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SHILLING



QUIGG
ISLE OF
ALMAN
AND
TIDE TA
FOR
186

DOUGLA

PRINTED AND PUBLISHED BY

LONDON—SIMPKIN, MARSHALL, & C
& SON; W. PITT. DUBLIN—WM.
& GILL. GLASGOW—J. LUMSDEN
WHITEHAVEN—CROSTHWAITE & CO.

Sold Retail in LIVERPOOL, by the O
BARROW-IN-FURNESS—JAMES WADDA
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FLEETWOOD—W. PORTER; T. STANLEY
HOLYHEAD—H. G. HUGHES. SWANSEA
HAVEN—the Booksellers. WORKI

List of LIFE BOATS on the Coasts of the United Kingdom

England.	SUFFOLK—	CORNWALL—	Scot-
NORTHUMBERLAND.	Gorleston [2]	Padstow	Kirkcaldy
Berwick.	Lowestoft	Bude Haven	Campbeltown
Holy Island	Pakefield	NORTH DEVON—	Ayr
N. Sunderland	Kessingland	Appledore	Irving
Boulmer	Southwold	Braunton	Ardrossan
Alnmouth	Thorpness [2]	Ilfracombe	Thurso
Hauxley	Aldbrough	SOMERSET—	Wick
Newbiggin	KENT—	Burnham	Lossi
Blyth [2]	Margate	Wales.	Buckie
Cullercoats	North Deal	Penarth	Banff
Tynemouth	Kingsgate	Porthcawl	Fraserburgh
Shields [3]	Ramsgate [3]	Swansea	Aberdeen
DURHAM—	Broadstairs [2]	Llanelli	Cove
Whitburn	Walmer	Carmarthen B.	Stonel
Sunderland	Dover	Tenby	Montroulez
Seaham	Dungeness	Fishguard	Arbroath
Hartlepool [5]	SUSSEX—	Cardigan	Buddo
Seaton Carew	Camber	Newquay	Broughton
YORKSHIRE—	Rye	Aberystwith	Dunde
Middlesboro'	Winchelsea	Aberdovey	St. Andrews
Redcar	Hastings	Barmouth	North
Saltburn	Eastbourne	Port Madoc	Ireland
Whitby [2]	Newhaven	Carnarvon	Portrus
Robin Hood's Bay	Brighton	Llanddwyn	Groombridge
Scarborough	Shoreham	Rhoscolyn	Tyrella
Filey	Worthing	Holyhead	Newcas
Bridlington	Selsey	Cemlyn	Dundalk
Hornsea	ISLE OF WIGHT—	Moelfre	Drogheda
Withernsea	Brooke	Penmon	Skerries
Spurn point	Grange	Orme's Head	Howth
LINCOLNSHIRE—	GUERNSEY—	Rhyl	Poolbeg
Donna Nook	St. Sampson's	England.	Kingstown
Theddlethorpe	DORSET—	CHESHIRE—	Wicklow
Sutton	Lyme Regis	New Brighton	Arklow
NORFOLK—	Poole	LANCASHIRE—	Whore
Blakeney	SOUTH DEVON—	Liverpool [7]	Rexford
Skegness	Exmouth	Southport	Cosslare
Sherringham	Teignmouth	Lytham	Carnsore
Cromer	Plymouth	Fleetwood	Tramore
Mundesley	CORNWALL—	Piel	Dungarvan
Bacton	Fowey	ISLE OF MAN—	Ardmore
Palling	Lizard	Castletown	Youghal
Winterton	Porthleven	CUMBERLAND—	Ballycott
Caister	Penzance	Whitehaven	Valentia
Yarmouth [2]	Sennen Cove	Silloth	Westport
ESSEX—	St. Ives		
Harwich	Newquay		

NOTICE—NEW LIGHTHOUSE, LYTHAM.

A new Lighthouse has been built on the Sandhills, 400 yards N.E. of the old Lighthouse. The Lighthouse is black with white top, and is expected to be lighted about January, 1865, and will show a bright white flashing light.

Lighthouse
No. 10.

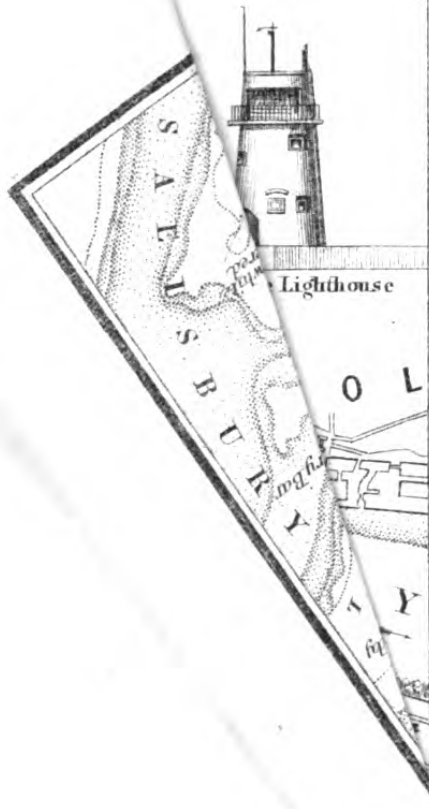
VIEW H.

Range
Pearson

1 mile W. of Burbo Flats.

Shipping
old. No.

ing into Old Formby Channel
ing S.E. by E. $7\frac{1}{2}$ E.)



QUIGGIN'S
ISLE OF MAN
ALMANACK,

FOR THE YEAR OF OUR LORD

1865,

Being the First after Bissextile or Leap-Year,
AND THE 28th-29th OF THE REIGN OF HER PRESENT MAJESTY;

WITH CORRECT

TIDE TABLES,

FOR

LIVERPOOL, BRISTOL, GREENOCK,
LONDON, CORK, SUNDERLAND, SHIELDS, HULL,
BRIDPORT, SOUTHAMPTON, AND PORTSMOUTH.

AND

MARINERS' COMPANION;

CONTAINING ALSO EVERY CALCULATION NECESSARY FOR

WORKING A LUNAR DISTANCE.

CALCULATED TO MEAN TIME, IN LATITUDE $54^{\circ} 10'$ N. AND LONGITUDE
 $4^{\circ} 30'$ W.

↪ The Liverpool Tides are calculated for Greenwich mean time.

FORTIETH ANNUAL IMPRESSION.

DOUGLAS, ISLE OF MAN:
PRINTED AND PUBLISHED BY MATTHEW GLOVER,
52, NORTH QUAY.

PHASES OF THE MOON.	FIRST QUARTER,	4th day, at	3h. 42m. afternoon.
	FULL MOON,	11th day, at	10h. 59m. night.
	LAST QUARTER,	20th day, at	2h. 36m. morning.
	NEW MOON,	27th day, at	9h. 30m. morning.

	Day	Twil.	☉'s	♂ Mercury.	♀ Venus.	♂ Mars.	♃ Jupiter.	♄ Saturn.	M.
	brek.	ends.	semi.	sets. sout.	sets. sout.	sets. sout.	rises. sout.	rises. sout.	D.
1	6 m 7	6 a 0	16 18	5 a 31 a 1	7 a 25 2 a 54	5 m 42 9 a 9	6 m 26 10 m 13	1 m 55 7 m 8	1
8	6 6	6 7	16 18	rises 0 3	7 48 2 58	5 14 8 42	6 6 9 52	1 30 6 42	8
5	6 3	6 16	16 18	6 m 58 11 m 4	8 11 3 1	4 49 8 17	5 46 9 30	1 4 6 16	15
2	5 58	6 27	16 17	6 35 10 34	8 33 3 3	4 27 7 54	5 25 9 9	0 38 5 49	22
9	5 49	6 39	16 16	6 34 10 27	8 55 3 4	4 9 7 34	5 3 8 47	0 11 5 22	29

M D	W D	Remarkable Days	HIGH WATER.—LIVERPOOL.				Equation of Time.
			MORNING.		EVENING.		
			Time.	Height.	Time.	Height.	'
1	A	1 Sun. aft. Christmas	1 15	17 11	1 42	18 9	4 0
2	M	Proper [Isa. xxxvii; Rom. ii. Lessons. [— xxxviii; Col. ii.	2 6	17 4	2 30	18 0	4 28
3	Tu	H souths 10 a 52	2 56	16 6	3 16	16 11	4 56
4	W	Neptune souths 5 a 26	3 43	15 4	4 9	15 7	5 23
5	Th	Bank Dividends due	4 38	14 2	5 8	14 4	5 50
6	F	Epiphany. 12th Day	5 45	13 4	6 22	13 5	6 16
7	S	Fenelon died, 1715.	6 58	13 0	7 27	13 4	6 42
8	A	1 Sun. aft. Epiphany	8 14	13 7	8 49	13 9	7 8
9	M	Proper [Isa. xlv; Matt. vi. Lessons. [— xlv; Rom. vi.	9 20	14 6	9 47	14 7	7 32
10	Tu	Royal Ex. built, 1838	10 14	15 7	10 38	15 5	7 57
11	W	Hilary Term begins	10 59	16 6	11 18	16 1	8 20
12	Th	Lavater died, 1801	11 38	17 2	11 58	16 6	8 43
13	F	Camb. Term begins	— —	— —	0 17	17 7	9 6
14	S	Oxford Term begins	0 33	16 8	0 51	17 6	9 28
15	A	2 Sun. aft. Epiphany	1 7	16 6	1 25	17 3	9 49
16	M	Pro. [Isa. li; Matt. xlii. Les. [— liij; Rom. xlii.	1 42	16 1	2 1	16 8	10 9
17	Tu	Battle of Falkirk, 1756	2 18	15 4	2 35	15 9	10 29
18	W	Prisca, V. & M.	2 52	14 7	3 8	14 9	10 48
19	Th	Copernicus b., 1473	3 28	13 8	3 46	13 7	11 7
20	F	Fabian, Bishop	4 7	12 9	4 31	12 6	11 24
21	S	Agnes, V. & M.	5 1	11 11	5 39	11 7	11 41
22	A	3 Sun. aft. Epiphany	6 16	11 6	6 53	11 5	11 58
23	M	Proper [Isa. lv; Matt. xx. Lessons. [— lvi; 1. Cor. iv.	7 29	11 11	8 9	12 1	12 13
24	Tu	Day increased 1 hour	8 43	13 1	9 14	13 5	12 28
25	W	Conversion of St. Paul	9 42	14 10	10 8	15 0	12 42
26	Th	Dr. Jenner died, 1823	10 31	16 8	10 55	16 9	12 55
27	F	H souths 9 a 14	11 17	18 3	11 37	18 4	13 7
28	S	Neptune south 3 a 53	11 59	19 4	— —	— —	13 18
29	A	4 Sun. aft. Epiphany	0 20	18 11	0 41	20 1	13 29
30	M	Proper [Isa. lvii; Matth. xxvi Lessons. [— lviii; 1 Cor. x.	1 4	19 3	1 27	20 0	13 39
31	Tu	Hilary Terms ends	1 50	18 10	2 13	19 4	13 48





Bristol tides				SUN.				MOON.				ASPECTS AND WEATHER.	
D.	morn. H. M.	even. H. M.	height F. I.	rises. H M	sets. H M	rt. ascen. H. M. S.	declin. S. ° / "	rises. H. M.	souths H. M.	declin. ° / "	age age	M D.	
1	9 24	9 46	33	1	8 22	3 46	18 48 35	22 59 3	9 a 1	3 a 23	6 s 40	4 1	☉ in Perigee
2	10 7	10 29	32	1	8 22	3 47	18 53 0	22 53 42	10 22	4 15	1 47	5 2	☽ in Perihel.
3	10 47	11 10	30	3	8 22	3 48	18 57 25	22 47 54	11 42	5 7	3 n 9	6 3	Expect
4	11 32	11 59	27	9	8 21	3 49	19 1 48	22 41 38	mor.	5 58	7 52	7 4	fair
5	—	0 25	25	4	8 21	3 50	19 6 12	22 34 56	1 1	6 50	12 4	8 5	☽ stationary
6	0 55	1 28	23	9	8 21	3 52	19 10 35	22 27 47	2 19	7 43	15 30	9 6	weather.
7	2 7	2 46	24	2	8 20	3 53	19 14 57	22 20 11	3 33	8 36	17 59	10 7	and rather
8	3 39	4 16	25	10	8 20	3 55	19 19 19	22 12 9	4 42	9 30	19 21	11 8	☽ ☽ ☽, 0 m 44
9	4 49	5 17	27	6	8 19	3 56	19 23 41	22 3 41	5 43	10 24	19 35	12 9	☽ ☽ ☽, 11 a 44
10	5 46	6 13	29	0	8 18	3 58	19 28 22	21 54 47	6 35	11 17	18 41	13 10	mild at
11	6 36	6 58	29	5	8 17	4 0	19 32 22	21 45 27	rises.	morn	—	F 11	the beginning,
12	7 21	7 42	30	4	8 16	4 1	19 36 42	21 35 42	5 a 18	0 8	16 47	15 12	which
13	8 2	8 19	30	11	8 15	4 3	19 41 1	21 25 32	6 25	0 56	14 4	16 13	☽ gr. Hl. lat. N
14	8 36	8 52	31	0	8 14	4 4	19 45 19	21 14 57	7 32	1 42	10 45	17 14	may
15	9 9	9 24	30	6	8 13	4 6	19 49 37	21 3 58	8 37	2 26	7 0	18 15	change
16	9 41	9 57	29	6	8 12	4 8	19 53 54	20 52 35	9 43	3 9	3 1	19 16	to frosty
17	10 12	10 26	28	4	8 11	4 9	19 58 10	20 40 47	10 49	3 51	1 s 3	20 17	☽ in Apogee
18	10 30	10 57	26	9	8 10	4 11	20 2 26	20 28 36	11 55	4 33	5 4	21 18	☽ stationary
19	11 12	11 30	24	8	8 9	4 13	20 6 41	20 16 2	morn	5 16	8 54	22 19	with
20	11 51	—	22	8	8 8	4 15	20 10 55	20 3 5	1 1	6 0	12 23	23 20	☽ ☽ ☽, 4 m 32
21	0 17	0 50	20	9	8 7	4 17	20 15 8	19 49 46	2 7	6 46	15 23	24 21	snow
22	1 23	1 59	20	7	8 6	4 19	20 19 21	19 36 4	3 12	7 36	17 43	25 22	or
23	2 44	3 31	22	8	8 4	4 21	20 23 33	19 22 0	4 16	8 28	19 9	26 23	sleet,
24	4 10	4 43	25	6	8 3	4 22	20 27 44	19 7 35	5 15	9 23	19 31	27 24	☽ ☽ ☽, 0 m 59
25	5 12	5 39	28	6	8 1	4 24	20 31 55	18 52 49	6 7	10 19	18 38	28 25	☽ ☽ ☽, 2 a 42
26	6 5	6 32	30	0	8 0	4 26	20 36 4	18 37 42	6 51	11 17	16 29	29 26	succeeded
27	6 57	7 18	32	4	7 58	4 28	20 40 13	18 22 15	sets.	0 a 14	13 9	N 27	by wind
28	7 43	8 6	34	3	7 57	4 30	20 44 21	18 6 28	6 a 34	1 11	8 52	1 28	and
29	8 27	8 49	35	6	7 55	4 32	20 48 28	17 50 22	8 1	2 6	4 0	2 29	☽ in Perigee
30	9 11	9 32	35	6	7 54	4 34	20 52 35	17 33 57	9 26	3 0	1 n 7	3 30	☽ ☽ ☽, 5 a 27
31	9 53	10 15	34	3	7 52	4 36	20 56 40	17 17 13	10 48	3 53	6 4	4 31	rain

LUNAR DISTANCES FROM THE SUN.

Mean Astronomical Time at Greenwich.

M.	Noon.	3 Hours.	6 Hours.	9 Hours.	Midn.	15 Hour.	18 Hour.	21 Hour.
D.	° / "	° / "	° / "	° / "	° / "	° / "	° / "	° / "
1w	48 22 27	50 2 29	51 42 30	53 22 28	55 2 24	56 42 16	58 22 4	60 1 48
2	61 41 27	63 21 0	65 0 28	66 39 50	68 19 4	69 58 12	71 37 13	73 16 6
3	74 54 52	76 33 29	78 11 58	79 50 18	81 28 29	83 6 32	84 44 25	86 22 9
4	87 59 44	89 37 9	91 14 24	92 51 29	94 28 24	96 5 10	97 41 45	99 18 10
5	100 54 24	102 30 29	104 6 23	105 42 6	107 17 39	108 53 2	110 28 13	112 3 14
6	113 38 5	115 12 44	116 47 12	118 21 30	119 55 36	121 29 31	123 3 15	124 36 48
7	126 10 9	127 43 18	129 16 16	130 49 2	132 21 36	133 53 57	135 26 6	136 58 2
15s	139 48 36	138 27 19	137 6 7	135 45 0	134 23 56	133 2 58	131 42 3	130 21 12
16	129 0 24	127 39 40	126 18 58	124 58 18	123 37 41	122 17 5	120 56 30	119 35 56
17	118 15 22	116 54 48	115 34 13	114 13 37	112 52 59	111 32 19	110 11 37	108 50 51
18	107 30 1	106 9 7	104 48 8	103 27 3	102 5 53	100 44 36	99 23 11	98 1 39
19	96 39 59	95 18 10	93 56 11	92 34 2	91 11 42	89 49 12	88 26 29	87 3 34
20	85 40 26	84 17 4	82 53 28	81 29 37	80 5 31	78 41 10	77 16 32	75 51 37
21	74 26 24	73 0 54	71 35 5	70 8 58	68 42 31	67 15 44	65 48 37	64 21 10
22	62 53 21	61 25 11	59 56 40	58 27 47	56 58 31	55 28 53	53 58 52	52 28 29
23	50 57 43	49 26 34	47 55 2	46 23 7	44 50 49	43 18 9	41 45 6	40 11 41
24	38 37 55	37 3 47	35 29 19	33 54 32	32 19 26	30 44 3	29 8 24	27 32 31
29w	29 29 57	31 12 27	32 55 1	34 37 37	36 20 12	38 2 46	39 45 16	41 27 41
30	43 10 0	44 52 12	46 34 15	48 16 8	49 57 52	51 39 24	53 20 44	55 1 52
31	56 42 46	58 23 26	60 3 51	61 44 2	63 23 57	65 3 36	66 42 59	68 22 5

Explanations

The LIVERPOOL TIDES on the left-hand Calendar pages are this year calculated for Greenwich mean time; with the height above the level of the Old Dock Sill now represented by the marks on the east side of the Canning Dock, and including the diurnal inequality in the height of each Tide.

PHASES OF THE MOON.	FIRST QUARTER,	3rd day, at 1h. 9m. morning.
	FULL MOON,	10th day, at 4h. 27m. evening.
	LAST QUARTER,	18th day, at 9h. 38m. night.
	NEW MOON,	25th day, at 8h. 30m. night.

M D.	Day brek.	Twil. ends.	☉'s semi.	♂ Mercury rises. sout.	♀ Venus. sets. sout.	♂ Mars. sets. sout.	♂ Jupiter. rises. sout.	♂ Saturn. rises. sout.	M D.
1	5m46	6a43	16 16	6m36 10m29	9 a 43 a 5	4 m 37 a 25	4m54 8m38	11a55 5m11	
8	5 35	6 55	16 15	6 43 10 37	9 24 3 5	3 44 7 7	4 32 8 15	11 28 4 43	
15	5 22	7 8	16 13	6 49 10 50	9 43 3 4	3 30 6 50	4 10 7 53	11 0 4 16	1
22	5 8	7 21	16 12	6 48 11 5	10 13 3	3 18 6 34	3 48 7 30	10 32 3 48	2
28	4 54	7 32	16 10	6 47 11 20	10 14 3 1	3 9 6 22	3 28 7 10	10 11 3 23	2

M W D D		Remarkable Days	HIGH WATER.—LIVERPOOL.				Equatio of Time
			MORNING.		EVENING.		
			Time.	Height.	Time.	Height.	
1	W	St. Bridget.	2 36	17 9	2 58	17 10	13 5
2	Th	Purification V. Mary	3 23	16 3	3 45	15 10	14
3	F	Blasius, Bishop	4 9	14 4	4 38	14 0	14
4	S	H south 8 a 41	5 12	13 2	5 50	12 8	14
5	A	5 Sun. aft. Epiphany	6 29	12 4	7 12	12 1	14
6	M	Proper [Isaiah lix; Mark v. Lessons. [— lxiv; 2 Cor. i.	7 58	12 6	8 34	12 4	14
7	Tu	Day long, 9h. 11m.	9 10	13 5	9 37	13 4	14
8	W	Mary Q. of Scots beh.	9 59	14 9	10 26	14 6	14
9	Th	Dr. Maskelyne d. 1811	10 47	15 11	11 7	15 6	14
10	F	Queen married, 1840	11 23	16 10	11 41	16 3	14
11	S	Washington b. 1732	11 57	17 5	—	—	14
12	A	Septuagesima Sun.	0 12	16 9	0 28	17 10	14
13	M	Proper [Gen. i; Mark xii. Lessons. [— ii; 2 Cor. vii.	0 43	16 11	1 2	17 8	14
14	Tu	Valentine, Bishop	1 17	16 9	1 33	17 3	14
15	W	Atterbury died, 1732	1 48	16 4	2 4	16 6	14
16	Th	Melancthon b. 1495	2 19	15 7	2 35	15 6	14
17	F	H souths 7 a 53	2 54	14 9	3 10	14 4	14
18	S	Luther died 1546	3 29	13 8	3 51	13 1	14
19	A	Sexagesima Sunday	4 17	12 7	4 45	11 10	14
20	M	Pro. [Genesis iii; Luke ii. Les. [— vi; Gala. ii.	5 19	11 7	6 2	11 1	13 5
21	Tu	Trinidad taken, 1797	6 45	11 8	7 28	11 6	13 5
22	W	Fren. Revolution, 1848	8 10	12 9	8 45	12 10	13 4
23	Th	Sir J. Reynolds d. 1792	9 16	14 6	9 42	14 9	13 3
24	F	Cam. term divides N.	10 7	16 9	10 32	16 9	13 2
25	S	[St. Matthias Apostle	10 57	18 7	11 17	18 5	13 1
26	A	Shrove Sunday	11 38	20 1	—	—	13 6
27	M	Proper [Gen. ix to v. xx; Luke ix. Lessons. [— xii; Ephe. iii.	0 1	19 8	0 22	20 11	12 5
28	Tu	Shrove Tuesday	0 43	20 1	1 6	20 10	12 4
Elliott's Engagement off Ramsey, 1760.							

To reduce the Liverpool Tides for the Isle of Man generally, subtract twelve minutes—the Tides at the Island being so much earlier than at Liverpool; and the height, or rise of water at Liverpool diminished one sixth will give the approximate rise of water in Douglas.





1865.

FEBRUARY 28 Days.

Bristol tides						SUN.										MOON.										ASPECTS	
M.	D.	morn.		even.		height F. I.	rises.		sets.		rt. ascen.		declin.		S.	sets.	souths declin.		M.	D.	AND WEATHER						
		H. M.	H. M.	H. M.	H. M.		H. M.	M. S.	°	'	H. M.	H. M.	°	'													
1	10	33	10	53	32	2	7	50	4	38	21	0	45	17	0	11	morn	4a46	10N33	5	1	Now expect					
2	11	13	11	33	28	9	7	48	4	40	21	4	49	16	42	51	0 6	5 40	14 18	6	2	more frost					
3	11	59	—	—	25	4	7	47	4	42	21	8	52	16	25	14	1 21	6 33	17 6	7	3	☽ in ☊, 2m					
4	0	28	1	0	22	8	7	45	4	44	21	12	54	16	7	19	2 32	7 27	18 51	8	4	♂ ♂ ☊, 3m					
5	1	36	2	22	22	0	7	43	4	46	21	16	55	15	49	9	3 37	8 20	19 27	9	5	except					
6	3	15	4	0	23	6	7	41	4	48	21	20	56	15	30	42	4 32	9 12	18 57	10	6	☿ ☊, 4 m					
7	4	38	5	6	25	7	7	39	4	50	21	24	55	15	11	59	5 17	10 3	17 27	11	7	the wind					
8	5	32	5	58	27	7	7	37	4	52	21	28	54	14	53	1	5 54	10 52	15 6	12	8	☿ stationary					
9	6	22	6	44	28	5	7	35	4	55	21	32	52	14	33	48	6 25	11 38	12 3	13	9	be southerly					
10	7	3	7	22	29	9	7	33	4	57	21	36	49	14	14	20	rises.	morn	—	F	10	then					
11	7	39	7	57	30	10	7	31	4	59	21	40	46	13	54	38	6a25	0 23	8 30	15	11	more					
12	8	14	8	29	31	5	7	29	5	1	21	44	42	13	34	43	7 31	1 6	4 38	16	12	fair					
13	8	46	9	2	31	4	7	27	5	3	21	48	37	13	14	34	8 37	1 48	0 37	17	13	☿ in Apogee					
14	9	16	9	29	30	10	7	25	5	5	21	52	31	12	54	12	9 42	2 30	3s 24	18	14	for the					
15	9	43	9	58	29	7	7	23	5	7	21	56	24	12	33	38	10 47	3 12	7 17	19	15	☿ in Aphelion					
16	10	12	10	28	28	3	7	21	5	9	22	0	17	12	12	52	11 52	3 56	10 52	20	16	☿ ☊, 0 a					
17	10	41	10	59	26	5	7	19	5	11	22	4	9	11	51	53	morn	4 41	14 2	21	17	season.					
18	11	17	11	39	24	0	7	17	5	13	22	8	1	11	30	43	0 57	5 28	16 35	22	18	Changeable					
19	—	—	0	3	21	9	7	15	5	15	22	11	51	11	9	23	2 0	6 17	18 24	23	19	now					
20	0	31	1	10	20	2	7	13	5	17	22	15	41	10	47	52	2 59	7 9	19 16	24	20	☿ ☊, 7 a					
21	1	50	2	41	21	3	7	10	5	19	22	19	31	10	26	11	3 52	8 3	19 2	25	21	about;					
22	3	32	4	12	24	7	7	8	5	21	22	23	20	10	4	20	4 40	8 59	17 36	26	22	more					
23	4	45	5	12	28	2	7	5	5	23	22	27	8	9	42	20	5 21	9 56	14 58	27	23	inclined					
24	5	38	6	6	31	8	7	3	5	25	22	30	56	9	20	12	5 53	10 52	11 13	28	24	☿ ☊, 7 a					
25	6	34	6	57	33	1	7	0	5	27	22	34	43	8	57	55	sets.	11 49	6 38	N	25	☿ gr.elong.E					
26	7	20	7	44	35	7	6	58	5	29	22	38	29	8	35	29	6a25	0a44	1 33	1	26	☿ in Perigee					
27	8	8	8	29	36	11	6	56	5	31	22	42	15	8	12	57	8 20	1 40	3a38	2	27	to rain					
28	8	51	9	13	36	11	6	54	5	33	22	46	0	7	50	17	9 39	2 35	10 42	3	28	or snow.					

LUNAR DISTANCES FROM THE SUN.
Mean Astronomical Time at Greenwich.

M.	NOON.			3 HOURS.			6 HOURS.			9 HOURS.			MIDN.			15 HOUR.			18 HOUR.			21 HOUR.		
D.	°	'	"	°	'	"	°	'	"	°	'	"	°	'	"	°	'	"	°	'	"	°	'	"
1w	70	0	55	71	39	27	73	17	41	74	55	39	76	33	18	78	10	40	79	47	43	81	24	29
2	83	0	57	84	37	6	86	12	58	87	48	31	89	23	47	90	58	44	92	33	24	94	7	46
3	95	41	50	97	15	37	98	49	7	100	22	19	101	55	15	103	27	53	105	0	15	106	32	21
4	108	4	10	109	35	43	111	7	0	112	38	1	114	8	47	115	39	17	117	9	32	118	39	32
5	120	9	18	121	38	49	123	8	5	124	37	7	126	5	55	127	34	29	129	2	49	130	30	55
6	132	14	26	133	41	55	135	10	11	136	40	12	138	11	12	139	43	13	141	14	19	143	19	25
7	144	19	33	145	44	16	147	14	22	148	47	19	150	16	29	151	46	26	153	17	26	155	22	31
8	156	24	37	157	47	20	159	17	26	160	50	23	162	19	33	163	53	27	165	20	30	167	25	36
9	168	29	41	169	50	24	171	20	30	172	53	27	174	22	36	175	56	31	177	23	34	179	28	41
10	180	34	45	181	53	28	183	23	34	184	56	31	186	25	40	187	59	35	189	26	38	191	31	46
11	192	39	49	193	56	32	195	26	38	196	59	35	198	28	46	199	62	39	201	29	42	203	34	50
12	204	44	53	205	59	36	207	29	42	208	62	39	210	31	50	211	65	43	213	32	46	215	37	54
13	216	49	57	217	62	40	219	32	46	220	65	43	222	34	54	223	68	47	225	34	50	227	40	59
14	228	54	61	229	65	44	231	35	50	232	68	47	234	37	58	235	71	51	237	36	54	239	43	64
15	240	59	65	241	68	48	243	38	54	244	71	51	246	40	66	247	74	55	249	38	58	251	46	76
16	252	64	69	253	71	52	255	41	58	256	74	55	258	43	70	259	77	59	261	41	62	263	50	86
17	264	69	73	265	74	56	267	44	62	268	77	59	270	46	74	271	80	63	273	44	66	275	54	102
18	276	74	77	277	77	60	279	47	66	280	80	63	282	49	78	283	83	67	285	47	70	287	58	122
19	288	79	81	289	80	64	291	50	70	292	83	67	294	52	82	295	86	71	297	50	74	299	61	140
20	299	84	85	300	83	68	301	53	74	302	86	71	304	55	86	305	89	75	307	53	78	309	65	159
21	311	89	89	312	86	72	313	56	78	314	89	75	316	58	90	317	92	79	319	56	82	321	72	179
22	323	94	93	324	89	76	325	59	82	326	92	79	328	61	92	329	95	83	331	59	86	333	80	200
23	335	99	97	336	92	80	337	62	86	338	95	83	340	64	94	341	98	87	343	62	90	345	88	220
24	347	104	101	348	95	84	349	65	90	350	98	87	352	67	96	353	101	91	355	65	94	357	95	241
25	359	109	105	360	98	88	361	68	94	362	101	91	364	69	98	365	104	95	367	68	98	369	102	263
26	371	114	109	372	101	92	373	71	98	374	104	95	376	72	100	377	107	99	379	68	102	381	110	286
27	383	119	113	384	104	96	385	74	102	386	107	98	388	74	102	389	110	103	391	68	106	393	114	310
28	395	124	117	396	107	100	397	77	106	398	110	102	400	76	104	401	113	107	403	68	110	405	118	334

The EQUATION of TIME is given to the nearest second for Greenwich mean noon; and as the difference between the equation of time for mean noon and apparent noon does not in any instance amount to the fifth part of a second, the given minutes and seconds may be used for reducing mean time into apparent time, or the contrary. When the column is headed "Clock before Sun," the Equation is to be subtracted from mean time to reduce it to apparent; or, in the case of a celestial observation, the result being apparent time, the equation must be added to reduce it to mean time. And when "after Sun," the equation must be added to mean time, to reduce it to apparent time, or subtracted from apparent time to reduce it to mean time.

PHASES OF THE MOON. { FIRST QUARTER, 4th day, at 0h. 18m. afternoon.
FULL MOON, 12th day, at 10h. 42m. morning.
LAST QUARTER, 20th day, at 0h. 36m. afternoon.
NEW MOON, 27th day, at 5h. 28m. morning.

Day	Twil.	☉'s	♂ Mercury		♀ Venus.		♂ Mars.		♂ Jupiter.		♂ Saturn.		M	
brek.	ends.	semi.	rises.	sout.	sets.	sout.	sets.	sout.	rises.	sout.	rises.	sout.	D.	
1	4m54	7 a 35	16 10	6m 49	11m 23	10a19	3 a 1	3 m 7	6 a 20	3m 25	7 m 6	10 a 3	3m 19	1
3	4 34	7 50	16 8	6 39	11 41	10 35	2 57	2 56	6 6	3 16	42	9 33	2 51	3
5	4 16	8 4	16 6	sets.	—	10 49	2 53	2 44	5 53	2 36	6 18	9 3	2 22	5
7	3 56	8 19	16 4	6 a 38	0 a 24	10 59	2 46	2 32	5 40	2 11	5 53	8 33	1 53	7
9	3 34	8 36	16 3	7 37	0 47	11 42	36	2 20	5 28	1 46	5 27	8 31	24	9

M D	W D	Remarkable Days	HIGH WATER.—LIVERPOOL.				Equation of Time.
			MORNING.		EVENING.		
			Time.	Height	Time.	Height.	''
1	W	Ash Wednesday	1 29	19 7	1 51	19 8	12 32
2	Th	Chad. Archbishop	2 13	19 1	2 35	18 1	12 20
3	F	E. Waller b. 1605	2 58	16 9	3 21	16 0	12 7
4	S	H Souths 6 a 50	3 46	14 5	4 12	13 9	11 54
5	A	1 Sunday in Lent	4 43	13 2	5 19	11 11	11 40
6	M	Pro. [Gen. xix to v. 30. ; Luke xvi. Les. [— xxii; Phil. iv.	6 3	12 0	6 46	11 1	11 26
7	Tu	Perpetua, Martyr	7 28	12 0	8 12	11 5	11 12
8	W	Regulus sou. 10 a 54	8 47	12 10	9 16	12 6	10 57
9	Th	Pleiades sets 1 m 5	9 43	14 2	10 5	13 11	10 41
10	F	Pri. of W. Mar. 1863	10 26	15 5	10 43	15 1	10 26
11	S	Sirius souths 7 a 21	11 2	16 6	11 17	16 1	10 10
12	A	2 Sunday in Lent	11 32	17 4	11 46	16 9	9 53
13	M	Proper [Genesis xxvii; Luke xxiii Lessons. [— xxxiv; 1 Thess. iii	—	—	0 1	17 8	9 36
14	Tu	Admiral Byng shot.	0 14	17 1	0 31	17 9	9 20
15	W	Uranus souths 6 a 7	0 46	17 2	1 2	17 6	9 2
16	Th	Le Brun b. 1739	1 19	16 11	1 35	16 10	8 45
17	F	St. Patrick	1 50	16 4	2 6	15 11	8 27
18	S	Edwd., King W., Sax.	2 24	15 5	2 43	14 8	8 10
19	A	3 Sunday in Lent	3 2	14 2	3 24	13 6	7 52
20	M	Proper [Genesis xxxix; John vi. Lessons. [— xlii; 1 Tim. 2, 3.	3 46	13 3	4 13	12 2	7 34
21	Tu	Benedict, Abbot.	4 46	12 3	5 27	11 4	7 15
22	W	Goethe died, 1822	6 12	12 0	6 55	11 6	6 57
23	Th	Day long, 12h. 17m.	7 39	12 10	8 16	12 10	6 39
24	F	Uranus souths 5 a 32	8 42	14 8	9 17	14 10	6 21
25	S	Lady Day	9 43	16 10	10 9	16 11	6 2
26	A	4 Sunday in Lent	10 30	18 9	10 53	18 7	5 44
27	M	Proper [Genesis xliii; John xlii. Lessons. [— xlv; 2 Tim. iv.	11 14	20 2	11 36	19 9	5 25
28	Tu	Aldebaran sou. 11 a 44	11 57	20 9	—	—	5 7
29	W	Pleiades set 11 a 43	0 19	20 1	0 42	20 6	4 49
30	Th	Sirius souths 6 a 7	1 6	19 8	1 29	19 5	4 30
31	F	Castor souths 7 a 9	1 52	18 6	2 15	17 9	4 12



1865.

MARCH 31 Days.

Bristol tides				SUN.				MOON.				ASPECTS AND WEATHER	
M.	morn.	even.	height	rises	sets.	rt.	ascen.	declin.	S.	s. ts.	souths	declin.	M.
D.	H. M.	H. M.	F. I.	H. M.	H. M.	H. M.	H. M.	° ' "	° ' "	H. M.	H. M.	° ' "	D.
1	9 33	9 53	35 5	6 51	5 35	22 49	45	7 27	31	11a 0	3a31	12m42	4 1
2	10 13	10 32	32 10	6 49	5 37	22 53	29	7 4 38		morn	4 27	15 59	5 2
3	10 51	11 13	29 5	6 47	5 39	22 57	13	6 41 39		0 20	5 22	18 9	6 3
4	11 35	—	25 5	6 44	5 41	23 0	57	6 18 35		1 29	6 16	19 9	7 4
5	0 2	0 32	21 11	6 42	5 43	23 4	39	5 55 26		2 28	7 9	19 0	8 5
6	1 11	1 51	20 7	6 39	5 44	23 8	22	5 32 12		3 15	8 0	17 50	9 6
7	2 41	3 34	21 11	6 37	5 46	23 12	4	5 8 53		3 53	8 49	15 46	10 7
8	4 14	4 45	24 4	6 35	5 48	23 15	45	4 45 31		4 26	9 36	12 59	11 8
9	5 13	5 37	26 8	6 32	5 50	23 19	26	4 22 5		4 55	10 21	9 39	12 9
10	5 58	6 18	27 8	6 30	5 52	23 23	7	3 58 36		5 20	11 4	5 57	13 10
11	6 39	6 56	29 4	6 27	5 54	23 26	48	3 35 4		5 40	11 46	2 1	14 11
12	7 13	7 28	30 9	6 25	5 56	23 30	28	3 11 29		rises.	morn	—	F 12
13	7 45	8 0	31 4	6 22	5 58	23 34	8	2 47 52		7a32	0 28	1s59	16 13
14	8 17	8 31	31 7	6 20	6 0	23 37	47	2 24 14		8 37	1 11	5 54	17 14
15	8 47	9 3	31 4	6 17	6 2	23 41	27	2 0 34		9 42	1 54	9 34	18 15
16	9 17	9 31	30 5	6 15	6 4	23 45	6	1 36 52		10 46	2 38	12 52	19 16
17	9 45	10 1	29 0	6 12	6 6	23 48	45	1 13 10		11 49	3 24	15 37	20 17
18	10 18	10 33	27 3	6 10	6 7	23 52	24	0 49 28		morn	4 12	17 40	21 18
19	10 53	11 11	25 2	6 7	6 9	23 56	2	0 25 46		0 51	5 2	18 51	22 19
20	11 35	—	22 9	6 5	6 11	23 59	41	0 2 4		1 45	5 53	19 4	23 20
21	0 3	0 39	20 10	6 3	6 13	0 3	19	0 21 38		2 31	6 47	18 11	24 21
22	1 19	2 3	21 5	6 0	6 15	0 6	58	0 45 18		3 11	7 41	16 11	25 22
23	2 57	3 41	24 8	5 57	6 17	0 10	36	1 8 57		3 47	8 36	13 6	26 23
24	4 15	4 46	28 6	5 55	6 19	0 14	14	1 32 24		4 19	9 31	9 3	27 24
25	5 14	5 41	32 1	5 52	6 21	0 17	52	1 56 9		4 48	10 26	4 18	28 25
26	6 5	6 31	33 7	5 50	6 22	0 21	30	2 19 41		5 14	11 22	0 49	29 26
27	6 55	7 18	35 9	5 47	6 24	0 25	8	2 43 11		sets.	0a18	5 55	N 27
28	7 41	8 5	36 11	5 45	6 26	0 28	47	3 6 37		8a36	1 15	10 34	1 28
29	8 28	8 51	36 8	5 43	6 28	0 32	25	3 29 59		9 57	2 12	14 26	2 29
30	9 12	9 33	35 1	5 40	6 30	0 36	3	3 53 18		11 10	3 9	17 12	3 30
31	9 54	10 14	32 7	5 38	6 32	0 39	41	4 16 32		morn	4 7	18 44	4 31

LUNAR DISTANCES FROM THE SUN.

Mean Astronomical Time at Greenwich.

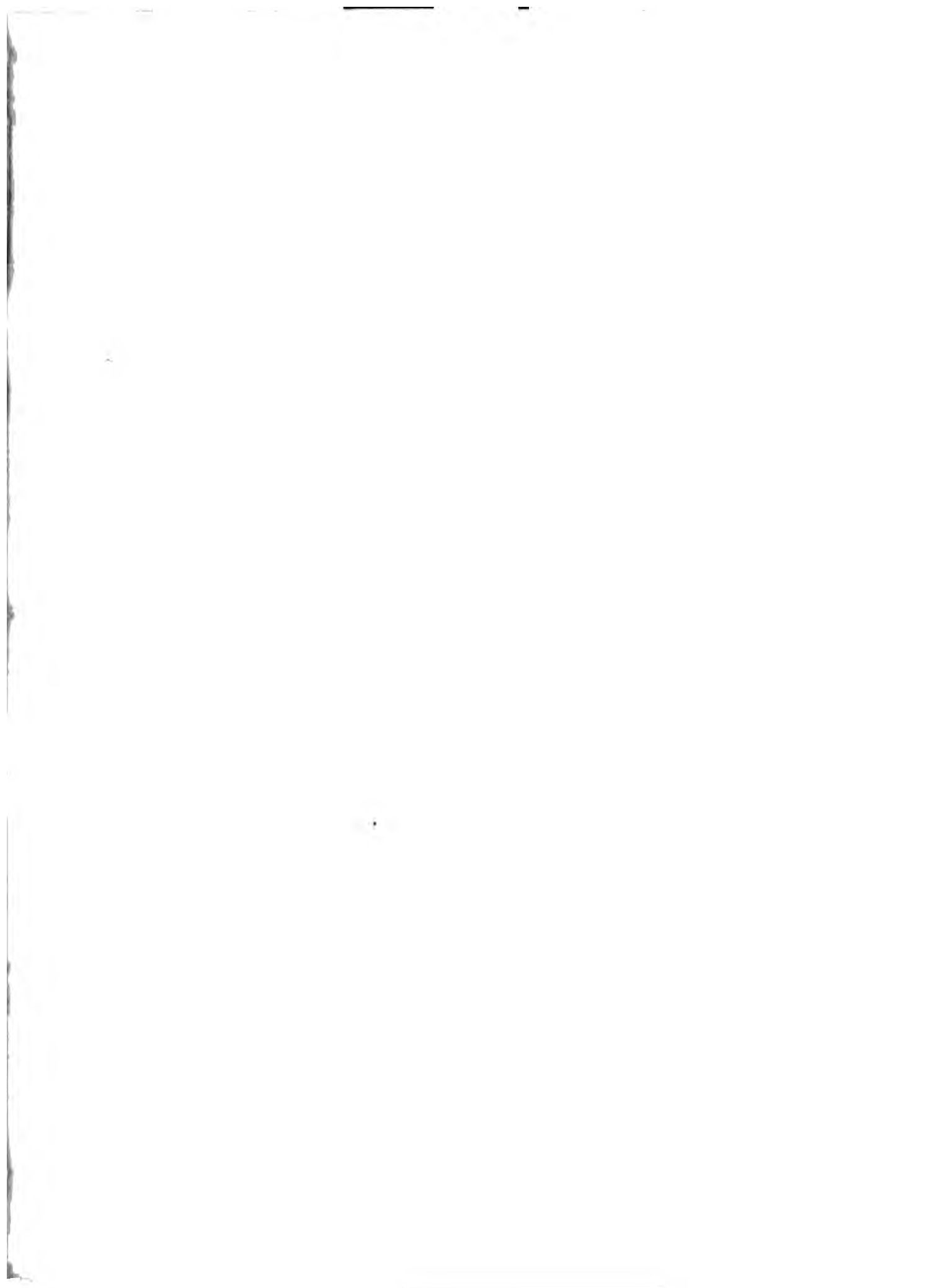
M.	NOON.	3 HOURS.	6 HOURS.	9 HOURS.	MIDN.	15 HOUR.	18 HOUR.	21 HOUR.
D.	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "
1w	51 15 36	52 56 28	54 36 58	56 17 6	57 56 52	59 36 15	61 15 15	62 53 52
2	64 32 5	66 9 55	67 47 21	69 24 23	71 1 2	72 37 16	74 13 7	75 48 35
3	77 23 38	78 58 19	80 32 36	82 6 30	83 40 1	85 13 9	86 45 55	88 18 19
4	89 50 21	91 22 2	92 53 22	94 24 20	95 54 59	97 25 17	98 55 15	100 24 55
5	101 54 15	103 23 16	104 52 0	106 20 26	107 48 34	109 16 26	110 44 0	112 11 19
6	113 38 22	115 5 10	116 31 43	117 58 1	119 24 5	120 49 56	122 15 33	123 40 57
7	125 6 8	126 31 7	127 55 55	129 20 30	130 44 54	132 9 8	133 33 11	134 57 3
8	135 59 39	134 37 8	133 14 29	131 51 41	130 28 44	129 5 37	127 42 22	126 18 56
9	124 55 20	123 31 32	122 7 34	120 43 24	119 19 2	117 54 28	116 29 41	115 4 40
10	113 39 26	112 13 57	110 48 14	109 22 15	107 56 1	106 29 31	105 2 44	103 35 41
11	102 8 19	100 40 40	99 12 42	97 44 25	96 15 49	94 46 53	93 17 37	91 48 0
12	90 18 2	88 47 42	87 17 0	85 45 56	84 14 29	82 42 39	81 10 25	79 37 48
13	78 4 46	76 31 20	74 57 29	73 23 14	71 48 33	70 13 26	68 37 54	67 1 57
14	65 25 34	63 48 45	62 11 30	60 33 49	58 55 43	57 17 10	55 38 13	53 58 50
15	52 19 2	50 38 49	48 58 11	47 17 10	45 35 45	43 53 56	42 11 45	40 29 12
16	38 46 18	37 3 3	35 19 29	33 35 35	31 51 24	30 6 56	28 22 12	26 37 13
17	25 14 14	23 38 11	21 59 46	20 16 3	18 38 44	16 54 20	15 9 24	13 28 4
18	11 55 14	9 38 11	7 59 46	5 16 3	3 38 44	1 54 20	0 9 24	0 28 4
19	0 11 14	0 38 11	0 59 46	0 16 3	0 38 44	0 54 20	0 9 24	0 28 4
20	11 55 14	9 38 11	7 59 46	5 16 3	3 38 44	1 54 20	0 9 24	0 28 4
21	0 11 14	0 38 11	0 59 46	0 16 3	0 38 44	0 54 20	0 9 24	0 28 4
22	11 55 14	9 38 11	7 59 46	5 16 3	3 38 44	1 54 20	0 9 24	0 28 4
23	0 11 14	0 38 11	0 59 46	0 16 3	0 38 44	0 54 20	0 9 24	0 28 4
24	11 55 14	9 38 11	7 59 46	5 16 3	3 38 44	1 54 20	0 9 24	0 28 4
25	0 11 14	0 38 11	0 59 46	0 16 3	0 38 44	0 54 20	0 9 24	0 28 4
26	11 55 14	9 38 11	7 59 46	5 16 3	3 38 44	1 54 20	0 9 24	0 28 4
27	0 11 14	0 38 11	0 59 46	0 16 3	0 38 44	0 54 20	0 9 24	0 28 4
28	11 55 14	9 38 11	7 59 46	5 16 3	3 38 44	1 54 20	0 9 24	0 28 4
29	0 11 14	0 38 11	0 59 46	0 16 3	0 38 44	0 54 20	0 9 24	0 28 4
30	11 55 14	9 38 11	7 59 46	5 16 3	3 38 44	1 54 20	0 9 24	0 28 4
31	0 11 14	0 38 11	0 59 46	0 16 3	0 38 44	0 54 20	0 9 24	0 28 4

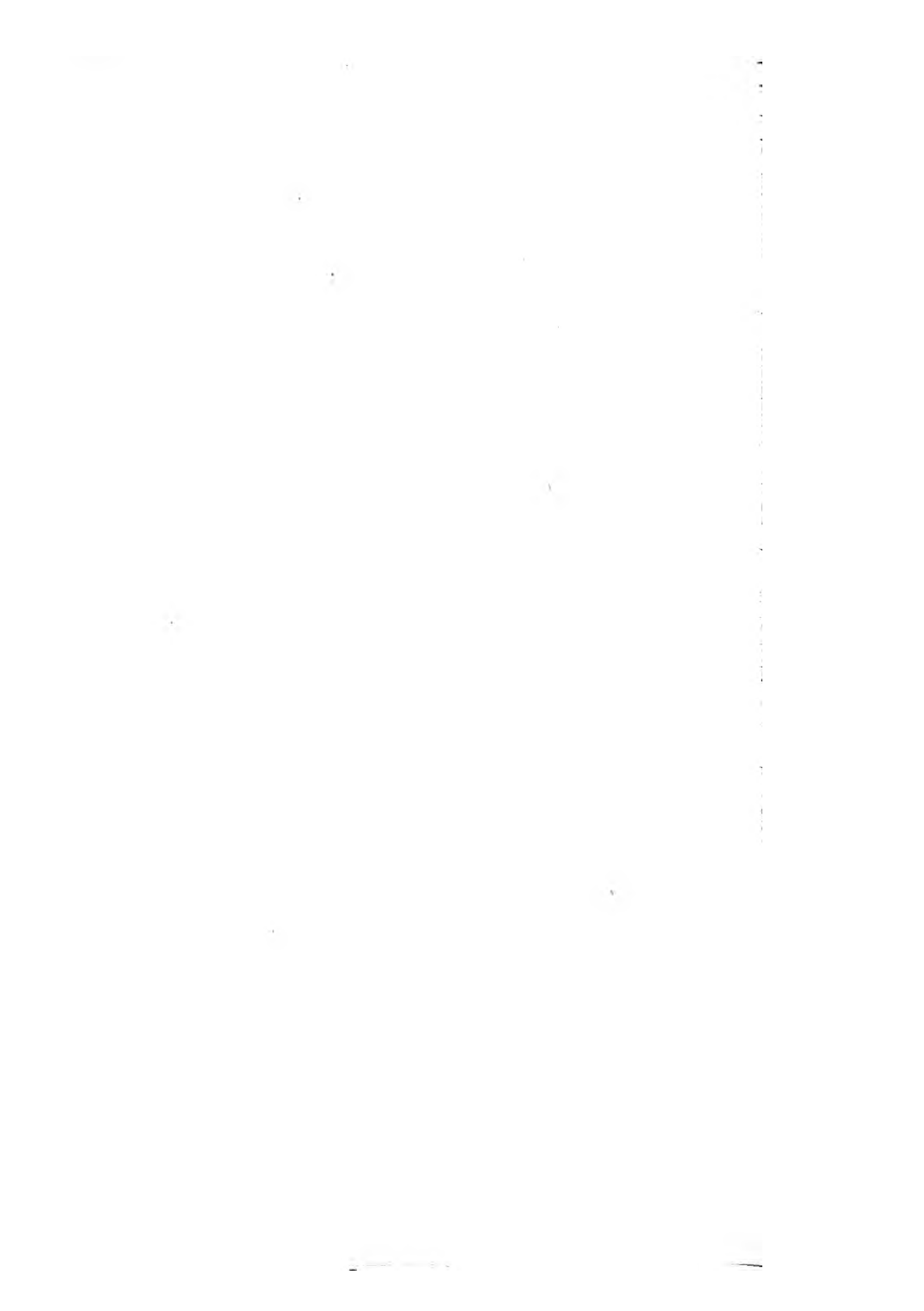
IN THE TIDE TABLE FOR BRISTOL, on the right-hand pages, the heights are given of those Tides which happen nearest to noon in each day at the Cumberland Gates, without taking into account the diurnal inequality of the height.

PHASES OF THE MOON. { FIRST QUARTER, 3rd day, at 1h. 19m. morning.
FULL MOON, 11th day, at 4h. 27m. morning.
LAST QUARTER, 18th day, at 11h. 20m. night.
NEW MOON, 25th day, at 2h. 13m. afternoon.

M D.	Day	Twil.	☉'s ends. semi.	♂ Mercury sets. so out.	♀ Venus. sets. sout.	♂ Mars. sets. sout.	♂ Jupiter. rises. sout.	♂ Saturn. rises. sout.	M D.
1	3m26	8 a 43	16 2	8 a 30 a 55	11 a 32 a 31	2 m 15 5 a 23	1 m 35 5 m 16	7 a 50 1 m 11	1
8	3 49	2 16 0		8 49 1 10	10 57 2 15	2 25 12	1 9 4 49	7 10 0 42	8
15	2 40 9	23 15 58		9 10 1 10	10 39 1 52	1 49 5 1	0 41 4 22	sets. 0 12	15
22	2 12 9	45 15 56		8 38 0 53	10 7 1 22	1 35 4 50	0 10 3 54	5 m 2 11 a 38	22
29	1 42	10 12 15 54		8 7 0 20	9 17 0 44	1 21 4 39	11 a 41 3 26	4 35 11 9	29

M D	W D	Remarkable Days	HIGH WATER.—LIVERPOOL.				Equation of Time.
			MORNING.		EVENING.		
			Time.	Height.	Time.	Height.	
1	S	Day increa. 5h. 45m.	2 38	16 11	3 2	15 8	3 54
2	A	5 Sunday in Lent	3 27	15 1	3 52	13 6	3 36
3	M	Pro. [Exodus iii; John xx. Less. [— v; Heb. iv.	4 21	13 3	4 55	11 9	3 18
4	Tu	Ambrose, Bishop	5 34	12 1	6 15	10 10	3 0
5	W	Regulus souths 9 a 4	6 56	11 10	7 36	11 1	2 42
6	Th	Old Lady Day	8 11	12 8	8 42	12 2	2 25
7	F	Prince Leop. b. 1853	9 10	13 8	9 34	13 4	2 8
8	S	Oxford T. ends	9 55	14 10	10 14	14 7	1 51
9	A	Palm Sunday.	10 3	15 11	10 45	15 7	1 34
10	M	Proper [Exodus ix; Matt. xxvi. Lessons. [— x; Heb. v. to v. 11	11 0	16 7	11 16	16 5	1 17
11	Tu	Altair rises 11 a 32	11 33	17 1	11 47	16 11	1 1
12	W	Dr. Young died, 1765	—	—	0 2	17 4	0 45
13	Th	Sir G.C. Lewis d. 1863	0 19	17 2	0 34	17 2	0 29
14	F	Good Friday	0 51	17 9	1 9	16 9	0 13
15	S	Easter Term begins	1 25	16 7	1 43	15 11	0 2
16	A	Easter Sunday	2 1	15 10	2 21	15 0	0 16
17	M	Proper [Exodus xii; Rom. vi. Lessons. [— xiv; Acts ii to v 22	2 42	14 11	3 4	13 10	0 31
18	Tu	Easter Tuesday	3 29	13 10	4 1	12 8	0 44
19	W	Oxford Easter T. beg.	4 30	13 2	5 8	12 1	0 58
20	Th	Span. fleet des. 1657	5 50	12 10	6 31	12 2	1 11
21	F	Cam. Term begins	7 5	13 5	7 44	13 4	1 23
22	S	Spica souths 11 a 14	8 19	15 0	8 49	14 1	1 36
23	A	Low Sunday	9 17	16 6	9 42	16 8	1 47
24	M	Proper [Numbers xvi; Acts xx. Lessons. [— xxii; 2 Peter ii.	10 6	18 3	10 28	18 2	1 58
25	Tu	St. Mark, Evangelist	10 50	19 4	11 14	19 2	2 9
26	W	Pleiades sets 9 a 59	11 37	19 10	—	—	2 19
27	Th	Sir W. Jones d. 1794	0 1	19 6	0 21	19 6	2 29
28	F	Mut. of Bounty	0 45	19 1	1 8	18 6	2 38
29	S	Sirius sets 8 a 35	1 31	18 2	1 53	17 1	2 47
30	A	2 Sun. after Easter [Numbers xxiii, xxiv; Acts xxvii. — xxv; ii and iii John.	2 16	16 10	2 41	15 3	2 55





Bristol tides					SUN.					MOON.					ASPECTS AND WEATHER.			
M	morn.		even.		height	rises.	sets.	rt. ascen.	declin. N.	sets.		souths declin.		age.		M	D.	
D.	H. M.	H. M.	H. M.	P. I.	H. M.	H. M.	H. M. S.	° ' "	H. M.	H. M.	° ' "	age.	D.					
1	10 34	10 56	29	4	5 35	6 34	0 43	20	4 39	41	0m14	5 a	2 19	n 2	5	1	♂ ♀ (, 4 a 56	
2	11 17	11 42	25	4	5 33	6 36	0 46	58	5 2	46	1 9	5 55	18 12	6	2	♂ ♀ (, 2m 41		
3	—	—	0 11	22	0	5 30	6 38	0 50	37	5 25	44	1 55	6 45	16 25	7	3	Showery	
4	0 45	1 20	20	2	5 28	6 40	0 54	15	5 48	37	2 30	7 33	13 51	8	4	but		
5	2 5	2 53	21	2	5 25	6 41	0 57	54	6 11	24	2 59	8 19	10 41	9	5	generally		
6	3 35	4 9	23	7	5 23	6 43	1 1	33	6 34	5	3 24	9 2	7 6	10	6	fair.		
7	4 39	5 4	25	9	5 20	6 45	1 5	13	6 56	38	3 46	9 45	3 16	11	7	Now		
8	5 26	5 46	27	8	5 18	6 47	1 8	52	7 19	5	4 5	10 27	0s42	12	8	expect		
9	6 5	6 21	28	7	5 16	6 49	1 12	32	7 41	24	4 25	11 9	4 38	13	9	(in Apogee		
10	6 39	6 56	29	9	5 14	6 50	1 16	12	8 3	35	4 46	11 52	8 23	14	10	) eclipse, vis.		
11	7 15	7 31	30	8	5 11	6 52	1 19	52	8 25	38	rises. morn	—	—	F	11	♂ gr. hel. la. N		
12	7 47	8 5	31	1	5 9	6 54	1 23	32	8 47	33	8a38	0 36	11 49	16	12	♂ gr. elon. E.		
13	8 20	8 36	31	0	5 6	6 56	1 27	13	9 9	19	9 42	1 22	14 46	17	13	more		
14	8 53	9 8	30	6	5 4	6 58	1 30	54	9 30	56	10 43	2 9	17 3	18	14	rain		
15	9 24	9 40	29	3	5 1	7 0	1 34	36	9 52	24	11a39	2 58	18 31	19	15	stationary		
16	9 58	10 16	27	11	4 59	7 1	1 38	18	10 13	42	morn	3 49	19 3	20	16	stationary		
17	10 34	10 56	26	1	4 57	7 3	1 42	0	10 34	49	0 28	4 41	18 32	21	17	♂ ♀ (, 0 m 32		
18	11 21	11 49	24	0	4 55	7 5	1 45	43	10 55	47	1 11	5 34	16 58	22	18	Fair		
19	—	—	0 22	22	5	4 53	7 7	1 49	26	11 16	1 47	6 27	14 21	23	19	and		
20	0 59	1 35	22	6	4 50	7 9	1 53	9	11 37	10	2 18	7 19	10 49	24	20	mild,		
21	2 20	3 5	25	4	4 48	7 11	1 56	53	11 57	34	2 46	8 12	6 31	25	21	ending		
22	3 46	4 18	28	8	4 45	7 13	2 0	38	12 17	47	3 12	9 6	1 42	26	22	with		
23	4 47	5 12	31	7	4 43	7 15	2 4	23	12 37	47	3 38	10 0	3s19	27	23	stationary		
24	5 39	6 4	33	10	4 41	7 17	2 8	8	12 57	36	4 6	10 56	8 11	28	24	) in Perigee		
25	6 29	6 55	34	8	4 39	7 18	2 11	54	13 17	11	sets. 11	53	12 30	N	25	♂ ecl. invis.		
26	7 20	7 45	35	7	4 37	7 20	2 15	40	13 36	34	8a46	0a51	15 53	1	26	♂ ♀ (, 4 a 37		
27	8 7	8 30	35	2	4 35	7 22	2 19	27	13 55	43	9 57	1 50	18 6	2	27	changeable		
28	8 52	9 13	33	10	4 32	7 24	2 23	14	14 14	38	10 58	2 48	19 1	3	28	weather.		
29	9 33	9 54	31	7	4 30	7 26	2 27	2	14 33	19	11 38	3 44	18 41	4	29	♂ ♀ (, 3m49		
30	10 14	10 36	29	0	4 28	7 28	2 30	50	14 51	46	morn	4 37	17 14	5	30	♂ ♀ (, 4a53		

LUNAR DISTANCES FROM THE SUN.

Mean Astronomical Time at Greenwich.

M.	NOON.			3 HOURS.			6 HOURS.			9 HOURS.			MIDN.			15 HOUR.			18 HOUR.			21 HOUR.		
D.	°	'	"	°	'	"	°	'	"	°	'	"	°	'	"	°	'	"	°	'	"	°	'	"
1w	71	13	12	72	46	3	74	18	30	75	50	31	77	22	8	78	53	21	80	24	10	81	54	36
2	83	24	39	84	54	20	86	23	39	87	52	36	89	21	12	90	49	28	92	17	24	93	45	0
3	95	12	17	96	39	16	98	5	57	99	32	20	100	58	26	102	24	16	103	49	50	105	15	9
4	106	40	13	108	5	2	109	29	38	110	54	1	112	18	11	113	42	9	115	5	55	116	29	30
5	117	52	54	119	16	8	120	39	13	122	2	8	123	24	55	124	47	33	126	10	4	127	32	27
6	128	54	44	130	16	54	131	38	58	133	0	57	134	22	50	135	44	38	137	6	23	138	28	3
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
15e	131	43	7	130	16	22	128	49	23	127	22	13	125	54	49	124	27	12	122	59	22	121	31	18
16	120	2	59	118	34	27	117	5	39	115	36	36	114	7	18	112	37	44	111	7	54	109	37	47
17	108	7	34	106	36	43	105	5	45	103	34	29	102	2	56	100	31	4	98	58	53	97	26	23
18	95	53	34	94	20	26	92	46	58	91	13	10	89	39	1	88	4	33	86	29	43	84	54	33
19	83	19	2	81	43	9	80	6	55	78	30	21	76	53	24	75	16	6	73	38	27	72	0	26
20	70	22	4	68	43	20	67	4	15	65	24	49	63	45	2	62	4	54	60	24	25	58	43	37
21	57	2	28	55	20	59	53	39	12	51	57	6	50	14	42	48	31	59	46	49	0	45	5	44
22	43	22	12	41	38	25	39	54	23	38	10	8	36	25	39	34	40	59	32	56	7	31	11	5
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
27w	26	18	51	27	59	28	29	39	43	31	19	34	32	59	1	34	38	3	36	16	40	37	54	53
28	39	32	40	41	10	1	42	46	57	44	23	26	45	59	30	47	35	7	49	10	19	50	45	4
29	52	19	24	53	53	17	55	26	44	56	59	46	58	32	23	60	4	34	61	36	21	63	7	43
30	64	38	40	66	9	14	67	39	23	69	9	10	70	38	34	72	7	35	73	36	14	75	4	32

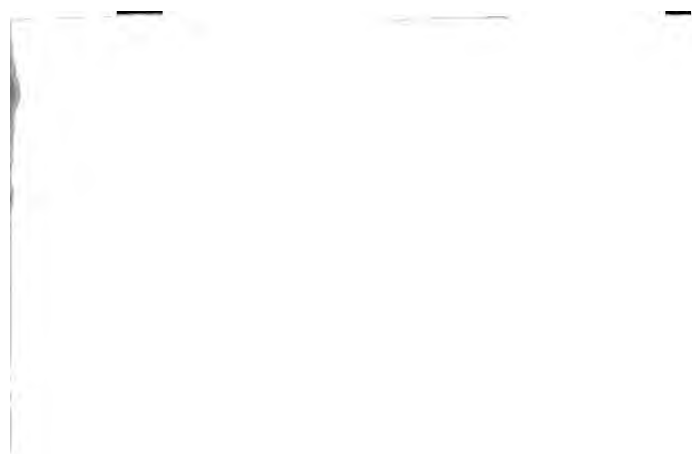
THE SUN'S RIGHT ASCENSION is given in time to the nearest second for Greenwich mean noon, and with the table of the right ascension of the principal fixed stars, given in page 29, is useful to find the time by the meridian distance of those stars.

THE SUN'S DECLINATION is also given for Greenwich mean noon, and may be reduced to any other place by applying the proportional part of the daily difference.

PHASES OF THE MOON. { FIRST QUARTER, 2nd day, at 4h. 4m. evening.
FULL MOON, 10th day, at 8h. 23m. night.
LAST QUARTER, 18th day, at 6h. 39m. morning.
NEW MOON, 24th day, at 10h. 49m. night.

M D.	Day brek.	Twil. ends	☉'s semi.	☿ Mercury sets. sout.	♀ Venus. sets. sout.	♂ Mars. sets. sout.	♃ Jupiter. rises. sout.	♄ Saturn. sets. sout.	M D.
1	1m31	10a28	15 54	7 a 51	0 a 8	1m16 4 a 36	11a32 3m18	4m26 11a0	1
8	0 25	11 16	15 52	rises. 11m26	rises. 11m49	1 04 26	11 22 48	3 58 10 31	8
15	noreal night.	noreal night.	15 51	3m41 10 52	3m14 11 7	0 44 4 15	10 33 2 19	3 29 10 2	15
22	noreal night.	noreal night.	15 50	3 24 10 31	2 54 10 30	0 26 4 5	10 21 48 3	1 9 33 22	22
29	noreal night.	noreal night.	15 49	3 8 10 22	2 36 10 1	0 83 54	9 32 1 17	2 33 9 4	29

M D	W D	Remarkable Days	HIGH WATER.—LIVERPOOL.				Equation of Time.
			MORNING.		EVENING.		
			Time.	Height.	Time.	Height.	' "
1	M	St. Philip & St. James	3 6	15 3	3 31	13 7	3 3
2	Tu	Camden born, 1551	3 57	13 10	4 27	12 2	3 10
3	W	Invent. of the Cross	5 0	12 8	5 36	11 4	3 17
4	Th	Dr. Barrow d. 1677	6 11	12 3	6 46	11 3	3 23
5	F	N. Bonaparte d. 1821	7 20	12 5	7 54	11 10	3 28
6	S	St. John, Port. Lat.	8 25	13 2	8 50	12 9	3 33
7	A	3 Sun. after Easter	9 14	14 0	9 32	13 10	3 38
8	M	[Deut. iv; Matt. v. — v; Rom. vi.]	9 53	14 11	10 14	14 11	3 42
9	Tu	Procyon sets 11 a 6	10 32	15 8	10 47	15 10	3 45
10	W	Battle of Lodi, 1778	11 4	16 3	11 20	16 5	3 48
11	Th	Easter Term ends	11 38	16 7	11 53	16 10	3 50
12	F	Spica souths 9 a 55	—	—	0 11	16 9	3 52
13	S	Old May Day	0 28	17 0	0 45	16 6	3 53
14	A	4 Sun. after Easter	1 5	16 9	1 25	15 11	3 53
15	M	[Deut. vi; Matt. xii. Les. — vii; Rom. xiii.]	1 45	16 5	2 7	15 4	3 53
16	Tu	D. O'Connel d., 1847	2 28	15 9	2 50	14 5	3 52
17	W	Dr. Jenner born 1794	3 16	14 11	3 42	13 7	3 51
18	Th	B. Franklin died 1790	4 11	14 2	4 45	13 0	3 49
19	F	Dunstan, Archbishop	5 23	13 10	6 1	13 0	3 47
20	S	Spica souths 9 a 24	6 38	14 2	7 16	13 8	3 44
21	A	Rogation Sunday	7 50	15 0	8 21	14 9	3 40
22	M	[Deut. vii; Matthew xix — ix; 1 Cor. iv.]	8 51	16 1	9 19	16 1	3 36
23	Tu	Linnæus born, 1707	9 47	17 2	10 14	17 4	3 31
24	W	Queen Victoria born	10 38	18 0	11 0	18 2	3 26
25	Th	Ascension Day	11 22	18 4	11 46	18 6	3 20
26	F	Prin. Hel. b. 25th	—	—	0 7	18 2	3 14
27	S	Venerable Bede	0 29	18 5	0 50	17 7	3 7
28	A	Sun. af. Ascens. Day	1 13	17 10	1 36	16 7	3 0
29	M	[Deut. xii; Matthew xxvi. Lessons. — xiii; 1 Cor. xii.]	1 58	16 11	2 21	15 4	2 53
30	Tu	Sir H. Davy d., 1829	2 44	15 9	3 6	14 1	2 45
31	W	A. Pope died 1744	3 30	14 6	3 53	12 10	2 36



M D.	Bristol tides				SUN.				MOON.				M D.	ASPECTS AND WEATHER.
	morn. H. M.	even. H. M.	height F. I.		rises. H. M.	sets. H. M.	rt. ascen. H. M. S.	declin. N ° ' "	sets. H. M.	souths H. M.	declin. ° ' "			
1	10 58	11 20	25 10		4 26	7 30	2 34 39	15 9 58	0 m 28	5 a 27	14 n 54	6 1		Fair
2	11 47	—	23 2		4 24	7 31	2 38 29	15 27 55	1 1	6 15	11 53	7 2		☿ in inf. ☿ ☉
3	0 15	0 46	21 1		4 22	7 33	2 42 19	15 45 37	1 28	6 59	8 25	8 3		and
4	1 17	1 54	21 1		4 20	7 35	2 46 9	16 3 3	1 51	7 43	4 38	9 4		☿ in ☿, 5 a 35
5	2 36	3 16	22 9		4 18	7 37	2 50 0	16 20 13	2 11	8 25	0 41	10 5		warm
6	3 51	4 18	24 8		4 16	7 39	2 53 52	16 37 6	2 31	9 7	3 s 16	11 6		☾ in Apogee
7	4 43	5 26	26 4		4 14	7 40	2 57 44	16 53 44	2 51	9 49	7 7	12 7		at the
8	5 24	5 47	27 10		4 12	7 42	3 1 36	17 10 4	3 12	10 33	10 41	13 8		☿ in inf. ☿ ☉.
9	6 7	6 23	28 6		4 10	7 44	3 5 30	17 26 7	3 35	11 18	13 50	14 9		beginning,
10	6 44	7 1	29 6		4 8	7 46	3 9 23	17 41 52	rises.	morn	—	F 10		which
11	7 21	7 38	30 2		4 6	7 47	3 13 18	17 57 20	8 a 36	0 5	16 23	16 11		turns
12	7 57	8 14	30 5		4 4	7 49	3 17 13	18 12 30	9 34	0 55	18 10	17 12		to
13	8 30	8 49	30 3		4 3	7 51	3 21 8	18 27 22	10 27	1 46	19 1	18 13		☿ ☿ ☿, 8 a 8
14	9 7	9 25	29 8		4 1	7 53	3 25 4	18 41 55	11 13	2 38	18 51	19 14		☿ in Aphelion
15	9 45	10 3	28 9		3 59	7 54	3 29 1	18 56 9	11 50	3 30	17 36	20 15		☿ stationary
16	10 22	10 45	27 6		3 57	7 56	3 32 58	19 10 4	morn	4 23	15 20	21 16		changeable,
17	11 8	11 33	25 10		3 56	7 58	3 36 56	19 23 40	0 19	5 15	12 7	22 17		thence
18	—	0 3	24 6		3 54	7 59	3 40 54	19 36 56	0 49	6 7	8 9	23 18		to
19	0 35	1 8	24 2		3 53	8 1	3 44 53	19 49 52	1 16	6 58	3 37	24 19		wind
20	1 45	2 32	25 7		3 51	8 2	3 48 53	20 2 28	1 43	7 50	1 n 12	25 20		and
21	3 13	3 48	28 3		3 50	8 4	3 52 53	20 14 43	2 8	8 43	6 2	26 21		rain.
22	4 20	4 49	30 5		3 48	8 6	3 56 54	20 26 38	2 33	9 38	10 32	27 22		☿ ☿ ☿, 2 m 13
23	5 18	5 48	32 2		3 47	8 7	4 0 55	20 38 12	2 57	10 35	14 21	28 23		☿ ☿ ☿, 6 m 54
24	6 15	6 40	33 0		3 45	8 9	4 5 20	49 24	sets.	11 33	17 10	N 24		Again
25	7 3	7 30	33 4		3 44	8 10	4 8 59	21 0 16	8 a 41	0 a 31	18 46	1 25		☿ in ☿, 6 a 8
26	7 53	8 15	33 3		3 43	8 11	4 13 21	10 45	9 37	1 29	19 2	2 26		☿ ☿ ☿, 4 a 18
27	8 35	8 57	32 6		3 41	8 13	4 17 5	21 20 53	10 25	2 25	18 7	3 27		☿ Stationary
28	9 17	9 37	30 11		3 40	8 14	4 21 9	21 30 39	11 4	3 17	16 8	4 28		more
29	9 59	10 18	29 1		3 39	8 16	4 25 13	21 40 2	11 31	4 7	13 21	5 29		☿ ☿ ☿, 9 m 40
30	10 37	10 57	27 0		3 38	8 17	4 29 17	21 49 3	11 54	4 54	9 59	6 30		fair
31	11 17	11 38	24 7		3 37	8 18	4 33 21	21 57 21	morn	5 38	6 15	7 31		☿ in Aphelion.

LUNAR DISTANCES FROM THE SUN.

Mean Astronomical Time at Greenwich.

M. D.	NOON.	3 HOURS.	6 HOURS.	9 HOURS.	MIDN.	15 HOUR.	18 HOUR.	21 HOUR
	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "
1w	76 32 29	78 0 5	79 27 21	80 54 18	82 20 55	83 47 14	85 13 15	86 38 59
2	88 4 26	89 29 36	90 54 31	92 19 11	93 43 36	95 7 47	96 31 44	97 55 29
3	99 19 1	100 42 22	102 5 32	103 28 31	104 51 20	106 14 0	107 36 31	108 58 53
4	110 21 8	111 43 16	113 5 18	114 27 13	115 49 3	117 10 47	118 32 27	119 54 4
5	121 15 36	122 37 6	123 58 33	125 19 59	126 41 22	128 2 45	129 24 7	130 45 29
..	..	..	..	..	..	..	..	..
14E	137 9 8	135 38 45	134 8 10	132 37 22	131 6 22	129 35 9	128 3 43	126 32 4
15	125 0 13	123 28 8	121 55 50	120 23 19	118 50 34	117 17 36	115 44 24	114 10 59
16	112 27 19	111 3 26	109 29 19	107 54 58	106 20 23	104 45 33	103 10 29	101 35 11
17	99 59 38	98 23 51	96 47 49	95 11 33	93 35 2	91 58 16	90 21 16	88 44 1
18	87 6 32	85 28 48	83 50 49	82 12 36	80 34 9	78 55 28	77 16 33	75 37 24
19	73 58 1	72 18 25	70 38 35	68 58 33	67 18 18	65 37 51	63 57 11	62 16 20
20	60 35 18	58 54 5	57 12 41	55 31 8	53 49 26	52 7 35	50 25 35	48 43 28
21	47 1 15	45 18 55	43 36 29	41 53 59	40 11 26	38 28 49	36 46 10	35 3 30
22	33 20 51	31 38 12	29 55 36	28 13 3	26 30 36	24 48 15	23 6 3	21 24 2
..	..	..	..	..	..	..	..	..
26w	20 53 26	22 29 24	24 5 7	25 40 34	27 15 44	28 50 35	30 25 7	31 59 19
27	33 33 10	35 6 40	36 39 49	38 12 37	39 45 4	41 17 8	42 48 50	44 20 11
28	45 51 10	47 21 47	48 52 3	50 21 57	51 51 30	53 20 42	54 49 33	56 18 4
29	57 46 14	59 14 5	60 41 35	62 8 47	63 35 41	65 2 15	66 28 32	67 54 31
30	69 20 14	70 45 39	72 10 49	73 35 43	75 0 22	76 24 47	77 48 57	79 12 54
31	80 36 38	82 0 10	83 23 30	84 46 39	86 9 37	87 32 25	88 55 4	90 17 34

THE SUN'S RISING AND SETTING, and the MOON'S RISING, SOUTHING, AND SETTING are given, for Latitude 54° 10' N., and Longitude 4° 30' W.

THE MOON'S DECLINATION is given to the nearest minute for her transit over the meridian of Greenwich.

PHASES OF THE MOON.	FIRST QUARTER,	1st day, at 8h. 22m. morning.
	FULL MOON,	9th day, at 6h. 41m. morning.
	LAST QUARTER,	16th day, at 11h. 53m. morning.
	NEW MOON,	23rd day, at 7h. 57m. morning.

M D.	Day brek.	Twil. ends.	☉'s semi.	♂ Mercury rises. sout.	♀ Venus. rises. sout.	♂ Mars. sets. sout.	♂ Jupiter. rises. sout.	♂ Saturn. sets. sout.	M D.
1	no real ni. this mon.	no real ni. this mon.	15 48	3 m 2 10 m 21	2 m 29 9 m 50	11 a 55 3 a 49	9 a 19 1 m 4	2 m 20 8 a 52	1
8			15 47	2 50 10 27	2 11 9 30	11 39 3 39	8 48 0 33	1 52 8 23	8
15			15 47	2 44 10 45	1 55 9 15	11 20 3 28	sets. 11 a 57	1 24 7 55	15
22			15 46	2 49 11 13	1 40 9 5	11 03 3 17	3 m 12 11 26	0 56 7 27	22
29			15 46	3 10 11 51	1 26 3 58	10 40 3 6	2 41 10 54	0 29 7 0	29

M D	W D	Remarkable Days	HIGH WATER.—LIVERPOOL.				Equation of Time.	
			MORNING.		EVENING.			
			Time.	Height.	Time.	Height.	/	//
1	Th	Nicomede, Martyr	4 17	13 5	4 46	11 11	2	27
2	F	Oxford Term ends	5 18	12 8	5 50	11 6	2	18
3	S	W. Harvey died, 1657	6 23	12 4	6 52	11 7	2	9
4	A	Whit Sunday.	7 24	12 6	7 54	12 2	1	59
5	M	Pro. [Deut. xvi to v. 18; Acts x v. 34 Les. [Isaiah xi; Acts xix to v. 21.	8 22	13 2	8 49	13 2	1	49
6	Tu	Whit Tuesday	9 15	14 0	9 36	14 1	1	38
7	W	Reform Bill pas. 1832	9 55	14 7	10 18	15 0	1	27
8	Th	Lyra souths 1 m 27	10 38	15 1	10 56	15 11	1	16
9	F	Dr. Rees died, 1825	11 15	15 11	11 36	16 8	1	5
10	S	Arcturus souths 8 a 52	11 52	16 5	—	—	0	53
11	A	Trinity Sunday.	0 11	17 2	0 31	16 8	0	41
12	M	Proper [Genesis i; Matt. iii. Lessons. [— xviii; 1 John v.	0 51	17 5	1 11	16 7	0	29
13	Tu	Regulus sets 11 a 49	1 33	17 3	1 56	16 2	0	17
14	W	Mag. Char. sig. 1215	2 21	16 10	2 45	15 7	0	4
15	Th	Corpus Christi.	3 10	16 2	3 35	14 10	0	8
16	F	J. Wesley born, 1703	4 2	15 4	4 32	14 2	0	21
17	S	St. Alban, Martyr	5 3	14 8	5 37	13 8	0	34
18	A	1 Sun. after Trinity	6 12	14 4	6 45	13 9	0	47
19	M	Pro. [Joshua x; Luke ii. Les. [— xxiii; Gal. ii.	7 19	14 6	7 53	14 4	1	0
20	Tu	Accession Q. Victoria	8 24	15 0	8 56	15 3	1	13
21	W	Queen Victoria, Proc.	9 25	15 10	9 54	16 3	1	26
22	Th	Machiavelli d. 1527	10 22	16 6	10 45	17 2	1	39
23	F	J. Hampden died, 1643	11 10	17 0	11 33	17 9	1	52
24	S	St. John B. Midsummer Day.	11 53	17 2	—	—	2	5
25	A	2 Sun. after Trinity	0 17	17 11	0 38	16 11	2	18
26	M	Proper [Judges iv; Luke viii. Lessons. [— v; Ephes. ii.	0 58	17 8	1 19	16 5	2	31
27	Tu	Dr. Dodd, exec. 1774	1 38	17 1	1 59	15 8	2	43
28	W	Lord Raglan d., 1855	2 20	16 3	2 41	14 7	2	56
29	Th	St. Peter, Apostle	3 0	15 4	3 21	13 10	3	8
30	F	Antares souths 9 a 44	3 42	14 3	4 3	12 11	3	20



Bristol tides					SUN.					MOON.					ASPECTS AND WEATHER	
M.	D.	morn. H. M.	even. H. M.	height F. I.	rises. H M	sets. H M	rt. ascen. H. M. S.	techn. ° ' "	N. ° ' "	sets. H. M.	souths declin. H. M.	° ' "	N. ° ' "	M.	D.	
1	—	—	0 3	22 9	3 36	8 19	4 37	28 22	5 56	0 m 16	6 a 21	2 n 19	8 1	1	1	Changeable
2	0 30	0 58	21 6	3 35	8 21	4 41	34 22	13 48	0 37	7 3	1 s 40	9 2	2	2	2	(in Apogee
3	1 29	2 1	21 7	3 34	8 22	4 45	40 22	21 16	0 57	7 45	5 35	10 3	3	3	3	and
4	2 40	3 17	23 1	3 33	8 23	4 49	46 22	28 22	1 18	8 28	9 17	11 4	4	4	4	☿ gr hel. I.S.
5	3 49	4 18	24 10	3 33	8 24	4 53	53 22	35 3	1 39	9 13	12 38	12 5	5	5	5	♂ ☿, 2 m 12
6	4 44	5 6	26 4	3 32	8 25	4 58	0 22	41 21	2 3	10 0	15 27	13 6	6	6	6	showery
7	5 26	5 52	27 7	3 31	8 26	5 2	8 22	47 15	2 32	10 48	17 35	14 7	7	7	7	which
8	6 14	6 35	28 3	3 31	8 27	5 6	15 22	52 46	3 8	11 39	18 51	15 8	8	8	8	with
9	6 56	7 18	29 2	3 30	8 28	5 10	23 22	57 52	rises.	morn	—	F 9	9	9	9	♂ ☿, 9 a 6
10	7 36	7 57	30 3	3 30	8 29	5 14	32 23	2 34	9 a 10	0 32	19 5	17 10	10	10	10	warm
11	8 17	8 36	30 10	3 29	8 29	5 18	40 23	6 51	9 51	1 25	18 14	18 11	11	11	11	intervals
12	8 55	9 16	30 11	3 29	8 30	5 22	49 23	10 45	10 24	2 19	16 16	19 12	12	12	12	but
13	9 36	9 59	30 4	3 29	8 31	5 26	58 23	14 13	10 54	3 12	13 19	20 13	13	13	13	☿ at gr. brill.
14	10 20	10 42	29 3	3 28	8 31	5 31	7 23	17 18	11 22	4 4	9 33	21 14	14	14	14	still
15	11 3	11 27	28 3	3 28	8 32	5 35	16 23	19 57	11 47	4 56	5 11	22 15	15	15	15	♂ ☿, 6 m 58
16	11 53	—	26 8	3 28	8 32	5 39	25 23	22 12	morn	5 47	0 s 29	23 16	16	16	16	showery.
17	0 19	0 49	25 3	3 28	8 33	5 43	34 23	24 2	0 11	6 38	4 n 17	24 17	17	17	17	Now
18	1 19	1 53	25 4	3 28	8 33	5 47	44 23	25 28	0 37	7 31	8 50	25 18	18	18	18	(in Pergee
19	2 35	3 17	26 10	3 28	8 33	5 51	54 23	26 28	1 6	8 25	12 51	26 19	19	19	19	more
20	3 52	4 25	28 7	3 28	8 34	5 56	3 23	27 4	1 40	9 20	16 2	27 20	20	20	20	☿ ☿, 3 m 48
21	4 55	5 26	29 11	3 28	8 34	6 0	13 23	27 15	2 19	10 17	18 11	28 21	21	21	21	☉ enters ☿
22	5 57	6 22	30 6	3 29	8 34	6 4	22 23	27 1	3 5	11 15	19 6	29 22	22	22	22	[Sum. com.
23	6 50	7 15	31 4	3 29	8 34	6 8	32 23	26 22	sets.	0 a 11	18 45	N 23	23	23	23	♂ ☿, 4 m 29
24	7 37	8 3	31 6	3 29	8 34	6 12	41 23	25 19	8 a 57	1 5	17 16	1 24	24	24	24	inclined
25	8 24	8 43	31 5	3 30	8 34	6 16	51 23	23 51	9 30	1 57	14 50	2 25	25	25	25	to
26	9 3	9 20	30 9	3 30	8 34	6 21	0 23	21 58	9 58	2 46	11 41	3 26	26	26	26	rain
27	9 39	9 59	29 6	3 31	8 34	6 25	9 23	19 41	10 22	3 32	8 3	4 27	27	27	27	☿ ☿, 3 m 34
28	10 15	10 33	27 11	3 31	8 34	6 29	18 23	16 59	10 42	4 16	4 9	5 28	28	28	28	☿ in Aphelion
29	10 51	11 9	26 4	3 32	8 34	6 33	27 23	13 53	11 1	4 59	0 8	6 29	29	29	29	and
30	11 27	11 45	24 6	3 32	8 34	6 37	35 23	10 22	11 21	5 41	3 s 50	7 30	30	30	30	wind.

LUNAR DISTANCES FROM THE SUN.

Mean Astronomical Time at Greenwich.

M. D.	NOON.			3 HOURS.			6 HOURS.			9 HOURS.			MIDN.			15 HOUR.			18 HOUR.			21 HOUR.		
	°	'	"	°	'	"	°	'	"	°	'	"	°	'	"	°	'	"	°	'	"	°	'	"
1w	91	39	55	93	2	8	94	24	15	95	46	15	97	8	8	98	29	57	99	51	40	101	13	20
2	102	34	55	103	56	27	105	17	57	106	39	25	108	0	51	109	22	16	110	43	41	112	5	6
3	113	26	32	114	47	59	116	9	27	117	30	58	118	52	31	120	14	8	121	35	48	122	57	32
4	124	19	21	125	41	15	127	3	14	128	25	18	129	47	29	131	9	47	132	32	11	133	54	42
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
13E	128	51	4	127	15	23	125	39	32	124	3	31	122	27	21	120	51	2	119	14	34	117	37	57
14	116	1	12	114	24	18	112	47	16	111	10	7	109	32	49	107	55	24	106	17	51	104	40	11
15	103	2	24	101	24	30	99	46	30	98	8	22	96	30	9	94	51	49	93	13	23	91	34	51
16	89	56	13	88	17	30	86	38	42	84	59	48	83	20	50	81	41	47	80	2	40	78	23	28
17	76	44	13	75	4	54	73	25	32	71	46	7	70	6	39	68	27	9	66	47	37	65	8	3
18	63	28	27	61	48	51	60	9	15	58	29	38	56	50	2	55	10	27	53	30	53	51	51	21
19	50	11	52	48	32	26	46	53	3	45	13	45	43	34	32	41	55	24	40	16	23	38	37	30
20	36	58	44	35	20	8	33	41	42	32	3	28	30	25	27	28	47	40	27	10	9	25	32	57
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
25w	27	24	4	28	52	52	30	21	29	31	49	54	33	18	5	34	46	3	36	13	47	37	41	16
26	39	8	30	40	35	30	42	2	14	43	28	44	44	54	59	46	20	59	47	46	44	49	12	15
27	50	37	32	52	2	34	53	27	23	54	51	59	56	16	21	57	40	31	59	4	28	60	28	13
28	61	51	46	63	15	9	64	38	20	66	1	22	67	24	13	68	46	55	70	9	28	71	31	53
29	72	54	9	74	16	19	75	38	22	77	0	18	78	22	9	79	43	54	81	5	35	82	27	12
30	83	48	45	85	10	15	86	31	43	87	53	9	89	14	34	90	35	58	91	57	22	93	18	46

THE MOON'S SEMI-DIAMETER is given to the nearest second for Greenwich mean noon and midnight on page 26, and the **HORIZONTAL PARALLAX** on page 27.

THE LUNAR DISTANCES FROM THE SUN are given with a view to assist those who may not have an opportunity of using the Nautical Almanack, and are given for every three hours of Greenwich astronomical mean time. As the rest of the Almanack is adapted to CIVIL time, this distinction must be kept in mind; the Civil

PHASES OF THE MOON.	FIRST QUARTER,	1st day, at	1h. 40m. morning.
	FULL MOON,	8th day, at	8h. 27m. evening.
	LAST QUARTER,	15th day, at	4h. 26m. afternoon.
	NEW MOON,	22nd day, at	6h. 29m. evening.
	FIRST QUARTER,	30th day, at	7h. 9m. evening.

M D.	Day brek.	Twil end.	☉'s semi.	♂ Mercury sets. sout.	♀ Venus rises. sout.	♂ Mars. sets. sout.	♂ Jupiter. sets. sout.	♂ Saturn. sets. sout.
1	no real ni. this mon.	no real ni. this mon.	15 46	8a 49 0 a 2	1m 22 8m 56	10a 34 3 a 3	2m 32 10a 46	0m 21 6 a 52
8			15 46	9 9 0 39	1 10 8 53	10 14 2 52	2 1 10 15	11a 50 6 25
15			15 46	9 15 1 9	0 59 8 51	9 53 2 41	1 31 9 44	11 22 5 58
22			15 47	9 7 1 30	0 52 8 51	9 32 2 29	1 19 14	10 55 5 31
29			15 48	8 50 1 43	0 47 8 54	9 10 2 18	0 32 8 45	10 27 5 5

M D	W D	Remarkable Days	HIGH WATER.—LIVERPOOL.				Equati of Tim
			MORNING.		EVENING.		
			Time.	Height.	Time.	Height.	
1	S	Bat. of Boyne, 1690	4 24	13 3	4 47	12 2	3 3
2	A	3 Sun. after Trinity	5 19	12 5	5 52	11 9	3 4
3	M	Proper Lessons. [1 Samuel ii; Luke xiv. iii; Phil. ii.	6 25	11 11	6 56	11 9	3 5
4	Tu	Trans. St. Martin	7 30	12 1	8 2	12 4	4 1
5	W	Chusan taken, 1840	8 31	12 8	8 59	13 3	4 1
6	Th	Old Midsummmer Day	9 25	13 7	9 48	14 5	4 2
7	F	Antares souths 9 a 18	10 10	14 6	10 31	15 8	4 3
8	S	Adam Smith d. 1790	10 53	15 8	11 15	16 10	4 4
9	A	4 Sun. after Trinity	11 36	16 7	11 55	17 9	4 5
10	M	[1 Samuel xii; Luke xxi. xiii; 1 Thess. i.	— —	— —	0 17	17 3	5 2
11	Tu	Lalande born, 1732	0 37	18 3	0 58	17 6	5 10
12	W	Erasmus died, 1526	1 21	18 5	1 44	17 4	5 18
13	Th	Dr. Bradley d, 1752	2 6	18 1	2 30	16 9	5 25
14	F	Bastile destroyed, 1789	2 55	17 8	3 19	16 0	5 32
15	S	Swithin, Bishop	3 44	16 3	4 11	14 11	5 38
16	A	5 Sun. after Trinity	4 39	15 0	5 10	14 0	5 44
17	M	Proper Lessons. [1 Samuel xv; John iv. xvii; 2 Thess. iii.	5 45	13 11	6 21	13 5	5 49
18	Tu	Earl Grey died, 1845	6 58	13 6	7 34	13 7	5 54
19	W	B. Hallidon Hill, 1233	8 11	13 9	8 43	14 4	5 58
20	Th	Margaret V, & M.	9 17	14 5	9 46	15 5	6 2
21	F	Ld. Russel behd. 1683	10 13	15 4	10 37	16 5	6 5
22	S	St. Mary Magdalene	10 59	16 0	11 21	17 3	6 8
23	A	6 Sun. after Trinity	11 41	16 6	— —	— —	6 10
24	M	Proper Lessons. [2 Samuel xii; John xi. xix; 2 Tim. ii.	0 1	17 8	0 20	16 9	6 12
25	Tu	St. James, Apostle.	0 37	17 9	0 55	16 8	6 13
26	W	St. Anne.	1 14	17 6	1 31	16 4	6 13
27	Th	Fren. Revolution, 1830	1 48	16 10	2 6	15 8	6 13
28	F	Wilberforce died 1833	2 23	16 0	2 41	14 10	6 12
29	S	Antares souths 7 a 51	3 1	14 11	3 19	13 11	6 10
30	A	7 Sun. after Trinity	3 39	13 9	3 58	12 10	6 8
31	M	Pro. [2 Samuel xxi; John xviii. Less. [— xxiv; Heb. ii.	4 21	12 6	4 49	11 11	6 5



Bristol tides					SUN.					MOON.					ASPECTS AND WEATHER.	
M	mor. even. high				rises. sets.				rt. asc.	declin. N.	sets. souths declin.				D.	
D.	H. M.	H. M.	P. I.		H. M.	H. M.	H. M.	H. M.	S.	° / "	H. M.	H. M.	° / "	age		
1	—	—	0 5 22	8	3 33	8 33	6 41	44	23	6 27	11a43	6a24	7s38	8	1	☉ in Apogee
2	0 33	1 1	21	3	3 34	8 33	6 45	52	23	2 8	morn	7 7	11 9	9	2	☿ ☽, 9 m 14
3	1 31	2 4	21	4	3 35	8 32	6 49	59	22	57 24	0 6	7 52	14 13	10	3	Fair
4	2 46	3 23	22	9	3 36	8 32	6 54	6 22	52	17	0 33	8 40	16 40	11	4	and
5	3 58	4 28	24	8	3 37	8 31	6 58	13	22	46 46	1 6	9 30	18 21	12	5	warm
6	4 55	5 19	26	6	3 38	8 31	7 2	20	22	40 51	1 46	10 22	19 5	13	6	☿ ☽ ☽, 11 a 0
7	5 43	6 6	28	4	3 39	8 30	7 6	26	22	34 32	2 34	11 16	18 43	14	7	which
8	6 31	6 55	29	3	3 40	8 29	7 10	32	22	27 50	rises.	morn	—	8	8	☿ gr. H. L. N
9	7 18	7 39	30	8	3 41	8 29	7 14	38	22	20 45	8a27	0 10	17 13	16	9	may
10	8 3	8 24	31	11	3 42	8 28	7 18	43	22	13 16	8 59	1 5	14 38	17	10	continue
11	8 43	9 5	32	8	3 43	8 27	7 22	48	22	5 25	9 27	1 59	11 5	18	11	during
12	9 26	9 46	32	6	3 44	8 26	7 26	52	21	57 11	9 53	2 52	6 50	19	12	☿ ☽ Regulus
13	10 9	10 32	31	8	3 45	8 25	7 30	56	21	48 34	10 17	3 44	2 9	20	13	☽ in Perigee
14	10 50	11 12	30	4	3 46	8 24	7 34	59	21	39 35	10 43	4 36	2 39	21	14	the
15	11 36	11 59	28	0	3 48	8 23	7 39	2	21	30 13	11 11	5 28	7 18	22	15	greater
16	—	0 28	25	10	3 49	8 21	7 43	4	21	20 30	11 41	6 21	11 28	23	16	☿ ☽ ☽, 1 a 2
17	0 54	1 28	24	3	3 50	8 20	7 47	6	21	10 24	morn	7 15	14 56	24	17	☿ gr. elon. W
18	2 7	2 52	24	8	3 52	8 19	7 51	8	20	59 57	0 17	8 10	17 25	25	18	part
19	3 36	4 11	26	6	3 53	8 17	7 55	9	20	49 9	1 1	9 6	18 48	26	19	☿ ☽ ☽, 2 m 29
20	4 46	5 17	28	4	3 55	8 16	7 59	9	20	37 59	1 53	10 2	18 58	27	20	of the
21	5 46	6 12	29	5	3 56	8 15	8 3	9	20	26 29	2 53	10 56	18 0	28	21	☿ gr. H. L. S.
22	6 37	7 2	30	1	3 58	8 13	8 7	8	20	14 38	sets.	11 48	16 0	N	22	month.
23	7 23	7 43	30	11	3 59	8 12	8 11	7	20	2 27	7a59	0a38	13 10	1	23	Expect
24	8 5	8 23	31	3	4 1	8 10	8 15	5	19	49 56	8 24	1 25	9 46	2	24	☿ ☽ ☽, 6 a 35
25	8 40	8 57	31	2	4 2	8 9	8 19	2	19	37 5	8 47	2 10	5 58	3	25	☿ ☽ ☽, 9 a 47
26	9 13	9 29	30	6	4 4	8 7	8 22	59	19	23 54	9 8	2 54	1 59	4	26	changeable
27	9 45	10 1	29	4	4 6	8 6	8 26	55	19	10 24	9 28	3 37	2 s 1	5	27	☿ ☽ Regulus
28	10 16	10 33	28	0	4 7	8 4	8 30	51	18	56 36	9 49	4 19	5 54	6	28	☽ in Apogee
29	10 49	11 6	26	2	4 9	8 2	8 34	46	18	42 28	10 11	5 2	9 32	7	29	☿ ☽ ☽, 6 a 34
30	11 22	11 42	23	10	4 11	8 1	8 38	41	18	28 2	10 36	5 46	12 46	8	30	weather
31	—	0 7	21	8	4 12	7 59	8 42	35	18	13 18	11 6	6 32	15 29	9	31	☿ ☽ ☽, 4 a 48

LUNAR DISTANCES FROM THE SUN.

Mean Astronomical Time at Greenwich.

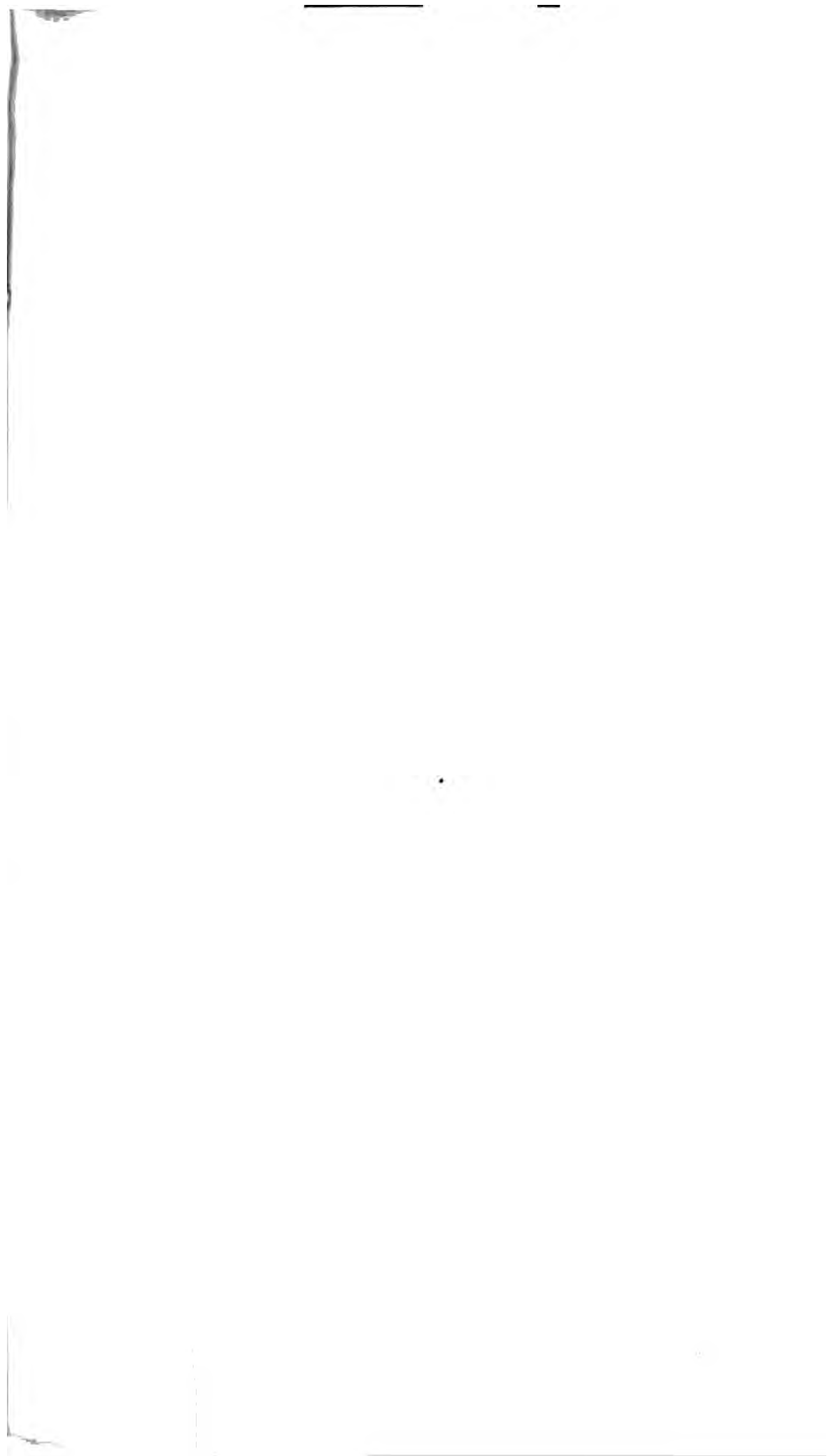
M.	NOON.			3 HOURS.			6 HOURS.			9 HOURS.			MIDN.			15 HOUR.			18 HOUR.			21 HOUR.		
D.	°	'	"	°	'	"	°	'	"	°	'	"	°	'	"	°	'	"	°	'	"	°	'	"
1w	94	40	12	96	1	39	97	23	8	98	44	40	100	6	15	101	27	55	102	49	38	104	11	27
2	105	33	21	106	55	21	108	17	28	109	39	41	111	2	3	112	24	32	113	47	10	115	9	57
3	116	32	54	117	56	0	119	19	17	120	42	45	122	6	23	123	30	14	124	54	16	126	18	31
4	127	42	58	129	7	39	130	32	32	131	57	39	133	22	59	134	48	33	136	14	21	137	40	24
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
12E	132	6	33	130	27	30	128	48	23	127	9	12	125	29	58	123	50	41	122	11	23	120	32	3
13	118	52	42	117	13	21	115	33	59	113	54	38	112	15	17	110	35	58	108	56	40	107	17	23
14	105	38	9	103	58	57	102	19	48	100	40	42	99	1	39	97	22	40	95	43	44	94	4	52
15	92	26	5	90	47	22	89	8	44	87	30	11	85	51	44	84	13	21	82	35	4	80	56	53
16	79	18	48	77	40	49	76	2	56	74	25	10	72	47	31	71	9	59	69	32	34	67	55	16
17	66	18	6	64	41	4	63	4	10	61	27	24	59	50	47	58	14	18	56	37	59	55	1	48
18	53	25	48	51	49	57	50	14	16	48	38	46	47	3	26	45	28	18	43	53	22	42	18	38
19	40	44	6	39	9	47	37	35	43	36	1	52	34	28	17	32	54	58	31	21	55	29	49	11
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
24w	20	53	49	22	17	53	23	42	1	25	6	10	26	30	18	27	54	22	29	18	22	30	42	17
25	32	6	5	33	29	47	34	53	22	36	16	49	37	40	9	39	3	20	40	26	24	41	49	20
26	43	12	8	44	34	49	45	57	22	47	19	47	48	42	6	50	4	17	51	26	22	52	48	21
27	54	10	14	55	32	1	56	53	43	58	15	20	59	36	53	60	58	22	62	19	47	63	41	9
28	65	2	29	66	23	46	67	45	2	69	6	16	70	27	30	71	48	43	73	9	57	74	31	12
29	75	52	29	77	13	47	78	35	8	79	56	32	81	17	59	82	39	31	84	1	8	85	22	50
30	86	44	37	88	6	32	89	28	33	90	50	42	92	12	59	93	35	26	94	58	1	96	20	46
31	97	43	41	99	6	48	100	30	7	101	53	37	103	17	20	104	41	16	106	5	26	107	29	50

day commences at *Midnight*, and the *Astronomical day* at the following *Noon*, being twelve hours later; thus the hours named 15, 18, and 21, on the 1st January, are according to Civil reckoning, 3, 6, and 9 in the morning of the 2nd of January, and

PHASES OF THE MOON. { FULL MOON 7th day, at 5h. 29m. morning.
LAST QUARTER, 13th day, at 9h. 42m. night.
NEW MOON, 21st day, at 7h. 17m. morning.
FIRST QUARTER, 29th day, at 11h. 46m. morning.

M D.	Day	Twil.	☉'s	♂ Mercury	♀ Venus.	♂ Mars.	♂ Jupiter.	♂ Saturn.
	brek.	ends.	semi.	sets. sout.	rises. sout.	sets. sout.	sets. sout.	sets. sout.
1	no	night	15 48	8 a 43 1 a 46	0 m 46 8 m 55	9 a 1 2 a 13	0 m 19 8 a 32	10 a 16 4 a 54
8	1 m 17	10 a 49	15 49	8 21 1 48	0 46 8 59	8 39 2 2	11 a 47 8 4	9 49 4 28
15	1 52	10 15	15 50	7 54 1 41	0 49 9 4	8 18 1 50	11 16 7 36	9 22 4 2
22	2 18	9 45	15 51	7 23 1 24	0 57 9 9	7 51 1 39	10 51 7 9	8 55 3 36
29	2 41	9 17	15 53	6 51 0 53	1 8 9 15	7 37 1 28	10 24 6 42	8 28 3 11

M D		Remarkable Days	HIGH WATER.—LIVERPOOL.								Equat of Time
			MORNING.				EVENING.				
			Time.		Height.		Time.		Height.		
1	Tu	Lammas Day	5	20	11	7	5	57	11	5	6
2	W	Battle of Nile, 1798	6	33	11	4	7	11	11	8	5
3	Th	E. Baines died, 1848	7	47	11	9	8	25	12	8	5
4	F	Pilgrim Fathers sailed	8	56	12	10	9	25	14	1	5
5	S	Cabul taken, 1839	9	50	14	3	10	14	15	9	5
6	A	8 Sun. after Trinity	10	35	15	9	10	56	17	4	5
7	M	[1 Kings xlii; Acts iv. — xvii; Heb. ix.	11	16	17	2	11	38	18	8	5
8	Tu	Neptune souths 3m34	11	57	18	4	—	—	—	—	5
9	W	Dryden born, 1631	0	19	19	7	0	41	18	10	5
10	Th	St. Lawrence	1	2	19	10	1	23	18	5	5
11	F	Dog Days end	1	45	19	4	2	8	18	0	4
12	S	Lyra souths 9 a 7	2	32	18	2	2	57	16	11	4
13	A	9 Sun. after Trinity	3	22	16	8	3	47	15	4	4
14	M	Proper Lessons. [1 Kings xvii; Acts xi. — xix; James iii.	4	13	14	10	4	44	13	11	4
15	Tu	Napoleon born, 1769	5	18	13	3	5	57	12	11	4
16	W	Bomarsund tkn. 1854	6	39	12	5	7	20	12	10	4
17	Th	Neptune souths 3 m 2	8	0	12	7	8	38	13	8	4
18	F	Flamstead born, 1646	9	8	13	5	9	36	14	10	3
19	S	Royal Geo. sunk, 1782	10	3	14	6	10	25	16	0	3
20	A	10 Sun. after Trinity	10	45	15	6	11	5	17	0	3
21	M	Proper Lessons. [1 Kings xxi; Acts xvii. — xxii; 1 Peter v.	11	23	16	4	11	40	17	7	2
22	Tu	Neptune souths 2m38	11	56	16	10	—	—	—	—	2
23	W	Herschell died, 1822	0	11	17	10	0	28	17	0	2
24	Th	St. Bartholomew	0	45	17	9	1	2	16	10	2
25	F	Altair souths 9 a 27	1	18	17	3	1	35	16	4	1
26	S	Prince Albert b. 1819	1	53	16	6	2	9	15	7	1
27	A	11 Sun. after Trinity	2	24	15	6	2	40	14	8	1
28	M	Proper Lessons. [2 Kings v; Acts xxv. — ix; 1 John iv.	2	58	14	3	3	18	13	7	1
29	Tu	St. John beheaded	3	39	12	11	4	2	12	6	0
30	W	Paley born, 1743	4	30	11	8	5	7	11	8	0
31	Th	J. Bunyan died, 1688	5	47	11	0	6	29	11	7	0



Bristol tides				SUN.				MOON.				ASPECTS AND WEATHER	
D.	morn.		height	rises.	sets.	rt. ascen.	declin. N.	sets.	souths	declin.	age.	D.	
	H. M.	H. M.		H. M.	H. M.	H. M. S.	° ' "	H. M.	H. M.	° ' "			
1	0 33	1 52	20 4	4 14	7 57	8 46 28	17 58 16	11a42	7a20	17s31	10 1	1	Fair
2	1 39	2 22	20 10	4 16	7 55	8 50 20	17 42 57	morn	8 11	18 42 11	2	2	and
3	3 6	3 51	23 3	4 17	7 53	8 54 12	17 27 20	0 24	9 3	18 53 12	3	3	☾ ☽ ☾, 4 m t
4	4 24	4 54	25 10	4 19	7 51	8 58 4	17 11 27	1 14	9 57	17 58 13	4	4	warm
5	5 21	5 46	28 5	4 21	7 49	9 1 54	16 55 16	2 16	10 52	15 55 14	5	5	if the
6	6 10	6 34	29 8	4 23	7 47	9 5 45	16 38 49	3 30	11 47	12 47 15	6	6	wind
7	6 57	7 20	31 11	4 24	7 45	9 9 34	16 22 6	rises.	morn	— —	F 7	7	be
8	7 41	8 5 34	0	4 26	7 43	9 13 23	16 5 8	7a56	0 42	8 46 17	8	8	southerly.
9	8 27	8 47	35 0	4 28	7 41	9 17 11	15 47 53	8 23	1 36	4 9 18	9	9	☾ ☽ ☽, 7 m 15
10	9 7	9 26	34 11	4 30	7 39	9 20 59	15 30 24	8 50	2 30	0 44 19	10	10	☽ in Aphelion
11	9 47	10 8 33	7	4 31	7 37	9 24 46	15 12 39	9 18	3 23	5 35 20	11	11	Changeable
12	10 31	10 53	31 9	4 33	7 35	9 28 33	14 54 40	9 47	4 17	10 0 21	12	12	and
13	11 14	11 36	28 6	4 35	7 33	9 32 19	14 36 26	10 19	5 11	13 45 22	13	13	various
14	—	0 4 25	5	4 37	7 31	9 36 5	14 17 58	10 59	6 6	16 34 23	14	14	about
15	0 32	1 6 22	11	4 38	7 29	9 39 50	13 59 16	11 50	7 2	18 18 24	15	15	this
16	1 44	2 34 22	9	4 40	7 27	9 43 35	13 40 21	morn	7 57	18 52 25	16	16	stationary
17	3 22	4 5 24	10	4 42	7 24	9 47 19	13 21 13	0 48	8 51	18 18 26	17	17	☾ ☽ ☽, 3 a 55
18	4 37	5 6 26	9	4 44	7 22	9 51 3	13 1 52	1 49	9 43	16 42 27	18	18	time,
19	5 34	5 59 28	7	4 46	7 20	9 54 46	12 42 19	2 53	10 33	12 14 28	19	19	ending
20	6 21	6 44 29	5	4 47	7 17	9 58 29	12 22 33	3 59	11 20	11 6 29	20	20	with
21	7 4	7 22 30	7	4 49	7 15 10	2 10 12	2 36	sets.	0a 6	7 29 N	21	21	wind
22	7 40	7 57 31	4	4 51	7 13 10	5 52 11	42 27	7a13	0 50	3 37 1	22	22	and
23	8 14	8 30 31	6	4 53	7 11 10	9 34 11	22 7	7 32	1 33	0s22	23	23	☽ ☽ ☽, 7 m 5
24	8 46	9 1 31	2	4 55	7 8 10	13 15 11	1 37	7 53	2 16	4 17 3	24	24	stationary
25	9 17	9 34 30	3	4 56	7 6 10	16 55 10	40 56	8 16	2 58	8 0 4	25	25	☽ in Perigee
26	9 48	10 1 28	11	4 58	7 4 10	20 35 10	20 5	8 41	3 42	11 23 5	26	26	☽ ☽ ☽, 5 m 30
27	10 14	10 29 27	4	5 0	7 1 10	24 15 9	59 4	9 9	4 26	14 17 6	27	27	rain or
28	10 47	11 5 25	2	5 2	6 59 10	27 54 9	37 53	9 40	5 13	16 34 7	28	28	frequent
29	11 24	11 48 22	8	5 4	6 57 10	31 33 9	16 33	10 16	6 1	18 6 8	29	29	showers
30	—	0 21 20	7	5 5	6 54 10	35 11 8	55 5	11 3	6 52	18 45 9	30	30	☽ ☽ ☽, 1 a 0
31	0 56	1 35 20	2	5 7	6 52 10	38 49 8	33 28	morn	7 44	18 23 10	31	31	☽ gr. H. L. S

LUNAR DISTANCES FROM THE SUN.

Mean Astronomical Time at Greenwich.

M.	Noon.				3 Hours.				6 Hours.				9 Hours.				Midn.				15 Hour.				18 Hour.				21 Hour.			
D.	°	'	°	'	°	'	°	'	°	'	°	'	°	'	°	'	°	'	°	'	°	'	°	'	°	'	°	'				
1w	108	54	29	110	19	23	111	44	32	113	9	58	114	35	40	116	1	39	117	27	56	118	54	30	119	21	5	120	5	35		
2	120	21	22	121	48	33	123	16	3	124	43	51	126	11	59	127	40	27	129	9	15	130	38	22	131	6	5	132	34	19		
3	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...		
4w	135	21	13	133	39	23	131	57	37	130	15	55	128	34	19	126	52	48	125	11	25	123	30	9	121	49	0	120	8	1		
5	121	49	0	120	8	1	118	27	11	116	46	30	115	6	0	113	25	40	111	45	32	110	5	35	108	25	49	106	46	16		
6	108	25	49	106	46	16	105	6	56	103	27	47	101	48	52	100	10	10	98	31	41	96	53	26	94	15	24	93	37	37		
7	95	15	24	93	37	37	92	0	3	90	22	43	88	45	37	87	8	45	85	32	7	83	55	44	81	19	34	80	43	39		
8	82	19	34	80	43	39	79	7	59	77	32	32	75	57	20	74	22	21	72	47	37	71	13	7	69	38	51	68	4	49		
9	69	38	51	68	4	49	66	31	1	64	57	27	63	24	7	61	51	0	60	18	8	58	45	29	56	13	3	55	40	52		
10	57	13	3	55	40	52	54	8	54	52	37	9	51	5	38	49	34	21	48	3	17	46	32	27	44	1	51	43	31	28		
11	45	1	51	43	31	28	42	1	19	40	31	24	39	1	43	37	32	16	36	3	3	34	34	5	31	5	22	31	36	55		
12	33	5	22	31	36	55	30	8	43	28	40	47	27	13	8	25	45	48	24	18	46	22	52	5	...	...	...	...	...	...		
13	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
14w	24	40	3	26	1	31	27	22	58	28	44	24	30	5	49	31	27	11	32	48	32	34	9	51	24	35	31	8	36	52	22	
15	35	31	8	36	52	22	38	13	34	39	34	44	40	55	52	42	16	58	43	38	3	44	59	6	25	46	20	8	47	41	10	
16	46	20	8	47	41	10	49	2	12	50	23	13	51	44	14	53	5	17	54	26	20	55	47	25	26	57	8	32	58	29	21	
17	57	8	32	58	29	21	59	50	53	61	12	8	62	33	27	63	54	51	65	16	19	66	37	52	27	67	59	31	69	21	16	
18	67	59	31	69	21	16	70	43	8	72	5	7	73	27	15	74	49	31	76	11	55	77	34	29	28	78	57	14	80	20	9	
19	78	57	14	80	20	9	81	43	15	83	6	33	84	30	3	85	53	47	87	17	43	88	41	54	29	90	6	20	91	31	1	
20	90	6	20	91	31	1	92	55	57	94	21	10	95	46	40	97	12	27	98	38	32	100	4	55	29	101	31	38	102	58	40	
21	101	31	38	102	58	40	104	26	2	105	53	45	107	21	48	108	50	13	110	19	0	111	48	8	31	113	17	40	114	47	34	
22	113	17	40	114	47	34	116	17	52	117	48	34	119	19	40	120	51	10	122	23	4	123	55	23	...	...	...	...	...	...	...	

in any other part of the Almanack would be set down as such. The letters E. and W. inserted in the first column refer to the position of the Sun; E. East, W. West

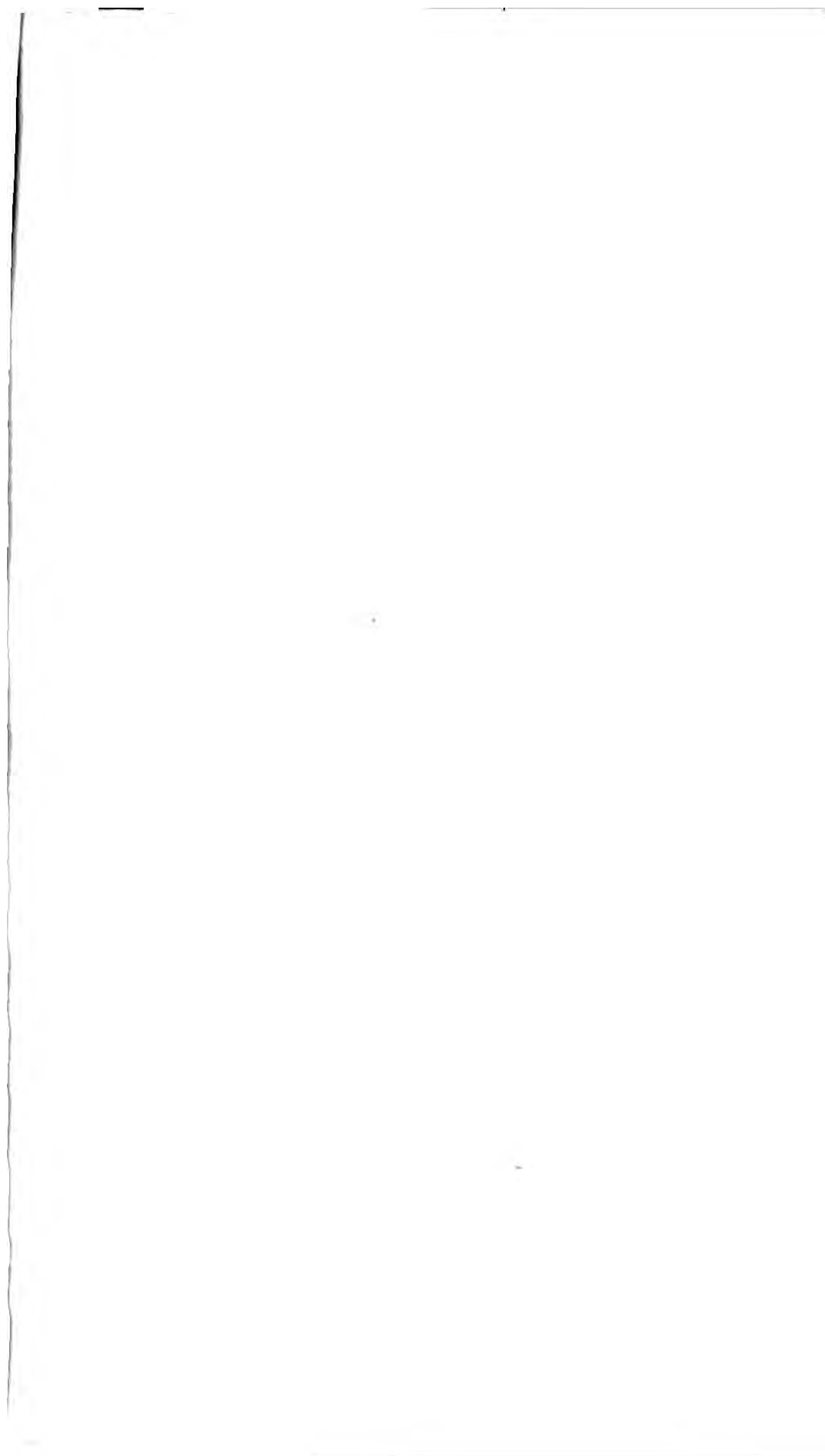
The Planets

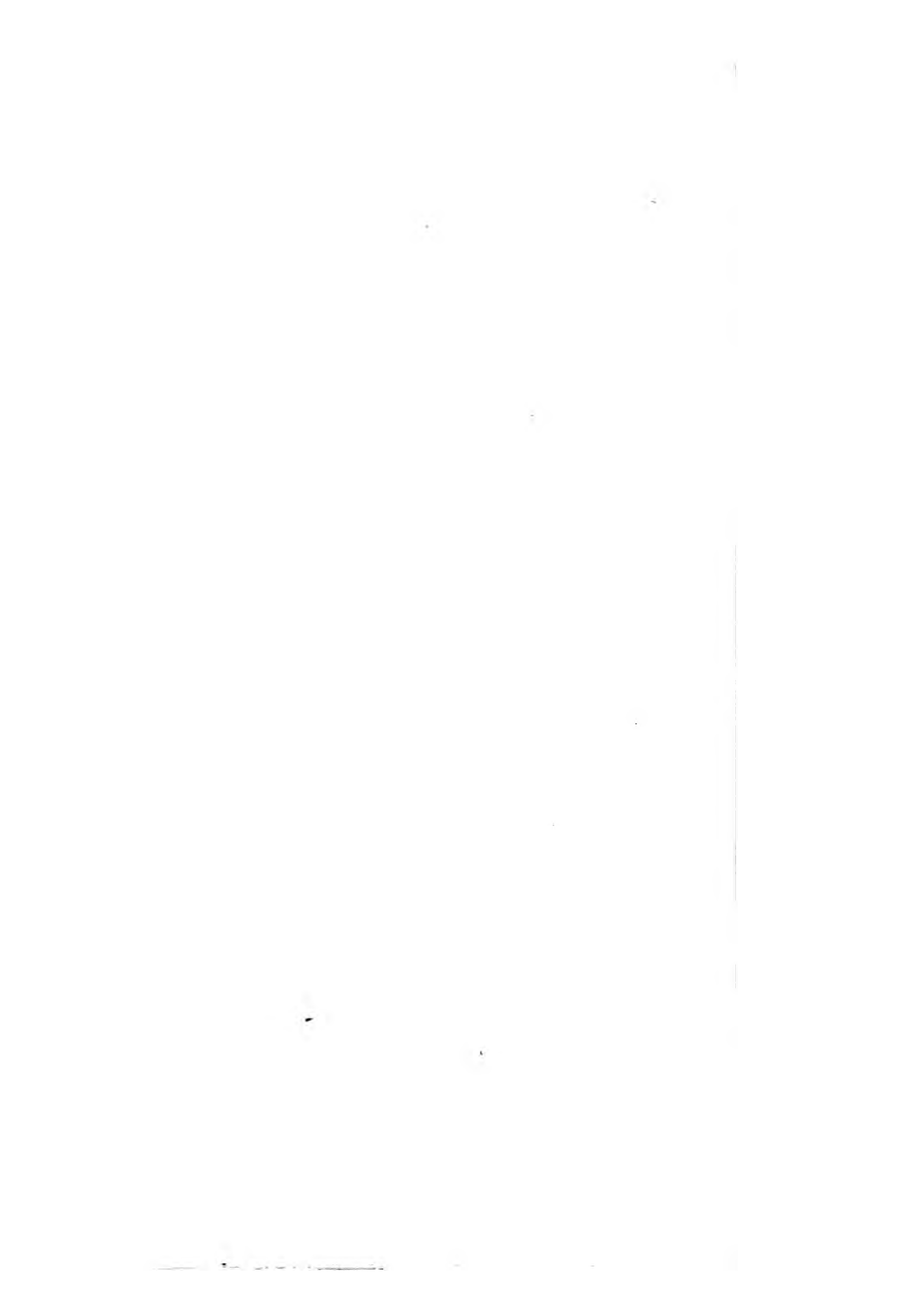
MERCURY [☿] will be visible in the mornings about the 25th February, 30th May

PHASES OF THE MOON. { FULL MOON, 5th day, at 1h. 52m. afternoon.
LAST QUARTER, 12th day, at 4h. 57m. morning.
NEW MOON, 19th day, at 10h. 46m. night.
FIRST QUARTER, 28th day, at 2h. 47m. morning.

M D.	Day brek.	Twil. ends.	☉'s semi.	☿ Mercury sets. sout.	♀ Venus. rises. sout.	♂ Mars. sets. sout.	♃ Jupiter. sets. sout.	♄ Saturn. sets. sout.	M D.
1	2m52	9 a 6	15 54	6 a 36 0 a 34	1 m 14 9 m 18	7 a 26 1 a 23	10 a 13 6 a 31	8 a 17 3 a 0	1
8	3 10	8 44	15 55	rises. 11 m 45	1 31 9 24	7 51 12	9 47 6 5	7 50 2 35	8
15	3 27	8 21	15 57	4 m 24 11 4	1 49 9 30	6 44 1 1	9 21 5 40	7 24 2 11	15
22	3 45	8 0	15 59	4 1 10 48	2 8 9 35	6 23 0 51	8 56 5 16	6 58 1 46	22
29	3 58	7 40	16 1	4 20 10 55	2 28 9 40	6 20 40	8 31 4 52	6 32 1 21	29

M D	W D	Remarkable Days	HIGH WATER.—LIVERPOOL.				Equation of Time.
			MORNING.		EVENING.		
			Time.	Height.	Time.	Height.	' "
1	F	Giles, Abbot	7 8	11 4	7 48	12 5	0 11
2	S	London burnt, 1666	8 22	12 5	8 51	14 1	0 30
3	A	12 Sun. after Trinity	9 20	14 3	9 48	16 0	0 50
4	M	Proper [2 Kings x ; Matt. iv. Lessons. [— xviii ; Rom. iv.	10 12	16 1	10 35	17 11	1 9
5	Tu	1st Amer. Con. 1774	10 55	17 10	11 16	19 6	1 29
6	W	Hannah More d. 1823	11 35	19 1	11 56	20 5	1 49
7	Th	Enurchus, Bishop	— —	— —	0 19	19 9	2 9
8	F	Nativity B. V. Mary	0 40	20 7	1 2	19 7	2 30
9	S	Altair souths 8 a 28	1 23	19 10	1 47	18 9	2 50
10	A	13 Sun. after Trinity	2 10	18 5	2 35	17 3	3 11
11	M	Proper [2 Kings xix ; Matt. xi. Lessons. [— xxiii ; Rom. xi.	2 59	16 6	3 25	15 5	3 32
12	Tu	Day 12h. 55m. long	3 50	14 4	4 25	13 9	3 53
13	W	Battle of Quebec, 1769	4 58	12 7	5 38	12 6	4 14
14	Th	Holy Cross day	6 19	11 7	7 3	12 5	4 35
15	F	Moscow burnt, 1812	7 44	11 10	8 22	13 2	4 56
16	S	James II died, 1701	8 49	12 9	9 17	14 6	5 17
17	A	14 Sun. after Trinity	9 42	14 1	10 5	15 8	5 38
18	M	Proper [Jeremiah v ; Matt. xviii. Lessons. [— xxii ; 1 Cor. ii.	10 23	15 3	10 42	16 8	5 59
19	Tu	Battle Poitiers, 1356	10 58	16 2	11 13	17 3	6 20
20	W	Manx fish ft. lt. 1787	11 28	16 5	11 42	17 8	6 41
21	Th	St. Matthew, Apostle	11 59	17 2	— —	— —	7 2
22	F	Neptune souths 0m 34	0 16	17 8	0 30	17 1	7 23
23	S	Uranus souths 6 m 8	0 47	17 4	1 4	16 9	7 44
24	A	15 Sun. aft. Trinity.	1 19	16 8	1 35	16 2	8 4
25	M	Proper [Jere. xxxv ; Matt. xxv. Lessons. [— xxxvi ; 1 Cor. ix.	1 52	15 8	2 9	15 2	8 25
26	Tu	St. Cyprian	2 28	14 6	2 46	14 3	8 45
27	W	Andromeda s. 11 a 33	3 8	13 2	3 30	13 1	9 5
28	Th	Buchanan died, 1592	3 57	12 0	4 29	12 1	9 25
29	F	St. Michael	5 8	11 2	5 52	11 10	9 45
30	S	St. Jerome	6 34	11 3	7 14	12 8	10 4





1865.

SEPTEMBER 30 Days.

11

Bristol tides				SUN.				MOON.				ASPECTS AND WEATHER	
D.	morn. even.		height	F. I.	rises.		rt. ascen.	declin. N.	sets.		declin. S.	D.	
	H. M.	H. M.			H. M.	H. M.			H. M.	H. M.			
1	2 19	3 8	22	1	5 9	6 49	10 42	27	0m2	8a37	16s55	1	The weather will
2	3 48	4 20	26	0	5 11	6 47	10 46	5	1 10	9 32	14 23	2	probably
3	4 50	5 19	28	11	5 13	6 44	10 49	42	2 23	10 27	10 50	3	be
4	5 45	6 11	31	11	5 15	6 42	10 53	19	3 39	11 22	6 29	4	wet
5	6 33	6 57	33	4	5 16	6 40	10 56	56	rises.	morn	—	5	in Perigee
6	7 18	7 41	35	6	5 18	6 37	11 0	32	6a50	0 17	1 38	6	in inf. of ☾
7	8 5	8 25	36	7	5 20	6 35	11 4	8	7 17	1 12	3n22	7	and
8	8 47	9 6	36	3	5 22	6 32	11 7	45	7 47	2 7	8 7	8	showery
9	9 28	9 49	34	7	5 23	6 30	11 11	21	8 22	3 3	12 16	9	during
10	10 11	10 31	32	0	5 25	6 27	11 14	56	9 4	4 0	15 31	10	the
11	10 52	11 14	28	7	5 27	6 25	11 18	32	9 51	4 57	17 40	11	beginning
12	11 43	—	24	9	5 29	6 22	11 22	8	10 42	5 53	18 38	12	☽ ☽ ☽, 4 m 31
13	0 14	0 48	21	10	5 31	6 20	11 25	43	11 37	6 47	18 25	13	of the
14	1 25	2 14	21	7	5 33	6 17	11 29	19	morn	7 40	17 9	14	☽ in ☽, 7 a 31
15	3 5	3 48	23	8	5 34	6 15	11 32	54	0 41	8 30	14 59	15	☽ ☽ ☽, 4 a 21
16	4 18	4 47	26	1	5 36	6 12	11 36	30	1 52	9 18	12 5	16	month.
17	5 13	5 37	28	1	5 38	6 10	11 40	5	3 0	10 3	8 41	17	☽ ☽ ☽, 2 a 2
18	5 58	6 19	29	0	5 40	6 7	11 43	41	4 5	10 48	4 56	18	☽ in ☽ 6 m 5
19	6 37	6 54	30	2	5 42	6 5	11 47	16	sets.	11 31	1 2	19	Now
20	7 10	7 26	31	1	4 43	6 2	11 50	52	6 a 0	0a13	2s54	20	☽ ☽ ☽, 10m55
21	7 45	8 2	31	6	4 45	6 0	11 54	28	0 36	0 56	6 40	21	☽ in Apogee
22	8 15	8 31	31	4	4 47	5 57	11 58	3	0 12	1 39	10 9	22	☽ enters ☽,
23	8 47	9 1	30	8	4 49	5 55	12 1	39	0s10	2 23	13 13	23	Autm.com.
24	9 16	9 31	29	5	4 51	5 52	12 5	15	0 34	3 9	15 42	24	changeable
25	9 47	10 3	27	11	4 52	5 50	12 8	51	0 57	3 57	17 30	25	☽ ☽ Reg. 8a25
26	10 17	10 36	25	11	4 54	5 47	12 12	27	1 21	0	4 44	26	☽ ☽ ☽, 1 m 4
27	10 55	11 19	23	7	4 56	5 45	12 16	4	1 44	9 49	5 34	27	Still
28	11 46	—	21	5	4 58	5 42	12 19	40	2 7	10 48	6 26	28	showery
29	0 20	0 59	20	5	6 0	5 40	12 23	17	2 31	11 58	7 18	29	and wet.
30	1 41	2 29	22	1	6 1	5 37	12 26	54	2 54	8 11	12 37	30	

LUNAR DISTANCES FROM THE SUN.
Mean Astronomical Time at Greenwich.

M.	NOON.	3 HOURS.	6 HOURS.	9 HOURS.	MIDN.	15 HOUR.	18 HOUR.	21 HOUR.
D.	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "
1w	125 28 7	127 1 16	128 34 50	130 8 49	131 43 14	133 18 3	134 53 18	136 28 58
2	125 28 7	127 1 16	128 34 50	130 8 49	131 43 14	133 18 3	134 53 18	136 28 58
3	125 28 7	127 1 16	128 34 50	130 8 49	131 43 14	133 18 3	134 53 18	136 28 58
4	125 28 7	127 1 16	128 34 50	130 8 49	131 43 14	133 18 3	134 53 18	136 28 58
5	125 28 7	127 1 16	128 34 50	130 8 49	131 43 14	133 18 3	134 53 18	136 28 58
6	125 28 7	127 1 16	128 34 50	130 8 49	131 43 14	133 18 3	134 53 18	136 28 58
7	125 28 7	127 1 16	128 34 50	130 8 49	131 43 14	133 18 3	134 53 18	136 28 58
8	125 28 7	127 1 16	128 34 50	130 8 49	131 43 14	133 18 3	134 53 18	136 28 58
9	125 28 7	127 1 16	128 34 50	130 8 49	131 43 14	133 18 3	134 53 18	136 28 58
10	125 28 7	127 1 16	128 34 50	130 8 49	131 43 14	133 18 3	134 53 18	136 28 58
11	125 28 7	127 1 16	128 34 50	130 8 49	131 43 14	133 18 3	134 53 18	136 28 58
12	125 28 7	127 1 16	128 34 50	130 8 49	131 43 14	133 18 3	134 53 18	136 28 58
13	125 28 7	127 1 16	128 34 50	130 8 49	131 43 14	133 18 3	134 53 18	136 28 58
14	125 28 7	127 1 16	128 34 50	130 8 49	131 43 14	133 18 3	134 53 18	136 28 58
15	125 28 7	127 1 16	128 34 50	130 8 49	131 43 14	133 18 3	134 53 18	136 28 58
16	125 28 7	127 1 16	128 34 50	130 8 49	131 43 14	133 18 3	134 53 18	136 28 58
17	125 28 7	127 1 16	128 34 50	130 8 49	131 43 14	133 18 3	134 53 18	136 28 58
18	125 28 7	127 1 16	128 34 50	130 8 49	131 43 14	133 18 3	134 53 18	136 28 58
19	125 28 7	127 1 16	128 34 50	130 8 49	131 43 14	133 18 3	134 53 18	136 28 58
20	125 28 7	127 1 16	128 34 50	130 8 49	131 43 14	133 18 3	134 53 18	136 28 58
21	125 28 7	127 1 16	128 34 50	130 8 49	131 43 14	133 18 3	134 53 18	136 28 58
22	125 28 7	127 1 16	128 34 50	130 8 49	131 43 14	133 18 3	134 53 18	136 28 58
23	125 28 7	127 1 16	128 34 50	130 8 49	131 43 14	133 18 3	134 53 18	136 28 58
24	125 28 7	127 1 16	128 34 50	130 8 49	131 43 14	133 18 3	134 53 18	136 28 58
25	125 28 7	127 1 16	128 34 50	130 8 49	131 43 14	133 18 3	134 53 18	136 28 58
26	125 28 7	127 1 16	128 34 50	130 8 49	131 43 14	133 18 3	134 53 18	136 28 58
27	125 28 7	127 1 16	128 34 50	130 8 49	131 43 14	133 18 3	134 53 18	136 28 58
28	125 28 7	127 1 16	128 34 50	130 8 49	131 43 14	133 18 3	134 53 18	136 28 58
29	125 28 7	127 1 16	128 34 50	130 8 49	131 43 14	133 18 3	134 53 18	136 28 58
30	125 28 7	127 1 16	128 34 50	130 8 49	131 43 14	133 18 3	134 53 18	136 28 58

and 23rd Sept. — the times of its greatest western elongation; and in the evenings about the 12th April, 10th August, and 5th December, when at its greatest eastern elongation. The most favourable time for observation will be at the eastern elongation in April, in the western sky.

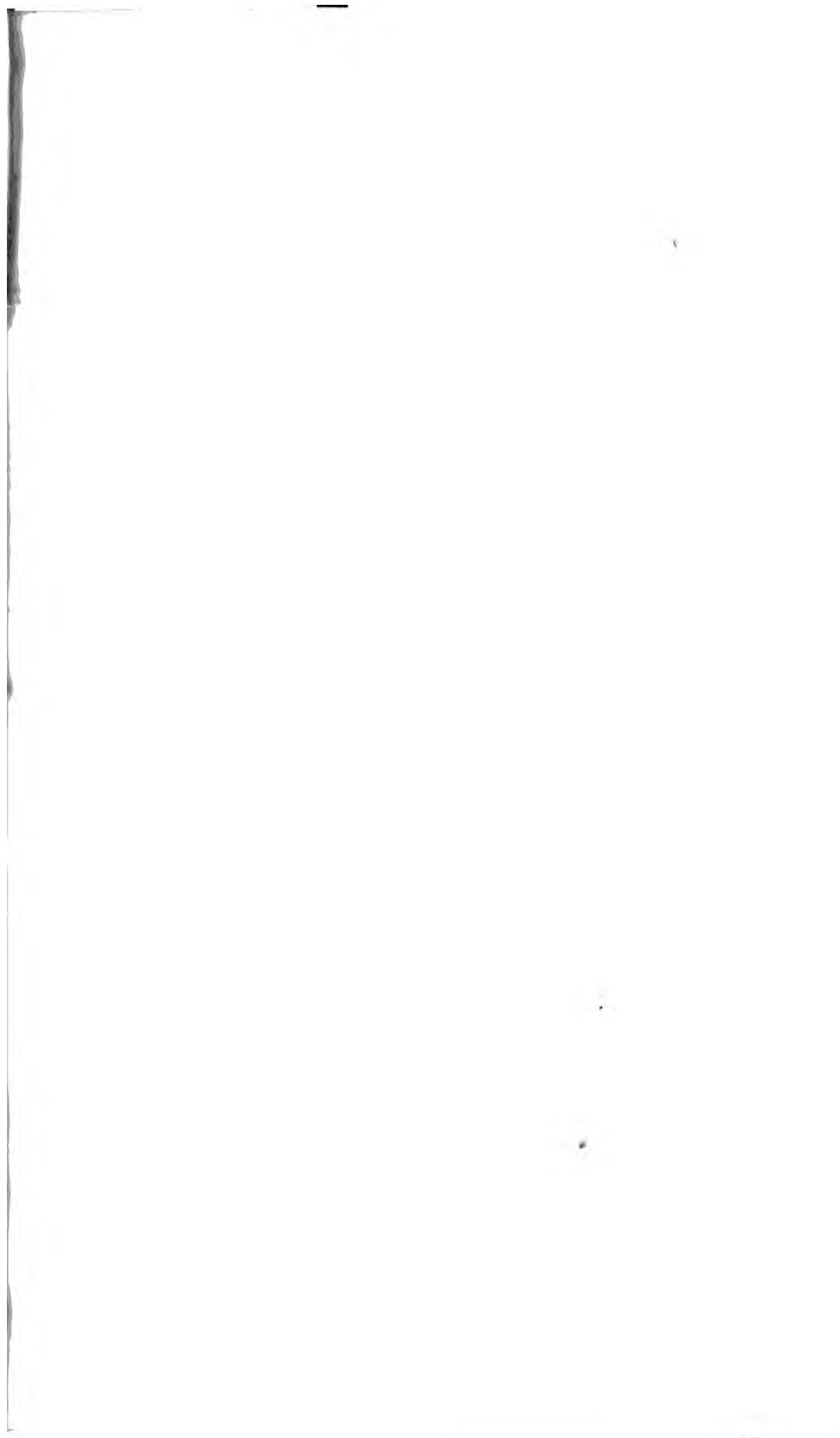
Venus [☿] will be an evening star to the 7th May, then a morning star to the end of the year. Its greatest brilliancy as an evening star will be on the 2nd April,

PHASES
OF THE
MOON.

FULL MOON, 4th day, at 10h. 31m. night.
LAST QUARTER, 11th day, at 3h. 22m. afternoon.
NEW MOON, 1th day, at 4h. 27m. evening.
FIRST QUARTER, 27th day, at 3h. 50m. afternoon.

M D.	Day	Twil. end.	☉'s semi.	♂ Mercury rises. sout.	♀ Venus. rises. sout.	♂ Mars. sets. sout.	♃ Jupiter sets. sout.	♄ Saturn. set. sout.	M D.
1	4 m 3	7 a 36	16 1	4 m 30 10 m 59	2 m 34 9 m 42	5 a 58 0 a 37	8 a 25 4 a 45	6 a 24 1 a 14	1
8	4 18	7 19	16 3	5 13 11 15	2 56 9 46	5 37 0 27	8 14 22	5 5 0 50	8
15	4 30	7 0	16 5	5 59 11 32	3 18 9 51	5 16 0 18	7 3 3 59	5 3 0 26	15
22	4 44	6 46	16 7	sets. 11 48	3 40 9 55	4 56 0 8	7 1 3 36	rises. 0 1	22
29	4 56	6 31	16 9	4 a 37 0 a 3	4 39 59	4 37 11 m 59	6 52 3 14	m 34 1 m 3	29

M W D D		Remarkable Days	HIGH WATER.—LIVERPOOL.				Equation of Time.
			MORNING.		EVENING.		
			Time.	Height.	Time.	Height.	/"
1	A	16 Sun. after Trinity	7 53	12 6	8 27	14 3	10 24
2	M	Pro. [Ezekiel ii; Mark iv. Less. [— xiii; 1 Cor. xvi.	8 53	14 4	9 18	16 3	10 42
3	Tu	R. Barclay died, 1690	9 42	16 4	10 7	18 3	11 1
4	W	Neptune souths 11 a 41	10 30	18 2	10 51	19 9	11 19
5	Th	H souths 5 m 26	11 11	19 6	11 32	20 7	11 37
6	F	Faith, V. & M.	11 53	20 1	—	—	11 55
7	S	Cassiopea s. 11 a 25	0 17	20 7	0 41	19 11	12 12
8	A	17 Sun. after Trinity	1 4	19 9	1 28	18 11	12 29
9	M	Pro. [Ezekiel xiv; Mark xi. Less. [— xviii; 2 Cor. vii.	1 51	18 2	2 16	17 5	12 45
10	Tu	Oxford Term begins	2 41	16 1	3 6	15 7	13 1
11	W	Old Michaelmas day	3 32	13 11	4 0	13 8	13 16
12	Th	Wat Tyler died, 1381	4 35	12 2	5 15	12 6	13 31
13	F	Trans. King Edward	5 55	11 4	6 37	12 4	13 45
14	S	Wm. Penn b., 1644	7 16	11 6	7 52	12 10	13 59
15	A	18 Sun. after Trinity	8 24	12 4	8 53	13 10	14 12
16	M	Proper [Ezekiel xx; Luke i, v 39 Lessons. [— xxiv; Gal i.	9 15	13 7	9 36	15 1	14 25
17	Tu	Ethelred V. Q.	9 58	14 9	10 15	16 0	14 37
18	W	St. Luke, Evangelist	10 31	15 9	10 45	16 8	14 49
19	Th	Neptune souths 10 a 41	11 1	16 5	11 18	17 1	14 59
20	F	Uranus souths 4 m 22	11 32	16 11	11 47	17 3	15 9
21	S	Battle Trafalgar, 1805	—	—	0 5	17 1	15 19
22	A	19 Sun. after Trinity	0 21	17 1	0 37	16 11	15 28
23	M	[Daniel iii; Luke viii. — vi; Ephes. ii.	0 53	16 6	1 9	16 5	15 36
24	Tu	Chaucer died, 1400	1 26	15 9	1 43	15 8	15 43
25	W	Crispin, Martyr	2 2	14 9	2 23	14 9	15 50
26	Th	Hogarth died, 1764	2 43	13 8	3 7	13 9	15 56
27	F	Servetus burnt, 1553	3 32	12 7	4 2	12 11	16 2
28	S	St. Sim. & St. Jude	4 37	11 10	5 15	12 7	16 6
29	A	20 Sun. after Trinity	6 0	11 9	6 40	13 1	16 10
30	M	Proper [Joel ii; Luke xv. Lessons [Micah vi; Phil iii.	7 16	12 9	7 53	14 5	16 13
31	Tu	All Hallow Eve	8 21	14 4	8 49	16 2	16 16



PHASES OF THE MOON. { FULL MOON, 3rd day, at 8h. 3m. morning.
LAST QUARTER, 10th day, at 5h. 45m. morning.
NEW MOON, 18th day, at 11h. 0m. morning.
FIRST QUARTER, 26th day, at 2h. 59m. morning.

M D.	Day	Twi. ends.	☉'s semi.	☿ Mercury	♀ Venus.	♂ Mars.	♃ Jupiter.	♄ Saturn.
	brek.			sets. sout.	rises. sout.	rises. sout.	sets. sout.	rises. sout.
1	5 m 2	6 a 24	16 10	4 a 34 0 a 10	4 m 13 10 m 1	7 m 21 11 m 56	6 a 42 3 a 5	6 m 24 11 m 26
8	5 13	6 13	16 12	4 22 0 26	4 36 10 5	7 23 11 47	6 20 2 43	6 21 1 2
15	5 24	6 16	16 13	4 21 0 42	4 59 10 10	7 24 11 40	5 59 2 22	5 39 10 38
22	5 34	5 58	16 14	4 22 0 59	5 23 10 16	7 26 11 32	5 38 2 1	5 16 10 13
29	5 44	5 53	16 16	4 31 1 14	5 47 10 23	7 27 11 25	5 17 1 40	4 53 9 49

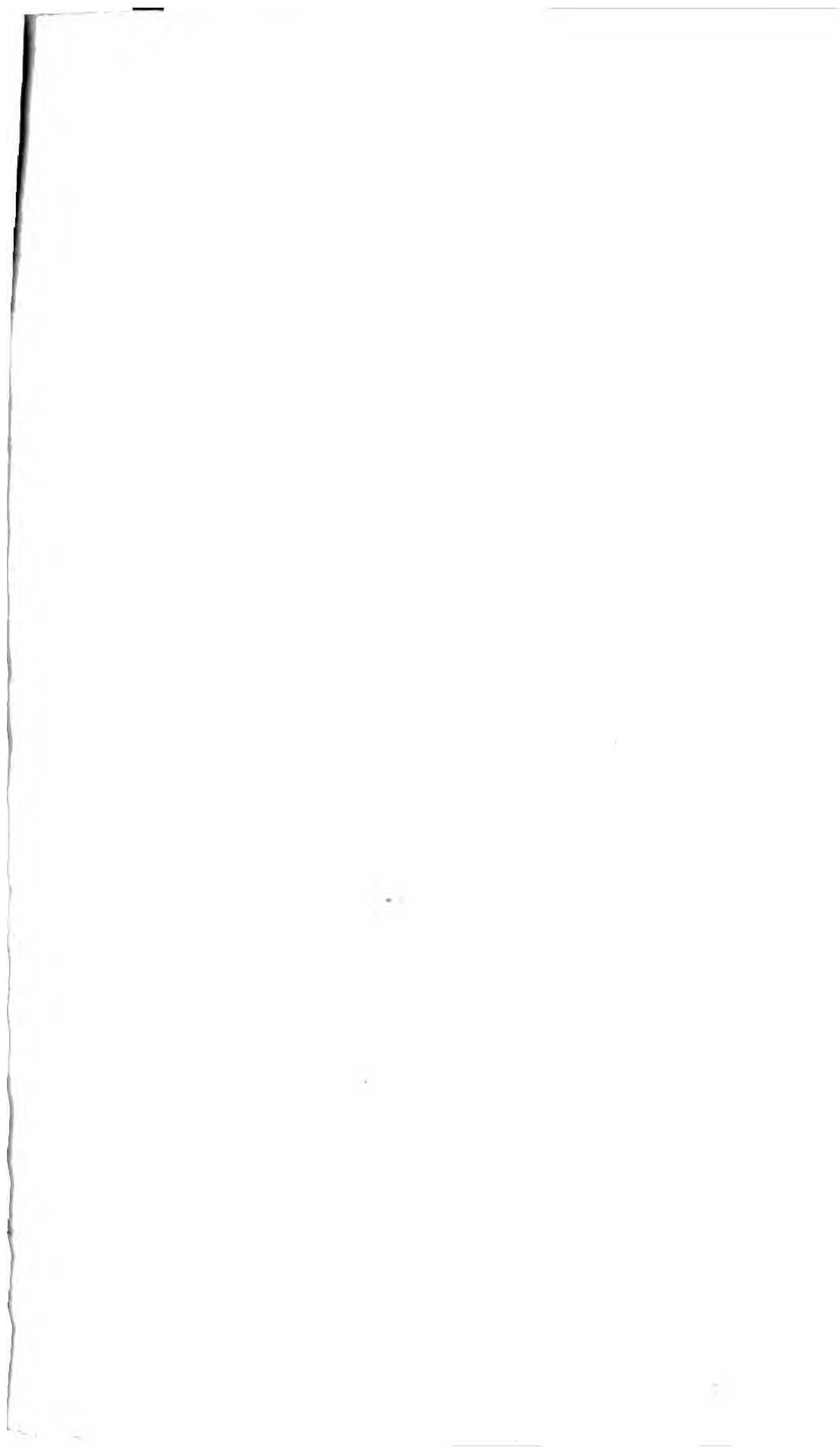
M D	W D	Remarkable Days	HIGH WATER.—LIVERPOOL.				Equation of Time
			MORNING.		EVENING.		
			Time.	Height.	Time.	Height.	
1	W	All Saints	9 16	16 3	9 41	17 10	16 11
2	Th	Michaelmas Ter. beg.	10 3	17 11	10 26	19 2	16 18
3	F	H souths 3 m 27	10 50	19 2	11 12	19 10	16 18
4	S	Wm. III. land. 1688	11 35	19 9	11 58	19 11	16 17
5	A	21 Sun. after Trinity	—	—	0 21	19 8	16 16
6	M	Proper [Hab. ii; Luke xxi. Lessons.] Prov. i; 1 Thess. i.	0 45	19 2	1 9	18 10	16 18
7	Tu	Neptune s. 9 a 24	1 33	17 10	1 59	17 6	16 10
8	W	Cam. Term div. N	2 23	16 0	2 48	15 11	16 6
9	Th	P. of Wales born	3 13	14 1	3 39	14 3	16 1
10	F	H souths 2 m 58	4 9	12 7	4 42	13 0	15 55
11	S	St. Martin, Bishop	5 18	11 7	5 52	12 5	15 48
12	A	22 Sun. after Trinity	6 29	11 4	7 3	12 6	15 40
13	M	Proper [Prov. ii; John iv. Lessons.] — iii; 2 Thess. iii.	7 37	11 6	8 6	13 2	15 32
14	Tu	Leibnitz died, 1716	8 35	12 10	8 59	14 0	15 22
15	W	Machutus, Bishop	9 21	13 11	9 42	14 10	15 12
16	Th	Pleiades south 11 a 55	9 54	14 10	10 21	15 7	15 1
17	F	Hugh, Bishop	10 37	15 9	10 51	16 2	14 49
18	S	Capella souths 1 m 18	11 9	16 4	11 24	16 5	14 36
19	A	23 Sun. after Trinity	11 39	16 9	11 55	16 7	14 23
20	M	Proper [Prov. xi; John xi. Lessons.] — xii; 2 Tim. ii.	—	—	0 12	16 10	14 8
21	Tu	Princess of Prussia b.	0 30	16 5	0 49	16 8	13 53
22	W	Cecilia V and M	1 6	15 11	1 26	16 4	13 37
23	Th	St. Clement	1 46	15 4	2 9	15 8	13 20
24	F	Neptune souths 8a20	2 29	14 6	2 50	14 11	13 3
25	S	Catherine V and M	3 16	13 8	3 43	14 2	12 44
26	A	24 Sun. after Trinity	4 12	13 0	4 45	13 8	12 25
27	M	Proper [Prov. xiii; John xviii; Lessons.] — xiv; Heb. ii.	5 23	12 8	6 0	13 7	12 6
28	Tu	H souths 1 m 45	6 37	13 1	7 15	14 3	11 45
29	W	Pleiades south 11 a 4	7 47	14 2	8 18	15 5	11 24
30	Th	St. Andrew, Ap.	8 47	15 6	9 16	16 9	11 3



PHASES OF THE MOON.	FULL MOON,	2nd day, at 6h. 44m. evening
	LAST QUARTER,	10th day, at 0h. 13m. morning.
	NEW MOON,	18th day, at 4h. 45m. morning.
	FIRST QUARTER,	25th day, at 0h. 31m. afternoon.

M	Day	Twil.	☉'s	♂ Mercury	♀ Venus.	♂ Mars.	♂ Jupiter.	♂ Saturn.	M
D.	brek.	ends.	semi.	sets. sout.	rises. sout.	rises. sout.	sets. sout.	rises. sout.	D.
1	5m48	5 a 50	16 16	4a 35 1a 18	5 m54 10 m25	7m27 11m24	5 a 11 1 a 34	4m46 9m42	1
8	5 53	5 50	16 17	4 47 1 22	6 18 10 32	7 28 11 17	4 50 1 13	4 23 9 17	8
15	6 15	5 51	16 17	4 42 1 3	6 41 10 41	7 28 11 11	4 30 0 52	4 08 52 15	15
22	6 45	5 53	16 18	rises. 0 8	7 2 10 51	7 27 11 6	4 10 0 32	3 36 8 27	22
29	6 65	5 58	16 18	7m 4 11m 6	7 20 11 1	7 26 11 1	3 51 0 11	3 12 8 2	29

M W D D				Remarkable Days	HIGH WATER.—LIVERPOOL.								Equation of Time.
					MORNING.				EVENING.				
				Time.	Height.	Time.	Height.	Time.	Height.	Time.	Height.	'	''
1	F			Press. of Wls, b. 1844	9 45	17 1	10 10	17 10	10 40			10	40
2	S			Mariners' Comp. inv.	10 33	18 2	10 58	18 7	10 17			10	17
3	A			Advent Sunday	11 22	19 0	11 45	18 8	9 53				
4	M			Proper [Isaiah i; Acts iv. Lessons. [— ii; Heb. ix.	—	—	0 7	19 2	9 29				
5	Tu			Neptune souths 7 a 32	0 31	18 4	0 54	18 8	9 4				
6	W			Nicholas, Bishop	1 18	17 5	1 40	17 9	8 39				
7	Th			Aldebaran sou. 11a21	2 3	16 1	2 26	16 6	8 13				
8	F			Conception V. Mary	2 50	14 9	3 13	15 2	7 47				
9	S			Milton born, 1608	3 36	13 6	4 0	13 9	7 20				
10	A			2 Sunday in Advent	4 25	12 3	4 54	12 10	6 53				
11	M			Proper [Isaiah v; Acts x. Lessons. [— xxiv; James iii.	5 27	11 2	6 2	12 3	6 25				
12	Tu			H souths 0 m 48	6 36	11 6	7 10	12 2	5 57				
13	W			Lucy V and M	7 42	11 11	8 12	12 8	5 28				
14	Th			Washington d. 1799	8 38	12 9	9 5	13 5	5 0				
15	F			Aldebaran sou. 10a50	9 29	13 9	9 50	14 3	4 30				
16	S			O Sapientia	10 11	14 8	10 28	14 10	4 1				
17	A			3 Sunday in Advent	10 47	15 7	11 3	15 8	3 32				
18	M			Pro. [Isaiah xxv; Acts xvii. Les. [— xxvi; 1 Peter v.	11 23	16 5	11 40	16 3	3 2				
19	Tu			Neptune souths 6 a 38	11 57	17 1	—	—	2 32				
20	W			H souths 0 m 15	0 15	16 7	0 34	17 4	2 2				
21	Th			St. Thomas.	0 54	16 8	1 15	17 4	1 32				
22	F			Pleiades souths 9 a 33	1 36	16 4	1 58	17 0	1 2				
23	S			[Isaiah xxx; Acts xxiv. — xxxii; 1 John iv.	2 20	15 9	2 42	16 4	0 32				
24	A			4 Sunday in Advent	3 3	15 1	3 25	15 7	0 2				
25	M			Christmas Day	3 54	14 4	4 21	14 9	0 28				
26	Tu			St. Stephens	4 51	13 7	5 25	14 2	0 58				
27	W			St. John	6 1	13 6	6 39	14 1	1 27				
28	Th			Innocents	7 16	13 8	7 53	14 5	1 57				
29	F			Neptune souths 5 a 58	8 26	14 7	8 56	15 3	2 26				
30	S			[Isaiah xxxvii; Acts xxviii. — xxxviii; Jude	9 27	15 10	9 54	16 3	2 55				
31	A			1st Sun. after Christ.	10 22	16 11	10 49	17 1	3 24				



Bristol tides					SUN.					MOON.					ASPECTS AND WEATHER.														
M	D.	morn.	even.	height	rises.	sets.	rt. ascen.	declin. S.	sets.	south.	declin.	M	D.																
		H. M.	H. M.	P. I.	H. M.	H. M.	H. M. S.	° ' "	H. M.	H. M.	° ' "																		
1	5	17	5	45	32	7	7	59	3	39	16	30	45	21	52	10	5m47	11a	4	16	43	13	1	((in Perigee					
2	6	10	6	39	33	3	8	1	3	38	16	35	4	22	1	9	rises.	morn	—	—	F	2	Changeable,						
3	7	5	7	30	34	3	8	2	3	37	16	39	24	22	9	42	4a58	0	5	18	22	15	3	probably					
4	7	53	8	17	34	2	8	4	3	37	16	43	45	22	17	50	6	4	1	5	18	40	16	4	H δ ((, 7m 10				
5	8	39	9	1	33	4	8	5	3	36	16	48	7	22	25	32	7	11	2	3	17	39	17	5	δ δ ((, 11m30				
6	9	21	9	42	31	6	8	7	3	36	16	52	29	22	32	48	8	20	2	58	15	33	18	6	rain				
7	10	2	10	22	29	5	8	8	3	35	16	56	51	22	39	38	9	30	3	50	12	37	19	7	or				
8	10	42	11	2	27	1	8	9	3	35	17	1	14	22	46	0	10	39	4	38	9	7	20	8	snow.				
9	11	22	11	44	24	3	8	11	3	35	17	5	37	22	51	56	11	47	5	24	5	18	21	9	Hard				
10	—	—	0	9	22	4	8	12	3	35	17	10	1	22	57	25	morn	6	7	1	21	22	10	Frost					
11	0	37	1	9	21	3	8	13	3	34	17	14	26	23	2	26	0	53	6	50	2	36	23	11	unless				
12	1	43	2	24	21	7	8	14	3	34	17	18	50	23	7	0	1	58	7	32	6	23	24	12	) in Apogee				
13	3	2	3	38	23	3	8	15	3	34	17	23	15	23	11	7	3	2	8	15	9	55	25	13	δ stationary				
14	4	6	4	34	24	11	8	16	3	34	17	27	41	23	14	46	4	6	8	59	13	2	26	14	((in ((, 10m56				
15	4	59	5	21	26	6	8	17	3	34	17	32	6	23	17	56	5	9	9	45	15	37	27	15	the				
16	5	44	6	3	27	5	8	18	3	34	17	36	32	23	20	40	6	10	10	33	17	30	28	16	δ in ((, 6 m 6				
17	6	24	6	42	28	2	8	19	3	35	17	40	58	23	22	55	7	7	11	22	18	34	29	17	δ δ ((, 5 m 22				
18	7	4	7	23	29	5	8	20	3	35	17	45	25	23	24	41	sets.	0a13	18	40	N	18	δ δ ((, 3 a 48						
19	7	42	8	1	30	4	8	20	3	35	17	49	51	23	26	0	5a27	1	4	17	47	1	19	((δ ((, 2 m20					
20	8	20	8	39	30	10	8	21	3	36	17	54	18	23	26	51	6	37	1	55	15	54	2	20	wind				
21	8	59	9	18	30	10	8	21	3	36	17	58	44	23	27	13	7	47	2	46	13	7	3	21	⊙ enters ♍				
22	9	38	9	58	30	2	8	22	3	36	18	3	11	23	27	7	8	56	3	37	9	33	4	22	[Win. com.				
23	10	17	10	34	29	4	8	22	3	37	18	7	37	23	26	33	10	11	4	27	5	26	5	23	δ in inf. δ ⊙				
24	10	54	11	19	28	0	8	22	3	37	18	12	4	23	25	30	11	29	5	17	0	56	6	24	be southerly.				
25	11	43	—	—	26	2	8	22	3	38	18	16	30	23	23	59	morn	6	8	3	N40	7	25	Snow					
26	0	9	0	37	24	9	8	23	3	39	18	20	57	23	22	0	0	47	7	0	8	8	8	26	or				
27	1	9	1	45	24	9	8	23	3	40	18	25	23	23	19	33	2	7	7	54	12	9	9	27	rain.				
28	2	30	3	15	26	4	8	23	3	41	18	29	49	23	16	38	3	25	8	50	15	26	10	28	Changeable.				
29	3	53	4	25	28	4	8	23	3	42	18	34	15	23	13	14	4	41	9	48	17	40	11	29	δ δ δ, 7m 12				
30	4	56	5	26	30	3	8	23	3	43	18	38	40	23	9	23	5	52	10	47	18	41	12	30	δ δ δ, 8 m 22				
31	5	57	6	26	30	10	8	23	3	44	18	43	6	23	5	4	6	55	11	46	18	22	13	31	H δ ((, 3 a 33				

LUNAR DISTANCES FROM THE SUN.

Mean Astronomical Time at Greenwich.

M.	NOON.	3 HOURS.	6 HOURS.	9 HOURS.	MIDN.	15 HOUR.	18 HOUR.	21 HOUR.
D.	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "
6E	130 46 11	129 14 10	127 42 33	126 11 19	124 40 29	123 10 4	121 40 2	120 10 23
7	118 41 7	117 12 14	115 43 44	114 15 35	112 47 48	111 20 22	109 53 18	108 26 33
8	107 0 8	105 34 3	104 8 17	102 42 49	101 17 40	99 52 47	98 28 12	97 3 52
9	95 39 49	94 16 1	92 52 27	91 29 7	90 6 1	88 43 7	87 20 26	85 57 57
10	84 35 38	83 13 30	81 51 33	80 29 44	79 8 4	77 46 32	76 25 8	75 3 51
11	73 42 40	72 21 35	71 0 35	69 39 40	68 18 50	66 58 3	65 37 19	64 16 38
12	62 55 59	61 35 21	60 14 45	58 54 9	57 33 33	56 12 58	54 52 21	53 31 43
13	52 11 4	50 50 23	49 29 40	48 8 55	46 48 6	45 27 14	44 6 18	42 45 19
14	41 24 16	40 3 9	38 41 58	37 20 42	35 59 22	34 37 58	33 16 29	31 54 57
15	30 33 20	29 11 40	27 49 58	26 28 13	25 6 27	23 44 42	22 22 58	21 1 17
..								
20W	27 37 37	29 6 24	30 35 29	32 4 52	33 34 31	35 4 26	36 34 35	38 4 59
21	39 35 38	41 6 30	42 37 35	44 8 54	45 40 25	47 12 10	48 44 6	50 16 15
22	51 48 37	53 21 10	54 53 56	56 26 53	58 0 2	59 33 23	61 6 55	62 40 40
23	64 14 35	65 48 43	67 23 1	68 57 32	70 32 13	72 7 7	73 42 11	75 17 27
24	76 52 55	78 28 33	80 4 23	81 40 24	83 16 36	84 53 0	86 29 34	88 6 20
25	89 43 16	91 20 23	92 57 41	94 35 10	96 12 49	97 50 38	99 28 37	101 6 47
26	102 45 6	104 23 35	106 2 13	107 41 0	109 19 56	110 59 1	112 38 13	114 17 34
27	115 57	2 117 36	119 16 18	120 56	6 122 35	59 124 15	57 125 56	0 127 36
28	129 16 16	130 56 28	132 36 42	134 16 57	135 57 12	137 37 27	139 17 40	140 57 50

URANUS [♅] will be best observed in the evenings of January to May, and in the mornings from July to the end of the year.

NEPTUNE—This Planet will be best observed when at its opposition on the 4th of October, its Right Ascension at Greenwich mean Noon on that day being 0h. 36m. 0sec., and Declination 2° 9' 54" North.

M	JANUARY.		FEBRUARY.		MARCH.		APRIL.		MAY.		JUNE.		D
	Noon.	Midn.	Noon.	Midn.	Noon.	Midn.	Noon.	Midn.	Noon.	Midn.	Noon.	Midn.	
D.	/	//	/	//	/	//	/	//	/	//	/	//	D.
1	16 18	16 18	16 13	16 8	16 22	16 16	15 45	15 37	15 19	15 13	14 52	14 50	1
2	16 16	16 15	16 2	15 57	16 9	16 2	15 30	15 23	15 7	15 2	14 49	14 48	2
3	16 12	16 10	15 51	15 46	15 55	15 48	15 17	15 11	14 58	14 54	14 48	14 48	3
4	16 7	16 4	15 40	15 35	15 41	15 34	15 6	15 1	14 51	14 49	14 49	14 51	4
5	16 1	15 58	15 30	15 25	15 28	15 22	14 57	14 53	14 47	14 46	14 53	14 56	5
6	15 54	15 51	15 21	15 17	15 16	15 11	14 50	14 48	14 46	14 46	14 59	15 3	6
7	15 47	15 43	15 12	15 9	15 7	15 2	14 46	14 45	14 46	14 47	15 6	15 10	7
8	15 40	15 36	15 5	15 2	14 59	14 56	14 44	14 44	14 49	14 51	15 15	15 19	8
9	15 32	15 28	14 59	14 56	14 53	14 50	14 44	14 44	14 53	14 56	15 23	15 28	9
10	15 24	15 20	14 54	14 51	14 48	14 47	14 45	14 46	14 59	15 2	15 32	15 36	10
11	15 16	15 12	14 49	14 48	14 45	14 44	14 48	14 50	15 5	15 9	15 40	15 44	11
12	15 8	15 5	14 46	14 45	14 44	14 44	14 52	14 54	15 12	15 16	15 48	15 52	12
13	15 1	14 58	14 45	14 45	14 44	14 44	14 57	15 0	15 20	15 24	15 55	15 58	13
14	14 55	14 52	14 45	14 46	14 45	14 46	15 4	15 7	15 28	15 33	16 1	16 4	14
15	14 50	14 48	14 47	14 49	14 48	14 50	15 12	15 16	15 37	15 42	16 6	16 8	15
16	14 47	14 47	14 52	14 55	14 53	14 56	15 21	15 26	15 46	15 51	16 10	16 12	16
17	14 47	14 47	14 59	15 4	14 59	15 3	15 32	15 37	15 56	16 0	16 13	16 14	17
18	14 48	14 50	15 8	15 14	15 8	15 13	15 44	15 50	16 5	16 9	16 14	16 14	18
19	14 53	14 57	15 21	15 28	15 19	15 25	15 56	16 3	16 13	16 17	16 13	16 12	19
20	15 1	15 5	15 35	15 43	15 32	15 39	16 9	16 15	16 20	16 23	16 10	16 8	20
21	15 11	15 17	15 51	15 58	15 46	15 54	16 21	16 26	16 25	16 26	16 5	16 2	21
22	15 23	15 30	16 6	16 14	16 1	16 9	16 31	16 34	16 27	16 26	15 58	15 53	22
23	15 37	15 45	16 21	16 27	16 16	16 23	16 37	16 39	16 25	16 22	15 49	15 43	23
24	15 52	15 59	16 33	16 38	16 29	16 35	16 39	16 38	16 19	16 15	15 38	15 32	24
25	16 6	16 13	16 41	16 43	16 39	16 43	16 36	16 33	16 10	16 5	15 27	15 21	25
26	16 18	16 23	16 44	16 43	16 45	16 46	16 28	16 23	15 59	15 25	15 16	15 11	26
27	16 28	16 31	16 41	16 38	16 45	16 43	16 17	16 10	15 46	15 39	15 6	15 2	27
28	16 33	16 33	16 34	16 28	16 39	16 35	16 3	15 55	15 32	15 26	14 58	14 55	28
29	16 33	16 32	.. ..	.. ..	16 29	16 23	15 48	15 40	15 19	15 13	14 52	14 50	29
30	16 29	16 26	.. ..	.. ..	16 16	16 8	15 33	15 25	15 8	15 3	14 49	14 49	30
31	16 22	16 18	.. ..	.. ..	16 0	15 52	.. ..	.. ..	14 59	14 55	.. ..	.. ..	31

M	JULY.		AUGUST.		SEPT.		OCTOBER.		NOVEMBER.		DECEMBER.		D.
	Noon.	Midn.	Noon.	Midn.	No.	Midn.	Noon.	Midn.	Noon.	Midn.	Noon.	Midn.	
D.	/	//	/	//	/	//	/	//	/	//	/	//	D.
1	14 49	14 50	15 5	15 10	15 43	15 51	16 12	16 19	16 40	16 43	16 35	16 33	1
2	14 51	14 53	15 16	15 22	15 59	16 6	16 26	16 32	16 44	16 44	16 31	16 27	2
3	14 56	15 0	15 28	15 35	16 13	16 20	16 37	16 41	16 43	16 40	16 23	16 17	3
4	15 4	15 8	15 42	15 48	16 25	16 30	16 44	16 46	16 36	16 31	16 11	16 4	4
5	15 13	15 18	15 55	16 1	16 34	16 37	16 46	16 44	16 25	16 18	15 57	15 50	5
6	15 23	15 29	16 7	16 12	16 38	16 38	16 42	16 38	16 11	16 3	15 42	15 35	6
7	15 34	15 40	16 16	16 20	16 38	16 35	16 32	16 27	15 55	15 47	15 28	15 21	7
8	15 45	15 50	16 23	16 25	16 32	16 28	16 20	16 13	15 39	15 32	15 15	15 9	8
9	15 55	15 59	16 26	16 26	16 23	16 18	16 5	15 58	15 25	15 18	15 4	14 59	9
10	16 2	16 6	16 25	16 23	16 12	16 6	15 50	15 43	15 12	15 6	14 55	14 52	10
11	16 8	16 10	16 21	16 18	16 0	15 53	15 36	15 29	15 1	14 57	14 49	14 48	11
12	16 12	16 13	16 15	16 11	15 47	15 41	15 22	15 16	14 54	14 51	14 47	14 46	12
13	16 13	16 13	16 7	16 3	15 35	15 29	15 11	15 6	14 48	14 46	14 46	14 47	13
14	16 13	16 12	15 58	15 54	15 24	15 19	15 2	14 58	14 45	14 44	14 48	14 50	14
15	16 11	16 9	15 49	15 45	15 14	15 10	14 54	14 51	14 44	14 44	14 52	14 55	15
16	16 8	16 5	15 40	15 36	15 6	15 2	14 49	14 47	14 45	14 46	14 58	15 1	16
17	16 3	16 0	15 31	15 27	14 59	14 56	14 46	14 44	14 48	14 49	15 5	14 8	17
18	15 58	15 54	15 23	15 19	14 53	14 51	14 44	14 43	14 51	14 54	15 12	15 16	18
19	15 51	15 48	15 15	15 11	14 49	14 47	14 43	14 44	14 56	14 59	15 20	15 24	19
20	15 44	15 40	15 8	15 4	14 46	14 45	14 44	14 45	15 2	15 6	15 28	15 32	20
21	15 35	15 31	15 1	14 58	14 44	14 44	14 47	14 48	15 9	15 13	15 36	15 39	21
22	15 27	15 22	14 55	14 52	14 44	14 44	14 51	14 53	15 17	15 22	15 43	15 47	22
23	15 18	15 13	14 50	14 48	14 45	14 47	14 56	15 0	15 26	15 31	15 51	15 55	23
24	15 9	15 5	14 47	14 46	14 49	14 51	15 3	15 8	15 36	15 42	15 58	16 2	24
25	15 1	14 58	14 46	14 46	14 54	14 58	15 13	15 18	15 48	15 53	16 5	16 9	25
26	14 55	14 52	14 46	14 48	15 3	15 8	15 24	15 30	15 59	16 5	16 12	16 14	26
27	14 50	14 49	14 50	14 52	15 13	15 19	15 37	15 44	16 11	16 16	16 17	16 18	27
28	14 48	14 48	14 56	15 0	15 26	15 33	15 51	15 58	16 21	16 25	16 20	16 20	28
29	14 48	14 49	15 4	15 10	15 41	15 48	16 5	16 13	15 29	16 32	16 20	16 19	29
30	14 51	14 54	15 15	15 22	15 56	16 4	15 20	16 26	16 34	16 35	16 17	16 15	30
31	14 57	15 1	15 29	15 36	.. ..	.. ..	16 32	16 37	.. ..	.. ..	16 11	16 7	31

1865

MOON'S HORIZONTAL PARALLAX.

2

M	JANUARY.		FEBRUARY		MARCH,		APRIL.		MAY.		JUNE.		D
	Noon.	Midn.	Noon.	Midn.	Noon.	Midn.	Noon.	Midn.	Noon.	Midn.	Noon.	Midn.	
1	59 44	59 42	59 25	59 6	60 0	59 36	57 41	57 13	56 6	55 44	54 30	54 21	1
2	59 38	59 31	58 46	58 25	59 10	58 44	56 47	56 21	55 23	55 5	54 16	54 13	2
3	59 24	59 15	58 5	57 45	58 18	57 52	55 58	55 37	54 49	54 36	54 12	54 14	3
4	59 4	58 53	57 25	57 6	57 26	57 2	55 18	55 1	54 25	54 16	54 18	54 24	4
5	58 42	58 29	56 48	56 31	56 39	56 17	54 46	54 33	54 10	54 6	54 32	54 42	5
6	58 17	58 4	56 14	55 59	55 57	55 38	54 22	54 14	54 5	54 5	54 54	55 7	6
7	57 50	57 37	55 44	55 30	55 21	55 6	54 7	54 3	54 7	54 11	55 21	55 36	7
8	57 23	57 9	55 17	55 5	54 53	54 41	54 0	53 58	54 17	54 24	55 51	56 7	8
9	56 54	56 40	54 54	54 43	54 31	54 22	53 59	54 0	54 32	54 42	56 23	56 39	9
10	56 25	56 11	54 34	54 26	54 15	54 9	54 3	54 8	54 52	55 4	56 55	57 10	10
11	55 56	55 42	54 19	54 12	54 4	54 0	54 13	54 20	54 16	55 29	57 25	57 40	11
12	55 28	55 14	54 7	54 4	53 58	53 57	54 28	54 37	54 42	55 56	57 54	58 7	12
13	55 1	54 49	54 2	54 1	53 58	54 0	54 47	54 58	56 11	56 26	58 19	58 30	13
14	54 38	54 29	54 2	54 6	54 3	54 7	55 11	54 25	56 41	56 57	58 41	58 50	14
15	54 21	54 15	54 11	54 18	54 13	54 21	55 40	54 56	57 13	57 30	58 59	59 7	15
16	54 10	54 8	54 28	54 39	54 31	54 42	56 14	56 33	57 47	58 4	59 14	59 20	16
17	54 8	54 10	54 54	55 10	54 55	55 10	56 53	57 15	58 21	58 38	59 24	59 27	17
18	54 14	54 22	55 29	55 50	55 27	55 46	57 37	58 0	58 55	59 10	59 28	59 28	18
19	54 31	54 45	56 14	56 39	56 7	56 29	58 23	58 47	59 25	59 39	59 26	59 22	19
20	55 0	55 17	57 6	57 34	56 54	57 19	59 10	59 33	59 51	60 1	59 16	59 7	20
21	55 37	55 59	58 3	58 32	57 46	58 14	59 54	60 13	60 9	60 13	58 57	58 44	21
22	56 23	56 48	59 1	59 28	58 42	59 10	60 29	60 43	60 15	60 13	58 30	58 13	22
23	57 14	57 41	59 54	60 18	59 36	60 2	60 53	60 58	60 8	60 0	57 55	57 36	23
24	58 8	58 35	60 38	60 55	60 25	60 45	61 0	60 56	59 48	59 33	57 17	56 56	24
25	59 0	59 24	61 7	61 15	61 2	61 14	60 49	60 37	59 15	58 55	56 36	56 16	25
26	59 45	60 3	61 17	61 15	61 22	61 24	60 22	60 2	58 33	58 9	55 56	55 37	26
27	60 18	60 29	61 8	60 56	61 22	61 14	59 39	59 14	57 45	57 20	55 20	55 5	27
28	60 37	60 40	60 41	60 22	61 2	60 45	58 48	58 20	56 55	56 31	54 51	54 39	28
29	60 39	60 34	..	..	60 25	60 1	57 52	57 24	56 8	55 47	54 29	54 22	29
30	60 25	60 14	..	..	59 35	59 7	56 57	56 31	55 27	55 9	54 18	54 16	30
31	60 0	59 43	..	..	58 39	58 10	..	..	54 54	54 40	..	..	31

M	JULY.		AUGUST.		SEPT.		OCTOBER.		NOVEMBER		DECEMBER		D
	Noon.	Midn.	Noon.	Midn.	Noon.	Midn.	Noon.	Midn.	Noon.	Midn.	Noon.	Midn.	
1	54 16	54 19	55 17	55 35	57 37	58 5	59 21	59 48	61 5	61 15	60 45	60 40	1
2	54 25	54 33	55 56	56 18	58 32	59 0	60 13	60 35	61 20	61 20	60 31	60 18	2
3	54 44	54 56	56 41	57 5	59 25	59 49	60 54	61 9	61 15	61 5	60 1	59 41	3
4	55 11	55 27	57 30	57 54	60 10	60 28	61 19	61 24	60 51	60 32	59 18	58 53	4
5	55 44	56 3	58 12	58 41	60 42	60 52	61 24	61 19	60 10	59 45	58 27	58 0	5
6	56 23	56 43	59 2	59 21	60 57	60 58	61 9	60 55	59 18	58 49	57 32	57 5	6
7	57 3	57 23	59 37	59 51	60 55	60 47	60 36	60 15	58 20	57 51	56 39	56 14	7
8	57 42	58 0	60 1	60 8	60 36	60 21	59 51	59 24	57 22	56 54	55 51	55 29	8
9	58 17	58 32	60 11	60 12	60 3	59 44	58 57	58 29	56 28	56 3	55 10	54 54	9
10	58 46	58 58	60 9	60 3	59 22	59 0	58 1	57 34	55 41	55 21	54 39	54 28	10
11	59 7	59 15	59 55	59 45	58 37	58 13	57 8	56 43	55 3	54 47	54 19	54 12	11
12	59 21	59 24	59 32	59 18	57 50	57 28	56 19	55 58	54 34	54 23	54 8	54 7	12
13	59 26	59 26	59 4	58 48	57 6	56 45	55 38	55 20	54 14	54 7	54 7	54 10	13
14	59 25	59 22	58 31	58 15	56 26	56 8	55 4	54 49	54 3	54 0	54 15	54 22	14
15	59 17	59 12	57 58	57 42	55 50	55 35	54 37	54 26	54 0	54 0	54 30	54 39	15
16	59 5	58 57	57 25	57 9	55 20	55 7	54 18	54 10	54 3	54 7	54 50	55 2	16
17	58 49	58 39	56 53	56 37	54 54	54 43	54 5	54 0	54 12	54 18	55 15	55 28	17
18	58 28	58 17	56 22	56 7	54 33	54 25	53 58	53 56	54 26	54 34	55 42	55 56	18
19	58 5	57 51	55 53	55 39	54 17	54 11	53 56	53 57	54 44	54 54	56 10	56 24	19
20	57 37	57 23	55 25	55 12	54 5	54 2	54 0	54 3	55 5	55 18	56 39	56 53	20
21	57 7	56 51	55 0	54 49	53 59	53 58	54 9	54 15	55 31	55 45	57 8	57 22	21
22	56 35	56 19	54 38	54 29	53 58	54 0	54 23	54 32	56 0	56 17	57 36	57 50	22
23	56 2	55 46	54 21	54 14	54 3	54 9	54 43	54 56	56 34	56 52	58 4	58 18	23
24	55 31	55 16	54 9	54 6	54 16	54 26	55 10	55 26	57 11	57 31	58 32	58 45	24
25	55 2	54 50	54 5	54 5	54 37	54 51	55 44	56 3	57 52	58 13	58 57	59 9	25
26	54 39	54 29	54 7	54 12	55 7	55 25	56 25	56 47	58 34	58 55	59 20	59 30	26
27	54 22	54 16	54 20	54 29	55 46	56 8	57 12	57 37	59 16	59 35	59 38	59 44	27
28	54 13	54 12	54 41	54 56	56 32	56 58	58 3	58 30	59 54	60 10	59 49	59 51	28
29	54 14	54 18	55 13	55 32	57 26	57 54	58 57	59 24	60 24	60 35	59 50	59 47	29
30	54 25	54 34	55 54	56 17	58 24	58 53	59 49	60 12	60 42	60 46	59 41	59 31	30
31	54 46	55 0	56 43	57 9	..	..	60 33	60 51	..	..	59 19	59 4	31

Mean Refraction.

pp lt.	Refr.	App. Alt.	Refr.	App. Alt.	Refr.	App. Alt.	Refr.	App. Alt.	Refr.
°	'	°	'	°	'	°	'	°	'
0	33 0	5 0	9 54	10 0	5 15	20 0	2 35	34 0	1 24
5	32 10	5 5	9 46	10 10	5 10	20 10	2 34	34 30	1 23
10	31 22	5 10	9 38	10 20	5 5	20 20	2 32	35 0	1 21
15	30 35	5 15	9 30	10 30	5 0	20 30	2 31	35 30	1 20
20	29 50	5 20	9 23	10 40	4 56	20 40	2 29	36 0	1 18
25	29 6	5 25	9 15	10 50	4 51	20 50	2 28	36 30	1 17
30	28 23	5 30	9 8	11 0	4 47	21 0	2 27	37 0	1 16
35	27 41	5 35	9 1	11 10	4 43	21 10	2 26	37 30	1 14
40	27 0	5 40	8 54	11 20	4 39	21 20	2 25	38 0	1 13
45	26 20	5 45	8 47	11 30	4 34	21 30	2 24	38 30	1 11
50	25 42	5 50	8 41	11 40	4 31	21 40	2 23	39 0	1 10
55	25 5	5 55	8 34	11 50	4 27	21 50	2 21	39 30	1 9
0	24 29	6 0	8 28	12 0	4 23	22 0	2 20	40 0	1 8
5	23 54	6 5	8 21	12 10	4 20	22 10	2 19	41 0	1 5
10	23 20	6 10	8 15	12 20	4 16	22 20	2 18	42 0	1 3
15	22 47	6 15	8 9	12 30	4 13	22 30	2 17	43 0	1 1
20	22 15	6 20	8 3	12 40	4 9	22 40	2 16	44 0	0 59
25	21 44	6 25	7 57	12 50	4 6	22 50	2 15	45 0	0 57
30	21 15	6 30	7 51	13 0	4 3	23 0	2 14	46 0	0 55
35	20 46	6 35	7 45	13 10	4 0	23 10	2 13	47 0	0 53
40	20 18	6 40	7 40	13 20	3 57	23 20	2 12	48 0	0 51
45	19 51	6 45	7 35	13 30	3 54	23 30	2 11	49 0	0 49
50	19 25	6 50	7 30	13 40	3 51	23 40	2 10	50 0	0 48
55	19 0	6 55	7 25	13 50	3 48	23 50	2 9	51 0	0 46
0	18 35	7 0	7 20	14 0	3 45	24 0	2 8	52 0	0 44
5	18 11	7 5	7 15	14 10	3 43	24 10	2 7	53 0	0 43
10	17 48	7 10	7 11	14 20	3 40	24 20	2 6	54 0	0 41
15	17 26	7 15	7 6	14 30	3 38	24 30	2 5	55 0	0 40
20	17 4	7 20	7 2	14 40	3 35	24 40	2 4	56 0	0 38
25	16 44	7 25	6 57	14 50	3 33	24 50	2 3	57 0	0 37
30	16 24	7 30	6 53	15 0	3 30	25 0	2 2	58 0	0 35
35	16 4	7 35	6 49	15 10	3 28	25 10	2 1	59 0	0 34
40	15 45	7 40	6 45	15 20	3 26	25 20	2 0	60 0	0 33
45	15 27	7 45	6 41	15 30	3 24	25 30	1 59	61 0	0 32
50	15 9	7 50	6 37	15 40	3 21	25 40	1 58	62 0	0 30
55	14 52	7 55	6 33	15 50	3 19	25 50	1 57	63 0	0 29
0	14 36	8 0	6 29	16 0	3 17	26 0	1 56	64 0	0 28
5	14 20	8 5	6 25	16 10	3 15	26 10	1 55	65 0	0 26
10	14 4	8 10	6 22	16 20	3 12	26 20	1 55	66 0	0 25
15	13 49	8 15	6 18	16 30	3 10	26 30	1 54	67 0	0 24
20	13 34	8 20	6 15	16 40	3 8	26 40	1 53	68 0	0 23
25	13 20	8 25	6 11	16 50	3 6	26 50	1 52	69 0	0 22
30	13 6	8 30	6 8	17 0	3 4	27 0	1 51	70 0	0 21
35	12 53	8 35	6 5	17 10	3 3	27 15	1 50	71 0	0 19
40	12 40	8 40	6 1	17 20	3 1	27 30	1 49	72 0	0 18
45	12 27	8 45	5 58	17 30	2 59	27 45	1 48	73 0	0 17
50	12 15	8 50	5 55	17 40	2 57	28 0	1 47	74 0	0 16
55	12 3	8 55	5 52	17 50	2 55	28 15	1 46	75 0	0 15
0	11 51	9 0	5 48	18 0	2 54	28 30	1 45	76 0	0 14
5	11 40	9 5	5 45	18 10	2 52	28 45	1 44	77 0	0 13
10	11 29	9 10	5 42	18 20	2 51	29 0	1 42	78 0	0 12
15	11 18	9 15	5 39	18 30	2 49	29 30	1 40	79 0	0 11
20	11 8	9 20	5 36	18 40	2 47	30 0	1 38	80 0	0 10
25	10 58	9 25	5 34	18 50	2 46	30 30	1 37	81 0	0 9
30	10 48	9 30	5 31	19 0	2 44	31 0	1 35	82 0	0 8
35	10 39	9 35	5 28	19 10	2 43	31 30	1 33	83 0	0 7
40	10 29	9 40	5 25	19 20	2 41	32 0	1 31	84 0	0 6
45	10 20	9 45	5 23	19 30	2 40	32 30	1 30	86 0	0 4
50	10 11	9 50	5 20	19 40	2 38	33 0	1 28	88 0	0 2
55	10 2	9 55	5 18	19 50	2 37	33 30	1 26	90 0	0 0

Dip of
The Horizon.

Height of the Eye.	Dip of the Horizon.	Height of the Eye.	Dip of the Horizon.
ft.	'	ft.	'
1	0 59	19	4 1
2	1 24	20	4 2
3	1 42	21	4 3
4	1 58	22	4 4
5	2 12	23	4 4
6	2 25	24	4 4
7	2 36	25	4 5
8	2 47	26	5
9	2 57	27	5
10	3 7	28	5 1
11	3 16	29	5 1
12	3 25	30	5 2
13	3 33	31	5 2
14	3 41	32	5 3
15	3 49	33	5 3
16	3 56	34	5 4
17	4 4	35	5 4
18	4 11	38	6

Dip at Different
Distances.

Miles.	Height of the Eye in Feet.
	5 10 15 20 25 30
1	11 23 34 45 57 6
2	6 12 17 23 28 3
3	4 8 12 15 19 2
4	3 6 9 12 15 1
5	3 5 7 10 12 1
6	3 4 6 8 10 1
7	2 4 5 7 8 1
8	2 3 4 6 7 1
9	2 3 4 5 6 1
10	2 3 4 5 6 1
11	2 3 4 5 6 1
12	2 3 4 5 6 1
13	2 3 4 5 6 1
14	2 3 4 5 6 1
15	2 3 4 5 6 1
16	2 3 4 5 6 1
17	2 3 4 5 6 1
18	2 3 4 5 6 1
19	2 3 4 5 6 1
20	2 3 4 5 6 1

Table
Of Corrections

To be applied to the
Rising and Setting of
the Sun, Moon, and
Planets, when view-
ed from elevation
above the sea level—
Subtract from Rising
add to Setting.

ft.	s.	ft.	m.s.	ft.	m.s.
5	16	50	0 51	120	1 11
10	23	60	0 56	140	1 20
15	28	70	1 1	160	1 31
20	30	80	1 5	180	1 38
30	38	90	1 8	200	1 43
40	46	100	1 10	300	2 4

**Right Ascensions, and Declinations, and Semi-diurnal Arcs,
FOR LATITUDE 54° 10',
Of the Principal Fixed Stars**

NAMES.	Magni- tude.	Right Ascension. H. M. S.	Annual Variations "	Declination. ° ' "	Annual Variations "	Semi-diurnal Arcs. H. M.
α Andromedæ	2	0 1 25	+ 3'08	N 28 20 42	+19'90	9 19
γ Pegasi (Algenib)	3·2	0 6 17	+ 3'08	14 25 58	+20'03	7 27
α Cassiopeæ	Var.	0 32 52	+ 3'36	55 47 47	+19'81	sets not
β Ceti	2	0 36 49	+ 3'01	S 18 43 42	+19'82	4 12
α Ursæ Minor. (Polaris) . .	2	1 9 38	+18'84	N 88 35 23	+19'18	sets not
α Eripani (Achernar) . . .	1	1 32 40	+ 2'24	S 57 55 24	+18'43	rises not
α Arietes.	2	1 59 34	+ 3'36	N 22 49 21	+17'25	8 27
β Ceti	2·3	2 55 13	+ 3'13	3 33 28	+14'38	6 23
α Persei	2	3 14 42	+ 4'24	49 22 39	+13'22	sets not
β Tauri	3	3 39 28	+ 3'55	23 41 6	+11'50	8 34
α Tauri (Aldebaran) . . .	1	4 28 11	+ 3'43	16 14 6	+ 7'67	7 39
α Aurigæ (Capella)	1	5 6 43	+ 4'42	45 51 24	+ 4'22	sets not
β Orionis (Rigel)	1	5 8 3	+ 2'88	S 8 21 38	+ 4'50	5 17
β Tauri	2	5 17 46	+ 3'79	N 28 29 23	+ 3'50	9 21
β Orionis	2	5 25 7	+ 3'06	S 0 24 8	+ 3'02	6 1
α Leporis	3	5 26 47	+ 2'64	17 55 17	+ 2'92	4 10
ε Orionis	2	5 29 22	+ 3'04	1 17 28	+ 2'68	5 57
α Columbæ	2	5 34 46	+ 2'18	34 8 51	+ 2'22	sets not
α Orionis	Var.	5 47 52	+ 3'25	N 7 22 43	+ 1'08	6 45
α Argus (Canopus)	1	6 20 57	+ 1'33	S 52 37 23	- 1'82	rises not
α Canis Majoris (Sirius) . .	1	6 39 12	+ 2'64	16 32 1	- 4'62	4 27
α Geminorum (Castor) . . .	2·1	7 25 59	+ 3'84	N 32 10 52	- 7'40	10 13
α Canis Minoris (Proc.) . .	1	7 32 14	+ 3'14	5 34 7	- 8'87	6 35
β Geminorum (Pollux) . . .	1·2	7 37 3	+ 3'68	28 20 57	- 8'28	9 20
α Hydræ	2	9 20 57	+ 2'95	S 8 4 30	-15'37	6 49
α Leonis (Regulus)	1·2	10 1 11	+ 3'20	N 12 37 32	-17'40	7 17
α Ursæ Majoris	2	10 55 22	+ 3'77	62 28 44	-19'34	sets not
β Leonis	2·3	11 6 55	+ 3'20	21 15 46	-19'66	8 16
β Leonis	2	11 42 10	+ 3'06	15 19 36	-20'09	7 34
γ Ursæ Majoris	2·3	11 46 43	+ 3'19	54 26 43	-20'02	sets not
α Crucis	1	12 19 6	+ 3'26	S 62 20 58	-19'94	rises not
β Corvi	2·3	12 27 18	+ 3'13	22 39 0	-19'98	3 44
α Virginis (Spica)	2	13 18 5	+ 3'15	10 27 21	-18'95	5 5
β Centauri	1	13 54 19	+ 4'15	59 43 11	-17'69	rises not
α Bootis (Arcturus)	1	14 9 30	+ 2'73	N 19 53 12	-18'93	8 5
α Centauri	1	14 30 28	+ 4'03	S 60 16 24	-15'06	rises not
ε Bootis	2·3	14 39 5	+ 2'62	N 27 38 41	-15'42	9 13
α Libræ	2·3	14 43 25	+ 3'30	S 15 28 43	-15'24	4 34
β Ursæ Minoris	2	14 51 8	- 0'26	N 74 42 25	-14'75	sets not
β Libræ	2	15 9 45	+ 3'22	S 8 52 57	-13'60	5 14
α Coronæ Borealis	2	15 28 58	+ 2'54	N 27 10 15	-12'36	9 8
α Serpentis	2·3	15 37 37	+ 2'95	6 51 9	-11'63	6 42
α Scorpii (Antares)	1·2	16 21 8	+ 3'67	S 26 7 46	- 8'44	3 15
α Trianguli Australis . . .	2	16 34 24	+ 6'27	68 46 27	- 7'44	rises not
α Herculis	Var.	17 8 29	+ 2'73	N 14 32 48	- 4'44	7 29
β Draconis	3·2	17 27 23	+ 1'35	52 24 9	- 2'85	sets not
α Lyræ (Vega)	1	18 32 22	+ 2'03	38 39 36	+ 3'10	sets not
β Lyræ	Var.	18 45 6	+ 2'21	33 12 28	+ 3'88	10 31
γ Aquilæ	3	19 39 50	+ 2'85	10 17 12	+ 8'45	7 2
α Aquilæ (Altair)	1·2	19 44 12	+ 2'93	8 30 51	+ 9'17	6 51
β Aquilæ	4	19 48 41	+ 2'94	6 4 19	+ 8'66	6 37
α Pavonis	2	20 14 57	+ 4'80	S 57 9 49	+11'08	rises not
α Cygni	2·1	20 36 50	+ 2'04	N 44 47 58	+12'66	sets not
α Cephei	3	21 15 21	+ 1'44	62 0 51	+15'10	sets not
β Aquarii	3	21 24 27	+ 3'16	S 6 9 48	+15'60	5 29
β Cephei	3	21 26 54	+ 0'80	N 69 58 6	+15'70	sets not
α Aquarii	3	21 58 51	+ 3'08	S 0 58 28	+17'29	5 58
α Gruis	2	21 59 43	+ 3'82	47 36 46	+17'16	rises not
α Piscium Australis	1·2	22 50 11	+ 3'33	30 20 13	+19'95	2 29
α Pegasi (Markab)	2	22 58 2	+ 2'98	N 14 28 46	+19'30	7 27

General Tide Table,

By which the times of High Water may be CORRECTLY FOUND on ANY Day.

N.B.—ADD to the time of High Water in the Tide Table in this Almanack, the Hour and Minutes in the Column opposite the Place required.

ENGLAND.		H.M.			H.M.			H.M.
Alderney Pier. . .	7	35	Burrey Harbour..	6	50	Eyemouth	3	1
Alne River	3	35	Cardiff	6	50	Leith Pier	3	1
Barnstaple Bar ..	6	20	Cardigan Bar ..	7	50	Montrose	2	3
Berwick	3	8	Caermarthen Bar ..	7	0	Tay Bar	2	3
Blakeney	7	40	Carnarvon Bar .	9	50	Wick	10	
Blythe	3	35	Denbigh	3	5			
Boston.. ..	8	5	Fisgard Bay	7	20			
Bridgewater	7	35	Milford Haven..	6	35			
Bridlington.. ..	5	20	Newport	7	35			
Carlisle	0	50	Pembroke	6	54			
Chatham	1	44	Skerries	10	35			
Christchurch .	9	40	Smalls and Swansea..	6	40			
Dartmouth.. ..	6	55	Strumble Head	7	5			
Exmouth Bar ..	7	15						
Falmouth	6	20						
Flamboro' Head ..	5	20						
Flatholm	7	18						
Fowey	6	20						
Gravesend	2	20						
Guernsey (Eng.Chan)	7	20						
Hartlepool	4	35						
Humber River ..	6	20						
Ilfracombe	6	20						
Ipswich	0	50						
Jersey (En. Ch.) ..	7	0						
Land's End	5	20						
Longships	5	20						
Lyme Regis	7	20						
Needles Point ..	10	35						
Newcastle	4	50						
Penzance	5	20						
Plymouth Dock..	6	20						
Poole	9	50						
Ramsgate	0	36						
Robin Hood's Bay ..	4	35						
Scarborough	5	15						
Scilly Islands ..	5	0						
Sheerness	1	29						
Spithead	10	20						
St. Ives	5	20						
Tees River	4	20						
Torbay.. ..	6	50						
Tynemouth Bar ..	3	40						
Weymouth.. ..	7	20						
Whitby	4	35						
Wisbeach	8	20						
Yarmouth Roads ..	9	30						
Yarmouth, IsleWight	10	20						

TIDE TABLES—JANUARY, 1865.

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M	D	Southampton & Portsmouth				Hull & Bridport				Sunderland & Shields				Gravelly				Gravelly			
		Morn	Even	Portmth. Height.	Datum—Sill of North Dock Gates.	Morn	Even	Hull Height.	Low Water Level of Ordinary Spring Tides.	Morn	Even	Shields Height.	Low Water Level of Ordinary Spring Tides.	Morn	Even	Gravelly Height.	Low Water Level of Ordinary Spring Tides.	Morn	Even	Gravelly Height.	Low Water Level of Ordinary Spring Tides.
1	2	1 34	1 55	19 3		8 42	9 12	1 21	3	5 33	6 44	14 1	6	7 12	7 38	12 1	4	4 15	4 37	23 4	11
2	3	2 17	2 40	18 11		9 23	9 48	20 8		6 18	7 31	13 6	1	7 57	8 20	11 10	9	4 58	5 20	22 9	11
3	4	3 6	3 27	18 7		10 15	10 35	19 11		7 10	8 30	12 10		8 45	9 9	11 5	2	5 43	6 8	22 2	9
4	5	3 53	4 18	18 1		11 4	11 35	19 0		8 1	9 35	12 2		9 34	10 0	10 9	9	6 30	6 58	21 9	9
5	6	4 49	5 18	17 6		0 42	1 17	17 4		9 2	10 47	11 8		10 32	11 1	10 2	5	7 25	7 55	21 1	5
6	7	5 53	6 29	17 2		1 49	2 26	17 3		10 11	11 23	11 11		11 37	0 47	9 9	3	8 26	9 3	20 3	3
7	8	7 3	7 33	17 1		3 2	3 35	17 11		11 0	1 3	12 1		0 12	0 47	9 11	11	9 40	10 17	20 3	5
8	9	8 20	8 53	17 5		4 5	4 38	18 8		1 3	1 34	12 1		1 17	2 0	10 3	8	10 56	11 33	20 5	11
9	10	9 27	9 55	17 11		5 56	5 34	19 4		2 2	2 27	13 4		2 33	3 1	10 5	11	0 38	1 6	20 11	5
10	11	10 23	10 48	18 3		6 38	6 18	19 8		3 30	3 51	13 7		3 32	4 0	11 1	10	1 32	1 55	21 5	3
11	12	11 9	11 29	18 5		7 17	7 35	20 3		4 4	4 44	13 10		4 25	5 3	11 7	9	2 16	2 36	22 1	6
12	13	11 51	12 18	18 7		8 27	8 46	20 2		5 19	5 37	13 9		5 9	6 11	11 7	8	3 35	3 51	22 2	4
13	14	0 12	0 30	18 8		9 35	9 53	19 11		6 54	7 13	13 6		6 25	6 41	11 7	7	4 41	4 57	21 11	4
14	15	0 48	1 6	18 9		10 12	10 29	18 5		7 7	7 26	12 6		6 59	7 16	11 6	6	5 15	5 31	21 6	1
15	16	1 21	1 38	18 8		11 35	11 51	17 8		8 29	8 48	11 3		7 33	7 52	11 3	5	6 41	6 57	20 11	6
16	17	1 54	2 13	18 7		0 2	0 19	16 10		9 28	10 5	10 9		8 8	8 26	10 11	4	7 48	7 58	20 1	8
17	18	2 29	2 46	18 2		1 11	1 28	15 11		10 42	11 18	10 8		9 21	9 38	10 0	3	8 23	8 43	20 1	1
18	19	3 3	3 18	17 10		2 21	2 37	14 4		11 53	1 0	11 0		9 58	10 23	9 6	2	9 21	9 38	19 6	1
19	20	3 39	3 56	17 4		3 35	3 51	13 11		12 10	1 11	11 11		10 53	11 31	9 0	1	10 53	11 31	19 6	6
20	21	4 4	4 41	16 11		4 42	4 58	12 16		1 0	1 1	10 9		0 42	1 14	8 11	0	11 11	12 10	19 2	3
21	22	5 11	5 48	16 6		5 49	6 24	11 11		2 27	3 0	11 10		0 42	1 14	9 2	10	12 27	1 10	19 10	10
22	23	6 24	7 0	16 5		6 56	7 34	10 4		3 35	4 1	10 9		1 54	2 28	10 2	9	1 15	1 44	19 10	9
23	24	7 34	8 15	16 8		8 49	9 21	17 3		4 48	5 27	11 0		3 0	3 28	10 10	8	2 4	2 32	19 9	8
24	25	8 49	9 21	17 3		9 40	10 17	18 0		5 56	6 35	11 7		4 43	5 11	11 4	7	3 53	4 17	11 4	5
25	26	9 40	10 17	18 0		10 41	11 18	18 7		6 56	7 35	12 7		5 30	5 51	12 4	6	5 43	6 12	11 4	4
26	27	10 41	11 18	18 11		11 28	12 4	19 4		8 4	9 43	13 0		6 13	6 32	12 9	5	6 13	6 32	12 9	3
27	28	11 28	12 4	19 3		9 41	10 19	21 11		9 41	10 19	14 7		7 41	8 3	13 15	4	7 41	8 3	13 15	3
28	29	0 35	0 56	19 6		10 35	11 13	22 2		10 35	11 13	15 11		8 25	9 4	14 11	3	8 25	9 4	14 11	2
29	30	1 18	1 41	19 8		11 28	12 6	22 9		11 28	12 6	15 14		9 8	10 17	14 11	2	9 8	10 17	14 11	0
30	31	2 2	2 30	19 10		12 6	12 25	23 11		12 6	12 25	15 14		10 35	11 13	15 14	1	10 35	11 13	15 14	1

TIDE TABLES.—FEBRUARY, 1865.

M D 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28

GREENOCK			LONDON			CORK			Sunderland & Shields			Hull & Bridport			Southampton & Portsmouth		
Morn	Even	Height	Morn	Even	Height	Morn	Even	Height	Morn	Even	Sunld. Height.	Morn	Even	Hull Height.	Morn	Even	Portm. Height
H. M. Ft. In.	H. M. Ft. In.	H. M. Ft. In.	H. M. Ft. In.	H. M. Ft. In.	H. M. Ft. In.	H. M. Ft. In.	H. M. Ft. In.	H. M. Ft. In.	H. M. Ft. In.	H. M. Ft. In.	H. M. Ft. In.	H. M. Ft. In.	H. M. Ft. In.	H. M. Ft. In.	H. M. Ft. In.	H. M. Ft. In.	H. M. Ft. In.
3 16 3 34 9 9 3 3 50 4 18 9 9 3 4 40 5 10 8 9 5 42 6 18 8 4 6 55 7 35 8 58 9 0 2 9 35 10 53 9 0 2 11 16 11 36 9 4 2 0 16 0 35 9 6 6 11 143 9 8 8 6 155 2 41 9 4 2 27 3 12 9 2 3 29 3 44 8 11 4 3 4 28 8 7 3 47 5 14 8 3 1 7 1 7 49 8 8 2 8 33 9 12 8 9 2 9 42 10 9 9 11 10 34 11 1 50 9 11 3 11 27 11 50 9 11 3 0 40 1 5 10 5 1 25 1 48 10	3 34 4 18 5 10 6 18 7 35 8 58 9 35 10 53 11 16 11 36 0 35 1 11 1 43 2 14 2 41 3 12 3 44 4 28 5 14 6 28 7 1 7 49 8 33 9 12 9 42 10 34 11 27 0 14 10 1 5 10 5 1 25 0 40 1 5 10 5 1 25 1 48 10	9 9 3 3 50 4 18 5 10 6 18 7 35 8 58 9 35 10 53 11 16 11 36 0 35 1 11 1 43 2 14 2 41 3 12 3 44 4 28 5 14 6 28 7 1 7 49 8 33 9 12 9 42 10 34 11 27 0 14 10 1 5 10 5 1 25 0 40 1 5 10 5 1 25 1 48 10	8 30 8 49 11 10 9 8 9 38 11 0 2 10 32 10 2 6 11 42 9 4 0 20 9 8 1 40 9 8 2 55 10 3 3 22 3 46 10 9 4 11 4 34 10 11 5 15 11 3 5 32 5 50 11 7 6 6 22 11 8 7 8 7 24 11 7 7 38 7 53 11 3 8 10 8 26 10 11 9 23 9 44 9 10 5 10 9 10 36 9 3 10 9 10 52 8 10 11 8 11 52 9 2 1 12 1 55 9 11 2 32 3 2 10 10 3 28 3 52 11 9 4 19 4 45 12 3 5 8 5 31 12 8 5 54 6 15 13 1 6 34 6 57 13 1	6 48 7 13 14 3 7 39 8 3 13 3 8 29 9 1 12 2 9 38 10 16 11 5 10 55 11 37 11 0 0 53 1 25 11 11 2 16 12 7 3 18 3 34 13 6 4 22 4 40 13 11 4 55 5 13 14 0 5 29 5 44 13 10 6 30 6 49 13 0 7 8 7 26 12 5 8 39 9 10 11 1 9 46 10 28 10 6 11 11 11 5 32 11 5 1 55 2 18 13 8 2 44 3 8 13 10 3 28 3 50 15 1 4 11 4 49 15 7 4 55 5 18 15 11	9 52 10 17 20 10 10 43 11 6 19 7 11 34 11 18 1 0 9 0 47 17 0 1 20 1 57 16 5 2 38 3 21 16 10 3 55 4 28 17 9 4 57 5 22 18 8 5 45 6 7 19 6 6 27 6 42 19 11 7 1 7 16 20 2 7 32 7 48 20 5 8 5 8 36 8 50 20 4 9 6 9 19 19 10 9 35 9 53 19 2 10 12 10 29 18 4 10 51 11 16 17 5 11 45 16 7 0 18 0 56 15 9 1 34 2 14 15 10 2 51 3 34 17 0 4 8 4 34 18 7 5 0 5 24 20 1 5 50 6 16 21 4 6 36 6 59 22 0 7 21 7 59 22 6 8 5 8 26 22 10	2 47 3 11 19 0 3 33 3 55 18 4 4 20 4 48 17 6 5 21 5 58 17 1 6 36 7 17 16 8 8 3 8 40 16 11 9 17 9 45 17 4 10 10 10 35 17 11 10 56 11 17 18 4 11 35 11 53 18 7 0 10 18 9 0 27 0 42 18 10 0 58 1 15 18 11 1 31 1 46 18 9 2 0 2 15 18 7 2 30 2 46 18 2 3 4 3 20 17 9 3 40 4 1 17 3 4 28 4 55 16 4 5 28 6 10 16 4 6 51 7 33 16 5 8 15 8 51 17 1 9 23 9 50 17 11 10 16 10 42 18 8 11 7 11 28 18 9 11 50 19 7 11 50 0 14 0 36 19 11 0 58 1 21 20 2	Portm. Height	2 47 3 11 19 0 3 33 3 55 18 4 4 20 4 48 17 6 5 21 5 58 17 1 6 36 7 17 16 8 8 3 8 40 16 11 9 17 9 45 17 4 10 10 10 35 17 11 10 56 11 17 18 4 11 35 11 53 18 7 0 10 18 9 0 27 0 42 18 10 0 58 1 15 18 11 1 31 1 46 18 9 2 0 2 15 18 7 2 30 2 46 18 2 3 4 3 20 17 9 3 40 4 1 17 3 4 28 4 55 16 4 5 28 6 10 16 4 6 51 7 33 16 5 8 15 8 51 17 1 9 23 9 50 17 11 10 16 10 42 18 8 11 7 11 28 18 9 11 50 19 7 11 50 0 14 0 36 19 11 0 58 1 21 20 2									

GREENOCK			LONDON			CORK			Sunderland & Shields			Hull & Bridport			Southampton & Portsmouth		
Morn	Even	Height	Morn	Even	Height	Morn	Even	Height	Morn	Even	Sunld. Height.	Morn	Even	Hull Height.	Morn	Even	Portm. Height
H. M. Ft. In.	H. M. Ft. In.	H. M. Ft. In.	H. M. Ft. In.	H. M. Ft. In.	H. M. Ft. In.	H. M. Ft. In.	H. M. Ft. In.	H. M. Ft. In.	H. M. Ft. In.	H. M. Ft. In.	H. M. Ft. In.	H. M. Ft. In.	H. M. Ft. In.	H. M. Ft. In.	H. M. Ft. In.	H. M. Ft. In.	H. M. Ft. In.
3 16 3 34 9 9 3 3 50 4 18 9 9 3 4 40 5 10 8 9 5 42 6 18 8 4 6 55 7 35 8 58 9 0 2 9 35 10 53 9 0 2 11 16 11 36 9 4 2 0 16 0 35 9 6 6 11 143 9 8 8 6 155 2 41 9 4 2 27 3 12 9 2 3 29 3 44 8 11 4 3 4 28 8 7 3 47 5 14 8 3 1 7 1 7 49 8 8 2 8 33 9 12 8 9 2 9 42 10 9 9 11 10 34 11 1 50 9 11 3 11 27 11 50 9 11 3 0 40 1 5 10 5 1 25 1 48 10	3 34 4 18 5 10 6 18 7 35 8 58 9 35 10 53 11 16 11 36 0 35 1 11 1 43 2 14 2 41 3 12 3 44 4 28 5 14 6 28 7 1 7 49 8 33 9 12 9 42 10 34 11 27 0 14 10 1 5 10 5 1 25 0 40 1 5 10 5 1 25 1 48 10	9 9 3 3 50 4 18 5 10 6 18 7 35 8 58 9 35 10 53 11 16 11 36 0 35 1 11 1 43 2 14 2 41 3 12 3 44 4 28 5 14 6 28 7 1 7 49 8 33 9 12 9 42 10 34 11 27 0 14 10 1 5 10 5 1 25 0 40 1 5 10 5 1 25 1 48 10	8 30 8 49 11 10 9 8 9 38 11 0 2 10 32 10 2 6 11 42 9 4 0 20 9 8 1 40 9 8 2 55 10 3 3 22 3 46 10 9 4 11 4 34 10 11 5 15 11 3 5 32 5 50 11 7 6 6 22 11 8 7 8 7 24 11 7 7 38 7 53 11 3 8 10 8 26 10 11 9 23 9 44 9 10 5 10 9 10 36 9 3 10 9 10 52 8 10 11 8 11 52 9 2 1 12 1 55 9 11 2 32 3 2 10 10 3 28 3 52 11 9 4 19 4 45 12 3 5 8 5 31 12 8 5 54 6 15 13 1 6 34 6 57 13 1	6 48 7 13 14 3 7 39 8 3 13 3 8 29 9 1 12 2 9 38 10 16 11 5 10 55 11 37 11 0 0 53 1 25 11 11 2 16 12 7 3 18 3 34 13 6 4 22 4 40 13 11 4 55 5 13 14 0 5 29 5 44 13 10 6 30 6 49 13 0 7 8 7 26 12 5 8 39 9 10 11 1 9 46 10 28 10 6 11 11 11 5 32 11 5 1 55 2 18 13 8 2 44 3 8 13 10 3 28 3 50 15 1 4 11 4 49 15 7 4 55 5 18 15 11	9 52 10 17 20 10 10 43 11 6 19 7 11 34 11 18 1 0 9 0 47 17 0 1 20 1 57 16 5 2 38 3 21 16 10 3 55 4 28 17 9 4 57 5 22 18 8 5 45 6 7 19 6 6 27 6 42 19 11 7 1 7 16 20 2 7 32 7 48 20 5 8 5 8 36 8 50 20 4 9 6 9 19 19 10 9 35 9 53 19 2 10 12 10 29 18 4 10 51 11 16 17 5 11 45 16 7 0 18 0 56 15 9 1 34 2 14 15 10 2 51 3 34 17 0 4 8 4 34 18 7 5 0 5 24 20 1 5 50 6 16 21 4 6 36 6 59 22 0 7 21 7 59 22 6 8 5 8 26 22 10	2 47 3 11 19 0 3 33 3 55 18 4 4 20 4 48 17 6 5 21 5 58 17 1 6 36 7 17 16 8 8 3 8 40 16 11 9 17 9 45 17 4 10 10 10 35 17 11 10 56 11 17 18 4 11 35 11 53 18 7 0 10 18 9 0 27 0 42 18 10 0 58 1 15 18 11 1 31 1 46 18 9 2 0 2 15 18 7 2 30 2 46 18 2 3 4 3 20 17 9 3 40 4 1 17 3 4 28 4 55 16 4 5 28 6 10 16 4 6 51 7 33 16 5 8 15 8 51 17 1 9 23 9 50 17 11 10 16 10 42 18 8 11 7 11 28 18 9 11 50 19 7 11 50 0 14 0 36 19 11 0 58 1 21 20 2	Portm. Height	2 47 3 11 19 0 3 33 3 55 18 4 4 20 4 48 17 6 5 21 5 58 17 1 6 36 7 17 16 8 8 3 8 40 16 11 9 17 9 45 17 4 10 10 10 35 17 11 10 56 11 17 18 4 11 35 11 53 18 7 0 10 18 9 0 27 0 42 18 10 0 58 1 15 18 11 1 31 1 46 18 9 2 0 2 15 18 7 2 30 2 46 18 2 3 4 3 20 17 9 3 40 4 1 17 3 4 28 4 55 16 4 5 28 6 10 16 4 6 51 7 33 16 5 8 15 8 51 17 1 9 23 9 50 17 11 10 16 10 42 18 8 11 7 11 28 18 9 11 50 19 7 11 50 0 14 0 36 19 11 0 58 1 21 20 2									

GREENOCK			LONDON			CORK			Sunderland & Shields			Hull & Bridport			Southampton & Portsmouth		
Morn	Even	Height	Morn	Even	Height	Morn	Even	Height	Morn	Even	Sunld. Height.	Morn	Even	Hull Height.	Morn	Even	Portm. Height
H. M. Ft. In.	H. M. Ft. In.	H. M. Ft. In.	H. M. Ft. In.	H. M. Ft. In.	H. M. Ft. In.	H. M. Ft. In.	H. M. Ft. In.	H. M. Ft. In.	H. M. Ft. In.	H. M. Ft. In.	H. M. Ft. In.	H. M. Ft. In.	H. M. Ft. In.	H. M. Ft. In.	H. M. Ft. In.	H. M. Ft. In.	H. M. Ft. In.
3 16 3 34 9 9 3 3 50 4 18 9 9 3 4 40 5 10 8 9 5 42 6 18 8 4 6 55 7 35 8 58 9 0 2 9 35 10 53 9 0 2 11 16 11 36 9 4 2 0 16 0 35 9 6 6 11 143 9 8 8 6 155 2 41 9 4 2 27 3 12 9 2 3 29 3 44 8 11 4 3 4 28 8 7 3 47 5 14 8 3 1 7 1 7 49 8 8 2 8 33 9 12 8 9 2 9 42 10 9 9 11 10 34 11 1 50 9 11 3 11 27 11 50 9 11 3 0 40 1 5 10 5 1 25 1 48 10	3 34 4 18 5 10 6 18 7 35 8 58 9 35 10 53 11 16 11 36 0 35 1 11 1 43 2 14 2 41 3 12 3 44 4 28 5 14 6 28 7 1 7 49 8 33 9 12 9 42 10 34 11 27 0 14 10 1 5 10 5 1 25 0 40 1 5 10 5 1 25 1 48 10	9 9 3 3 50 4 18 5 10 6 18 7 35 8 58 9 35 10 53 11 16 11 36 0 35 1 11 1 43 2 14 2 41 3 12 3 44 4 28 5 14 6 28 7 1 7 49 8 33 9 12 9 42 10 34 11 27 0 14 10 1 5 10 5 1 25 0 40 1 5 10 5 1 25 1 48 10	8 30 8 49 11 10 9 8 9 38 11 0 2 10 32 10 2 6 11 42 9 4 0 20 9 8 1 40 9 8 2 55 10 3 3 22 3 46 10 9 4 11 4 34 10 11 5 15 11 3 5 32 5 50 11 7 6 6 22 11 8 7 8 7 24 11 7 7 38 7 53 11 3 8 10 8 26 10 11 9 23 9 44 9 10 5 10 9 10 36 9 3 10 9 10 52 8 10 11 8 11 52 9 2 1 12 1 55 9 11 2 32 3 2 10 10 3 28 3 52 11 9 4 19 4 45 12 3 5 8 5 31 12 8 5 54 6 15 13 1 6 34 6 57 13 1	6 48 7 13 14 3 7 39 8 3 13 3 8 29 9 1 12 2 9 38 10 16 11 5 10 55 11 37 11 0 0 53 1 25 11 11 2 16 12 7 3 18 3 34 13 6 4 22 4 40 13 11 4 55 5 13 14 0 5 29 5 44 13 10 6 30 6 49 13 0 7 8 7 26 12 5 8 39 9 10 11 1 9 46 10 28 10 6 11 11 11 5 32 11 5 1 55 2 18 13 8 2 44 3 8 13 10 3 28 3 50 15 1 4 11 4 49 15 7 4 55 5 18 15 11	9 52 10 17 20 10 10 43 11 6 19 7 11 34 11 18 1 0 9 0 47 17 0 1 20 1 57 16 5 2 38 3 21 16 10 3 55 4 28 17 9 4 57 5 22 18 8 5 45 6 7 19 6 6 27 6 42 19 11 7 1 7 16 20 2 7 32 7 48 20 5 8 5 8 36 8 50 20 4 9 6 9 19 19 10 9 35 9 53 19 2 10 12 10 29 18 4 10 51 11 16 17 5 11 45 16 7 0 18 0 56 15 9 1 34 2 14 15 10 2 51 3 34 17 0 4 8 4 34 18 7 5 0 5 24 20 1 5 50 6 16 21 4 6 36 6 59 22 0 7 21 7 59 22 6 8 5 8 26 22 10	2 47 3 11 19 0 3 33 3 55 18 4 4 20 4 48 17 6 5 21 5 58 17 1 6 36 7 17 16 8 8 3 8 40 16 11 9 17 9 45 17 4 10 10 10 35 17 11 10 56 11 17 18 4 11 35 11 53 18 7 0 10 18 9 0 27 0 42 18 10 0 58 1 15 18 11 1 31 1 46 18 9 2 0 2 15 18 7 2 30 2 46 18 2 3 4 3 20 17 9 3 40 4 1 17 3 4 28 4 55 16 4 5 28 6 10 16 4 6 51 7 33 16 5 8 15 8 51 17 1 9 23 9 50 17 11 10 16 10 42 18 8 11 7 11 28 18 9 11 50 19 7 11 50 0 14 0 36 19 11 0 58 1 21 20 2	Portm. Height	2 47 3 11 19 0 3 33 3 55 18 4 4 20 4 48 17 6 5 21 5 58 17 1 6 36 7 17 16 8 8 3 8 40 16 11 9 17 9 45 17 4 10 10 10 35 17 11 10 56 11 17 18 4 11 35 11 53 18 7 0 10 18 9 0 27 0 42 18 10 0 58 1 15 18 11 1 31 1 46 18 9 2 0 2 15 18 7 2 30 2 46 18 2 3 4 3 20 17 9 3 40 4 1 17 3 4 28 4 55 16 4 5 28 6 10 16 4 6 51 7 33 16 5 8 15 8 51 17 1 9 23 9 50 17 11 10 16 10 42 18 8 11 7 11 28 18 9 11 50 19 7 11 50 0 14 0 36 19 11 0 58 1 21 20 2									

M D 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28

GREENOCK.				LONDON.				CORK.				Sunderland & Shields.				Hull & Bridport.				Southampton & Portsmouth.			
M	D	Morn.	Even.	Heigh.	Morn.	Even.	Heigh.	Morn.	Even.	Heigh.	Morn.	Even.	Heigh.	Morn.	Even.	Morn.	Even.	Morn.	Even.	Morn.	Even.	Morn.	Even.
1	1	2 10	2 31	10 3	4 23	4 45	23 10	7 20	7 42	12 8	5 41	6 3	15 6	8 47	9 22	1 43	2 4	1 43	2 4	1 43	2 4	1 43	2 4
2	2	2 52	3 14	9 10	5 6	5 27	23 2	8 4	8 28	12 1	6 25	6 49	14 7	9 30	9 53	2 2	3 19	2 2	3 19	2 2	3 19	2 2	3 19
3	3	3 34	3 55	9 4	5 48	6 12	23 8	8 50	9 14	11 2	7 18	7 37	13 6	10 18	10 41	3 9	4 22	3 9	4 22	3 9	4 22	3 9	4 22
4	4	4 19	4 43	8 9	6 35	7 12	5	9 39	10 4	2 4	8 4	8 32	12 5	11 8	11 39	3 51	4 22	3 51	4 22	3 51	4 22	3 51	4 22
5	5	5 13	5 46	8 4	7 28	8 0	20 4	10 35	11 9	9 0	9 7	9 44	11 4	0 53	1 16	4 53	5 28	4 53	5 28	4 53	5 28	4 53	5 28
6	6	6 29	7 10	8 1	8 37	9 21	19 6	11 53	0 34	9 3	10 29	11 10	9	0 53	1 16	6 11	6 51	6 11	6 51	6 11	6 51	6 11	6 51
7	7	7 49	8 36	8 4	10 4	10 47	19 3	0 34	1 58	2 33	1 58	2 33	10 9	2 12	2 53	7 33	8 17	7 33	8 17	7 33	8 17	7 33	8 17
8	8	9 12	9 42	8 7	11 30	0 34	19 8	1 58	3 2	3 28	0 31	1 56	12 4	3 32	4 7	8 53	9 23	8 53	9 23	8 53	9 23	8 53	9 23
9	9	10 9	10 32	8 11	0 6	0 34	20 5	3 2	3 50	4 11	1 32	2 37	13 0	4 36	5 1	9 51	10 14	9 51	10 14	9 51	10 14	9 51	10 14
10	10	10 53	11 12	9 1	1 0	1 23	21 2	3 50	4 30	4 48	2 19	3 14	13 8	5 25	6 22	10 35	10 53	10 35	10 53	10 35	10 53	10 35	10 53
11	11	11 31	11 49	9 4	1 42	2 0	21 10	4 30	5 7	5 24	2 55	3 43	13 10	6 36	7 2	11 43	11 58	11 43	11 58	11 43	11 58	11 43	11 58
12	12	0 23	0 7	9 6	2 18	2 34	22 2	5 39	6 8	6 53	3 57	4 11	13 11	7 6	7 21	0 28	0 45	0 28	0 45	0 28	0 45	0 28	0 45
13	13	0 57	1 13	9 8	2 50	3 5	22 5	6 36	7 10	7 23	4 25	5 14	14 0	7 34	8 23	1 1	1 17	1 1	1 17	1 1	1 17	1 1	1 17
14	14	1 27	1 44	9 8	3 19	3 33	22 6	7 10	8 13	8 32	4 57	5 47	13 9	8 38	9 24	1 33	1 48	1 33	1 48	1 33	1 48	1 33	1 48
15	15	2 0	2 13	9 6	4 19	4 35	22 2	8 13	9 17	9 10	5 6	6 18	13 4	9 7	10 218	2 2	2 17	2 2	2 17	2 2	2 17	2 2	2 17
16	16	2 27	2 43	9 3	4 50	5 52	9 9	8 13	9 17	10 8	6 38	7 41	12 8	9 43	10 218	2 35	2 54	2 35	2 54	2 35	2 54	2 35	2 54
17	17	3 0	3 18	9 0	5 20	6 16	20 8	8 49	9 38	10 4	7 19	8 37	11 5	10 23	10 44	3 12	3 35	3 12	3 35	3 12	3 35	3 12	3 35
18	18	3 34	3 57	8 5	5 56	6 39	20 2	9 38	10 38	11 20	8 6	9 11	9 54	11 11	11 44	3 56	4 24	3 56	4 24	3 56	4 24	3 56	4 24
19	19	4 16	4 43	8 5	6 39	7 21	9 6	10 38	0 44	1 26	10 37	11 19	10 9	1 0	1 16	4 55	5 38	4 55	5 38	4 55	5 38	4 55	5 38
20	20	5 15	5 56	8 1	7 30	8 31	9 2	10 38	0 44	1 26	10 37	11 19	10 9	1 0	1 16	6 21	7 2	6 21	7 2	6 21	7 2	6 21	7 2
21	21	6 37	7 20	8 8	8 45	9 29	19 6	0 44	2 4	2 33	0 35	1 56	13 9	2 24	3 3	7 44	8 21	7 44	8 21	7 44	8 21	7 44	8 21
22	22	8 3	8 42	9 2	10 13	10 56	19 6	2 4	3 3	3 29	1 31	2 42	14 9	3 37	4 6	8 54	9 24	8 54	9 24	8 54	9 24	8 54	9 24
23	23	9 13	9 43	9 9	0 6	0 35	21 9	3 55	4 42	5 6	2 20	2 42	14 9	4 36	5 4	9 51	10 17	9 51	10 17	9 51	10 17	9 51	10 17
24	24	10 10	10 36	9 9	1 0	1 25	22 10	4 42	5 29	5 13	3 31	3 25	15 3	5 26	6 10	10 39	11 3	10 39	11 3	10 39	11 3	10 39	11 3
25	25	11 1	11 24	10 3	1 47	2 9	23 8	5 29	6 12	6 13	4 30	4 8	15 9	6 10	7 17	11 25	11 48	11 25	11 48	11 25	11 48	11 25	11 48
26	26	0 12	0 37	10 6	2 31	2 54	24 2	6 12	6 34	13 0	5 17	5 41	15 5	6 54	7 39	0 33	0 57	0 33	0 57	0 33	0 57	0 33	0 57
27	27	1 1	1 24	10 5	3 16	3 37	24 2	6 12	6 34	13 0	5 17	5 41	15 5	6 54	7 39	1 21	1 43	1 21	1 43	1 21	1 43	1 21	1 43
28	28	1 48	2 10	10 2	3 59	4 22	23 10	6 57	7 19	12 7	6 4	6 27	14 6	8 26	9 10	2 5	2 27	2 5	2 27	2 5	2 27	2 5	2 27
29	29	2 31	2 53	9 10	4 45	5 7	23 0	7 42	8 5	12 0	6 4	6 27	14 6	9 10	9 32	3	3	3	3	3	3	3	3

TIDE TABLE—APRIL, 1865.

GREENOCK			LONDON			CORK			Sunderland & Shields			Hull and Bridport.			Northampton & Portsmouth		
M	D	Heigh	M	D	Heigh	M	D	Heigh	M	D	Heigh	M	D	Heigh	M	D	Heigh
		Ft. in.			Ft. in.			Ft. in.			Ft. in.			Ft. in.			Ft. in.
1	2	36	1	2	22	1	2	11	1	2	13	1	2	19	1	2	18
2	3	42	2	3	40	2	3	43	2	3	12	2	3	20	2	3	19
3	4	52	3	4	50	3	4	53	3	4	22	3	4	30	3	4	28
4	5	63	4	5	62	4	5	64	4	5	33	4	5	41	4	5	39
5	6	75	5	6	74	5	6	76	5	6	45	5	6	53	5	6	51
6	7	87	6	7	86	6	7	88	6	7	57	6	7	65	6	7	63
7	8	99	7	8	98	7	8	100	7	8	69	7	8	77	7	8	75
8	9	111	8	9	110	8	9	112	8	9	81	8	9	89	8	9	87
9	10	123	9	10	122	9	10	124	9	10	95	9	10	103	9	10	101
10	11	135	10	11	134	10	11	136	10	11	109	10	11	117	10	11	115
11	12	147	11	12	146	11	12	148	11	12	125	11	12	133	11	12	131
12	13	159	12	13	158	12	13	160	12	13	141	12	13	149	12	13	147
13	14	171	13	14	170	13	14	172	13	14	157	13	14	165	13	14	163
14	15	183	14	15	182	14	15	184	14	15	173	14	15	181	14	15	179
15	16	195	15	16	194	15	16	196	15	16	189	15	16	197	15	16	195
16	17	207	16	17	206	16	17	208	16	17	201	16	17	209	16	17	207
17	18	219	17	18	218	17	18	220	17	18	215	17	18	223	17	18	221
18	19	231	18	19	230	18	19	232	18	19	229	18	19	237	18	19	235
19	20	243	19	20	242	19	20	244	19	20	241	19	20	249	19	20	247
20	21	255	20	21	254	20	21	256	20	21	253	20	21	261	20	21	259
21	22	267	21	22	266	21	22	268	21	22	265	21	22	273	21	22	271
22	23	279	22	23	278	22	23	280	22	23	277	22	23	285	22	23	283
23	24	291	23	24	290	23	24	292	23	24	289	23	24	297	23	24	295
24	25	303	24	25	302	24	25	304	24	25	301	24	25	309	24	25	307
25	26	315	25	26	314	25	26	316	25	26	313	25	26	321	25	26	319
26	27	327	26	27	326	26	27	328	26	27	325	26	27	333	26	27	331
27	28	339	27	28	338	27	28	340	27	28	337	27	28	345	27	28	343
28	29	351	28	29	350	28	29	352	28	29	349	28	29	357	28	29	355
29	30	363	29	30	362	29	30	364	29	30	361	29	30	369	29	30	367
30		375	30		374	30		376	30		373	30		381	30		379

Low Water Levels at Ordinary Spring Tides.

Low Water Levels of Ordinary Spring Tides.

Datum—Sill of North Dock Gates.

TIDE TABLES—MAY, 1865.

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GREENOCK			LONDON			CORK			Sunderland & Shields			Hull & Bridport			Southampton & Portsmouth		
M	D	Height.	M	D	Height.	M	D	Height.	M	D	Height.	M	D	Height.	M	D	Height.
1	1	3 37	1	1	5 53	1	1	8 52	1	1	7 21	1	1	10 25	1	1	3 16
2	2	4 26	2	2	6 44	2	2	9 47	2	2	8 17	2	2	11 22	2	2	4 17
3	3	5 27	3	3	7 42	3	3	10 50	3	3	9 24	3	3	1 6	3	3	5 10
4	4	6 34	4	4	8 53	4	4	11 58	4	4	10 37	4	4	2 12	4	4	6 17
5	5	7 46	5	5	10 8	5	5	0 37	5	5	11 43	5	5	3 17	5	5	7 26
6	6	8 50	6	6	11 13	6	6	1 42	6	6	0 16	6	6	4 10	6	6	8 33
7	7	9 40	7	7	12 11	7	7	2 35	7	7	1 6	7	7	5 2	7	7	9 21
8	8	10 20	8	8	13 11	8	8	3 18	8	8	2 27	8	8	6 6	8	8	10 42
9	9	11 11	9	9	14 11	9	9	4 0	9	9	3 31	9	9	7 14	9	9	11 14
10	10	12 11	10	10	15 11	10	10	5 12	10	10	4 4	10	10	8 39	10	10	12 50
11	11	13 6	11	11	16 11	11	11	6 55	11	11	5 17	11	11	9 46	11	11	1 0
12	12	0 35	12	12	17 11	12	12	7 34	12	12	6 41	12	12	10 36	12	12	2 0
13	13	1 11	13	13	18 11	13	13	8 17	13	13	7 38	13	13	11 39	13	13	3 27
14	14	2 23	14	14	19 11	14	14	9 4	14	14	8 50	14	14	0 18	14	14	4 21
15	15	3 3	15	15	20 11	15	15	10 14	15	15	9 50	15	15	1 32	15	15	5 32
16	16	4 40	16	16	21 11	16	16	11 14	16	16	10 3	16	16	2 40	16	16	6 44
17	17	5 50	17	17	22 11	17	17	12 11	17	17	11 3	17	17	3 39	17	17	7 55
18	18	6 26	18	18	23 11	18	18	13 5	18	18	12 0	18	18	4 36	18	18	8 58
19	19	7 42	19	19	24 11	19	19	14 11	19	19	13 11	19	19	5 30	19	19	9 56
20	20	8 18	20	20	25 11	20	20	15 11	20	20	14 11	20	20	6 19	20	20	10 33
21	21	9 18	21	21	26 11	21	21	16 11	21	21	15 11	21	21	7 5	21	21	11 34
22	22	10 16	22	22	27 11	22	22	17 11	22	22	16 11	22	22	8 19	22	22	0 1
23	23	11 58	23	23	28 11	23	23	18 11	23	23	17 11	23	23	9 49	23	23	1 5
24	24	0 25	24	24	29 11	24	24	19 11	24	24	18 11	24	24	10 33	24	24	2 28
25	25	1 11	25	25	30 11	25	25	20 11	25	25	19 11	25	25	11 34	25	25	3 41
26	26	2 36	26	26	31 11	26	26	21 11	26	26	20 11	26	26	12 34	26	26	4 4
27	27	3 20	27	27	1 11	27	27	22 11	27	27	21 11	27	27	1 34	27	27	5 3
28	28	4 1	28	28	2 11	28	28	23 11	28	28	22 11	28	28	2 34	28	28	6 3
29	29	5 24	29	29	3 11	29	29	24 11	29	29	23 11	29	29	3 34	29	29	7 3
30	30	6 41	30	30	4 11	30	30	25 11	30	30	24 11	30	30	4 34	30	30	8 3
31	31	7 58	31	31	5 11	31	31	26 11	31	31	25 11	31	31	5 34	31	31	9 3

Datum—Sill of North Dock Gates.

Low Water Level of Ordinary Spring Tides.

Low Water Level of Ordinary Spring Tides.

GREENOCK			LONDON			CORK			Sunderland and Shields.			Hull and Bridport			Southampton & Portsmouth		
M	D	Heigh	Morn	Even	Heigh	Morn	Even	Heigh	Morn	Even	Sunld. Height.	Morn	Even	Hull Height.	Morn	Even	Portm. Height.
		Ft. in.	H. M.	H. M.	Ft. in.	H. M.	H. M.	Ft. in.	H. M.	H. M.	H. M.	H. M.	H. M.	Ft. in.	H. M.	H. M.	Ft. in.
1	2	5 15	4 46	7 34	20	10 7	10 37	9 6	8 41	9 10	11 3	11 48	0 52	16 10	4 28	4 56	11
2	3	6 16	5 44	8 34	19	11 7	11 40	9 2	9 43	10 16	11	0 13	1 50	16 3	5 12	5 59	8
3	4	7 18	6 48	9 40	19	0 43	0 13	9 2	10 47	11 16	10 11	1 23	2 47	16 3	6 30	6 58	7
4	5	8 21	7 49	10 41	19	1 44	1 13	9 7	11 46	12 10	10 11	2 18	3 43	16 3	7 29	7 59	8
5	6	9 16	8 49	11 41	20	2 36	2 10	10 0	0 16	0 40	11 9	3 17	4 33	17 6	8 28	8 56	3
6	7	10 2	9 41	0 7	20	3 21	3 0	10 5	1 5	1 28	12 5	4 9	5 14	18 0	9 22	9 44	9
7	8	11 27	10 22	1 52	21	4 6	4 24	11 9	1 47	2 8	12 9	4 51	5 14	18 11	10 3	10 27	0
8	9	12 27	11 7	2 13	21	4 45	5 7	11 2	2 29	2 49	13 1	5 35	5 56	19 4	10 48	11 7	18
9	10	0 32	1 12	2 53	22	5 20	6 47	11 5	3 7	3 26	13 5	6 15	6 35	19 9	11 26	11 48	6
10	11	0 32	1 12	3 30	22	6 6	7 23	11 7	3 45	4 4	13 7	6 54	7 12	20 0	0 25	0 46	18
11	12	1 13	2 33	4 8	22	6 42	7 46	11 7	4 23	5 23	13 9	7 33	7 52	20 3	1 5	1 26	9
12	13	2 35	3 49	5 48	22	7 24	8 35	11 2	5 45	6 58	13 7	8 12	8 33	20 4	1 48	2 10	18
13	14	3 55	4 27	6 22	21	8 11	9 28	10 11	6 33	7 51	12 9	8 53	9 10	20 0	2 33	2 55	18
14	15	5 8	5 10	7 16	21	9 2	10 25	10 6	7 24	8 53	12 5	9 27	10 54	18 10	3 20	3 46	18
15	16	6 38	6 41	8 19	20	9 56	11 29	10 2	8 21	9 53	12 0	10 27	11 43	18 4	4 12	4 43	17
16	17	7 38	7 47	9 30	20	10 55	12 10	10 2	9 26	10 53	12 0	11 24	0 17	19 9	5 13	5 45	17
17	18	8 11	8 54	10 36	20	0 28	1 10	10 6	10 38	11 10	11 11	1 9	1 40	17 8	6 19	6 51	17
18	19	8 11	9 11	11 43	21	0 42	1 14	11 0	11 43	12 12	11 11	2 15	2 44	18 1	7 24	7 58	17
19	20	9 4	10 11	12 51	22	1 42	2 14	11 4	0 13	1 40	13 6	3 14	3 46	19 1	8 29	9 3	18
20	21	9 4	11 11	1 10	22	2 43	3 10	11 4	1 13	2 32	13 10	4 16	4 44	19 10	9 33	10 3	18
21	22	10 23	10 52	2 12	22	3 41	4 9	11 6	2 4	3 20	14 0	5 9	5 38	20 4	10 31	10 54	18
22	23	11 15	11 42	3 35	22	4 32	5 0	11 8	2 56	3 44	14 1	6 3	6 28	20 6	11 20	11 45	18
23	24	0 33	0 9	4 51	22	5 26	6 31	11 8	3 48	4 49	14 0	6 57	7 14	20 8	0 32	0 52	18
24	25	1 21	1 40	5 35	22	6 10	7 11	11 6	4 27	5 31	13 10	7 36	7 58	20 7	0 32	0 52	18
25	26	2 1	2 18	6 22	23	6 49	7 49	11 2	5 10	6 10	13 6	8 19	8 39	20 4	1 13	1 32	18
26	27	3 8	3 55	7 11	23	7 28	8 30	10 10	5 50	6 52	12 6	8 57	9 16	19 10	1 52	2 11	18
27	28	4 1	4 18	8 3	21	8 11	9 14	10 5	6 31	7 37	12 11	9 36	9 56	19 1	2 32	2 52	18
28	29	5 8	5 53	9 12	21	8 52	9 54	9 11	7 14	8 23	12 5	10 22	10 45	18 4	3 10	3 32	17
29	30	6 34	6 56	10 20	20	9 34	10 54	9 11	8 0	9 23	11 10	11 5	11 28	17 7	3 53	4 14	17

Datum.—Sill of North Dock Gates.

TIDE TABLES,—JULY, 1865.

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GREENOCK			LONDON			CORK			Sunderland and Shields			Hull and Bridport.			Northampton & Portsmouth			M	
Morn	Even	Height	Morn	Even	Height	Morn	Even	Height	Morn	Even	Height	Morn	Even	Height	Morn	Even	Height	D	
H. M.	H. M.	Ft In	H. M.	H. M.	Ft In	H. M.	H. M.	Ft In	H. M.	H. M.	Ft In	H. M.	H. M.	Ft In	H. M.	H. M.	Ft In	1	
4 55	5 17	8 5	7 18	7 40	20 0	10 17	10 39	9 6	8 49	9 13	11 3	11 56	0 21	0 53	16 10	4 35	4 57	16 11	2
5 47	6 19	8 2	8 4	8 36	19 6	11 10	11 43	9 2	9 45	10 18	10 11	0 21	0 53	16 10	5 28	5 50	16 11	3	
6 50	7 22	8 5	9 10	9 42	19 5	0 45	0 15	9 2	10 49	11 20	10 10	1 22	1 54	16 7	6 32	6 54	16 8	4	
7 53	8 25	8 8	10 14	10 47	19 6	0 45	1 17	9 6	11 52	12 1	11 1	2 22	2 54	16 7	7 35	7 57	16 8	5	
8 58	9 25	8 11	11 20	11 50	19 11	1 47	2 19	10 0	0 24	0 48	11 9	3 23	3 55	17 5	8 37	8 59	17 8	6	
9 52	10 15	8 11	0 42	1 42	20 6	2 45	3 11	10 6	1 15	1 38	12 4	4 20	4 43	18 3	9 33	9 56	17 8	7	
10 38	11 0	9 2	1 27	1 49	21 7	3 34	4 41	11 1	2 0	2 22	12 10	5 5	5 28	19 0	10 19	10 41	18 1	8	
11 24	11 48	9 4	2 10	2 32	22 2	4 18	5 29	11 6	2 44	3 47	13 3	6 33	6 56	20 1	11 3	11 26	18 4	9	
0 36	1 0	9 9	2 54	3 14	22 6	5 51	6 11	11 10	4 6	4 27	14 0	7 16	7 37	20 6	11 48	12 18	8 8	10	
1 20	1 41	9 10	3 35	3 54	22 8	6 20	6 50	12 0	4 46	5 2	14 2	7 56	8 18	20 9	0 8	0 31	18 10	11	
2 2	2 23	9 10	4 14	4 36	22 8	7 11	7 33	12 0	5 32	5 55	14 3	8 40	9 1	20 10	0 52	1 13	18 11	12	
2 45	3 8	9 8	4 58	5 19	22 8	7 57	8 21	11 5	6 17	6 41	14 0	9 23	9 45	20 6	1 35	1 57	19 0	13	
3 33	3 51	9 6	5 43	6 7	22 3	8 48	9 10	11 5	7 8	7 35	13 7	10 12	10 39	20 0	2 18	2 41	18 10	14	
4 16	4 43	9 1	6 33	6 59	21 8	9 37	10 5	10 10	8 2	8 32	13 0	11 5	11 37	19 3	3 5	3 29	18 7	15	
5 11	5 42	8 10	7 27	7 56	21 1	10 34	11 6	10 3	9 3	9 34	12 3	0 43	1 16	17 5	4 49	4 22	18 2	16	
6 12	6 47	8 7	8 26	8 9	20 5	11 36	0 47	10 0	10 10	10 47	11 9	0 43	1 16	17 5	5 53	5 19	17 3	17	
7 23	8 0	8 8	9 39	10 15	20 7	0 12	0 2	10 6	11 21	11 57	11 9	1 50	2 23	17 1	7 4	6 28	17 3	18	
8 28	9 8	8 11	10 52	11 29	20 7	1 23	2 0	10 6	0 59	1 31	12 2	2 58	3 30	18 1	8 16	7 39	17 3	19	
9 43	10 13	9 2	0 21	1 21	21 1	2 28	3 2	10 11	1 58	2 25	13 4	4 1	4 35	18 11	9 24	8 49	17 6	20	
10 41	11 6	9 4	0 35	1 21	21 7	3 32	3 59	11 2	2 47	3 10	13 7	5 3	5 30	19 8	10 21	9 53	18 0	21	
11 30	11 55	9 5	1 16	1 53	22 3	4 24	4 48	11 4	3 31	3 51	13 9	6 39	7 0	20 3	11 9	11 32	18 9	22	
0 39	1 2	9 8	2 16	2 38	22 5	5 12	5 33	11 7	4 10	4 30	13 11	7 20	7 41	20 5	11 53	12 18	9 9	23	
1 19	1 37	9 8	2 59	3 18	22 3	5 53	6 13	11 8	4 48	5 6	13 11	7 58	8 15	20 5	0 12	0 33	18 10	24	
1 54	2 11	9 6	3 37	3 54	22 5	6 29	6 46	11 8	5 25	5 43	13 9	8 33	8 50	20 2	0 52	1 10	18 10	25	
2 27	2 44	9 4	4 11	4 29	22 2	7 3	7 21	11 6	5 59	6 17	13 4	9 5	9 22	19 8	1 28	1 44	18 9	26	
3 0	3 17	9 1	4 46	5 2	21 10	8 13	8 31	10 10	6 37	6 55	12 10	9 41	9 59	19 0	2 0	2 17	18 5	27	
3 35	3 53	8 11	5 19	5 36	21 4	8 13	8 31	10 10	7 15	7 36	12 4	10 18	10 40	18 3	2 35	2 52	18 1	28	
4 11	4 30	8 8	5 53	6 13	20 11	8 50	9 10	10 5	7 58	8 19	11 9	11 11	11 24	17 5	3 10	3 30	17 8	29	
4 53	5 19	8 3	6 33	6 54	20 6	9 31	9 51	9 10	8 43	9 13	10 9	11 51	12 16	16 6	3 49	4 9	17 3	30	
			7 14	7 37	19 10	10 15	10 42	9 3							4 32	4 59	16 9	31	

Datum—Sill of North Dock Gates.

Low Water Level of Ordinary Spring Tides.

Low Water Level of Ordinary Spring Tides.

GREENOCK

LONDON

CORK

BANDERLAND AND SHIELDS

HULL AND BRIDPORT

SOUTHAMPTON & PORTSMOUTH

M	D	Morn	Even	Heigh
1	1	5 47	6 23	8 1
2	2	6 58	7 38	8 2
3	3	8 10	8 50	8 6
4	4	9 22	9 51	8 10
5	5	10 17	10 41	9 2
6	6	11 3	11 26	9 4
7	7	11 50		9 7
8	8	0 14	0 37	10 0
9	9	1 2	1 23	10 2
10	10	1 44	2 4	10 2
11	11	2 24	2 46	9 11
12	12	3 7	3 32	9 8
13	13	3 56	4 20	9 3
14	14	4 44	5 15	8 9
15	15	5 46	6 24	8 5
16	16	7 3	7 44	8 4
17	17	8 24	9 3	8 8
18	18	9 34	10 3	8 11
19	19	10 30	10 54	9 2
20	20	11 14	11 36	9 4
21	21	11 57		9 6
22	22	0 17	0 36	9 8
23	23	0 54	1 10	9 8
24	24	1 26	1 43	9 7
25	25	1 58	2 15	9 6
26	26	2 32	2 47	9 3
27	27	3 0	3 15	9 0
28	28	3 31	3 51	8 9
29	29	4 11	4 31	8 5
30	30	4 55	5 34	8 1
31	31	6 14	6 54	8 0

Morn	Even	Heigh
8 6	8 38	19 3
9 14	9 51	19 1
10 28	11 5	19 4
11 42		20 1
0 15	0 43	20 11
1 7	1 30	21 8
1 51	2 13	22 5
2 34	2 55	23 0
3 16	3 38	23 5
3 59	4 19	23 5
4 39	5 0	23 2
5 22	5 45	22 7
6 9	6 33	21 11
6 59	7 26	21 3
7 58	8 33	20 5
9 13	9 56	19 11
10 38	11 19	20 0
11 56		20 7
0 25	0 52	21 3
1 18	1 41	21 9
2 2	2 22	22 2
2 41	2 57	22 5
3 14	3 30	22 6
3 46	4 2	22 1
4 18	4 33	22 3
4 40	5 6	21 9
5 21	5 37	21 2
5 53	6 12	20 10
6 33	6 55	20 2
7 19	7 48	19 6
8 24	9 5	19 0

Morn	Even	Heigh
11 11	11 47	8 11
0 23		9 1
1 33	1 33	9 8
2 43	2 43	10 3
3 35	3 35	10 11
4 21	4 21	11 3
5 8	5 8	11 7
5 52	5 52	12 4
6 33	6 33	12 7
7 13	7 13	12 7
7 58	7 58	12 2
8 47	8 47	11 9
9 41	9 41	10 11
10 37	10 37	10 2
11 48	11 48	9 7
0 28	0 28	9 6
1 47	1 47	10 1
2 54	2 54	10 6
3 48	3 48	11 0
4 32	4 32	11 3
5 15	5 15	11 6
5 51	5 51	11 8
6 20	6 20	11 8
6 52	6 52	11 6
7 25	7 25	11 4
7 59	7 59	11 1
8 29	8 29	10 8
9 9	9 9	10 2
9 52	9 52	9 6
10 56	10 56	9 0
11 38	11 38	8 11

Morn	Even	Sunind. Height.
9 47	10 24	10 7
10 59	11 35	10 7
0 43	0 9	11 1
1 39	1 13	11 11
2 25	2 3	12 9
3 7	3 27	14 2
3 47	4 8	14 6
4 31	4 53	14 11
5 15	5 35	15 0
5 57	6 20	14 9
6 43	7 7	14 0
7 30	7 55	13 2
8 32	9 6	12 3
9 42	10 21	11 6
11 3	11 43	11 2
0 55	1 22	12 5
1 48	2 14	13 0
2 36	2 57	13 6
3 19	3 34	13 9
3 49	4 6	13 11
4 22	4 40	14 0
4 57	5 14	13 11
5 29	5 46	13 9
6 4	6 19	13 3
6 38	6 55	12 8
7 15	7 37	12 0
8 0	8 25	11 4
8 56	9 34	10 9
10 13	10 53	10 6

Morn	Even	Hull Height.
0 22	0 57	15 10
1 31	2 2	15 10
2 37	3 10	16 7
3 44	4 15	17 9
4 44	5 9	13 10
5 32	5 53	20 0
6 15	6 35	20 9
6 56	7 10	21 3
7 34	7 57	21 9
8 20	8 42	21 11
9 5	9 25	21 6
9 47	10 10	20 7
10 36	11 1	19 5
11 40		18 2
0 14	0 51	17 1
1 28	2 8	16 9
2 44	3 21	17 5
3 58	4 26	18 4
4 53	5 20	19 2
5 43	6 4	19 10
6 27	6 43	20 2
6 59	7 15	20 5
7 31	7 50	20 7
8 4	8 22	20 5
8 36	8 52	20 2
9 9	9 25	19 6
9 43	9 59	18 9
10 19	10 40	17 10
11 3	11 32	16 11
0 48	0 7	16 0

Morn	Even	Portm. Height.
5 28	6 51	5 5
6 39	7 16	5 5
7 52	8 31	9 9
9 2	9 33	17 4
9 57	10 22	18 0
10 44	11 6	18 7
11 27	11 49	18 11
0 33	0 11	19 3
1 17	1 37	19 6
1 58	2 10	19 4
2 43	3 7	18 10
3 33	3 57	18 4
4 24	4 54	17 7
5 27	6 51	17 1
6 45	7 25	16 10
8 5	8 44	17 3
9 14	9 44	17 9
10 11	10 34	18 2
10 55	11 14	18 7
11 34	11 52	18 9
0 25	0 10	18 10
0 59	0 43	18 11
1 32	1 17	18 10
2 6	2 21	18 4
2 35	2 51	17 11
3 8	3 29	17 5
3 50	4 12	17 0
4 41	5 18	16 6

TIDE TABLES—SEPTEMBER, 1865.

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GRENOCK				LONDON				CORK				Sunderland and Shields.				Hull and Bridport				Southampton & Portsmouth							
M	D	Morn	Even	Height	M	D	Morn	Even	Height	M	D	Morn	Even	Height	M	D	Morn	Even	Height	M	D	Morn	Even	Height			
1	1	7 35	8 13	4	1	10 26	19	2	3	1	0 19	0 59	9	4	1	11 32	0 39	10	10	1	1	55	2 38	16	2		
2	2	8 48	9 17	8	2	11 40	20	9	9	2	1 35	2 9	10	4	0	1 7	0 34	11	9	6	3	8	4 11	17	3		
3	3	9 47	10 15	9	3	0 10	20	10	10	3	2 37	3 6	11	1	1	1 7	2 25	13	7	8	4	10	4 38	18	8		
4	4	10 40	11 5	9	4	1 52	21	10	10	3	3 33	4 22	12	2	2	2 45	3 6	14	8	0	5	52	6 14	20	11		
5	5	11 25	11 50	9	5	1 50	22	9	9	4	4 23	5 28	12	2	3	3 27	4 15	15	0	6	6	35	6 55	21	10		
6	6		0 12	10	6	2 33	23	6	6	5	5 8	6 12	13	0	4	4 7	5 14	15	6	6	7	17	7 40	22	5		
7	7	0 37	1 10	6	7	3 15	23	11	0	6	5 52	6 12	13	0	4	5 2	6 14	15	6	6	8	2	8 24	22	5		
8	8	1 21	1 43	10	8	3 57	24	0	7	7	6 30	7 36	12	6	5	5 35	6 49	14	2	8	44	9 7	22	0	9		
9	9	2 3	2 26	10	9	4 39	23	7	8	8	7 13	8 26	11	10	6	6 22	7 40	13	3	9	9	28	9 53	20	9		
10	10	2 48	3 12	9	10	5 24	22	10	8	9	8 0	9 14	11	0	7	7 14	8 45	12	2	10	17	10 43	19	6	6		
11	11	3 32	3 55	9	11	6 11	22	1	9	9	8 47	9 14	11	0	8	8 9	9 23	10	2	11	14	11 52	18	0	0		
12	12	4 19	4 52	8	12	7 42	1	3	10	10	9 40	10 14	10	0	9	9 23	10 5	11	2	11	1	0	31	16	9	9	
13	13	5 27	6 4	8	13	8 14	20	2	10	9	10 50	11 28	9	3	10	10 46	11 28	10	10	1	1	14	1 52	16	3	3	
14	14	6 44	7 30	8	14	9 37	19	7	7	2	0 54	1 33	9	9	0	0 45	1 10	12	8	1	2	29	3 10	16	10	10	
15	15	8 10	8 51	8	15	10 31	8	8	8	4	2 13	2 36	10	4	1	1 32	1 55	12	9	3	3	48	4 14	17	11	11	
16	16	9 16	9 44	8	16	11 20	2	2	9	10	3 3	3 28	10	10	2	2 17	2 35	13	4	4	4	37	5 1	18	10	8	
17	17	10 9	10 33	9	17	0 35	21	0	0	8	4 31	4 11	11	1	3	3 24	3 9	13	4	8	5	23	5 41	19	8	5	
18	18	10 53	11 13	9	18	1 58	22	0	1	5	5 5	5 22	11	7	6	3 53	4 9	13	8	6	6	1	6 17	20	1	1	
19	19	11 29	11 47	9	19	2 31	22	4	2	7	6 37	5 54	11	8	7	4 27	4 22	14	1	7	7	32	7 18	20	4	7	
20	20		0 4	9	20	3 1	22	6	3	8	7 8	6 53	11	6	8	4 58	5 15	13	10	6	8	8	8 24	20	4	8	
21	21	0 21	0 41	9	21	3 12	22	6	4	9	8 18	7 24	11	2	9	5 31	5 46	13	6	6	9	9	9 28	19	7	9	
22	22	0 59	1 11	9	22	3 33	22	6	5	10	9 47	8 32	10	4	10	6 42	6 23	12	11	3	9	9	10 28	10	3	10	
23	23	1 27	1 44	9	23	4 3	22	3	6	11	10 53	9 19	9	9	11	7 25	7 49	11	7	3	9	9	11 23	9	4	11	
24	24	1 59	2 14	9	24	4 34	21	11	7	12	11 3	10 18	9	2	12	8 20	8 55	11	0	0	10	10	12 23	16	4	12	
25	25	2 29	2 46	9	25	5 5	21	5	8	13	12 8	11 41	8	11	13	9 22	10 17	10	6	6	0	0	3	0 31	15	9	13
26	26	3 4	3 18	8	26	6 20	20	3	9	14	13 8	12 10	9	9	14	10 59	11 37	10	3	1	1	23	2	1 16	1	1	14
27	27	3 37	3 59	8	27	6 22	20	3	10	15	14 8	11 41	9	9	15	11 3	12 10	17	10	6	1	1	23	2	1 16	1	15
28	28	4 26	4 56	8	28	7 13	19	9	11	16	15 3	12 41	8	11	16	12 10	13 7	10	6	6	0	0	3	0 31	15	9	16
29	29	5 39	6 17	8	29	8 26	19	2	12	17	16 9	13 41	8	11	17	13 11	14 10	17	10	6	1	1	23	2	1 16	1	16
30	30	7	7 39		30	9 52	19	3	13	18	17 9	14 25	9	4	18	14 10	15 37	10	3	1	1	1	23	2	1 16	1	17

GREENOCK			LONDON			CORK			Sunderland and Shields.			Hull and Bridport.			Southampton & Portsmouth		
M	D	Heigh	Morn	Even	Heigh	Morn	Even	Heigh	Morn	Even	Sunnd.	Morn	Even	Heigh	Morn	Even	Portmh.
		H. M. Ft. In.	H. M. Ft. In.	H. M. Ft. In.	H. M. Ft. In.	H. M. Ft. In.	H. M. Ft. In.	H. M. Ft. In.	H. M. Ft. In.	H. M. Ft. In.	Height.	H. M. Ft. In.	H. M. Ft. In.	Height.	H. M. Ft. In.	H. M. Ft. In.	Height.
1	2	8 20	10 32	11 10	19 9	1 2	1 42	10 3	0 43	1 8	12 10	2 38	3 12	17 5	7 58	8 33	17 3
3	4	9 20	11 45	0 36	22 0	3 4	2 40	11 2	1 32	1 55	14 0	3 48	4 12	19 0	9 0	9 26	18 1
5	6	10 10	0 12	0 59	1 23	5 4	3 28	12 0	2 18	2 40	14 11	4 37	5 0	20 7	9 49	10 15	18 10
7	8	11 01	0 59	1 45	2 7	4 22	4 18	12 4	3 1	3 21	15 4	5 24	5 47	21 9	10 39	11 1	19 6
9	10	11 45	1 45	2 28	2 50	5 27	5 49	13 1	3 42	4 4	15 9	6 8	6 29	22 3	11 22	11 44	19 9
11	12	0 10	2 28	3 12	3 35	6 11	6 32	13 0	4 29	4 53	15 9	6 51	7 13	22 8	0 31	0 56	20 1
13	14	1 0	3 12	4 20	4 43	7 39	7 16	12 6	5 16	5 40	15 2	7 39	8 3	22 1	1 18	1 40	19 8
15	16	1 45	4 20	5 53	6 19	8 27	8 52	10 11	6 3	6 30	14 3	8 26	8 49	22 10	2 4	2 28	19 0
17	18	2 28	5 29	6 46	7 15	9 19	9 49	11 1	6 55	7 22	13 2	9 9	9 34	20 10	2 52	3 16	18 4
19	20	3 14	6 19	7 41	8 32	10 24	11 3	9 2	7 51	8 23	12 0	10 54	11 30	17 10	3 41	4 8	17 5
21	22	4 2	7 15	8 38	9 54	11 44	0 46	9 6	9 0	9 41	11 1	0 50	1 29	16 1	4 45	5 25	16 9
23	24	5 3	8 12	9 34	10 11	0 27	1 2	10 8	10 21	11 1	10 9	0 50	1 29	16 1	6 4	6 43	16 6
25	26	6 20	9 18	10 11	11 11	1 35	2 12	10 1	11 39	0 41	11 10	2 4	2 41	16 7	7 21	7 57	16 9
27	28	7 22	10 3	11 42	12 0	2 38	3 1	10 8	0 11	1 28	12 6	3 14	3 45	17 7	8 30	8 59	17 3
29	30	8 50	1 13	1 31	2 1	3 21	3 44	11 0	1 7	2 8	13 1	4 10	4 32	18 6	9 23	9 45	17 10
31		9 42	2 13	2 22	3 3	4 34	4 52	11 5	2 26	2 43	13 6	4 53	5 14	19 4	10 7	10 24	18 3
		10 26	3 13	3 22	4 4	5 15	5 27	11 7	2 56	3 13	13 8	5 33	5 50	19 10	10 41	10 56	18 7
		11 34	4 13	4 22	5 5	6 14	6 27	11 6	3 28	3 42	13 9	6 4	6 21	20 1	11 13	11 29	18 8
		0 28	5 13	5 22	6 6	7 14	7 31	10 3	3 58	4 16	13 10	6 36	6 51	20 3	11 44	18 18	9 9
		1 3	6 14	6 22	7 7	8 14	8 27	11 6	4 32	4 48	14 9	7 8	7 26	20 4	0 1	0 20	18 10
		2 4	7 14	7 22	8 8	9 14	9 27	11 6	5 0	5 20	13 6	7 41	7 57	20 3	0 35	0 52	18 9
		3 14	8 14	8 22	9 11	10 27	10 43	11 3	5 36	5 55	13 11	8 9	8 28	19 11	1 7	1 24	18 7
		4 1	9 14	9 22	10 4	11 48	11 6	10 6	6 16	6 37	12 6	9 22	9 42	18 6	1 40	1 56	18 3
		5 5	10 14	10 22	11 7	12 48	12 6	11 3	6 59	7 25	11 11	10 3	10 29	17 8	2 14	2 35	17 10
		6 24	11 14	11 22	12 10	1 48	1 6	12 4	7 52	8 25	11 4	10 55	11 31	16 11	2 54	3 17	17 4
		7 43	12 14	12 22	13 11	0 32	1 1	13 4	9 3	9 42	10 11	0 51	1 16	3 3	3 43	4 13	17 0
		8 50	13 14	13 22	14 10	1 44	2 11	14 2	10 24	11 5	11 1	0 51	1 31	16 5	4 47	5 27	16 8
									11 38	12 11	12 10	2 10	2 39	17 9	6 9	6 46	16 9
									0 12	0 37	12 10	3 14	3 39	19 0	7 21	7 58	17 4
															8 27	8 56	18 1

Datum—Sill of North Dock Gates.

Low Water Level of Ordinary Spring Tides.

Low Water Level of Ordinary Spring Tides.

GREENOCK			LONDON			CORK			Sunderland & Shields			Hull & Bridport			Southampton & Portsmouth		
M	D	Heigh	Morn	Even	Heigh	Morn	Even	Heigh	Morn	Even	Sunland.	Morn	Even	Hull	Morn	Even	Portmth.
		Ft In	H M	H M	Ft In	H M	H M	Ft In	H. M.	H. M.	Ft. In.	H. M.	H. M.	Height.	H. M.	H. M.	Height.
1	1	10 14	0 5	0 33	22 5	3 3	3 3	12 0	1 29	1 56	14 2	4 33	5 5	1 20	9 54	10 20	18 11
2	2	11 4	1 1	1 26	23 0	4 4	4 4	12 2	2 22	2 45	14 8	5 28	5 52	21 5	10 44	11 10	19 4
3	3	11 58	1 50	2 14	23 4	5 4	5 4	12 4	3 8	3 32	14 9	6 16	6 40	21 7	11 35	11 59	19 5
4	4	0 25	2 39	3 3	23 4	6 4	6 4	12 4	3 55	4 19	14 10	7 4	7 29	21 8	0 46	0 21	19 5
5	5	1 14	3 26	3 49	23 2	7 8	7 8	12 8	4 43	5 6	14 7	7 53	8 14	21 3	1 33	1 9	19 3
6	6	1 59	4 11	4 34	22 7	8 8	8 8	11 8	5 31	5 53	14 2	8 38	8 59	20 9	2 16	2 38	18 11
7	7	2 42	4 55	5 17	21 11	9 8	9 8	11 2	6 17	6 40	13 5	9 22	9 44	19 9	3 1	3 23	17 6
8	8	3 24	5 39	6 2	21 2	10 8	10 8	11 7	7 4	7 29	12 7	10 8	10 33	18 8	3 47	4 10	17 11
9	9	4 6	6 26	6 50	20 9	11 8	11 8	11 1	8 49	8 22	11 10	10 58	11 27	17 7	4 36	5 4	16 3
10	10	4 54	7 15	7 41	20 0	12 8	12 8	11 5	9 54	9 20	11 2	11 56	1 3	16 9	5 36	6 10	16 8
11	11	5 51	8 11	8 45	19 6	13 8	13 8	11 2	11 1	11 32	10 10	0 28	2 5	16 3	6 42	7 15	16 7
12	12	7 1	9 19	9 54	19 5	14 8	14 8	11 3	11 1	0 4	11 3	1 34	3 4	16 10	7 48	8 18	16 11
13	13	8 7	10 27	11 0	19 7	15 8	15 8	11 3	0 28	0 54	11 5	2 35	3 3	16 4	8 44	9 12	17 3
14	14	9 5	11 29	11 56	20 1	16 8	16 8	11 6	1 19	1 41	12 5	3 30	4 23	17 4	9 37	9 59	17 9
15	15	9 56	12 17	0 22	20 8	17 8	17 8	11 6	2 0	2 20	12 9	4 23	5 6	18 11	10 20	10 37	18 0
16	16	10 40	13 56	1 52	21 0	18 8	18 8	11 9	2 39	2 58	13 1	5 45	6 5	19 4	10 57	11 13	18 3
17	17	11 17	14 34	2 44	21 4	19 8	19 8	11 2	3 14	3 33	13 5	6 22	7 17	19 9	11 34	11 53	18 6
18	18	11 57	15 11	3 40	21 9	20 8	20 8	11 5	3 50	4 8	13 7	6 59	7 56	20 0	0 29	0 49	18 7
19	19	0 18	16 0	4 40	22 0	21 8	21 8	11 6	4 27	4 46	13 9	7 37	8 34	20 3	1 9	1 29	18 9
20	20	0 58	17 1	5 33	22 2	22 8	22 8	11 6	5 6	5 25	13 9	8 16	9 17	20 3	1 49	2 10	18 9
21	21	1 37	18 1	6 33	22 2	23 8	23 8	11 5	5 47	6 9	13 7	8 56	10 0	20 5	2 32	2 53	18 4
22	22	2 16	19 1	7 32	22 10	24 8	24 8	11 2	6 30	6 56	13 2	9 35	10 19	20 5	3 13	3 38	18 0
23	23	2 56	20 1	8 32	21 6	25 8	25 8	11 6	7 19	7 45	12 4	10 23	10 48	18 10	4 4	4 31	17 8
24	24	3 36	21 1	9 32	21 6	26 8	26 8	11 6	8 13	8 43	12 4	11 17	11 50	18 3	5 2	5 34	17 3
25	25	4 28	22 1	10 32	21 0	27 8	27 8	11 6	9 15	9 51	11 10	0 1	0 23	17 7	6 8	6 45	17 2
26	26	5 21	23 1	11 32	20 7	28 8	28 8	11 5	10 27	11 4	11 9	1 0	1 33	17 6	7 21	7 58	17 6
27	27	6 27	24 1	12 32	20 7	29 8	29 8	11 5	11 39	0 42	12 2	2 7	2 40	18 0	8 32	9 3	18 0
28	28	7 42	25 1	13 32	20 7	30 8	30 8	11 5	0 11	0 42	12 9	3 13	3 45	18 11	9 34	10 2	18 7
29	29	8 54	26 1	14 32	21 1	31 8	31 8	11 5	1 11	1 40	13 6	4 15	4 45	19 10	10 31	11 5	18 10
30	30	9 53	27 1	15 32	21 3	32 8	32 8	11 7	2 2	2 33	13 11	5 12	5 39	20 5	10 31	11 5	18 10
31	31	10 52	28 1	16 32	21 7	33 8	33 8	11 7	2 6	2 33	13 11						

Descriptive List of Principal Lights—Scotch Coast

Name of Light.	Situation.	No. of Lights.	Appearance.	distance visible	Points of Compass within which light only towards the Carr	North latitude	West longitude.
INCHKEITH ..	Summit of Island, Ffifeshire..	One	Revolving once every minute ..	—21—	All round the Compass	56° 27'	3° 87'
ISLE OF MAY ..	Isle of May, in Ffifeshire, ..	Two	Fixed. Bear from each other N.E. & S.S.W. 4 W., 250 yards	21 & 15	All round the Compass	56 11	2 33
BELL ROCK ..	A sunk Reef, 11½ miles S. by E. ½ E. off Arbroath, Forfarshire	One	Revolving, shewing alternately a bright & red light every 2 min.	—15—	All round the Compass	56 26	2 23
GIRDLENESS ..	Girdleness, Kincardineshire..	Two	Fixed Lights, one above the other	20 & 16	NNE to WSW ½ W. by E'ward	57 8	2 3
BUCHANNESS ..	Buchanness, Aberdeenshire..	One	Flashing once every 5 seconds ..	—16—	N.b E to SW.b W. by E'ward	57 28	1 46
KINNIRDHEAD ..	Kinnairdhead, Aberdeenshire	One	Fixed	—15—	WNW.to SSE ½ E. N'y & E'y	57 42	2 1
TARBETNESS ..	Tarbetness, Cromartysire ..	One	Visible 2½ min., then eclipsed ¼ a min. To W. of the Ness Fixed	—18—	All round the Compass	57 51	3 48
DUNNETHEAD ..	On the Head, Caithnesshire..	One	Fixed	—23—	From SE ½ E to W. by N'ward	58 40	3 22
PENTLAND SKERRIES ..	On the Island	Two	Fixed N.N.E. & S.S.W., 100 feet	18 & 16	All round the Compass	58 41	2 55
START POINT ..	East point of Sanda Island ..	One	Fixed	—15—	All round the Compass	59 17	2 22
SUMBURGHHEAD ..	On S.W. point of Shetlands..	One	Fixed	—21—	NE by E ½ E to NW by N ½ N by S	59 51	1 16
NORTH RONALDSHAY ..	On North point	One	Flashing once every 10 seconds	—18—	All round the Compass	59 23	2 24
CAPE WRATH ..	On the Cape, N.W. point of Scotland..	One	Revolving, shewing alternately a bright & red light every 2 min.	—23—	From S. ½ E. to S.W. by W. 58	37 5	0
ISLAND GLASS ..	N.E. point of Island, Harris Isle	One	Fixed	—17—	W. by S. to E. N.E. ½ E. by S.	57 52	6 33
BARRAHEAD..	Highest point on Bernera Isle	One	Intermittent, continuing in view 2½ min., then eclipsed ¼ a min.	—33—	From N. by E. to E. N.E. 56	48 7	38
ARDNAMURCHAN ..	Southern point of Hebrides	One	Fixed	—18—	Westerly and Southerly	56 44	6 13
LISMORE ..	Ardnamurchan point, Argyleshire	One	Fixed	—15—	From N. E. by E. ½ E. to S. 56	27 5	36
CRINAN CANAL ..	Mousdale Island	One	Fixed, dark 2½ point over land ..	—4—	W. by S. N'y and W'y	56 27	5 33
RHINS OF ISLAY ..	East side	One	Fixed, red light	—17—	From E. to N.E. by E. 56	5 5	29
MULL OF CANTYRE..	Oversay Island, off S.W. point of Islay, Argyleshire ..	One	Flashing once every 5 seconds; disappears ¼ a mile off Cul point	—22—	All round the Compass	55 41	6 29
SANDA ISLAND ..	South western headland of Cantyre	One	Fixed	—15—	From NNE. ½ E. to S. by W. 55	19 5	49
DEVAR ISLAND ..	Ship Rock	One	Fixed, red light	—17—	½ W. Westerly	54 16	5 35
PLADDA ..	Eastern part	One	Revolves every ¼ minute ..	—14 & 17	NW ½ W to SE by E ½ E by SW ½ W	55 26	5 32
CORSEWALL..	Pladda Isle, off south east of Arran, county of Bute ..	Two	Fixed, vertical N. & S., 8 yards apart	—15—	From N.W. by W. Southerly to N.E. by E.	55 26	5 7
MULL OF GALLOWAY ..	W. side of entrance to Loch Ryan, in Wigtonshire ..	One	Revolving, shewing alternately a bright & red light every 2 min.	—23—	From N.E. by E, Northerly to S.W. ..	55 0	5 9
	Southern extremity of mainland of Scotland, Wigtonsh	One	Intermittent, continuing in view 2½ min., then eclipsed ¼ a min.	—23—	From N.E. to N.W. ½ W. 54	38 4	51

Descriptive List of Lights—Isle of Man

Name of Light.	Situation.	Latitude North. /	Longitude West. /	No. of Lights.	Fixed or Revolving.	Miles visible in clear weather.	Remarks.
POINT OF AYR	A quarter of a mile S.W. of the Point	54 25	4 22	One	R	—15—	Shewing alternately a bright and red light every 2 min. Visible from S. by W.N. E'y, to W. by N.
Peel Harbour	East side of Entrance	54 13	4 42	One	F	—8—	Revolving every 2 min. When in one they lead on [the Chicken Rocks.
CALF OF MAN	West side of Calf Island	54 3	4 50	Two	R	24&22	To be kept on the port hand on entering.
Port St. Mary	Pier Head	54 4	4 44	One	F	—9—	Also a light on Fort Island during herring fishing
Castletown Harbour	New Pier Head	54 5	4 39	Two	F	—8—	Not visible from Langness Point, but with 3 miles
Derbyhaven	Entrance of the Harbour	54 5	4 36	One	F	—2—	offing it will be seen N.E. $\frac{1}{2}$ E.; and the Calf
DOUGLAS	Douglas Head	54 9	4 28	One	F	—14—	Light, at the same time N.N., by W. $\frac{1}{4}$ W.
Douglas Harbour	North Pier Head	54 10	4 28	One	F	—6—	Red Light
Ramsey Harbour	South side of entrance	54 20	4 23	One	F	—10—	A Gong is sounded during foggy weather. 'Bahama
Bahama Bank Light Vessel	A mile off the S. E. tail of the Shoal. Moored in 11 fathoms,	54 20	4 12	Two	F	—10—	Bank' is painted on her sides. King William Bank Buoy, E. by N. $\frac{1}{2}$ N. nine miles.

Principal Lights—West Coast of England

Lee Scar	On the Rocks	54 52	3 25	One	F	—6—	On Piles. Base dries at 6 feet at low water.
Solway Light Vessel	Robin Rigg Channel	54 48	3 32	One	F	—6—	Red light. Moored in 4 $\frac{1}{2}$ fms. A Black Ball by day. Tolls a bell in foggy weather.
ST. BEES	St. Bees Head	54 31	3 38	One	F	—25—	Every minute. The Fixed Light is Red. N.W. by W. $\frac{1}{2}$ W. and S.E. by E. $\frac{1}{2}$ E. 340 yards.
WALNEY	S. Point of Walney Island	54 3	3 11	Two	1 R 1 F	—13—	Every 30 seconds,—Red. Var. in 1864, 23 $\frac{1}{2}$ W.
Morecombe Bay Light Vessel	In 12 fathoms	53 54	3 31	One	R	—10—	On Piles. A Bell is tolled in foggy weather.
River Wyre	N.E. elbow of N. Wharf Bank	53 57	3 2	One	F	—10—	N. and S. 850 feet. Shown while 9 feet water in the Channel,
Fleetwood	High Light in the Town,	53 56	3 1	Two	F	13 & 9	The upper Light Bright—the lower Red. The Lighthouse stands about 70 feet high, and bears by compass S.E. by E. $\frac{1}{2}$ E. from Buoy Nelson, 7 miles.
River Ribble	Low Light on Esplanade	53 45	3 1	Two	F	12 & 9	White about the bearings. N.W. by W. $\frac{1}{2}$ W. round by the N. to E., and red from E. to E. $\frac{1}{2}$ S.
GREAT ORMSHEAD	On Stanner Point, N. side of entrance	53 45	3 1	Two	F	—24—	Red Light. Painted red; carries Red Ball. In 25 feet at low water. Crosby Lightship S.E. $\frac{1}{4}$ S. 2 $\frac{1}{2}$ miles. N.W. Mark, E. by N. $\frac{1}{4}$ N., $\frac{3}{4}$ miles. Yellow Light. Painted Red; carries Red Ball.
Formby Light Vessel	North Point, Steep Cliffe	53 20	3 52	One	F	—8—	
Crosby Light Vessel	In the New Channel	53 32	3 11	Two	F	—8—	
	N.E. elbow of Gt. Burbo Bank	53 31	3 7	One	F	—8—	

Principal Lights—West Coast of England, continued

Name of Light.	Situation.	Lat- tude North. ° /	Long- tude West. ° /	No. of Lights.	Fixed or Revol- ving.	Miles visible in clear weather.	Remarks.
Black Rock	Rock Point, West side of the entrance of the Mersey	53 27	3 3	One	R	14—	Making a revolution every three minutes, show- ing two Bright Lights and one Red Light in due succession. A Bell is tolled in foggy weather.
Leasowe	On the shore, between the Mersey and the Dee Rivers	53 25	3 7	One	F	15—	Bidston Light open E. of Leasowe, and afterward to the W., lead up the Horse Channel.
BIDSTON	Bidston Hill	53 24	3 4	One	F	23—	Obscured when inward bound, bearing S.b.W. & W
Hoylake	New Hoylake Church	53 24	3 11	Two	F	13 & 11	The Upper Light ex. from N.N.W. round to the E'ward, the Lower from N. round to E'ward.
Liverpool N.W. Light Ship..	W. extreme of 3 and 4 fath. Tongue in 5½ fathoms.	53 27	3 17	One	R	10—	Moored in 6½ fathoms; exhibits a Black Ball during the day.
AIR	Air Point, at low water mark	53 22	3 19	One	F	9—	On Piles. A Bell is sounded in foggy weather.
LYNUS	Point Lynus	53 25	4 17	One	Fl.	16—	Flashing once every ten seconds.
SKERRIES	Highest Island..	53 25	4 36	One	F	16—	
STACK	South Stack Rock, off N.W. Point of Holyhead I.	53 18	4 42	One	R	20—	Revolving every 2 min. During foggy weather a smaller Bright Light is occasionally shown, 40 feet above the sea, and 30 yards N. of main Lighthouse.
BARDSEY	Bardsey Island	52 45	4 48	One	F	17—	sounded in foggy weather.
Cardigan Bay Light Vessel..	Cardigan Bay	52 22	4 54	One	R	9—	Red Light. Revolving every 30 sec. A Gong is
SOUTH BISHOP	South Bishop Rock	51 51	5 25	One	R	18—	Revolving every twenty seconds.
SMALLS	Smalls Island..	51 43	5 40	One	F	15—	Erected upon pillars 40 feet high.
ST. ANN'S	St. Ann's Point, Milford Haven	51 41	5 10	Two	F	20 & 18	High Light N. by W. & W., 609 feet from Low Light. When in one they lead clear of the Crow and Toes Rocks.
CALDY	Caldy Island, Southern part	51 38	4 41	One	F	20—	
MUMBLES	Mumbles Head	51 34	3 58	One	F	15—	
NASH	Nash Point	51 24	3 33	Two	F	19 & 17	High Light, S.E. by E. & E. and N.W. by W. & W. 1000 feet from Low Light. The Lights in one lead a cable's length Southward of the Nash Sand.
USK	W, side of entrance of River	51 32	3 0	Two	F	11—	Red. A Red Light is also shown up the river.
FLATHOLM	Flatholm Island. South point	51 23	3 7	One	F	18—	
LUNDY	On the ridge of Lundy Island	51 10	4 40	Two	1 R 1 F	31—	The Low Light (fixed) is only visible from the Westward, between N.N.W. and W.S.W. The Re- volving Light flashes every two minutes. [One The Lower Light is 50 feet in advance of the high
TREVOSE HEAD	On north-western part	50 33	5 1	Two	F	20 & 17	

Name of Light.	Situation.	Latitude North.	Longitude West.	No. of Lights.	Fixed or Revolving.	Miles visible in clear weather.	Remarks.
FASTNET	Summit of Rock	51 23 9	36 8 32	One	R	18—	Attaining its greatest brilliancy every 2 minutes
KINSALE	South Point of Old Head	51 36 8	32	One	F	21—	Red light is shown in a line to the Horse Rock in Courtmacsherry Bay, Bright to Seaward.
CORK HARBOUR or Queenstown	Roche Point, E. side of Entrance	51 48 8	15	One	F	4—	Red towards the sea to the Harbour Bright.
BALLYCOTTIN ..	East Elbow of Spit Bank, in 9 feet	51 51 8	16	One	F	8—	Red. From N.N.E. to S.E. by E. $\frac{1}{4}$ E. round by E.
MINEHEAD ..	Outer Island, West side of Bay ..	51 49 7	59	One	Fl.	18—	Every 10 secs. From E. $\frac{1}{4}$ N. round S. to W. $\frac{1}{4}$ N.
HOOK TOWER ..	South side of Head	52 0 7	35	One	Int.	21—	Bright 50 sec., obscured 10 secs. From E.N.E. $\frac{1}{4}$ N. [to W. $\frac{3}{4}$ S.]
SALTEE'S LIGHT VESSEL	East side entrance Waterford ..	52 7 6	56	One	F	16—	Carries a Ball. Moored in 32 fathoms. During foggy weather a Gong is sounded.
TUSKAR	Off Conningbeg Rock, the Southernmost of the Saltee Islands ..	52 2 6	40	Two	F	10—	Every two minutes. Two sides Bright, one Red. During foggy weather a Bell is tolled every half-minute. Red light seen 10 miles. [weather
ARKLOW LT.-VESSEL.	Tuskar Rock	52 12 6	12	One	R	15—	Carries a Ball. A Gong is sounded in foggy weather. The Lights bear from one another N. W. by W. $\frac{3}{4}$ W. and S.E. by E. $\frac{3}{4}$ E., 540 feet. When in one they lead between the India and Arklow Banks.
WICKLOW	S. end of Arklow Bank, in 22 faths	52 42 6	0	One	R	10—	The Lights are triangular. Carries a Ball. A Gong is sounded during foggy weather.
KISH LIGHT VESSEL	Wicklow Head.. ..	52 58 6	0	Two	F	21 & 16	Revolving every half-minute, showing a Bright and Red light alternately. During foggy weather A small Red Light. [A Bell is tolled.
Kingstown.. ..	Off N. Point of Kish Bank, Moored in 10 fathoms	53 19 5	56	Three	F	10—	The Lower Light which is much fainter than the Upper, is exhibited from half-flood to half-ebb. A Ball is hoisted at the same period during day-time.
POOLBEG.. ..	Centre of East Pierhead of Kings-town Harbour.. ..	53 18 6	8	One	R	9—	During foggy weather a Bell is tolled.
BAILEY	West Pierhead	53 20 6	9	One	F	2—	The Lower from half-flood to half-ebb. A Ball is hoisted during the same period by day; and in foggy weather a Bell is tolled every half-minute.
CARLINGFORD..	End of S. Wall, at the entrance to the River Liffy	53 20 6	9	Two	F	12—	Red Light. Every minute, 45 secs. red, and 15 Every minute and a half. [secs. obscured.
DUNDRUM BAY	End of N. Wall or N. Quay, Dublin	53 21 6	14	One	F	10—	
SOUTH ROCK	S.E. Point of Howth Island	53 22 6	3	One	F	15—	
COPELAND.. ..	Haulbowline Rock	54 1 6	5	Two	F	15—	
	St. John's Point	54 13 5	40	One	Int.	12—	
	On the Rock	54 24 5	25	One	R	12—	
	Small Copeland Island	54 42 5	32	One	F	16—	

Isle of Man Fairs

JANUARY.—5. St. Mark's, Malew.

FEBRUARY.—2. Greeba—12. Kirk Bride.—27. Baldwin.

MARCH.—17. St. John's.—25. Ramsey.—28. Peel.

APRIL.—5. Jurby.

MAY.—1. St. John's.—3. Sulby Cladagh.—10. Laxey.—12. St. Mark's.—15. Ballaugh.—26. Kirk Santon.

JUNE.—4. Sulby.—16. Kirk Michael.

JULY.—5. St. John's.—23. Sulby.

AUGUST.—5. Laxey.—12. Ballasalla.—26. Ballaugh.

SEPTEMBER.—29. Ballasalla.

OCTOBER.—10. Michael.—28. Arbory.

NOVEMBER.—1. St. John's.—8. Ramsey.—12. Douglas.—18. St. John's.

DECEMBER.—6. Colby, Kirk Arbory.—11. Kirk Andreas.

Those falling on Saturday, Sunday, or Monday, to be held on the following Tuesday—except the Tynwald Fair, which must be held on the 5th July, unless that day fall on a Sunday.

Cumberland—Abbey-Holme, Tuesday before Whitsunday, Oct. 29.—Alston Moor, last Thursday in May, Friday before 27th Sept., 1st Thur. in Nov.—Arclecdon Ap. 24, 1st Friday in June, 17 Sep.—Bootle, April 5, 26, August, 3, Sept. 24.—Brampton, April 22, 2nd Wed. after Whit. 2nd Wed. after 15th Sept.—Carlisle, Sat. next Whit., Aug. 26, Sept. 16, Sat. nearest 11th Nov.—Cockermouth, Feb. 18, Mon. before Easter, 1st and 3rd Wed. in May, Oct. 10.—Egremont, Feb. 18, 3rd Frid. in May, Sept. 13.—Ennerdale, 2nd Tues. in Sept.—Eskdale, 2nd Mon. in Sep. Garrigill, 3rd Frid. in May, 1st Frid. in Sep.—Gosforth, April 25th, Oct. 18.—Hesket Newmarket, every alternate Fri. from May till Whit., last Thur. in Aug., 2nd Thur. in Oct.—Ireby, Feb. 21, Oct. 18.—Keswick, 3rd Thursday after 1st May, Oct. 11, Sat. after 29th Oct.—Kirkoswald Thur. before Whit. Sun., Aug. 5.—Longtown, Thur. before Whit. Sun., Thur. before Sept. 30.—Nether Wasdale, 1st Mon. in Sep.—Newlands 1st Fri. in Sept.—Penrith, March 1, April 24, 25, 3rd Tues. in Oct., Tues. after Nov. 11.—Ravenglass, May 6, June 8, Aug. 5.—Rosely Hill, Whit. Mon., and every alter. Mon. till Michael.—Skinburness, June 24th.—Threldkeld, 1st Thur. in Sept.—Uldale August 22.—Ulpha, Mon. before Easter, July 5.—Whitehaven, Aug. 12.—Wigton, Feb. 20, April 5.—Workington, Wed. before Holy Thursday, Oct. 18.

Cheshire—Altringham, Ap. 22, Aug. 5, Nov. 22.—Budworth, Feb. 13, Ap. 5, Oct. 2.—Congleton, May, 12, July 5, Nov. 22.—Chester, Feb. 23, April 27, July 5, Oct. 2, Nov. 24.—Knutsford, Whit. Tues., July 10, Nov. 8.—Macclesfield, May 6, June 22, July 11, Oct. 4, Nov. 11.—Malpas, Ap. 5,

July 25, Dec. 8.—Middlewich, Holy Th., Aug. 6.—Nantwich, Feb. 4, Mar. 15, Sep. 4, Dec. 11.—Northwich, August 2, Dec. 6.—Over, May 16, Sep. 25.—Sandbach, East. Tues., Tues. after Sept. 10.—Stockport, March 4, 25, May 1, Oct. 23.—Tarporey, May 1, last Monday in Aug., Dec. 11.—Winsford, May 8, Nov. 25.

Lancashire—Blackburn, Easter-Mon., May 12, Oct. 17, every fortnight on Wed. from Feb. till Oc.—Bolton-le-moors 1st Mon. after Jan 5, and every Mon. fortnight till May 12, July 30, 31, Oct. 13, 14.—Burnley, March 6, East. Eve., May 6, 13, July 10, Oct. 11.—Broughton-in-F., Aug. 1.—Bury, March 5, May 3, 2nd Thursday after Whit. S., Sept. 18.—Cartmell, March 22, Whit. Mon., Oct. 24, Nov. 5.—Chorley, March 26, May 5, Aug. 20.—Clithero, March 24, 25, August 1, 2, the 5th Thur. and Fri. after St. Michael's day.—Conistone, 3rd Saturday in Sept.—Darwen Holy Thurs., 1st Thurs. in Oct.—Dalton, April 28, June 6, Oct. 23.—Great Harwood, Mar. 3, Aug. 21.—Haslingden, May 8, July 1, Oct. 10.—Hawkshead Mon. before Holy Thurs., Whit. Mon., Oct. 2.—Inglewhite, Oct. 5.—Kirkham, June 24.—Lancaster, May 1, July 5, Aug. 11, Oct. 10.—Liverpool, July 25, Nov. 11; Horse fair every alternate Wednesday.—Longridge, May 13, Nov. 6.—Manchester, Whit. Mon. Oct. 1, Nov. 6.—Middleton, Thurs. after March 11, Thurs. after April 15, 2nd Thur. after Sept. 29.—Newburg, June 21.—Newbury, June 21.—Newchurch, April 29, Sept. 30.—Newton, May 17, July 15, and every Mon. fortnight, Aug. 12.—Oldham, May 2.—Ormskirk, Whit. Mon., Sep. 8.—Poulton, Feb., 6, Ap. 13, Nov. 3.—Prescot, June 12, Aug., 24, 25, Nov. 1.—Preston, 1st Satur. after Jan. 6, March 27, Aug. 25, last 10 days, Nov. 7.—Rufford, May 19.—Radcliffe Bridge, April 29, 30, Sep. 21, 22.—Rochdale, May 14, Whit. Tues., Nov. 7.—Ulverstone, March 22, October 27.—Warrington, July 18, Nov. 30, each lasts 10 days; every Wed. fortnight.—Wigan, Holy Thursday, June 27, Oct. 21.

Irish Fairs—Antrim

Ahoghill, June 4, Aug. 26, Dec. 5.—Antrim, Jan. 1, May 12, Aug. 1, Nov. 12.—Armoy, Jan. 25, Feb. 25, Mar. 29, May 25, Aug. 16, Nov. 12, Dec. 25.—Ballinagabob, July 26.—Ballindery, second Monday in Feb., May, Aug., and Nov.—Ballintoy, June 3, Sept. 4, Oct. 14.—Ballicary, 2nd Mon. in Jan., 3rd Mon. in April, August, and Nov.—Ballycastle, Easter Tues., last Tues. in May, Aug., Oct., and Nov., July 26.—Ballyclare, last Tues. in Jan., 2nd Tues. in May, July, and Nov. o.s. Ballymena July 26, Oct. 21.—Ballamoney, May 5, July 10, Oct. 6.—Ballybernice, 1st Tues. aft. 12th Jan. and Feb.—Ballynure, May 15, Sep. 4, 2nd Tues. in Oct. o.s.—Belfast, 1st Wed. in each month, Aug. 12, Nov. 1.—Broughshane, June 17, Sept. 1.—

ISLE OF MAN INFORMATION.

Manx Legislature

H. B. Loch, Esq., C.B... Lieut.-Governor
Sec. to his Excellency .. J. F. Clucas

COUNCIL.

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Charles R. Ogden Attorney-General
Hon. W. L. Drinkwater, South. Deemster
Hon. J. C. Stephen, Northern Deemster
Wm. W. Christian Water-Bailiff
Hon. Mark H. Quayle, Clerk of the Rolls
Ven. Joseph C. Moore Archdeacon
Richard Jebb Vicar General
J. T. Clucas Clerk of Council

HOUSE OF KEYS.

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Robert John Moore, Secretary Peel
John F. Crellin Orrisdale
Evan Gell Whitehouse
Alexander Spittall Laureston
Richard Quirk Rheaby, Patrick
William Callister Thornhill
J. G. Bennett Willaston
Edward Curphey Farrant.. Ballakillingan
Patrick T. Cunningham Ballanorris
John Gell Kennaa
Philip Killey Douglas
John M. Jeffcott Castletown
Ridgway Harrison Douglas
William Harrison German
W. F. Moore Cronkbourne
William Haslam Ballaglass
William Farrant Ballamoore
J. S. Goldie Taubman Nunnery
Edward Faulder Ellerslie
R. T. Quayle Castletown
Thomas Moore Billown
F. B. Clucas Santon
C. E. Cowie Andreas

Committee of the Legislature

FOR REGULATING ALL MATTERS RELATIVE
TO HIGHWAYS, BRIDGES, &c.

W. Callister, E. C. Farrant, Ridgway
Harrison, J. M. Jeffcott. and R. J.
Moore.
Surveyor-General, R. Anderson, Douglas

Constituted Authorities

HIGH BAILIFFS.

Samuel Harris Douglas
James Gell Castletown
Frederick Tellet Ramsey
Robert J. Moore Peel

Coroner-General for holding Inquests of
Death... W. W. Christian, Andreas
Registrar of Deeds .. S. Harris, Douglas
Registrar General of Births and Mar-
riages.. S. Harris, Douglas
Deputy Registrars do., R. Harrison, Dou-
glas; James Gell, Castletown; Robert
J. Moore, Peel; F. Tellet, Ramsey.
Episcopal Registrar Samuel Harris

Archdeacon's Registrar.. R. H. L. Brown
Archdeacon's Official T. C. Callow
Seneschal L. Adamson, Douglas
Acting Attorney-General..... A. W.
Adams, Douglas.

Regulator of Weights and Measures .. F.
L. Gelling, Castletown

Agent for Woods and Forests ... F. C.
Skrimshire, Douglas

Tithe Agent R. Harrison, Douglas
Southern Deemster's Clerk, R. Harrison
Northern Deem. do., F. B. Clucas
Clerk to the Vicar General.. H. B. Watts

Magistrates

The Members of the Council... }
The High Bailiff of Castletown.. } For the
The High Bailiff of Douglas } time
The High Bailiff of Ramsey } being.
The High Bailiff of Peel }
Thomas Moore Ballown
Mark H. Quayle, C.R. Castletown
Wm. Watson Christian Ballacurry
James Campbell New Zealand
Samuel Pollock Strathallan House
Evan Gell Whitehouse
Richard Quirk Rheaby
Cesar Bacon Seafield
William Callister..... Thornhill
Ewan Cameron..... Ballatessen
Clarence Horatio Cary Beach House
John Frissell Crellin Orrisdale
Edward Moore Gawne.... Kentraugh
Alexander Taubman Goldie . . Douglas
Richard Simpson The Cliff
J. G. Bennett... Williston
P. T. Cunningham Ballanorris
William Farrant Ballamoar
John Gell..... Kennaa
William Haslam .. Ballaglass
W. F. Moore Cronkbourne
G. H. Newton Westham
J. S. Goldie Taubman..... Nunnery
CLERKS—James Spittall..... Douglas
Henry C. Gill... Castletown
R. J. Kelly, Ramsey
John Kelly Peel

Members of Manx Bar

* Members of the House of Keys.

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Frederick L. Gelling .. Castletown
James Quirk Douglas
William W. Christian Andreas
William Clague Peel
Mark H. Quayle, C.R..... Castletown
George Wm. Dumbell ... Douglas
Henry B. Watts Douglas
J. C. Stephen, Deemster Ramsey
*Frederick B. Clucas..... Ramsey
Edward H. Frizelle Peel
Robert J. Kelly .. Ramsey
*Robert J. Moore, H.B. Peel

Thomas C. Howard New Zealand
 *John M. Jeffcott Castletown
 Laurence Craigie Douglas
 *Ridgway Harrison Douglas
 Samuel Harris Douglas
 Edward Callow Manchester
 Charles J. Stewart Lancashire
 Chas. R. Ogden Liverpool
 John Kelly Peel
 Thomas C. Callow Douglas
 James Gell, H.B. Castletown
 Daniel F. Wilson Ramsey
 J. G. M'Hutchin Exeter
 Samuel S. Rogers Australia
 James Spittall Douglas
 Alfred Walter Adams Douglas
 Frederick Call Australia
 A. N. Laughton Douglas
 Thomas A. Corlett Ramsey
 Laurence W. Adamson Douglas
 Henry C. Gill Castletown
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 Richard Tuton Douglas
 John Thomas Clucas Castletown
 Richard Sherwood New Zealand
 Alured Dumbell Ramsey
 Henry Evans Gelling Castletown
 Henry T. Lamothe Ramsey
 Claude Cannell, B.A. Douglas
 J. C. Lamothe Ramsey
 W. E. S. Moore Peel
 John Quayle Castletown
 John Frederick Gill Castletown
 C. W. Beckwith Douglas

Notaries Public

DOUGLAS.—John Moore, Henry B. Watts, J. C. T. Harrison, James Spittall, Ridgway Harrison, T. C. Callow, A. N. Laughton, R. Tuton.

CASTLETOWN.—Frederick L. Gelling, H. C. Gill.

RAMSEY.—Fred. B. Clucas, Robt. J. Kelly, D. F. Wilson.

PEEL.—J. Kelly

Commissioners to take Affidavits.

English Court of Chancery & Irish Courts of Queen's Bench, and Common Pleas.—Robt. J. Kelly, Advocate, Ramsey.

English Courts of Queen's Bench, Exchequer, and Common Pleas, Thomas Cheslyn Callow, Douglas.

English Court of Chancery, Queen's Bench, Common Pleas, Exchequer, and Probate.—Jas. Gell, Advocate, Castletown; James Spittall, Douglas.

English Court of Probate—L. W. Adamson, Douglas, Alfred N. Laughton, Douglas.

Her Majesty's Court of Chancery L. W. Adamson, Douglas.

Customs Brokers

H. Johnson Market Place, Douglas
 W. Berey North Quay, Douglas
 John Clucas Castletown

Coroners

Glenfaba Philip C
 Michael William
 Garff John Ch
 Ayre John St
 Middle George
 Rushen W. Thor

Summers

Sumner-General John C
 Kirk Maughold John B
 — Lonan Jas. C
 — Onchan George
 — Braddan George
 — Marown T. Chr
 — Santon Wm. C
 — Malew Wm. C
 — Arbory Richard C
 — Christ Rushen John H
 — Patrick P. C
 — German Robert R
 — Michael Edward Ca
 — Andreas Matthias Cu
 — Bride John K
 Ballaugh John Ste
 Jurby J. Mou
 Lezayre John

Officers of Police.

Head Constable, Isle of Man.... C
 Geo. P. Goldie.

John Sayle, Inspector Dou
 James Martin, Sergeant .. Castlet
 W. Kermode .. do.... Ran
 Matthias Collister, do.....

Officers of Customs

PORT DOUGLAS.

Collector R. S. D'Ou
 Collector's First Clerk N. W. Wa
 Collector's 2nd Clerk }
 and Assistant Exam- } G. A. M'Cam
 ining Officer }
 Examining Officer R. J. Wea
 Locker and Weigher .. Robert Qu
 Out-Door Officers Wm. Kirkbr
 J. Quine, John Kelly, and G. W
 man.

CREEK OF PEEL.

Principal Coast Officer .. Leslie Lockh
 Out-Door Officers J. Cowley
 J. J. Corlett

PORT RAMSEY.

Collector T. Jacks
 Examining Officer G. A. Ada
 Out-Door Officers Thos. Corlett,
 Farrington, and J. Quayle

PORT CASTLETOWN.

Collector R. Q. Crell
 Assist. Examining Officer.. J. Watters
 Out-Door Officers.. W. Archer, W. Be
 and T. W. Lawson

Vice Consuls

Danish W. F. Moo
 Swedish and Norwegian .. H. B. Nob

Harbour Masters

Douglas..... { John Clague
 { Deputy, Robert Gelling
 Ramsey Charles Teare
 Castletown John Caveen
 Peel J. Gill
 Port St. Mary Thomas Qualtrough

Commissioners of Harbours

R. Quirk, Receiver General
 R. S. D'Ousely | James Corlett
 James Gell | Robert J. Moore
 R. J. T. Quayle | William Callister
 R. J. Weaver | William F. Moore

Douglas Town Commissioners.

C. Cleator, (Chairman), J. Mylrea, (Vice
 Chairman), T. Quayle, H. Wallace, T.
 Richards, R. Clague, J. Dearden, R.
 Quayle, and J. R. Bowman.
 C. Craine, Clerk to Commissioners,
 J. Robertson, Out-door Overseer.

Receiver of Droits of Admiralty

R. S. D'Ousely Douglas

Agents for Lloyd's

Southern District, William Berey, Douglas
 Also for the Underwriters of Glasgow
 and Liverpool
 Northern District.. Hugh Brown, Ramsey

Bankers

Bank of Mona, Douglas—(Draw on Pres-
 cott, Grote, & Co., London) — J. S.
 Jackson, Manager
 Douglas and Isle of Man Bank—(Draw on
 Glynn, Mills, & Co., London)—Dum-
 bell, Son, & Howard.
 Bank for Savings, Thomas-st, Douglas
 —J. Spittall, Secretary

Law Courts

COMMON LAW.—Douglas, Feb. 7, July
 4.—Castletown, May 9, October 10.—
 Ramsey, Feb. 14, May 16, July 11, Oct. 17.
 CHANCERY AND EXCHEQUER.—On the
 first THURSDAY in each month; the
 months of Jan., August, and September

excepted; besides which, Special Courts
 are held as occasion may require.

ADMIRALTY, OR WATER-BAILIFF'S.—
 Weekly during the fishing season.

DEEMSTERS' SUMMARY.—At Castle
 Rushen, Douglas, Ramsey, and Peel,
 every fortnight.

VICAR'S GENERAL.—At Douglas, Cas-
 tletown, Peel, and Ramsey once monthly.

CHAPTER.—Half-yearly, in Spring and
 Autumn.

HIGH BAILIFFS'.—At Castletown, Dou-
 glas, Peel, and Ramsey, weekly.

BARON.—Held in April and October.

MAGISTRATES'.—Fortnightly.

Isle of Man Post-Office

Atholl Street, Douglas.... Miss Macadam
 SUB-POST-OFFICES & RECEIVING HOUSES.

Duke Street, Douglas R. Cain

Pillar Letter Box, Osborne Terrace, Douglas

Shore Road, Douglas E. G. Smith

Crescent, Douglas Geo. M. Jones

Wall Box Ballaughton, near Douglas....

Ballasalla H. Caugherty

CASTLETOWN John Kinvig

Wall Box, the Green, Castletown..

Port St. Mary William Skillicorn

Union Mills W. Dalrymple

Crosby R. Kelly

St. John's John Garrett

PEEL John Morrison

Onchan J. Lewin

Laxey J. Kinley

RAMSEY John Hampton

Wall Box, Sandy Road, Ramsey ..

Kirk Andreas Fred. Radcliffe

Sulby J. McWhannell

Ballaugh W. Teare

Michael J. Cannan

Jurby A. Joughin

St. Mark's P. Mylrea

Foxdale T. Buzzo

Glenmay W. Quayle

Maughold D. Kinrade

Bride R. Pass

Colby Wall Letter Box

Port Erin J. McComb

LIVERPOOL INFORMATION.**Pilot Boat Stations.**

NOTICE.—From the Liverpool Pilot Boats
 is shown a single Light at the mast
 head.

The boat having the turn to board
 displays a Red and White Flag at the
 masthead by day: by night a white light
 and exhibits a flare-up light every 15
 minutes; the other boats a white light
 only.

The two western boats cruise off Point
 Lynas, and as far to the westward as the
 Middle Mouse, and to the eastward until
 Priestholm Island bears S.S.W.

The third western boat cruises from

Point Lynas to S.S.W. off west end of
 Great Ormshead, to board any vessels
 that may pass the first and second boats.

The fourth western boat cruises from
 eastern limits of third boat's station, and
 eastward to N.N.E. from west end of Bar
 Land.

The fifth, or first Holylake boat cruises
 to the westward so as to keep sight of the
 Northwest Light Ship from the deck.

The sixth, or second Holylake boat, to
 board vessels after they pass the line of
 the Northwest Light Ship and Point of
 Air, when the first boat is not within a
 reasonable distance, and after high water
 to take pilots from vessels outward bound

Rates of Pilotage.*For all Vessels Trading Foreign.*

INWARD.	PER FOOT.
From the length of the west end of s. d. the Great Ormshead bearing S. by W., or before Penman Bachan be shut in with the Great Ormshead, at the rate of	9 0
From the Eastward of the Great Ormshead as above	8 0
From the only house now on Great Hilbre Island, bearing S.S.W. by the compass, or shall be piloted from the road of Holylake only, or from the Buoy of the Fairway in Formby Channel	4 0

OUTWARD.

Whether through the Rock or s. d. Formby Channel	4 0
--	-----

No Vessel, trading to Foreign Parts, inward or outward bound, is to refuse a pilot: but if such vessel has passed the Brazil Buoy in the Rock Channel, or the Middle Patch Buoy in Formby Channel, or if a Pilot-boat falls in with a vessel in the narrows of the Channels in stormy weather, that she cannot board her without eminent danger the Pilot shall then lead the way, and in either case be entitled to such Pilotage as shall be awarded by the Committee at their next meeting.

For Coasting Vessels, and those trading to and from Ireland, the Islands of Faro or Ferro, Jersey, Guernsey, Alderney, Sark and Man.

INWARDS.

From the length of the Great Ormshead, as above, at the rate of	4 6
From the Eastward of the Great Ormshead, as above	4 0
From the only house now on Great Hilbre Island, &c., as above	2 0

OUTWARD. PER FOOT.

Whether through the Rock or s. d. Formby Channel	2 0
--	-----

No coasting vessel to pay for less than eight feet of water, nor any vessel to pay for odd inches under half a foot. No coasting vessel, inward or outward bound of the burden of one hundred tons or upwards (unless she be in ballast), is to refuse a Pilot, as the master or owner, &c., must pay the full Pilotage, if one is offered. No vessel to be deemed a coaster unless she has been six months in that trade.

EXTRA PAY. PER DAY.

For every day of attendance whilst s. d. in the River, except the day of going to sea with such ships or vessels as shall be outward bound and the day of returning from sea

and the day of docking for such as shall be inward bound 5
And if the attendance of a Pilotboat be required 42
Though the Pilot or boat be not employed a whole day, to be paid for a d

CHARGES ON THE MERSEY—For taking a vessel from one dock to another, & from Liverpool to Garston, £2, and *vers* versa.

Pilots' Rules and Regulation

Any person acting as Pilot without license, to forfeit £20

Pilots refusing to conduct or assist in distress, to forfeit £10 and license.

Masters of vessels forcibly taking Pilots beyond the limits of port, to forfeit more than £20, nor less than £5.

Pilots misbehaving to have their licenses recalled, and if they act afterwards to same penalties as if they were not Pilots.

Vessels liable to pay Pilotage coming into port, to display signal for Pilots under a penalty of £5.

Reward for Pilots assisting the ships in distress to be settled by the Committee.

Compensation to be made to Pilots for taking vessels out of port which have been forced back, to be fixed by the Committee.

When in stormy weather, a vessel cannot be boarded with Pilots' small boats the vessel should be steered with the wheel on the quarter, the yards braced by the lee quarter, and the Pilot jumps on board.

Life Boats.

All Masters and others, entering or quitting the port, and requiring the assistance of the Life Boats are requested to hoist the Distress Signal, in order that they may be dispatched to their assistance as soon as possible. Vessels aground on the Banks, and not hoisting the Distress Signal, will be supposed not to require the assistance of the Life Boats.

Life Boat Stations.

At Liverpool, on the North Landing Stage, two boats; the key kept at the Marine Surveyor's Office, Custom-house and at the Life Boat Master's house, Pownall Street. Magazines, two boats; the key kept at the Life Boat Master's house. Hoyle, one boat; the key kept at the Lower Hoyle Light-house. Point of Air, two boats; the key kept at the Master's house. Formby one boat; the key kept at the Life Boat House by the keeper. Hilbre Island, one boat.

Bidston Hill Signals.

SIGNALS OF DISTRESS.—For vessels in distress or on shore in the Rock Channel or about Hoyle—Coming in; on the

oblique pole to the southward of the lighthouse— for every ship, a ball with a flag half-mast; for every snow, a cone, broad end up and a flag half-mast; for every brig or small vessel, a cone small end up and a flag half-mast. Going out, the same as above, but a broad pendant instead of a flag.

N.B.—For vessels in distress to the southward, when on shore to the main, the ball or cone to be put on the outside of the flag or pendant: but if on shore on Hoyle Bank, then the ball or cone to be put on the inside of the flag or pendant.

In Formby Channel.—The same signals to the northward of the Lighthouse.

Pilot Boats, Masters, &c.

- | NO. | NAMES. | FIRST AND SECOND MASTERS. |
|-----|---------------------------------------|---|
| 1. | Queen (schooner)... | Wm. Hughes, Fairfield-crescent, Fairfield. R. Taggart, Olive Cottage, St. George's Road, West Derby road. |
| 2. | Leader (schooner)... | Joseph Powell, Islington; Samuel Jones, 115, Vine street. |
| 3. | The Duke (schooner)... | Thos. Parry, 33, Sackville street, Everton. Wm. Harris, 74, South Chester street. |
| 4. | Auspicious (cutter)... | J. Shepherd, 40, Wesley-st.; C. Christie, Upper Warwick-st |
| 5. | Victoria and Albert... | Isaac Williams, Back Lane, Wallasey, Cheshire; Peter Dickenson, Lower Mersey View, North-shore. |
| 6. | Pioneer (schooner)... | T. Parry, 18, Stafford-st.; T. Davis, Sackville-st |
| 7. | George Canning... | W. Rowlands, Gt. Mersey-st.; John Williams, Raglan-terrace Netherfield-road, North. |
| 8. | Albert Edward, }
Prince of Wales } | John Bark, Stanley Crescent, North-shore; William J. Mc. Cracken, Thomaston-street. |
| 9. | Liver (cutter) | John Corrin, 126, Duke-street; John Pritchard, 63, St. George's Hill, Everton. |
| 10. | Criterion (schooner)... | J. Wilson, 146, Falkner-st.; H. Williams, 16, Percy-st. |
| 11. | Mersey (cutter)... | R. Parry, Cazneau-st.; R. Williams, Clarence-st., Everton. |
| 12. | Perseverance (cutter)... | George Bark, Juvinal-st.; John Tunstall. |
- Superintendent of Pilots, Robert J. Simpson, Church-st., Woodside, Cheshire.
- The Pilot Committee meet for the transaction of business every Monday, at twelve o'clock, at the Committee Room, south end of Prince's Dock.

Mersey Docks and Harbour Board.

OFFICERS.

- | | |
|--|--|
| Mr. John North, Solicitor.—Office, Dock Office. | Mr. Wm. Laidlaw, Receiver of Duties on Goods Outwards. |
| Mr. George Fosbery Lyster, Engineer of the Docks, &c.—Office, south side of Coburg Dock. | Mr. T. L. Burgess, Receiver of Duties on Goods Coastwise. |
| Mr. John Harrison, Secretary. | Mr. Richard Jones, Receiver of Duties at Runcorn. |
| Mr. G. J. Jefferson, Treasurer. | Mr. Thomas Hanlon, Superintendent of Albert Dock Warehouses. |
| Lieut. M. T. Parks, R.N., Marine Surveyor.—Office, Dock Office. | Mr. W. D. Turner, Superintendent of Stanley Dock Warehouses. |
| Mr. A. E. Parks, R.N., Water Bailiff—Office, George's Pier. | Mr. J. Ayre, Superintendent of Wapping Warehouses. |
| Mr. Wm. Marrow, Receiver of Duties on Tonnage. | Mr. W. H. Sloman, Superintendent of Birkenhead Warehouses. |
| Mr. John Evans, Receiver of Duties on Goods Inwards. | |
| Mr. Thomas Hodgson, Harbour Master.—Office, George's Dock Passage, | |
| Mr. H. T. Cox, North Assistant Harbour Master—Office, Sandon Graving Docks. | |
| Mr. Wm. Foyle, South Assistant Harbour Master.—Office, south end of Wapping Dock. | |
| Capt. Jas. Hookey, R.N., Birkenhead Assistant Harbour Master.—Office, Morpeth Dock Entrance. | |

Dock Masters.

- | | | | |
|---|------------------|--|---------------------|
| Canada | Mr. Josh. Woods. | Clarence Half-tide, Clarence, Trafalgar and Victoria. | Thomas Stirzaker. |
| Huskinson | George Corfield. | Waterloo | (under alteration.) |
| Sandon | Thomas Barnes. | Prince's | H. M. Liardet. |
| Wellington & Half-tide... | Edward Carey. | George's | Charles Purnell. |
| Nelson & Bramley Moore... | Jas Saunders. | Canning and Half-tide... | George A. Bond |
| Salisbury, Collingwood, and Stanley | Edward Edwards. | Albert and Salthouse Docks and Wapping Basin | George Wilson. |

King's and Wapping Joseph Curry
 Queen's and Half-tide .. George Palmer.
 Coburg Shadrach Williams.
 Brunswick J. H. Hinrichson.
 Toxteth and Harrington.. Thomas King.
 BIRKENHEAD—Morpeth Basin and
 Morpeth & Egerton Docks.. S. Stokes.
 Birkenhead Low Water Basin and
 Great Float Thomas J. Shepherds.
 The Dock Masters' Offices are at the
 entrances of the respective docks.

Dock and Basin Signals.

All vessels are allowed to enter the Docks when signals are not hoisted at the respective pier heads. All owners, masters, and consignees are however, recommended to register their vessels as expeditiously as possible, in order the better to secure their right of turn to accommodation at the Dock quays.

DOCK SIGNALS.

HUSKISSON—Flag on N. pier of Sandon Basin entrance.

SANDON—Flag on N. side of gateway
 WELLINGTON AND HALF-TIDE.—Flag on S. pier of Sandon Basin entrance.

SALISBURY, COLLINGWOOD, AND STANLEY—Flag on S. pier of Salisbury Dock entrance.

CLARENCE AND HALF-TIDE—Flag on N. pier of Clarence Half-tide entrance.

TRAFALGAR—Flag on S. pier of Clarence Half-tide Dock entrance.

WATERLOO AND VICTORIA—Flag on N. pier of Prince's Basin entrance.

PRINCE'S NORTH ENTRANCE—Flag on S. pier of Prince's Basin entrance.

PRINCE'S SOUTH ENTRANCE—Flag on N. Pier of George's Basin entrance.

GEORGE'S—Flag on S. pier of George's Basin entrance.

CANNING AND HALF-TIDE—Flag on N. Pier of Canning half-tide entrance.

ALBERT AND SALTHOUSE—Flag on S. pier of Canning half-tide entrance.

KING'S—Flag on N. pier of King's and Queen's Basin entrance.

WAPPING—Flag on N. end of the King's Parade.

QUEEN'S—Flag on S. pier of King's and Queen's Basin entrance.

COBURG—Flag on S. pier of Coburg entrance.

BRUNSWICK—Flag on S. side of entrance

TOXTETH—Flag on N. side of entrance

HARRINGTON—Flag on S. side of en

BASIN SIGNALS.

SANDON—Ball on the north side.

PRINCE'S—Ball on S. pier of entrance

GEORGE'S—Ball on S. pier of entrance

Abstract of Dock Laws.

Goods causing obstruction on the Dock quays, may be removed by the Trustee at expense of owners.

Such a quantity of cargo or ballast to be kept on board each vessel as to enable it to be safely removed: penalty £50

Harbour and Dock Masters, may remove vessels in dock, or from one dock to another, at owner's expense; penalty for obstructing them, disobeying their orders, or using abusive or offensive language to them £10

Vessels on which dues, &c., are owing may be detained until such are paid.

Shipowners have a lien for freight and all other lawful claims on goods discharged into dock warehouses.

Manifest of all goods imported or exported to be delivered at the Dock Office within 14 days after the discharge inwards or clearance outwards; penalty £20

Collector, &c., not to receive entry of any vessel until the dock and light duties are paid; penalty £20

No ballast to be thrown into the docks, penalty £20

After ballast is discharged to be carted away as the trustees of the docks shall appoint; penalty £5.

Vessels not to come into dock under sail; penalty £5.

Persons wilfully & maliciously damaging docks, &c., adjudged guilty of felony.

Water-bailiff empowered to remove vessels lying in the river; penalty for obstructing him £10

Persons firing cannon, &c., within the port (except signals of distress) to forfeit £10 for every offence.

CUMBERLAND INFORMATION.

Members of Parliament, &c.

WHITEHAVEN.—G. Lyall, Esq., 17 Park Crescent, Regent's Park, London, W.C.

COCKERMOUTH.—J. Steel, Esq., 13 Bury Street, London. Lord Nass, 79 Eccleston Square, Palmerston House, London.

EASTERN DIVISION—Hon. Chas. W. G. Howard, Naworth Castle; 56 Park-street,

Grosvenor Square, London. W. Marshall, Esq., Peterdale Hall; 85, Easton Square, London.

WESTERN DIVISION.—Hon. Percy Wyndham. H. Lowther, Esq., 21 Wilton Crescent, London.

CARLISLE—E. Potter, Esq., Manchester, Reform Club, London. Wilfred Lawson, Esq., Braytow, Boodles, London, S.W.

Lord Lieutenant..... Earl of Lonsdale.
 Clerk of the Peace.. T. H. Hodgson, Esq.
 County Treasurer . Mr. Dobson, Carlisle.
 Gov. of Gaol.. Mr. T. H. Redin, Carlisle.
 County Coroners.. { Wm. Carrick, Esq.
 { W. Lumb, jun., Esq.

Quarterly Sessions.

Easter, in the first week after 31 March
 Midsummer, first week after 24 June
 Michaelmas, first week after 11 October
 Christmas, first week after 28 Dec.

The Easter, Midsummer, Michaelmas,
 and Christmas Sessions for Cumberland
 are held at Carlisle.

Bankers.

WHITEHAVEN—The Whitehaven Joint
 Stock Banking Company, Peter Cameron,
 Manager.—London Joint Stock Bank
 5, Princes's Street.

Bank of Whitehaven, G. W. Brown,
 Manager.—Price, Marryatt, and Co., 54
 King William Street, City.

J. M. Head & Co's. (of Carlisle) Branch
 Bank, W. Miller, Manager,—Barnett and
 Co., 62, Lombard Street, London.

Savings' Bank—Open Saturdays, from
 6 to 5 p.m.—F. J. Lowes, Sec.

WORKINGTON.—Cumberland Union
 Banking Company, W. B. Gordon, Man-
 ager.—Barclay, Bevan, and Co., 54 Lom-
 bard Street.

J. M. Head & Co's. (of Carlisle) Branch
 Bank, John Allison, Agent.—Barnett and
 Co., 62 Lombard Street, London.

MARYPORT—Branch of the Cumberland
 Union Banking Company, Joseph Thomp-
 son, Agent—Barclay, Bevan, and Co., 54,
 Lombard Street.

COCKERMOUTH—Branch of the Cumber-
 land Union Banking Company, John S.
 Hellon, Agent—Barclay, Bevan, and Co.,
 54, Lombard Street.

**WHITEHAVEN & WEST CUMBERLAND
 BENEFIT LAND AND BUILDING SOCIETY.**
 —Public Office, Lowther Street; open on
 Saturdays, from six to eight p.m.—
 S. Armstrong, Secretary.

The Whitehaven and Furness Junction Railway.

Trains leave Bransty Station three
 times daily (Sunday excepted) for Bootle
 Ulverston, Broughton, Fleetwood, Pres-
 ton, Manchester, Liverpool, &c. This is
 the nearest route to Preston, Manchester
 Liverpool, &c.—(See *West Cumberland
 Railway Guide*.)

The Whitehaven and Maryport Junction Railway.

Trains leave Bransty Station four times
 daily (Sunday excepted) for Workington,
 Maryport, Wigton, Carlisle and Cocker-
 mouth; three times daily for Edinburgh,
 London, Birmingham, Liverpool, Man-
 chester, Preston, Newcastle, York, and
 Darlington.—(See *West Cumberland
 Railway Guide*.)

The Whitehaven, Cleator, and Egremont Railway.

Trains leave Whitehaven three times
 daily (Sundays excepted) for Cleator
 Moor, Frizington, Woodend, and Egre-
 mont.—(See *West Cumberland Railway
 Guide*.)

Steamers and Traders.

LIVERPOOL.—The Whitehaven Steam
 Navigation Company's powerful and
 commodious first-class steamers sail
 regularly with goods and passengers.—
 Fares: Cabin, 7s., Deck, 4s. Passengers
 are conveyed, in connection with the Rail-
 way Companies, between Newcastle, Car-
 lisle, Dalston, and Wigton, to Liverpool,
 at a through fare. Passengers by Railway
 arrive at Whitehaven by the last train
 before the steamer's sailing, and those
 from Liverpool being forwarded by first
 train after the vessel's arrival in White-
 haven.—Fares. Cabin and First-class,
 10s.; Deck and Third-class, 4s. Agents—
 Carlisle, Edward Jobling; Liverpool,
 Fisher, Wilson, and Co.; Whitehaven,
 J. and J. Hodgson.

BELFAST.—The Whitehaven Steam
 Navigation Company's steamers sail re-
 gularly with goods and passengers.—
 Fares: Cabin, 10s., Deck, 3s. Passengers
 are conveyed, in connection with the
 Railway companies, between Carlisle,
 Dalston, and Wigton, to Belfast, at a
 through fare. Those from Carlisle, &c.,
 arriving in Whitehaven by the last train
 before the steamer's sailing, and those
 from Belfast being forward by first train
 after the vessel's arrival in Whitehaven.
 —Fares, Cabin and First-class, 12s.;
 Deck and Third-class, 5s. Agents—Belfast
 R. Henderson and Son, Donegal Quay;
 Carlisle, Edward Jobling; Whitehaven,
 J. and J. Hodgson.

BELFAST.—The North British Steam
 Packet Company's first-class fast sailing
 Steamers sail between Silloth and Belfast
 once a week. Fares from Silloth to
 Belfast, first cabin, 10s.; second do., 3s.

DUBLIN.—The North British Steam-
 Packet Company's first-class fast sailing
 Steamers sail between Silloth and Dublin
 once a week, calling off Whitehaven

(weather permitting) to land and embark passengers. Fares from Whitehaven to Dublin, first cabin, 15s.; second cabin, 6s. Agents for Whitehaven, J. and J. Hodgson, 36, King street.

DOUGLAS (Isle of Man).—The North British Steam Packet Company's first-class fast sailing Steamers sail between Silloth and Douglas once a week, calling off Whitehaven (weather permitting) to land and embark passengers. Fares from Whitehaven to Douglas, first cabin, 6s. 6d.; second cabin, 3s. 6d. Agents for Whitehaven, J. & J. Hodgson, 36 King street.

RAMSEY (Isle of Man).—The Isle of Man Company's Steam-ship "Mona's Isle" sails between Ramsey and Whitehaven once a week, with goods and passengers. Fares—Saloon 6s.; Fore Cabin 3s. Agents for Whitehaven—Frost & Nelson, Ship-brokers, 7½, West Strand.

LONDON.—The Whitehaven Steam Navigation Company in connection with the Belfast Screw Steam Company, sail a vessel once a week. Agents:—Belfast, Robert Henderson & Son, London, Ogilby Moore & Co., Ingram Court, Fenchurch Street; Whitehaven, J. & J. Hodgson.

DUNDRUM.—The 'Ansbros,' and 'Robert Burns,' screw steamers, sail regularly between Dundrum and Whitehaven. Agent—Charles Fisher & Co., 36, King Street, Whitehaven.

LIVERPOOL.—The North British Steam Packet Company's first-class fast sailing Steamers sail between Silloth and Liverpool twice weekly calling off Whitehaven in the summer months. Fares: Carlisle and Liverpool First Cabin 8s.; Second Cabin 4s. Silloth and Liverpool First Cabin 7s.; Second Cabin 3s. 6d. Whitehaven and Liverpool First Cabin 7s.; Second Cabin 3s. 6d. Agents for Whitehaven—J. & J. Hodgson, 36, King street.

Carriers

Leave Whitehaven for Harrington, Workington, Cockermouth, Keswick, and Egremont, every Tuesday, Thursday, and Saturday; for Wigton every Wednesday; and for Gosforth every Tuesday Thursday and Saturday.

Rates for the Steam Tugs.

Vessels employed in the Coal or Coasting Trade shall pay every voyage on clearing for sea one half-penny per Ton Register. Vessels arriving from a Foreign

Port or from a discharging Port one penny per Ton Register.

Vessels engaged in the Coal or Coasting Trade pay an additional half-penny per ton when they require the use of the Steam Tug Outward, and the same Inwards.

No Vessel towed out for less than 1s

Foreign Vessels as above one penny per ton.

That the limits for towing vessels in and out of the harbour for one half penny and one penny per ton respectively, as follows, viz:—say a line drawn from St. Bee's Head to Mickleham Pit, on the Hill north of Parton, and two lines intersecting the above, from Redness Point and Tom Hurd Rock, bearing N.W. by W. and S.E. by S. by compass.

If the vessel first in turn be not able or not ready for the Tug Boat, then she is to take the first that is.

Vessels wanting the use of the Steam Tug are to hoist the Union Jack on the Main Top Gallant Mast Head.

Harbour Boat Rates.

A boat is stationed at the Old Quay Watch House to attend on vessels entering the Port and also to give assistance to those outward bound, charges are as follows, viz:—

Vessels of 120 tons and upwards	4
Vessels from 100 to 120	3
Vessels from 80 to 100	3
Vessels from 60 to 80	2
Vessels from 40 to 60	2
Vessels from 20 to 40	1
Vessels less than 20	1

FOREIGN LADEN VESSELS.

Under 120 tons	4
Above 120 tons	6

The Harbour Boat to be paid as above by all vessels entering the port; but not employed by those leaving it, no charge to be demanded.

Rates for the Gridiron.

Every vessel previous to going on must be entered at the Harbour Office and payment made according to the established rates, for which she may remain on four tides, counting the tide going on and the tide coming off.

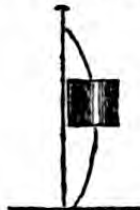
	s	d	s	d
Vessels not exc. 50 tons	5	0	1	0
Above 50 & not ex. 100	7	6	2	6
.. 100..... 150	10	0	3	4
.. 150..... 200	15	0	5	0
.. 200.. .. 250	20	0	6	8
.. 250..... 300	25	0	8	4

Post Office, Whitehaven.—WILLIAM B. GIBSON, POSTMASTER.

Arrivals.—*Week days*—London and all parts 9h., a.m.; 8h. 30m., p.m.
Sundays—London and all parts 10h. 35m., a.m. Despatches.—*Week days*—Local parts, 9h. 30m. a.m.; North mail, 2h. 50m. p.m.; London and all parts, 6h. 15m. p.m. *Sundays*—North mail, 7h. 50m. a.m.; Local parts, 11h. 30m. a.m.; London and all parts, 5h. p.m. The letter box is closed 15 minutes before each despatch. Letters bearing one additional stamp will be forwarded for the first ten minutes. The deliveries by letter carriers commence during the week days at 9h. 35m. a.m. and 8h. 55m. p.m.; and on Sundays at 12h. 45m. p.m.

POST OFFICES IN CONNECTION WITH THE WHITEHAVEN POST OFFICE.
 Those marked thus † are empowered to grant and pay Money Orders.

OFFICES.	ARRIVAL.	DESPATCH.	RECEIVER.
Sandwith.....	10 30 a.m.	4 55 p.m.	J. Fisher
† St. Bees.....	7 15 ..	8 58 a.m.	W. Geldart
Ditto	11 25 ..	4 10 p.m.	Ditto
Parton	10 30 ..	4 50 ..	E. Lightfoot
Distington	12 10 ..	3 20 ..	E. Lawrence
Hensingham	9 40 ..	5 26 ..	J. Sumpton
Cleator Lane End	10 1 ..	5 5 ..	C. McGinn
Cleator	10 51 ..	4 5 ..	J. Harkness
† Cleator Moor	11 30 ..	3 20 ..	Jno. Atkinson
Arledon	1 45 p.m.	2 0 ..	J. James
† Egremont	10 12 a.m.	4 54 ..	G. Selkirk
Beckermont.....	10 34 ..	4 32 ..	G. Gilliot
Calderbridge	10 45 ..	4 21 ..	M. Moore
Gosforth	11 0 ..	4 6 ..	A. Herbert
Holm Rook	11 22 ..	3 44 ..	J. Birkett
Eskdale	12 21 p.m.	9 30 a.m.	J. Porter
Wasdale	1 41 ..	5 10 p.m.	M. Pharoah
† Ravenglass	11 41 ..	3 25 ..	E. Thompson
Waberthwaite.....	12 16 ..	2 50 ..	J. Woodhall
† Bootle.....	12 46 ..	2 20 ..	J. Parker

STORM-WARNING SIGNALS.

Gale probably from the Northward.	Gale probably from the Southward.	Dangerous winds may be expected from nearly opposite quarters suc- cessively.	Dangerous wind probably at first from the Northward.	Dangerous wind probably at first from the Southward.
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Whenever such a signal is shown (in consequence of a telegram from London) it will be kept up, shown distinctly, till dusk of *that day only*, unless otherwise specially directed. These cautionary or warning signals advert to winds during some part of the next nights or two or three days; therefore due *vigilance* should prevail (until the weather is again thoroughly settled), but without suspending *departures* or any operations *unnecessarily*.

It should be remembered that only the greater and more *general* disturbances of the atmosphere are to be made known by this method (Warning Signals), not merely local or sudden changes (however violent or dangerous) which are not felt at a certain distance, and do not therefore affect other localities.

MERSEY DOCKS AND HARBOUR.

Tabular Statement, showing the Area of Water, Quay Space, Width of Entrance and Depth of Sill for each Dock, also the length of Graving Docks. &c.

The Old Dock contains an area of 3 acres 1890 yds., and 557 lineal yds. quay space
Its Passage do 675½ do., 90 do.

The level of the Old Dock Sill is the Datum to which the Depth of Sills refer, and is preserved on a Tide Gauge on the west side of the Centre Pier of the entrances to the Canning Half-tide Dock.

LIVERPOOL DOCKS.	Width of Entrance.		Sill under Old Dock Datum.		Coping at Hollow Quoins, above Sill		Water Area.		Quay Space.	
	Ft.	In.	Ft.	In.	Ft.	In.	Acr.	Yd.	Mile	Yds.
North Carrier's Dock .. West Passage	40	0	6	0	33	0	2	3423		641
South ditto West Passage	40	0	6	0	33	0	1	4515		615
Canada Half-tide Dock	..	..	..	..	..	..	3	4380		468
West Entrance	60	0	7	9	35	9				
Northern West Lock Entrance.....	32	0	6	0	34	0				
Southern West Lock Entrance.....	20	0	6	0	34	0				
North Passage	20	0	3	0	30	0				
South Passage	80	0	7	9	35	9				
Canada Dock	..	..	..	..	..	..	17	4043		1272
South Passages..... East	50	0	6	6	35	6				
West	80	0	6	6	35	6				
Canada Lock	100	0	7	9	35	9	1	3479		487
Huskisson Dock	..	..	..	..	..	..	14	3451		1039
Huskisson Branch Dock.....	..	..	..	..	..	..	7	592		910
Huskisson East Lock	80	0	6	6	44	6	0	4652		342
Huskisson West Lock.....	45	0	6	0	32	0	0	3650		330
Sandon Dock..... West Entrance	70	0	6	6	37	5	10	100		867
Wellington Half-tide Dock, East Entr.	70	0	6	9	37	6	3	813		400
West Entrance	50	0	6	6	34	6				
Wellington Dock..... West Passage	70	0	6	6	37	6	7	4120		820
Bramley-Moore Dock,.. North Passage	66	0	6	0	32	0	9	3106		935
South Passage	60	0	6	0	32	0				
Nelson Dock	60	0	6	6	32	6	7	4786		803
Stanley Dock	51	0	5	8	34	8	7	120		753
Collingwood Dock	60	0	6	9	32	9	5	244		553
Salisbury Dock	..	..	..	..	..	..	3	2146		406
West Entrances.... North	60	0	6	11	32	11				
South	50	0	6	11	32	11				
Clarence Graving } North Passage	45	0	4	9	30	9	1	1056		291
Dock Basin } South Passage	45	0	4	6	31	0				
Clarence Half-tide Dock . West Entr.	50	0	5	6	34	0	4	1794		635
Clarence Dock..... West Passage	47	0	3	2	29	2	6	273		914
Trafalgar Lock.. Nth. & Sth. Passages	45	0	6	7	30	5	0	2937		256
Trafalgar Dock	45	0	4	11	31	4	5	4546		764
Victoria Dock	40	0	4	11	31	3	5	3559		755
Waterloo Dock	..	..	..	..	..	..	5	3056		737
Waterloo Lock	45	0	6	5	33	0	0	2937		256
North Passage	45	0	6	8	33	3				
South Entrance	45	0	6	8	33	3				
Prince's Dock & Locks, North Entrance	45	0	5	11	34	1	11	3889		1613
South Entrance	44	11	5	11	34	1				
George's Dock & Passage, North Entr.	41	11	4	6	29	0	5	2593		1001
South Passage	40	1	4	6	28	11				
Manchester Dock..... West Entrance	32	10	Note†		23	0	1	595		339
Manchester Lock..... West Entrance	33	8	3	9	28	0	0	315		57
Canning Dock	45	0	6	1	32	3	4	376		585
Canning Half-tide Basin	..	..	..	..	..	..	2	2688		429
Two West Entrances	45	0	6	3	34	6				
Albert Dock..... North Passage	45	0	6	4	32	4	7	3542		885
East Passage	45	0	6	0	32	0				
Salthouse Dock..... North Passage	45	0	6	0	32	0	6	2019		784
Wapping Basin..... West Passage	40	0	6	0	31	0	1	3151		454
North and South Passages .. each	50	0	6	0	32	0				

† The Sill of the Manchester Dock is 3 inches above Old Dock Datum.

TABULAR STATEMENT, continued.

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LIVERPOOL DOCKS.		Width of Entrance.		Sill under Old Dock Datum.		Coping at Hollow Quoins above Sill.		Water Area,		Quay Space.	
		Ft.	In.	Ft.	In.	Ft.	In.	Acr.	Yd.	Mile	Yd.
Wapping Dock.....	West Passage	50	0	6	0	32	0	5	499		815
	South Passage	50	0	6	0	32	0				
King's Dock.....	South Passage	42	0	5	0	31	1	7	3896		875
Basin to Queen's Dock		..	..	..	..	..	..	3	3542		445
West Entrances.....	North	70	0	6	9	37	9				
	South	50	0	6	9	37	9				
Queen's Dock.....	West Passage	50	0	6	0	32	0	10	1564		1214
	South Passage	60	0	6	6	35	3				
Coburg Dock.....	West Entrance	70	1	6	0	32	3	8	26		1053
Brunswick Dock.....	North Passage	60	0	6	6	33	6	12	3010		1086
Brunswick half-tide Dock,...	East Pass.	42	0	5	6	31	6	1	3388		491
	West Entrance	45	0	6	0	32	6				
Torteth Dock.....	West Entrance	40	0	5	0	31	0	1	469		393
Harrington Dock... .	West Entrance	29	9	1	2	24	3	0	3740		315

Total Water Area and Quay Space of the Liverpool Docks.... 228 630 16 923

LIVERPOOL BASINS.				Height of Piers above Old Dock Sill					
		Ft.	In.	Ft.	In.	Ft.	In.	Acr.	Yd.
Canada Basin.....		250	0	32	0	..	..	6	4528
Sandon Basin.....		200	0	31	0	..	..	6	904
Prince's Basin		156	0	27	10	..	..	4	1549
Seacombe Basin		52	0	..	..	..	..	0	1805
George's Basin		147	0	25	0	..	..	3	1852
George's Ferry Basin ..		70	0	..	..	..	..	0	1344
Manchester Basin.....		36	0	..	..	..	..	0	2568
South Ferry Basin		60	0	..	..	..	..	0	2927
Harrington Basin.....		40	0	..	..	..	..	0	3917

Total Water Area and Quay Space of the Liverpool Basins.... 23 2034 1 1600

Ditto ditto ditto Docks.... 228 630 16 923

Total 251 2664 18 763

BIRKENHEAD DOCKS.									
		Ft.	In.	Ft.	In.	Ft.	In.	Acr.	Yd.
Wallasey Pool.....	Western Eloat	..	..	..	..	..	..	52	319
Ditto.....	Eastern Ditto	..	..	..	..	..	..	59	3786
Ditto.....	Passage	100	0	7	6	33	6		
Ditto, Basin near Canada Works, West		50	0	..	..	..	..	1	2554
Ditto, ditto.....	East	50	0	..	..	..	..	1	84
Ditto, Railway Company's Basin..		..	..	..	..	..	..	0	606
Egerton Dock.....	West Passage	70	0	7	0	28	6	3	4011
Morpeth Dock.....	West Passsge	70	0	5	3	30	0	3	1189
	East Entrance	50	0	5	0	30	0		

Total Water Area and Quay Space of the Birkenhead Docks .. 121 2869 5 786

Ditto ditto Liverpool Docks and Basins.. 251 2664 18 763

Total. 373 693 23 1549

LIVERPOOL GRAVING DOCKS.		Width of Entrance		Sill under Old Dock Datum.		Coping at Hollow Quoins above Sill.		Length at Bottom.		Total Length at Bottom,	
		Ft.	In.	Ft.	In.	Ft.	In.	Lineal Yd.		Lineal Yd.	
Canada Lock and Graving Dock....		100	0	7	9	35	9	..	..	167	
Huskisson Lock and Graving Dock ..		80	0	6	6	44	6	..	..	132	
Sandon Graving Docks, No. 1—East..		60	0	3	6	29	6	180			
	No. 2—..	70	0	3	6	29	6	180			
	No. 3—..	60	0	3	6	29	6	180			
	No. 4—..	70	0	3	6	29	6	180			
	No. 5—..	45	0	3	6	29	6	180			

GRAVING DOCKS, Continued.	Width of Entrance.		Sill under Old Dock Datum.		Coping at Hollow Quoins above Sill		Length at Bottom.		Total Length at Bottom.
	Ft.	In.	Ft.	In.	Ft.	In.	Lineal Yd	Lineal Yd	
Sandon Graving Docks, No. 6—West Clarence Graving Docks—	45	0	3	6	29	6	180		1080
No. 1—Outer Gates	45	0	3	0	29	6	135		
No. 1—Inner Gates	45	0	0	6	18	6	97		
No. 2—Outer Gates	45	0	3	0	29	6	138		
No. 2—Inner Gates	32	10	0	6	18	6	96		466
Canning Graving Docks No. 1....	35	9	†		21	6½	147		
No. 2....	35	9	0	0½	23	4	160		307
Queen's Graving Docks No. 1....	42	0	1	8½	29	4	146		
No. 2....	70	1	3	6	30	11	145		291
Brunswick Graving Docks .. No. 1....	42	0	26		29	0	133		
No. 2....	42	0	26		29	0	133		266
Total measure at the bottom.....									2709

† Sill 1 foot 8½ inches ABOVE Old Dock Datum.

LIVERPOOL CORPORATION DOCKS.	Width of Entrance.		Level of Sill.		Level of Coping above Sill.		Water Area.
	Ft.	In.	Above Datum.	Below Datum.	Ft.	In.	
River Craft Dock, Lock, & Eagle Basin	..	..	..	..	..	..	1 3416
Outer Gates	30	0	0	3	25	1	
Inner Gates.....	30	0	1	3	24	7	
Duke of Bridgewater's Dock—							2 1336
Outer Gates.....	40	0	..	4	30	0	
Middle Gates	28	10	0	6	22	3	
Inner Gates.....	40	0	..	6	31	0	

A Tide-Gauge Table for the Entrance of the Mersey,

Adapted to shew the Height of Water above low-water level of ordinary Spring Tides, at any required period.

When it is High Water at or near either of the following times.	H. W.												L. W.
	hour.	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	
12 o'clock	30	29	27	25	22	19	16	13	10	8	5	3	2
11 or 1	29	28	27	25	22	19	16	13	10	8	6	4	3
10 or 2	27	26	25	24	21	19	16	13	11	9	7	6	5
9 or 3	26	25	24	23	21	18	16	13	11	9	8	7	6
8 or 6	25	24	23	22	20	18	16	14	12	10	9	8	7
7 or 5	24	23	22	21	20	18	16	14	12	11	10	9	8
6	23	22	21	20	19	18	16	14	13	12	11	10	9

Graving Dock Rates

FOR	2 Tides, the tide in & next tide out		3 —, includ. going in & coming out		4 —		5 —		6 —		7 —		8 —	
	£	s.	£	s.	£	s.	£	s.	£	s.	£	s.	£	s.
2 Tides, the tide in & next tide out	1	16	2	2	2	8	2	14	3	0	3	10	0	11
3 —, includ. going in & coming out	2	2	2	2	2	8	2	14	3	0	3	10	0	11
4 —	2	2	2	2	2	8	2	14	3	0	3	10	0	11
5 —	2	2	2	2	2	8	2	14	3	0	3	10	0	11
6 —	2	2	2	2	2	8	2	14	3	0	3	10	0	11
7 —	2	2	2	2	2	8	2	14	3	0	3	10	0	11
8 —	2	2	2	2	2	8	2	14	3	0	3	10	0	11
2 Neaps	12	0	16	0	12	0	16	0	12	0	16	0	12	0
3 —	18	0	24	0	18	0	24	0	18	0	24	0	18	0
4 —	24	0	32	0	24	0	32	0	24	0	32	0	24	0
5 —	30	0	40	0	30	0	40	0	30	0	40	0	30	0
6 —	36	0	48	0	36	0	48	0	36	0	48	0	36	0
7 —	42	0	56	0	42	0	56	0	42	0	56	0	42	0
8 —	48	0	64	0	48	0	64	0	48	0	64	0	48	0

Latitude and Longitude of Liverpool

Lat. of the Observatory .. 53° 24' 47.8" N.
Longitude in Time 12m. 0.11s. before Greenwich Time.

MISCELLANEOUS INFORMATION.

Eclipses, 1865.

In the year 1865 there will be two Eclipses of the Sun, and two of the Moon—the Greenwich mean time of their occurrence will be as follows:—

First. A Partial Eclipse of the Moon on the 11th April, visible here from its commencement until moon-set. The first contact with the shadow will be at 3h. 45m. in the morning; middle of the eclipse 4h. 38m.; the last contact with the shadow 5h. 31m. The Moon will set at Douglas at 5h. 26m. partially eclipsed.

Second. A Total Eclipse of the Sun on the 25th of April. This Eclipse will be visible only in south latitudes, in Africa, the Southern Ocean, and South America. It will commence at 11h. 37m. in the morning, and end at 4h. 39m. in the evening.

Third. A partial Eclipse of the Moon on the 4th October, the whole of the Eclipse will be visible in these parts of the Earth. First contact with the shadow, 9h. 39m. at night, middle of the Eclipse, 10h. 40m. last contact with the shadow 11h. 41m., greatest obscuration, 0.342 on the Moon's southern limb.

Fourth. An Annular Eclipse of the Sun on the 19th of October, commencing on the Earth at 1h. 25m. in the Afternoon, and ending at 17 minutes past 7 in the Evening. This Eclipse will be visible in the greater part of Europe, North and South America, and the Atlantic. As seen in several parts of this Kingdom, the phenomena will occur as follows in the evening—

	BEGINNING	MIDDLE	SUNSET	MAGNITUDE
Greenwich.....	4h 12m after.	5h 9m after.	4h 57m	0.316
Liverpool	4h 7m ..	5h 3m ..	5h 5m	0.288
Douglas	4h 6m ..	5h 2m ..	5h 9m	0.261
Dublin.....	4h 5m ..	5h 1m ..	5h 18m	0.282
Edinburgh.. ..	4h 4m ..	4h 58m ..	5h 1m	0.263

The first contact will take place about 153° from the Sun's vertex towards the West.

Quarters of the Year.

Spring Quarter commences on the 20th March, at 2h. 6m. evening. — ☉ enters ♈

Summer Quarter commences on the 21st June. at 10h. 45m. morning. — ☉ enters ♊

Autumnal Quarter commences on the 23rd Sept., at 1h. 0m. morning. — ☉ enters ♏

Winter Quarter commences on the 21st December, at 6h. 49m. evening. — ☉ enters ♐

Chronological Notes.

Lunar Cycle or Golden Number .. .	4	Septuagesima Sunday	February 12
Epact.....	3	Lent begins	March 1
Solar Cycle	26	Easter Day	April 16
Dominical Letter	A	Ascension Day	May 25
Roman Indiction	8	Trinity Sunday	June 11
Julian Period.....	6578	Advent Sunday	December 3

The Revolutions, Distances, &c., of the Planets

Names.	Periodical Revolution.					Mean distance from Sun.	Diameter.	Time of Rotation upon their Axis.				Inclination of Axis to Ecliptic.	Hourly motion in their Orbits.		
	Yrs	d	h	m	s	English miles.	Eng. miles	d	h	m	s	°	'	''	Miles.
Sun.....							887,076	25	7	48	0				
Mercury..	0	87	23	15	44	36,890,000	2,950	1	0	5	28				111,256
Venus ..	0	224	16	49	8	68,770,000	7,900	0	23	21	8				81,398
Earth	1	0	5	48	48	95,298,260	7,912	0	23	56	4	23	28	0	75,222
Moon	0	27	7	43	5	95,268,260	2,160	27	7	43	5	1	43	0	2,335
Mars	1	321	22	18	27	145,205,000	4,500	1	0	37	20	28	42	0	56,121
Jupiter ..	11	315	14	39	2	495,917,000	88,780	0	9	55	21	3	22	0	30,358
Saturn ..	29	164	7	21	50	909,026,000	77,230	0	10	16	1	30	0	0	22,351
Uranus ..	83	294	8	39	0	1,828,071,000	35,000								15,846

Population of the United Kingdom according to the Census of 1861.

	Popula. Enumerated.		Increase, 1861.		Decrea. 1861.	
	1851.	1861.	Persons.	Rate per cent.	Persons.	Rate per cent.
ENGLAND AND WALES	17,927,609	20,061,725	2,134,116	12	—	—
SCOTLAND	2,888,742	3,061,117	172,375	6	—	—
IRELAND	6,552,385	5,764,543	—	—	787,842	12
ISLANDS IN THE BRIT. SEAS	143,126	143,779	653	—	—	—
TOTAL UNITED KINGDOM ..	27,511,862	29,031,164	2,307,144	—	787,842	—

Net Increase 1,519,302, or 6 per cent.

Fair and Foul Weather Prognosticator

The following Table and the accompanying remarks, are the results of many years actual observation; and will show the observer what kind of weather will probably follow the entrance of the Moon into any of her Quarters.

MOON	TIME OF CHANGE	IN SUMMER.	IN WINTER.
If New Moon—First Quarter—Full Moon—Last Quarter happens	Between Midnight and 2 in the Morn..	Fair	Hard Frost, unless the wind be S. or W.
	— 2 and 4 do {	Cold, with frequent Showers.....	Snow and stormy.
	— 4 and 6 ..	Rain	Rain.
	— 6 and 8 ..	Wind and Rain.....	Stormy.
	— 8 and 10 {	Changeable	Cold rain, if the wind be W. Snow, if E.
	— 10 and 12..	Frequent Showers	Cold and high winds.
	At 12 o'clock at Noon and to 2 P.M.....	Very Rainy	Snow or rain.
	Between 2 and 4 After.	Changeable	Fair and mild.
	— 4 and 6	Fair	Fair.
	— 6 and 8.... {	Fair, if the wind N.W. Rainy, if S. or S.W.	Fair and frosty, if N. or N. E. Rain or Snow, if S. or S.W.
If New Moon—First Quarter—Full Moon—Last Quarter happens	— 8 and 10	Ditto	Ditto.
	— 10 and 12	Fair	Fair and Frosty.

REMARKS.—1. The nearer the time of the Moon's Change, First Quarter, Full; and Last Quarter to MIDNIGHT, the fairer will the weather be during the 7 days following. The space for this calculation occupies from 10 at night to 2 next morning.—2. The nearer to MIDDAY these phases happen, the more foul or wet the weather may be expected the next 7 days. The space for this calculation occupies from 10 in the forenoon to 2, afternoon.—3. The phases happening from 4 to 10 in the afternoon, may be followed by fair weather, but this mostly depends upon the wind.—4. To prognosticate correctly, where the WIND is concerned, a good VANE should be within sight. Dr. Kirwan remarks, if a storm arise from the East on or immediately preceding the time of the Spring Equinox, or from any point of the compass near a week after; then, in either of these cases, the succeeding summer is dry, four times out of five; but if a storm arise from the S.W., or W.S.W., on or just before the Spring Equinox then the summer following is wet, five times in six.

Useful Stamp Tables

BONDS.	INLAND BILLS.	APPRENTICES' INDENTURES
Given as security for money	Not exceeding £5 .. 0s 1d	If no Premium £0 2 6
Not exceeding £50 .. 1s 3d	£5 10 .. 0 2	Prem. under £30 .. 1 0 0
£50 2 6	10 25 .. 0 3	If 30 50 .. 2 0 0
£100 3 9	25 50 .. 0 6	50 100 .. 3 0 0
£150 5 0	50 75 .. 0 9	100 200 .. 6 0 0
£200 6 3	75 100 .. 1 0	200 300 .. 12 0 0
£250 7 6	100 200 .. 2 0	300 400 .. 20 0 0
£300 8 9	200 300 .. 3 0	400 500 .. 25 0 0
£350 10 0	300 400 .. 4 0	500 600 .. 30 0 0
£400 11 3	400 500 .. 5 0	600 800 .. 40 0 0
£450 12 6	500 750 .. 7 6	800 1000 .. 50 0 0
£500 14 0	750 1000 .. 10 0	1000 and upwards .. 60 0 0
£550 15 3	1000 1500 .. 15 0	
£600 16 6	1500 2000 .. 20 0	SEA INSURANCE POLICIES
£650 18 0	2000 3000 .. 30 0	Upon any voyage, for every £100 charged as follows:
£700 19 3		s. d.
£750 20 6	AGREEMENTS.	Not exc. 10s. per cent. 0 3
£800 22 0	Of the value of £20 and upwards, containing only 1080 words, 2s. 6d.; and for every further 1080 words 2s. 6d.	10s. 20s. 0 6
£850 23 3	Letter of Power of Attorney £1 10 0	20s. 30s. 1 0
£900 24 6	Bills of Lading, each 0 0 6	30s. 40s. 2 0
£950 26 0	Charter Party 0 5 0	40s. 50s. 3 0
£1000 27 3		50s. 4 0
£1050 28 6		For every £100 insured for a term,
£1100 30 0		Not exc. six months 2 6
£1150 31 3		Exc. six months 4 0
£1200 32 6		
£1250 34 0		
£1300 35 3		
£1350 36 6		
£1400 38 0		
£1450 39 3		
£1500 40 6		
£1550 42 0		
£1600 43 3		
£1650 44 6		
£1700 46 0		
£1750 47 3		
£1800 48 6		
£1850 50 0		
£1900 51 3		
£1950 52 6		
£2000 54 0		
£2050 55 3		
£2100 56 6		
£2150 58 0		
£2200 59 3		
£2250 60 6		
£2300 62 0		
£2350 63 3		
£2400 64 6		
£2450 66 0		
£2500 67 3		
£2550 68 6		
£2600 70 0		
£2650 71 3		
£2700 72 6		
£2750 74 0		
£2800 75 3		
£2850 76 6		
£2900 78 0		
£2950 79 3		
£3000 80 6		
£3050 82 0		
£3100 83 3		
£3150 84 6		
£3200 86 0		
£3250 87 3		
£3300 88 6		
£3350 90 0		
£3400 91 3		
£3450 92 6		
£3500 94 0		
£3550 95 3		
£3600 96 6		
£3650 98 0		
£3700 99 3		
£3750 100 6		
£3800 102 0		
£3850 103 3		
£3900 104 6		
£3950 106 0		
£4000 107 3		
£4050 108 6		
£4100 110 0		
£4150 111 3		
£4200 112 6		
£4250 114 0		
£4300 115 3		
£4350 116 6		
£4400 118 0		
£4450 119 3		
£4500 120 6		
£4550 122 0		
£4600 123 3		
£4650 124 6		
£4700 126 0		
£4750 127 3		
£4800 128 6		
£4850 130 0		
£4900 131 3		
£4950 132 6		
£5000 134 0		
£5050 135 3		
£5100 136 6		
£5150 138 0		
£5200 139 3		
£5250 140 6		
£5300 142 0		
£5350 143 3		
£5400 144 6		
£5450 146 0		
£5500 147 3		
£5550 148 6		
£5600 150 0		
£5650 151 3		
£5700 152 6		
£5750 154 0		
£5800 155 3		
£5850 156 6		
£5900 158 0		
£5950 159 3		
£6000 160 6		
£6050 162 0		
£6100 163 3		
£6150 164 6		
£6200 166 0		
£6250 167 3		
£6300 168 6		
£6350 170 0		
£6400 171 3		
£6450 172 6		
£6500 174 0		
£6550 175 3		
£6600 176 6		
£6650 178 0		
£6700 179 3		
£6750 180 6		
£6800 182 0		
£6850 183 3		
£6900 184 6		
£6950 186 0		
£7000 187 3		
£7050 188 6		
£7100 190 0		
£7150 191 3		
£7200 192 6		
£7250 194 0		
£7300 195 3		
£7350 196 6		
£7400 198 0		
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£7500 200 6		
£7550 202 0		
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£7800 208 6		
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£8000 214 0		
£8050 215 3		
£8100 216 6		
£8150 218 0		
£8200 219 3		
£8250 220 6		
£8300 222 0		
£8350 223 3		
£8400 224 6		
£8450 226 0		
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£8550 228 6		
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£9650 258 0		
£9700 259 3		
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£9800 262 0		
£9850 263 3		
£9900 264 6		
£9950 266 0		
£10000 267 3		

PROBATE OF WILLS.

£20 £100 .. £0 10
100 200 .. 2 0
200 300 .. 5 0
300 450 .. 8 0
450 600 .. 11 0
600 800 .. 15 0
800 1000 .. 22 0
1000 1500 .. 30 0
1500 2000 .. 40 0
2000 3000 .. 50 0
3000 4000 .. 60 0
4000 5000 .. 80 0
5000 6000 .. 100 0
6000 7000 .. 120 0

Table of Wages and Expences

TO WHICH A WITNESS ATTENDING THE MANX COURTS, AS UNDER, IS ENTITLED

PARISHES.	Patrick.	German.	Michael.	Ballaugh.	Jurby.	Andreas.	Bride.	Lezayre.	Maughold.	Lonan.	Onchan.	Braddan.	Marown.	St. Ann.	Arbory.	Malew.
Castletown	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.
Gentleman . . .	3 6 5	3 7 0	8 9 10	6 10 6	10 6 12	3 10 6	10 6 10	6 8 9	7 0 5	3 7 0	3 7 0	3 7 0	3 7 0	3 7 0	3 7 0	3 7 0
Tradesman . . .	2 11 3	2 6 4	1 4 8	5 3 5	3 5 3	5 10 5	3 5 3	4 8 4	1 3 6	2 11 2	4 1 9	2 11 2	4 1 9	2 11 2	4 1 9	2 11 2
Tradeswoman . .	2 4 2	1 1 3	6 4 1	4 8 4	8 5 3	4 8 4	8 4 8	4 8 4	1 3 6	2 11 2	4 1 9	2 11 2	4 1 9	2 11 2	4 1 9	2 11 2
Labourer . . .	1 10 2	2 2 2	6 2 10	3 2 3	2 3 2	3 6 3	2 3 2	3 2 2	10 2 6	2 2 2	6 1 10	1 10 1	1 10 1	1 10 1	1 10 1	1 10 1
Douglas	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.
Gentleman . . .	8 9 7	0 8 9	10 6 12	3 8 9	8 9 7	0 5 3	3 3 6	2 4 3	6 5 3	7 0 8	9 10 6	11 0 12	2 2 2	2 2 2	2 2 2	2 2 2
Tradesman . . .	4 8 4	1 4 8	5 3 5	10 4 8	4 8 4	1 3 6	2 11 2	4 1 9	2 11 2	4 1 9	2 11 2	4 1 9	2 11 2	4 1 9	2 11 2	4 1 9
Tradeswoman . .	4 1 3	6 4 1	4 8 4	8 5 3	4 8 4	1 3 6	2 11 2	4 1 9	2 11 2	4 1 9	2 11 2	4 1 9	2 11 2	4 1 9	2 11 2	4 1 9
Labourer . . .	2 10 6	6 2 10	3 2 3	2 3 2	3 6 3	2 3 2	3 2 2	10 2 6	2 2 2	6 1 10	1 10 1	1 10 1	1 10 1	1 10 1	1 10 1	1 10 1
Ramsey	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.
Gentleman . . .	10 6 8	9 7 0	5 3 7	0 5 3	3 3 6	2 4 3	6 5 3	7 0 8	9 10 6	11 0 12	2 2 2	2 2 2	2 2 2	2 2 2	2 2 2	2 2 2
Tradesman . . .	5 3 4	8 4 1	3 6 4	1 3 6	2 11 2	4 1 9	2 11 2	4 1 9	2 11 2	4 1 9	2 11 2	4 1 9	2 11 2	4 1 9	2 11 2	4 1 9
Tradeswoman . .	4 8 4	1 3 6	2 11 2	4 1 9	2 11 2	4 1 9	2 11 2	4 1 9	2 11 2	4 1 9	2 11 2	4 1 9	2 11 2	4 1 9	2 11 2	4 1 9
Labourer . . .	3 2 2	10 2 6	2 2 2	6 2 10	3 2 3	2 3 2	3 6 3	2 3 2	3 2 2	10 2 6	2 2 2	6 1 10	1 10 1	1 10 1	1 10 1	1 10 1

A Tradesman attending to give evidence respecting matters connected with his trade, to be allowed at the discretion of the Court, any sum not exceeding 12s. 3d.; a professional Gentleman any sum exceeding 24s. 6d.

General Marketing Table

	2d.	2½d.	3d.	3½d.	4d.	4½d.	5d.	5½d.	6d.	7d.	7½d.	8d.	8½d.	9d.	9½d.	10d.	10½d.	11d.	11½d.
N	s	d	s	d	s	d	s	d	s	d	s	d	s	d	s	d	s	d	s
20	4	0	5	0	6	0	7	0	8	0	9	0	10	0	11	0	12	0	13
40	8	0	10	1	0	1	2	1	4	1	6	1	8	1	10	1	12	1	14
60	12	0	15	1	1	2	3	2	6	2	9	2	12	2	15	2	18	2	21
80	16	0	20	1	2	3	4	3	8	2	12	3	16	2	20	3	24	3	28
100	20	0	25	1	3	4	5	4	10	2	14	3	20	3	25	3	30	3	35
120	24	0	30	1	4	5	6	5	12	2	16	3	24	3	30	3	36	3	42
140	28	0	35	1	5	6	7	6	14	2	18	3	28	3	35	3	42	3	49
160	32	0	40	1	6	7	8	7	16	2	20	3	32	3	40	3	48	3	56
180	36	0	45	1	7	8	9	8	18	2	22	3	36	3	45	3	54	3	63
200	40	0	50	1	8	9	10	9	20	2	24	3	40	3	50	3	60	3	70
220	44	0	55	1	9	10	11	10	22	2	26	3	44	3	55	3	66	3	77
240	48	0	60	1	10	11	12	11	24	2	28	3	48	3	60	3	72	3	84
260	52	0	65	1	11	12	13	12	26	2	30	3	52	3	65	3	78	3	91
280	56	0	70	1	12	13	14	13	28	2	32	3	56	3	70	3	84	3	98
300	60	0	75	1	13	14	15	14	30	2	34	3	60	3	75	3	90	3	105
320	64	0	80	1	14	15	16	15	32	2	36	3	64	3	80	3	96	3	112
340	68	0	85	1	15	16	17	16	34	2	38	3	68	3	85	3	102	3	119
360	72	0	90	1	16	17	18	17	36	2	40	3	72	3	90	3	108	3	126
380	76	0	95	1	17	18	19	18	38	2	42	3	76	3	95	3	114	3	133
400	80	0	100	1	18	19	20	19	40	2	44	3	80	3	100	3	120	3	140
420	84	0	105	1	19	20	21	20	42	2	46	3	84	3	105	3	126	3	147
440	88	0	110	1	20	21	22	21	44	2	48	3	88	3	110	3	132	3	154
460	92	0	115	1	21	22	23	22	46	2	50	3	92	3	115	3	138	3	161
480	96	0	120	1	22	23	24	23	48	2	52	3	96	3	120	3	144	3	168
500	100	0	125	1	23	24	25	24	50	2	54	3	100	3	125	3	150	3	175

Even numbers only are given in the above Table to make it more comprehensive.—For example, required the value of 17 yards of calico, at 8d. per yard. By referring to the Table, you will find 16 yards to be 10s. 8d., and by adding the price of the odd yards will give you the correct amount.

Table to calculate Wages, &c

Year	Per M.	P.W.	P.D.	Year	P.	M.	P.	W.	P.	D.
£	£	s	d	£	£	s	d	£	s	d
1	0	1	8	0	15	1	5	0	5	9
2	0	3	4	0	16	1	6	8	0	10
3	0	5	0	1	17	1	8	4	0	11
4	0	6	8	1	18	1	10	0	6	12
5	0	8	4	1	19	1	11	8	0	13
6	0	10	0	2	20	1	13	4	0	14
7	0	11	8	2	21	1	15	0	11	15
8	0	13	4	3	22	1	16	8	0	16
9	0	15	0	4	23	1	18	4	0	17
10	0	16	8	4	24	1	20	0	13	18
11	0	18	4	5	25	1	21	8	0	19
12	1	0	0	6	26	1	23	4	0	20
13	1	1	8	6	27	1	25	0	14	21
14	1	3	4	7	28	1	26	8	0	22

If the Wages be Guineas instead of Pounds, for each Guinea add One Penny to each Month, or One Farthing to each Week.

RULE FOR CALCULATING INTEREST, at 5 per cent.
—Multiply the Pounds by the Days, and divide the Product by 365. The Quotient gives the interest at 5 per cent. in Shillings.

Weights

BY WHICH GRAIN, ETC., ARE SOLD.

ISLE OF MAN.

lbs.

WHEAT, per bushel of 64, or boll of 256
BARLEY, per bushel of 50, or boll of 200
OATS, per bushel of . . . 40, or boll of 240
BEANS or PEAS, per
bushel of 60, or boll of 240
POTATOES, per stone of 14, or boll of 448

LIVERPOOL.

WHEAT, per bushel 70
BARLEY . . . do 60
OATS do 50
BEANS, per 480 lbs. and 450
INDIAN CORN 280
FLOUR, per sack 190
FLOUR, per barrel 240
OATMEAL, per load 90
POTATOES, per measure 90

MARINERS' GUIDE

TO THE

Principal Ports and Harbours

IN THE

BRISTOL AND ST. GEORGE'S
CHANNELS,
THE IRISH SEA,
AND THE NORTH CHANNEL;

CONTAINING A SERIES OF CLEAR AND CONCISE

SAILING DIRECTIONS

FOR THE

WEST COASTS OF ENGLAND, WALES, AND
SCOTLAND, THE ISLE OF MAN,

AND THE

EAST, SOUTH-EAST, NORTH-EAST, AND
NORTH-WEST COASTS OF IRELAND;

WITH

Tables of the Magnetic Bearings and Distances

OF DIFFERENT

HEADLANDS, HARBOURS, AND LIGHTS

ON THOSE COASTS.

. The Bearings and Courses in these Directions are those by compass,
and the Distances are nautical miles, of 60 to a degree.

MARINERS' GUIDE.

NOTICE.—Vessels entering the Harbours of the Isle of Man, must give a look out for the new Breakwaters now erecting, from which lights are exhibited during the night.

ISLE OF MAN.

The **ISLE OF MAN** lies in a N.E. by E. and S.W. by W. direction, and is about 30 miles in length and 11 in breadth. The Northernmost Point of Ayre is in lat. 54 deg. 27 min. N., and long. 4 deg. 20 min. W. The

Calf Island,

At the S.W., is in lat. 54 deg. 3 min. N. and lon. 4 deg. 50 min. W. On this Island are two Lighthouses, 187 yards distant from each other, bearing N.E. $\frac{1}{2}$ E. and S.W. $\frac{1}{2}$ W. The higher Light bears from the dangerous sunken rocks called the *Chickens* N.E. $\frac{1}{2}$ E., distant about a mile and a quarter: when the Lights are in one they lead on the Chickens. These Lights are **DOUBLY** revolving, without color, making their revolution in 2 minutes, and becoming gradually fainter during that time, until, at a distance, they appear totally obscured. At their brightest period they may be seen seven leagues off, resembling a planet. Between the Chickens and Calf is a passage about a mile broad, through which the tide sets from the W. round the Calf Point *very strong* outside of the *Eyre Rock*, and also through the passage between the Island and S.W. Point of Man. There has been erected in the Sound of the Calf, on the "Thusla Rock," a Large Oblong Beacon. $2\frac{1}{2}$ miles to the east is **PORT ST. MARY**, where there is good anchorage behind the Pier, which has been lately very much improved, but a dangerous rock called *Carrick*, lies about $\frac{3}{4}$ of a mile S.S.E. $\frac{1}{2}$ E. from the Village. This harbour has about 9 or 10 feet water at neap tides, and 14, 15, 18, &c. at spring tides. In running for it, keep *Scarlet Head* to the S. of *Castletown*, a good sail's breadth open, to avoid the *Carrick Rock*. On entering, take the quay as close as circumstances will admit. A **LIGHT** is exhibited throughout the year, on the larboard hand on entering the harbour. Five miles E. from the Chickens and $2\frac{1}{4}$ from Port St. Mary, is *Scarlet Head*, the westernmost point of

Castletown Bay.

The bottom towards the entrance is generally rocky, and there are three shoals or rocks dry at low water, the largest of which, *Lheeahrio*, is a quarter of a mile long and 500 feet wide, and is marked on the east end by a large Black Buoy. A **RED** stationary light, to be kept on the larboard hand on entering, is erected on the new pierhead, which lies 80 yards

outside the old pierhead, in a S.S.E. direction therefrom. The Buoy on *Lheeahrio* Rock is placed in five fathoms at low water, having *Langness Point*, by compass bearing S. $\frac{3}{4}$ E., and the lighthouse on the pierhead, N. $\frac{3}{4}$ E. On entering the Bay be careful to leave the Buoy on the larboard hand, and in working into the Bay from the Westward, you must not bring the Buoy to the Southward of E.S.E.; nor open *Spanish Head* to the Northward of the Stack of *Scarlet* until Eastward of the Buoy, or until the lighthouse on the pierhead bears N. $\frac{1}{2}$ E., then steer for the harbour. The anchorage is sheltered from N.W. round by N. to S.S.E., the marks for which are, *Spanish Head* just open to the Southward of the Stack of *Scarlet*; the Steeple of *Castletown Chapel* in line with the Eastern part of a Gap in the Mountain bearing N. by W., and *King William's College* N.E. by N., where there are 9 fathoms at low water, spring tides, and safe anchorage.

Langness Point,

An isthmus running out from the mainland, 2 miles to the S.W., has a turret on the point to identify its situation. There are **SUNKEN** rocks all about it, and the tide sets like a race upon the Point from the Chickens, at the rate (spring tides) of 6 miles an hour, and runs E.N.E. from 2 to 5 or 6 miles from the land, diminishing in strength to *Maughold Head*. To avoid the inset between the Chickens and *Langness Point*, it is advisable for strangers on no account to come within 3 or 4 miles of the land. On the E. side is

Derbyhaven,

Affording anchorage for large merchant ships, and sheltered from all winds except E. to S.E. The best **ANCHORAGE** is on the N. side of *St. Michael's Island*, in 3 or 4 fathoms, the castle (or fort) on it bearing S.E. by S. Small vessels may run further up. There is a **LIGHT** at the entrance of the harbour, which is lighted only during the herring fishing season. The stream, or rather eddy, along the E. side of *Langness* runs 10 hours S., from 2 hours of flood to the last of ebb on the shore. About 3 miles to the E. of *Derbyhaven* is *St. Ann's Head*, from which to

Douglas Head,

E. is about 2 miles, upon which a **LIGHTHOUSE** has been erected, the light from which is **STATIONARY**, and appears like a star of the first magnitude at the distance

of 14 miles. The Bearings of the light are as follows:—From CLAY HEAD, W. by S. $\frac{1}{2}$ S., 4 miles; from LANGNESS POINT, E. by N. $7\frac{1}{2}$ miles. The light will not be visible from Langness Point; but with an offing of 3 miles from that Point, the light will be seen bearing N.E. $\frac{1}{4}$ E., and the Calf Lights at the same time bearing N. W. by W. $\frac{1}{4}$ W. Vessels running for Douglas, between E. by N. $\frac{1}{2}$ N. to W. by S. $\frac{1}{2}$ S., will see the light at 5 miles' distance. Blowing fresh from the W. and bound for the bay, a vessel should keep pretty close to Douglas Head, or she will be thrown to leeward of St. Mary's Rock, by the strong and variable gusts off the high land to the S.W., where she will be exposed and in bad anchorage. On this rock a Tower has been erected, the appearance of which in the night is like a square-rigged sloop under sail. Anchor in the bay between St. Mary's and the S. shore, 3 or 4 cables East of the pierhead, where there is a light exhibited throughout the year, to shew ships into the Harbour; to enter which keep close to the pierhead. Four miles E.N.E. from Douglas Head is

Clay Head,

Round which is Laxey Bay, where there is good anchorage in 6 fathoms depth. From Clay Head to Maughold Head the course is N.E. $\frac{1}{2}$ E. 7 miles, and round the latter to

Ramsey,

N.W. N'y. $2\frac{1}{2}$ miles. To the E.S.E. of the town is Port Lewagne. There is excellent anchorage and shelter from 1 to $1\frac{1}{2}$ miles opposite the town, as the bottom is good stiff clay; but there is generally a heavy sea and hard riding in it with winds from S. to E.N.E., to all of which it is open. The harbour, which is a dry one, will admit vessels drawing 17 or 18 feet water at spring tides, and 11 or 12 feet at neap tides. There is a lighthouse on the quay, a stationary light, of a RED colour, is exhibited throughout the year. In the bay the stream runs nine hours N. and three hours S., beginning at 2 hours' flood. There are three banks off this bay that deserve notice. The BAHAMA BANK, or RIG, bears N.E. 2 leagues from Ramsey town, and is about 6 miles in length from S.S.E. to N.N.W., with only 6 feet depth of water at the S. end, differing in other parts from 9 to 12 feet, and is rather more than $\frac{1}{2}$ a mile broad. The BAHAMA FLOATING LIGHT, exhibiting two BRIGHT FIXED lights, is moored a mile off the S.E. tail of the shoal, in eleven fathoms, low water, spring tides, and with the following compass bearings:—King William's Bank Buoy, E. by N. $\frac{1}{2}$ N. nine miles; Point of Ayre lighthouse, N. by W. $\frac{3}{4}$ W.; Maughold Head, W. by S.; Clay Head, S.W. by W. $\frac{1}{4}$ W. WHITESTONES BANK,

so called from its composition, lies S.S.E. $1\frac{1}{2}$ miles from the extreme Point of Ayre, with a good passage between them; it bears N.N.E. from Maughold Head, and is $\frac{1}{2}$ a mile in length N. and S. and a $\frac{1}{2}$ in breadth E. and W., with 6 feet at low water spring tides. POINT OF AYRE BANK is a ridge extending $\frac{1}{2}$ a mile from the Point to the distance of 1 mile E., and thence circularly to the S. and E., always with a considerable ripple, nearly in a line with the BAHAMA BANK. KING WILLIAM'S BANK is 8 miles in length from S.E. to N.W., and $\frac{1}{2}$ a mile broad: the N. W. end is E. $6\frac{1}{2}$ miles from the Point of Ayre, and N.E. 11 miles from Maughold Head, from which the S.E. end bears E. N.E. $\frac{1}{2}$ E. $13\frac{1}{2}$ miles, and from the Point of Ayre, E. S.E. 12 miles distant. The least depth of water on it is 18 feet. A Green Buoy, marked "wreck," is moored on the wreck of a vessel which lies about 4 miles N. E. ward off Ramsey, in the fairway of vessels coasting along the E. side of the island. The Buoy is moored about 10 fathoms to the Eastward on outside of the wreck in 6 fathoms low water spring tides. The following are the bearings from the buoy:—Point of Ayre Lighthouse N.; Lighthouse on Ramsey Pier, S.W. $\frac{1}{2}$ W.; Maughold Head, S. $\frac{1}{2}$ W. Another Green Buoy, marked "wreck" is moored on the wreck of a second vessel in Ramsey Bay, about 4 miles N. Eastward off Maughold Head, in the way of vessels coasting along the E. side of the Island. The Buoy is moored about 10 fathoms to the Eastward on outside of the wreck in 9 fathoms. The following are the bearings from the Buoy:—Ramsey Mill, N.W. by W.; Maughold Head, S.W. The

Point of Ayre Lighthouse

Bears N.N.E. $\frac{1}{2}$ E. from Maughold Head, distant 8 miles, and the lantern is 106 feet above the sea. It is REVOLVING, showing alternately a BRIGHT and RED coloured light, becoming from a star-like appearance gradually stronger, until the attainment of the utmost brilliancy every two MINUTES. The light of the common colour is to be seen 4 or 5 leagues off; but the RED one is not distinct at so great a distance. Maughold Head prevents the light being seen by a navigator S. of it, as does Rue Point when he is W. of it. N. by W. $\frac{1}{2}$ W. $1\frac{1}{2}$ miles from the Point of Ayre is STRUNAKILI BANK, bearing from Jurby Point E. by N. 5 miles; it is $1\frac{1}{2}$ miles long E.S.E. and W.N.W., and nearly $\frac{1}{2}$ a mile broad. There are 3 fathoms on the shoalest end, but the sea breaks and the tide sets strong upon it; keeping WITHIN $1\frac{1}{2}$ miles of the land will clear the whole.—From the Point of Ayre to Jurby is 7 miles to the W., and hence to the Peel Light, S.W. $\frac{1}{2}$ W. 11 miles; 4 miles from Jurby

W. $\frac{1}{2}$ N. and about 3 miles from the land abreast, is a BLIND ROCK, and from

Peel Light,

N.E. by E., 9 miles. This light is stationary, is exhibited throughout the night, and is visible at a distance of eight miles in clear weather. The harbour at Peel is a dry one. Between Jurby and Peel, off Ballabui, lies a shoal $1\frac{1}{2}$ miles from the land, and $3\frac{1}{2}$ miles N.E. $\frac{1}{2}$ E. from the light. A vessel may ride in the bay with the Castle bearing from S.S.W. to S.W. in 6 or 7 fathoms' depth of water. On entering the Harbour, keep the point of the Jetty close on board on the starboard hand and run in, keeping the light on the pierhead on the larboard hand. The Mull of Galloway light adds to the convenience of this Harbour, being visible from the Castle, and only distant N. by E. 26 miles. The Peel Light is about 300 yards S.S.W. from the N.E. point of the Castle. The streams of flood that come to the E. from along the S. coast, and along the N. coast of Ireland, meet about a mile W. of Contrary Head, so called from this circumstance, and there divide into two branches, one of which runs N.E. to the Point of Ayre, and on to Maughold Head, the other S.W. to the Calf; one proceeding round the Calf at 6, the other round the Point of Ayre at 4 miles an hour, meeting off Maughold Head. From Contrary Head to abreast the Calf Lights the course is S.W. 10 miles; and $4\frac{1}{2}$ miles from the W. end of that Isle is

Port Erin,

a sheltered little creek, surrounded by very high land, easy of access, and affording shelter against all E. winds. At the entrance, between the headlands, there is a depth of about 15 fathoms water; here the tide runs very strong at the rate of 6 miles an hour. In the Sound of the Calf the stream runs W. 2 hours before high water on the shore, and continues 6, i.e., two hours before it ebbs on shore. Keep the Calf Lights well open when passing Langness Point.

TIDES.—On the full and change days, it is high water on the shore at Peel at 10h. 48m.; in the Calf Sound, 10h. 57m.; at Douglas, 10h. 48m.; at Ramsey, 10h.; and at the Point of Ayre, 10h. In the Isle of Man, spring tides rise 18 or 20 feet perpendicular; neap tides 9 or 10.

Magnetic Bearings & Distances,

FROM THE HEADLANDS OR HARBOURS IN THIS ISLAND, TO OTHER HEADLANDS OR HARBOURS IN THE CHANNEL.

FROM DOUGLAS HEAD TO	MILES.
St. Bees Light	E. by N. 42
Ravenglass	E. by S. 40
Lancaster Channel	S.E. $\frac{1}{2}$ E. 54
Liverpool Floating Light, S. by E.	$\frac{1}{2}$ E. 59
Chester Bar	S. by E. 60

Great Ormshead	S. $\frac{1}{2}$ W.
Skerries Light	S.W. by S.
Langness Point	S.W. by W.

FROM THE POINT OF AYRE TO

Maughold Head	S.S.W. $\frac{1}{2}$ W.
St. Bees Light ..	E.S.E. $\frac{1}{2}$ E.
Whitehaven	E.S.E. $\frac{1}{2}$ E.
Maryport	E. $\frac{1}{2}$ N.
Ross Light, Kirkcudbright	N.E. $\frac{1}{2}$ E.
Burrow Head	N.N.E.
Mull of Galloway ..	N.W. by N. $\frac{1}{2}$ N.
Copeland Light, Belfast ..	N.W. $\frac{1}{2}$ N.
Liverpool Floating Light ..	S. $\frac{1}{2}$ E.

FROM MAUGHOLD HEAD TO

Skerries Light	S.W. $\frac{1}{2}$ S.
Great Ormshead	S. by W.
Liverpool Floating Light ..	S. $\frac{1}{2}$ F.
Lancaster Channel	S.E. $\frac{1}{2}$ S.
St Bees Head	E.
Ravanglass ..	E.S.E. $\frac{1}{2}$ S.
Whitehaven	E. $\frac{1}{2}$ N.

FROM THE CALF OF MAN TO MILES

Langness	E.S.E. $\frac{1}{2}$ S.
Mull of Galloway	N.N.E. 3
Copeland Light	N. $\frac{1}{2}$ W. 4
South Rock Light ..	N. by W. $\frac{1}{2}$ W. 3
Strangford Lough ..	N.N.W. $\frac{1}{2}$ W. 32
Carlingford Lough ..	N.W. $\frac{1}{2}$ W. 45
Drogheda	W. $\frac{1}{2}$ N. 55
Howth Head	W.S.W. $\frac{1}{2}$ W. 60
Kish L'ship, Dublin Bay	W.S.W. $\frac{1}{2}$ W. 60
Holyhead	S.S.W. 41
Great Ormshead	S. by E. 54
Liverpool Floating Light	S.S.E. $\frac{1}{2}$ E. 64
Skerries Light	S. by W. $\frac{1}{2}$ W. 38
Point Lynas	S. $\frac{1}{2}$ E. 42

FROM PEEL TO

Mull of Galloway Light ..	N. by E. 26
Copeland Light	N.N.W. $\frac{1}{2}$ N. 40
Strangford Lough	N.W. $\frac{1}{2}$ W. 29
Maidens Light	N. by W. $\frac{1}{2}$ W. 57

Free Harbours

No tolls are exigible on vessels entering any of the Harbours in the Isle of Man.

Abstract of the Bye-Laws for regulating the Harbours.

1. Any vessel, through mismanagement, injuring the quays, &c., such injury to be repaired, under penalty of double the value of the damage.
2. No chain cables to be used for mooring vessels, under penalty of £2.
3. No ballast to be discharged without a port sail, under penalty of £2.
4. Vessels heaving ballast or stones into the harbours, penalty £2 per ton.
5. That no person heave stones, dung, &c., into the harbours, under the penalty of £2; and if not removed when ordered, a further penalty of £2.
6. Masters of vessels not obeying Harbour Masters in mooring vessels, penalty £2: all expenses incurred by the Harbour Master in mooring vessels to be paid by master or owners of said vessel.

Any person obstructing Harbour Master in executing his duty, penalty £5.

7. No person to make a fire on the quays without permission, penalty £3.

8. No clog fenders to be used, under penalty of £1, unless hung lengthways.

9. Any person throwing off ends or cutting hawsers, besides paying the damage to the owners, to forfeit £5.

10. That all gunpowder be landed immediately after arrival, under penalty of £10 for every 24 hours it remains on board; and no fire or light to be kept on board while such gunpowder remains in the vessel, further penalty £20.

11. Any dock made for repairing vessels in harbour to be filled up in 24 hours after removal of the vessel, under penalty of £5 for every 24 hours it lies open.

12. No vessel to unload ballast at night under penalty of £10.

13. That no timber, iron, &c. (unless for repairing vessels) be left on the quays longer than two days, on penalty, for every day longer than the said two days, after notice given by the Pier Master, of £1.

14. That no vessel be allowed to take ballast from another, penalty £1, unless by leave of the Harbour Commissioners.

15. Ballast not to lie on the quay longer than 24 hours, under penalty of 5s. per day.

16. All vessels unloading merchandize to have preference of berth in turn.

17. Vessels taking in goods to have any unoccupied berth, but to give it up on the arrival of a loaded vessel.

18. & 19. One person at least to be on board every vessel when afloat, in harbour or bay, under penalty of £2.

20. & 21. No person to act as pilot without commission, under penalty of £10. No vessel compelled to take a pilot.

22. Proprietors of lime-kilns to screen their lights, if liable to be mistaken for harbour lights, under penalty of £5.

23. Persons firing on pier, &c., (except on days of public rejoicing,) penalty 10s.

24. Boats plying for passengers without licence, penalty £2; and owners to be accountable for breach of harbour laws by any of the crew.

25. No person to erect stalls on the quays to cure fish, or deface the quays, &c. under penalty of £2 for every offence.

26. No person to enforce higher rates for pilotage than as follows, which include attendance of boat and four men:

Vessels of 40 Tons	£0 5 0
Vessels above 40 and under 60	0 7 0
Vessels above 60 and under 100	0 13 0
Vessels 100 Tons and larger	1 0 0

27. Vessels must allow ropes or warps of other vessels to be made fast to them, under penalty of £2.

28. All vessels in harbour must keep in their jib and mizen booms, under penalty of £2.

29. No lumber to remain on the quays or steps, under penalty of £1.

30. No conveyance having wheels shod with iron, allowed on Douglas pier, under penalty of £2.

WEST COAST OF ENGLAND.

RIVER RIBBLE TO SOUTHERNESS LIGHT.

The River Ribble.—PORT OF PRESTON.—The entrance to the River Ribble and Port of Preston is indicated by a large buoy at sea called *Nelson*, which should be observed by vessels bound for the river. It is a large Black Buoy with a Cage-Ball at the top, stands 26 feet out of the water, and may be seen in clear weather 10 miles. *Nelson of Preston* is painted upon it. Having observed the Nelson Buoy, the entrance to the River may be made by the North Channel or the Gut. The entrance to the North Channel is northward, and to the Gut southward of Nelson Buoy. The North Channel is buoyed by 10 buoys, numbered 1 to 10, and marked with the letter N.; the Gut by 5 buoys with cages on the top. The buoys are placed in the deepest parts of the Channels. The Gut joins the North Channel at No. 8 buoy, nearly opposite Lytham Lighthouse. The outer buoys of both Channels are placed in 3 fms. water,

and from them the other buoys can be seen. From No. 10 buoy to the commencement of the stone embankments, about three miles east of the town of Lytham, the Channel is marked by perches placed upon the north side, and from thence to Preston by perches placed on the stone embankments on both sides of the Channel. Between buoys four and six in the North Channel vessels drawing 14 feet of water may lie at anchor afloat at low water. A new Lighthouse has been built on the Sandhills, 400 or 500 yards N.E. of the Old Lighthouse, see notice at the end of Almanack. On the north shore of the Ribble, and 3 miles east of the lighthouse, is the town of Lytham, before which there is a small tide light. Here also is a dock, where vessels can lie in safety, and to which a branch of the Lancashire and Yorkshire Railway extends, connecting it with the main line. Vessels drawing 12 to 14 feet can go up

to Preston Quays at spring tides. The quays are connected by a branch with the Railways leading to Manchester, Bolton, Blackburn, Bury, Accrington, and the various other manufacturing towns of Lancashire and Yorkshire, and the Wigan and Burnley coal fields. Mr. W. Allsupp's two Steam Tug Boats ply upon the River for the purpose of towing vessels to and from Preston, and at present, when required, tows vessels at the following rates per reg. ton:—No. 1 buoy to Preston and back 1s. 4d.; No. 1 buoy to Preston, or Preston to No. 1 buoy, 1s.; No. 1 buoy to Lytham, or Lytham to No. 1 buoy, 6d.; Lytham to Preston and back, 8d.; Lytham to Preston, or Preston to Lytham, 6d. Masters of vessels requiring a pilot or tug-boat, and not meeting with one outside the channels, should signal in sight of the lighthouse. A pilot will also, if required, go to any port to conduct vessels into the river on a letter being addressed to Captain Ashburn, Harbour Master Lytham, Lancashire.—By applying to the Admiralty agent, J. D. Potter, 31, Poultry, London, a Chart of the Entrance to the Ribble, published in 1860, can be had for 1s. 6d.

Morecambe Bay.—In sailing towards this bay, from the southward, which is about 8 leagues from Formby Point, keep full 4 miles from the shore, on account of the flat shoal water, known by the name of "Shell Wharf," this begins nearly abreast of the "Red Banks," and extends to the south side of Lune Deep. The western edge of these grounds is steep-to, and there are on some parts of the Shell Wharf, not more than 6 and 9 feet at low water. The entrance to Morecambe Bay is known by the name of Lune Channel, and is 2½ miles wide at the west end. On the southern side is the Point of Rossall, and on the northern side is the Island of Walney; on the former is a conspicuous beacon or landmark, and on the latter a lighthouse, which bear from each other nearly north and south, distant 8 miles. The Point of Rossall is low land, and the beacon, when seen at the distance of about 5 miles, has the appearance of a vessel under sail. Morecambe Bay is encumbered with numerous large sandbanks, many of which dry at low water, and some at half-ebb. The general direction for the mariner, if bound to Lancaster, will be to attend particularly to his soundings, taking care to get into the deep water of the Lune Channel, and to remain there until he obtains a pilot. When in 24 and 25 fathoms, you will perceive the ends of the rock weeds floating, and the water of a darker blue than when you are over any of the banks.

The River Wyre.—The following are the directions for entering the Port of Fleetwood:—On coming from sea, keep the westernmost part of Walney Island to the eastward of Blackcombe until Rossall Landmark bears S.E.: here you are entering the deep water of Lune, where you will have 28 fathoms at low water. The shoals to be avoided on approaching Wyre are, Shell Wharf, North Wharf, and King's Scar Ridge. A large red buoy is laid down nearly on the point of the Ridge, to which a good berth should be given; it also marks the southern side of the Lune deep. A black perch is placed on North Wharf, about three-quarters of a mile S.E. by S. from the King's Scar Buoy. On the north side of Lune deep a black buoy, with globe on the top, and marked "Danger Patch," is placed a few fathoms westward of a shoal patch bearing that name. Between these buoys is the Lune deep or channel, the course up which is E. ½ N. Rossall Landmark is a large wooden structure (of a conical shape) built on the shore of Rossall point, and denotes the southern limit of Morecambe Bay. Walney Island, on which is a revolving light, is the northern limit. Shell Wharf extends to the westward of Rossall Landmark and North Wharf upwards of three miles. If in hazy weather you fall in with low land, and not knowing whether it is Walney or Rossall land, your lead, which should never be neglected, will at once inform you; for 4 or 5 miles off Walney, you will have 8 or 10 fathoms, but at the same distance off Rossall only 4 or 5 fathoms. After passing the Danger Patch and King's Scar Buoys, you will observe the Fairway Buoy to Fleetwood channel. It is a vertically striped black and white buoy, and lies half-a-mile N.N.W. from the Screw Pile or Fleetwood Lighthouse. Enter the channel between the Fairway Buoy and the lighthouse, giving the lighthouse a good berth on the starboard hand, and running up for the No. 2 black buoy on the Little Ford, leaving that buoy on the port hand. You will now have come up with the red buoy guarding the north end of the Big Ford; leave that on the starboard hand; then leaving all the black buoys, which mark the eastern side of the channel, on the port hand, and the red buoys and perches (the latter having red globes on the top) on the starboard hand, round close to the Steep Breast, on the edge of which stands the Lower Shore Lighthouse, and where the tides run very strong: you then enter the Harbour. There are large red buoys for mooring ships to. Sail between the buoys and the shore, letting go your anchor when you reach the upper part of the Canshe Hole; but be careful not to foul the moorings of the buoys, as they run

in various directions across the harbour. Strangers visiting this port should always hoist signal for a pilot, several of whom are constantly on the look-out. There are two pilot cutters (numbered 1 and 2) with pilots for any of the ports in the bay, and are generally cruising off the bay. The Screw Pile or Fleetwood Light is a Fixed Bright Light, seen 8 or 10 miles in clear weather. There are also two Fixed Shore Lights, lighted from half-flood to half-ebb. By day, a black ball hoisted on a pole at the Screw Pile Light and Lower Shore Lighthouses, denotes the same interval of tide. A bell, tolling three strokes per minute in foggy weather, is sounded from the Screw Pile Lighthouse, and may be heard at the distance of two miles. There is good anchorage off North Wharf, anywhere between the King's Scar Buoy and the Lighthouse, in such water as the state of the tides and a vessel may require. A green buoy is placed near a wreck on the Bernard Sand, about half-a-mile N.E. of the Screw Pile Lighthouse; but your vessel should never be that far to the eastward, as the Flood tides run across there, and will set you ashore. There is now at low water Spring Tides, 6 feet of water from sea into the Harbour, by the buoyed channels, keeping the best of the deep. The powerful steam tug "Wyre" belonging to the Port, tows vessels in and out of the Harbour at moderate rates.—A Light Vessel will shortly be moored at sea, off the entrance to Morecambe Bay, of which due notice will be given.

The River Lune.—SUNDERLAND, GLASSON, and LANCASTER.—Sunderland harbour is at the mouth of the River Lune, and is dry. Large vessels may go in after half-flood, and lie on clean ground below the houses, and with neap tides, ships of 12 feet water may ride afloat in the pool, off the westernmost houses in the village. It is not safe riding in the pool with spring tides, because of the rapidity of the stream, which runs there about $4\frac{1}{2}$ miles an hour when strongest. The channel leading into Sunderland is buoyed, and there is a Lighthouse on the south side, over against the point of Sunderland. Bernard's Wharf, the westernmost bank, begins to dry at half-ebb. At the easternmost buoy there is a patch of sand that dries with spring tides only. To come up with the outer or westernmost buoy of the channel of Lune River, take half-flood, and stand no nearer the North Wharf Bank than 8 fathoms water; or keep Lancaster Church Steeple a small sail's breadth open to the southward of the Bluff End of Highfield or Lawson's Wood,—a long hill under the same high land, which terminates in a

remarkable Bluff Point, a little to the northward of the Church Steeple. This mark will bring you up to the Outermost Buoy, clear of North Wharf and Bernard's Wharf; or, when this mark can not be seen, keep the westernmost part of Walney Island to the eastward of Blackcombe, until the Landmark bears about S.E. In this situation you are entering the deep water of the Lune, where you will have 28 fathoms at low water, and the Outermost Buoy bearing about east from you; and should you be forced in by strong gales, or night coming on with a flood-tide, that you cannot keep an offing, you may by observing these directions bring your vessel to an anchor to the southward of the buoy.—If in dark hazy weather you should fall in with low land, bearing E.N.E., &c., and not know whether it is Walney or Rossall land, your lead will at once inform you; for at the distance of 4 or 5 miles from Walney, in that direction you will have 8 or 10 fathoms water, but at that bearing and distance from Rossall, only 4 or 5 fathoms.—*To avoid the Shoals on the north side of the Bay:*—Near low water come no further in, with a vessel of considerable draft of water, than where Walney Lighthouse is open to the eastward of the highest part of Blackcombe, when the Landmark bears S.E., as you are here to the westward of the Stony Patches on the north side of the Lune, where you may safely stand off and on for a pilot.—*To avoid the Shoals on the south side of the Bay:*—Shell Wharf extends W. by N. to W. by S. from the Landmark, therefore you must take care about low water to keep the Landmark to the southward of E.S.E., and when you steer for the buoy at the proper time of the tide, and having fallen into the deep water of the Lune, by observing the foregoing directions, you must allow for North Scar and North Wharf, a high bank, which runs out 2 miles northward of the Landmark, and covers about half-flood. About high water, you may venture in the day time to stand over any part of the bay from Pile of Foudry to the Outermost Buoy in the Lune; but in the night or thick weather, keep further out to the westward, taking care to keep the lead constantly going, and watch every opportunity to take the bearings of the marks before mentioned, until you obtain a pilot.—The *First*, or Outermost Buoy, lies in $6\frac{1}{2}$ fathoms at low water, neap tides, pass on the south side of the Buoy, with Pile Castle bearing N.N.W. $\frac{1}{2}$ N.; Lighthouse on Walney, N.W. by N. $\frac{1}{2}$ N.; North End of North Wharf, W. by S.; Landmark on Rossall Point, S.W.; Foot of Wyre Lighthouse, S.W. by W.; Lancaster Church Steeple, a little open with Highfield, E. by N.; Second Buoy, E.S.E. The *First*

Buoy must be passed on the south side. If too early of the tide, or too late in the evening to proceed up the river, you have good anchorage one cable's length to the westward of the Second Buoy, under Bernard's Wharf, where you will have 3 fathoms at low water, and little current; but you must not proceed up the river with a vessel of considerable water draft until after half-flood. The *Second Buoy* lies in 3 fathoms, with Outermost Buoy bearing W. N. W.; Third Buoy, E. S. E. The *Third Buoy* lies in 3 feet, with Second Buoy bearing W. N. W.; Fourth Buoy, S.E. by S. The *Fourth Buoy* lies in 3 feet, with Third Buoy bearing N. W. by N.; Fifth Buoy, E. $\frac{1}{2}$ S. The *Fifth*, or Innermost Buoy, lies in 3 feet, with Fourth Buoy bearing West $\frac{1}{2}$ N.; Lighthouse on Abbey Scar, East. Keep the Upper and Lower Lighthouses in a line, and guard against the flood-tide setting strong to the southward, up Cocker. Soon after you have passed the Lower Lighthouse, keep Basil Barn a little open to the southward of Overton Chapel, which will take you clear of Thornbush Fishery and Town's Skear, to Sunderland, where you may obtain a pilot. The deepest water is on the south side of all the Buoys, and the River Buoys are placed on the north side of the channel.—GLASSON is about 5 miles before you reach Lancaster. Upon the pier is a harbour light, shown at tide time. The tide flows at the dock gates the same time as at Liverpool; adding two inches to every foot of water at Liverpool, will give the height at Glasson. Every vessel going into the dock must clew up her sails, and (if the wind be any way to the northward) let go an anchor before coming into the Dock Gut, to prevent her anchor bills running through her bows and destroying the works. If the wind be from the westward, and a flowing tide, she may safely touch on the west side, and be veered alongside the pier-head, by a line from the westward; but on no pretence whatever is any vessel to attempt going in under ever so easy sail, as several serious losses have already been sustained thereby; and no steam-vessel is to use her paddle wheels either in going in or out of dock, but to let off steam before doing so. Masters of vessels offending in these particulars are liable to a penalty of £5, besides having to repair the damage.—From Glasson to LANCASTER the Channel is irregular, variable, and shallow; the shallowest part of it having no more than 7 feet water at high water with neap tides, and 12 or 14 at high water with spring tides. Pilots, legally appointed to conduct vessels to and from the quays at Lancaster, may be obtained at Snatchems, near Sunderland.

Morecambe Harbour.—This har-

bour is situate at the terminus of the North Western Railway, and is connected with the Midland, and Lancaster and Carlisle Railways. A new stone pier has recently been constructed, and super accommodation provided for the transshipment of passengers and merchand between the railway trains and steam boats. The dues levied on vessels in respect of lights and buoys are 2d. per ton on vessels from ports in the United Kingdom, and 3d. per ton on vessels from ports beyond, but when such dues have been paid three times in one year by a vessel, they are then reduced to 1d. per ton on the same vessel for the remainder of the year. There are no other dues or port charges on vessels.—The sailing directions for Fleetwood or Lancaster must be still adhered to until the Light at Foot of Wyre bears South one mile distant, then, if flood-tide, haul up N. by N., and, if ebb, N.E., this course leads to the Entrance of the Channel to Morecambe Harbour, which is defined by No. 1 Red on the Starboard, and No. 1 Black Buoys on the Port hand, moored as hereinafter described:—A NEW LIGHTSHIP has been substituted for the Screw Pile Lighthouse, formerly on Clark's Wharf, and is now moored in Mid Channel, about three-quarters of a mile Eastwards of No. 1 Black Buoy, in four fathoms low water of ordinary Spring Tides; the Compass bearing of this Lightship are as follows:—To Walney Light N.W. $\frac{1}{2}$ W. distance $6\frac{1}{2}$ miles; Wyre Light S.W. by S. distance $4\frac{1}{2}$ miles; Morecombe Harbour Pier Head Light, E. $\frac{1}{2}$ N., distance $5\frac{1}{2}$ miles. The Ship is painted Red with "Morecombe" in large white letters on her sides, has one Mast with Circular Beacon and exhibits a RED LIGHT from Sunset to Sunrise, visible all round the horizon in clear weather $5\frac{1}{2}$ miles; when there is 8 feet of water in the Channel up to the Harbour, a Black Ball will be hoisted on the Flagstaff aft by day and a White Light shown on the bluff of the Bows at night. During Foggy Weather or Snow, a bell will be struck three times every minute. N.B.—The Lightship is moored with a single anchor, and in rough weather will ride with 100 fathoms of chain out. Masters of vessels running in or out of the Channel are therefore requested to give the Ship a sufficiently wide berth. Seven Buoys define the Channel leading to Morecambe Harbour, viz.:—No. 1 Red Buoy on the Western Point of Clark's Wharf Spit, the compass bearings from which are:—To Foot of Wyre Light, S.W. by S. $\frac{1}{2}$ S.; to Walney Light, N.W. $\frac{1}{2}$ N.; to New Light Ship, N.E. $\frac{1}{2}$ E.; to No. 1 Black Buoy, N.E. by N. $\frac{1}{2}$ N. No. 1 Black Buoy on the Western Point of Yeoman's Wharf Spit, the compass bearings from which are:—To

Foot of Wyre Light, S.W. by S. $\frac{1}{2}$ S.: to Walney Light, N.W. $\frac{1}{2}$ W.; to New Light Ship, E. by N. $\frac{1}{2}$ N.; to No. 1 Red Buoy, S.W. by S. $\frac{1}{2}$ S. N.B.—These two Buoys define the Mouth of the Channel; they are about one Sea mile apart, and have a depth of about 9 feet between them at dead Low Water Spring Tides. From New Lightship to No. 2 Red Buoy on the North side of Clark's Wharf, the compass bearings are E. $\frac{1}{2}$ N. No. 2 Red Buoy to No. 3 Red Buoy, N.E. by E. From New Lightship to No. 2 Black Buoy on the South side of Yeoman's Wharf, the compass bearings are, N.E. by E. $\frac{1}{2}$ E. No. 2 Black Buoy to No. 3 Red Buoy, E. $\frac{1}{2}$ N. No. 3 Red Buoy has a circular Cage on the top, is placed on the Western Point of Low Scare, and may be passed on either hand. Vessels approaching the Harbour at low water, should anchor below this Buoy, where there is excellent holding ground in a depth of not less than 5 fathoms at dead Low Water of Spring Tides, and remain there until a Black Ball, by day, is exhibited at the end of the Pier, and at night until Half Flood, when there will be a depth of 8 feet in a clear course between the No. 4 Buoys up to the harbour. The Compass bearings from the Red Buoy are:—To No. 4 Red and No. 4 Black Buoys, E. $\frac{1}{2}$ S. No. 4, Red Buoy is on the end of Old Scare, and No. 4 Black Buoy is on the end of Stone Scare. The Lighthouse on the Stone Pier exhibits a White Light from Sunset to Sunrise; in day time a Ball is hoisted when there is 8 feet of water between the No. 4 Red and Black Buoys. The Pier Heads are distinguished at night by four Gas Lamps coloured Green to the West and Red to the North. Two Red Lamps about one-third up the Pier, when brought into use will lead between the No. 4 Red and Black Buoys.

Pile of Foudry.—Pile of Foudry is a harbour near the south end of Walney Island, where large merchant ships may ride in good shelter near the west or south-west side of Roe Island, in from 3 to 5 fathoms water. Small vessels commonly lie aground in the bight, on the east side of Pile of Foudry Island, about a cable's length from high water mark, when the house bears S. by W. In the anchorage near Roe Island the streams of flood meet; one from the north, the other from the south, and make it troublesome to keep the anchor clear. The stream here runs about 3 miles an hour when strongest. On the south end of Walney Island is a stone lighthouse, exhibiting a revolving light 70 feet above high water, flashing every minute, visible in clear weather 3 or 4 leagues; there is also a small fixed light of a red colour.

On the north side of this channel is Walney Island, which is low land, and on the south side are several sandbanks or stony ledges; the most dangerous of these is the Stony Patch, which lies to the westward of all the others, distant from the lighthouse on Haw's Point about four miles; to clear it to the westward, bring the Old Castle on Pile Island just open to the eastward of the lighthouse. The lead should be kept constantly going, and if coming from the southward, bring Blackcombe Hill on with the north end of Walney Island, and keep them so until Walney Lighthouse comes E.N.E., and the ruin upon Foula Island touches Haw's Point. The Helpsford Sand is on the S.E. side of Walney, within a mile of the shore, to clear which, you must bring the dwelling-house near the lighthouse a sail's breadth open of the southernmost sandhills, or the lighthouse just clear of the eastern chimney of the same house, bearing N.E. by E.; then, as you advance, bring the ruin of the house on Foula, before mentioned, on with Haw's Point, and these marks will lead you in. Upon the bar is 15 feet water at 2 hours' flood, and the rise of tide is sometimes 29 $\frac{1}{2}$ feet. The strength of the flood tide is 2 $\frac{1}{2}$ knots an hour, and the ebb nearly the same. In leading to the anchorage with a flood tide, and the wind scant, you may stand along the southern part of Walney about a mile from the shore, and have regular soundings. In dark weather, should you fall in with land bearing E.N.E., and uncertain whether it is Walney Island or the land adjacent to Rossall Point, then you must be guided by your lead, for at the distance of 5 miles from the former are 7 and 8 fathoms, but at the same distance from Rossall there are only 4 or 5 fathoms; allowance must be made for the rise and fall of the tides, making high water full and change at 11 o'clock. In running for the Pile of Foudry anchorage at half-flood, give Haw's Point a berth of half a cable's length, and keep off Pile Castle Point a similar distance, then, should your vessel draw 10 feet water, anchor in the bight below the house on Pile Island, or near to Roe Island, in 5 fathoms, with the lighthouse open to the starboard of Pile Castle. The breadth of the anchorage above Roe Island is nearly 2 cables. Here the ground holds well; as the tide ebbs you become quite landlocked and may shorten your cable, to enable you to swing clear of either side at low water in 3 fathoms.—Vessels bound from Pile to Barrow should leave Roe Island Pier Lighthouse on the starboard hand, when they will fall in with the Fairway Buoy for Barrow, painted black and white. Further on they will find Six Red Buoys. Nearly in a line by keeping them on the starboard hand will lead vessels up to

Barrow Pier, where they will have 18 feet water spring tides, and 10 feet neaps. A strong flashing light from the Iron Works lately erected at Hindpool, $1\frac{1}{2}$ miles north of Barrow, may be seen bearing from Walney Island Light N. $\frac{1}{2}$ W.; Hilp's Ford N. N. E. $\frac{1}{2}$ N.; Cockspeck Scar, E., and may be seen 15 miles seaward.

Ravenglass is a dry harbour, where three rivulets, the Esk, Mite, and Orte, unite about 12 miles to the southward of St. Bee's Head. There is a buoy placed a little within the mouth of the channel, in the middle, near the Fish Wear, which marks the entry. At this buoy, and in most parts of the channel, the depth is 3 fathoms at high water, with neap tides. The best part for vessels to lie aground on is, half a cable's length from the west end of the town of Ravenglass, on the south side of a perch which stands on the point of a sand there. At this anchorage, in the mouth of the river Esk, and also at the meeting of the other rivers, there are 3 fathoms at high water with spring tides, and 10 feet with neaps. To sail into Ravenglass Harbour, take 4 hours of flood, keep above a mile from the coast to avoid Selker and Drig Rocks (till Ravenglass town bears E.N.E.); steer in that course till you see the buoy bearing east, and then steer right for it, keeping within a ship's length of it on either hand; when you are just past the buoy, steer E.N.E., or keep Ravenglass a sail's breadth open to the north of your stern, till you are about half a mile from the east end of the sandy hillocks; hook the small bay, which begins there; keep near a cable's length from the point at the end of the small bay, and anchor half a cable's length from the west end of the town, or off the perch, in the meeting of the three rivers. When the buoy in the entrance bears E., it is also in a line with the south shoulder of Newton Knot Hill, which is a small hill half a mile south of Ravenglass. The tide flows here, full and change, at 11 o'clock; and off the Bar runs as follows: the last half-flood and the first half-ebb set Northward, at the rate of 2 miles per hour, spring-tides; and the last half-ebb and first half-flood Southward at the same rate. There is a foot of water more on the Bar than shown by this Tide Table.

St. Bees Head.—To the Northward of Ravenglass Harbour, distant 13 miles, is St. Bees Head. On its summit is a **LIGHTHOUSE**, the light from which is *stationary*, appearing like a bright star at the distance of 6 or 7 leagues in clear weather. From the entrance of Formby Channel to this Head, the course and distance are N. by E. 20 leagues. In sailing along from Walney Island to St. Bees Head, keep 2 or 3 miles from the shore, and you will clear every

danger. Vessels in moderate weather may stop a tide any where along the coast, for the stream seldom runs more than a mile an hour.

Whitehaven.—About 3 miles E.N. from St. Bees Head is the town of Whitehaven: the harbour is dry, and divided into basins by strong quays, which break the sea. Within the second basin is the best place for vessels drawing above 12 feet water. Here you will find 18 to 20 feet water spring-tides, and 12 to 14 neap. The **HARBOUR LIGHTS** are upon the outer and inner Pierheads. The inner Light is *stationary*, of a RED colour, and is lighted while there are 9 ft. water between the Pierheads. The outer Light *revolves*, is lighted all night, and is seen at a distance of 3 or 4 leagues in clear weather. The light appears in its brightest state once every 2 min., and gradually becomes less luminous, till eclipsed. In the day a *Flag* is hoisted on a pole at the top of the old Lighthouse, while there are 9 feet water in the harbour, on entering which, keep both lights on the starboard hand.—A Blue Light is shown from a lighthouse on the end of the north pier, which has been extended 352 yards.

Harrington Harbour is 4 miles Northward of Whitehaven. A *Lantern* is hoisted upon a pole on the starboard side of the entrance, while there are 8 feet of water in the harbour, and in the day a Red Ball, at the inner end of the pier, during the same interval of tide.

Workington is 2 or 3 miles north-eastward of Port Harrington. A red ball is hoisted upon a pole on St. John's pier when there are 8 feet water in the harbour; and at night a light is exhibited on the pier-head, which answers a like purpose, and can be seen in clear weather at about 3 leagues from any point seaward. The channel into this port is along the south shore, its entrance bearing from St. John's pier nearly E. by S. by compass. It is formed by red buoys on the south side, and black buoys and perches on the north side, the deepest water being midway between. The outer perch has a cask upon it, painted black, which must be kept on the port side in entering. Steer in between the perches and red buoys, giving St. John's pier-head a berth of about 100 feet on the starboard side. After passing St. John's pier a perch with a white board upon it is the leading mark for the channel by day; and, by night, the southernmost of the blast furnaces on the north side kept right a-head, until an inner light which is on a wooden pier bears about S. E. $\frac{1}{4}$ S.; then steer S. E. $\frac{1}{4}$ E. for the entrance to the harbour, keeping the light upon the wooden pier on the

starboard side, and passing a perch with a small black cask upon it by about 10 feet on the larboard side, when the harbour boat will be in attendance.

Maryport, situate about 5 miles N.E. of Workington, is easy of access, free from sand banks, and has a capacious dock, in which vessels are kept constantly afloat, as well as its original tidal harbour and basin. Depth of water in ordinary spring tides, 21 ft. 6 in., neap tides, 13 ft. 6 in.; or by adding 3 ft. to the water shewn in Holden's Liverpool, and the Manx tide tables, a near approximation for each tide will be obtained. A fixed bright light is exhibited on the outer pierhead all night, and another on the inner stone pier whilst there are 8 feet in the harbour; both lights are on the starboard side in entering, and are visible at sea from E.N.E. to W.S.W., the former at a distance of 15 miles, and the latter 10 miles. A Red Ball near the inner lighthouse denotes 8 feet in the day time. The jetty on the south side is distinguished by a Red light, and the north tongue by a Green one. Steam tugs are in readiness every tide, and when required by vessels at night, two lights must be shown one above the other; or by day a union jack at the main. There is good anchorage in stiff clay, about 1½ miles off shore, the outer lighthouse bearing S.E.

Solway Frith.—The entrance to Solway Frith may be considered to commence abreast of Workington, on the English, and at Abbey Head on the Scottish shore, the distance between which is 5 leagues. On the eastern side of the Frith of Solway, about 10 miles north-eastward from Maryport, is

Port Silloth.—This place is daily increasing in importance, being connected by railway with Carlisle, Newcastle, and Edinburgh, the rails of which are laid on the quays. It contains a wet dock, with entrance gates 60 feet wide, and a jetty from the dock entrance 1000 feet outwards to low water mark. The dock is fitted up with Hydraulic Machinery, by which vessels are discharged and loaded with the greatest possible dispatch. The dock sill is 3 feet 6 inches above low water mark; and, by adding 5 feet to any tide in this tide table, the depth over the sill will be given for high water. A Yellow Light is shown in the Lighthouse at the outer end of the jetty from Sunset to Sunrise; except during the time the gates are open, when the Yellow Light is discontinued and a Green Light exhibited in its place. A Red Ball is hoisted on a Pole at the Lighthouse during the time gates are

open by day. In Silloth Bay (between Lee Scar Light and the jetty) there is excellent anchorage in from 4 to 6 fathoms at low water, clay bottom. There is also good anchorage all the way from the fairway buoy to Silloth, with the Red Light a sail's breadth open north of Lee Scar. It is high water here, full and change, 11h. 35m.; spring tides rise 26 feet and neaps 20 feet. The fairway course, from about a mile off Workington to the Light Vessel at the entrance of the channel, is N.E.; and to avoid the tail of Robin Spit, care should be taken not to bring the vessel to the eastward of E.N.E., on which bearing the bright Light on Lee Scar will be in one with it. This Light Vessel is in the middle of the channel, in 3½ fathoms at low water, and exhibits a fixed Red Light at 25 feet above the water, visible six miles. From it Maryport Outer Light bears S. by W. ¼ W., 4½ miles; Southernness Light, N. ¼ E., 5½ miles; and Lee Scar Light, E. N. E., 6 miles. It has a black ball at the mast-head during the day, and in fogs a bell is tolled. Having passed the Light Vessel, run up N. E. by N. ¼ N. 1½ miles which will lead up mid-channel in 3½ to 4 fathoms at low water to the turn Buoys, black and red, where the Cott Red Light opens a ship's length north of Lee Scar, bright, bearing E. by N. ¼ N., alter your course to that direction, which will carry you up the fairway as far as Lee Scar in a depth of 2½ to 5 fathoms. On passing Lee Scar Lighthouse keep a good cable's length to the northward of it. Silloth Harbour is about half a mile above Lee Scar. When following the preceding instructions, it is necessary to bear in mind that, as far as Silloth Bay, the black nun buoys should be kept on the port, and the red can buoys on the starboard hand. The black and white striped buoy marked F, in the fairway off Beckfoot, is passable on each side. The shoalest part of the channel, on which there are 2½ fathoms at low water, is about half a mile below this latter buoy; thence to Silloth the depth is from 3 to 5 fathoms. The harbour expenses, including light charges, are—Coasting vessels 6d.; Foreign vessels 9d. per register ton. Branch Pilots for Silloth may be had (if required) off Maryport; charge, 1s. 9d. per foot. A powerful Steam Tug attends every tide to assist vessels, when required.

Port Carlisle, a dry harbour, 10 or 11 miles up the Frith from Silloth Bay, is connected with Carlisle by railway, the rails of which run on the quays. It is high water here, full and change, at 12h. 10m.; springs rise 18 feet, and neaps 11 feet; the flood runs 3 hours. Vessels running up from sea and bound to Port

Carlisle should alter course for the North Channel at the Fairway Buoy, off Beckfoot, and haul across N. E. by N. $\frac{1}{2}$ N., which course leads up past buoy No. 1 to buoy No. 2, thence N. N. E. leads over the bar to buoy No. 3, from which E. N. E. leads up to Perch Buoy in Powfoot Channel. Vessels in the anchorage at Silloth bound up, after half-flood, may take the South Channel, after leaving the Bay N. E. $\frac{3}{4}$ N. will lead up past buoys Nos. 1 and 2, and up to the White and Black Buoy, thence N. N. E. will lead over the bar to Perch Buoy in Powfoot Channel, afterwards follow the buoys up, which are all placed in the fairway. The harbour expenses, including light charges, are—coasting vessels, 4d., and foreign vessels, 9d. per register ton. Pilots may be had off Maryport; charge, 3s. 6d. per foot.—At Annan Foot there is a bright tide-light, and 2 perches on the western side of the entrance; the light is shown from half-flood to half-ebb. There is also a tide-light on the end of the jetty at Port Carlisle, 3 miles above Annan Foot, on the opposite or southern side of the channel; this light opens off Knockcross Point, on a S. E. by E. bearing. After passing Annan, soundings should be taken of the English side of the channel up to Port Carlisle.

Magnetic Bearings & Distances

FOR THE WEST COAST OF ENGLAND
WESTERLY VARIATION 25 TO 26 DEGREES.

BUOY NELSON, OFF PRESTON (Lat. 43 N., Long. 3 11 14 W.) MILE
To Beaumaris entrance... W. by S.
Dundalk Bar..... N.W. by W. 1
Douglas Head Light N.N.W. $\frac{3}{4}$ W.
Ross Light, Kirkcudbright... N.
WYRE LIGHT, FLEETWOOD (Lat. 53 14 N., Long. 3 1 46 W.)
To Great Orms Head... S.W. by W. $\frac{3}{4}$ W.
Dundalk Bar... N.W. by W. $\frac{3}{4}$ W. 1
WYRE LIGHT, FLEETWOOD MILE
To Wicklow Head Light W. $\frac{1}{4}$ S. 11
Calf of Man L'ts. N.W. by W. $\frac{1}{4}$ W. 6
Walney Light N. by W. $\frac{1}{4}$ W.
WALNEY LIGHT (Lat. 54 2 56 N., Long. 3 10 32.)
To Wyre Light S. by E. $\frac{1}{4}$ E.
N.W. L'tship, L'pool. . S.W. by S. 3
Kish Lightship W. $\frac{1}{4}$ N. 10
Calf of Man N.W. by W. $\frac{3}{4}$ W. 5
ST. BEES' HEAD (Lat. 54 30 50 N., Long. 3 18 W.) MILES.
To N.W. L'tship, L'pool S. by W. $\frac{1}{4}$ W. 65
Tuskar Rock Light S.W. by W. $\frac{1}{4}$ W. 162
Douglas Head Light ... W. by S. 42
WHITEHAVEN (Lat. 54 33 N., Long. 3 26 2 W.)
To Beaumaris entrance .. S.W. $\frac{3}{4}$ S. 76
Skerries Light S.W. $\frac{3}{4}$ W. 64
Bahama Lightship W. by S. 244

WEST COAST OF SCOTLAND.

SOUTHERNESS LIGHT TO THE MULL OF CANTYRE.

Southernness Light, at the west side of Solway Frith, is chiefly useful as a direction to the harbour of Dumfries. It shows a fixed bright light, from N.E. seaward to W., which can be seen at the distance of 11 miles in clear weather.

Little Ross Island—A Lighthouse has been erected upon this Island, which lies off the entrance of Kirkcudbright bay and harbour. It bears a fixed and flashing light, producing 12 bright flashes in a minute, visible from N. by E. to N.W. by W. Southerly, at the distance of 6 leagues.

Kirkcudbright is formed by the Points Balmae and Torrs to the E., and the Island of Little Ross to the W. There are two Towers on Little Ross bearing S.W. from each other, which being kept in one lead over the Bar in the best water to the First Perch on the S.E. shore; thence running N.E. about 300 yards, passing a Red Buoy on the point of the bank on the larboard hand; thence

N.N.W. passing the Perch on the point of St. Mary's Isle on the starboard hand; thence direct to the lower Fish-house, where is a Pool a vessel can ride afloat at spring ebbs. Abreast and above the upper Fish-house there is excellent lying on soft mud, moored to rings on the rocks, and no stream of tide. On the bar of Kirkcudbright River there are about 7 feet water at half-flood. Vessels running for this place, and not having water over the Bar, will find good anchorage in the Ross Roads in from 2 to 3 fathoms at low water, in good clay ground. Should the wind be Southerly, blowing hard, a vessel should bring up on the W. side of the beach just as the sound begins to open, the closer to the beach the better, as it is very steep-to and quite out of the sea. At half-tide she can trip and run up the lake to the Lake of Fish-house, or waiting 4 hours' flood may run up for the Perch off St. Mary's, and proceed to Fish-house or the town. The coast from Kirkcudbright to Belcarey Bay

and River Urr is a bold rocky shore, with neither beach nor harbour.

Belcarey Bay, about 8 miles to the E. of Abbey Head, is formed by the High Lands of Aairds to the W., and Heston Island to the E.; entrance $\frac{1}{2}$ a mile wide. The Heston Island is also high, and high in the middle: this is an excellent place, and too little known. Vessels running for it should keep close past the Aairds, and keep close up till they come above the first salmon weir opposite the large house in the bight, when they may go as far as water will admit, as it is all clean ground, and quite landlocked from all weathers. The tide sets strong E. and W. past all these places, till a vessel comes within the points mentioned.

Wigton Bay lies to the westward of Kirkcudbright Bay, and has a spacious entrance, with several places where vessels may stop in moderate weather, or when the wind blows off the shore. The river channel at the north-west or upper end of the bay, leading to the town of Wigton, is intricate, and only fit for small vessels who know the place. Vessels may stop with good anchorage in 7 or 8 fathoms water, about a mile to the northward of Stein Head, and half a mile from the shore, where the bottom is clean sand.

Garlieston.—This is a safe and sheltered dry harbour in the north-west corner of Wigton Bay, with a convenient quay, against which small vessels lie on an even and soft bottom. The outer bay has shelter from W. winds, and good anchorage between Criggleton Point and Lagerness Point. There is a small ship yard, and a town with good supplies at Garlieston. When desired a light is shown from the pier-head, which has been recently extended 250 feet, and where are at springs, 18 to 20 feet, and 11 to 12, neaps. From the pier-head the Ross Light bears S.E. by E. In taking the harbour, keep the perch off the breakwater on the larboard hand. Port charges, 1d. per ton; harbour boat, 3s. to 6s.

Whitehorn.—To the southward of Stein Head and near Burrow Head is Whitehorn Island, between which and the coast is Whitehorn harbour, in which vessels drawing 12 feet water cannot be neaped above twice a year at the quay. It is well sheltered from all winds. The only danger is the Screen's Reef, a rocky ledge, marked by a perch, extending from the west point, upon which the tide sets very strong. Going into the harbour from the west, if Stein Head be kept open of Kairnharra Hill it will clear the rocks on the west side.

Glenluce Bay.—To the westward of Burrow Head is the bay of Luce, within which and near to the Mull of Galloway lie the Scar Rocks, always above water. There are no shoals near them; but off the Little Scar are two or three rocks, which the sea sometimes washes over. In moderate weather, with W. and S.W. winds, vessels may stop anywhere on the west side of the bay of Luce.

Mull of Galloway.—On the Southern point of the Mull of Galloway, a Lighthouse has been erected, and bears, by compass, from the largest of the Scar Rocks, W. $\frac{1}{2}$ N., 6 miles; from Burrow Head, W. by N. $\frac{1}{2}$ N., 18 miles. The light is intermittent, $2\frac{1}{2}$ minutes bright, then eclipsed $\frac{1}{2}$ a minute; is visible seaward 23 miles from N. E. to N. W. $\frac{1}{2}$ W.; but the high lands of Dramore shut the light from the view of the mariner in coasting along the Port Patrick shores. After rounding the Mull, which is a rocky shore, you will soon reach

Cromack Point, about 4 miles from which is

Port Nessic Harbour, fit only for small craft; but a vessel drawing not more than 6 or 7 feet, may find shelter from N. or N. W. winds, by running aground near the pier head. Seven and a half miles further is

Port Patrick, a small and dry harbour open to the westward. Small vessels must go in at high water, and run aground on the N. side of the creek, or within the pier, so as to be out of the reach of the sea, in case the wind should blow from the W. or South-westward.

Point Corsewall is about 14 miles to the northward of Port Patrick, and is the north-west point of entrance to Loch Ryan; between are some rocks, but they lie close in shore, and are mostly above water. On the rocks off Laggan Point called Ebbstone Rocks, which dry at low water, is a red beacon consisting of a pyramid of iron pillars, 40 feet high, with a cylindrical open cage on the top. From it Corsewall Lighthouse bears N.E. by E.; the highest point of Ailsa Craig, N.E. $\frac{3}{4}$ N.; and Laggan Point, S.S.E. $\frac{1}{2}$ E. On Corsewall stands a Lighthouse, exhibiting a white and red light alternately; these lights revolve, and attain their greatest brilliancy every 2 minutes. They may be seen, like a star of the first magnitude, at the distance of 5 or 6 leagues, and are visible from N.E. by E. northerly, to S.W.

Loch Ryan is capacious, of easy access, well sheltered, with good holding

ground, and depth sufficient for large vessels. The only danger to be avoided is the Scar, a tongue of sand on the western side of the Loch, and about 3 miles up the harbour, which extends $1\frac{1}{2}$ miles south-eastward from Kirkholm Point. There is a large Red Nun Buoy on the S. end of the Scar, which distinctly shews its position. The best anchorage is about $\frac{1}{2}$ a mile to the southward of Cairn Point, in 6 and 7 fathoms. On this point is a tower, exhibiting a fixed light of the natural appearance, serving to lead to the anchorage. Opposite the Lighthouse Tower is a small Red Buoy, to mark the eastern edge of the Scar. Fourteen miles N.N.E. from Loch Ryan is the

Craig of Ailsa, a rock 940 feet high, with deep water all round it, serving as a beacon to guide ships to the entrance of the Clyde.

The **Frith of Clyde** makes a fine open entry to several rivers, having no danger more than a quarter of a mile from the shore, excepting the Brist Rock, which lies three-quarters of a mile W. $\frac{1}{2}$ S. from Turnberry Point; it dries at half-ebb, and is about half-a-mile from shore.

Ayr.—Ten miles from Turnberry Point is the Town of Ayr, with a lofty Spire seen from a considerable distance. Here is a commodious harbour, fit for vessels drawing 12 to 14 feet water. The bar, at low water, has from 4 to 6 feet water over it, and with spring-tides at high water there are from 13 to 15 feet, and with neap from 11 to 12 feet over it; with fresh southerly winds there will be a foot more; for S. and S.W. winds raise the tides in all the rivers of the Frith of Clyde, and N. and N. E. winds have a contrary effect. On the north side of the harbour is a lighthouse exhibiting two lights; the upper bright, having a star-like appearance, and the lower red. There is also a tide-light (red) shown when 8 feet water are on the bar. The distance between the lights is 850 feet; and they bear from one another S.E. by E. $\frac{1}{4}$ E., and N.W. by W. $\frac{1}{4}$ W., and are leading lights for entering the harbour, and when kept in one lead over the bar in the deepest water. The upper or bright light may be seen 12 miles off; the red 9 miles; and the tide light 4 miles off. Vessels drawing 7 feet water may make directly for the bar so soon as the tide-lamp is lighted. A flag is hoisted in day-time at half-flood, and continues to be so until half-ebb. About a cable's length S.W. of the south pier lies St. Nicholas Rock, which dries with spring tides only; you will avoid it by keeping the two red buoys on the starboard hand coming into the harbour, the breakwater being on the larboard hand. There is

an iron steam tug for towing vessels and out; and the bar and harbour being further deepened by means of a powerful dredging machine.

Troon Harbour has an extensive pier and breakwater, with 4000 feet quayage room, and an average depth of 12 feet at low water; at the outer end the rise and fall of the tide is from 8 feet. About 1 mile S.S.W. of Troon is the Lady Isle, a large patch of water with a large and small Beacon on it. The Beacons are not leading marks, and there is plenty of water inside the Isle. At a distance of half-a-mile N.E. from the Isle is a half-tide shoal, on which is a buoy. Here are exhibited two Lights, one, on the inner end of the Pier, intermittent, 40 seconds bright and 20 seconds red; the other on the Pier-head, red. They bear from each other N.E. $\frac{1}{2}$ N. and S. $\frac{1}{2}$ S. 350 yards; and are visible, respectively, 9 and 6 miles. This harbour is perfectly safe, and may be run for in any weather by vessels of moderate draught of water, as there are no dangers but what are to be seen, and pilots are always at attendance. An extensive open wet dock or basin, 400 feet long by 300 wide, with 20 feet at low water tides, and capable of admitting the largest ships or steamboats, adds to the importance of this port. A branch of the Glasgow and Ayr Railway comes down to the harbour, as does also the Railway of the Duke of Portland from Kilmarnock. There is also an extensive ship-yard, with one of the finest graving docks in the west of Scotland capable of receiving ships of the largest size. The magnetic bearings and nautical distances are as follows:—From Troon pier head to Ayr Harbour, S. by W. 9 miles; Dunure Point, S.W., 9 miles; Beacon on Lady Isle, W. by S., $2\frac{1}{2}$ miles.

Irvine.—Four miles and a half from Troon are the town and harbour of Irvine, and nearly midway, is Lappock Rock upon which was erected, in 1843, a beacon about 40 feet above the level of the sea, bearing S.W. Southerly, distant about 12 miles from Irvine bar. There are from 12 to $13\frac{1}{2}$ feet water on the bar at high water spring tides; ordinary tides 12 feet; and at low water 4 feet. There is a red warping buoy placed in the fairway of the river, about two cables' length from the bar perch, which perch must be kept on the starboard hand on going up the river on both sides. Vessels running should keep the middle of the river, and run right up till they come to the end of the stone quay, where they can either beach or anchor. There is a steam tug for vessels frequenting this harbour.

Ardrossan.—At about a mile to the N.N.W. of Saltcoats are the spacious wet dock and harbour of Ardrossan, in which 100 sail of coasters can lie with ease. The pier and breakwater completely shelter the harbour from southerly and westerly winds; and Horse Isle, with the other rocks, protect it from the N.W. The greatest depth at low water in the Inner Tidal Harbour is 10 feet, and in the Outer Harbour 18 feet. The entrance loch to the wet dock is 160 feet long and 40 feet wide; and at average tides there is a depth of 18 feet over the sill of the lock. The railway trains come alongside all the berths in the wet dock and harbour. There are a graving dock and patent slip attached to the wet dock. In place of the two previously existing harbour lights, a new lighthouse, exhibiting a red light, has been erected at the extremity of the Breakwater. This light illuminates an arc of from 15° to 20° in the direction of the open channel leading into the harbour, and bears from the middle of this channel E. and by N., on which bearing it is brightest. A vessel running for the harbour should steer the usual course from Pladda towards Cumbray Light, and when about 14 miles past the former, and 7 miles from the latter light, the Ardrossan Light will be seen, in favourable states of the weather, on the starboard, at the distance of about 5 miles, and bearing E. by N. In running into the harbour the light should never be closed; but the vessel must be kept within the illuminated space in which there is nowhere less than 22 feet at low water. A black buoy marks the north side of the channel by day, which is on the west Grinan Rock, and there is a perch on the Grinan Rock, both to be kept on the Port hand in entering.

The **River Clyde** is remarkable for the ease and safety with which it may be navigated. It is provided with numerous well sheltered harbours, and spacious arms of the sea, of easy access, and capable of containing the largest fleets. In approaching it, there are neither rocks, nor shoals, nor rapid tides to be feared. Ailsa is a high mountainous rock in the mouth of it, conspicuous at more than 10 leagues' distance, and serves as a remarkable beacon to direct ships to it; there are 4 Light Houses to direct mariners farther up, and to good shelter in the night; and there is hardly one opening to be seen but what a stranger, without chart or pilot, might venture safely to run for in the day time, and find good anchorage within it. On coming up the S. or St. George's Channel, and passing Ailsa Rock at 2 miles' distance, the course by compass for Cumbray Head is N.N.E. $\frac{1}{2}$ E. nearly, and will carry you clear of Holy Island, which forms the har-

bour of Lamlash. If at night, the Lights will be seen on Pladda, a small low Island off the S.E. of Arran Isle. The distance between Ailsa Rock and Pladda Lights is about 11 miles, and from Pladda Lights to the Light on Cumbray Island $18\frac{1}{2}$. There are very large Furnaces of Iron Works between Troon and Ardrossan, which shew for a long distance at night, and might mislead a stranger, unless aware of what they are. It would, however, be advisable for strangers to keep between the Rock Ailsa and the Island of Arran, till daylight. When coming in the North Channel, particularly during the winter months, with a N.W. gale, ships should never run to leeward of Arran during the night, but as soon as they pass the Island of Sanda, inside the Mull of Cantyre, they should haul by the wind, on the larboard tack, with the ship under easy sail, standing 2 hours each way. By this you keep in smooth water, and when daylight comes, can act according to circumstances. Should you run to the leeward of Arran, the wind, which was N.W. will be found at N.W. by N. and sometimes N.N.W. blowing heavy, with very heavy gusts. Keeping to windward, should the gale increase or continue long, you have Loch Ryan under your command; its entrance about 17 miles S. $\frac{1}{2}$ W. from Ailsa; but once getting to leeward you can never regain your ground. On approaching the Cumbray Islands, 3 entrances appear before you: the middle one is the main ship channel. In clear weather you cannot mistake the Cumbray Island, being distinguished by an old Light Tower on its highest part, a little to the southward of the present Light-house, which is low down on the hill side. There is a good ship channel to the eastward of the Cumbray Island, but strangers never should attempt it without a pilot. The part of the Island of Cumbray on which the Light stands, is bold and steep close to. Opposite to it lies the Island of Bute, the nearest point of which is Garroch Head, distant about 3 miles. Entering between these 2 head-lands, with the Cumbray Light on your starboard hand, when in mid-channel your course to the Light on the Point of Clough is N.E. $\frac{1}{2}$ E., 12 or 18 miles. In proceeding on this course, a little more than half distance, you will see a REVOLVING LIGHT on your larboard hand, situated on the Point of Toward, which forms the starboard side of the entrance of Rothsay Bay. The Clough light stands on a bold shore. On the opposite side is the town of Dunoon, off which lies a ledge of half-tide rocks, called Gantocks. The position of these rocks is marked by a large stone obelisk, which can be seen from a considerable distance. The river afterwards inclines a little to

the eastward, until you get opposite to Gourock, in a small bay on your starboard side. Opposite the middle of this bay is good anchorage; and here it is advisable to anchor till a pilot comes on board. The mark, the centre of the bay with the Clough Light on with Kempuck.

Greenock, which is the chief port for large vessels in the Clyde, has three fine basins adjacent to each other. They are known as the west, the east, and the Victoria harbours. Between the pier-heads, at the entrance of the west harbour, there are about 20 feet at high water, spring tides, and from 10 to 12 feet at low water; alongside the quays is a depth of from 17 to 19 feet. The east harbour contains about the same depth of water, but is more spacious; on the quay is a crane capable of raising 50 tons. The custom-house stands between these two basins. On the eastern side of the east basin is the Victoria harbour, opened in 1851. It has an area of 6 acres, is 563 feet long, and 458 feet wide, with a uniform depth of 26 feet at high water, and 14 feet at low water, spring tides. On the quay is a large crane of 70 tons lift; there is also 2 steam cranes of 15 tons lift, for loading coals. Connected with the east and west harbours are graving docks, the widths of their respective entrances being 34 and 38 feet. There are two lines of Rails all round the Victoria and East Harbours, in connection with the Caledonian Railway. A large Coal Shoot has been erected at the East Harbour, from which a great quantity of Coals are shipped daily. A small light is placed on the quay, in front of the custom-house, as a guide to the shipping, and lights of a red colour are exhibited at the several entrances of the port. In the roadstead are warping buoys; but in order to avoid the shoal off the custom-house, care must be taken to anchor as close as possible *outside* the line of buoys. The best anchorage for small vessels is off Albert Quay, in 4 fathoms water. About a mile N. N. W. of the custom-house are two fixed red lights, visible at the distance of two leagues: when in one, bearing W.S.W. $\frac{3}{4}$ W., they lead to the anchorage below the "Tail of the Bank."—**COCKLE BANK** reaches from the east end of the town of Greenock to the *Old Castle of Newark* at Port Glasgow. A new harbour is now building to the N.W. of Mr. Scott's Building Yard, for the discharge of timber laden vessels, the depth of water at spring tides to be 27 feet, with a large space for storing deals.

Port Glasgow.—The channel from Greenock to Port Glasgow is narrow and intricate as far as *Garville Point*, and should not be attempted without a pilot; about a $\frac{1}{4}$ of a mile N. from *Garville Point*

is a buoy on the south edge of the *Cockle Bank*. Keep that buoy on the larboard hand, and run about a cable's length from it. Near the E. side of *Garville Point* is a beacon, which pass on the starboard hand, keeping not less than 2 ships' lengths from it, nor more than half a cable from the *Cockle Bank*. Between the last-mentioned beacon and *Inch Garvie* first a buoy and then a beacon; keep on the starboard side, sailing at the distances before directed. There is a beacon near the quay of Port Glasgow which you must pass at 2 ships' lengths on the starboard side, and enter the harbour about high water. At the quay the water is for small craft only. At low water it is dry, and with spring tides is capable of containing vessels that draw 10 feet water; the ground is soft and easily on, and a good place for graving bottoms is made here. A light is exhibited on the pier to direct the steamers; at the entrance of the harbour is a beacon of a red colour on the west quay. A four miles from Port Glasgow is

Dumbarton, a creek in the mouth of the river Leven. Vessels drawing more than 8 or 9 feet may go in at low water. If pilots cannot be had, the following directions may be useful. Weigh anchor and sail from Port Glasgow at flood; keep a cable's length from shore the *Old Castle of Newark*; from there steer eastward between *Audoch* and *Dumbarton Castle*, about 2 miles, until you come abreast of *Finlayston*; then steer south-eastward for the western buoy off *Dumbarton Castle*; there anchor until the water is high-water. Leave that buoy to the board, and the other on the starboard, stand in for the entry, keeping that buoy close until you have passed the *Castle*.

Between Port Glasgow and *Bow Bay* are three Lights: at *Auchenloch* the *Garmoye Floating Light*, and a third about a mile above *Dumbarton*, all to be left on the starboard hand going up the river.

Glasgow.—On the lower or western extremity of *Broomielaw Quay*, and on the board hand going up the river, a light of star-like appearance, is placed for the direction of shipping.

Isle of Bute.—To the westward of the Isles of *Cumbray* is the *Isle of Bute*, the eastern side of which, directly opposite *Great Cumbray*, is *Killichattan Bay*, where vessels may anchor in from 10 to 16 fathoms. To the northward is the *Isle of Rothesay*, the ground good and clean and well sheltered: you may anchor at any part on the E. side of the Bay: the most convenient place is 2 cables

length N. of the pier-head, in order to be clear of the tract of the numerous steamers plying from the pierhead to all parts of the Clyde.

Kyles of Bute.—The channels between Bute and the Main are termed the Kyles of Bute: their access is easy, and well sheltered, the bottom is extraordinarily good, and the depth sufficient for the largest ships. They are distinguished by the names of the East and West Kyles.

Island of Arran lies to the south-west: at its S. E. extremity lies the **Island of PLADDA**, upon which a **LIGHT** tower is erected, 3 miles north-easterly of which is the **ISLAND OF LAMLASH**. This island lies right in the front of the bay and forms a good and well-sheltered anchorage: the N. side of it is shallow about 2 cables' length from the shore, but the best parts to ride in are off the houses in Holy Island, in 9 or 10 fathoms, or about 2 cables' length E. by N. or E.N.E. from the pier at the town of Lamlash. A red buoy (called Fergusson's) is placed on a rock, with 14 fathoms water in the south entrance to Lamlash. You can go either side; but the inland side is best. At the north entrance on the mainland side is Hamilton's Rock, for which, in thick weather, a good lookout should be kept, though it is scarce a mile from the shore and never quite covers. The lighthouse on Pladda exhibits two bright fixed lights, and may be seen from N.W. by W. southerly, to N.E. by E.; the upper at 17 and lower at 14 miles' distance. At the northern extremity of Arran Island is

Loch Ranza, the ground in which is very good, and water sufficient for large ships, but the place being narrow renders it fit for small vessels only. On the east side of the entrance there is a rocky ledge, dry at low water, which extends near one-third over to the opposite side; to avoid this ledge, keep in the middle of the channel. Anchor abreast of the houses of Ballino, in 5 or 6 fathoms water, nearest the E. side of the Bay, about a cable's length north of the Old Castle, which stands quite at the bottom of the Bay.

Loch Fyne.—After passing Ardnamont Point, the entrance opens to the northward, and is about 7 miles from Skipness Point, forming an arm of the sea running in northwardly then eastwardly for a distance of 35 miles. The water in the middle is too deep for vessels to anchor. The east side from Skate Island to Kilbrennan Bay is rocky, but does not extend far from shore, and they are mostly above water, so can be seen;

but deep water close to them. There is good anchorage in Kilbrennan Bay, and from there to the Spit of Otter Ferry, which is a shoal about two cables' length from shore, having a beacon on the North Point. On the west side of the Loch, about 6 miles from Skipness Point, is the little harbour of **EAST TARBET** well sheltered and good bottom, much frequented by steamers and small vessels; but the entrance narrow. From there, passing northward, you leave Barmore Island on the left, giving it a berth of a cable's length or so, to avoid some half-tide rocks off its N.E. end, and from there to Invermel Bay the coast is bold. Off the Church at Invermel there is a shoal about 2 cables' length from shore, with only 8 feet water on it. From thence to Ardrishaig Point the coast is clear, up to the Pier Head, on which there is a Light-house showing a fixed light. There is good anchorage on the north side of the Pierhead, and on the opposite side, north of Ilan Yone, in a line from the Pier, and about half a mile distant, there is a shoal near mid-channel, marked by a white buoy, and having only about 4 feet of water over it at low water. The shoal can be passed on either side: but the west side is the best. It is foul ground from Ilan Yone to Silver Craig. Abreast of the beacon on Otter Shoal, which you pass on the right, the channel is narrow, but clear, with strong tides. Sailing up Upper Loch Fyne the south side is clear to the head, and is the side used by sailing vessels. On the north side, passing the narrows at Otter about one mile, you open Gaerloch, a fine safe bay, much used by fishing vessels, having good anchorage in 3 fathoms water, but only narrow. Passing on you come to Minard Point, behind which there is good anchorage. Opposite Minard Castle, there is a shoal in the middle of the Lough, marked by a beacon on each end, the middle dries at low water. You can go on either side, but the west is the safest. Nearly abreast of Castle Lachlan is Paddy's Rock, keep the south side. Following the north shore, the whole coast round Furnace Point to Inverary is clear. South of the Pier of Inverary is a shoal called the Otter, to which a berth of 2 cables' length from the shore must be given. Anchor north of the Pier, and nearly opposite the large bridge, in a line with Inverary Castle, in 8 or 9 fathoms water. From Inverary to the head of the Loch is clear, and very deep water, so that it is safe sailing up at any time.

Campbeltown Harbour lies about 11 miles south westward of Point Caradale; it is large, well sheltered, the ground good, and there is very little to be feared in sailing into it. On coming

from the S. or S.E., you will first see the Island of Devar and the *blind* sound to the southwest of it, through which is a view of the town. On Otter Buoy the north-east point of Devar Island, is a light-house, from which is exhibited a bright light every half minute: it is visible from N. $\frac{1}{4}$ W. to E. by S. by the N., and may be seen in clear weather about 15 miles. This light is a good light for clearing Paterson's Rock; if kept in sight, it will lead about 3 miles to the eastward of it. In standing in for Campbeltown at night, be careful to keep to the eastward until the light upon Devar Island is fairly open; then stand for it, keeping it on the port hand, and steering about one or two cables' length from the point of the Island, until you open the harbour; then haul up W. $\frac{1}{4}$ N., or W. by N., still keeping about the same distance from the shore. When abreast of the western end of Devar, a black buoy will be observed on Mulbeg Bank, about 60 fathoms from the Island; this must be passed on the port hand. Steering half a point more northerly, you will next pass on your starboard hand, a red buoy, placed nearly opposite a sandbank, which is always dry, except with spring tides. On this bank is a beacon, painted black. There is also another beacon, painted red, on Trench Flat. Hence the red light on the north pier will be seen, and soon after, on passing Trench Point, the green light shown from Dolintober Quay. Now steer W.N.W., or N. W. by W., and you may come to an anchor in any part of the loch—observing, however, to give the west shore a berth of two cables' length. In the Loch, inside the beacons, the deepest water is on the north side; a stranger should, however, keep the lead going, if working in, and put about the first shoal cast, as the bank is steep on both sides. The harbour has a depth of water of from 5 to 10 fathoms. Masters of vessels turning in from a west wind at night, must be careful not to shut the light on the Island when atanding south, but tack as soon as it becomes obscured by the high land of the Island, for in that case they are close to the South Bank, and the water shoalens at once; but by keeping the light E. by S. they will go clear. At night, however, it will be better to anchor at Black Rock, on the north side, about a quarter of a mile E.N.E. from the red buoy, or when Devar light bears about S.E. in 4 or 5 fathoms water, good holding ground, and well sheltered, being within Macrinian's Point, which forms the north entrance to the harbour.

Sanda Island.—About 9 miles south of the Island Devar is the Island of Sanda, a dangerous Island, being surrounded by ledges of Rocks. There are several ledges

of rocks about the east and west extending about a cable's length shore; and near Gluinmore, which is always above water, there are several rocks that dry at low water, also on the east end around Island Ilanagurach the sound, between Ilanagurach and Sanda, is the anchorage, a kind of harbour fit only for small vessels in summer time or in moderate weather. It is protected by the reefs in the sound—those to the west, on which there is a beacon pointing out the anchorage. And when Fair Head is shut up on the east Sanda in about 10 feet water, close to the houses, off an old quay. No vessel should attempt to pass between Sanda and Ilanagurach, the tide being strong and running very irregular. Round Gluinmore and Island Ilanagurach are many and sunken rocks with deep water. The ship rock of Sanda, in lat. $54^{\circ} 16'$ N., and lon. $5^{\circ} 34' 55''$ W., a lighthouse exhibiting a fixed red light, has been erected. It is visible from N.W. $\frac{1}{4}$ W. S.E. by E. $\frac{1}{4}$ E. by south-westerly, may be seen at the distance of 5 leagues. It bears by compass from Pladda Light W. by S. $\frac{3}{4}$ W., 18 miles; from Ailsa Crois N.W. by W. $\frac{1}{4}$ W. 16 miles; from Corse Light, N. by W. $\frac{1}{4}$ W. 22 miles; from Maiden's Rocks Lights, N.E. $\frac{1}{4}$ N., 12 miles; from N'most Point of Rat Island, S.E. by E. $\frac{1}{4}$ E., 21 miles; and from S'most Point of the Mull of the Cantyre S.E. $\frac{3}{4}$ E., 6 miles. From Sanda Light E. by S., distant $1\frac{1}{2}$ miles, is the Paterson's Rock Buoy, pointing out a dangerous rock, uncovered at low water. When the Mull Head of Cantyre is seen to the southward of Sanda, you are to the southward of this rock; when the Mull Head is to the northward of Sanda, you are to the northward of it. When Gluinmore Rock appears to the west end of Ilanagurach you are to the eastward; and when Gluinmore Rock appears to the east end of Ilanagurach, you will be to the westward of Paterson's Rock. A beacon is now erecting on Paterson's Rock. In sailing east along the south end of Sanda keep the light in sight; you will pass south of the rock: the light is shut when you are in a line with the rock, and when the light is seen over the hill on east end you are within the reef.—Tides.—High water inshore 9, middle channel 10 30, a.m.

Tides.—The stream of flood within a mile of the Mull Head runs southward and turns sooner than at a greater distance from the land, so that a vessel keeping near the west coast of Cantyre, will have the benefit of the stream 2 hours before one above a mile from the land.

Magnetic Bearings & DistancesFOR THE WEST COAST OF SCOTLAND.
WESTERLY VARIATION 25 TO 26 DEGREES.

ROSS, OFF KIRKCUDBRIGHT (Lat. 45 46 N., Long. 4 51 W.)	MILES.	HEADS OF AYR SbyW½W	13
To Maryport SE by E	20	Loch Ryan SW½S	38
St. Bees' Head Light .. S by E ½ E	21½	Corsewall Light SW	40
Rossall Landmark S ½ E	61½	Ailsa Rock SW½W	26
Booy Nelson, off Preston S	71	Copeland Light SW½W	61
SW Lightship, Liverpool .. S ½ W	83	Pladda Light SWbyW½W	17
Manmaris entrance SSW	85	CUMBRAY LIGHT (Lat. 55 43 16 N., Long. 4 58 W.)	
Manama Lightship, I. M. .. SWbyS	26	To Ardrossan .. S½E	6
MULL OF GALLOWAY (Lat. 54 38 9 N., Long. 4 51 20 W.)		Ayr Harbour S½E	12
Biggar Scar Rock E ½ S	6	Heads of Ayr SbyW	18½
St. Bees' Head Light SE½E	43	Turnbury Point SSW	23
Point of Ayre, I. M. SEbyS½S	21	Loch Ryan entrance SWbyW	42
Hardsey Island Light SSW½W	113	Corsewall Light SW½S	43
Knalls Light SW½S	180	Ailsa Rock SW½S	29½
Tankar Rock Light SW	153	Copeland Light SW	64
PART OF CORSEWALL (Lat. 55 0 29 N., Long. 5 9 28 W.)		PLADDA ISLAND LIGHT (Lat. 55 26 N., 5 7 6 W.)	
To Larne Lock Light W½N	24	To Cumbray Light, from 1 mile	
Fair Head NW½N	37	North of Pladda Light .. NE	19
Mull of Cantyre NNW	30	Irvine Harbour EbyN	18
Sanda Light NbyW½W	26	Troon do E	16
Pladda Light NEbyN½N	25	Ayr do EbyS½S	16
Ailsa Rock NEbyN	14½	Turnbury Point .. SEbyS	11
Cumbray Light NE½N	43	Loch Ryan Entrance SSW	24½
Ardrossan Harbour NE	40	Ailsa Rock .. SWbyS½S	11
TROON (Lat. 55 33 N., Long. 4 41 W.)		Corsewall Light SWbyS½S	25
Heads of Ayr SW½S	2	Copeland Light SW	45
Corsewall Light SW½W	36	Belfast Loch entrance SW½W	43
Copeland Light SWbyW	58	Larne Loch Light SWbyW½W	42
Ailsa Rock SW½W	22½	Maidens Lights SWbyW½W	36
Larne Loch Light WSW	56	MULL OF CANTYRE (Lat. 55 19 N., Long. 4 49 W.)	
Maidens Lights WbyS½S	55	To Sanda Light SEbyE½E	5
Pladda Light W	16	Ailsa Rock SE½E	24
ARDROSSAN (Lat. 55 38 37 N., Long. 4 4 38 W.)		Corsewall Light SSE	30
Troon SbyE	7½	Calf of Man S½W	84
Ayr Harbour .. S	11½	Maidens Lights SSW	24
		Fair Head W½S	13
		Inisterhul Light NWbyW	49
		Loch Ryan entrance SEbyS½S	31
		Larne Loch do .. SWbyS½S	28
		Rathlin Island, N. end .. WbyN½N	13
		Sound of Islay, E. end .. NbyE½E	28

MULL OF CANTYRE TO THE NORTH END OF SCOTLAND.

The **Mull of Cantyre** is a high rocky promontory, running to the south-west, and approaching within 11 miles of the coast of Ireland. On its southern extremity is a lighthouse, which exhibits a fixed bright light, visible 22 miles in clear weather, from N. N. E. ½ E. to S. by W. ½ W. by W. Off Dunimore Head, which is about 5 miles to the northward of the lighthouse, is a rock, lying about a cable's length from the shore, which dries at half-ebb. A rocky shoal, with 3 or 4 feet on it at low water, lies further north, about a quarter of a mile off Usid Point, at the Saltpans: on this shoal the sea always swells, and breaks in the calmest weather.

West Loch Tarbit, on the main of

Cantyre; the bay of which is well sheltered, and the depth of water for a mile up sufficient for the largest ships; but the ground, being of soft mud, does not hold well with hard gales, except there is a full cable out. The common places of anchorage are, for large ships, off Ardfarik, in the mouth of the loch; and for small vessels, on the east side of Ilanagalligan. On the S. side of Ilan Trayn are several rocks above ½ a cable's length from the island, or ½ from it, and ¾ from the starboard side of the entry. There is also a sand bank extending from the E. point of Corran, nearly ½ over to the N. side of the loch; to avoid which, keep nearest to the N. side, or keep the easternmost extremity of Ilan Trayn in a line with the W. end of the highest hill in Gia Island. About 3 miles up the

loch, off Duneturik, nearest to the N. shore is a small blind rock, having 5 feet water over it. Keep the middle of the loch, and you will avoid it.

Loch Achastil is a fine harbour, and fit for ships of any size; the ground good, and only one rock, about midway, within it, covered only with spring tides. Ships may anchor in any part of this loch above Castle Swein. The danger to be avoided in sailing towards Achastil is a small rock on the N. side of the two Mackcarmack Islands, which dries with spring-tides only

Jura Island—To the westward is the Island of Jura; on the S.E. side of which is Loch Daguell, with good anchorage, well sheltered, and water enough for a merchant ship. This anchorage is very convenient for vessels bound to the southward. You will anchor near the middle of the bay, when Gia Island is just shut in by the N. point of the entry, and the northernmost Pap of Jura bears N. W. $\frac{1}{2}$ W. In running either in or out, stand not too near the sides, for on the N.N.E. and N.W. sides of the bay it shoals nearly 2 cables' length from shore.

Sound of Islay is the common track for shipping to and from the N. A Lighthouse has been erected on Rudha Mhail Point showing a Fixed Light, visible 15 miles. It shows RED from about NNE $\frac{1}{2}$ E. W'y. to about N. $\frac{1}{4}$ W.; MASKED W'y. from about N $\frac{1}{4}$ W. to about N by W $\frac{3}{4}$ W., and from about N by W $\frac{3}{4}$ W. round S'y and E'y to about NNE $\frac{1}{2}$ E it will show WHITE, excepting where intercepted by the land. When proceeding into, or through, Islay Sound, this light kept in view clears the Black Rock and other shoals at the south entrance. A Lighthouse is also erected on MacArthur's Head, on East side of Islay, and south entrance to the Sound, showing a Fixed Light, visible 17 miles. It shows WHITE up the Sound till it bears S $\frac{1}{2}$ W; RED towards Jura from S $\frac{1}{2}$ W till it bears about W; and WHITE from about W. round by the S., or until obscured by the south side of Islay. A tide or a night is the longest any vessel should stop here except in Macdougall's Bay, where one cable may be made fast to a ring or rock on the shore. In entering Islay Sound from the southward, you are to bring Glas-hilan Island to bear N., or keep within a cable's length or two from the Islay shore, and you will clear the Skerchray Rock, which lies on the starboard side, W. of the small Island of Frochilan.

Loch Tarbet is filled with small rocks, especially on its southern side, it is therefore hazardous to enter. The anchorage is $\frac{1}{2}$ of a mile above Guinmore, but the best and safest place is

near the mouth of the Loch in Glegig Bay. This is easy of access, and 3 and 4 fathoms water. Keep a cable length from the point in passing, and anchor the same distance eastward. About a mile eastward of this anchor is a cluster of small rocks above which on the E. side of these a ship may be safe in five fathoms water, keeping a cable's length from them in going up.

Loch Indaal.—Having rounded Mull of Kinbo, which is the southern part of Islay, you will open Loch Indaal. This may be said to be the place in Islay where vessels in winter can ride in safety. Here small vessels drawing 9 or 10 feet of water may ride be well sheltered; larger ships, draught 15 feet, must ride with the mouth of the loch open, and will therefore not be safe when the wind blows from the S.W. But the best anchorage is at the further end of the loch called Kilin, when Bomore House bears S.S.E., somewhat nearer to the S. than to the side of the harbour, in 3 fathoms, soft ground. Larger ships anchor more to the westward bringing Bomore House S.E. in 4 fathoms. At the entrance to the harbour are 2 spits of sand; one on the side, which never dries, extending to Atturach Point northwards; the other running from the opposite side southward, which dries gradually. These two spits of sand almost enclose the harbour, the channel between their two points being 2 and 2 $\frac{1}{2}$ fathoms, low water, spring tides.

Rhins of Islay Light, on the northern side of the entrance to Loch Indaal, upon the small Island of Oversa, bears by compass from the Mull of Kinbo N. by W. $\frac{3}{4}$ W., distant 10 miles; and from the STATIONARY LIGHT of the Mull of Cantyre, N. by W. $\frac{3}{4}$ W., 33 miles. From the north eastern extremity of the Is. of Rachlin, N. $\frac{1}{2}$ E., distant 25 miles. From the REVOLVING LIGHT of Innistrathul, distant 28 miles. From the REVOLVING LIGHT, producing a bright flash once every minute, on the Rock of Skerry, distant from Hynish Point, in Tyree, S.W. $\frac{1}{4}$ W., 10 $\frac{1}{2}$ miles, it bears S. $\frac{1}{2}$ W. distant 44 miles. From the Rock of Dunheertach, lying 11 miles S.W., it bears S.S.W., distant 11 miles; and from Tranvore Head, S.W. $\frac{1}{4}$ S., distant 6 $\frac{1}{2}$ miles. It will be known by Mariners as a STATIONARY and a REVOLVING LIGHT. To a distant observer it appears like a star of the first magnitude, producing a bright flash of light every 60 seconds, without those intervals of darkness which characterise other Revolving Lights upon the coast. In clear weather it will be visible at the distance of 6 leagues, and is open from N.N.E.

S.E. (westerly); half a mile off Cull Point it disappears.

Oronsa and Colinsa Islands.—

Oronsa is much the smaller Island, and is nearly 4 miles to the northward of Ruinanishag Point, in Islay. Off its southern sides are several Rocks, one of which extends W.S.W., from Gudimel, a small Island on the S.E. part of Oronsa. This rock dries at half-ebb. There is a shoal about a $\frac{1}{4}$ mile to the southward of the middle of the rock, on which are 6 feet at low water. At the S.W. point of Oronsa is Ilana Roan; one mile S.W. of which are 2 or 3 rocks, which dry with spring-tides only, and some shoals on which the sea always break. A leading mark to go to the southward of these dangers is Ruvaal Point in Islay, on with the S. end of Beninore Hill in Jura. Sail not nearer to Colinsa than till Ruvaal Point, bears on the middle of the hill. To the W. of Colinsa are several Rocks and Shoals, lying a mile out from Ardskinish Point, some are above, some below, and others dry only at low water; you will avoid the whole of them by keeping about 1 mile from the shore, or one mile from those rocks you see above water. There is no anchorage on the W. side of Colinsa, and but indifferent on the E. side.

The Gulf of Coryvreckan, which is formed by the N. end of Jura, and the Island Scarba, is distinguished by a violent breaking sea with whirlpools, partly occasioned by an excessively rapid stream running over a steep rock, at the N. side of the Sound, near the W. Point of Scarba. On the Jura side of the Gulf the sea rages, and forms whirlpools, both with ebb and flood: but the waves do not rise so high on the Scarba side of the Gulf.

The Sound of Mull Lighthouse

is situated on a small rock called Runa Gull, on the south shore of the Sound of Mull, Argyleshire, about one mile northwards from Tobermory. The Tower is about 50 yards within the high water mark of spring-tides, and is connected with the shore by a bridge of two spans. The Light is an azimuthal condensing Light, and shows a FIXED RED LIGHT northwards out to sea; a FIXED GREEN LIGHT towards the New Rocks, the Red Rocks, and the Stirks Rocks, in the Sound of Mull; a FIXED WHITE LIGHT southwards into the sound of Mull. The Light is exhibited from a tower of masonry about 55 feet above high water of spring tides, and may be seen in clear weather at the distance of about twelve nautic miles.

Adnamurchan Point.—A Lighthouse, exhibiting a Fixed Light of the natural appearance, has been erected on this point; and bears by compass from

Callach Head, N.E. $\frac{3}{4}$ E., distant 7 miles; from the Cairns of Coll, S.S.E., 8 miles; from Kana Head, S $\frac{1}{4}$ E., 30 miles; from Scour of Eigg, S.W. by S. $\frac{3}{4}$ W., 11 miles; from Bo Askadil Rock, W.S.W., 7 miles. It is visible 18 miles in clear weather.

Ushenish Lighthouse is situated on the most easterly head land on the eastern side of the Island of South Uist, one of the Hebrides, in the county of Inverness. The Light is a dioptric first-class FIXED RED LIGHT, and is exhibited from a tower of masonry erected on the headland. The Light is about 176 feet above high water of spring tides, and may be seen in clear weather at the distance of about 18 nautic miles.

Island Glass Light, situate on the eastern side of Glass, and on the western side of the channel between Skye and the Long Island. The Light is STATIONARY, appearing like a star of the first magnitude, at the distance of 5 or 6 leagues, from W. by S. to E.N.E. $\frac{1}{4}$ E. by the S.

Skergriatick Rock—A Beacon, painted black, has been erected on this rock, situate in the Minsh. It consists of a Frame-work of Iron, surmounted by a cylindric cage, and rising to about 30 feet above high water spring tides. There are steps leading from the rock to the cage in which shipwrecked mariners may find a temporary shelter. This Beacon bears by compass from Skernamule beacon N.N.W., distant 3 miles; from Dunvegan Head, in Skye, N.E. $\frac{3}{4}$ E., 18 miles; from Island Glass Lighthouse, S.E. by S. $\frac{3}{4}$ S., 7 $\frac{1}{2}$ miles; from the Greater Galtimore (one of the Shiant Islands), S.W. $\frac{1}{4}$ S., 8 miles. There is foul ground nearly all the way from Skergriatick Rock to Fiaddahuan Island, from which the beacon lies 2 $\frac{1}{2}$ miles to the N. by E.

Loch Terriden.—In entering Loch Terriden avoid Runawagh Point, its southern entrance, a little way off which point is a rock under water, which dries at spring tides. Excepting this rock, there is no danger in sailing into or up this Loch; for Skerintram Rock, which lies on the North side, is always above water, with deep water all round. Here therefore the access is easy, the ground good and so well sheltered, that several hundreds of the largest Ships may ride with safety in all weathers. Its Entry is 2 $\frac{1}{2}$ miles wide, the Loch running in S. by E. $\frac{1}{2}$ E. to abreast of Loch Shieldag, then S.E. by E. to the furthest end. The best place for Anchorage is in Loch Shieldag, between the two narrows, on the S. side of the Basin, or any where above the second Narrow, which is what may properly be called Loch Terriden.

Loch Gerloch.—About 4 miles further N. is Loch Gerloch, a large and well

sheltered harbour, the ground in all parts clean, holding well, and capable of containing a fleet of the largest ships; its entrance is between Coupachar Point and Longa Island; distant from each other nearly two miles. There are no dangers either in or near it; and when it does not blow hard from the W. or S.W. ships may ride in any part, particularly on the E. side of Island Longa. In winter the best anchorages is between Flowerdale and the Island of Horisdale, in from 9 to 20 fathoms water. Small vessels may ride on the W. side of this Island, S. E. of a rock above water.

Loch Yew.—From Longa Island to Ru Rhea the bearing and distance are N. E. $\frac{1}{2}$ N., $3\frac{1}{2}$ leagues. Five miles to the eastward is Loch Yew, a place large and well sheltered, forming a bay of easy access, a moderate depth of water, and having good holding anchorage, where whole fleets may ride in the greatest safety at all times. The entrance to Loch Yew is a mile wide, and nearly off its western point lies the small Island of Fura, with 2 or 3 islets to the eastward of it; there is also a little rock off the northern point of Fura; keep therefore at a distance in passing it, and the channel in is free from danger. In the middle of the bay is Yew Island, at the northern point of which are some rocks above water. The best places to ride are on the E. side of the Island Yew, or on the E. side of the bay, off Tunag, and off Inveraspadae at the opposite side of the Loch.

Loch More or Great Loch Brim.—To the northward of Loch Beg, are several Islands, lying before Loch More, or Great Loch Brim. Loch More is a great and safe branch of the sea, capable of accommodating the largest fleets, and having no rocks or dangers within it, except a small ledge on the E. side of Ullapool extending above a cable's length from that shore, which is avoided by keeking $\frac{1}{2}$ from the Ullapool side. You may anchor in this bay in 14 or 15 fathoms water above a cable's length from the shore, or any where above Logie Point, in from 13 to 24 fathoms. Should you, in entering or sailing from this Loch, go between the larboard point, or Ru Handerrick, and the Carniskere Islands, remember to give the former a berth on account of a rock called Nuela, which lies nearly a cable's length from the shore, and dries about half ebb.

Loch Kylescough, is nearly 7 miles E.S.E. $\frac{1}{2}$ E. from Ru Stoir, and $3\frac{1}{2}$ miles in the same direction from Ouldenay Island. This is a large and well sheltered branch of the sea, the approach to which is safe, and the anchorage good; but for some miles within the Loch the water is too

deep for ordinary vessels, being from 30 to 50 fathoms, unless you carry an anchor on shore. Above the Island Ranick where the contracted channel commences again to widen, ships may anchor anywhere, the stream in the narrowest part running not more than 1 mile an hour.—The only rock necessary to notice, lies near the Island Caraway, off the larboard side of entrance; it bears W.S.W. from it and dries at low water; keep Runachus Point in Ouldenay Island on with the extremity of Ru Stoir, and you will clear this rock to the Southward. At the N. side of the entrance to Loch Kylescough is Loch Shark, and N.E. of Shark lies Loch Calaway.

Loch Inshard.—One league to the eastward of Lusford is Loch Inshard, the last bay before you round Cape Wrath. In sailing in, great caution must be observed, as there is a rock lying right at the entrance, which appears at spring ebbs only. Within the Loch you will be well sheltered, your depth moderate, and your ground good. Sail up until you are landlocked, and anchor near the north or east side. To the north west of Loch Ardcar are some Islands, close to the main, called Ilanarone; and nearly N.N. E. of these 4 miles, is Balag Island, having a small rock above water, at both the N. and S. extremities. This Island lies about a mile from Ru Wochel. Near the latter is a rock above water, close to the land. From hence to Cape Wrath the coast is high and rocky. Off Cape Wrath are said to lie several rocks under water, called the Stags. Vessels in sailing round this headland should always give it a good berth, of $1\frac{1}{2}$ or two miles, and steering E'ward, they will reach the Pentland Frith.

Isle Oronsay Lighthouse is situated on a low point at the south-east end of the Island of Oronsay, Inverness-shire, in the Sound of Skye, also called Sound of Sleat. The Light is an azimuthal condensing Light, and shows a **FIXED WHITE LIGHT**, from a tower of masonry about 58 feet above high water of spring tides. The Light may be seen in clear weather about twelve nautic miles.

Kyleakin Lighthouse is situated on a point of rock which covers at high water spring tides, and projects from the west end of Eilan Dool, or Gillean Island, in Ross-shire, at the western entrance of "The Narrows," leading to Loch Alsh. The tower is about fifty-three yards within the high water mark of spring tides, and is connected with the Island by a bridge of five spans. The Light is an azimuthal condensing Light, and shows a **FIXED WHITE LIGHT** in the fairway of the Sound of Loch Alsh, and a **FIXED WHITE LIGHT** in the fairway leading to the Sound of Applecross, and which White Light ex-

tends southwards to Pabba Island. From thence it shows a **FIXED RED LIGHT**, extending eastwards along the shore of Skye to the south of the fairway of Loch Alsh. It also shows a **FIXED RED LIGHT** to the north-eastwards of the fairway to the Sound of Applecross. To the north of the fairway of Loch Alsh the Light is not shown. It is exhibited from a tower of masonry about 53 feet above high water of spring tides, and may be seen in clear weather at the distance of about eleven nautic miles.

Rona Lighthouse is situated on the northern end of the Island of Rona, in Inverness-shire, between the west coast of Ross-shire and the Island of Skye. The Light is a catadioptric second-class heliophotal **FLASHING WHITE LIGHT**, showing a flash **EVERY TWELVE SECONDS**. It is exhibited from a tower of masonry erected on a peak at the north-east point of the Island. It is elevated about 222 feet above high water of spring tides, and may be seen in clear weather at the distance of about twenty nautic miles.

Cape Wrath Lighthouse, erected on the Cape, forming the north-western extremity of the main land of Scotland, in lat. 58 deg. 37 min. N., and in lon. 5 deg. W., bears from Hoy Head in Orkney, W. $\frac{1}{2}$ N., distant 50 miles; from the Butt of the Lewis, E. by S. $\frac{1}{2}$ S., 41 miles; from the rocks called the Stags off the Cape, S. W. by W. $\frac{1}{2}$ W., about 1 mile; from the Sunk Rock called the Nun, S.S.W. $\frac{3}{4}$ W., distant 15 miles; and from the Islands of Stack and Skerry, W.S.W., the former 35 $\frac{1}{2}$ and the latter 38 miles distant. It is known to mariners as a **REVOLVING LIGHT**, of the natural appearance, changing with one tinged red, which attain their most luminous effect every two minutes, and become, to a distant observer, totally eclipsed for a short time. The Light is visible from S. $\frac{1}{2}$ E. to S. W. by W. by the N., at the distance of 23 miles.

Dunnethead Light, on the North-western extremity of the mainland of Scotland, in lat. 58 deg. 40 min. N., bears by compass from the N. end of the Island of Skye, in Pentland Frith, W.N.W., distant 7 $\frac{1}{2}$ miles; from Hoy Head, leading to Hoy Sound, S.S.W., distant 13 miles; from the Stack and Skerry, S. by E. $\frac{3}{4}$ E. distant thirty-three miles; and from Cape Wrath, in Sutherlandshire, S.E. by E. $\frac{1}{4}$ E., distant 54 miles. In reference to these bearings, the light will be visible to the mariner in a northerly direction from S.E. $\frac{1}{4}$ E. to W. by northward. The Light is **STATIONARY**, and being elevated 346 feet above the medium level of the sea, will be seen like a star of the first magnitude, at the distance of from 7 to 8 leagues, and at lesser distances according to the weather.

Magnetic Bearings & Distances FOR THE NORTH AND EAST COASTS OF SCOTLAND.

CAPE WRATH (Lat. 58 37 30 N., Long. 5 W.) MILES.

To Ru Store SW by W 26 $\frac{1}{2}$
Loch Maddy entrance ... W by S 92
Glass Island Light ... W by S $\frac{1}{4}$ S 70
Chicken Head W $\frac{3}{4}$ S 47
Tolsta Head W $\frac{1}{4}$ N 39
To Nun Rock NNE $\frac{3}{4}$ E 15
Hoy Mouth, Stromness E $\frac{3}{4}$ S 61
Holburn Head SE by E $\frac{1}{4}$ E 51

DUNNET HEAD (Lat. 58 40 16 N., Long. 3 22 20 W.)

To Thurso Bar SW by W $\frac{1}{2}$ W 5
Holburn Head.... W by S 5
Hoy Head..... NNE 13
Swona, South end of E by S 10
Pentland Skerries ESE 14

SULE SKERRIE (Lat. 59 3 N., Long. 4 13 W.)

To Dunnet Head SSE 33
Strathy Head S by W 28
Sumburgh Head, Shetland..... E 100
Westra Frith..... E by S 40

HOY MOUTH, STROMNESS (Lat. 59 3 N., Long. 3 23 W.)

To Scrabster Roads..... SW $\frac{1}{2}$ S 17
Strathy Head W by S $\frac{1}{4}$ S 23
Lock Erobol W 45
Cape Wrath W $\frac{3}{4}$ N 59

DENNESS LIGHT, NORTH RONALDSHA (Lat. 59 23 N., Long. 2 23 W.) MILES

To Foul Island..... NE 45
Pappa Island, Shetland .. NE $\frac{1}{2}$ E 60
Sumburgh Light, Shetland E $\frac{3}{4}$ N 46
Fair Island E by S 28

START POINT IN SANDA ISLAND (Lat. 59 16 39 N., Long. 2 22 25 W.)

To Foul Island..... NE $\frac{1}{4}$ N 50
Fair Isle E 30
Noss Head SW $\frac{1}{2}$ W 50
Copinsha Island SW $\frac{1}{2}$ W 22

SUMBURGH HEAD, SHETLAND (Lat. 59 51 N., Long. 1 16 W.)

To Noss Island NE by E 20
Bucanness Light SW by S 140
Fair Isle SW by W 21
Start Point, Sanda I. W by S $\frac{1}{4}$ S 48
Foul Island..... NW by N $\frac{1}{2}$ N 28

NOSS HEAD (Lat. 58 28 38 N., Long. 3 3 5 W.)

To Duncansby NE by N 10
Pentland Skerries Lights ... NE 12 $\frac{1}{2}$
Fair Isle ENE 78
Sumburgh Head.. NE by E $\frac{1}{4}$ E 96

TARBETNESS LIGHT (Lat 57 51 N., Long. 3 48 W.)

To Troup Head..... SE $\frac{1}{4}$ E 48
Cowsey Point SE by S $\frac{1}{4}$ S 18
Burgh Head S $\frac{3}{4}$ W 13
Mairn SW $\frac{1}{4}$ S 16

KINARD'S HEAD (Lat. 57 42 N., Long. 2 1 W.)

To Rattry Brigs SE by S $\frac{3}{4}$ S 8
Helmsdale NW by N 60
Noss Head..... N by W 61

Duncansby Head... .. N $\frac{1}{2}$ W	67	Arbroath	N by W $\frac{1}{2}$ W
Copinsha Island N by E	77	Dumbar Harbour.....	SW $\frac{1}{2}$ S
BUCANNESS LIGHT (Lat. 57 28 15 N.,		St. Abb's Head	S. by W. $\frac{1}{2}$ W
Long. 1 46 11 W.)		Fifeness	SW by W $\frac{3}{4}$ W
To Peterhead, S.H.....	NNE 2 $\frac{1}{2}$	MAY ISLAND (Lat. 56 11 8 N., Long. 2	
Rattray Brigs	NNE 9	20 W.)	
Sumburgh Head....	NE by N 140	To Fifeness	N $\frac{3}{4}$ E
Bell Rock ..	SW 66	Arbroath	NE by N $\frac{3}{4}$ N
St. Abb's Head	SW $\frac{3}{4}$ S 95	Bell Rock ..	NE $\frac{3}{4}$ E
Girdleness Light.....	SW $\frac{1}{2}$ W.. 25	St. Abb's Head	S $\frac{3}{4}$ E
THE GIRDLENESS (Lat. 57 8 15 N., Long.		Inchkeith	W $\frac{1}{2}$ N
2 3 2 W.)	MILES.	INCHKEITH (Lat. 56 2 N., Long. 3 8 W.)	
To Bucanness	NE $\frac{1}{2}$ E 25	To Kirkaldy.....	N by E $\frac{1}{2}$ E
St. Abb's Head	SSW 72	Elieness	E by N $\frac{1}{2}$ N
Bell Rock	SW $\frac{1}{4}$ S 42	Fidra Island.....	E by S $\frac{1}{4}$ S 1
Flambrough Head	S $\frac{1}{2}$ W 193	Fisherow	S $\frac{1}{4}$ E
MONTROSE (Lat. 56 42 N., Long. 2 27 W.)		Colm Island	NNW
To St. Abb's Head.....	S by W $\frac{1}{2}$ W 48	Garvy Island..	W by N $\frac{3}{4}$ N
Bell Rock..	SSW 11	May Island.....	E $\frac{1}{2}$ S
May Island	SW by S 30	ST. ABB'S HEAD (Lat. 55 55 N., Long.	
Flambrough Head	S 174	2 9 W.)	
Longstone Light, Ferns....	S $\frac{1}{2}$ W 70	To Buttonness	N
BELL ROCK (Lat. 56 26 3 N., Long. 2 23		Bell Rock Light.....	N by E $\frac{1}{2}$ E
6 W.)		Aberdeen, Girdleness	NNE 7
To Montrose entrance	NNE 11	Bucanness Light	NE $\frac{3}{4}$ N 9
Girdleness Lights.....	NE $\frac{1}{2}$ N 42	Bass Rock	NW by N 11
Bucanness Light	NE 66	Elieness	NW by N $\frac{3}{4}$ N 25 $\frac{1}{2}$
Flamborough Head.....	S $\frac{1}{4}$ E 158	May Island	N by W 20
Buttonness	NW $\frac{1}{2}$ W 13		

EAST COAST OF IRELAND.

POINT CARNSORE TO LOCH CARLINGFORD.

Point Carnsore is the S.E. point or extremity of Ireland, and lies about 42 leagues from Cape Cornwall, bearing N. by E. $\frac{1}{2}$ E.; from the Small's Light N. by W. $\frac{1}{2}$ W., distant 37 miles. Nearly E. by S. from Carnsore Point, distant 6 miles, lies the **TUSKAR**, a very remarkable rock 20 feet above the level of the sea at high water, upon which stands a lighthouse similar to that on the Eddystone, elevated 81 feet from its base. The light revolves every two minutes, showing two faces bright, and one red. The red light is visible 10 miles, and the bright 15 miles. During foggy weather a bell is tolled every half minute. This rock bears from the Smalls Lighthouse N. $\frac{1}{2}$ W., distant 33 miles. Ships coming from the westward and bound for St. George's Channel, should endeavour to see this rock before they shape their course to the northward.

Blackwater Bank, is a narrow sandbank running nearly in the direction of the coast at the distance of from 3 to 4 miles. A bouy is placed at each extremity of this bank. Moored off the north end in 18 fathoms, at low water, spring tides is a Light Vessel, which exhibits a Fixed Light. The Light is shown from the mainmast, and in clear weather can be seen at a distance of 10 miles. The vessel

has three masts, and carries a Ball at the main-mast-head; is painted black, with a White Band, having the word "*Black Water*," in white letters on her sides and lies about 1 $\frac{1}{2}$ miles E. $\frac{3}{4}$ S. of the black buoy on the N. end of the Black Water Bank, with the following marks and compass bearings:—Arklow Light Vessel N.E. 13 miles; Cahore Point, N. by W. 5 miles; Tuskar Lighthouse, S.W. $\frac{3}{4}$ S., 18 miles. A gong is sounded in foggy weather.

Wexford Harbour, is capacious and sufficiently sheltered, but is obstructed by a bar extending across it, over which there are at times but 7 feet water. Buoys are laid in the deepest water across the bar; but to enter this harbour a pilot is necessary.

Arklow Bank, is a narrow sandbank off Arklow Bay, about two leagues from the land, and nearly 11 miles long from N.E. by N. to S.W. by S. and from half to three-quarter of a mile broad; the shallowest part is near the N. end where the least water is 4 feet; the S. end has from 6 feet to 3 fms. on it, and except at slack water, you will perceive its ripple; near to its East side are from 13 to 20 fathoms; approach it no nearer than 30 fms. The marks for its southern end are Arklow

Rock N.W. by N. distant 7 miles, and in one with the northern declivity of the Copper Ore mountains; and the Great Sugar Loaf open to the eastward of the Ballynacarrig Hills, and also of Mizen Head, bearing about N. by E. There is also a buoy placed to mark the south end, striped black and white vertically with the words "*Arklow Bank South, No. 4*" on it. The marks for its northern end are the top of Carrig Mc Keilly just open to the N.W. $\frac{1}{2}$ N., and the Great Sugar Loaf open to the eastward of Wicklow Head, N. $\frac{1}{2}$ W. Wicklow Head bearing N. $\frac{1}{4}$ W. clears it. There is also a buoy placed to mark the north end, striped black and white horizontally, surmounted by a staff and globe with the words "*Arklow Bank North No. 1*" on it. Two Can Buoys have been placed to mark the eastern edge, the northernmost of which is chequered red and white, with the words "*Arklow Bank No. 2*" on it. It is placed in 12 fathoms, with the following marks and compass bearings—Arklow Bank North Buoy, E. N.E. $\frac{1}{4}$ E.; highest part of Bray Head just open of the highest part of Wicklow Head, N. by E.; Mizen Tower on with the peak of a small hill, N.W. by W. The southernmost is striped black and white horizontally, with the words "*Arklow Bank, No. 3*" on it. It is moored in 10 fathoms, low water, with the following marks and compass bearings—Arklow Bank No. 2 Buoy, N.E. by N.; Arklow Bank South Buoy, S.W. $\frac{1}{2}$ S.; Arklow Bank Light Vessel, S.W. $\frac{1}{2}$ W.; A Light Vessel is moored in 22 fathoms, on the south end of the bank. The vessel has three masts, showing a Revolving Light from main-mast, which attains its greatest brilliancy one every minute visible 10 miles. Carries a ball at main-mast-head, and has the words "*Arklow Bank*" painted on the sides. During foggy weather a gong is sounded.

On **Wicklow Head** are two-light houses, each showing a bright fixed light. The upper may be seen at 21, and the lower 16 miles off. The lights bear from each other N.W. by W. $\frac{3}{4}$ W., and S.E. by E. $\frac{1}{2}$ E., 180 yards, and, when in one, lead between the India and Arklow Banks.

Wicklow Harbour, fit for small craft only, there being only 9 feet in the entrance at low water, spring tides, and 6 at neap tides. To make its entrance better, a new channel has been opened; this is formed by 2 Piers about half a furlong to the westward of the Old Bar, and there the depth is 12 and 14 feet.

The **Wicklow Banks** are 2 narrow patches of sand, lying about 5 miles E. from Wicklow Head. The southern patch called the India Bank, is about one mile long, N.N.E. $\frac{1}{2}$ E. and S.S.W. $\frac{1}{2}$ W., and

half of a mile broad. On its middle are 2 fathoms, on its S.W. end $3\frac{1}{2}$ fathoms; at its S.W. extremity is a black buoy having the words "*India Grounds South*" painted in white letters on its broad end, and moored in five fathoms low water from which Wicklow Head light bears W. by S. 5 miles. The lights in one, bearing N. W. by W. $\frac{3}{4}$ W., leads $2\frac{3}{4}$ miles to the southward of this buoy, in from 12 to 40 fms.; and the buoy is a guide to pass between Wicklow Head and the Banks. To sail between this Bank and Wicklow Head, bring Wicklow Head lights in one; keep them so until the Sugar Loaf Hill bears N. $\frac{3}{4}$ W.; then steer by this course, and you go clear, and to the southward and westward, of the India Banks.

The **South Ridge** lies at the N. end of the India Bank, it is $1\frac{1}{4}$ miles long and half a mile broad, with $3\frac{1}{4}$ to 5 fms. water on it. Its direction is N.N.E. $\frac{1}{2}$ E., and S.S.W. $\frac{1}{2}$ W., and its N.W. end is nearly $5\frac{1}{2}$ miles S.E. by E. from Six Mile Point.

The **Codling Bank**.—The south end of this bank lies N.E. by E., 3 miles from the South Ridge; it then runs N. by E. 3 miles, and turns suddenly to W. by N. for 2 miles, then curving round to the S.E. till it joins the south point. In the middle of the bank, which is 2 miles broad are from $3\frac{1}{4}$ to 5 fathoms. The Great Sugar Loaf open north of the Gap N.W. $\frac{3}{4}$ N., leads between the Codling, and the South Ridge. A Black Buoy is placed on each extremity of the Codling, and lying off the south-eastern end, in 8 fathoms, low water, spring tides is a Black Spiral Buoy, surmounted by a Staff and Globe, and marked "*Codling Bank*," with the following marks and compass bearings:—Carrickgollogan Hill, in one with Bray Point, N.W. $\frac{3}{4}$ N.; Great Sugar Loaf, N.W. $\frac{1}{2}$ W.; Wicklow Head, W. by S. $\frac{3}{4}$ S.

The **Bray Bank** lies N.N.E. $\frac{1}{2}$ E. and S.S.W. $\frac{1}{2}$ W.; is 2 miles long and $\frac{1}{2}$ a mile broad, with twelve feet on it. In the Channel, between the N.W. end of the Codling and the South end of the Bray, which is half a mile wide, there are 9 fms. gravelly ground. Carrickgollogan Hill, two degrees open north of Bray Head, N.W. $\frac{1}{2}$ N., clears the Codling to the northward. This mark will lead across the bay in 3 fathoms at low water. The south hummock of the Little Sugar Loaf in one with Windgate Hill, W.N.W. $\frac{1}{2}$ W. leads between the Bray and the Kish Banks in $3\frac{1}{4}$ fathoms.

The **Kish** is a long narrow sand, stretching N. by E. $\frac{1}{2}$ E.; and S. by W. $\frac{1}{2}$ W., about $6\frac{1}{2}$ miles, and is from $\frac{1}{2}$ to $\frac{3}{4}$ of a mile broad; on its southern extremity is a black buoy. From it Dublin Lighthouse bears N. by W. $\frac{1}{2}$ W., $12\frac{1}{2}$ miles; Howth Head Light N. $11\frac{1}{2}$ miles; and Bray Head W.N.W. $\frac{1}{2}$ W., 6 miles. On the Kish are

from 9 feet to 3 fathoms, the latter depth being near its northern end. Three-quarters of a mile from the northern extremity of the Kish, a Floating Light Vessel is moored, with the following mark and bearing:—Ireland's Eye a little open of Howth Head, and Dublin Lighthouse, N.W. $\frac{1}{2}$ W., distance $7\frac{1}{2}$ miles. This vessel bears 3 lights or lanterns on three separate masts, equi-distant from each other, the centre lantern being the highest. At 3 miles to the southward of the light-vessel are only $7\frac{1}{2}$ feet water; at this spot the Great Sugar Loaf Hill appears on the saddle of Bray Head, bearing W. $\frac{1}{2}$ S., and Ireland's eye just open, and shut with the Head of Howth, N. $\frac{1}{4}$ W.

Bennett's Bank.—The S. end of this bank lies about 1 mile East of the Kish Lighthouse and 5 miles S.E. from Howth Head Lighthouse; it is about $2\frac{1}{2}$ miles in length, and has from 6 to $4\frac{1}{2}$ fathoms on it; at half mile southward are 12 to 14 fathoms.

The **Burford Bank**, at the entrance to Dublin Bay, is narrow, and runs in a N.N.E. $\frac{1}{4}$ E. and S.S.W. $\frac{1}{4}$ W. direction being about $1\frac{1}{2}$ mile long, but not a $\frac{1}{4}$ of a mile broad. Nelson's Pillar kept open to the southward of the Pigeon-house on Dublin Quay, will lead clear of its southern extremity in $4\frac{1}{2}$ and 5 fathoms water. There is a shallow part of this bank over which there is not more than 12 feet at low water. This lies with Malpas Obelisk in one with signal station, and Sutton Tower just open of Sheep's Hole Point. On all other points of the bank are from 3 to 4 fathoms. The mark to clear to the eastward of it, is Ireland's eye open to the Nose of Howth. Upon each end of this bank is a buoy; that on the southern end is a conical buoy, coloured red, surmounted by a staff and globe, and that on the northern chequered black and white.

Sailing for Dublin Bay from the Southward.—From the Tuskar to Wicklow Head the bearing and distance are N.E. $\frac{3}{4}$ N. nearly $46\frac{1}{2}$ miles, but to pass to the eastward of the Arklow Bank the course is N.E., observing to make due allowance thereon for the set of the tide, whether flood or ebb. When Wicklow Head Lights bear N. by W. you will be clear of the Arklow Bank; then to sail within the Wicklow or India Banks bring the Great Sugar Loaf Hill well open of Wicklow Head, bearing N. by W. or Wicklow Lights in one; either of these will lead between the Arklow and India Banks, and when within 2 miles of the shore, a N. by E. $\frac{3}{4}$ E. course will carry you past Moulditch Bank and Dalkey Island. In working up between the banks and the shore with a flood tide and northerly wind, do not stand further from the

land than four miles; for the tide with little wind may drift you upon the bank while near the shore the stream common makes to the southward $1\frac{1}{2}$ hours before high water.

Stopping Places.—In moderate weather vessels may stop almost anywhere within the banks between Wicklow and Dublin, except off the Giant's Bed where lies the Moulditch Bank; the best part, with westerly winds, is between Bray Bank and the main, from $\frac{1}{2}$ to miles from the shore. Here is very little stream of tide, and the violence of the sea is considerably broken by the banks.

In **Killiney Bay** vessels may anchor in 5 or 6 fathoms, sheltered from W.N.W. to N.N.E. winds.

Dublin Bay.—There is good anchorage in the mouth of Dublin Bay when the wind does not blow hard from the E. and S.E.; with these winds a great sea sets in when it blows hard, so that vessels are obliged to run for some place of safety; with north-easterly winds, vessels run for Kingstown harbour, which lies on the S. side of Dublin Bay, and is enclosed by two large piers; on the head of the eastern of which is a lighthouse shewing a revolving light, presenting white and red faces alternately, and attaining their greatest brilliancy at intervals of thirty seconds. During foggy weather a bell is tolled. There is also a fixed red light on the west pier-head. The entrance to this harbour faces the N.E., and has 4 fathoms water; within, from 4 to $2\frac{1}{2}$ fathoms at low water. When going in, leave the revolving light on the port hand, and round it close to. **BAILEY LIGHT**, exhibited from the S. E. point of Howth Peninsula, is stationary, and is visible at a distance of fifteen miles. About a mile to W.S.W. of the Bailey lighthouse lies the Rosebeg Bank, which is easily distinguished in blowing weather by the sea breaking over it; and on which are from $2\frac{1}{2}$ to 3 fathoms water. The Revenue Barrack on with the Poolbeg Lighthouse, bearing N.W. by W. $\frac{3}{4}$ W., leads clear to the southward of it.

Dublin Harbour lies between two banks, the North and South Bull, and is sheltered on the south side by a wall on piles, carried eastward about 3 miles into the bay. At the end of the south wall is Poolbeg lighthouse showing a fixed light all night, and a lower light, from half-flood to half-ebb: a ball is hoisted during the same period in the day. A bar lies across the entrance, on which are 12 feet at low water. Between the bar and lighthouse are 14 to 27 feet. A red buoy is moored on the bar, in 9 feet at low water: it lies a mile E.S.E. $\frac{1}{4}$ E. from the lighthouse. Pass about a cable's length

to the southward of this buoy, observing the before-mentioned mark and you will carry 12 feet over the bar at low water. On the north side of the channel, and bearing E., 3-10th's of a mile from the lighthouse, is a white buoy, moored in 9 feet at low water, between which and the lighthouse are from 14 to 27 feet. The south bar buoy (black) lies S. $\frac{1}{4}$ W. 4-10th's of a mile from the lighthouse, on the southern extremity of the south bar patches, which commence about $\frac{1}{2}$ of a mile S.E. from the lighthouse, extending in that direction nearly $\frac{1}{2}$ a mile; then turning to the westward about the same distance, when they terminate where the black buoy is placed. On these patches are only from 4 to 5 feet low water. At 5-10th's of a mile within the lighthouse a white buoy is placed, which must be passed to the northward. The channel is regularly buoyed on the north side with black buoys, and on the south with red buoys from the Pigeon House to Ring's end. Between Poolbeg and the Pigeon House there are several places where vessels may anchor, in from 16 to 20 feet at low water, the channel having been greatly improved by means of powerful steam dredges. Ships in general, with suitable draughts of water sail over the bar to the north of the east buoy. This is called the East Channel, and the mark for it is the Church of Irishtown just open to the northward of the lighthouse. This mark will lead you about a cable's length to the southward of the east buoy in no less depth than 15 feet at half-flood. So soon as you are over the bar, the depth will increase to 18 and 20 feet. Keep about mid-channel between the Spit Buoy and the lighthouse, and when about $\frac{1}{2}$ a mile within the latter you may anchor in 15 or 16 feet at low water. This is called Poolbeg, and although a tolerably good place for summer, it is not so good in winter time; it is then best to go a mile further up, so as to take the ground about half-ebb, or to lie along the wall or along the quay above Ring's End. To sail in through the West Channel, you must pass to the southward of the South Bar Buoy; when the lighthouse bears N.E. $\frac{1}{4}$ N., and on with Baldoyle Chapel, or the ruins of Kilbarrack Church, steer for it in that direction, giving it a berth on your larboard hand, as you haul round to the westward. When coming from the southward, keep Sandy Cove Tower on with the eastern extreme of the pier at Kingstown, S. $\frac{1}{4}$ E., until you bring the lighthouse on the above bearing: this will lead you in the best water, and well to the westward of the south bar buoy. In the channel are only 6 feet at low water, spring tides. The tide flows at the lighthouse, on full and change days, 11 hours 12 minutes, and rises 13 feet on springs. Vessels

coming from the northward, bound for Dublin, must give the Hill of Howth a berth, to avoid the bank called Rosebeg. To avoid it on the east side, bring the eastern extreme of Howth open of the Bailey, or the Bailey Light N.E. $\frac{1}{4}$ N.; and on the south side, Poolbeg Lighthouse, N.W. by W. $\frac{3}{4}$ W.

Ireland's Eye is a small island $1\frac{1}{2}$ miles to the north of Howth Head; on its eastern side is anchorage in 6 fathoms; on its north in 7; but the best is on the west side in about 4 fathoms, with the Stack open to the southward of the height, and from whence it is easy to run for the pier of Howth in case of necessity.

Howth Harbour, which is at present being deepened and improved, to the S. of Ireland's Eye half a mile. There are two piers, on the easternmost of which there is a lighthouse exhibiting a fixed red light to seaward 45 ft. high, on the west side of the entrance and towards the end of the west pier there is 7 feet of water at low water spring tides, (rise of tides 13 feet at springs) and alongside the eastern pier there is 4 to 5 ft. at low water spring tides. The centre of the Harbour, from three-quarter cable length inside the jetty is a Rock, that dries at low water, and should be avoided. Entering the Harbour from the eastward keep Howth Church, W. $\frac{3}{4}$ S., open S. of the lighthouse to clear the rocks off Ireland's Eye; and entering from the northward keep the Martello tower between the Pier heads S. $\frac{1}{4}$ W. Give the eastern pier a wide berth to avoid the loose stones under it that dry at low water. List of Tolls, Rates, License, Duties, and Charges authorized by the Lords Commissioners of Her Majesty's Treasury, to be levied and paid at the Harbour of Howth:—On Vessels freighted with Coal, Dressed Stone, Bricks, Grain, or General Merchandise, per Ton Register, not exceeding 6d. On Vessels freighted with Limestone, Sand, Manure, Undressed Building or Road Stone, per Ton Register, not exceeding 2d. On Vessels engaged in Fishing, if exceeding 5 Tons burthen, a charge of 1s. for each Cargo landed, or an annual licence of 10s. On Vessels engaged in Fishing, if under 5 Tons burthen, a charge of 6d. for each cargo landed, or an annual licence of 5s. On small Boats, plying for Hire, an annual licence of 2s. 6d. Vessels engaged in Trade if occupying a Berth at the Quays for a period exceeding Ten Days, to pay a charge of $\frac{1}{4}$ d. per Ton Register for each day exceeding such period.

Harbour of the Skerries—This Harbour may be easily known by Rockabill and St. Patrick's Islands; the former is a remarkable rock, always above water,

and steep to all round, having from 9 to 18 fathoms close to it, and on the summit of which a Lighthouse is erected exhibiting a FLASHING light every 12 seconds, and can be seen 18 miles. The flash is white between N. $\frac{1}{2}$ W. and S.W. by S.; red between the same bearings round westward or towards the land. It lies 4 miles E. by S. of the Skerries, and about $2\frac{1}{2}$ miles from St. Patrick's Island. To sail in, after you have rounded St. Patrick's Island, steer N.W. by W. until all the town of Skerries appears open of the pier-head; you will then be clear of the Cross, and may round into the road, where you will have 4 or 5 fms. of water. Here the riding is safe, unless it come to blow hard from the E. or N.E.; but if you intend going up to the pier, stop about a cable's length from the pier-head, in 3 fathoms, until the tide serves.

Balbriggan Harbour is sheltered from the east by a Pier, on the S. side of the Bay, which runs northward. Within the Pier Head, at high spring-tides, are 12 feet water, and with neap-tides, 9 or 10. On the pier, S. side of entrance, is a white lighthouse, exhibiting a fixed light, visible at the distance of 10 miles, between W. S. W. and S.S.E. $\frac{1}{2}$ E.

Drogheda Bar lies $27\frac{1}{2}$ miles N. of Dublin, about 10 miles N. of Skerries, and 7 miles from Balbriggan, the river running due E. and W. Formerly the river from the Maiden Tower to the bar had a tendency to run N.E., but an annual outlay of nearly £6000 a-year in its improvements has contributed to give the entrance to the river an E. and W. direction, thereby enabling vessels to take the bar with much more safety than heretofore. The parallel walls at the mouth of the river having been extended within the last few years 1800 lineal yards seaward, and now nearly reaching the bar, has caused the water in the river adjacent to the bar to be comparatively smooth in the severest weather. These walls have also had the effect of deepening the channel, and directing its course in a more southerly direction, thereby making the bar much easier of access in bad weather. The continual dredging of the river has removed the banks and shoals which previously existed, leaving the navigable channel of a uniform depth, not less than from 18 ft. 6 in. to 19 ft. at high water of ordinary spring tides. The water on the bar at spring tides from 18 to 22 feet., with from 15 to 16 feet at neaps. There is an excellent tug-boat in attendance on vessels requiring her assistance, with a number of experienced licensed pilots always looking out for vessels bound for this port. There are fifty sailing vessels, with five first-class paddle-steamers, having in the whole a registered tonnage of 7327 tons trading to this port, exclusive of other

vessels which frequent this place & occasional cargoes. Four lighthouses are placed at the entrance of the river and a number of stone towers built the N. side, with wooden perches landmarks on the S. side; the cables between them denoting the channel. The relative bearings of the E. and W. Lights will be occasionally changed, as sandbanks alter their places. The pre-entrance of the river, keeping these lights in one, is W. $\frac{1}{2}$ S., until you come abreast of the large Stone Pillar on north side, then steer N.W. $\frac{1}{2}$ W. for North Red Light. There has lately been placed at the East end of the North Wall a large Wooden Perch, with a Cage Barrel placed on the top of it, and may be kept about 100 feet on the starboard side in coming in. Ships drawing $10\frac{1}{2}$ should have at least 4 hours' flood in bad weather before taking the bar.

Dundalk.—Sailing N. you will pass Clogher Head and reach Dunany Point off which, about a mile E. of high water mark, lies a small rock, drying with low water spring tides. The first buoy is 6 fathoms at low water, about 4 miles from Dunany, bearing from it N. by keeping Clogher Head well open, and bearing from Cooley Point W. by distant about 4 miles. The second and third buoys bears N.N.W. $\frac{1}{2}$ N. from the first buoy. The second buoy is in 3 $\frac{1}{2}$ fathoms at low water; and the third is the bar, on which there are, at low water springs, 3 and at low water neaps, 6 feet. The depth on the bar at high water springs, varies from 24 to 18 feet; at neaps, from 16 to 13 feet. These depths continue up to Soldier's Point, when to the quays, the depth is at high water springs 19 feet, and neaps 13 feet. From the bar to Soldier's Point, the W. side of the channel is marked by three hexagonal beacons constructed of timber piles, each having a ball on the top, and painted black; and on the E. side near to Soldier's Point, at a place called *The Rock*, there is a large hexagonal beacon constructed of timber piles and painted red; this beacon has a lantern on the top showing a Red Light when lighted at night. Between the Rock Beacon and Soldier's Point on the N. side of the channel, there are two Beacons painted Red. Between Soldier's Point and the Quays there is also on the N. side of the channel, at the entrance of the Ballymascanlon River, a similar Beacon to the last, painted Red: from thence to the Quays the N. side of the Channel is marked by Perches. All the beacons are furnished with lanterns, which are lighted every night. The third light after passing the Lighthouse shows GREEN, the Rock light shows RED, and the rest show Bright Lights. A Lighthouse, on screw piles has been erected

at the entrance of the Harbour Channel. The Light is a Fixed Light, varied by Flashes, giving a flash once in every 15 seconds; its focal point 33 feet over the level of the sea, at high water; and in clear weather it is visible at the distance of about 9 miles. To seaward the Light appears of the natural colour, Bright, between the bearings of W. by N. and N. $\frac{1}{2}$ W.; it is masked in the direction of the Dunany Reefs between the bearings of N. $\frac{1}{2}$ W. and N. by E. $\frac{1}{2}$ E.; it is coloured Red towards the west side of Dundalk Bay; and shows Bright towards the Harbour Channel, northerly. The Lighthouse is borne on screw piles of red colour, braced into an open framing below the dwelling, which is of octagonal form, and coloured white: over this the Lighthouse has a dome-formed top. It stands within the entrance of the Channel, in lat. $53^{\circ} 58' 40''$ N., and lon. $6^{\circ} 18' W.$; and bears from Castle Rocks off Cooley Point N.W. $\frac{3}{4}$ W., distant $5\frac{1}{2}$ nautic miles; from Dundalk Patch (rocky shoal), N. by W. $\frac{3}{4}$ W., distant $6\frac{1}{2}$ nautic miles; from Dunany Reefs, eastward of Dunany Point, N. $\frac{1}{2}$ W., distant $6\frac{1}{2}$ nautic miles. A large bell has been placed on the roof of the lighthouse which strikes six times per minute in foggy weather. All vessels entering the Port to keep the Lighthouse on the Port hand. Masters of vessels are cautioned to give the beacons and perches a sufficient berth. When vessels bound to Dundalk come between Cooley Point and Clogher Head, they are required to hoist a signal for a pilot. Vessels wanting the use of a Steam Tug are requested to hoist by day an Ensign at the Fore-top-gallant mast head, by night, Two Lights, one above the other. Masters of vessels necessitated to enter the Harbour without being able to obtain a pilot should observe that after passing the Lighthouse, they are to keep the black beacons on the Port hand, and the red beacons on the Starboard hand.—The Dundalk Harbour Commissioners have had built, at a cost of £3,000, a new and powerful Iron Steam Tug-boat for the accommodation of vessels trading to this Port.—The Commissioners for Improving the Port and Harbour of Dundalk are erecting a Guide Wall from the North Bull towards the Bar, the end and line of which bears from the Lighthouse N. by W. $\frac{1}{2}$ W., and distant from it about 300 yards. Also, three Jetties, running from the Westward towards the fairway; the first Jetty ends at No. 1 Beacon; the second is situated about half-way between No. 1 and No. 2 Beacons. The River End is marked by a Perch which will be Lighted at Night. The third Jetty ends at No. 2 Beacon; a fourth Jetty is being also constructed on the East side of the Channel between No. 2 and No. 3 Beacons, marked by a Perch at the River End.

DUNANY AND IMOGENE ROCKS DUNDALK BAY.—A *black conical buoy*, surmounted by a staff and ball, has been placed in $3\frac{1}{2}$ fathoms, at low water, spring tides, to mark the position of the Imogene Rocks, which lie about a mile and three quarters S.S.E. off Cooley Point, north side of entrance to Dundalk Bay, and with the following marks and compass bearings:—Dundalk High Chimney, open of Rathcor Point, N.W. $\frac{1}{2}$ W.; Cooley Point, N.N.W. $\frac{1}{2}$ W.; Carlingford Lighthouse, N.E. $\frac{1}{2}$ N.—A *red conical buoy*, surmounted by a staff and ball, has been placed in 4 fathoms, low water, spring tides, on the outside of the Dunany Reefs, which lie off Dunany Point, south side of entrance to Dundalk Bay, and with the following marks and compass bearings—Clogher Head, S. W. $\frac{3}{4}$ S.; Dunany Church, W. $\frac{1}{2}$ S.; Dundalk High Chimney, N. by W. $\frac{1}{2}$ W.; Tipping Mountain on with a saddle in the distance, N. $\frac{1}{2}$ W.

Loch Carlingford lies two leagues to the eastward of Dundalk Harbour entrance, and forms a large well sheltered bay, the ground good, and water sufficient for the largest ships; but there are several rocks and dangers which must be attended to. Its entrance is between Ballaggan and Cranfield Points, which bear from each other nearly E. by N. and W. by S., distant $1\frac{1}{2}$ miles. The following Iron Nun Buoys have been laid down at low water, spring tides:—*Black Buoy* on the Shoal N.E. of the lighthouse, in 7 feet water at low water, lighthouse S.W., distant about 40 fathoms; *Blockhouse*, W.N.W. *Red Buoy* off the tail of the Scar, Cranfield Bay, in 8 feet water, lighthouse S.W.; *Greencastle N.* *Red Buoy* on the south end of the Earls Rock and shoal, in 8 feet water, *Greenore Point* W. by S.; *Greencastle E.*; distant from *Greenore Point* $\frac{3}{4}$ mile. *Red Buoy* on the S.W. end of Ballyedmont Bank, in 9 feet water, *Monument N.*; *Old Castle*, Carlingford, W.S.W. *Black Buoy* on the eastern edge of Carlingford Bank, in 8 ft. water, *Greenore*, S.S.E.; *Old Castle* of Carlingford, S.W. by S. When inward bound, masters of vessels will keep the red buoys on the starboard hand and black on the port. The Helly Hunter, upon which a large Red Buoy has been placed, is a rocky shoal lying to the eastward of the entrance of the Loch, and stretching about 1 mile S.W. and N.E.; its western end dries with extraordinary low tides only, and on the other parts the least water is 6 feet. To avoid the Helly Hunter, as you sail to Carlingford from the E. or S., do not bring Mount Culy to the westward of W. $\frac{1}{2}$ N. until the Blockhouse comes on with the top of Foy Mountain, bearing N.W. $\frac{1}{2}$ N. Then steer for the N. end of Blockhouse or Haulbowline Island, giving the Point of Cran-

field and the Island a berth of a Cable's length each from the high-water mark. Between the W. side of Blockhouse Island and Ballaggan Point are several rocks and shoals, and consequently this passage must not be attempted.

Carlingford Loch Light, situate on Greenore Point, on the larboard side in going up Carlingford Loch, revolves, is of the natural appearance, attains its greatest magnitude every 45 secs., and is visible at a distance of 9 miles.

To Sail into Loch Carlingford, take flood-tide; and with the Blockhouse bearing from N. by W. $\frac{1}{2}$ W. to N.W. $\frac{1}{2}$ N. sail in for the E. side of the Island, giving it a berth of a cable's length or two on the larboard. Steer thence for Greenore Point keeping between $\frac{1}{2}$ a cable and 2 cables' length from it; then run N. by W. up the middle of the channel; and abreast of

Killeen Point or above it, nearest the side, drop your anchor, in from 2 to fathoms water. Small vessels may lie on the W. side, easy and safe, about 2 cable length eastward of Carlingford Castle, on soft mud.

Carlingford Lights are shown from a tower erected on Hauibowline Rock which lies upon the bar $\frac{1}{2}$ a mile W. by N. from Cranfield Point, on the larboard side of the entrance to the Loch. The upper is a fixed light, and the lower revolving. The higher light is shown throughout the night, and may be seen like a star of the first magnitude, at the distance of 15 miles. The lower light, having also a starlike appearance, is exhibited from half-flood to half-ebb. In the day during the same period, a ball is hoisted; and in foggy weather, a bell is tolled every half-minute.

NORTH-EAST AND NORTH-WEST COASTS OF IRELAND.

LOCH CARLINGFORD TO SLIGO BAY.

Annalong.—A small dry harbour, with excellent shelter for coasters after passing a narrow but easy entrance.

Newcastle.—A dry harbour, surrounded by a quay and sea-wall, affording good shelter for coasters, with an even bottom, and very easy access between the two pierheads.

Dundrum Harbour.—The entrance to Dundrum Harbour (a dry one) lies $2\frac{1}{2}$ miles eastward off Newcastle at the mountain foot. The Marquis of Downshire, has built a long two storied House, close to the western side of the entrance, the light colour of which is a useful guide for vessels endeavouring to make the harbour in thick weather. In the middle of the entrance channel a black buoy is laid down in 14 feet, low water spring tides. It may be picked up by keeping the old castle that stands above the town a sail's breadth in on the west point that forms the entrance. Steering north from this, you will arrive at a smaller buoy lying in the middle of the river; then by steering N.W. by W. you will come up with the first perch on the banks to the west, having on it a small barrel—give this a berth of half a cable's length on your larboard hand; after which by changing your course N. by E. you reach the second perch, having a triangle on it: allow this the same berth as the first. The third perch has a round black top. From the second perch,

from which you have the town and pier open, steer N.N.W. up the river until abreast of the red-topped perch, to which give a berth of half a cable's length on your starboard hand, and then keep for the pier end.

St. John's Point.—On this Point in lat. $54^{\circ} 13' 10''$ N., and lon. $5^{\circ} 39' 50''$ W. is erected a tower, shewing an intermittent light, *Red* appearing of its full brightness during 45 secs. and ob. 15 secs. The light bears from Newcastle pier (Dundrum bay) E. by S. $\frac{1}{2}$ S., $7\frac{1}{2}$ miles, and from the Calf of Man revolving light N.W. $\frac{1}{2}$ W., 33 miles, and can be seen seaward from W. by N. $\frac{1}{2}$ N. to E. $\frac{1}{2}$ N. The light kept open will lead clear of Gun Island and of the St. Patrick's rock, on the entrance of Strangford Lough.

Killough, half a league East of St. John's Point, has a good roadstead in off-shore winds, and, within, offers to coasters a safe dry harbour, with a muddy bottom. Killough Pier is built from the West side, and, between it and a smaller Pier on the East side, called Coney Island lies the entrance to the port. Outside the entrance of the bay an Iron Perch marks the Water Rock, which is covered only at high water: to avoid it, bring a remarkable two-storied house, with white front and slate roof, (called Cotter's House, and situated inside the harbour,) one-third inboard from the West Pier-head, until you have passed the Perch; then keep

more to the Eastward till you bring the House over to the extreme end of the Pier. Two cables N.N.E. $\frac{1}{2}$ E. from the Perch is the Little Plate Rock, and half a cable N. from this is the Big Plate, both covered except at spring ebbs; and, consequently, when there is water to enter the harbour, there is also water over these rocks. The Garter, on which is an Iron Perch, is a ledge of foul ground which runs off from the Western side of the bay, under the Old Mill Stamp. There is also a spit of rough stones, called Crane's Point, extending S.W. a short distance from Coney Island; but by keeping Cotter's House midway between the two Pier-ends, when you come within two cables' length of them, you avoid this spit. The best anchorage in the Bay is within the Water and Plate Rocks, in from about five to seven fathoms, with shelter from all but southerly winds.

Ardglass Harbour, $2\frac{1}{2}$ miles E. of St. John's Point, is easily known by several old Castles and a rising town on the W. side of the bay. You can anchor at the mouth of the bay, between Ringfad and Pennick Points, in from 6 to 10 fathoms water, but if the wind blows on shore, a small vessel may shelter inside the pier under the middle castle in from $1\frac{1}{2}$ to $2\frac{1}{2}$ fathoms water, with a warp to the quay, or run aground on the beach. A temporary red light is shown from the inner shore of harbour, 2 cables' length from entrance N. by W.

Loch Strangford lies N.E. at the distance of 60 miles from the Hill of Howth, and nearly E.N.E. $\frac{1}{2}$ E. 28 miles from Loch Cullinford. The stream at the entrance is very rapid, and when the tide is ebbing the wind strong at S., S.E., or E., the sea is short and broken, which gives the bar across the river the appearance of a ridge of broken rocks; but there are not less than four fathoms at low water on any part of the bar, and it is quite free from rocks. Few places afford such safety to wind-bound vessels as this Loch, ships having at all times of tide abundance of water, not only on the bar, but also in the two principal roadsteads, *Ballyhenry* on the east, after passing Portaferry, and *Audley's Road* on the west side of the river, after passing Strangford. A small pillar or obelisk, lately built on the outer point of Gun's Isle is a guide to vessels from the southward, for making the square headed Iron Perch on Rock Patrick. This rock covers at half-flood. It is $\frac{1}{2}$ of a mile outside Killard Point, and has deep water on both sides, but it is best to leave it on the port hand, and steer for the Northern Bar or entrance, giving it a wide berth to the Garter Perch, which marks the south end of the Reef of Rock Angus, on account of the

western, set of flood tide at this spot. On Rock Angus itself, stands a stone tower, to be left on the port hand. The star-board side or opposite side of the entrance is marked by the Perch on Pladdy Lug, which must not be approached nearer than 25 fathoms, on account of small outlying rocks. Off the north entrance and in a direct line with Kilclief Castle and Ballywalter Spire (which when brought in one, are the marks for vessels from the N. and E.) is a black fairway Buoy, lately placed there by the Ballast Board. It should be rounded on the star-board hand, as there are several Pladdies between it and Ballyquintin Point. Having passed the Tower on Rock Angus $1\frac{1}{2}$ mile, come to anchor, if you are late for the tide, opposite a White Beacon on the south shore, called Cross Roads, where you can stop a tide until you can get to Ballyhenry or Audley's Road, 2 miles further, and just beyond Strangford and Portaferry towns. A short half a mile above Cross Roads the mid-channel is marked by a tall red and white Pillar on the W. side, and a short white Beacon on the E. side of the Lough. The "Hole" of Strangford is a perfectly sheltered anchorage between the town and Swan Island, and there are 2 Quays opposite the Customhouse, with berths alongside them, and a little Bay with an even beach and smooth water for vessels desirous of taking the ground. There is also at PORTAFERRY (opposite) a good Quay, with berths and a smooth beach along the shore, under the town. A Horse Ferry plies between the two towns. There is a Red Pillar Beacon on the outer end of Swan Island, which marks the entrance into the "Hole" of Strangford. On hoisting a signal, experienced pilots can be had.

South Rock Light is erected on the South Rock, about 2 leagues northward from the entrance to Loch Strangford. The light revolves, attaining its greatest lustre every $1\frac{1}{2}$ minutes, and is visible at a distance of 12 miles. A reef of rocks called the Ridge, extends $1\frac{1}{2}$ miles to the E. of the lighthouse, on the extremity of which is a red buoy, which bears about S. by E. from the North Rock Beacon. The North Rock, about a mile N. by W. of the lighthouse, is marked by a solid Beacon, like a small church spire, erected in 1856. The Butter Pladdy, about $1\frac{1}{2}$ miles S.W. of the lighthouse, is marked by a blackbuoy, to be left on their outer hand by vessels taking the "Sound of the Light"—a channel much frequented by coasters and now well marked, between the lighthouse and the North Rock Beacon. Sailing along the Downshire shore from the Copeland to the North and South Rock, the South Light should be kept outside of Burr Isle, or the Black-head of the Gabbans, in Isle Magee, a

sail's breadth outside of Donaghadee shore, or the Copeland Light North, to clear Sculmartin Rock that lies N. $\frac{1}{2}$ E. $3\frac{1}{2}$ miles from Burr Isle, and S.E. 1 mile from the town of Ballywater. To the northward of Sculmartin, on which is an Iron Perch, lie Ballawater Rocks, which stretch out about $\frac{1}{2}$ a mile, commencing at Ballyferris Point, and run S. 2 miles. The S. end is seldom covered, the middle is covered at half-tide, the N. end seldom bare. Vessels of 60 and 70 tons frequently go in to discharge; and there is good shelter from all but N. E. winds, though the space is small, because after building the Quay, the Board of Works never cleared away the loose stones inside it. Six and a half miles N. of Ballywater is

Donaghadee.—This harbour has been greatly improved, and there is now a depth of 10 feet water at low water, spring tides, in the improved portion of the harbour, which extends along the S. Pier, from 100 feet west of the western crane to the black buoy, and thence to the N. Pier head. From the S.E. pier head a Light is shown, red to seaward from N. by E. $\frac{1}{4}$ E. to S. $\frac{1}{4}$ E., and bright towards the harbour and the entrance of Belfast Bay. Sailing in from the S'ward keep above half a cable's length from the shore until the harbour is open, then run in and let go your anchor inside the pier head. No buoys are allowed to anchors on account of the steampackets. Mariners must be on their guard not to lose sight of the red Part of the light in sailing N. or S. of Donaghadee. About a mile north of Donaghadee is Foreland Point, from whence extends a ledge of rocks to the E., with an Iron Perch on it, and outside of that again is a large black buoy, which should not be rounded too close, particularly at low water. Deputy Rock, on which is a red buoy, lies half way between Donaghadee and Copeland, and has about 8 ft. at low water. The proper course through the sound is between the Foreland and Deputy buoys: but there is a channel on the E. side of the latter, keeping $\frac{1}{2}$ from the Copeland, as a shelf of foul ground runs out after passing the Deputy. Cairn Point, at N.W. end of Copeland, must have a good berth on the starboard hand, to avoid a rock called Gordon's Bush, that lies a cable's length S. of it, and is seldom bare at low water. These are all to be feared in the Sound of Donaghadee.

Copeland Island lies $2\frac{1}{2}$ miles N.E. $\frac{1}{2}$ N. from Donaghadee, and 1 mile to the E'ward of Nout Head. E.N.E. 1 mile from Copeland, are the Cross and Mew Islands, between which is a narrow channel not navigable. On the cross Island is the Copeland Light. Between these small islands and the Copeland is the outer sound. On the E. side of the Copeland,

near the S. point, is a ledge of rocks tending above two cables' length to E'ward: there is also a ledge extending from the Mew Island to the W'ward, between these is the channel. Half between the sound of Copeland and C. Island, is a small rock called the Pladd over which are, with common spring tides, 3 or 4 feet water; it bears S. $\frac{1}{4}$ W. the light. To avoid this rock on the side, bring the lighthouse N. by W.; on south side, bring the S.W. house in Donaghadee in sight with the S. end of Copeland Island: in this sound the currents are strong, and, as there are no buoys to be avoided by strangers.

Belfast.—The entrance to Belfast Lough is immediately to the N. of Copeland Light, and lies between Said Light and Black Head; the latter bearing from the former N. N. W., distant about eight miles. At the larboard side of the entrance, about a mile to the W. of Orlock Point, is a rocky ledge called the Briggs stretching out $\frac{3}{4}$ of a mile, and upon which is a red buoy. About 6 miles to the S. of the Briggs is Grey Point, and, in sort of bight between them, is the town and harbour of Bangor, which has about the same depth of water at the quay as to be found at Carrickfergus, and, in addition, a wooden wharf for the accommodation of steamers has been attached to the back of the stone pier, at which feet will be found at ordinary low water 2 miles further W. from Grey Point, a small ridge of rocks runs out from the shore rather more than a $\frac{1}{2}$ of a mile, on which is a buoy to be kept on the port hand. On the opposite side of the Lough, and being W. by N. $\frac{3}{4}$ N. from Orlock Point, distant 9 miles, is the town of Carrickfergus, where there is a pier, having, with spring tides, 10 feet water, and with neaps 7 feet. As a guide to the entrance of this harbour at night, a red light is shown 2 hours before and 2 hours after high water; this light to be brought immediately over a street lamp in Governor's place—a red light showing about 2 feet above a white light, and from a vessel coming due north. Off this town, to the S. and W. is a bank running out $1\frac{1}{2}$ miles from the shore, and extending N. $1\frac{1}{2}$ miles; the least water over it is 7 feet. Extending a mile from the shore on the S. side of the Lough, and opposite the village of Hollywood is Hollywood Bank, on which is a lighthouse built on screw piles, which shows a pale red light, visible 8 miles in clear weather. Between the Hollywood and middle bank is the commencement of the pool of Garmoyle, which extends from abreast the large red buoy on the starboard hand, having from 3 to 4 fathoms at low water. From Garmoyle the channel up to Belfast is now nearly straight, having above 10 feet at low

spring tides: it is well buoyed—on the larboard, and black on the starboard hand going up the quays. There is also a green light on Hollywood Island, with three more of the same colour near Belfast, all of which are to be left on the port side when going up. There is a red light S.W. of the stone beacon on the left on the starboard side. Large vessels usually anchor off the town of Carrifergus, near the middle of the Lough. Many vessels frequent this anchorage, which is marked on all the Admiralty Charts of the Lough, and Masters will pronounce it excellent. Vessels drawing not more than 16 feet water may go higher up in the Folly Roads—between the Carrick bank and abreast of the Abbey; smaller vessels in Whitehead Roads. Large vessels drawing 18 feet water, intending to reach the quays, anchor in Garmoyle. A large pilot boat is constantly under weigh during the day, at night also (weather permitting) and generally boards vessels bound to Belfast abreast of Grey Point. Briggs of Kilroot, now a perch on the shore, lie on the north side of the Lough, stretch almost from Kilroot Point to the Head, and about a quarter of a mile from the shore to avoid which keep Black Head open with the White Head, and a vessel will be clear of all danger.—The Admiralty Chart of 1856, as surveyed and corrected on by R. Hoskin, Master R.N., states:—Belfast Loch is an admirable harbour. Above Grey Point ships may ride securely against all winds.

Larn.—A lighthouse is erected on Carrifergus Point, on the larboard hand, and into this spacious Loch, opposite to the Maiden or Hulin Rocks. Vessels going into Larn from the S.E. pass Muckish Point, Brown's Point and Bay; give Carrifergus Point a berth near half a mile, as a line of rocks runs off above a quarter of a mile; give Farras Point on which is a lighthouse, a berth of half a cable's length; run for Corran Point on Larn Island, on which stand the ruins of an old castle, giving the Isle Magee side a large berth, as a long shoal runs out from it near half way across to the steamship's wooden wharf opposite the salt stack, and continue to near the Point of Yellow Stone, round which is Yellow Stone Island, sheltered from all sea, and little wind. There is a long flat runs out from the N.W. side of the entrance which, when covered, is so deceitful to strangers, that they should open the mouth of the Lough well; keep no more than two cables' length from the lighthouse, run up past the wooden wharf, giving it a berth on the starboard hand. Anchor $\frac{1}{2}$ of a Cable's length from Isle Magee shore. Small vessels from above the wharf should run up abreast of Corran Point in two fathoms, keeping one third from Corran shore, and

two thirds from the Island. Large vessels should come to further out, about one third from Corran side. There are no rocks in Larn Loch and should a vessel run too far, she will only go on soft sand or mud. A stranger going in, in the night, should take his soundings from Isle Magee shore; but going to the Yellow Stone Roads should take a pilot. Vessels may run in without anchors or cables—there are no rocks or shoals to interrupt them, coming from the southward, except Barr's Point before mentioned, and Hunter's Rock. Four miles of the mouth of Larn Loch, and 4 miles N. $\frac{1}{2}$ W. from Knee or Muck Island, the Sound of Muck appears open, and Corran Castle on with Larn Lighthouse.

Maiden, or Hulin Rocks Light.

Two lighthouses marked with broad red and white belts, are erected on the Maiden or Hulin Rocks. These rocks bear by compass from the Mull of Cantyre Light, S.S.W., distant 24 miles; from Sanda Island, S.S.W. $\frac{1}{2}$ W., 18 $\frac{1}{2}$ miles; from Ailsa W.S.W., 23 miles; from Copeland Island Light, N. $\frac{1}{2}$ E., 16 $\frac{1}{2}$ miles, and from the eastern extremity of Rachlin Island, S. by E., distant 20 and a half miles. The lights are distant from each other 320 fathoms, and bear N.W. by W. and S.E. by E. The mariner in passing should give them a wide berth, there being a number of sunken rocks extending upwards of 3 miles N. and 1 $\frac{1}{2}$ miles S. of them.

Ballicastle Harbour.—Opposite Church Bay on the Irish Coast, is Ballicastle Harbour, formed at the mouth of a small rivulet near the town, affording shelter for small vessels drawing 7 feet water, for at high water there are 9 or 10 feet between the pier heads, with spring-tides, and 8 feet with neaps. In summer ships may ride near the W. side of the bay in 9 or 10 fathoms water, the glass-house bearing S.S.W., Sheep Island being shut in with Kinbane Head, and Clare House bearing on the top of the cliff near it; but it will not be prudent to lie long here. Should the wind blow from the N. or N.W., and a swell begin to set in, weigh anchor, and rounding Tor Point, make for Cushinden, Cushindaal, or Larn.

The **Skerries** lie W. by N. 5 miles from Bengore head, and about a mile from the shore: on the south side of the largest of these islands, where it appears lowest, a vessel may anchor in 6 or 7 fathoms water, a little more than a cable's length from shore. In sailing into this anchorage be careful of the Stirks on the east side, and of the Kers on the west side: they lie a little to the southward of a cluster of rocks about half a mile westward of the Skerries, and dry at four hours' ebb.

Port Rush is much improved by a pier and quay; there are from 8 to 24 feet within the harbour, while off the

mouth of the port a vessel may anchor in 6 to 8 fathoms, on a bottom of sand. On entering the harbour you must give the North Pier a berth of at least fifteen yards, to clear the stones which have been placed to break off the swell, and which are covered at $\frac{3}{4}$ flood.

Loch Foyle is a capacious harbour, where the largest ships may ride in safety in all weathers; but the best place for large ships is on the N. side, 3 or 4 miles within the entrance, in from 5 to 8 fathoms water: but vessels of 11 or 12 feet draught will ride easiest between Quigley's Point and Ture, in from $2\frac{1}{2}$ to 3 fathoms. The danger to be avoided is the Tuns Bank, which lies on the S. side of the entrance, having a channel between it and the land, on the N. side, $\frac{3}{4}$ of a mile wide. To sail into Loch Foyle, wait for flood tide, or a brisk leading wind to stem the ebb, which runs at the rate of $3\frac{1}{2}$ knots in the entrance: keep Glenegad Head 2 or 3 ships' length open off Inishoan Head, until the mouth of Derry River at Kilmore Point is a little open of Magilligan's Point; then steer for the entrance, keeping $\frac{1}{2}$ of a mile from the N. shore, and you will pass between it and the Tuns Bank: when you are within Magilligan's Point, you may keep at a greater distance from shore, and run up to the anchorage. On Donagree Point, a little to the S. of Inishoan Head, are two lighthouses, bearing from each other E. and W., distant 153 yards. The lights are fixed, visible 13 miles, and when in one lead clear of the Tuns Bank.

Inistrahul Island, on the N.E. part of which a lighthouse stands, is 6 miles N. $\frac{1}{2}$ E. from Glenegad Head, and 4 miles from the nearest shore. The light makes a revolution every two minutes.

Loch Swilly.—The entrance of this Loch lies 7 miles W. by S. from Malin Head, and is about $3\frac{1}{2}$ miles wide, from shore to shore. Fannet Point is a low point at the W. side of the entrance; it is distinguished by a lighthouse which displays a steady light, which, when seen from sea, appears of a deep red colour, but from within the Loch, bright. This is a safe harbour for vessels of any size; but the best anchorages are off Burncranah House, 2 or 3 cables' length from shore, in from 4 to 8 fathoms, or between the Island Inch and Rathmullin, rather nearer to the latter, in from 5 to 8 fathoms.

Mulroy Harbour is known at a distance by Tory Island, Horn Head, and Rosgull Hill; it has water sufficient for the largest ships; but a part of the channel is narrow and difficult. Strangers should always take a pilot.

Sheephaven & Downing Bays.—Few vessels like to run for Sheephaven as many get on shore, yet some are compelled, not being aware of the excellent anchorage in Downing Bay, which lies on

the E. side, at the bottom of Sheephaven. The bay is formed by points called Downing and Morlach. Close under Morlach Point is the anchorage, in from 4 to 6 fathoms. In running for it from Horn Head, the course will be S.E. by S., distant six miles, care being taken to give berth to two half-tide rocks about a cable length N.N.W. from Downing; when the sea breaks on them, which it generally does, they may be approached as most convenient: there are no other dangers.

Tory Island, the east end of which lies $7\frac{1}{4}$ miles N. W. from Horn Head, has no good anchorage on its S. side; but in the summer season, with S. winds, a vessel may stop on the north side in 10 or 20 fathoms, within half a mile of the shore. On its N.W. end is a lighthouse exhibiting a steady bright light, visible from seaward 16 miles all round; but when passing to the S.E. of the island, it is shut in behind the heights between N.W. by N. and N.W. $\frac{1}{2}$ W.

Rathlin-O-Birne.—This island lies 2 miles S.W. $\frac{1}{4}$ W. from Malin More Head, and is about $\frac{1}{2}$ a mile long and $\frac{1}{2}$ of a mile wide. A lighthouse has been erected upon it, in N. lat. $54^{\circ} 40'$ and W. long. $8^{\circ} 50'$ exhibiting a flashing light, at an interval of 20 seconds, visible at a distance of 16 miles, but red towards the mainland and sound, eastward of that island.

Donegal Harbour is on the E. side of the peninsula, called the Hassens, or Green Islands, 2 miles below the Town of Donegal, where small vessels may ride in 2 or 3 fathoms water at about a cable's length from shore. To sail in, take half-flood, and keep about $\frac{1}{2}$ a mile from the shore on the larboard or N. side, until you are near the Black Rock; then steer E. $\frac{1}{2}$ N. until you are a cable's length past it; you may then steer directly for the Green Islands, giving the north shore a berth of about two cables' length.

Sligo Bay is to the southward of the point of Raugly, and at the N.E. side of the bay is the entrance to Sligo Harbour. S. by E. $\frac{1}{2}$ E. from Raugly point is Black Rock, covered at high water, on which is a fixed bright light, shewing from S.W. seaward to S.E. by S. and seen at a distance of 13 miles. To sail in keep about 2 cables' length to the northward of the lighthouse, in order to avoid the shoal water on the N. side of the rock. The only place where a vessel will lie afloat at all times of the tide, is Oyster Island Harbour, but the bottom is rocky, and does not hold well. On this Island are two fixed lights, bearing N.N.W. $\frac{3}{4}$ W. and S.S.E. $\frac{3}{4}$ E., 165 yards from each other. After passing the bar, the lights in one clear the Bun Gar Bank, and lead to the entrance of the harbour, or up to the Metal Man Beacon.

SOUTH-EAST COAST OF IRELAND.

WATERFORD TO BALTIMORE.

Waterford Harbour.—From Great Saltee Island to Hook Point, on which Waterford Lighthouse is erected, the bearing and distance are, W.N.W. 13 miles; and from the Longship Lighthouse off the Land's end, N. $\frac{1}{2}$ E. 43 leagues. When coming from the S. or the E. for Waterford, bring Sleanaman Mount a remarkable mountain inland, to bear N. E. and you see Hook Lighthouse on the E. side of the entrance of Waterford Harbour, from which a bright and steady light is emitted. Go not nearer Hook Point than about 2 cables' length, to avoid falling into irregular streams of tide that run near it. Having passed the Hook, and intending to proceed for the anchorage at Passage, take a flood tide or a leading wind, and steer for Credan Head, giving it a berth of at least $\frac{1}{2}$ a cable's length. From Credan Head steer N. E. by N. for Duncannon Fort, carefully avoiding the sand banks which extend from both shores. That on the starboard side begins at Bull Head, extends more than half a mile from the shore, and terminates at Duncannon Fort. Between Bull Head and Duncannon Fort is Ballistraw Bay. The sand on the other side, called Drumroe Bank, extends more than a mile from shore, and narrows the passage abreast Duncannon fort to about a quarter of a mile. Two lights in Duncannon Fort, one above the other, are exhibited to direct vessels to that point. On the flat, what is known as "the bar," 14 feet of water can be had on the lowest spring tide. This shallow lies nearly midway between Credan Head and Duncannon, extends for about a mile in length, and is composed of hard sand; the course by compass over it is from N. N. E. $\frac{1}{2}$ E. to N. E. $\frac{1}{2}$ E. Another lighthouse, having a fixed bright light, is erected N. N. E. $\frac{1}{2}$ E. from Duncannon Fort lighthouse, distant half a mile. These two lights kept in a line, will lead in the best channel across the bar between the eastern and middle banks. When above the lights keep near the eastern side, steering about N. $\frac{1}{2}$ W. for the church of Ballinak, until the perch, which is fixed in the upper end of Drumroe Bank, comes on with the town of Passage; you may then steer upward N. W. by N. in mid-channel. Abreast of this perch are 10 or 11 fathoms. The usual anchorage is about a mile above Passage Town, in 1 or 6 fathoms. Two or three miles above Passage is very good anchorage, and there the stream is much weaker than at Passage. In proceeding for this place, avoid a spit of sand called the Seede's Bank, which stretches off about W. S. W. from Buttermilk Castle, extending about half-way over to the op-

posite side; the least water on it is 9 feet. Avoid also a small rock which dries at low water, and has fourteen feet over it at high water, which lies about half a cables' length from shore, on the south side of Cheek Point. In proceeding about low water, keep in the middle between the two points, or rather nearest to Buttermilk Point; if the flood-tide be running, keep in the rough part of the stream, and you will clear the shoal. Vessels drawing 20 or 22 feet water may go up to Waterford, where there are 2 fathoms at low water, a ship's length from the quay. The safest channel to Waterford is on the north side of Little Island; the channel on the other side is deeper, but it is narrower, and subject to eddy-tides, which make it dangerous. Pilots may always be had at the entrance of the harbour.

Dungarvan Bay.—A lighthouse has been erected on Ballinacourty Point, on the northern side of Dungarvan Bay, with the following marks and compass bearings:—Helvick Head, S. $\frac{1}{2}$ W., $1\frac{1}{2}$ miles; Carrickapane Rock, S. S. E., 9 cables' length; and Whitehouse Spit, W. by N., $3\frac{1}{2}$ cables' length. It shows a fixed bright light, visible between the bearings of W. and S. E. $\frac{1}{2}$ S.; green, bearing from W. to N. W. by W.; and red in the direction of Carrickapane Rock. Its white appearance can be seen at the distance of about 10 miles in clear weather.—The intermittent light on Mine Head, S. W. by W., 4 miles from Helvick Head, marks the approach from the westward to Dungarvan Bay, and can be seen further eastward than the range of Dungarvan light. A vessel in the entrance of Dungarvan Bay must keep clear of the red colour of the light to avoid Carrickapane Rock; and on the northern side of the bay keep to the southward of the green light to avoid Carricknagaddy, and the rocks which extend half a mile eastward of Ballinacourty Point.

Youghall Harbour lies about 13 miles W.S.W. from the entrance to Dungarvon. During high water, spring tides, ships drawing fully 17 feet may go in, and ride off the middle of the town. Across the mouth of the harbour is a bar, which extends above a mile south from the entrance, and has 6 to 9 feet on it at low water. Except when the wind blows from the south, south-east or south-west, there is always smooth water on this bar; 14 to 15 feet water are on it at high water, neap tides. When Cable Island bears W.S.W. you are on the outer edge of the bar. When sailing for Youghall Bay from the southward, keep Knockmeldown Mountain N. by E. To anchor when

waiting to go over the bar, the best places are on the S. side of the bar, the harbour mouth bearing N.N.E., in 3 or 4 fathoms; or on the north side of Cable Island, in 3 to 6 fathoms, about 2 cables' length from the shore. From a tower on the west side and within the entrance, is shown a fixed bright light, open to the harbour, and seaward to S. W. by S., and may be seen at a distance of 6 miles.

Cork Harbour.—From a tower on Roche Point, at the east side of the entrance, is shown a fixed light, red towards the sea, to the harbour bright, and visible at the distance of 14 miles. From it Cork Head bears S. W. by W. about 4 miles. From the Longship Lighthouse off the Land's End to the entrance of Cork Harbour is 46 leagues N. by W. $\frac{1}{2}$ W. Coming from the southward, and bound to this harbour, keep Knockmeldown Hill about N.E. by E. until you see the Old Head of Kinsale, a bluff point of land with a lighthouse on it. From this Head the entrance of Cork Harbour lies E. $\frac{3}{4}$ N, distant about 5 leagues. When off the harbour, Roche Tower with its lighthouse is remarkable. A little without the point, on E. side of entrance, lie the Stag Rocks. There is clean ground in a moderate depth without the harbour's mouth, where ships may, with a northerly wind, wait the flood or daylight. A red buoy is placed on the edge of the bank off Fort Camden; another red buoy about a mile further in, to the northward of the entrance to Cross Haven; a third, of the same colour, off the east side of Spike Island; and a red buoy on the eastern extremity of East Haulbowline Bank. Each of these buoys is numbered. There are also several black buoys on the side opposite, on the edge of the mud flat: they lie in 4 fathoms, and are likewise numbered. Having passed the narrows, which is about 450 fathoms over, the channel continues that width on a N. by E. and N.E. direction, between the red buoys on W., and black buoys on E. side, to the anchorage off Spike Island, on sandy ground: thence it leads upwards, narrowing round the beacons on the northern side of the Spit extending E.S.E. from Haulbowline Island, close in to Queenstown on the north shore. At the entrance of the passage to Queenstown is a white buoy; and at about 160 fms. to the S.W. of this, in $2\frac{1}{2}$ fathoms, is the Lower Spit Buoy, red. The Upper Spit Buoy, red, lies in 9 feet, N.W. by W. $\frac{1}{4}$ a mile from the Lower Spit Buoy. Here the tide runs 2 or 3 knots; it is high water on the full and change at half-past 4, and the tide rises from 9 to 13 feet. Large ships going in at or near low water, must be careful to avoid the Harbour Rock, which lies a little within the Stag Rocks, on the east side. On it are two iron trunk buoys about $1\frac{1}{2}$ cables' length

apart: one on the eastern, chequered red and white with beacon; the other on the western edge, chequered black and white. It has fifteen feet on it at low water spring tides. About half a mile N. by $\frac{1}{2}$ E. from the Harbour Rock lies the S. end of the Turbot Bank, extending thence N.W., and which has on its shoalest part, the north end, 18 feet low water average springs. The middle of this bank lies with a remarkable dark stone building, on the precipitous part of Kenil Cove, bearing W.S.W., and touching the projecting part of the land south-eastward of Temple Breedy Church. On it are two iron trunk buoys about cable's length apart: one on the east, chequered red and white, with beacon; the other on the west side, chequered black and white. In order to avoid the shoals on the east side, keep within two cables' length of the eastern shore; or bring the lower part of the white wall, which stands to the S'ward of the fort upon Dog's Nose, on, or under the west bastion of that fort. To go to the westward of the Harbour Rock and Turbot Bank, keep the fort on Dog's Nose open to the westward of the lower part of the white wall above-mentioned: or when without the harbour, bring and keep a village, which appears upon a hill upon Great Island, over some pine trees, touching the point of Dog's Nose, bearing N. 21 degrees E. which will lead clear of all dangers on that side. To go between the shoals, keep the flag-staff in the fort of Dog's Nose, on, or over the lower part of the white wall. To avoid the Harbour Rock on the S. side, keep the Crow Rock on with Poor Head. The Turbot Bank may be avoided by keeping nearer to the E. than to the W. side of the entrance. Between the Harbour Rock and the east point are 5 to 6 fathoms; between the Harbour Rock and Turbot Bank are 6 and 7 fathoms; and between the bank and the western shore are 5 and 6 fathoms at low water. About a mile E. by N. from Haulbowline Island, extends the Spike Sand, which begins to dry on the north side at half ebb, and shelters the anchorage at Queenstown. On the east elbow of this bank a lighthouse has been erected on screw piles, in 9 feet; it exhibits a fixed red light, visible from N.N.E. $\frac{1}{4}$ E. to S.E. by E. $\frac{1}{4}$ E., round by eastward, and at a distance of 8 miles. Masters of vessels are cautioned not to cross the bank between the lighthouse and Haulbowline Island, and to give the lighthouse and detached beacon-pillar sufficient berth in passing. In going from Dog's Nose for the anchorage off Queenstown, keep Dog's Nose Point S. by W. $\frac{3}{4}$ W.; or steer for the eastmost part of the fort on the N. shore, between the black and red buoys to avoid a flat which extends in some parts a mile from the E. shore, and also

a rock that lies to the westward of Cork Beg, which appears at half-ebb, with a beacon on it. The best place for large ships to anchor is off the garrison, in from 4 to 5 fathoms. Merchant ships may ride off the town of Queenstown in smoother water and less tide, they may go also further up the harbour of Passage, and ride any where between the first houses and Ronan's Point. In proceeding from Queenstown to Passage, do not approach nearer than half a cable's length to the south side of Black Point; and give the W. side of it a berth of about a cable's length, to avoid a sand which extends from that shore, and dries at low water. You may go westward from Haulbowline Island, until you see Ronan's Point in the channel of Passage; then steer N'ward along the W. side of the channel, for the anchorage. Vessels drawing 16 feet may, with spring tides go up to Black Rock or to the town of Cork, and lie at the quays with 9 feet at low water, average tides. Between Passage and Horse Head is a spit of sand, of 6 feet water, extending above a cable's length eastward from the Clay Cliff: you will avoid the extremity of this spit by keeping Dunkettle House on with a grove of trees which stand on the top of a hill above the House. The point of this spit lies with Belveley Castle and Ronan's Point in one; and vessels which anchor near it, should have the castle fairly without Ronan's Point, or wholly shut in with it. In a small creek called Cross Haven, within the entrance of Cork Harbour, and on the west side, opposite Dog's

Nose, vessels may ride in 10 or 12 feet.

Kinsale Harbour.—A new lighthouse has been erected on the Rocky Point at the S. end of the Old Head, distant half a mile S.S.W. $\frac{1}{2}$ W. from the old lighthouse, bearing from Bulman's Rock S.W. $\frac{1}{2}$ W. $4\frac{1}{2}$ miles. This light is a fixed bright light, similar to that heretofore shown from the old lighthouse, and is visible from N.E. $\frac{1}{2}$ N. seaward to W. by N., and at the distance of 21 miles. In sailing towards the harbour from the southward, keep Knockmeldown Hill N. E. by E. until you see the Old Head of Kinsale: after making that, which is about $3\frac{1}{2}$ miles S.W. by S. from the entrance of the harbour, run in until the old lighthouse on it bears W.N.W. about 3 miles; then run in N.W. by W. until the old lighthouse bears S.W. by S.; and then steer N.E. by N. until you are abreast of the lower cove, where you may anchor in 6 fathoms. The only danger near Kinsale Harbour is Bulman Rock, which lies about a cable's length S.S.W. $\frac{1}{2}$ W. from Hangman's Point on the E. side of the entrance, and has 4 feet on it at low water. This rock is buoyed, and may be passed on either side, but the channel on its W. side is the safest for ships coming in or going out.

Baltimore Harbour lies about $5\frac{1}{2}$ miles to the north eastward of Cape Clear, and is very convenient for ships bound either eastward or westward. Small vessels may ride 2 or 3 cable-lengths N.N.W. of Baltimore Town, in 10 or 11 feet, at low water, sheltered from all winds.

BRISTOL CHANNEL.

LIGHT VESSELS AND BUOYS.

Light Vessels are moored, and Buoys laid in this Channel as follows:—

Light Vessels.

A **LIGHT VESSEL**, exhibiting a bright light, which revolves every minute, and is visible 10 miles, lies near the English and Welsh Grounds, on the south side of the Bristol Channel, and in lat. 51 deg. 26 min. N., and long. 2 deg. 53 min. W. This vessel is painted red, carries a ball during the day, has the words *English and Welsh Grounds* upon her sides, and is moored on the northern edge of the sand in 6 fathoms low water, spring tides, about 10 miles from King Road, with the high land at Minehead on with Flat-holm Light Tower, W. by S.; the Usk Light Tower, N. by E. $\frac{1}{2}$ E.; a remarkable Peak on the distant Land (See-mee

or See-me-not), on with St. Thomas' Head, S. $\frac{1}{2}$ W. A gong is sounded in foggy weather.

Off the West end of the Skerweather Sand there is a **LIGHT SHIP** placed to prevent the stranger from passing into the dangers of Swansea Bay. It exhibits a Red Revolving Light, shewing a flash every 20 seconds, at an elevation of 38 feet above the level of the sea. It is intended to show half a globe above the usual globe. Calculations for bearings and distances can be ascertained sufficiently accurate, by judging that of the West Skerweather Buoy.—This light is regarded as being very obscure, and this is accounted for by the lowness of the north shore, which conveys a mist over the Swansea Bay. It is, however, very serviceable, and is relied on when entering the Bay.

A LIGHT VESSEL, bearing a bright light, which revolves every minute, and is visible 10 miles, lies off the western end of the Helwick Shoals, and in lat. 51 deg. 31 min. N., and long. 4 deg. 24 min. W. This vessel is painted red, shows a ball in the daytime, has the word *Helwicks* upon her sides, and is moored in 17 fathoms, low water, with Oxwich Point, E. by S. $\frac{3}{4}$ S.; Worm's Head, N. E. by E. $\frac{3}{4}$ E.; Caldylighthouse, N.N.W. $\frac{3}{4}$ W.; Lundy Island, S.W. $\frac{3}{4}$ W., 22 miles. During foggy weather a gong is sounded.

CARDIGAN BAY LIGHT VESSEL lies in 26 fathoms, low water, spring tides, one Red revolving light, shewing a flash every 30 seconds, 25 feet above the level of the sea, South Bishop Lighthouse, S.W. by W., 36 $\frac{1}{2}$ miles; Strumble Head, S.W. $\frac{1}{4}$ S., 21 $\frac{1}{2}$ miles; Kenmaes Head, S. $\frac{1}{4}$ W., 16 $\frac{1}{2}$ miles; Causeway Buoy, E. by N. $\frac{3}{4}$ N., 25 miles; Bardsey Lighthouse, N. E. by N., 23 miles.

Buoys.

MORTE STONE, Black, Staff and Globe, lies in 9 fathoms low water, spring tides, 1 $\frac{1}{4}$ cable's length to the N.W. of the Ledge; Bull Point, E. $\frac{1}{4}$ S., 1 $\frac{1}{2}$ miles; Morte Point, S.E. $\frac{1}{4}$ S., $\frac{1}{2}$ mile; Baggy Point S.W. by S., 2 7-10 miles; Hartland Point, W. by S. $\frac{3}{4}$ S., 14 4-10 miles; Lundy Lighthouse, W. by N. $\frac{3}{4}$ N. 16 miles. This Buoy warns mariners of a dangerous and rocky locality over which the tide sweeps at a terrific rate.

SAND RIDGE, Black, lies in 4 fathoms low water spring tides, with the Valley of Rocks Hotel, midway between Linton church and a conspicuous house on a hill westward, bearing S.W.; Hurststone, apparently a cable's length outside the Foreland, S. E. by E. $\frac{1}{4}$ E.; Rillage bearing W. by N. $\frac{1}{4}$ N., 10 miles.

GORE, Black, lies in 18 feet, Burnham High Light its length open northward of Low Light, bearing E. by S. $\frac{3}{4}$ S.; Flatholms Island, its apparent length open west of Steepholms; the Lighthouse, N. E. by N., 9 miles; Sand Point appearing open of Brean Down Point, N. E. by E. $\frac{1}{2}$ E.

WEST CULVER, Red and White striped, with Beacon, lies in 4 fathoms, with Swallow Cliff, a little open of the South of Steepholme Island, E. $\frac{1}{4}$ N.; Willet's Tower, well open to the Westward of West Quantocks Wood, S.S.W. $\frac{1}{4}$ W. Westerly; East Culver Buoy, E. $\frac{1}{4}$ S., 5 miles.

EAST CULVER, Red, lies in 6 $\frac{1}{2}$ fathoms, with Penarth Head, on with Lavernock Point, N.N.E. $\frac{1}{4}$ E.; Black Nose Point, just open Southward of Steepholm Island, E. by N. $\frac{1}{4}$ N.; Flatholm Lighthouse, N. E. $\frac{1}{4}$ E.; Burnham Church Tower, S.E. by S.

ONE FATHOM, Black, lies in 4 $\frac{1}{2}$ fathoms,

with Barry Church (with Belfry) its apparent breadth on the West of Barry Island, N. by W.; Laver Point, N.E. $\frac{3}{4}$ E. Flatholm Lighthouse, E. $\frac{1}{4}$ N., 4 $\frac{1}{2}$ miles; Steepholm Flag E. S. E., 4 $\frac{1}{2}$ miles; Brean Down, by E. $\frac{1}{4}$ E.

HONEYCOMB, Black, lies in 5 fathoms about 35 fathoms N.W. of the L with Weston-super-mare Church with W. end of Piggot's Summer House S.E. $\frac{3}{4}$ E.; Kewstock Church about ship's length open N. of Brean Down land, E. by S. $\frac{1}{4}$ S.; Brean Down Point W.; Swallow Cliff Point, N.E. by E. Flatholm Lighthouse, N.W. $\frac{1}{4}$ W., 4

NEW PATCH, Black, lies in 9 feet, the high land of Minehead just Southward of the South end of Flatholm Island, W. $\frac{3}{4}$ S.; Flatholm Lighthouse, W. $\frac{1}{4}$ S. S'y., $\frac{1}{2}$ mile; Grounds Light by N N'y. 6 5-10 miles; Cardiff Church Tower, and the two Glass House Churches at Cardiff, apparently at equal distances, the Church Tower being Eastern object, N. $\frac{1}{4}$ E.; Hayes' Windmill over the East end of Sully Island, N.W. $\frac{1}{4}$ W.; Penarth Church, N. $\frac{3}{4}$ N.

WOLVES, Red and White chequered, in 5 fathoms, half a cable's length westward of the rocks, with Hayes' Windmill on with the West end of Sully Island, N.W.; Breaksea Buoy bears N.W. W'y., 10 miles; Penarth Head by E. $\frac{1}{4}$ E.; Flatholm Lighthouse, $\frac{1}{4}$ S. The Wolves are a dangerous cluster of rocks: the tides both ebb and flow, set directly on them, therefore great caution is requisite,

SOUTH WEST PATCH, Red, with Beacon, lies in 4 fathoms, with Worle Mill line with the western side of Midhope Beach, S. $\frac{1}{4}$ E.; Monkstone Beacon, W. $\frac{1}{4}$ S., 4 miles; Flatholm Lighthouse, W. by S. $\frac{3}{4}$ S.; Usk Lighthouse, N.N. $\frac{1}{4}$ E. N'y.; Grounds Light Vessel, S. by E. $\frac{3}{4}$ E. The Buoy, formerly called the Spit, protects one of the quick sands in the Channel, and, like many other dangers, the tides set directly on them. The old passage between the sand and the Welsh Hook is now filled up, and rendered unnavigable.

WELSH HOOK, Black, lies in 5 fathoms low water spring tides, with Aust Head a ship's length open southward; Denny Island, E. by N. $\frac{1}{4}$ N.; Ull Lighthouse, N.N.W., 6 miles; See-me-not on with Clevedon Church, S.S.W. $\frac{1}{4}$ W.; Grounds Light Vessel, W. S'y., 3 $\frac{1}{2}$ miles.

RANNEY FLOATING BEACON, placed on the S.S.W. part of Ranney Spit, lies in 1 fathoms low water spring tides. Sailor's Home at Cardiff, just open off Penarth Head, N. by E. $\frac{1}{4}$ E.; the Western part of Brean Down on with Flatholm Island at low water, the Lighthouse S. by E.; Ball Point, W. $\frac{1}{4}$ N.; the

highest part of Sully Island, W. $\frac{1}{4}$ S.

West CARDIFF, Black, with Beacon, lies in $4\frac{1}{2}$ fathoms, with the Monkstone Beacon in line with Clevedon New Church, E. by S. $\frac{1}{4}$ S.; Grounds Light, E. $\frac{1}{4}$ S., $6\frac{1}{2}$ miles; Cardiff Hook Buoy, S. W. $\frac{1}{4}$ W., 27-10 miles; Usk Lighthouse, N. E. by E. $\frac{1}{4}$ E., $9\frac{1}{2}$ miles; the Eastern side of Steephholm, just open West of Flatholm, at high water, the Light-house S. E. ly.; Sully Island open a ship's length Southward of Ball Point, W. $\frac{1}{4}$ S.; Penarth Church, N.

East CARDIFF, Red, lies in 6 fathoms, low water, spring tides; Hook Buoy, S. W. by W. $\frac{1}{4}$ W., 1 mile; Monkstone Beacon on with S. E. end of Steephholm, S. S. W. $\frac{1}{4}$ W.; Penarth Church, W. $\frac{1}{4}$ S.; Usk Lighthouse, E. N. E.

CARDIFF HOOK, Black and White chequered, lies in 2 fathoms, with Cardiff Church Tower its apparent length open Eastward of a conspicuous Clump of Trees, N. N. W. $\frac{1}{4}$ W.; Grounds Light, S. E. by E. $\frac{1}{4}$ E., $5\frac{1}{2}$ miles; Peterstone Church Tower apparently midway between the Spire of Newport New Church and the Tower of the Old Church, N. E. $\frac{1}{4}$ E.; the Usk Light Tower, N. E. by E. $\frac{1}{4}$ E.

NORTH WEST SPIT, Black and White, Vertical Stripes, lies in 2 fathoms low water spring tides; Cardiff Hook, N. E. $\frac{1}{4}$ E., $2\frac{1}{2}$ miles; West Cardiff Buoy 2 cables distant, S. S. E. Easterly; the eastern part of Steepholms on with the western high water mark of Flatholms, S. $\frac{1}{4}$ E.; Penarth Church, N. $\frac{1}{4}$ E.

BRAKSEA, Black and White striped horizontally, with Beacon, lies in 5 fathoms, about one cable's length from low water mark, and $\frac{1}{2}$ a cable's length without the Rocks, with the Nash Low Light Tower apparently midway between the High Light Tower and the White Beacon upon St. Donant's Cliff, N. W. $\frac{1}{4}$ W.; One Fathom Bank Buoy, S. E. $7\frac{1}{2}$ miles; Evans' Farm House, apparently midway between a large Yellow Dwelling House and Limpert House, the latter being the Eastern object, N. N. E. $\frac{1}{2}$ E.; Brereton Windmill, N. N. W. $\frac{1}{2}$ W.

COCKBURN SHOAL, Black, lies in 4 fathoms, about 20 fathoms S. E. from the shoal, with the Avon Lighthouse one-third between Penpole House and Miles' House, S. E.; High water mark of Black Nose Point on with Portishead Point, W. $\frac{1}{4}$ S.

West USK, Black, dries at low water; a farm house at St. Brides in line with a bluff tree on the western land, N. W. by W. $\frac{1}{4}$ W.; Usk Lighthouse, N. by W. $\frac{1}{4}$ W.; Windbound Point, N. by E. $\frac{1}{4}$ E.

East USK, Black, dries at low water; a clump of tiles on Stone Hill just open westward of Windbound Point, N. N. W.

$\frac{1}{4}$ W.; West Usk Buoy in line with Peterstone Church W. $\frac{1}{4}$ N.

EAST NASH, Black and White chequered, lies in $4\frac{1}{2}$ fathoms, with Groes' House, (yellow) twice its apparent width open Westward of the Tower upon Dunraven Promontory, N.; the North side of the Nash High Light Tower on with the South side of the Low Light Tower, S. E. by E. $\frac{1}{4}$ E.; Nash Swatchway Buoy, N. W. $\frac{1}{4}$ W., $4\frac{1}{2}$ miles; Tusker Beacon, N. N. W. $\frac{1}{4}$ W. $4\frac{1}{2}$ miles; the fair channel course from the Mumbles to this buoy inside the sands, with the Mumbles Light Tower N. N. W. $\frac{3}{4}$ W., and the Nash Low Light Tower S. S. E. $\frac{3}{4}$ E.

NASH SWATCHWAY, Black, lies in $2\frac{1}{2}$ fathoms, with Sker House on with Rhwychwyn Point, N. $\frac{1}{4}$ E.; Newton Down Windmill, its apparent length open Northward to Newton Nottage Church Tower, N. N. E. $\frac{3}{4}$ E.; the Nash High Light Tower, its apparent length open Northward of the Low Light Tower, S. E. $\frac{1}{4}$ E.; Tusker Beacon, N. E. $\frac{1}{4}$ N; East Nash Buoy, S. E. $\frac{1}{4}$ E., $4\frac{1}{2}$ miles; West Nash Buoy, N. W. by W. N'ly., $2\frac{1}{2}$ miles.

WEST NASH, Black and White chequered, with Beacon, lies in 6 fathoms, with Newton Down Windmill on with the centre of the Breakwater at Porth Cawl, N. E. by E. $\frac{1}{4}$ E.; Nash High Light Tower, S. E. $\frac{1}{4}$ E., $7\frac{1}{2}$ miles; the Nash Low Light Tower, S. E. $\frac{1}{4}$ E.; East Skerweather Buoy, N by E, 26-10 miles; West Skerweather, N. W. $\frac{1}{4}$ N., $6\frac{1}{2}$ miles; Mumbles Light Tower, N. N. W.; Nash Swatchway Buoy, right between the Lighthouses, S. E. by E. S'ly., 2 miles; Tusker Beacon, E by S., 3 miles.

EAST SKERWEATHER, Red and White striped, lies in 6 fathoms, with a conspicuous Shaft on the summit of the highest Hill, open Eastward of Constantinople Cottages, the apparent length of them, N. N. E. $\frac{1}{2}$ E.; Margam Trees, on with the West end of a long stone wall terminating near the Beach E. $\frac{1}{4}$ N.; the Windmill inland of Cwm Mawr on with Dunraven Point, S. E. $\frac{1}{4}$ E.; Kemfig Church $2\frac{1}{2}$ points open Westward of the Scar House, N. E. by E. $\frac{1}{4}$ E.; Nash Low Light Tower, S. E. $\frac{1}{2}$ S., 9 miles; Mumbles Light Tower, N. N. W. $\frac{1}{4}$ W.; West Nash Buoy, S. by W., 24-10 miles; West Skerweather Buoy, N. W. by W. $\frac{1}{2}$ W., 5 miles; Mixon Buoy, N. N. W. $\frac{1}{2}$ W., 9 miles; Tusker Beacon, S. E. $\frac{1}{4}$ E., 4 miles.

WEST SKERWEATHER, Red, with a Beacon, lies in $4\frac{1}{2}$ fathoms, with Constantinople Cottages on with the mouth of Aberafon Harbour, E. N. E. Northerly; Margam Trees open Southward of Sker House three times their apparent width E. by S.; Nash High Light Tower, S. E.,

Easterly, 14 miles; Mumbles Light Tower, N., Easterly, 6 miles; East Skerweather Buoy, S. E. by E. $\frac{1}{2}$ E., 5 miles.

HUGO, Black, lies about a cable's length from the dry sand on the N.E. side of the Bank, in 3 fathoms low water with a large square House on with the South end of the large Store House at Porth Cawl, S. E. $\frac{1}{2}$ E.; Kemfig Church its apparent breadth open South of a White Cottage (the Northernmost in the Village), E. $\frac{1}{2}$ N.; Nash Low Light Tower, S. E. by S.; Mumbles Light, N. N. W. $\frac{1}{2}$ W.; Constantinople Cottages N. E. $\frac{1}{2}$ N.; East Skerweather Buoy, S. by E.

INNER GREEN GROUNDS, Red Nun, lies in $3\frac{1}{2}$ fathoms, about one and a half cable's length from 5 feet on the S.E. end of the Shoal, with Kilvey Old Mill, $\frac{1}{2}$ distant from the Inn (a large brick house), towards Tennant's Look-out House, N.N.E. $\frac{1}{2}$ E.; Swansea East Pier Head, N. by E. $\frac{1}{2}$ E., 2-3-10 miles; Mumbles Lighthouse, W. $\frac{1}{2}$ N.; Woodland Castle, N.W. N'ly.

OUTER GREEN GROUNDS, Black and White chequered, lies in $2\frac{1}{2}$ fathoms, with the Tut between the two Houses on the Mumbles Point, W. $\frac{1}{2}$ N.; Woodland Castle, N. N. W. $\frac{1}{2}$ W.; Swansea Pier and Lighthouse, N.E. by N.; Kilvey Old Mill, N.E. $\frac{1}{2}$ N.; Green Grounds Buoy, E.

MIXON, Black, with Bell, lies in 10 fathoms, with Porth Einion Point on with Oxwich Point, W. by N. $\frac{1}{2}$ N.; Kilvey Old Mill Tower on with Swansea East Pier Head, N. E. $\frac{1}{2}$ E.; Mumbles Light Tower, N. E. $\frac{1}{2}$ N.; West Skerweather Buoy, S. $\frac{1}{2}$ E., $5\frac{1}{2}$ miles.

WEST HELWICK, Black, with Beacon, lies in 6 fathoms, and is surrounded by 11, 14, and 15 fathoms. Worms Head, bears N.E. by E. $\frac{1}{2}$ E.; Helwick Light Vessel, W. by N. $\frac{1}{2}$ N.; West Scar, S.E. $\frac{1}{2}$ S.

HELWICK SWATCHWAY, Black and White striped, lies in $4\frac{1}{2}$ fathoms, with Burry Holmes appearing in the centre of Worms Sound, N.N.E. N'ly; Oxwich Point on with Porth Einion Point, E. by S. $\frac{1}{2}$ S., Easterly; East Helwick Buoy, E. by S. $\frac{1}{2}$ S., $3\frac{1}{2}$ miles; Worms Head, N., 2-4-10 miles; West Helwick Buoy, W. by N. $\frac{1}{2}$ N., $2\frac{1}{2}$ miles.

EAST HELWICK, Black, lies in $2\frac{1}{2}$ fathoms, with Rhossily Point open westward of Tears Point the supposed breadth of a ship, N. W. $\frac{1}{2}$ N.; a White Building upon the high land, apparently midway between two White Cottages below that building, N.N.E. $\frac{1}{2}$ E.; Helwick Swatchway Buoy, W. by N. $\frac{1}{2}$ N., $3\frac{1}{2}$ miles; West Skerweather Buoy, S. E. $\frac{1}{2}$ E. S'ly., $12\frac{1}{2}$ miles; Mixon Buoy, E. by S. $\frac{1}{2}$ S., $9\frac{1}{2}$ miles; Worms Head, N. W. $\frac{1}{2}$ N., 5 miles.

TUSKER AND MONKSTONE.—A mast with a large red ball attached is erected as a

beacon upon each of these rocks.

the Tusker Beacon, Porth Cawl N. $\frac{1}{2}$ W., is $1\frac{1}{2}$ miles; Mumbles Lighthouse, N. W. by N. 13 miles; Nash Light Tower, S. S. E. $\frac{1}{2}$ E., $5\frac{1}{2}$ miles; East Skerweather Buoy, N. W. 4 miles; East Nash Buoy, S.S.E. 5 miles; West Nash Buoy, W. miles.

BEACON ON THE WOLF ROCK

This Beacon consists of an artificial bearing a mast having a large ball at its summit at an elevation of 36 feet at the level of the sea at high water; mariners are to observe that spring rise at this station 19 feet, and the low water of those tides, the rock is covered to the height of 15 feet. Michael's Mount open of Lorn leads $2\frac{1}{2}$ miles to the Eastward of Longships Lighthouse touching Cornwall leads $1\frac{1}{2}$ miles Westward of The Bearings and Distances of the unmentioned objects from this Beacon, as follows, viz.:—Longships Lighthouse N. E. $\frac{1}{2}$ N., $7\frac{1}{2}$ miles; Scilly Lighthouse W. by N. $\frac{1}{2}$ N., 21 miles; Rundlest Rock, which covers at half-flood, E. N. $\frac{1}{2}$ N., 7 miles; Seven Stones Light vessel, N.N.W. $\frac{1}{2}$ W., Westerly, $12\frac{1}{2}$ miles; Lizard Lighthouses, E. S. E., 23 miles.

Directions for Sailing the Bristol Channel.

The introduction of Railway communication between Kingroad and the City of Bristol, together with the contemplated formation of Channel Docks at the mouth of the River Avon, induces us to submit the following illustrations of the dangers of the Bristol Channel, which by way of preface, we may quote the remark of an eminent nautical man, "that the Bristol Channel is a harbour of refuge in itself the dangers are many, but their avoidance is easy when judiciously encountered hence the object of this paper. It will be needful to state that the lights and buoys are fully described in another column. We will place a stranger in the Chop of the Channel about 45 miles Northward of the Scilly Islands. The first place he may make is Lundy Island, which can be obtained by steering east. Should it be thick weather he will be cautioned by the sound of a gun played on the west-side which reports every minute; on making the Island, either north or south, difficulty is met with the set of the tide. The proper passage is between the Island and Hartland Point. The ebb-tide sets W.S.W.; flood, E.N.E. Being bound up the course to avoid the dangers of Morte Bay, which consists of Baggy Leap, Rockham, Morte Stone, and a dead lee shore when the wind is from

the N.W. is to steer on an ebb-tide E.N.E., and on the flood East until Morte Point bears S.S.W. This brings the vessel abreast the point, and a good berth off; the most experienced always think it right to keep the south side in sight, it is a bold high land up as far as the foreland, and perceivable in thick weather, therefore good for a departure. The next course is E. by S. $\frac{1}{2}$ S. which will clear the dangers which are close to the shore, and comprise the following:—Copperas Rock, Sandrige, and Foreland Ledge. On Departure from the Foreland ship your course E. by S., this will leave the west buoy of the Culver sands a peice on the starboard hand, make the One Fathom Bank buoy which is black, and bring you on to the Flatholmes; but if Bridge-water is the destination, when at the Foreland alter the course to S.E. by E. $\frac{1}{2}$ E. then the Culvers are left on the port hand and the Gabriel and Kelve Patch will be escaped on the starboard, continue this course until you see Burnham Lights, on making them keep the high light a sail's breadth open of the low one, until the Flat Holm Light is open eastward of the Steep Holms, then draw both Lights in one, this will clear the Sturt and Lark Sands, giving the Gore a berth northward and bring the ship safely in Bridgewater river; we may remark, the course E. by S. $\frac{1}{2}$ S. will take you to the projected harbour at Brean down. Should Kingroad be your object you must (after steering E. by S. as stated before) haul up to E.N.E. which will bring you direct to the Light ship on the English and Welsh Grounds. This course will take you clear of the N.W. elbow of the English Grounds and pass you between that and a sand as quick as any in the Channel known as the S.W. Patch. When abreast this Welcome Light steer East, which will carry deep water and leave Clevedon Flats on the Starboard hand and the Hook sand on the port, on which a black buoy is placed in 5 fathoms, (en passant we must refer to a fine roadstead, when Kingroad cannot be reached, called Walton's bay, it affords fine anchorage when the Light Ship bears W. by N.) by this time you will shorten sail for coming to anchor in Kingroad keeping the same course until you are opposite the Fort, which is a low bluff point: then steer E. by S. to avoid the Horse Shew, a sand midway between Portshead and the Cockburn Rock. Taking the ship southward of both dangers, we now approach Kingroad, which affords the best holding ground, and can show accommodation for large vessels rarely equalled. The best berths are generally found when the Avon Light bears S.S.E., this will give 7 fathoms low water; the roadstead is on its own merits considered safe from every wind that blows, blue clay bottom, and

the only wind that can influence it is N. W., when if a vessel forsakes her anchors a soft bed of mud will receive her on the east bank. Many ship have resorted to this under loss of anchors and chains. To enter the Avon steer E. by S. until you get the red light of the tower, open then port, this will take you over the Swatch, but must not be attempted by large vessels before half flood, We will now turn our attention to the down Channel Voyage, and until we get the English and Welsh Grounds Light Ship it will serve to "box the compass," on arrival there, and, bound to Newport Roads, it is necessary to bring up at anchor at the back or westward part of the S.W. Patch to wait the coming flood, getting the Light Ship to bear S.E. by E. you will then obtain 5 fathoms of water, which will increase as you near it, in fact 5 fathoms can be relied on after the western side of this sand, but shallows as you approach the eastward. On the flood steer N.N.E. which will find the Usk light then make the Red light bear N. by W. $\frac{1}{2}$ W., then steer North and you will get into Sea Reach. We are once more at the English and Welsh Grounds Light-ship, bound for Penarth Roads, then ship a course W. by N. $\frac{1}{2}$ N. you will make Monkstone on your starboard hand, alter it, N.W. which will make the buoy on the West Cardiff Grounds. There is an eastern passage which it is not prudent to attempt at all times, and has got into disuse seeing that the western one can be obtained in the same time without the danger. It is now our object to get a good anchorage in Penarth Roads which can be secured by getting the Steep Holmes open West of the Flat Holmes. This roadstead cannot be relied upon, it has a very uneven bottom, and very little shelter, and it very frequently occurs that vessels bound out from Cardiff on meeting with an adverse wind rather than anchor there run for Kingroad, or under some circumstances anchor under the Flat Holmes, where good anchorage can be found. The ship is now bound out from Penarth Roads, the first danger is the Ranney Spit and Lavernock Point, over which the tide runs rapidly, to avoid which steer S.S.W. which will leave these dangers on the starboard hand, continue this course until the Flat Holmes Light bears S. by E. The ship is now making her passage North of the Flat Holmes, and will next encounter a cluster of rocks called the Wolves, which will be escaped by steering W. by N., the tide sets on these rocks at a tremendous rate direct from Monkstone. This same course will take you off the Nash Point, and clear of a rock known as the Old Chapel, on which small vessels have met with mishaps, (it is close in on the North shore) and also take you southward of a dangerous point

known as Breaksea Point, which is 11 miles from the Flat Holmes, and give the One Fathom Bank a berth southward, to continue this course you will clear the Nash Sands, Scarweather, and all other dangers, on the North side of the Channel. If Swansea is the Port and you want to go inside the Nash Sands, then haul up N. W. by N., which must make the Nash Lights. On effecting an entrance steer N.W. by N. $\frac{1}{2}$ N. this course will clear the Tuskar on the starboard hand, and the E. buoy off the Scarweather on the port, leaving Hugo Bank on the port side, and Kenfig Patches on the Starboard, follow this course until you get the Mumble Light to bear W. by N., this will leave the Green Grounds on the starboard hand, and will find good anchorage. It is our intention to proceed further down the Channel, and if a direct course for Lundy Island is required steer W.S.W. but we want to visit the North Shore, when under weigh for either, we must notice the Mixon which bears from the Mumble Light S.W. $\frac{1}{2}$ S. consequently we steer W. by S., until we get the light to bear N.E. by E.; then steer W. by N. which will bring you a

peice to the South of the East end of the Helwick Sand, to run down after the sand steer W.N.W. this sand is 6 miles length, and is divided by what is called swatch way, the marks for passing through which is to see Burry Holm through Worms Sound, there is a good passage inside, the entrance is narrow but deep water exists. The western entrance is obtained by getting Oxwich Head in one with Elnion point. At the western part of these sands a bay called Rhossily, which is unfortunately situated for the safety of the Mariner, the Southern extremity of this bay has an obstruction, named the Worms Head, which is very prominent but has a tell tale of its own; a large cavity in the rocks cause a roar when the sea breaks on it, this bears from the Helwick Light Ship N.E. by E. $\frac{3}{4}$ E. to continue our voyage, and after making the Helwick, steer N.W. by N. which will find Caldy. With a good offing the Channel course will be west if bound from between the Holmes for Lundy steer W. by N. which will make the Foreland, Ship a W.N.W. course and this will take you clear of all dangers until you get Lundy Island.

WEST COASTS OF ENGLAND AND WALES.

SMALLS LIGHT TO THE PORT OF LIVERPOOL.

Smalls Light is placed on Smalls Rocks, lying off St. David's Head in Pembrokeshire, and bearing from St. Ann's Point, N.W. by W., distant 18 miles. This light is stationary, appearing like a star of the first magnitude, at the distance of 13 miles. To avoid these rocks, keep above a mile from the highest on all sides, and do not attempt to pass inside of them without a good chart and ample directions, or a pilot; with these there is excellent anchorage to be found in St. Bride's Bay in 8 or 9 fathoms.

South Bishop Light.—The Bishop and Clerks are a number of dangerous rocks, with great overfalls, lying north-west of Ramsey Island, at the distance of $2\frac{1}{2}$ miles. On the southernmost, called the South Bishop, is a lighthouse, exhibiting a revolving light, visible in all directions, and appearing with great brilliancy at intervals of 20 seconds, whereby it will be readily distinguished from the Smalls and other lights in its vicinity; it can be seen at the distance of 18 miles. This light is the principal guide the mariner has to enable him to know his exact situation, when sailing near this dangerous part of the coast of Wales. The light must be always

passed to the westward, and when to the northward of it never bring it to the westward of south, until you are $3\frac{1}{2}$ or 4 miles from it, particularly on a flood tide, in moderate weather, for then you have the tide nearly on the beam, which runs rapidly through amongst the islands; at spring tides nearly 5 knots and causes several overfalls. The passages between the rocks must not be attempted by strangers.

From St. David's Head to Strumble Head the course is E. N. E. $\frac{1}{2}$ E., distant $10\frac{1}{2}$ miles; between them at the distance of $5\frac{1}{2}$ miles from the former, is Abercastle Island, lying close to the land. In sailing from St. David's Head to Cardigan Bay you must give the shore a good berth, for several rocks under water lie scattered about, some of which are nearly a mile from shore; they are called the Sledges, and are 2 miles eastward of St. David's Head.

Fishgard Bay.—Three miles to the eastward of Strumble Head you open Fishgard Bay, having good anchorage with any wind, except from the N. to the E., the ground holding well. The best anchorage will be to the southward of the Crow Rock, which is always above water,

in 4 or 5 fathoms, the rock bearing N. by E. $\frac{1}{2}$ E., distant $\frac{1}{2}$ to $\frac{3}{4}$ a mile. This bay is more desirable for vessels seeking sheltering gales from S. and W. than Studwall's Road, which is $5\frac{1}{2}$ miles to the leeward, as it is well sheltered from these gales, which Studwall's Road is not, and the bay affords a more ready outlet to the S. or N. than any place in the neighbourhood.

Newport Bay opens when you are 6 or 7 miles distant from Strumble Head.—

The bar and channel to Newport lie about $\frac{1}{2}$ cable's length from the shore, directly below the village of Newport. On the bar are 13 feet water with spring tides, and 7 or 8 at neaps. When a vessel is over the bar, she will be sheltered from all winds.

Cardigan Bay.—The Buoy on the Causeway in Cardigan Bay has been moved, and now lies near the extremity of the Causeway Reef, in five fathoms at low water springs, with the following marks and compass bearings; Slandebrog Mill in line with the east side of West Island at St. Studwall, N. by E.; Penkilan Head, N. by W.; Bardsey Lighthouse, N. W. $\frac{1}{2}$ W. A LIGHT VESSEL in this Bar—see page 101

Cardigan Harbour is adapted for vessels drawing about 15 feet. In the channel over the bar, which is liable to shift, are 14 feet water with spring tides, and 8 or 9 with neap; but in Cardigan Road a ship may stop, in moderate weather, almost any part without the bar, about two cables' length from the shore, in 5 fathoms water.

Aberystwith Harbour is fit for vessels which draw 15 feet. There are lead-marks to lead you over the bar, one of which is moored on wheels, as the bar shifts. When any vessel is seen off the point in the evening, there are lights put upon the marks, which must be brought to bear, to direct you over the bar.

Aberdovey is about 3 leagues to the northward and eastward of Aberystwith, and 6 miles to the south of the Diamond Beacon on Beach Head. This harbour has a shifting bar about a cable's length broad, and about half that in and out. The Trinity Board have placed a large Black Buoy at the entrance, outside, and a Red one inside the bar. A good lookout should be kept for a small Buoy between the Black and Red Buoys, which makes the angle of the passage if any. These Buoys are all placed in the fairway. Vessels may come to anchor half a mile above the Red Buoy, and which is about the same distance below the town, where from 12 to 15 sail, drawing from 12 to 15 feet water may ride in safety and in good holding ground.

Barmouth Bay may be known at a distance by the highest mountain on that coast: it has two tops—the southmost is highest; and when seen from the west-

ward, is in a line with the N. side of the entrance of Barmouth. From the N. side of the Bay, and about 1 mile from the main, a shoal called the Causeway, extends W. by S. 3 leagues: at low water there is not more than 2 or 3 feet water all along the edge of it, where at a cable's length the compass is so affected by magnetism, as to vary 90 degrees, and, as you approach nearer, quite reverse the points.

Studwall's Road affords excellent anchorage for the largest ships, sheltered from all winds except from E. to S. E. by E. It is easily known by two Islands that lie off the point, and there is no danger except a small rock about $\frac{1}{4}$ of a mile eastward of the Islands, between which there is a good passage, as well as between the westernmost and the main, at a cable and a half's length from them.

Bardsey Island is separated from the mainland by a channel more than a mile and a half wide, having from 15 to 25 fathoms in it. On the S.W. part of this Island is a Lighthouse exhibiting a bright fixed light, visible seaward from E. $\frac{3}{4}$ S. to N.E. $\frac{1}{4}$ E., and at a distance of 17 miles; but masked between the bearings of N. 50 deg. E. to S. 70 deg. E. If in a gale of wind from the W.N.W. vessels should be unable to weather Bardsey Island, this light will point out a secure asylum in Studwall's Road, enabling them to preserve a proper position until daylight, when they can proceed to the anchorage therein. Vessels bound to Studwall's Road, or laying-to for daylight, must not bring the light to bear to the westward of W. N. W.; and if they lose sight of the light when it bears from them nearly in that direction, they will be too far to the northward, and in danger of getting embayed in Hell's Mouth.

Carnarvon.—From Brauchypool Head the shore lies nearly E. N. E. to Carnarvon Bar, and from thence nearly N. by W. $\frac{1}{2}$ W. to Holyhead Island, forming Carnarvon Bay. Vessels going in are to leave the outer or Black Buoy on the port hand, the Red Buoys on the starboard hand, and the Perch beacon on the port hand. The black and white chequer buoy is placed in mid-channel. Nun buoys, painted green, denoting sunken rocks, are placed off Llanddwyn Point. This Point may be distinguished in the daytime by two white towers (a large and a small one), and during the night by a fixed red light, visible in clear weather about five miles to seaward, between the bearings (from Llanddwyn by compass) of N. W. by N., and S. W. by W.; and which is intended solely as a leading light for the entrance to the Menia Straits. The bar should not be attempted until daylight, nor by vessels drawing more than 10 feet before half flood. During gales from W. to N., vessels may find shelter

on the S.E. side of Llanddwyn Point. The proper anchorage is about a quarter of a mile from the shore, with the small tower a little open to the northward of the large tower. In running in give a good berth to the sunken rocks (the green buoys indicating which are placed to seaward); but it is much preferable for strangers to heave-to outside sufficiently to windward and make signal for Pilot, four of whom are stationed at Llanddwyn, with a lifeboat and Marryat's code of signals. Vessels wishing to communicate will be answered from the large tower.

South Stack Light.—Off the N.W. point of Holyhead Island is the South Stack Rock, upon which is a lighthouse, bearing a brilliant light, which revolves every minute, whereby it will be readily distinguishable from the light on the Skerries, which is a stationary light, and bears from the light on the South Stack N.E. $\frac{1}{2}$ E., distant 8 miles, and may be seen through a great part of Carnarvon Bay. During foggy weather, a smaller bright light, revolving in $1\frac{1}{2}$ minute, is occasionally shown, about 40 feet above the sea, and 30 yards north of the main lighthouse. Any vessel making either of these two great lights, can find no difficulty in navigating round the head, or into the harbour of Holyhead, if the wind permits; and no directions that could be given would serve equal to that of having the two lights in sight, as will be the case in the situation above mentioned.

Holyhead Refuge Harbour is chiefly formed by an immense breakwater, the heel resting on Soldier's Point, from whence it projects N.E. by E. nearly one and a half cables' length, then E.S.E. about five cables' length, and then E.N.E. to its end, which is marked by a red light, visible at a distance of 8 or 9 miles. The end of the breakwater is N.N.E., one mile from the Old Harbour Light.—To sail into Holyhead Refuge Harbour, give the end of the breakwater a good berth, as a strong tide sets to the westward nine hours out of the twelve, and strikes hard upon it. Having rounded the breakwater, steer to the W.S.W., between it and the outer Platters, leaving all the black buoys on the port hand, and anchor well in, close to the beach. There are passages between the Platters and Salt Island; but these should never be attempted by strangers. Vessels should have both anchors ready for letting go, with 50 or 60 fathoms of chain ranged according to the weather, and should be careful to anchor well up, or they will have to shift berth. Vessels disabled or without ground-tackle may be laid on a beaching slope at the head of the harbour which has been prepared for the purpose.

Old Harbour of Holyhead.—A wooden pier extends from the Old Harbour Lighthouse in a direction E.

by S.: at its eastern end is a bright light of the sixth order, supported on pillars superseding that formerly exhibited from the stone lighthouse. Vessels bearing up for Holyhead Harbour should be prepared with both bower anchors ready to let go, and the end good warp for a boat to take to one of the dolphins, moored along the passage for that purpose. The course round the head up the harbour, is W. by N., then W.N.W. therefore, with the wind at N., and to westward of that point, a press of sail should be carried, especially after-sails. Run the jetty close on board, and neither start tack nor sheet till the vessel is inside the lighthouse and the pack moorings, then act as circumstances require. Rise of water at spring tides 17 feet; depth of water at the entrance at low water, spring tides, about 12 fathoms. Holyhead harbour being a tide harbour and frequently with many anchors drawn in the way, vessels drawing 12 feet should not run in until about two hours' flood, and those of a heavy draught should, if possible, keep off until four hours' flood. In tempestuous weather no vessel should run for the harbour at night time. There is no occasion to use this as a harbour shelter now the new harbour is established. All vessels anchoring outside must keep a light up during the night.

Holyhead Harbour Lights, vessels on the starboard hand in entering the harbour, are stationary. The high fixed white light formerly shewn from the Light Tower on the Old Pier Head of the Old Harbour is discontinued, and a fixed white light, at an elevation of 20 feet above high water, shewn from a structure above-named on the end of a wooden pier which now forms the entrance to the harbour. The small light is still exhibited from the Light Tower on the Old Pier head of the Old Harbour, between the bearings of S.S. $\frac{1}{2}$ W. and S.W. The former bearing clews to the end of the Breakwater, and the latter all dangers on the east-side of the bay. A red light is shown from a mast 84 yds from the eastern extremity of the new breakwater of the New Harbour at an elevation of 40 feet above the level of high water. A gong is sounded in foggy weather. At night vessels should steer in for the New Harbour until a small red light in the Old Harbour is seen, and in entering or leaving the harbour they should not approach the breakwater light nearer than $\frac{1}{2}$ of a cable.

FOG SIGNAL STATION.—On the North Stack Point is a fog-gun of large size, battery, attendants' residence, magazine and flagstaff all painted white. For the greater security of vessels navigating the vicinity of Holyhead, and of His Majesty's packets in particular, the above gun is fired during foggy weather.

every half hour; except from 10.45 a.m. and the same time p.m., when for 15 minutes, or till the arrival of the day mail packets, it is fired every 15 minutes, Greenwich time being observed.

The Skerries is a cluster of islets and rocks 13-5ths mile to the northward of Carmel Point, occupying a space of about half a mile. Upon the centre and largest islet of the group is a lighthouse 110 feet high, showing a fixed bright light 16 feet above the level of high water, 16 miles. The position of this lighthouse is lat. $53^{\circ} 25' 18''$ N., and long. $4^{\circ} 17' 34''$ W. A short distance all round the Skerries is deep water, except on the eastern side of the group, where is a shoal rock of 2½ fathoms, called the *Penryn*, lying with the lighthouse in one line. *Pengarn Hill* bearing S.S.E. Upon the rock there is a great overfall when the tide is running either way. Between the Skerries Islets and Carmel Point is a shoal ledge of rocks, drying with the tides only, called the *East Platters*. All round are 8 to 16 fathoms, there is a strong rippling when the tide is heavy. You may sail between the Skerries and the Skerries by bringing the *Stack Bridge* over the *North Stack* between them and Carmel Point, by bringing the *South Stack* and *North Stack* in line. The Beacon on the *West Mouse* is in one with the *Middle Mouse*, also in line with the south side.

Point Lynas lies S. E. by E. ¼ E. of the eastern point of *Amlwch Bay*, distant 1½ miles, and is situated in lat. $53^{\circ} 25' 18''$ N., long. $4^{\circ} 17' 34''$ W. It is a bold conical point of land both from the east and westward. A lighthouse is situated on the high pitch of the point, a castellated building, with a white lantern. It exhibits a flashing light, which becomes instantaneously obscured at intervals of 10 seconds, and remains visible 2 seconds only, so that it is readily distinguishable from the Skerries and lights in the vicinity. From *Lynas* lighthouse to *Great Orms Head*, S.E., 16 miles; *N.W. Lightship*, *Liverpool*, E.S.E., 42 miles; *Calf of Man*, N. ¼ W., 42 miles; *Nelson*, off *Preston*, E., 41 miles; *Lee's Head*, N.E., 70 miles.

Port of Amlwch, Anglesea.—In day time, when the Breakwater Barks are down, a Ball is fixed on a pole at the easternmost point of the harbour. When many vessels lie at the entrance of the harbour, a Red Light will be shown, and at the entrance is clear a White Light.

To Sail into Beaumaris Harbour.—THROUGH THE SOUND IN LOW TIDE.—Steer in for *Table Land*, till the end of *Puffin Island* comes open with the end of *Penmaenmawr Hill*. These rocks will clear the *Dinmora Bank* on your starboard hand. You then have the

Sound fairly open; but to avoid the rocks off *Trwyndu Point*, keep more to the *Perch* on your left; and when *Beaumaris* comes open off *Trwyndu Point*, haul up for the red buoy off *Penman*, keeping it on your starboard hand, and off the red buoy of the *Causeway* on your left. Anchor in 4 fathoms off *Penman* red buoy, clean and good holding ground, well sheltered from a north-westerly wind; but if one hour's flood, you will carry 16 feet over the *Flats* off *Penryn Point*. Steer for the black buoy on the *Spit of the Levan Sand*, abreast of *Friar's House*, where anchor in 5 fathoms low water spring tides, or at half flood steer for the town, keeping the red buoy on *Watch House Point* on your starboard hand, in 6 and 7 fathoms. Keep that depth of water until the *Church* at *Beaumaris* bears N.N.E. by compass, when you may anchor in 9 fathoms at that time of tide. Thence you will see *Bangor Pool*, which is above *Ferry Point*. But if any of the buoys should be missing, as you steer up, keep the *Church Tower* and *Lodge Hill* in one.—Opposite the *Friar's House*, in mid-channel, is a sand-bank, marked by a red and white chequered buoy: in sailing up to *Beaumaris*, keep this buoy on the starboard hand.

To Sail out of Beaumaris Harbour.—FROM THE ANCHORAGE OFF THE TOWN.—Weigh at high water, and drop down to *Friar's Road*. Give the black buoy off the *Spit* a berth on your starboard hand, and the red buoy off *Penman* on your larboard. At half ebb, take the eastern passage, keeping off the red buoy of the *Causeway* on your larboard hand. From the latter, steer for the east end of *Puffin Island*, on your larboard hand, keeping off it half a cable's length, and the black buoy off the *Dutchman's Spit* the same distance on your starboard hand.

Menai Lighthouse is erected at the north-eastern entrance of the *Menai Straits*. The light is STATIONARY and of a RED colour, visible from N.W. ¾ W. seaward, to S.W. ¼ W. excepting that by the intervention of *Puffin Island* the light will be eclipsed to vessels upon the bearings from it of E. by N. ¼ N. to E. ¼ S. A ledge of rocks extending under water from the base of the lighthouse nearly 50 yards, it is advisable not to approach the building within that distance.

Conway Harbour.—There are two channels leading into this harbour—the west and north. For the west channel, steer from the N.W. black buoy to the second black buoy, leaving them on your larboard hand; keep the red buoy off *Penmaenbach*, the chequered red and white buoy, the two red buoys, and the perch, on your starboard hand; haul up, and steer for the quay, keeping close to *Deganwy Point* on the larboard hand. The entrance to the north channel is

marked with a black perched buoy: the second, third, and fourth are all black, and moored in the best of the channel. Vessels drawing from 10 to 12 feet may lash alongside the quay, on mud and sand, dry at low water.

To Sail from Point Lynas to the Great Ormshead.—The course from Point Lynas to the Great Ormshead is S.E. per compass; from whence keep the Ormshead as the line is drawn on the chart, till Rhyland Castle and St. Asaph Church are in one; then haul in till the south mark on Helbre and Bidstone Lighthouse come in one. Steer forward on that line which is the deepest water along the shore. It will also clear the Middle Patch on the left, which is dry at low water, spring tides. Buoys are placed here; red on the starboard, and black on the larboard hand, coming in. Give the Point of Ayr Lighthouse a berth of a mile on the starboard hand; and when it bears W. haul up S.S.E. for mid-channel. At that time the rippling of the tide on the edge of the Salisbury Bank will be very perceptible, as well as on the Welsh side. Continue that course, in mid-channel, till the Grange Mill bears N.E. by E. by compass, then haul quick for Dawpool, and keep that bearing till Burton Mill comes over the town of Parkgate. That course clears the south end of Salisbury Bank, and the Bagilt Flats on your right. As you advance, keep the lead going, and borrow on the Haswell Church side of the shore. It will carry you clear to Bearhouse Pool, where anchor till you obtain a pilot. The leading mark for passing at high water across the Salisbury Bank to Hoyle Lake is Helbre Eye on with the Grange Mill.

Chester Bar is a narrow sandbank between 3 and 4 miles in length, stretching rather circularly from S.E. to N.W.; its south end is near to Nant House, and is called the Middle Patch, sometimes drying, the middle of it is called Earwick, and dry at low water; but much the greater part of it never dries, having from 3 to 6 feet water over it at all times. To clear the Earwick to the eastward, bring Nant House and the barn above it in one. To SAIL OVER CHESTER BAR in a ship drawing 12 feet, take half-flood; and when Craig Disart Hill bears S. S. E., which with Middle Hill and Comb Hill form an equilateral triangle, keep the two Ormsheads shut below, and a little open above; by this you will avoid all danger on the southward. To avoid the banks and shallows on the north side, open the Ormsheads below near a ship's length, but not more. If a vessel comes to Chester Bar before half-flood, and is apprehensive of not having sufficient water to cross it, she may sail between the Middle Patch and the Earwick, keeping the Ormsheads a little open below;

and when Craig Disart Hill and Middle Hill are in a line, steer N.E. by E. you deepen your water to 4 or 5 fathoms and sail along Hoyle Sand for the Point of Air, giving that point a berth of a mile. To avoid that part of Helbre which is opposite to Air, keep Bidstone Windmill to the south of Helbre Smerhouse; this will carry you through the Swashway toward Hoyle Lake. the mark which leads clear of the northern part of the Hoyle Sand, and directly to Hoyle Lake, is the Point of Air Lighthouse open to the northward of Helbre Island.

The River Dee.—Vessels may go at a tide about a mile to the eastward of Point of Air, upon which a lighthouse is erected. The tide runs, when strong $3\frac{1}{2}$ miles an hour; and when the tide and wind are contrary to each other, making rough sea here. At this place, which is called Wild Road, you can anchor in 6 fathoms; or you may proceed higher up to the anchorage off Linacre Croft, where, in 6 or 7 fathoms, you will be much better sheltered than in Wild Road from north-westerly winds, and ride on ground that holds well. To sail from Wild Road to Dawpool, a distance of nearly 6 miles, bring the southernmost head of Dawpool, which stands below a cliff, exactly in a line with the barn having a white end, standing on the top of the cliff, but the barn must not be brought on either side of the house, anchor about 2 cables' length from high water mark in $3\frac{1}{2}$ or 4 fathoms at low water. Here the stream runs 5 miles an hour when strongest. At Parkgate, which is more than 4 miles up the river, vessels may lie aground on the beach; for though there are $2\frac{1}{2}$ fathoms in the channel above the town, and 3 fathoms above it, yet the stream is so strong, and the ground so indifferent, that a vessel would drag anchor. Take the ground about 2 hours before high water, below the houses at Parkgate. Vessels in making their passage to Parkgate must use the utmost caution to avoid the Salisbury Bank, a dangerous shoal, and lying in the direction of the river. The channel now at Parkgate is opened into a swashway between Bagilt and Flint; four red buoys are placed on the edge of the Mostyn and Bagilt Banks, and two black ones on the Salisbury Bank, the former of these are to be left on the starboard side, the latter on the larboard. A black buoy lies on the SELDOM SEEN ROCKS in the channel between the Salisbury Bank and the Lime Wharf. There are three small islands or rocks, called the Helbre Islands, lying to the southward of the Hoyle Sands: on the northernmost of which is called Great Helbre, are two wooden beacons or marks, distant from each other 633 yards.

BAY AND HARBOUR OF LIVERPOOL.

In the vicinity, and to the northward and westward of the Rivers Dee and Mersey, lie the banks which form the principal channels to Liverpool, viz., the Great Burbo Bank, the Burbo Sands and Flats, the Jordan Banks, Formby Point Flats, &c. The principal channels are, the Great Burbo Channel, the Victoria Channel, the Queen's Channel, the Old Formby Channel, and the Crosby or Main Channel.

The principal lights and sea-marks of Liverpool Bay are as follow:—

THE GREAT ORMSHEAD.—A first order Diaphanous Fixed Light is exhibited from a Lighthouse, situate on the Northern point of the Great Ormshead, at an elevation of about 325 feet above the sea level. It will appear as a fixed Light when seen from any direction between the bearings NW by W and round by the North to East, and as a Red Light from East to E. $\frac{3}{4}$ S. By this arrangement the light will be found to mask suddenly when standing into Mersey Bay, if brought to bear to the westward of S.E. by E. $\frac{3}{4}$ E., warning of approach to shoal water; when to the westward of Ormshead, the change of colour from bright to Red arises upon the line of bearing of the Fairway Bell Beacon, off the entrance to the Queen's Channel, in Liverpool Bay, and the Red will finally disappear if brought to the northward of W. $\frac{3}{4}$ N., warning of the approach to the northern edge of West and East Hoyle; if the Red be kept in sight, those banks cannot be approached nearer than one mile. The NORTH-WEST LIGHT SHIP has been removed to the position indicated by the transition of the Ormshead Light from Bright to Red, and by the masking and unmasking of the Upper Holylake Beacon on a N.N.W. bearing; she will lie to the West extreme of Three and Four Fathom Tongue, in 6 $\frac{1}{2}$ fathoms at low water, and will exhibit a powerful bright revolving Light, appearing once in every minute, with the following bearings. Ormshead Light West, 20 miles; Queen's Channel Bell Beacon East, 3 $\frac{3}{4}$ miles; Crosby Light Ship, E. $\frac{3}{4}$ S., 6 miles; N. Buoy of East Hoyle, S.S.E. 4 $\frac{1}{2}$ miles; Helbre Swash Fairway Buoy, S. E. 4 $\frac{1}{4}$ miles.

BELL BEACON, in the form of a square Pyramid, the body of open lattice work, painted Red, and marked in white with the words "HORSE CHANNEL, S.E. $\frac{1}{4}$ S." has been moored in the fair-way to the Horse Channel. This Beacon occupies the position formerly held by the N. W. Lightship; the marks for its station are, the Beacon on the Eye, and Helbre Beach Mark in one S. $\frac{3}{4}$ E. (nearly). Bidston Lighthouse open Eastward of Leasowe Lighthouse S.E. $\frac{1}{4}$ S.

The FORMBY LIGHT VESSEL, at the elbow of the Crosby and Queen's Channels, moored in 25 feet at low water, shows one Red light visible 8 miles; a red ball is exhibited during the day. Her hull is painted red. In foggy weather a bell is tolled. Crosby Lightship, S. E. $\frac{1}{4}$ S., 2 $\frac{1}{2}$ miles; N. W. Mark, E. by N. $\frac{1}{4}$ N., 3 $\frac{3}{4}$ miles; Buoy Q. Fy. (bell beacon), N. W. by W. $\frac{1}{4}$ W., 2 $\frac{1}{2}$ miles.

The CROSBY LIGHTHOUSE, situated to the north-eastward of Crosby Point, shows a fixed Bright light, elevated 96 ft. above the level of the sea at half-tide, and visible between the bearings of S.S. E. $\frac{1}{4}$ E. and E., which limits indicate respectively when a ship is westward of Formby Spit, or to the southward of Crosby Lightship.

About a mile and a quarter to the north-eastward of Crosby Lighthouse is the FORMBY OLD LIGHTHOUSE, the light from which has been discontinued. Near the latter, on the strand, is a beacon, which formerly formed a leading mark for Victoria Channel; further to the northward is the Life Boat House; and near it just round Formby Point, is the North-west Mark. This mark is one with another on Mad Wharf, bearing S. E. by E. $\frac{1}{4}$ E., is the leading direction for entering the Old Formby Channel.

The CROSBY LIGHT VESSEL, at the north-east elbow of the Great Burbo Bank, moored in 44 feet at low water, shows a yellow fixed light, visible 8 miles, and carries a red ball at the mast-head in the daytime. Her hull is painted red. From hence the fairway course, up the Mersey is S. by E. $\frac{1}{4}$ E. In sailing through Crosby Channel during ebb-tide, to avoid the indraught through the gullies in Great Burbo Bank, vessels should be kept well to the eastward of a line drawn between the Rock Lighthouse and Crosby Lightship.

At Bootle, near Liverpool, are two obelisks on the shore, and behind Bootle, near Walton Church, is a beacon, called Bootle Inner or Walton Mark.

On the south side of Liverpool Bay, on the peninsula separating the Mersey from the Dee, are many objects used as sea-marks, several of which will have been seen before arriving at the North-west Light Vessel. Off the west end of the peninsula are the islets, called the Great and Little Helbre, upon which are placed two beacons. On the mainland, within two miles S.E. by S. of the Helbre Islets, are the village and church of Kirby, to the east of which is Grange Hill, surmounted by a beacon, in the form of a pillar, at 173 feet above half-flood. Within two miles S. S. E. from Kirby, is Irby Hill, with its mill and wood.

About a mile and a quarter north of Kirby, near the shore, is the Hoylake

Hotel, and within half a mile E.N.E. from this are the HOYLAKES LIGHTHOUSES, showing fixed lights. The Upper Light will be exhibited from a bearing of NNW round to the eastward, masking suddenly on the bearing just named, indicating thereby the line of bearing of the N.W. Buoy of East Hoyle, and of the N.W. Lightship. The Lower Light will be exhibited from a bearing of North round to the Eastward, masking suddenly on the bearing just named, to indicate the sailing line between the East Hoyle Bank and the Four and Six Feet Flats. The lower light must be sighted (instead of the upper as formerly) to clear the Flats. The Hoylake Lights in a line indicate the turning point from the Horse into the Rock Channel, or the contrary, between Spencer's Spit and Dove Spit. At a mile to the eastward of the lower light are the Dove Beacons, erected as a mark for the eastern passage into Hoylake, the interior channel of communication between Helbre Swatch, and the Horse Channel, which is, at times, a very desirable harbour.

The Old Bell Beacon lies at the entrance of the Rock Channel. It bears a self-acting bell, and is marked, "R 1, Spencer's Spit."

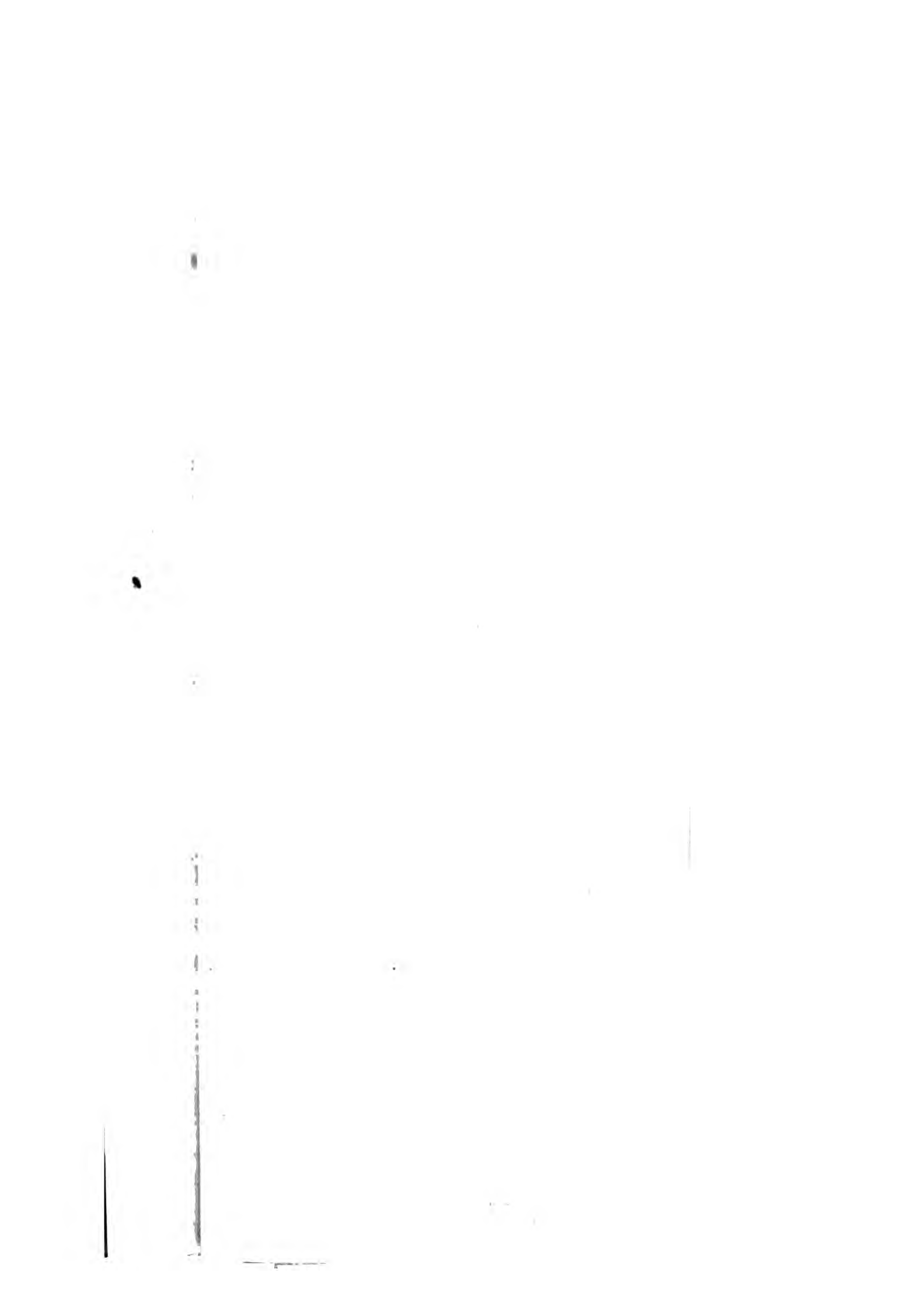
The next conspicuous object is the LEASOWE LIGHTHOUSE, which is white; its light brilliant and fixed, 110 feet above the level of half-tide, is seen 5 leagues off, and is so masked as to give a defined light in the Rock Channel, within certain limits, and suddenly disappears, bearing S.W. $\frac{1}{2}$ S. to vessels inward bound, when off West Wharf Buoy, R 3, Red, and suddenly appears when outward-bound. This is succeeded inland by the BIDSTON LIGHTHOUSE, upon the summit of Bidston Hill, with its church and mill. This lighthouse is of stone, but appears of a dark colour, and shows a brilliant fixed light at 244 feet above the level of half-tide. Its light can be seen 23 miles off. This light is so masked as to give a

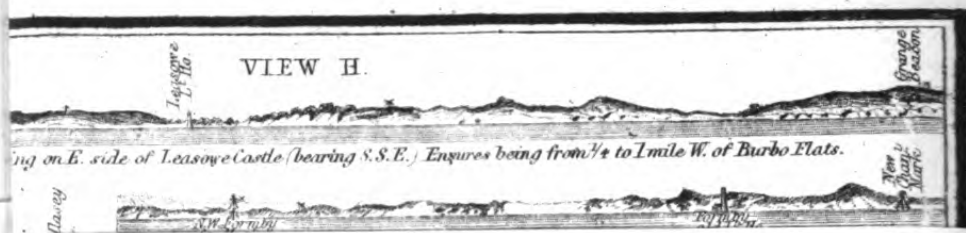
defined light in the Rock Channel, within certain limits, and to vessels inward bound it suddenly disappears on the bearing of S. by W. $\frac{1}{2}$ W. when abreast of East Wharf Buoy, R. 4, Red, and suddenly appears when outward bound. The lights of Leasowe and Bidston are called the Se Lights. At three-quarters of a mile eastward from the Leasowe Light is the Mock beggar Hall, and $2\frac{1}{4}$ miles further east is the Black Rock Lighthouse, standing upon the reef, so called, at the entrance of the Mersey.

THE BLACK ROCK LIGHTHOUSE is built on the rocks off New Brighton, on the west side of the entrance of the River Mersey, and is a handsome round tower of Anglesea limestone. It is surrounded by water at nearly half-tide. The height of the building, from the lantern to the base, is 75 feet, and the whole height above the level of the sea is 88 feet. The light revolves, exhibiting alternately from the same light room, two bright lights and one of a red colour, each at intervals of a minute, the whole revolution being completed in 3 minutes. Having acquired their brightest state, they gradually become less luminous, and are eclipsed. The light in clear weather can be seen about 5 leagues off. A bright fixed light from a lower chamber is also shown down the Rock Channel and up the River while 11 feet water remain in the Gut, and a black ball denotes the same by day. Three bells toll in succession during foggy weather; and a blue flag summons the Magazine life-boat when distress appears.

Garston Dock.—This Dock, which is 4 miles south of the Liverpool Docks, and on the same side of the river, is free from the Liverpool dock rates, vessels entering it being only liable for the harbour and light dues. The channel from Liverpool is buoyed with red and black buoys.

We would respectfully suggest to the Lords of the Admiralty the desirability of at once placing a Light on Morte Point, Bristol Channel, which is now entirely destitute of warning, notwithstanding the dangers of Morte and Bideford Bay; and, also, of putting a light-vessel westward of the Culvers, which would be useful to ships bound to Brigewater, and conduct others bound to Newport, Cardiff, or any port eastward. These additions would be invaluable to the stranger, and render the Channel easy for navigation.





QUIGGIN'S
ISLE OF MAN
ALMANACK,

FOR THE YEAR OF OUR LORD

1866,

Being the Second after Bissextile or Leap-Year,
AND THE 29th-30th OF THE REIGN OF HER PRESENT MAJESTY;

WITH CORRECT

TIDE TABLES,

FOR

LIVERPOOL, BRISTOL, GREENOCK,
LONDON, CORK, SUNDERLAND, SHIELDS, HULL,
BRIDPORT, SOUTHAMPTON, AND PORTSMOUTH

AND

MARINERS' COMPANION;

CONTAINING ALSO EVERY CALCULATION NECESSARY FOR

WORKING A LUNAR DISTANCE.

CALCULATED TO MEAN TIME, IN LATITUDE $54^{\circ} 10'$ N. AND LONGITUDE
 $4^{\circ} 30'$ W.

☞ The Liverpool Tides are calculated for Greenwich mean time.

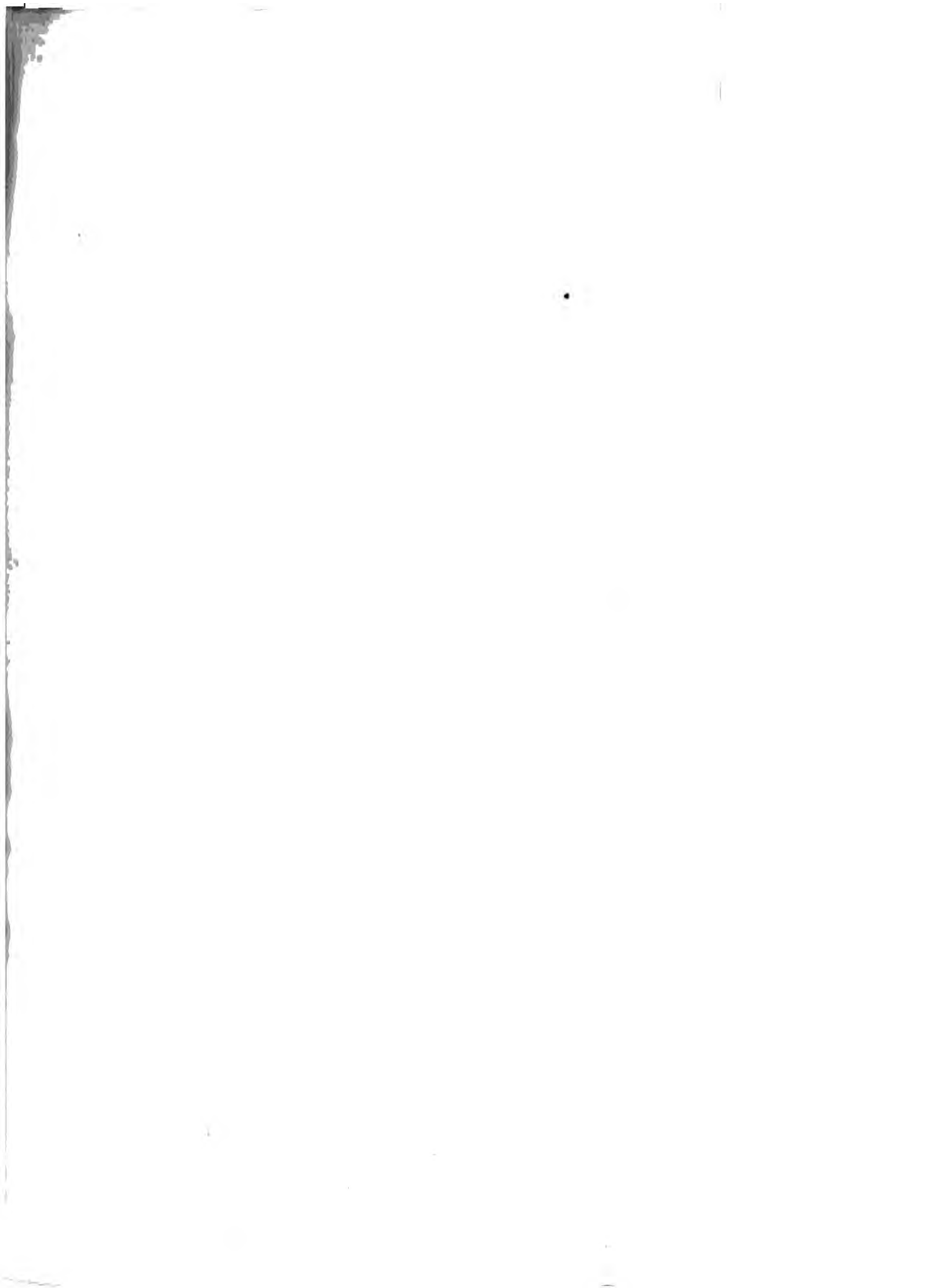
FORTY-FIRST ANNUAL IMPRESSION.

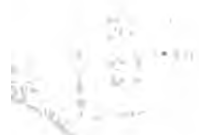
DOUGLAS, ISLE OF MAN:
PRINTED AND PUBLISHED BY MATTHEW GLOVER,
52, NORTH QUAY.

PHASES OF THE MOON.	{	FULL MOON,	1st day, at	6h. 48m. morning.
		LAST QUARTER,	8th day, at	9h. 37m. night.
		NEW MOON,	16th day, at	8h. 37m. night.
		FIRST QUARTER,	23rd day, at	8h. 54m. night.
		FULL MOON.	30th day, at	8h. 29m. night.

M D.	Day brek.	Twil. ends.	☉'s semi.	☿ Mercury. rises. sout.	♀ Venus. rises. sout.	♂ Mars. sets. sout.	♃ Jupiter. rises. sout.	♄ Saturn. rises. sout.	M. D.
1	6m 7	6 a 0	16 18	6m 46 10m 47	7m 27 11m 6	7m 25 10m 59	8m 22 0 a 2	3 m 0 7m 51	1
8	6 6	6 7	16 18	6 31 10 28	7 39 11 16	7 21 10 54	8 1 11m 42	2 36 7 26	8
15	6 3	6 16	16 18	6 39 10 27	7 47 11 27	7 16 10 49	7 40 11 21	2 11 7 0	15
22	5 58	6 27	16 17	6 54 10 37	7 49 11 37	7 10 10 45	7 18 11 1	1 46 6 34	22
29	5 49	6 29	16 16	7 9 10 51	7 49 11 47	7 1 10 40	6 55 10 40	1 20 6 8	29

M D	W D	Remarkable Days	HIGH WATER.—LIVERPOOL.				Equation of Time. / "
			MORNING.		EVENING.		
			Time.	Height.	Time.	Height.	
1	M	Circumcision.	11 10	18 0	11 31	17 6	3 52
2	Tu	H souths 11 a 17	11 52	18 4	— —	— —	4 20
3	W	Neptune souths 5 a 39	0 11	17 6	0 34	18 4	4 48
4	Th	R. Ascham died, 1568	0 56	17 3	1 20	18 2	5 15
5	F	Bank Dividends due	1 39	16 8	2 1	17 3	5 42
6	S	Epiphany. 12th Day	2 20	15 8	2 38	16 1	6 9
7	☉	1 Sun. aft. Epiphany	2 58	14 7	3 17	14 11	6 35
8	M	Proper [Isa. xlv; Matt. v. Lessons. [— xlv; Rom. v.	3 36	13 5	3 58	13 6	7 0
9	Tu	Fontenelle died, 1801	4 20	12 3	4 48	12 3	7 25
10	W	Royal Ex. built, 1838	5 19	11 7	5 54	11 8	7 50
11	Th	Hilary Term begins	6 26	11 6	7 1	11 8	8 14
12	F	Lavater died, 1801	7 39	12 0	8 15	12 4	8 37
13	S	Camb. Term begins	8 48	13 1	9 12	13 4	9 0
14	☉	2 Sun. aft. Epiphany	9 34	14 4	9 57	14 6	9 22
15	M	Pro. [Isa. li; Matt. xii. Les. [— liii; Rom. xii.	10 21	15 7	10 39	15 7	9 44
16	Tu	B. of Corunna, 1809	11 0	16 8	11 20	16 6	10 5
17	W	Battle of Falkirk, 1756	11 39	17 8	11 56	17 4	10 25
18	Th	Prisca, V. & M.	— —	— —	0 15	18 5	10 44
19	F	Copernicus b., 1473	0 34	17 9	0 54	18 10	11 3
20	S	Fabian, Bishop	1 15	17 10	1 36	18 7	11 21
21	☉	3 Sun. aft. Epiphany	1 58	17 5	2 20	17 11	11 38
22	M	Proper [Isa. lv; Matt. xix. Lessons. [— lvi; 1 Cor. iii.	2 41	16 9	3 6	16 10	11 54
23	Tu	Vincent, Martyr.	3 30	15 7	3 54	15 6	12 10
24	W	R. Boyle died, 1627	4 19	14 4	4 50	14 1	12 25
25	Th	Conversion of St. Paul	5 27	13 4	6 7	13 2	12 39
26	F	Dr. Jenner died, 1823	6 46	12 4	7 26	13 5	12 52
27	S	H souths 9 a 34	8 5	13 10	8 41	14 4	13 4
28	☉	Septuagesima Sun.	9 12	15 5	9 40	15 6	13 15
29	M	Proper [Genesis i; Matt. xxv. Lessons. [— ii; 1 Cor. ix.	10 11	16 9	10 35	16 6	13 26
30	Tu	Neptune south 3 a 54	10 58	17 9	11 20	17 2	13 36
31	W	Hilary Terms ends	11 39	18 5	11 58	17 7	13 45





Bristol tides					SUN.								MOON.								ASPECTS AND WEATHER.	
D.	morn.		even.	height	rises.		sets.		rt. ascen.		declin. S.		rises.		souths.		declin.	δ or ♀	M	D.		
	H. M.	H. M.			H. M.	H. M.	H. M.	H. M.	° ' "	° ' "	H. M.	H. M.	° ' "	° ' "								
1	6 55	7 18	32	1	8 23	3 45	18 47	31 23	0 17				4a45	morn	—	—	F	1		The year		
2	7 41	8 23	32	6	8 23	3 46	18 51	55 22	55 3				5 56	0a43	16 50	15 2	♂	2	stationary			
3	8 25	8 46	32	4	8 23	3 47	18 56	19 22	49 21				7 8	1 37	14 19	16 3	will	3				
4	9 9	9 16	32	1	8 22	3 48	19 0	43 22	43 12				8 19	2 28	11 2	17 4	probably	4				
5	9 46	10 3	30	7	8 22	3 50	19 5	7 22	36 37				9 28	3 16	7 18	18 5	♀ in 8.	5	8 m 49			
6	10 18	10 35	28	11	8 21	3 51	19 9	30 22	29 34				10 36	4 1	3 19	19 6	begin	6				
7	10 51	11 7	26	10	8 21	3 52	19 13	53 22	22 4				11 42	4 45	0 42	20 7	stormy.	7				
8	11 26	11 46	24	4	8 20	3 54	19 18	15 22	14 8				morn	5 28	4 37	21 8	Changeable.	8				
9	—	0 10	22	2	8 20	3 55	19 22	36 22	5 46				0 47	6 11	8 18	22 9	(in Apogee	9				
10	0 36	1 7	20	7	8 19	3 57	19 26	57 21	56 58				1 51	6 55	11 37	23 10	♂ δ (, 4 m 33	10				
11	1 37	2 16	20	7	8 18	3 58	19 31	18 21	47 45				2 54	7 39	14 27	24 11	Expect	11				
12	3 2	3 44	22	4	8 17	4 0	19 35	38 21	38 5				3 56	8 26	16 39	25 12	rain	12				
13	4 20	4 46	24	3	8 16	4 2	19 39	57 21	28 1				4 55	9 14	18 7	26 13	♂ gr. elong. W.	13				
14	5 9	5 33	26	4	8 15	4 3	19 44	16 21	17 32				5 51	10 4	18 40	27 14	♀ δ 2, 3 m 59	14				
15	5 59	6 19	28	3	8 14	4 5	19 48	34 21	6 38				6 41	10 56	18 15	28 15	δ δ (, 7 m 53	15				
16	6 43	7 6	29	3	8 13	4 7	19 52	51 20	55 20				sets.	11 48	16 47	N 13	♀ δ (, 2 m 26	16				
17	7 26	7 45	30	11	8 12	4 9	19 57	8 20	43 38				5a31	0a41	14 20	1 17	or snow	17				
18	8 6	8 25	32	4	8 11	4 10	20 1	24 20	31 33				6 44	1 32	11 1	2 18	if the	18				
19	8 44	9 5	33	1	8 10	4 12	20 5	39 20	19 4				7 59	2 24	7 0	3 19	wind be	19				
20	9 24	9 44	32	11	8 9	4 14	20 9	54 20	6 13				9 16	3 15	2 34	4 20	southerly.	20				
21	10 4	10 22	32	0	8 8	4 16	20 14	7 19	52 59				10 35	4 6	2 4	5 21	or	21				
22	10 44	11 5	30	7	8 7	4 18	20 18	20 19	39 23				morn	4 57	6 35	6 22	frosty	22				
23	11 25	11 47	28	2	8 5	4 20	20 22	32 19	25 25				0 54	5 50	10 44	7 23	♂ in 8, 3 a 19	23				
24	—	0 14	25	7	8 4	4 22	20 26	44 19	11 5				1 11	6 44	14 13	8 24	if the	24				
25	0 45	1 20	23	6	8 2	4 24	20 30	54 18	56 25				2 26	7 40	16 48	9 25	♀ δ δ, 2 a 10	25				
26	1 57	2 46	23	11	8 1	4 26	20 35	4 18	41 24				3 38	8 37	18 17	10 26	wind	26				
27	3 33	4 14	26	3	7 59	4 28	20 39	13 18	26 2				4 43	9 34	18 33	11 27	♂ δ 2, 7 m 25	27				
28	4 46	5 15	28	4	7 58	4 30	20 43	21 18	10 21				5 39	10 31	17 37	12 28	inclines	28				
29	5 48	6 15	30	6	7 56	4 32	20 47	28 17	54 20				6 24	11 25	15 36	13 29	δ δ 2, 8 m 5	29				
30	6 41	7 5	31	0	7 54	4 34	20 51	34 17	38 0				rises.	morn	—	F 30	to be	30				
31	7 26	7 47	32	2	7 52	4 36	20 55	40 17	21 21				5a57	0 17	12 42	15 31	northerly.	31				

LUNAR DISTANCES FROM THE SUN.

Mean Astronomical Time at Greenwich.

M.	NOON.			3 HOURS.			6 HOURS.			9 HOURS.			MIDN.			15 HOUR.			16 HOUR.			21 HOUR.		
D.	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "
4e	139 22 25	137 53 49	136 25 32	134 57 32	133 29 51	132 2 28	130 35 23	129 8 36																
5	127 42 7	126 15 55	124 50 1	123 24 23	121 59 3	120 33 58	119 9 10	117 44 38																
6	116 20 21	114 56 18	113 32 30	112 8 56	110 45 36	109 22 29	107 59 34	106 36 51																
7	105 14 19	103 51 59	102 29 48	101 7 48	99 45 57	98 24 15	97 2 41	95 41 14																
8	94 19 54	92 58 41	91 37 34	90 16 31	88 55 34	87 34 40	86 13 50	84 53 3																
9	83 32 18	82 11 34	80 50 52	79 30 10	78 9 28	76 48 45	75 28 2	74 7 16																
10	72 46 28	71 25 37	70 4 43	68 43 44	67 22 41	66 1 33	64 40 20	63 19 1																
11	61 57 35	60 36 2	59 14 21	57 52 33	56 30 37	55 8 32	53 46 18	52 23 54																
12	51 1 21	49 38 38	48 15 44	46 52 40	45 29 25	44 5 58	42 42 21	41 18 33																
13	39 54 33	38 30 21	37 5 59	35 41 25	34 16 41	32 51 46	31 26 41	30 1 26																
14w	20 54 47	22 27 7	23 59 57	25 33 13	27 6 53	28 40 53	30 15 12	31 49 48																
15	33 24 40	34 59 46	36 35 6	38 10 38	39 46 21	41 22 15	42 58 19	44 34 33																
16	46 10 55	47 47 25	49 24 3	51 0 48	52 37 40	54 14 38	55 51 41	57 28 50																
17	59 6 5	60 43 24	62 20 47	63 58 14	65 35 45	67 13 20	68 50 58	70 28 39																
18	72 6 23	73 44 9	75 21 57	76 59 47	78 37 39	80 15 32	81 53 27	83 31 23																
19	85 9 20	86 47 18	88 25 17	90 3 16	91 41 15	93 19 14	94 57 12	96 35 11																
20	98 13 9	99 51 6	101 29 2	103 6 57	104 44 51	106 22 43	108 0 34	109 38 22																
21	111 16 8	112 53 52	114 31 32	116 9 10	117 46 44	119 24 15	121 1 42	122 39 4																
22	124 16 22	125 53 34	127 30 42	129 7 43	130 44 39	132 21 28	133 58 9	135 34 43																

Explanations

The LIVERPOOL TIDES on the left-hand Calendar pages are this year calculated for Greenwich mean time; with the height above the level of the Old Dock Sill, now represented by the marks on the east side of the Canning Dock, and include the diurnal inequality in the height of each Tide.

PHASES OF THE MOON. { LAST QUARTER, 7th day, at 7h. 39m. evening.
NEW MOON, 15th day, at 10h. 13m. morning.
FIRST QUARTER, 22nd day, at 4h. 48m. morning.

1	Day	Twil.	☉'s	♿ Mercury	♀ Venus.	♂ Mars.	♃ Jupiter.	♄ Saturn.	M
1	brek.	ends.	semi.	rises. sout.	rises. sout.	rises. sout.	rises. sout.	rises. sout.	D.
1	5m46	6a43	16 16	7m14 10m58	7m15 11m51	6m56 10m38	6m45 10m31	1 m 8 5m56	1
8	5 35	6 55	16 15	7 20 11 16	sets. 11 59	6 46 10 33	6 23 10 10	0 41 5 30	8
5	5 22	7 8	16 13	7 29 11 35	4a46 0a6	6 34 10 28	6 09 49	0 14 5 3	15
2	5 8	7 21	16 12	sets. 11 55	5 10 0 12	6 20 10 23	5 37 9 27	11a43 4 35	22
8	4 54	7 32	16 10	5a21 0a13	5 31 0 17	6 7 10 19	5 13 9 9	11 19 4 11	28

M W D D	Remarkable Days	HIGH WATER.—LIVERPOOL.				Equation of Time.	
		MORNING.		EVENING.		/ "	
		Time.	Height.	Time.	Height.		
1 Th	St. Bridget.	—	—	0 17	18 9	13	53
2 F	Purification V. Mary	0 36	17 8	0 54	18 7	14	0
3 S	Blasius, Bishop	1 11	17 4	1 29	18 0	14	7
4 G	Sexagesima Sunday	1 47	16 8	2 5	16 11	14	13
5 M	Pro. [Genesis iii; Mark iv. Les. [— vi; 1 Cor. xvi.	2 24	15 8	2 41	15 9	14	18
6 Tu	Pleiades souths 6 a 40	3 0	14 7	3 17	14 4	14	22
7 W	Day long, 9h. 11m.	3 36	13 4	3 56	12 11	14	25
8 Th	Mary Q. of Scots beh.	4 18	12 2	4 46	11 7	14	28
9 F	Dr. Maskelyne d. 1811	5 19	11 4	5 57	10 10	14	29
10 S	Queen married, 1840	6 38	11 3	7 16	11 2	14	30
11 G	Shrove Sunday	7 55	12 1	8 34	12 3	14	31
12 M	Proper [Gen. ix to v. 20; Mark xi. Lessons. [— xii; 2 Cor. vii.	9 5	13 6	9 31	13 8	14	30
13 Tu	Shrove Tuesday	9 54	15 3	10 17	15 5	14	29
14 W	Ash Wednesday	10 37	16 11	10 57	16 9	14	27
15 Th	Atterbury died, 1732	11 18	18 3	11 36	18 0	14	24
16 F	Cam. term divides M.	11 56	19 4	—	—	14	21
17 S	H souths 8 a 10	0 16	18 10	0 35	19 11	14	16
18 G	1 Sunday in Lent	0 56	19 1	1 18	19 10	14	12
19 M	Pro [Gen. xix to v. 30; Luke i. v. 39. Les. [— xxii; Gal. i.	1 39	18 10	2 0	19 0	14	6
20 Tu	Procyon souths 9 a 29	2 22	17 10	2 46	17 5	14	0
21 W	Trinidad taken, 1797	3 11	16 5	3 33	15 11	13	53
22 Th	Fren. Revolution, 1848	3 56	14 9	4 25	14 0	13	45
23 F	Sir J. Reynolds d. 1792	4 59	13 4	5 41	12 7	13	37
24 S	St. Matthias Apostle	6 23	12 8	7 6	12 4	13	28
25 G	2 Sunday in Lent	7 50	13 4	8 29	13 3	13	18
26 M	Proper [Gen. xxvii; Luke viii. Lessons. [— xxxiv; Ephes. ii.	9 3	14 8	9 34	14 7	13	8
27 Tu	Arcturus rises 7 a 33	10 0	16 2	10 25	15 10	12	58
28 W	Elliott's Engagement off Ramsey, 1760.	10 44	17 4	11 3	16 8	12	46

To reduce the Liverpool Tides for the Isle of Man generally, subtract twelve minutes—the Tides at the Island being so much earlier than at Liverpool; and the eight, or rise of water at Liverpool diminished one sixth will give the approximate rise of water in Douglas.



1

2

3

4

5



1866.

FEBRUARY 28 Days.

Bristol tides					SUN.								MOON.					ASPECTS AND WEATHER	
D.	morn. H. M.	even. H. M.	height F. I.	rises. H M	sets. H M	rt. ascen. H. M. S.	declin. S. ° / '	rises. H. M.	souths H. M.	declin. ° / '	age. age.	D.							
1	8 8	8 27	32	9 7	51 4	38 20	59 45	17 4	24 7	a 8	1m6	9n12	16 1	h ☐ ☉, 1 m 2					
2	8 44	9 0	32	7 7	49 4	40 21	3 49	16 47	9 8	17 1	53 5	19 17	2 2	☿ in Aphelio					
3	9 17	9 33	31	9 7	47 4	42 21	7 51	16 29	36 9	24 2	38 1	16 18	3 3	Still					
4	9 50	10 7	30	3 7	46 4	44 21	11 54	16 11	46 10	30 3	22 2	s 44	19 4	changeable,					
5	10 21	10 38	28	7 7	44 4	46 21	15 55	15 53	39 11	35 4	5 6	33 20	5 5	inclined					
6	10 52	11 9	26	4 7	42 4	48 21	19 56	15 35	16 morn	4 49	10 2	21 6	6 6	to					
7	11 25	11 44	23	9 7	40 4	50 21	23 56	15 16	37 0	39 5	33 13	5 22	7 7	h ☿ ☉, 6 m					
8	—	0 9	21	4 7	38 4	52 21	27 55	14 57	42 1	41 6	18 15	34 23	8 8	☿ in Aphelio					
9	0 37	1 10	19	8 7	36 4	54 21	31 53	14 38	32 2	41 7	5 17	22 24	9 9	cold					
10	1 48	2 32	20	1 7	34 4	56 21	35 51	14 19	7 3	37 7	54 18	21 25	10 10	and					
11	3 19	4 5	22	7 7	32 4	58 21	39 48	13 59	28 4	29 8	44 18	25 26	11 11	high					
12	4 38	5 5	25	3 7	30 5	0 21	43 44	13 39	36 5	15 9	36 17	28 27	12 12	☿ ☉ ☉, 7 a 3					
13	5 30	5 54	28	3 7	28 5	2 21	47 39	13 19	29 5	55 10	29 15	31 28	13 13	☿ ☉ ☉, 11 m 2					
14	6 17	6 39	29	6 7	26 5	4 21	51 34	12 59	10 sets.	11 21	12 36	29 14	14 14	☿ ☉ ☉, 4 a 5					
15	7 3	7 22	31	10 7	24 5	6 21	55 27	12 38	38 5a39	0a13	8 51	N 15	15 15	☿ ☉ ☉, 8 m 4					
16	7 45	8 7	33	11 7	21 5	8 21	59 20	12 17	54 6	58 1	7 4	30 1	16 16	winds					
17	8 26	8 46	35	0 7	19 5	10 22	3 13	11 56	58 8	18 1	59 0	n 11	2 17	and					
18	9 8	9 27	35	2 7	17 5	12 22	7 5	11 35	51 9	39 2	52 4	53 3	18 18	rain					
19	9 46	10 6	34	1 7	15 5	14 22	10 56	11 14	33 10	58 3	46 9	16 4	19 19	or					
20	10 27	10 48	32	2 7	12 5	16 22	14 46	10 53	5 morn	4 41	13 2	5 20	20 20	h stationary					
21	11 7	11 27	29	3 7	10 5	18 22	18 35	10 31	27 0	16 5	36 15	56 6	21 21	snow.					
22	11 52	—	25	9 7	8 5	20 22	22 24	10 9	39 1	30 6	33 17	45 7	22 22	Now					
23	0 20	0 57	22	10 7	6 5	22 22	26 13	9 47	42 2	36 7	29 18	25 8	23 23	☿ gr. H. L. S					
24	1 34	2 21	22	5 7	4 5	24 22	30 0	9 25	36 3	33 8	24 17	55 9	24 24	☿ ☉ ☉, 2 m 4					
25	3 14	4 0	24	6 7	1 5	26 22	33 47	9 3	21 4	21 9	18 16	19 10	25 25	more					
26	4 37	5 9	27	0 6	59 5	28 22	37 34	8 40	59 5	2 10	10 13	49 11	26 26	☿ Sup. ☿ ☉					
27	5 36	6 3	29	2 6	57 5	30 22	41 20	8 18	29 5	36 10	59 10	37 12	27 27	inclined					
28	6 25	6 46	30	1 6	54 5	32 22	45 5	7 55	52 6	4 11	46 0	57 13	28 28	to rain.					

LUNAR DISTANCES FROM THE SUN.
Mean Astronomical Time at Greenwich.

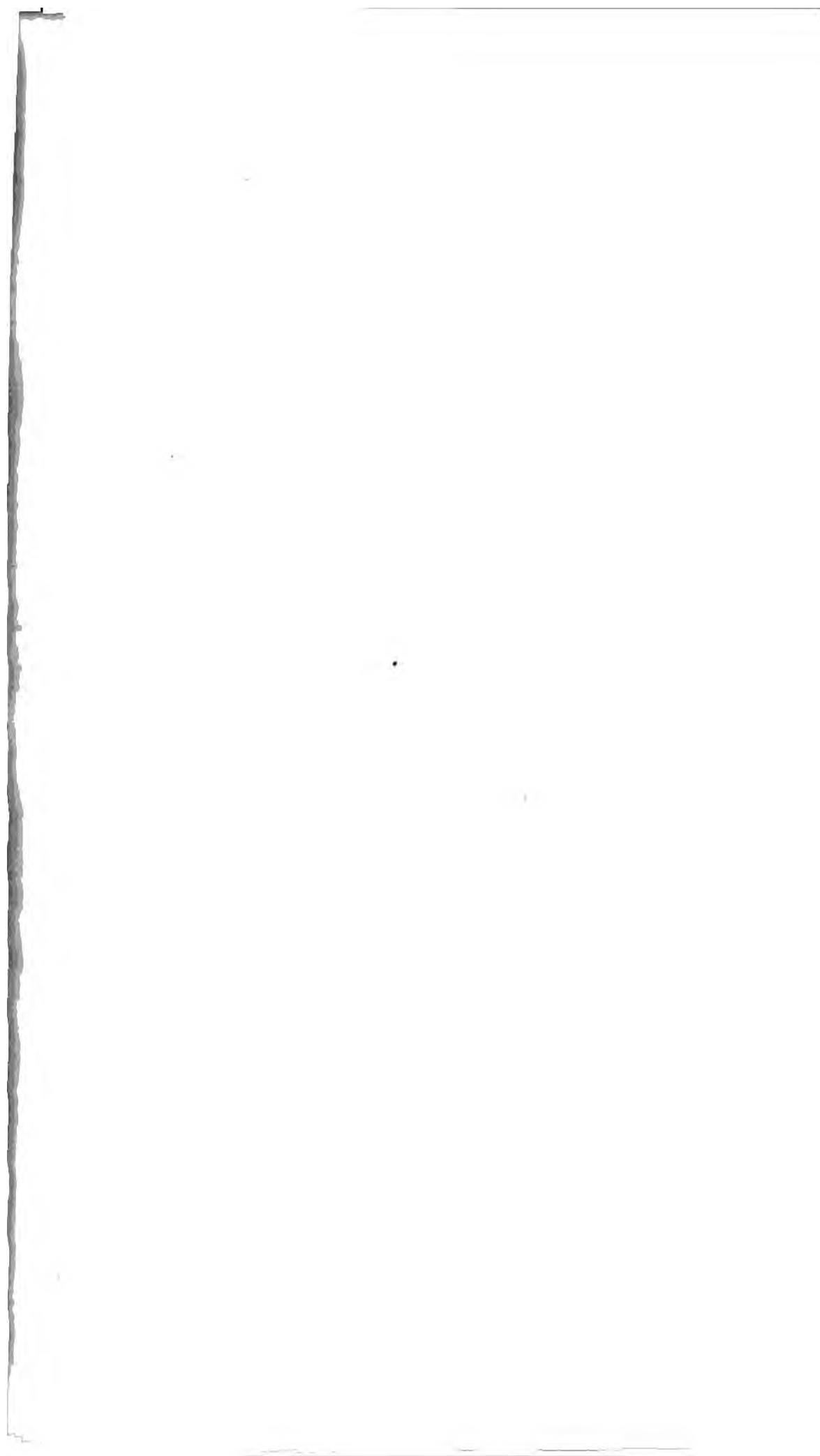
M. D.	NOON.			3 HOURS.			6 HOURS.			9 HOURS.			MIDN.			15 HOUR.			18 HOUR.			21 HOUR.		
	°	'	''	°	'	''	°	'	''	°	'	''	°	'	''	°	'	''	°	'	''	°	'	''
3 ^E	137	5	9	135	41	17	134	17	36	132	54	6	131	30	47	130	7	40	128	44	43	127	21	56
4	125	59	19	124	36	51	123	14	33	121	52	24	120	30	22	119	8	29	117	46	44	116	25	4
5	115	3	33	113	42	8	112	20	48	110	59	32	109	38	22	108	17	15	106	56	13	105	35	13
6	104	14	15	102	53	20	101	32	25	100	11	31	98	50	38	97	29	44	96	8	49	94	47	52
7	93	26	53	92	5	51	90	44	46	89	23	37	88	2	23	86	41	4	85	19	39	83	58	7
8	82	36	29	81	14	43	79	52	49	78	30	46	77	8	34	75	46	12	74	23	40	73	0	56
9	71	38	1	70	14	54	68	51	34	67	28	2	66	4	15	64	40	14	63	15	59	61	51	29
10	60	26	44	59	1	42	57	36	24	56	10	49	54	44	58	53	18	49	51	52	22	50	25	37
11	48	58	34	47	31	12	46	3	32	44	35	33	43	7	15	41	38	37	40	9	41	38	40	22
12	37	10	51	35	40	57	34	10	45	32	40	15	31	9	27	29	38	21	28	6	59	26	35	21
13	27	32	33	29	12	28	30	52	34	32	32	46	34	13	6	35	53	31	37	34	1	39	14	34
14	40	55	9	42	35	45	44	16	22	45	56	58	47	37	34	49	18	8	50	58	39	52	39	7
15	54	19	32	55	59	53	57	40	9	59	20	19	61	0	24	62	40	23	64	20	15	66	0	0
16	67	39	38	69	19	9	70	58	31	72	37	45	74	16	50	75	55	47	77	34	34	79	13	13
17	80	51	41	82	30	0	84	8	9	85	46	8	87	23	58	89	1	37	90	39	5	92	16	23
18	93	53	31	95	30	28	97	7	14	98	43	50	100	20	15	101	56	29	103	32	33	105	8	23
19	106	44	7	108	19	38	109	54	58	111	30	7	113	5	5	114	39	52	116	14	28	117	48	53
20	119	23	8	120	57	11	122	31	3	124	4	44	125	38	15	127	11	34	128	44	42	130	17	38

The EQUATION of TIME is given to the nearest second for Greenwich mean noon and as the difference between the equation of time for mean noon and apparent noon does not in any instance amount to the fifth part of a second, the given minutes and seconds may be used for reducing mean time into apparent time, or the contrary. When the column is headed "Clock before Sun," the Equation is to be subtracted from mean time to reduce it to apparent; or, in the case of a celestial observation, the result being apparent time, the equation must be added to reduce it to mean time. And when "after Sun," the equation must be added to mean time, to reduce it to apparent time, or subtracted from apparent time to reduce it to mean time.

PHASES OF THE MOON.	FULL MOON,	1st day, at 11h. 52m. morning.
	LAST QUARTER,	9th day, at 3h. 53m. afternoon.
	NEW MOON,	16th day, at 9h. 36m. night.
	FIRST QUARTER,	23rd day, at 1h. 2m. afternoon.
	FULL MOON,	31st day, at 4h. 31m. morning.

d.	Day Twil.		☉'s		♂ Mercury		♀ Venus.		♂ Mars.		♃ Jupiter.		♄ Saturn.		M D.											
	brek.	ends.	semi.		s	ts. s	ut.	sets.	sout.	rises.	s	ut.	rises.	sout.		rises.	sout.									
1	4m54	7a55	16	10	5	28	0	16	5a34	0a18	6m4	10m18	5m14	9m6	11a14	4m7	1									
8	4	34 7	50	16	8	6	25	0	37	5	58	0	23	5	48	10	12	4	50	8	41	10	46	3	39	8
5	4	16 8	4	16	6	7	21	0	57	6	22	0	27	5	32	10	6	4	26	8	21	10	18	3	11	15
12	3	56 8	19	16	4	7	59	1	10	6	46	0	31	5	14	10	0	4	0	7	59	9	49	2	42	22
19	3	34 8	36	16	3	8	21	1	8	7	10	0	36	4	56	9	53	3	34	7	36	9	19	2	13	29

M D	W D	Remarkable Days	HIGH WATER.—LIVERPOOL.				Equation of Time.	
			MORNING.		EVENING.		/	"
			Time.	Height	Time.	Height.		
1	Th	St. David	11 21	18 1	11 41	17 4	12	34
2	F	Chad. Archbishop	11 57	18 6	— —	— —	12	22
3	S	E. Waller b. 1605	0 13	17 8	0 30	18 6	12	10
4	☉	3 Sunday in Lent	0 44	17 7	1 2	18 1	11	56
5	M	Proper [Gen. xxxix; Luke xv. Lessons. — xlii; Phil. iii.	1 19	17 2	1 36	17 3	11	43
6	Tu	Sirius souths 7 a 37	1 50	16 4	2 5	16 1	11	29
7	W	Perpetua, Martyr	2 23	15 4	2 41	14 9	11	14
8	Th	Regulus sou. 10 a 52	2 57	14 0	3 18	13 4	10	59
9	F	Procyon souths 8 a 21	3 38	12 10	4 2	11 11	10	44
10	S	Pri. of W. Mar. 1863	4 29	11 9	5 4	10 10	10	29
11	☉	4 Sunday in Lent	5 45	11 2	6 28	10 8	10	13
12	M	Proper [Genes. xliii; Luke xxii. Lessons. — xlv; 1 Thess. ii.	7 8	11 9	7 49	11 8	9	57
13	Tu	H discovered, 1781	8 26	13 3	8 57	13 4	9	40
14	W	Admiral Byng shot.	9 23	15 2	9 47	15 4	9	23
15	Th	Julius Cæsar assass.	10 10	17 2	10 34	17 2	9	6
16	F	Le Brun b. 1739	10 53	18 9	11 11	18 6	8	49
17	S	St. Patrick	11 32	19 11	11 51	19 7	8	32
18	☉	5 Sunday in Lent	— —	— —	0 12	20 7	8	14
19	M	Pro. [Exodus iii; John v. Less. — v; 1 Tim. i.	0 33	20 0	0 55	20 5	7	56
20	Tu	Newton died, 1727.	1 17	19 7	1 40	19 6	7	38
21	W	Benedict, Abbot.	2 4	18 5	2 28	17 10	7	20
22	Th	Goethe died, 1822	2 51	16 10	3 16	15 9	7	2
23	F	Cambridge Term ends	3 43	15 0	4 11	13 8	6	44
24	S	Lady Day, 25th	4 45	14 4	5 27	12 1	6	25
25	☉	Palm Sunday.	6 9	12 7	6 51	11 10	6	7
26	M	Proper [Exodus ix; Matt. xxvi. Lessons. — x; Heb. v. to v. 11	7 35	13 1	8 13	12 8	5	48
27	Tu	Peace of Amiens, 1802	8 45	14 4	9 14	14 0	5	30
28	W	Castor souths 6 a 57	9 40	15 9	10 4	15 4	5	11
29	Th	Pleiades set 11 a 39	10 23	16 10	10 40	16 4	4	53
30	F	Good Friday	10 55	17 6	11 14	17 0	4	34
31	S	Pollux souths 7 a 2	11 30	17 10	11 44	17 5	4	16



1866.

MARCH 31 Days.

Bristol tides				SUN.						MOON.				M	ASPECTS AND WEATHER		
D.	morn.		even.	height	rises		sets.	rt.	ascen.	declin.	rises.		sets.	declin.	M	D.	
	H. M.	H. M.	H. M.	F. I.	H. M.	H. M.	H. M.	M. S.	° / '	H. M.	H. M.	° / '	° / '				
1	7	7	7 28	31 5	6 52	5 34	22 48	50	7 33	8	6a 1	morn	—	—	14	1	♂ S ♂ ☉, 8m
2	7	46	8 4	32 4	6 50	5 36	22 52	34	7 10	17	7 8	0a32	3N	15	2	2	♂ ♂ ♀, 11m
3	8	21	8 34	32 6	6 47	5 38	22 56	18	6 47	20	8 15	1 16	1 s 0	16	3	3	Cold and windy, which will stationar
4	8	51	9 7	32 1	6 45	5 40	23 0	1	6 24	18	9 21	2 0	4 54	17	4	4	change to fair
5	9	23	9 36	30 11	6 43	5 42	23 3	44	6 1	10	10 25	2 44	8 32	18	5	5	♂ ♂ ☉, 3 a 3
6	9	49	10 6	29 3	6 40	5 44	23 7	26	5 37	57	11 27	3 27	11 46	19	6	6	and ♂ ♂ ☉, 1 a 4
7	10	21	10 33	27 4	6 38	5 46	23 11	8	5 14	40	morn	4 12	14 28	20	7	7	♂ ♂ ☉, 1 a 4
8	10	52	11 9	25 0	6 35	5 48	23 14	50	4 51	18	0 27	4 58	16 33	21	8	8	♂ ♂ ☉, 1 a 4
9	11	29	11 53	22 4	6 33	5 50	23 18	32	4 27	53	1 24	5 46	17 52	22	9	9	♂ ♂ ☉, 1 a 4
10	—	—	0 23	20 1	6 30	5 52	23 22	13	4 4	24	2 18	6 34	18 20	23	10	10	♂ ♂ ☉, 1 a 4
11	0	59	1 38	19 6	6 28	5 54	23 25	53	3 40	52	3 7	7 24	17 53	24	11	11	♂ ♂ ☉, 1 a 4
12	2	23	3 14	21 4	6 26	5 56	23 29	34	3 17	17	3 49	8 15	16 28	25	12	12	♂ ♂ ☉, 1 a 4
13	3	57	4 30	24 10	6 23	5 57	23 33	14	2 53	40	4 25	9 7	14 4	26	13	13	♂ ♂ ☉, 1 a 4
14	4	57	5 23	28 4	6 21	5 59	23 36	54	2 30	1	4 57	9 59	10 46	27	14	14	♂ ♂ ☉, 1 a 4
15	5	48	6 14	30 0	6 18	6 1	23 40	33	2 6	20	5 26	10 52	6 43	28	15	15	♂ ♂ ☉, 1 a 4
16	6	35	6 56	32 9	6 16	6 3	23 44	12	1 42	39	sets	11 46	2 8	N 16	16	16	♂ ♂ ☉, 1 a 4
17	7	19	7 40	34 11	6 13	6 5	23 47	52	1 18	57	7a13	0a40	2N40	1	17	17	♂ ♂ ☉, 1 a 4
18	8	3	8 24	36 3	6 11	6 7	23 51	31	0 55	14	8 37	1 35	7 21	2	18	18	♂ ♂ ☉, 1 a 4
19	8	45	9 5	36 5	6 8	6 9	23 55	9	0 31	31	9 57	2 31	11 32	3	19	19	♂ ♂ ☉, 1 a 4
20	9	27	9 49	35 1	6 6	6 11	23 58	48	0 7	49	11 13	3 29	14 53	4	20	20	♂ ♂ ☉, 1 a 4
21	10	11	10 30	32 9	6 3	6 13	0 2	26	N 0 15	53	morn	4 26	17 9	5	21	21	♂ ♂ ☉, 1 a 4
22	10	51	11 14	29 5	6 1	6 14	0 6	5	0 39	33	0 23	5 24	18 13	6	22	22	♂ ♂ ☉, 1 a 4
23	11	38	—	25 7	5 58	6 16	0 9	43	1 3	12	1 28	6 20	18 4	7	23	23	♂ ♂ ☉, 1 a 4
24	0	8	0 44	22 5	5 56	6 18	0 13	21	1 26	50	2 24	7 15	16 49	8	24	24	♂ ♂ ☉, 1 a 4
25	1	21	2 4	21 10	5 53	6 20	0 16	59	1 50	25	3 6	8 7	14 36	9	25	25	♂ ♂ ☉, 1 a 4
26	2	58	3 43	23 9	5 51	6 22	0 20	37	2 13	57	3 38	8 56	11 39	10	26	26	♂ ♂ ☉, 1 a 4
27	4	18	4 48	26 2	5 48	6 24	0 24	15	2 37	26	4 6	9 43	8 11	11	27	27	♂ ♂ ☉, 1 a 4
28	5	15	5 41	28 4	5 46	6 26	0 27	53	3 0	53	4 32	10 29	4 22	12	28	28	♂ ♂ ☉, 1 a 4
29	6	2	6 21	29 3	5 43	6 28	0 31	31	3 24	15	4 56	11 13	0 26	13	29	29	♂ ♂ ☉, 1 a 4
30	6	38	7 0	30 7	5 41	6 30	0 35	9	3 47	34	5 19	11 57	3 29	14	30	30	♂ ♂ ☉, 1 a 4
31	7	17	7 33	31 5	5 38	6 31	0 38	47	4 10	48	5 40	morn	—	F 31	31	31	♂ ♂ ☉, 1 a 4

LUNAR DISTANCES FROM THE SUN.

Mean Astronomical Time at Greenwich.

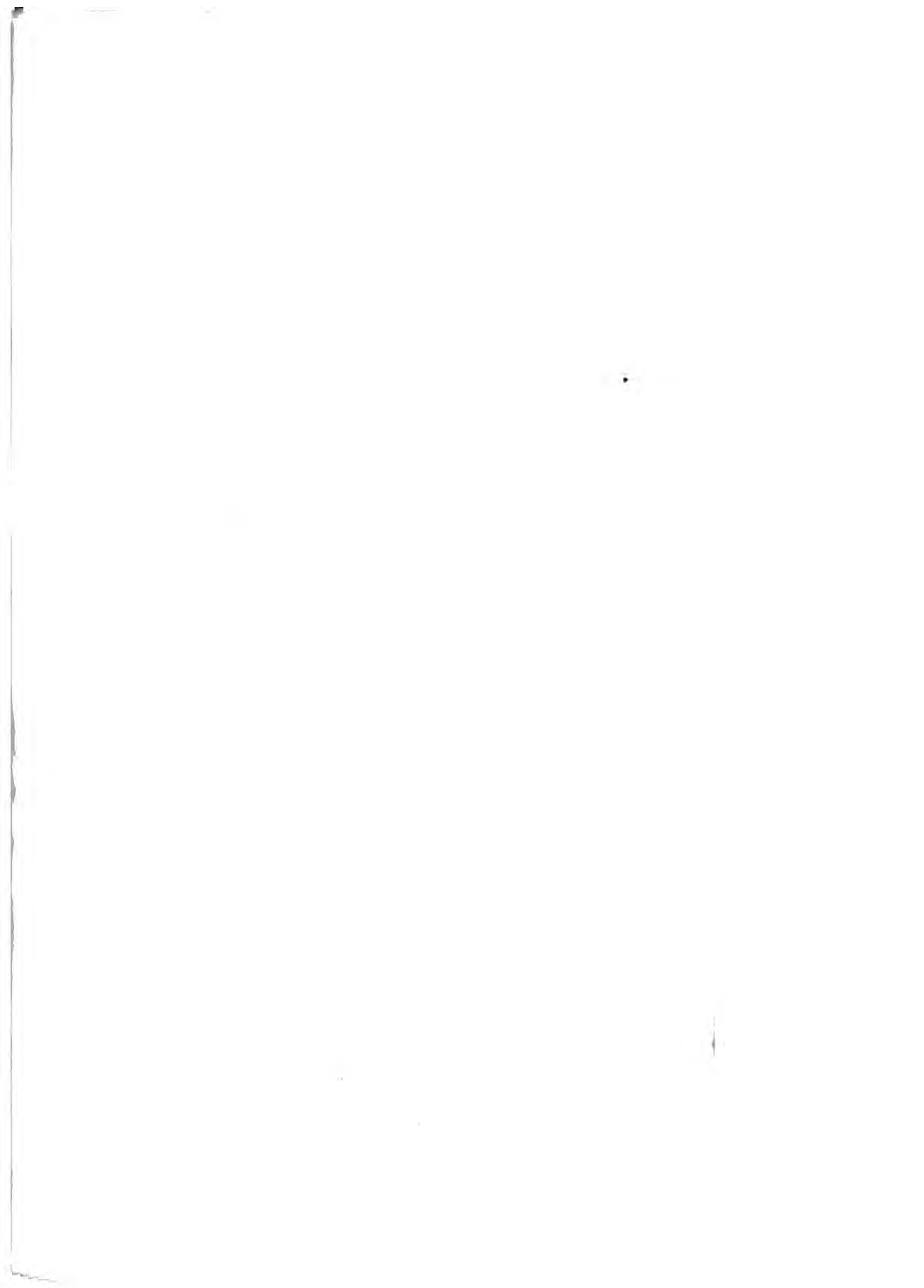
M.	NOON.	3 HOURS.	6 HOURS.	9 HOURS.	MIDN.	15 HOUR.	18 HOUR.	21 HOUR.
D.	° / "	° / "	° / "	° / "	° / "	° / "	° / "	° / "
5	135 17 47	133 56 15	132 34 47	131 13 23	129 52 3	128 30 4	127 9 32	125 48 20
6	124 27 11	123 6 3	121 44 56	120 23 50	119 2 43	117 41 3	116 20 2	114 59 20
7	113 38 10	112 16 57	110 55 41	109 34 22	108 12 58	106 51 3	105 29 5	104 8 17
8	102 46 32	101 24 39	100 2 39	98 40 31	97 18 15	95 55 4	94 33 13	93 10 26
9	91 47 29	90 24 20	89 0 59	87 37 25	86 13 37	84 49 35	83 25 19	82 0 48
10	80 36 0	79 10 57	77 45 36	76 19 59	74 54 3	73 27 48	72 1 15	70 34 22
11	69 7 9	67 39 36	66 11 42	64 43 26	63 14 49	61 45 49	60 16 27	58 46 42
12	57 16 33	55 46 1	54 15 5	52 43 45	51 12 1	49 39 52	48 7 18	46 34 20
13	45 0 57	43 27 9	41 52 55	40 18 17	38 43 14	37 7 46	35 31 54	33 55 37
14	32 18 56	30 41 51	29 4 22	27 26 31	25 48 17	24 9 41	22 30 44	20 51 26
15	19 32 55	17 55 40	16 18 25	14 41 10	13 3 55	11 16 40	10 0 25	8 13 10
16	6 47 54	5 10 39	3 23 24	1 46 9	0 29 14	0 12 0	0 0 0	0 0 0
17	—	—	—	—	—	—	—	—
18w	22 7 1	23 51 22	25 35 43	27 20 3	29 4 20	30 48 35	32 32 44	34 16 49
19	36 0 46	37 44 37	39 28 18	41 11 51	42 55 14	44 38 26	46 21 26	48 4 15
20	49 46 50	51 29 12	53 11 20	54 53 14	56 34 52	58 16 14	59 57 21	61 38 11
21	63 18 44	64 59 1	66 38 59	68 18 41	69 58 4	71 37 10	73 15 57	74 54 25
22	76 32 36	78 10 27	79 48 1	81 25 15	83 2 11	84 38 49	86 15 8	87 51 8
23	89 26 50	91 2 14	92 37 19	94 12 7	95 46 37	97 20 49	98 54 44	100 28 21
24	102 1 41	103 34 44	105 7 31	106 40 1	108 12 15	109 44 12	111 15 54	112 47 21
25	114 18 32	115 49 28	117 20 9	118 50 35	120 20 47	121 50 46	123 20 30	124 50 1
26	126 19 18	127 48 22	129 17 13	130 45 53	132 14 19	133 42 33	135 10 34	136 38 24

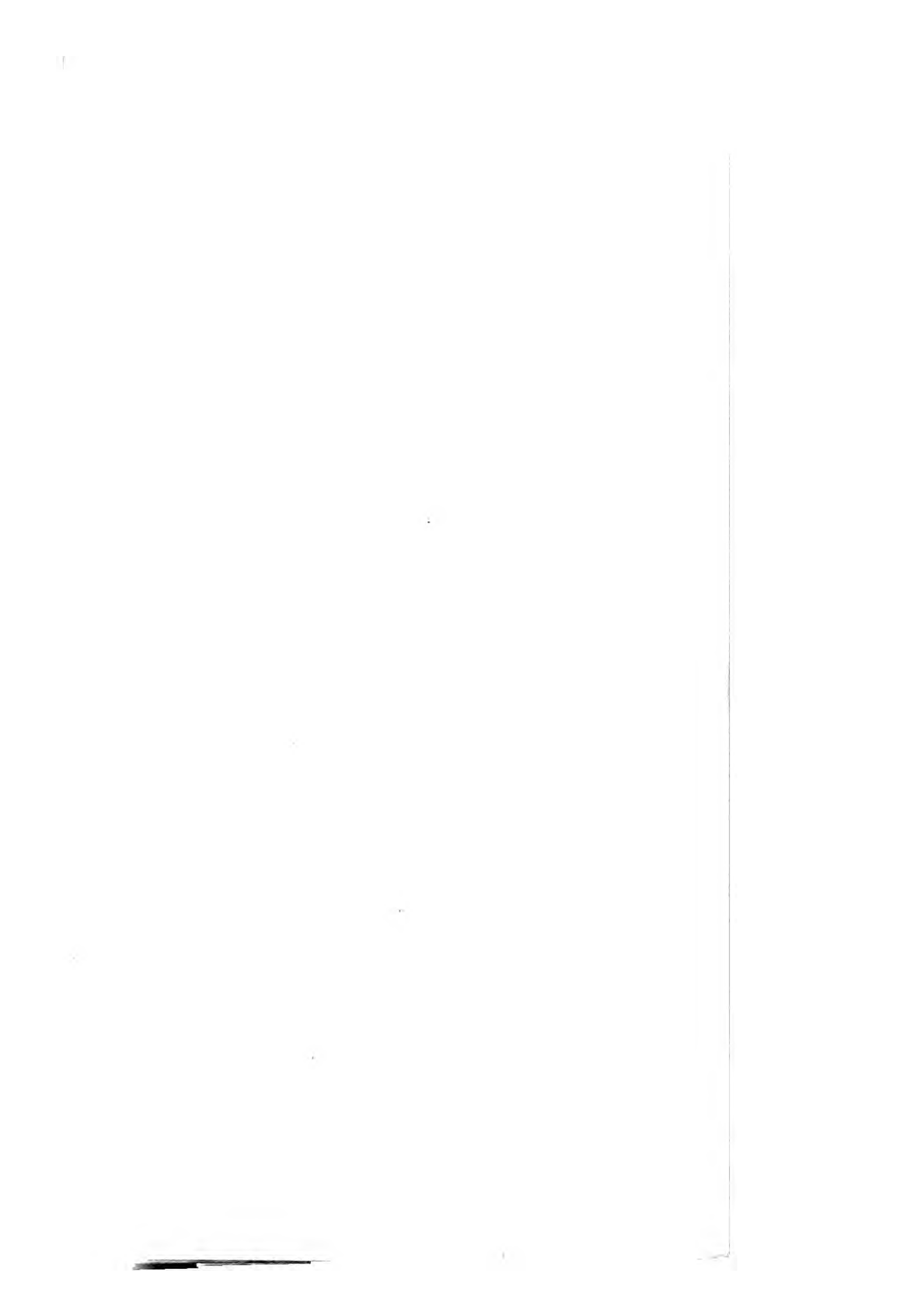
IN THE TIDE TABLE FOR BRISTOL, on the right-hand pages, the heights are given of those Tides which happen nearest to noon in each day at the Cumberland Gates, without taking into account the diurnal inequality of the height.

PHASES OF THE MOON. { LAST QUARTER, 8th day, at 8h. 42m. morning.
NEW MOON, 15th day, at 7h. 3m. morning.
FIRST QUARTER, 21st day, at 10h. 31m. night.
FULL MOON, 29th day, at 9h. 23m. night.

M D.	Day brek.	Twil. ends.	☉'s semi.	☿ Mercury sets. sout.	♀ Venus. sets. sout.	♂ Mars. rises. sout.	♃ Jupiter. rises. sout.	♄ Saturn. rises. sout.	M D.
1	3m26	8a43	16 2	8a25 1a2	7a21 0a37	4m48 9m50	3m27 7m26	9a5 2m1	1
8	3 49	2 16	0	7 23 0 32	7 45 0 42	4 30 9 43	3 27 2	8 35 1 32	8
15	2 40 9	23 15	58	rises. 11m49	8 10 0 47	4 11 9 36	2 37 6 38	8 51 2 15	15
22	2 12 9	45 15	56	4m32 11 9	8 35 0 53	3 51 9 28	2 11 6 13	7 35 0 33	22
29	1 42	10 12 15	54	4 7 10 40	9 0 1 0	3 31 9 20	1 44 5 48	7 40 3 29	29

M D.	W D.	Remarkable Days	HIGH WATER.—LIVERPOOL.				Equation of Time.	
			MORNING.		EVENING.			
			Time.	Height.	Time.	Height.	/	//
1	G	Easter Sunday	—	—	0 1	17 11	3	58
2	M	Proper Lessons. [Exodus xii; Rom. vi. — xiv; Acts ii to v 22	0 16	17 5	0 32	17 8	3	39
3	Tu	Easter Tuesday	0 48	17 2	1 5	17 1	3	21
4	W	Ambrose, Bishop	1 22	16 7	1 37	16 1	3	3
5	Th	Altair rises 11 a 51	1 53	15 8	2 12	14 11	2	46
6	F	Cam. Term begins	2 30	14 8	2 49	13 8	2	28
7	S	Prince Leop. b. 1853	3 9	13 6	3 31	12 4	2	11
8	G	1st Sun. after Easter	3 57	12 4	4 27	11 3	1	54
9	M	Proper Lessons. [Numbers xvi; Acts v. — xxii; Hebrews x.	5 6	11 8	5 48	10 11	1	37
10	Tu	Regulus souths 8 a 46	6 27	12 0	7 7	11 9	1	20
11	W	Oxford Term begins	7 47	13 2	8 18	13 1	1	4
12	Th	Dr. Young died, 1765	8 46	15 2	9 14	15 6	0	48
13	F	Sir G.C.Lewis d. 1863	9 39	17 3	10 4	17 4	0	32
14	S	Sirius sets 9 a 37	10 22	18 10	10 43	18 9	0	17
15	G	2 Sun. after Easter	11 7	19 11	11 16	19 8	0	2
16	M	[Numbers xxiii, xxiv; Acts xii. xxv; James iv.	11 49	20 4	—	—	0	13
17	Tu	B. Franklin died 1790	0 11	20 1	0 33	20 3	0	27
18	W	Judge Jeffries d. 1689	0 57	19 9	1 22	19 2	0	41
19	Th	Alphege, Archbishop	1 47	18 4	2 11	17 5	0	54
20	F	Span, Fleet des. 1657	2 37	16 11	3 3	15 6	1	7
21	S	Bishop Heber b. 1783	3 30	15 2	3 58	13 6	1	20
22	G	3 Sun. after Easter	4 31	13 8	5 8	12 2	1	32
23	M	Proper Lessons. [Deut. iv; Acts xix. — v; 2 Peter i.	5 47	12 9	6 26	11 9	1	44
24	Tu	Cromwell born, 1599	7 4	13 2	7 40	12 6	1	56
25	W	St. Mark, Evangelist	8 13	14 1	8 44	13 7	2	7
26	Th	Regulus souths 7 a 43	9 11	15 0	9 32	14 8	2	17
27	F	Sir W. Jones d. 1794	9 51	15 11	10 12	15 8	2	27
28	S	Mut. of Bounty	10 29	16 7	10 45	16 4	2	37
29	G	4 Sun. after Easter	11 2	16 11	11 19	16 9	2	46
30	M	Proper Lessons. [Deut vi; Acts xxvi. — vii; 1 John v.	11 34	17 1	11 51	17 0	2	54





1866.

APRIL 30 Days.

9

Bristol tides										SUN.				MOON.				ASPECTS AND WEATHER.	
M	morn. even. height			rises. sets.			rt. ascen.			declin. N.			sets.	souths		declin.		D.	
D.	H. M.	H. M.	F. I.	H. M.	H. M.	H. M.	H. M.	S.	° / '	° / '	° / '	° / '	H. M.	H. M.	° / '	° / '	° / '		
1	7 51	8 7 31	9	5 36	6 33	0 42	26	4 33	58	8 a 15	0 m 40	7 13	16	1				1	Showery,
2	8 23	8 38 31	5	5 33	6 35	0 46	4	4 57	3	9 18	1 24	10 36	17	2				2	h δ ☉, 6 a 28
3	8 55	9 10 30	8	5 31	6 37	0 49	42	5 20	3	10 18	2 8	13 31	18	3				3	inclined
4	9 23	9 37 29	3	5 28	6 39	0 53	21	5 42	57	11 15	2 54	15 49	19	4				4	☿ stationary
5	9 55	10 10 27	9	5 26	6 41	0 57	0	6 5	46	morn	3 40	17 26	20	5				5	to rainy
6	10 26	10 43 25	9	5 24	6 43	1 0	39	6 28	28	0 9	4 28	18 14	21	6				6	☿ ☿ ☿, 7 a 5
7	11 2	11 24 23	4	5 21	6 45	1 4	18	6 51	3	1 0	5 16	18 9	22	7				7	weather.
8	11 50	— — 21	3	5 19	6 46	1 7	58	7 13	32	1 45	6 6	17 9	23	8				8	Now
9	0 25	1 1 20	3	5 16	6 48	1 11	37	7 35	53	2 23	6 56	15 14	24	9				9	☿ ☿ ☿, 8 m 16
10	1 37	2 24 21	7	5 14	6 50	1 15	17	7 58	7	2 54	7 47	12 25	25	10				10	more
11	3 12	3 49 24	4	5 11	6 52	1 18	58	8 20	13	3 23	8 38	8 48	26	11				11	fair
12	4 20	4 48 28	7	5 9	6 54	1 22	38	8 42	10	3 51	9 30	4 33	27	12				12	☿ ☿ ☿, 2 a 2
13	5 15	5 42 31	8	5 7	6 56	1 26	19	9 3	59	4 18	10 23	0 n. 8	28	13				13	and
14	6 2	6 26 33	0	5 4	6 58	1 30	0	9 25	39	4 46	11 18	4 56	29	14				14	☉ ecl., invis.
15	6 53	7 14 35	1	5 2	6 59	1 33	42	9 47	10	sets.	0 a 14	9 29	N 15	15				15	☿ ☿ ☿, 2 m 42
16	7 38	8 2 36	4	5 0	7 1	1 37	24	10 8	31	8 a 51	1 13	13 23	1	16				16	☿ ☿ ☿, 2 m 54
17	8 24	8 47 36	2	4 57	7 3	1 41	6	10 29	41	10 8	2 13	16 17	2	17				17	warm,
18	9 10	9 33 34	8	4 55	7 5	1 44	49	10 50	42	11 18	3 13	17 57	3	18				18	with
19	9 55	10 17 32	3	4 53	7 7	1 48	32	11 11	32	morn	4 12	18 17	4	19				19	☿ ☿ ☿, 4 a 46
20	10 39	11 2 29	4	4 51	7 9	1 52	15	11 32	10	0 16	5 9	17 23	5	20				20	frequent
21	11 26	11 55 25	9	4 48	7 11	1 55	59	11 52	37	1 2	6 3	15 26	6	21				21	☿ ☿ ☿, 6 m 49
22	— —	0 27 22	11	4 46	7 12	1 59	43	12 12	53	1 40	6 54	12 40	7	22				22	showers,
23	1 0	1 36 21	11	4 43	7 14	2 3	28	12 32	56	2 12	7 42	9 19	8	23				23	which
24	2 22	3 5 23	4	4 41	7 16	2 7	13	12 52	47	2 38	8 27	5 36	9	24				24	changes
25	3 44	4 17 25	8	4 39	7 18	2 10	59	13 12	25	3 1	9 12	1 42	10	25				25	to fair
26	4 45	5 7 27	1	4 37	7 20	2 14	45	13 31	50	3 24	9 56	2 s 13	11	26				26	☿ stationary
27	5 27	5 51 28	6	4 35	7 22	2 18	31	13 51	2	3 45	10 38	6 0	12	27				27	and
28	6 10	6 28 29	2	4 32	7 24	2 22	18	14 10	0	4 6	11 21	9 31	13	28				28	☿ in ☉, 0 a 23
29	6 47	7 5 29	11	4 30	7 25	2 26	6	14 28	41	rises. morn	— —	— —	F 29	29				29	h ☿ ☉, 2 a 30
30	7 22	7 41 30	5	4 28	7 27	2 29	54	14 47	14	8 a 11	0 6	12 37	15	30				30	warm.

LUNAR DISTANCES FROM THE SUN.
Mean Astronomical Time at Greenwich.

M.	NOON.		3 HOURS.		6 HOURS.		9 HOURS.		MIDN.		15 HOUR.		18 HOUR.		21 HOUR.	
D.	° / '	° / '	° / '	° / '	° / '	° / '	° / '	° / '	° / '	° / '	° / '	° / '	° / '	° / '	° / '	° / '
42	132 56	46 131 35	16 130 13	43 128 52	7 127 30	27 126 8	43 124 46	55 123 25	1 122 3	1 120 40	55 119 18	43 117 56	23 116 33	56 115 11	21 113 48	37 112 25
5	122 3	1 120 40	55 119 18	43 117 56	23 116 33	56 115 11	21 113 48	37 112 25	44 111 2	41 109 39	28 108 16	4 106 52	29 105 28	42 104 4	42 102 40	30 101 16
6	111 2	41 109 39	28 108 16	4 106 52	29 105 28	42 104 4	42 102 40	30 101 16	4 99 51	23 98 26	28 97 1	18 95 35	51 94 10	9 92 44	10 91 17	53 89 51
7	99 51	23 98 26	28 97 1	18 95 35	51 94 10	9 92 44	10 91 17	53 89 51	18 88 24	25 86 57	12 85 29	40 84 1	47 82 33	34 81 5	0 79 36	4 78 6
8	88 24	25 86 57	12 85 29	40 84 1	47 82 33	34 81 5	0 79 36	4 78 6	15 76 37	6 75 7	2 73 36	35 72 5	44 70 34	29 69 2	50 67 30	45 65 58
9	76 37	6 75 7	2 73 36	35 72 5	44 70 34	29 69 2	50 67 30	45 65 58	15 64 25	20 62 51	58 61 18	11 59 43	57 58 9	18 56 34	11 54 58	37 53 22
10	64 25	20 62 51	58 61 18	11 59 43	57 58 9	18 56 34	11 54 58	37 53 22	15 51 46	11 50 9	17 48 31	57 46 54	10 45 15	57 43 37	17 41 58	12 40 18
11	51 46	11 50 9	17 48 31	57 46 54	10 45 15	57 43 37	17 41 58	12 40 18	15 38 38	45 36 58	23 35 17	37 33 36	27 31 54	53 30 12	57 28 30	39 26 47
12	38 38	45 36 58	23 35 17	37 33 36	27 31 54	53 30 12	57 28 30	39 26 47	15 31 25	49 33 10	48 34 55	31 36 39	59 38 24	10 40 8	4 41 51	39 43 34
13	31 25	49 33 10	48 34 55	31 36 39	59 38 24	10 40 8	4 41 51	39 43 34	15 45 17	52 47 0	28 48 42	43 50 24	37 52 6	10 53 47	19 55 28	6 57 8
14	45 17	52 47 0	28 48 42	43 50 24	37 52 6	10 53 47	19 55 28	6 57 8	15 58 48	31 60 28	9 62 7	22 63 46	12 65 24	37 67 2	38 68 40	16 70 17
15	58 48	31 60 28	9 62 7	22 63 46	12 65 24	37 67 2	38 68 40	16 70 17	15 71 54	18 73 30	42 75 6	43 76 42	20 78 17	33 79 52	23 81 26	49 83 0
16	71 54	18 73 30	42 75 6	43 76 42	20 78 17	33 79 52	23 81 26	49 83 0	15 84 34	32 86 7	50 87 40	44 89 13	18 90 45	29 92 17	19 93 48	47 95 19
17	84 34	32 86 7	50 87 40	44 89 13	18 90 45	29 92 17	19 93 48	47 95 19	15 96 50	43 98 21	10 99 51	18 101 21	7 102 50	37 104 19	48 105 48	42 107 17
18	96 50	43 98 21	10 99 51	18 101 21	7 102 50	37 104 19	48 105 48	42 107 17	15 108 45	36 110 13	38 111 41	23 113 8	52 114 36	6 116 3	5 117 29	49 118 56
19	108 45	36 110 13	38 111 41	23 113 8	52 114 36	6 116 3	5 117 29	49 118 56	15 120 22	34 121 48	36 123 14	25 124 40	1 126 5	25 127 30	36 128 55	36 130 20
20	120 22	34 121 48	36 123 14	25 124 40	1 126 5	25 127 30	36 128 55	36 130 20								

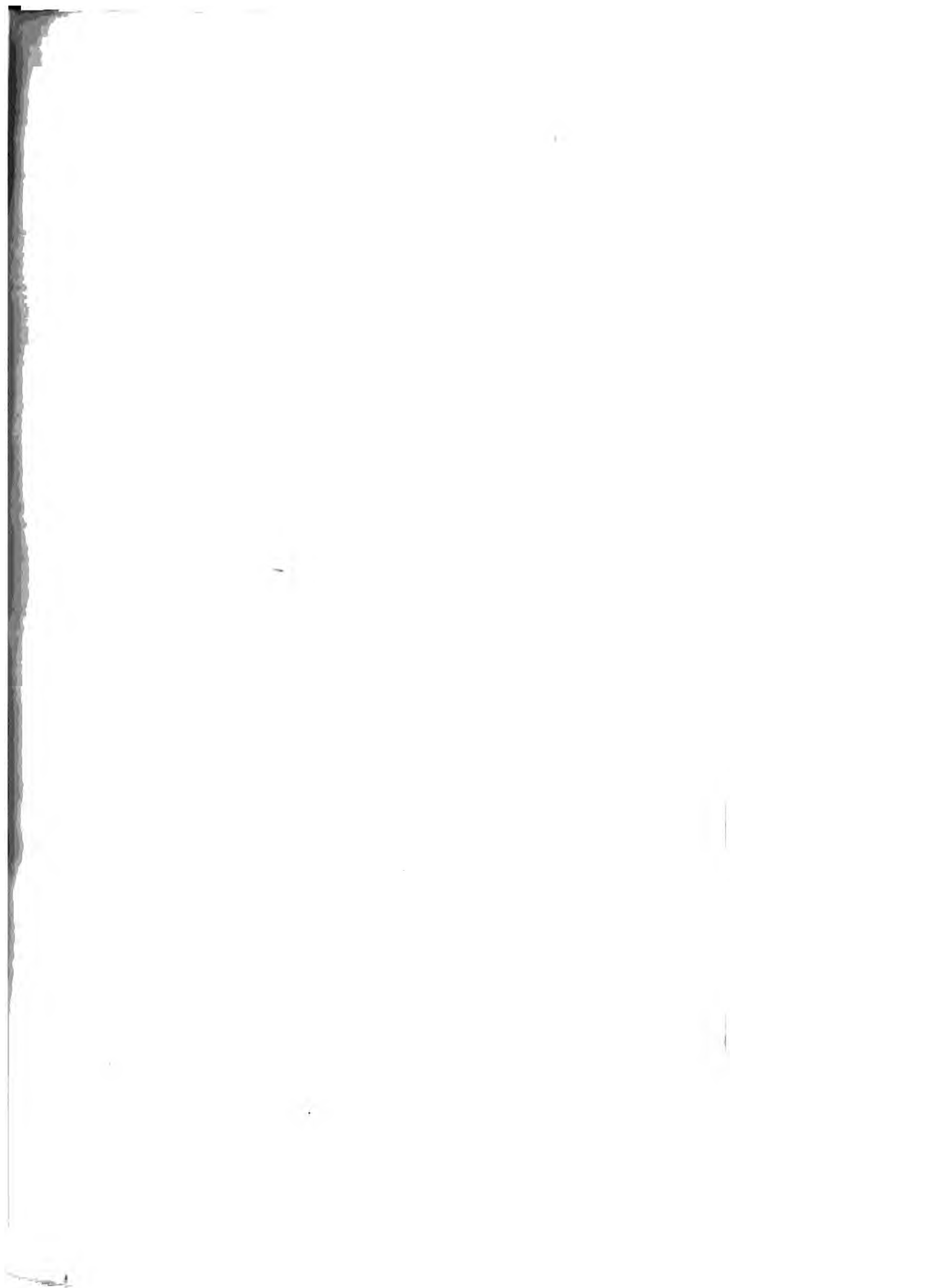
THE SUN'S RIGHT ASCENSION is given in time to the nearest second for Greenwich mean noon, and with the table of the right ascension of the principal fixed stars, given in page 29, is useful to find the time by the meridian distance of those stars.

The SUN'S DECLINATION is also given for Greenwich mean noon, and may be reduced to any other place by applying the proportional part of the daily difference.

PHASES OF THE MOON. { LAST QUARTER, 7th day, at 9h. 42m. night.
NEW MOON, 14th day, at 2h. 58m. afternoon.
FIRST QUARTER, 21st day, at 9h. 58m. morning.
FULL MOON, 29th day, at 1h. 18m. afternoon.

M D.	Day	Twil. ends	☉'s semi.	☿ Mercury es sout.	♀ Venus. sets. sout.	♂ Mars. rises. sout.	♃ Jupiter. rises. sout.	♄ Saturn. sets. sout.	M D.
1	1m31	10a28	15 54	4 m 2 10m34	9a7 1a3	3m26 9m18	1m38 5m40	4 50 11a51	1
8	0 25	11 16	15 52	3 46 10 22	9 30 1 11	3 6 9 10	1 11 5 14	4 21 11 21	8
15	noreal night.	noreal night.	15 51	3 32 10 20	9 51 1 20	2 46 9 2	0 44 4 47	3 52 10 52	15
22	noreal night.	noreal night.	15 50	3 19 10 26	10 9 1 29	2 26 3 54	0 13 4 20	3 22 10 22	22
29	noreal night.	noreal night.	15 49	3 7 10 41	10 22 1 39	2 7 8 46	11a41 3 52	2 52 9 53	29

M D.	W D.	Remarkable Days	HIGH WATER. - LIVERPOOL.				Equation of Time.	
			MORNING.		EVENING.			
			Time.	Height	Time.	Height.		
1	Tu	St. Philip & St. James	—	—	0 7	17 0	3	2
2	W	Camden born, 1551	0 21	16 11	0 8	17 7	3	9
3	Th	Invent. of the Cross	0 56	16 7	1 12	16 11	3	16
4	F	Dr. Barrow d. 1677	1 28	16 0	1 47	15 1	3	22
5	S	N. Bonaparte d. 1821	2 7	15 1	2 27	14 1	3	28
6	G	Rogation Sunday	2 49	14 2	3 11	13 0	3	33
7	M	[Deut. viii; Matthew iv — ix; Romans v.]	3 35	13 4	4	12 3	3	38
8	Tu	Easter Term ends	4 35	12 9	5 12	11 10	3	42
9	W	Procyon sets 11 a 7	5 49	12 8	6 26	12 4	3	45
10	Th	Ascension Day	7 2	13 9	7 36	13 8	3	48
11	F	Lord Chatham d. 1778	8 10	15 4	8 36	15 5	3	50
12	S	Spica sou hs 9 a 56	9 3	16 11	9 29	17 0	3	52
13	G	Sun. af. Ascens. Day	9 55	18 3	10 20	18 4	3	53
14	M	Proper Lessons. [Deut. xii; Matthew xi. — xii; Rom. xii.]	10 40	19 2	11 6	19 4	3	53
15	Tu	Cuvier died, 1832	11 29	19 9	11 52	19 9	3	53
16	W	D. O'Connell d., 1847	—	—	0 18	19 6	3	52
17	Th	Dr. Jenner born 1794	0 43	19 5	1 7	18 7	3	51
18	F	B. Franklin died 1790	1 31	18 6	1 40	17 1	3	49
19	S	Oxford T. ends	2 22	17 1	2 48	15 5	3	47
20	G	Whit Sunday.	3 14	15 7	3 42	13 10	3	44
21	M	Pro. [Deut. xvi to v. 18; Acts x v. 34 Les. [sa ah xi; Acts xix to v 21.]	4 10	14 2	4 40	12 7	3	41
22	Tu	Whit Tuesday	5 14	13 4	5 51	11 11	3	37
23	W	Ox. Trin. Term begins	6 26	13 0	6 54	12 3	3	32
24	Th	Q. Victoria b. 1819	7 27	13 5	7 58	12 11	3	27
25	F	Prin. Helena b. 1846	8 25	14 1	8 53	13 10	3	22
26	S	Augustine Archbishop	9 18	14 10	9 39	14 10	3	16
27	G	Trinity Sunday.	9 59	15 5	10 19	15 6	3	9
28	M	Proper Lessons. [Genesis i; Matt. iii. — xviii; 1 John v.]	10 36	15 10	10 52	16 0	3	3
29	Tu	K. Chas. II. restored	11 10	16 1	11 27	16 5	2	55
30	W	Sir H. Davy d., 1829	11 43	16 2	—	—	2	47
31	Th	A. Pope died 1744	0 1	16 7	0 10	16 2	2	39



1866.

MAY 31 Days.

11

Bristol tides				SUN.				MOON.				ASPECTS AND WEATHER.	
m	morn.	even.	height	rises.	sets.	rt. ascen.	decl. N	rises.	south.	decl.	m	D.	
D.	H. M.	H. M.	F. I.	H. M.	H. M.	H. M. S.	° ' "	H. M.	H. M.	° ' "	D.		
1	7 58	8 12	30 0	4 26	7 29	2 33 43	15 5 29	9a10	0m51	15 16	1	1	☿ in Aphelion
2	8 28	8 45	30 1	4 24	7 31	2 37 32	15 23 30	10 6	1 37	17 2	2	2	Expect showers
3	9 0	9 14	29 3	4 22	7 33	2 41 22	15 41 15	10 57	2 24	18 7	3	3	if the wind
4	9 31	9 50	28 0	4 20	7 35	2 45 12	15 58 44	11 42	3 13	18 21	4	4	
5	10 7	10 25	26 8	4 18	7 37	2 49 3	16 15 58	morn	4 1	17 41	5	5	
6	10 44	11 5	24 11	4 16	7 38	2 52 54	16 32 56	0 21	4 50	13 8	6	6	☿ ☿ (, 7 a 47
7	11 28	11 57	23 4	4 14	7 40	2 56 46	16 49 38	0 55	5 39	13 42	7	7	be southerly;
8	—	0 29	22 0	4 12	7 42	3 0 39	17 6 2	1 25	6 29	10 29	8	8	☿ in Perihel.
9	1 2	1 36	22 8	4 10	7 43	3 4 32	17 22 10	1 52	7 19	6 36	9	9	fair
10	2 22	3 3	25 4	4 8	7 45	3 8 26	17 38 0	2 18	8 9	2 12	10	10	☿ ☿ (, 11m40
11	3 42	4 10	28 5	4 6	7 47	3 12 20	17 53 33	2 44	9 2	2 28	11	11	☿ gr elon. W
12	4 38	5 5	31 2	4 5	7 49	3 16 15	18 8 48	3 12	5 56	7 8	12	12	if the wind
13	5 33	6 1	33 2	4 3	7 51	3 20 11	18 23 44	3 42	10 53	11 25	13	13	☿ ☿ (, 11m44
14	6 24	6 52	34 0	4 1	7 52	3 24 7	18 38 22	sets.	11 53	14 56	14	14	be
15	7 17	7 42	35 4	4 0	7 54	3 28 3	18 52 41	56	0a54	17 20	15	15	☿ ☿ (, 4 m13
16	8 9	8 34	35 2	3 58	7 56	3 32 1	19 6 41	0 2	1 55	18 23	16	16	north
17	8 57	9 17	34 1	3 56	7 57	3 35 59	19 20 22	0 56	2 56	18 3	17	17	or
18	9 40	10 4	32 0	3 54	7 59	3 39 57	19 33 43	1 39	3 53	16 29	18	18	☿ stationary
19	10 26	10 48	29 6	3 53	8 0	3 43 56	19 46 45	morn	4 47	13 56	19	19	northeast.
20	11 13	11 37	2 7	3 51	8 2	3 47 55	19 59 26	0 12	5 38	10 42	20	20	☿ gr. hel. la. S
21	—	0 3	2 1	3 50	8 3	3 51 55	20 11 46	0 42	6 25	7 1	21	21	Showery
22	0 32	1 4	22 4	3 48	8 5	3 55 56	20 23 46	1 8	7 10	3 6	22	22	with intervals
23	1 36	2 10	2 6	3 47	8 7	3 59 57	20 35 25	1 31	7 54	0 51	23	23	☿ ☿ (, 11a11
24	2 51	3 28	23 11	3 46	8 8	4 3 58	20 46 43	1 52	8 37	4 43	24	24	of warm weather.
25	3 57	4 27	2 6	3 44	8 10	4 8 0	20 57 39	2 14	9 20	8 21	25	25	☿ ☿ ☿, 0 a 23
26	4 53	5 15	26 10	3 43	8 11	4 12 3	21 8 13	2 37	10 4	11 37	26	26	☿ in Perihel.
27	5 36	5 59	27 9	3 42	8 13	4 16 6	21 18 26	3 1	11 48	1 23	27	27	
28	6 17	6 36	28 2	3 41	8 14	4 20 9	21 28 17	3 28	11 34	16 31	28	28	
29	6 56	7 14	28 9	3 40	8 15	4 24 13	21 37 45	rises.	morn	—	29	29	
30	7 32	7 52	29 4	3 38	8 17	4 28 17	21 46 51	8a55	0 22	17 55	30	30	
31	8 8	8 25	29 4	3 37	8 18	4 32 22	21 55 35	9 42	1 10	18 29	31	31	

LUNAR DISTANCES FROM THE SUN.

Mean Astronomical Time at Greenwich.

M.	Noon.	3 Hours.	6 Hours.	9 Hours.	Midn.	15 Hour.	18 Hour.	21 Hour.
D.	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "
3a	140 21 8	138 58 37	137 35 59	136 13 14	134 50 21	133 27 20	132 4 10	130 40 52
4	129 17 24	127 53 47	126 30 0	125 6 3	123 41 55	122 17 36	120 53 6	119 28 23
5	118 3 28	116 38 21	115 13 0	113 47 25	112 21 36	110 55 33	109 29 14	108 2 40
6	106 35 50	105 8 44	103 41 20	102 13 39	100 45 41	99 17 24	97 48 48	96 19 54
7	94 50 39	93 21 5	91 51 10	90 20 54	88 50 17	87 19 18	85 47 57	84 16 13
8	82 44 7	81 11 38	79 38 45	78 5 28	76 31 48	74 57 43	73 23 14	71 48 20
9	70 13 2	68 37 18	67 1 9	65 24 36	63 47 37	62 10 13	60 32 24	58 54 10
10	57 15 32	55 36 28	53 57 0	52 17 9	50 36 53	48 56 14	47 15 13	45 33 49
11	43 52 3	42 9 56	40 27 29	38 44 42	37 1 37	35 18 14	33 34 35	31 50 41
12	30 33 28	28 43 53	26 58 32	25 13 48	23 28 21	21 43 34	20 8 28	18 23 2
13	17 0 33	15 14 42	13 29 3	11 44 0	10 9 29	8 24 10	6 38 13	4 52 16
14	3 35 55	2 32 7	1 57 9	0 14 58	0 54 60	0 22 9	0 33 20	0 8 17
15	12 42 68	11 16 52	9 50 32	7 23 46	5 56 36	4 29 0	3 1 0	1 32 36
16	79 3 48	80 34 37	82 5 2	83 35 5	85 4 46	86 34 4	88 3 2	89 31 38
17	90 59 53	92 27 49	93 55 26	95 22 43	96 49 42	98 16 23	99 42 46	101 8 52
18	102 34 41	104 0 15	105 25 32	106 50 35	108 15 24	109 39 58	111 4 18	112 28 26
19	113 52 21	115 16 4	116 39 35	118 2 55	119 26 5	120 49 4	122 11 54	123 34 34
20	124 57 5	126 19 27	127 41 42	129 3 48	130 25 47	131 47 40	133 9 25	134 31 4

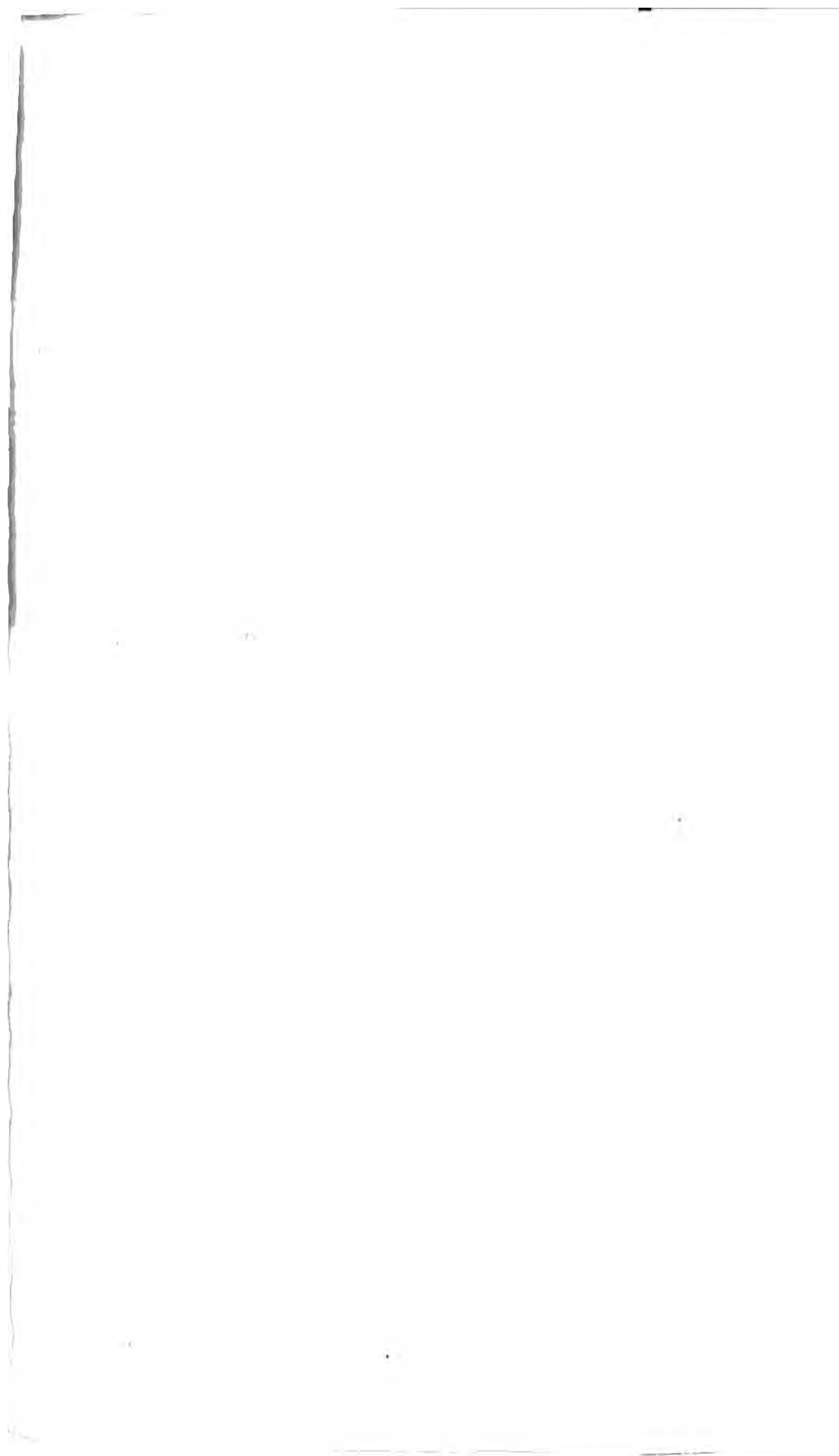
THE SUN'S RISING AND SETTING, and the MOON'S RISING, SOUTHING, AND SETTING are given, for Latitude $54^{\circ} 10' N.$, and Longitude $4^{\circ} 30' W.$

THE MOON'S DECLINATION is given to the nearest minute for her transit over the meridian of Greenwich.

PHASES OF THE MOON.	LAST QUARTER,	6th day, at 7h. 13m. morning.
	NEW MOON,	12th day, at 10h. 7m. night.
	FIRST QUARTER,	19th day, at 11h. 45m. night.
	FULL MOON,	28th day, at 3h. 35m. morning.

M D.	Day brek.	Twil. ends.	☉'s semi.	☿ Mercury rises. sout.	♀ Venus. sets. sout.	♂ Mars. rises. sout.	♃ Jupiter. rises. sout.	♄ Saturn. sets. sout.	M D.
1	no real ni.	no real ni.	15 48	3 m 4 10 m 50	10 a 27 1 a 43	1 m 59 8 m 43	11 33 3 m 40	2 m 39 9 a 40	1
8	no real ni.	no real ni.	15 47	3 4 11 18	10 31 1 53	1 39 8 35	11 53 11	2 11 9 12	8
15	no real ni.	no real ni.	15 47	sets. 11 55	10 32 2 2	1 20 8 27	10 37 2 42	1 43 8 43	15
22	no real ni.	no real ni.	15 46	9 a 19 0 a 35	10 29 2 10	1 2 8 19	10 8 2 12	1 15 8 14	22
29	no real ni.	no real ni.	15 46	9 41 1 8	10 21 2 17	0 4 8 11	9 38 1 41	0 46 7 46	29

M D	W D	Remarkable Days	HIGH WATER.—LIVERPOOL.				Equation of Time.
			MORNING.		EVENING.		
			Time.	Height.	Time.	Height.	/' "
1	F	Nicomede, Martyr	0 35	16 7	0 51	16 10	2 31
2	S	Antares souths 11 a 36	1 11	16 4	1 28	15 4	2 22
3	G	1 Sun. after Trinity	1 49	15 9	2 9	14 8	2 12
4	M	Pro. [Joshua x; Mark iv. Les. [— xxiii; 2 Cor. i.	2 33	15 2	2 55	14 1	2 2
5	Tu	Boniface, Bishop	3 19	14 7	3 44	13 5	1 52
6	W	J. Bentham d. 1832	4 11	13 11	4 42	12 10	1 41
7	Th	Reform Bill pas. 1832	5 15	13 8	5 53	13 0	1 31
8	F	Iyra souths 1 m 28	6 24	14 1	6 54	13 10	1 19
9	S	Dr. Rees died, 1825	7 31	15 0	8 1	15 1	1 8
10	G	2 Sun. after Trinity	8 33	16 2	9 5	16 6	0 56
11	M	Proper [Judges iv; Mark xi. Lessons. [— v; 2 Cor. viii.	9 34	17 5	9 59	17 10	0 44
12	Tu	Trinity Term ends	10 27	18 7	10 51	18 10	0 32
13	W	Regulus sets 11 a 50	11 17	18 8	11 39	19 2	0 19
14	Th	B. of Marengo, 1800	— —	— —	0 6	18 8	0 7
15	F	Luther excom. 1520	0 29	19 1	0 53	18 1	0 6
16	S	J. Wesley born, 1703	1 17	18 6	1 42	17 0	0 19
17	G	3 Sun. after Trinity	2 6	17 5	2 29	15 8	0 32
18	M	Proper [1 Samuel ii; Luke i. Lessons. [— iii; Gala. i.	2 53	16 2	3 16	14 6	0 44
19	Tu	B. of Waterloo, 18th	3 41	14 11	4 4	13 3	0 57
20	W	Accession Q. Victoria	4 31	13 9	4 58	12 4	1 10
21	Th	Queen Victoria, Proc.	5 29	12 11	6 0	11 11	1 23
22	F	Cambridge T. ends	6 34	12 7	7 5	12 3	1 36
23	S	St. John B. 24th	7 36	12 11	8 9	12 10	1 49
24	G	4 Sun. after Trinity	8 38	13 6	9 4	13 9	2 2
25	M	[1 Samuel xii; Matt. iii. — xiii; Matt. xiv to v. 13	9 27	14 2	9 51	14 7	2 15
26	Tu	George IV. d. 1830	10 13	15 0	10 32	15 5	2 27
27	W	Dr. Dodd, exec. 1774	10 49	15 4	11 8	16 1	2 40
28	Th	Lord Raglan d., 1855	11 25	15 9	11 43	16 7	2 52
29	F	St. Peter, Apostle	11 59	16 1	— —	— —	3 4
30	S	Antares souths 9 a 45	0 17	16 11	0 35	16 3	3 16



Bristol tides			SUN.				MOON.				ASPECTS AND WEATHER	
morn.	even.	height	rises.	sets.	rt. ascen.	declin. N.	rises.	souths declin.	age.			
H. M.	H. M.	F. I.	H. M.	H. M.	H. M. S.	° ' "	H. M.	H. M. / °				
1 8 39	8 59	29 2	3 36	8 19	4 36 27	22 3 55	10a23	1m59 18 s 8	18	1		
2 9 14	9 34	28 7	3 35	8 21	4 40 33	22 11 53	10 59	2 48 16 52	19	2		
3 9 52	10 12	27 10	3 34	8 22	4 44 39	22 19 27	11 30	3 37 14 44	20	3	☾ ☽ ☾, 1 m 34	
4 10 31	10 52	26 11	3 34	8 23	4 48 45	22 16 38	11 57	4 25 11 49	21	4	☾ ☽ ☾, 1 m 34	
5 11 14	11 38	25 7	3 33	8 24	4 52 52	22 33 25	morn	5 14 8 13	22	5	☾ ☽ ☾, 1 m 34	
6 —	0 5	24 5	3 33	8 25	4 56 59	22 39 49	0 22	6 3 4 5	23	6	☾ ☽ ☾, 1 m 34	
7 0 33	1 6	24 0	3 32	8 26	5 1 7	22 45 49	0 47	6 53 0 N	23	7	☾ ☽ ☾, 1 m 34	
8 1 34	2 12	25 2	3 32	8 27	5 5 14	22 51 25	1 13	7 44 4 57	25	8	☾ ☽ ☾, 1 m 34	
9 2 54	3 33	27 9	3 31	8 27	5 9 22	22 56 37	1 41	8 38 9 21	26	9	☾ ☽ ☾, 1 m 34	
10 4 7	4 40	29 11	3 31	8 28	5 13 31	23 1 25	2 12	9 35 13 13	27	10	☾ ☽ ☾, 1 m 34	
11 5 10	5 37	31 11	3 30	8 29	5 17 39	23 5 49	2 49	10 34 16 14	28	11	☾ ☽ ☾, 1 m 34	
12 6 10	6 36	33 3	3 30	8 30	5 21 48	23 9 48	sets.	11 35 18 2	N	12	☾ ☽ ☾, 1 a 21	
13 7 3	7 28	33 10	3 29	8 31	5 25 57	23 13 23	8a42	0a37 18 28	1	13	☾ ☽ ☾, 1 a 21	
14 7 57	8 20	34 0	3 29	8 31	5 30 6	23 16 33	9 33	1 37 17 32	2	14	☾ ☽ ☾, 1 a 21	
15 8 43	9 5	33 5	3 28	8 32	5 34 16	23 19 19	10 13	2 34 15 25	3	15	☾ ☽ ☾, 1 a 21	
16 9 28	9 50	31 11	3 28	8 32	5 38 25	23 21 40	10 44	3 28 12 24	4	16	☾ ☽ ☾, 1 a 21	
17 10 11	10 31	30 0	3 28	8 32	5 42 34	23 23 36	11 11	4 18 8 47	5	17	☾ ☽ ☾, 1 a 21	
18 10 51	11 12	27 11	3 28	8 33	5 46 44	23 25 8	11 35	5 5 4 51	6	18	☾ ☽ ☾, 1 a 21	
19 11 32	11 56	25 5	3 28	8 33	5 50 53	23 26 15	11 57	5 51 0 48	7	19	☾ ☽ ☾, 1 a 21	
20 —	0 19	23 4	3 28	8 34	5 55 3	23 26 57	morn	6 34 3s10	8	20	☾ ☽ ☾, 1 a 21	
21 0 45	1 12	21 11	3 28	8 34	5 59 12	23 27 14	0 18	7 18 6 57	9	21	☾ ☽ ☾, 1 a 21	
22 1 45	2 23	22 2	3 28	8 34	6 3 22	23 27 6	0 40	8 1 10 23	10	22	☾ ☽ ☾, 1 a 21	
23 3 1	3 39	23 5	3 29	8 34	6 7 31	23 26 34	1 4	8 46 13 22	11	23	☾ ☽ ☾, 1 a 21	
24 4 11	4 38	24 9	3 29	8 34	6 11 41	23 25 37	1 21	9 31 15 47	12	24	☾ ☽ ☾, 1 a 21	
25 5 2	5 27	26 1	3 29	8 34	6 15 50	23 24 15	2 2	10 18 17 29	13	25	☾ ☽ ☾, 1 a 21	
26 5 51	6 12	26 9	3 30	8 34	6 19 59	23 22 28	2 38	11 6 18 23	14	26	☾ ☽ ☾, 1 a 21	
27 6 31	6 53	27 8	3 30	8 34	6 24 8	23 20 17	3 21	11 55 18 24	F	27	☾ ☽ ☾, 1 a 21	
28 7 11	7 32	28 7	3 31	8 34	6 28 17	23 17 41	rises.	morn —	16	28	☾ ☽ ☾, 1 a 21	
29 7 49	8 8	29 5	3 31	8 34	6 32 26	23 14 41	9 a 2	1 34 17 28	17	29	☾ ☽ ☾, 1 a 21	
30 8 26	8 4	29 11	3 32	8 34	6 36 34	23 11 16	9 3	2 2 15 38	18	30	☾ ☽ ☾, 1 a 21	

LUNAR DISTANCES FROM THE SUN.

Mean Astronomical Time at Greenwich.

M.	Noon.	3 Hours.	6 Hours.	9 Hours.	Midn.	15 Hour.	18 Hour.	21 Hour.
D.	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "
28	135 25 21	133 59 26	132 33 18	131 6 57	129 40 22	128 13 35	126 46 33	125 19 17
29	123 51 48	122 24 4	120 56 5	119 27 51	117 59 22	116 30 38	115 1 38	113 32 22
30	112 2 50	110 33 1	109 2 55	107 32 32	106 1 52	104 30 53	102 59 37	101 28 3
1	99 56 10	98 23 58	96 51 28	95 18 38	93 45 28	92 11 59	90 38 9	89 4 0
2	87 29 31	85 54 41	84 19 30	82 43 59	81 8 7	79 31 54	77 55 20	76 18 25
3	74 41 10	73 3 33	71 25 36	69 47 19	68 8 41	66 29 42	64 50 23	63 10 45
4	61 30 47	59 50 30	58 9 54	56 28 59	54 47 48	53 6 18	51 24 32	49 42 31
5	48 0 14	46 17 42	44 34 57	42 52 0	41 8 51	39 25 32	37 42 4	35 58 28
6	34 14 47	32 31 1	30 47 13	29 3 25	27 19 40	25 36 0	23 52 30	22 9 14
7	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..
8	22 26 28	24 5 44	25 44 56	27 24 0	29 2 54	30 41 33	32 19 57	33 58 5
9	35 35 53	37 13 22	38 50 30	40 27 17	42 3 43	43 39 45	45 15 24	46 50 40
10	48 25 32	50 0 0	51 34 3	53 7 43	54 40 59	56 13 50	57 46 17	59 18 20
11	60 49 59	62 21 14	63 52 5	65 22 34	66 52 39	68 22 21	69 51 41	71 20 39
12	72 49 16	74 17 31	75 45 26	77 13 0	78 40 14	80 7 8	81 33 43	83 0 0
13	84 25 59	85 51 41	87 17 5	88 42 13	90 7 5	91 31 42	92 56 4	94 20 11
14	95 44 5	97 7 46	98 31 14	99 54 30	101 17 34	102 40 27	104 3 10	105 25 43
15	106 48 6	108 10 21	109 32 27	110 54 26	112 16 17	113 38 2	114 59 40	116 21 12
16	117 42 39	119 4 1	120 25 19	121 46 33	123 7 43	124 28 51	125 49 55	127 10 58
17	128 31 58	129 52 57	131 13 55	132 34 52	133 55 48	135 16 44	136 37 40	137 58 36

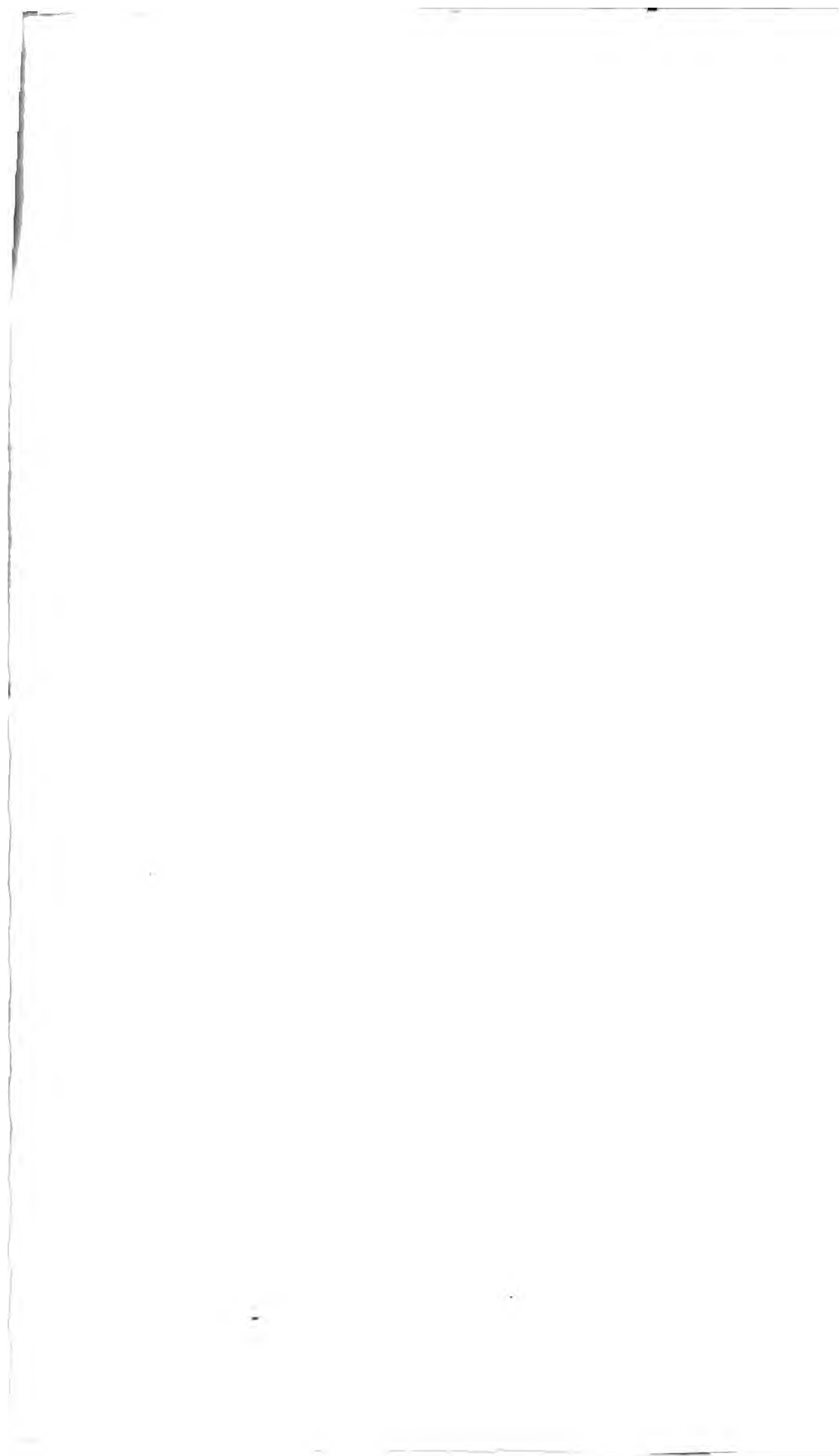
THE MOON'S SEMI-DIAMETER is given to the nearest second for Greenwich mean noon and midnight on page 26, and the HORIZONTAL PARALLAX on page 27.

THE LUNAR DISTANCES FROM THE SUN are given with a view to assist those who may not have an opportunity of using the Nautical Almanack, and are given for every three hours of Greenwich astronomical mean time. As the rest of the Almanack is adapted to Civil time, this distinction must be kept in mind; the Civil

PHASES OF THE MOON. { LAST QUARTER, 5th day, at 2h. 3m. afternoon.
NEW MOON, 12th day, at 5h. 35m. morning.
FIRST QUARTER, 19th day, at 3h. 41m. afternoon.
FULL MOON, 27th day, at 4h. 13m. afternoon.

M D.	Day	Twil	☉'s	♂ Mercury	♀ Venus	♂ Mars.	♂ Jupiter.	♂ Saturn.	M D.
	brek.	end.	semi.	sets. sout.	sets. sout.	rises. sout.	rises. sout.	sets. sout.	
1	no real ni.	no real ni.	15 46	9 a 43 1 a 16	10 a 18 2 a 19	0 m 38 8 m 9	9 a 30 1 m 32	m 3: 7 a 38	1
8	no real ni.	no real ni.	15 46	9 40 1 38	10 6 2 25	0 21 8 1	9 1 1 2	1 7 11	8
15	no real ni.	no real ni.	15 46	9 26 1 50	9 52 2 30	0 47 53	8 31 0 30	11 a 43 6 43	15
22	no real ni.	no real ni.	15 47	9 51 53	9 36 2 33	11 a 45 7 45	sets. 11 a 55	11 15 6 16	22
29	no real ni.	no real ni.	15 48	8 38 1 47	9 19 2 36	11 29 7 37	3 m 20 11 23	10 48 5 49	29

M D.	W D.	Remarkable Days	HIGH WATER.—LIVERPOOL.				Equation of Time.	
			MORNING.		EVENING.			
			Time.	Height.	Time.	Height.		
1	☉	5 Sun. after Trinity	0 55	17 1	1 14	16 2	3 28	
2	M	Proper Lessons. [1 Samuel xv; Luke xiii. — xvii; Philip i.	1 33	16 10	1 53	15 10	3 39	
3	Tu	Dog Days begin	2 17	16 5	2 39	15 4	3 50	
4	W	Trans. St. Martin	3 2	15 10	3 25	14 8	4 1	
5	Th	Chusan taken, 1840	3 51	15 1	4 17	14 0	4 12	
6	F	Old Midsummmer Day	4 47	14 4	5 20	13 7	4 22	
7	S	Oxford Term ends	5 57	13 11	6 31	13 8	4 32	
8	☉	6 Sun. after Trinity	7 5	14 4	7 39	14 7	4 42	
9	M	Proper Lessons. [2 Samuel xii; Luke xx. — xix; Coloss. iv.	8 12	15 3	8 46	15 10	4 51	
10	Tu	Columbus born, 1447	9 18	16 4	9 48	17 1	5 0	
11	W	Lalande born, 1732	10 14	17 2	10 39	18 1	5 8	
12	Th	Erasmus died, 1526	11 5	17 9	11 29	18 8	5 16	
13	F	Dr. Bradley d, 1752	11 53	18 0	—	—	5 24	
14	S	Bastile destroyed, 1789	0 18	18 11	0 40	17 10	5 31	
15	☉	7 Sun. after Trinity	1 0	18 8	1 22	17 5	5 37	
16	M	Pro. [2 Samuel xxi; John iii. Less. [— xxiv; 2 Thess. ii.	1 43	17 11	2 6	16 3	5 43	
17	Tu	Dr. Watts b. 1674	2 27	16 9	2 49	15 2	5 49	
18	W	Earl Grey died, 1845	3 9	15 7	3 29	14 1	5 54	
19	Th	B. Hallidon Hill, 1233	3 51	14 2	4 11	12 5	5 58	
20	F	Margaret V, & M.	4 35	12 9	5 5	12 0	6 2	
21	S	Ld. Russel behd. 1683	5 40	12 0	6 9	11 7	6 5	
22	☉	8 Sun. after Trinity	6 42	11 8	7 15	11 11	6 8	
23	M	[1 Kings xiii; John x. — xvii; 2 Tim. i.	7 50	12 2	8 22	12 10	6 10	
24	Tu	Gibraltar taken, 1804	8 53	12 11	9 20	13 10	6 12	
25	W	St. James, Apostle.	9 42	14 0	10 5	15 0	6 13	
26	Th	St. Anne.	10 26	14 11	10 46	16 1	6 13	
27	F	Fren. Revolution, 1830	11 3	15 10	11 23	17 0	6 13	
28	S	Wilberforce died 1833	11 41	16 7	11 59	17 9	6 12	
29	☉	9 Sun. after Trinity	—	—	0 16	17 2	6 10	
30	M	Proper Lessons [1 Kings xvii; John xvii. — xix; Heb. i.	0 35	18 2	0 55	17 5	6 8	
31	Tu	Ignia. Loyola d. 1556	1 14	18 3	1 34	17 3	6 6	





Bristol tides						SUN.										MOON.										ASPECTS AND WEATHER.	
morn. even.				eign	D.	ises.		sets.		rt. asc.		declin.		N.		rises.		souths declin.		D.	M						
H.	M.	H.	M.			H.	M.	H.	M.	H.	M.	S.	°	'	"	H.	M.	H.	M.			°	'	"			
1	9	3	9	2	30	1	3	33	8	33	6	40	42	23	7	27	10	a	4	2	m	23	12	-57	19	1	Showery and changeable ☉ in Apogee weather may be
2	9	3	10		9	8	3	34	8	33	6	44	50	23	3	14	10	21	3	12	9	33			20	2	
3	0	1	10	3	29	2	3	34	8	32	6	48	58	22	58	36	10	55	4	1	5	36			21	3	
4	1	1	11	22	28	0	3	35	8	32	6	53	5	22	53	31	11	18	4	50	1	17			22	4	
5	1	4	—	—	26	6	3	36	8	32	6	57	12	22	48	9	11	43	5	40	3	11			23	5	
6	0	1	0	39	25	1	3	37	8	31	7	1	19	22	42	18	morn	6	31	7	34	24			24	6	
7	1	1	1	41	24	9	3	38	8	30	7	5	26	22	36	6	0	12	7	25	11	35			25	7	
8	2	2	3	5	26	4	3	39	8	3	7	9	32	22	29	29	0	45	8	21	14	55			26	8	♂♂☾, 0 m 2 expected.
9	3	4	4	10	28	6	3	40	8	29	7	13	38	22	22	29	1	26	9	19	17	16			27	9	h stationary
10	4	5	5	24	30	4	3	41	8	28	7	17	43	22	15	6	2	16	10	20	18	24			28	10	♂♂☾, 6 m 0
11	5	5	6	21	31	2	3	42	8	27	7	21	48	22	7	19	3	15	11	20	18	10			29	11	Inclin ed
12	6	5	7	16	32	5	3	43	8	26	7	25	53	21	59	11	sets.	0	a	18	16	40		N	12		to
13	7	4	8	9	33	2	3	44	8	25	7	29	57	21	50	39	8	a	43	1	14	14	5		1	13	
14	8	3	8	50	33	1	3	46	8	24	7	34	0	21	41	45	9	11	2	7	10	43			2	14	♂♂☾, 5 m 24
15	9	1	9	29	32	6	3	47	8	23	7	38	4	21	32	29	9	39	2	57	6	51			3	15	♀♂☾, 1 m 13
16	9	50	10	10	30	9	3	49	8	22	7	42	6	21	22	51	10	4	3	44	2	46			4	16	rain.
17	10	29	10	46	29	1	3	50	8	20	7	46	8	21	12	51	10	26	4	29	1	s	20		5	17	Now
18	11	3	11	22	27	0	3	51	8	19	7	50	10	21	2	29	10	47	5	14	5	15			6	18	♂ in ☿, 1 a 49
19	11	39	12	0	24	3	3	53	8	18	7	54	11	20	51	46	11	9	5	57	8	53			7	19	more
20	—	—	0	25	22	1	3	54	8	17	7	58	11	20	40	42	11	34	6	41	12	5			8	20	♂☉, 8 m 30
21	0	56	1	21	20	10	3	56	8	15	8	2	11	20	29	18	morn	7	26	14	45				9	21	fair
22	1	53	2	33	21	0	3	57	8	14	8	6	10	20	17	32	0	3	8	13	16	46			10	22	and
23	3	16	3	54	22	9	3	59	8	12	8	10	9	20	5	56	0	38	9	0	18	1			11	23	warm
24	4	26	4	54	24	7	4	0	8	11	8	14	7	19	53	0	1	18	9	4	18	25			12	24	♂ gr. elon. E.
25	5	17	5	42	26	5	4	2	8	9	8	18	4	19	40	15	2	5	10	38	17	53			13	25	towards
26	6	5	6	28	27	2	4	3	8	8	8	22	1	19	27	9	3	0	11	2	16	25			14	26	the end
27	6	47	7	9	28	11	4	5	8	6	8	25	58	19	13	44	rises.	morn	—	—					F	27	♂☾, 3 m 26
28	7	29	7	49	30	5	4	7	8	4	8	29	53	19	0	1	8	a	7	0	18	14			3	16	☿ in Aphelion
29	8	7	8	26	31	7	4	8	8	3	8	33	49	18	45	58	8	34	1	9	10	52			17	29	h ☐☉, 9 m 2
30	8	45	9	3	32	2	4	10	8	1	8	37	43	18	31	37	9	0	1	58	7	4			18	30	of the
31	9	21	9	41	32	1	4	12	7	59	8	41	37	18	16	57	9	25	2	48	2	49			19	31	month.

LUNAR DISTANCES FROM THE SUN.

Mean Astronomical Time at Greenwich.

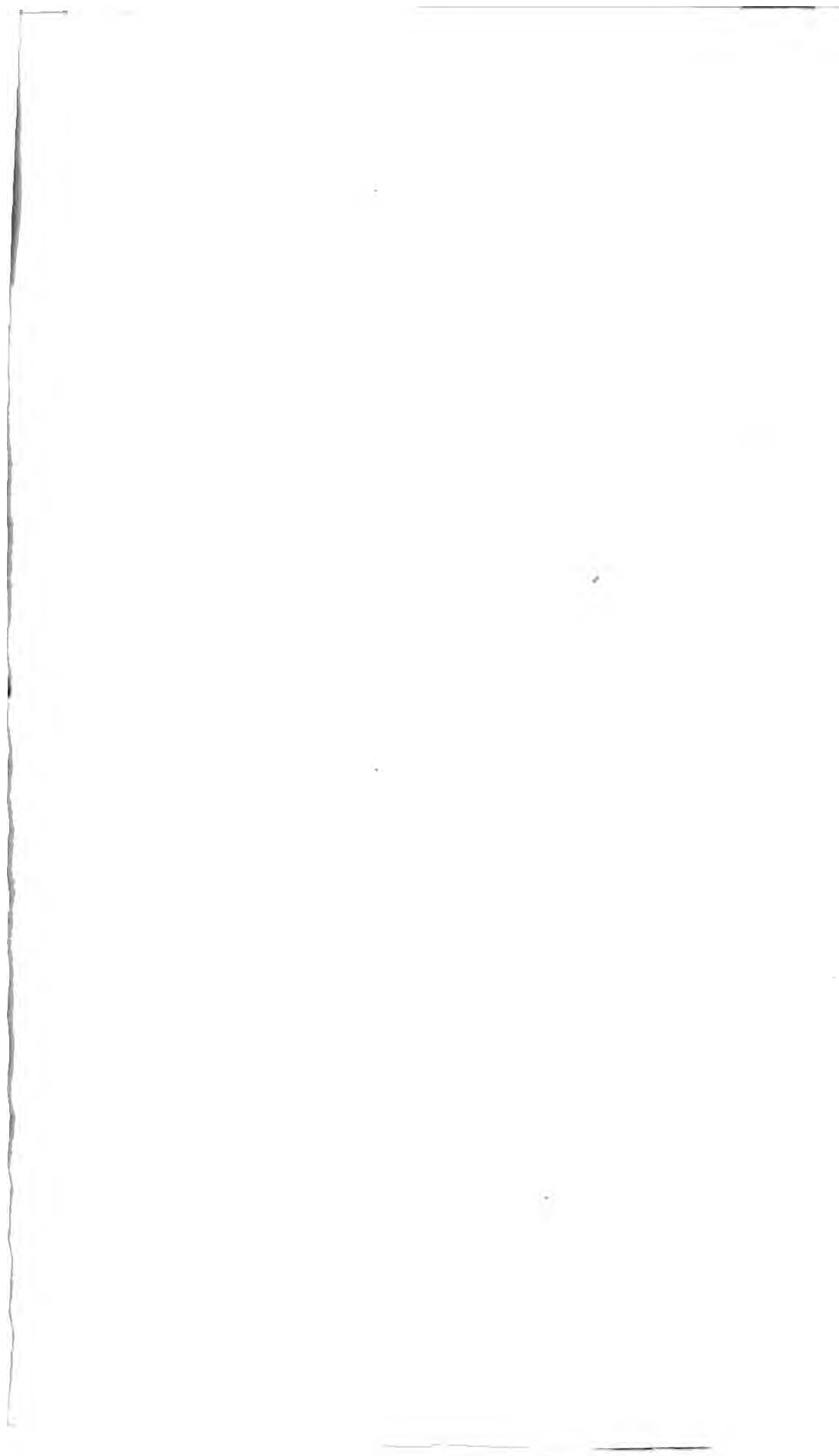
N. D.	NOON.			3 HOURS.			6 HOURS.			9 HOURS.			MIDN.			15 HOUR.			18 HOUR.			21 HOUR.		
	°	'	''	°	'	''	°	'	''	°	'	''	°	'	''	°	'	''	°	'	''	°	'	''
28	128	39	58	127	8	50	125	37	28	124	5	51	122	34	1	121	1	56	119	29	36	117	57	3
3	116	24	15	114	51	13	113	17	56	111	44	25	110	10	40	108	36	40	107	2	25	105	27	55
4	103	53	12	102	18	13	100	42	59	99	7	31	97	31	48	95	55	50	94	19	38	92	43	10
5	91	6	28	89	29	31	87	52	20	86	14	54	84	37	14	82	59	19	81	21	10	79	42	46
6	78	4	9	76	25	19	74	46	14	73	6	57	71	27	26	69	47	43	68	7	47	66	27	39
7	64	47	20	63	6	49	61	26	8	59	45	16	58	4	15	56	23	4	54	41	44	53	0	17
8	51	18	43	49	37	1	47	55	14	46	13	23	44	31	27	42	49	28	41	7	27	39	25	25
9	37	43	23	36	1	23	34	19	26	32	37	34	30	55	49	29	14	12	27	32	46	25	51	34
14	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
15	29	55	35	31	29	3	33	2	16	34	35	12	36	7	51	37	40	12	39	12	13	40	43	55
16	42	15	17	43	46	20	45	17	2	46	47	24	48	17	26	49	47	7	51	16	28	52	45	30
17	54	14	11	55	42	32	57	10	34	58	38	17	60	5	41	61	32	46	62	59	32	64	26	1
18	65	52	12	67	18	6	68	43	43	70	9	4	71	34	9	72	58	59	74	23	34	75	47	54
19	77	12	0	78	35	53	79	59	33	81	23	1	82	46	16	84	9	21	85	32	15	86	54	59
20	88	17	33	89	39	59	91	2	15	92	24	24	93	46	26	95	8	21	96	30	10	97	51	53
21	99	13	31	100	35	5	101	56	35	103	18	1	104	39	25	106	0	47	107	22	7	108	43	26
22	110	4	44	111	26	2	112	47	20	114	8	40	115	30	1	116	51	24	118	12	49	119	34	18
23	120	55	49	122	17	25	123	39	5	125	0	49	126	22	38	127	44	33	129	6	34	130	28	41
..	131	50	54	133	13	14	134	35	41	135	58	16	137	20	57	138	43	37	140	6	45	141	29	51
31	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
32	132	45	9	131	9	57	129	34	35	127	59	3	126	23	20	124	47	27	123	11	24	121	35	12

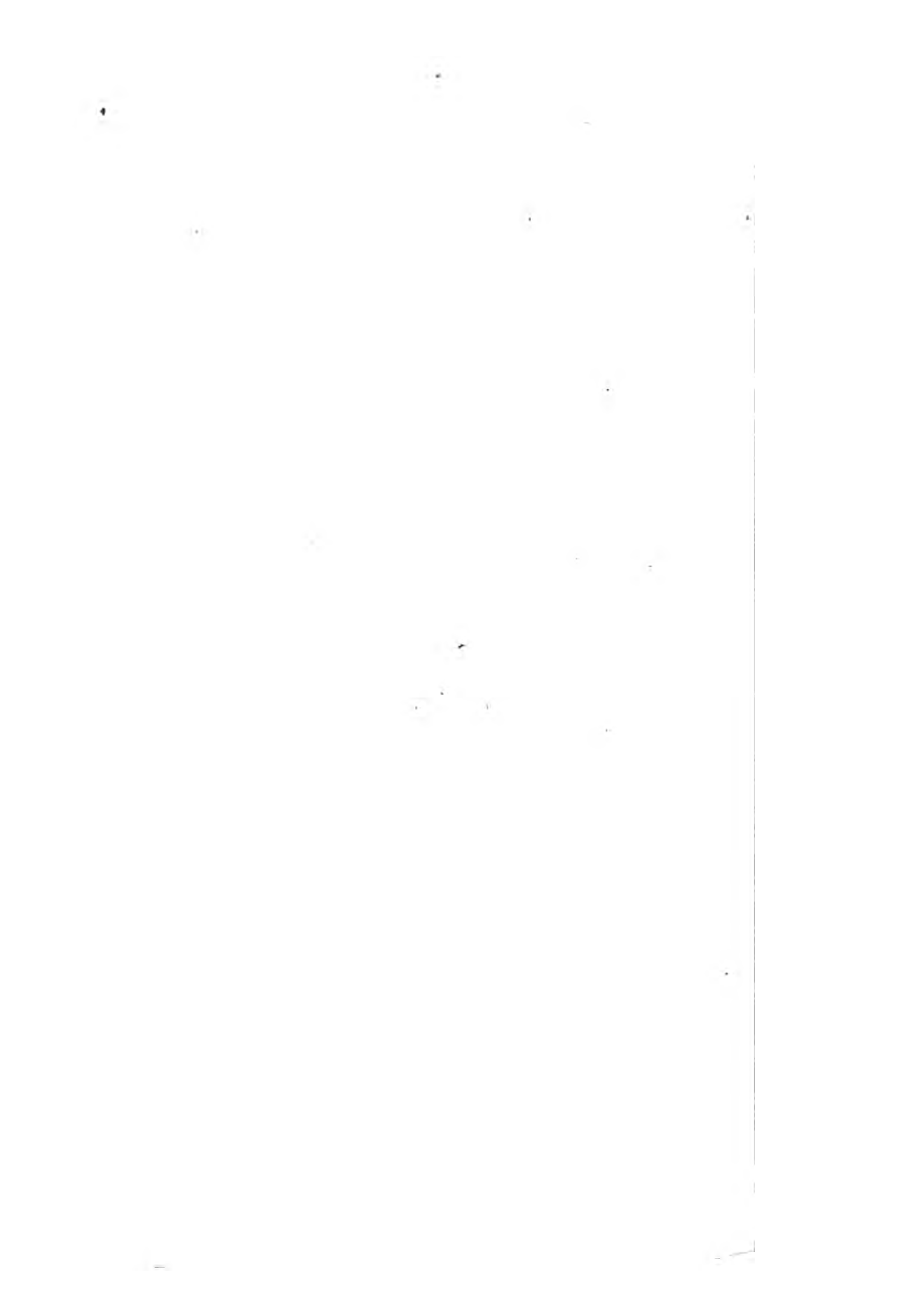
day commences at *Midnight*, and the *Astronomical day* at the following *Noon*, being twelve hours later; thus the hours named 15, 18, and 21, on the 4th January, are according to Civil reckoning, 3, 6, and 9 in the morning of the 5th of January, and

PHASES OF THE MOON. { LAST QUARTER, 3rd day, at 7h. 16m. evening.
NEW MOON, 10th day, at 2h. 36m. afternoon.
FIRST QUARTER, 18th day, at 9h. 16m. morning.
FULL MOON 26th day, at 3h. 34m. morning.

M D.	Day brek.	Twil. ends.	☉'s semi.	☿ Mercury sets. sout.	♀ Venus sets. sout.	♂ Mars rises. sout.	♃ Jupiter sets. sout.	♄ Saturn sets. sout.	M D.
1	no	night	15 48	8 a 25 1 a 40	9 a 12 2 a 37	11 a 23 7 m 34	3 m 7 11 a 10	10 a 37 5 a 39	1
8	1 m 17	10 a 49	15 49	7 51 1 16	8 53 2 39	11 9 7 26	2 35 10 39	10 9 5 11	8
15	1 52	10 15	15 50	rises. 0 36	8 33 2 40	10 55 7 18	2 3 10 8	9 4 4 45	15
22	2 18	9 45	15 51	4 m 56 11 m 48	8 14 2 41	10 42 7 9	1 33 9 38	9 15 4 19	22
29	2 41	9 17	15 53	3 57 11 7	7 57 2 42	10 30 7 0	1 2 9 9	8 49 3 54	29

M D.	W D.	Remarkable Days	HIGH WATER.—LIVERPOOL.				Equation of Time.	
			MORNING.		EVENING.			
			Time.	Height.	Time.	Height.	'	"
1	W	Lammas Day	1 56	17 9	2 17	16 7	6	2
2	Th	Battle of Nile, 1798	2 40	16 11	3 4	15 9	5	59
3	F	E. Baines died, 1848	3 28	15 10	3 54	14 9	5	54
4	S	Pilgrim Fathers sailed	4 21	14 7	4 53	13 9	5	49
5	☉	10 Sun. after Trinity	5 28	13 7	6 5	13 3	5	44
6	M	Proper [1 Kings xxi; Acts iii. Lessons. — xxii; Heb. viii.	6 45	13 4	7 24	13 10	5	37
7	Tu	Name of Jesus	8 2	14 1	8 37	15 1	5	31
8	W	Lyra souths 9 a 24	9 11	15 3	9 41	16 10	5	24
9	Th	J. Dryden born, 1631	10 10	16 5	10 35	17 9	5	16
10	F	St. Lawrence	10 56	17 3	11 18	18 7	5	7
11	S	Dog Days end	11 38	17 10	11 59	18 11	4	58
12	☉	11 Sun. after Trinity	—	—	0 16	17 11	4	49
13	M	Proper [2 Kings v; Acts x. Lessons. — ix; James ii.	0 36	18 10	0 57	17 8	4	39
14	Tu	Printing inventd. 1437	1 16	18 4	1 34	16 11	4	28
15	W	Napoleon I. b., 1769	1 51	17 2	2 9	15 11	4	17
16	Th	Bomarsund tkn. 1854	2 29	16 0	2 49	14 9	4	5
17	F	Neptune souths 3 m 8	3 6	14 7	3 25	13 7	3	53
18	S	Flamstead born, 1646	3 46	13 1	4 10	12 4	3	40
19	☉	12 Sun. after Trinity	4 36	11 8	5 9	11 5	3	26
20	M	Proper [2 Kings x; Acts xvii. Lessons. — xviii; 1 Peter iv.	5 48	10 11	6 25	11 3	3	12
21	Tu	Cnt. Rumford d., 1814	7 2	11 2	7 43	12 0	2	58
22	W	B. of Bosworth, 1485	8 17	12 1	8 47	13 7	2	43
23	Th	Herschell died, 1822	9 13	13 5	9 37	14 11	2	28
24	F	St. Bartholomew	10 1	14 11	10 23	16 5	2	12
25	S	Altair souths 2 a 28	10 41	16 3	10 59	17 9	1	56
26	☉	13 Sun. after Trinity	11 18	17 6	11 35	18 9	1	40
27	M	Proper [2 Kings xix; Acts xxiv. Lessons. — xxiii; 1 John i.	11 56	18 3	—	—	1	23
28	Tu	St. Augustine, Bishop	0 15	19 4	0 32	18 8	1	5
29	W	St. John Baptist behd	0 53	19 5	1 14	18 6	0	48
30	Th	Paley born, 1743	1 34	18 10	1 56	17 10	0	30
31	F	J. Bunyan died, 1688	2 18	17 9	2 42	16 8	0	11







Bristol tides				SUN.				MOON.				ASPECTS. AND WEATHER.	
m	morn	even.	height	rises.	sets.	rt. ascen.	declin.	rises.	souths	declin.	m		
D.	H. M.	H. M.	F. I.	H. M.	H. M.	H. M. S.	° / ' "	H. M.	H. M.	° / ' "	D.		
1	11 4	11 28	28 4	5 9	6 50	10 41 34	8 17 4	10 a 7	5 m 7	15 32 22	1	Fair	
2	11 56	—	25 3	5 10	6 48	10 45 11	7 55 12	10 57	6 4	17 27 23	2	♀♂ Spic. Vir.	
3	0 28	1 4	22 11	5 12	6 45	10 48 49	7 33 13	11 56	7 1	18 13 24	3	♂♂ ((, 4 m 11	
4	1 43	2 34	23 4	5 14	6 43	10 52 26	7 11 6	morn	7 58	17 45 25	4	♂♂ ((, 1 m 10	
5	3 25	4 2	25 10	5 16	6 40	10 56 3	6 48 52	1 2	8 54	16 9 26	5	and	
6	4 35	5 5	28 5	5 18	6 38	10 59 40	6 26 32	2 12	9 47	13 35 27	6	♂ gr. el. 17 59	
7	5 34	6 13	30 3	5 19	6 35	11 3 16	6 4 5	3 23	10 38	10 17 28	7	fine W.	
8	6 22	6 46	31 2	5 21	6 33	11 6 52	5 41 32	4 34	11 27	6 29 29	8	♂♂ Regulus	
9	7 7	7 26	32 6	5 23	6 31	11 10 28	5 18 53	sets	0 a 14	2 26 N	9	for the	
10	7 43	8 1	33 0	5 25	6 28	11 14 4	4 56 9	6 a 54	1 0	1 s 39	10	♂ in Perihel.	
11	8 19	8 36	32 8	5 27	6 26	11 17 40	4 33 19	7 17	1 45	5 35 2	11	season.	
12	8 51	9 7	31 10	5 28	6 23	11 21 16	4 10 25	7 41	2 30	9 11 3	12	♀♂ ((, 10 a 15	
13	9 21	9 3	30 3	5 30	6 21	11 24 52	3 47 27	8 7	3 14	12 19 4	13	♂♂ ((, 7 a 53	
14	9 53	10 7	28 5	5 32	6 18	11 28 27	3 24 25	8 36	4 0	14 53 5	14	Now	
15	10 23	10 40	26 2	5 34	6 16	11 32 3	3 1 19	9 9	4 46	16 46 6	15	♂ in Apogee	
16	10 58	11 18	23 5	5 36	6 13	11 35 38	2 38 9	9 49	5 33	17 53 7	16	expect	
17	11 53	—	21 0	5 37	6 11	11 39 14	2 14 57	10 39	6 21	18 10 8	17	some	
18	0 13	0 50	19 4	5 39	6 8	11 42 49	1 51 42	11 35	7 10	17 33 9	18	♀♂ h, 0 m 5	
19	1 26	2 11	20 0	5 41	6 6	11 46 24	1 28 24	morn	7 59	16 2 10	19	♂♂ ((, 1 a 0	
20	2 58	3 43	22 10	5 43	6 3	11 50 0	1 5 5	0 36	8 49	13 38 11	20	showers	
21	4 13	4 41	26 1	5 45	6 1	11 53 35	0 41 44	1 41	9 39	10 24 12	21	♂ in Aphelion	
22	5 4	5 29	29 2	5 46	5 58	11 57 11	0 18 21	2 52	10 30	6 30 13	22	after which	
23	5 53	6 16	30 7	5 48	5 56	12 0 46	0 5 2	4 8	11 21	2 6 14	23	☉ enters ♎.	
24	6 3	6 56	32 11	5 50	5 53	12 4 22	0 28 26	rises. morn	—	—	24	Autm.com.	
25	7 18	7 39	34 10	5 52	5 51	12 7 5	0 51 51	6 a 25	0 14	2 32 16	25	fair	
26	8 0	8 19	35 9	5 54	5 48	12 11 34	1 15 15	6 53	1 8	7 5 17	26	and	
27	8 40	9 0	35 7	5 56	5 46	12 15 10	1 38 39	7 27	2 3	11 12 18	27	♂ in Perigee	
28	9 22	9 43	34 0	5 57	5 43	12 18 47	2 2 3	8 8	3 0	14 31 19	28	mild	
29	10 3	10 25	31 8	5 59	5 41	12 22 24	2 25 26	8 56	3 58	16 55 20	29	for some	
30	10 50	11 16	28 4	6 1	5 38	12 26 1	2 48 47	9 53	4 56	18 4 21	30	days.	

LUNAR DISTANCES FROM THE SUN.
Mean Astronomical Time at Greenwich.

M.	NOON.	3 HOURS.	6 HOURS.	9 HOURS.	MIDN.	15 HOUR.	18 HOUR.	21 HOUR.
D.	° / ' "	° / ' "	° / ' "	° / ' "	° / ' "	° / ' "	° / ' "	° / ' "
1	96 40 35	95 1 30	93 22 30	91 43 33	90 4 42	88 25 56	86 47 15	85 8 39
2	83 30 8	81 51 43	80 13 24	78 35 11	76 57 3	75 19 2	73 41 7	72 3 19
3	70 25 37	68 48 2	67 10 35	65 33 14	63 56 0	62 18 54	60 41 55	59 5 4
4	57 28 21	55 51 46	54 15 19	52 39 1	51 2 51	49 26 50	47 50 58	46 15 15
5	44 39	43 4 18	41 29 4	39 53 59	38 19 5	36 44 22	35 9 49	33 35 27
6	32 1 16	30 27 17	28 53 30	27 19 54	25 46 31	24 13 21	22 40 24	21 7 41
11w	27 58 59	29 24 4	30 48 57	32 13 38	33 38 8	35 2 25	36 26 32	37 50 27
12	39 14 12	40 37 45	42 1 9	43 24 22	44 47 26	46 10 21	47 33 6	48 55 43
13	50 18 12	51 40 33	53 2 47	54 24 54	55 46 54	57 8 49	58 30 38	59 52 22
14	61 14 1	62 35 36	63 57 8	65 18 37	66 40 3	68 1 27	69 22 49	70 44 11
15	72 5 33	73 26 55	74 48 17	76 9 41	77 31 7	78 52 36	80 14 8	81 35 43
16	82 57 23	84 19 8	85 40 58	87 2 54	88 24 57	89 47 8	91 9 26	92 31 53
17	93 54 29	95 17 15	96 40 11	98 3 18	99 26 37	100 50 7	102 13 50	103 37 47
18	105 1 57	106 26 22	107 51 1	109 15 57	110 41 8	112 6 35	113 32 19	114 58 21
19	116 24 41	117 51 20	119 18 17	120 45 33	122 13 9	123 41 5	125 9 22	126 37 59
20	128 6 58	129 36 18	131 6 0	132 36 4	134 6 30	135 37 18	137 8 29	138 40 3
27e	140 17 0	138 34 17	136 51 40	135 9 7	133 26 40	131 44 21	130 2 8	128 20 4
28	126 38 7	124 56 20	123 14 42	121 33 15	119 51 57	118 10 51	116 29 56	114 49 12
29	113 8 41	111 28 22	109 48 16	108 8 22	106 28 42	104 49 51	103 10 2	101 31 2
30	99 52 17	98 13 46	96 35 28	94 57 25	93 19 37	91 42 3	90 4 43	88 27 38

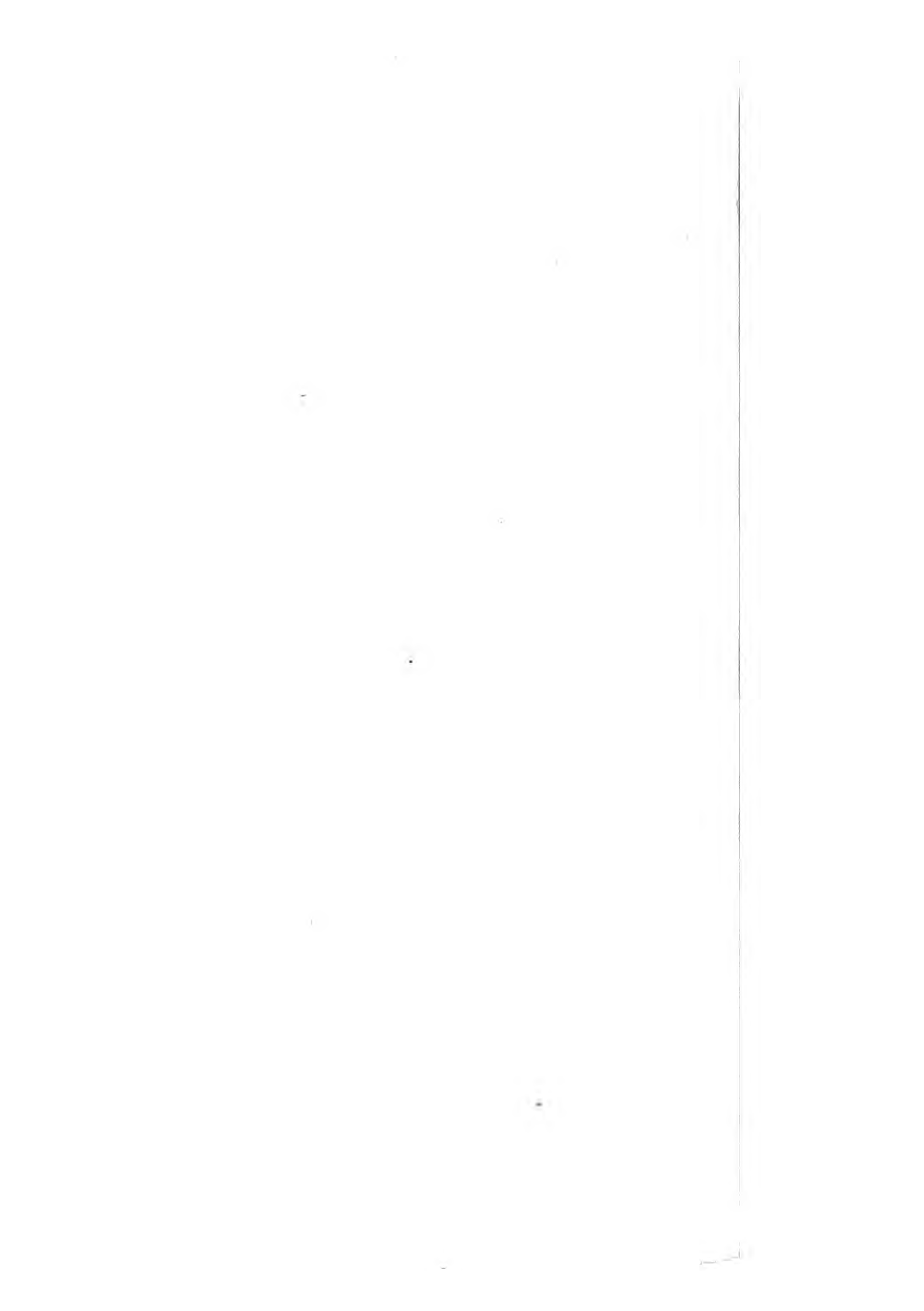
6th Sept., and 27th Dec.,—the times of its greatest elongation west; and in the evenings about the 26th March, 24th July, and 18th Nov.,—when at its greatest eastern elongation. The most favourable time for observation of this planet will be at its greatest elongation in March, when it may be seen in the western sky after sunset.

VENUS [♀] will be a morning star to the 26th February, then an evening star to the 11th December, thence a morning star to the end of the year. Its greatest

PHASES OF THE MOON. { LAST QUARTER, 1st day, at 6h. 9m. morning.
NEW MOON, 8th day, at 4h. 58m. evening.
FIRST QUARTER, 16th day, at 9h. 24m. night.
FULL MOON, 24th day, at 0h. 12m. morning.
LAST QUARTER, 30th day, at 2h. 45m. afternoon.

	Day brek.	Twil. end.	☉'s semi.	♂ Mercury		♀ Venus.		♂ Mars.		♂ Jupiter.		♂ Saturn.	
				rises.	sout.	sets.	sout.	rises.	sout.	sets.	sout.	sets.	sout.
1	4 m 3	7 a 36	16 1	5m 51	11 m 47	6 a 32	2 a 46	9 a 37	6m 57	10 a 46	6 a 57	6 a 45	1 a 56
8	4 18	7 19	16 3	sets.	0 a 3	6 17	2 46	9 26	6 47	10 21	6 31	6 18	1 31
5	4 30	7 0	16 5	5 a 14	0 18	6 32	45 9	14 6	37	9 56	6 6	5 52	1 7
2	4 44	6 46	16 7	5 1	0 32	5 49	2 43	9 16	26	9 32	5 41	5 26	0 42
9	4 56	6 31	16 9	4 50	0 46	5 36	2 38	8 46	6 15	9 8	5 17	5 0	0 18

M W D D		Remarkable Days	HIGH WATER.—LIVERPOOL.				Equatio of Time
			MORNING.		EVENING.		
			Time.	Height.	Time.	Height.	
1	M	Cambridge T. begins	3 47	14 1	4 20	13 9	10 2
2	Tu	F. Arago died, 1583	4 56	12 6	5 39	12 10	10 3
3	W	R. Barclay died, 1690	6 22	12 1	7 4	13 3	10 5
4	Th	Neptune souths 11a51	7 44	12 11	8 18	14 6	11 1
5	F	H souths 5 m 42	8 48	14 3	9 14	15 11	11 3
6	S	Faith, V. & M.	9 39	15 6	9 59	17 1	11 5
7	G	19 Sun. after Trinity	10 18	16 4	10 35	17 9	12 5
8	M	[Daniel iii; Mark x. — vi; 2 Cor. vi.	10 55	17 3	11 11	18 2	12 2
9	Tu	Cassiopea s. 11 a 18	11 27	17 7	11 43	18 3	12 4
10	W	Oxford Term begins	— —	— —	0 1	17 8	12 5
11	Th	Old Michaelmas day	0 17	17 9	0 33	17 4	13 1
12	F	Wat Tyler died, 1381	0 50	17 1	1 5	16 7	13 2
13	S	Trans. King Edward	1 22	16 0	1 40	15 8	13 4
14	G	20 Sun. after Trinity	1 58	15 9	2 16	14 7	13 5
15	M	Proper [Joel ii; Luke i, to v. 39. Lessons [Micah vi; 2 Cor. xiii.	2 35	13 6	2 56	13 5	14 1
16	Tu	Battle of Leipsic, 1813	3 18	12 2	3 42	12 2	14 2
17	W	Ethelred V. Q.	4 14	11 1	4 49	11 5	14 3
18	Th	St. Luke, Evangelist	5 29	10 6	6 10	11 8	14 4
19	F	Neptune souths 10a50	6 49	11 6	7 28	13 1	14 5
20	S	H souths 4 m 43	8 0	13 2	8 28	14 10	15 1
21	G	21 Sun. after Trinity	8 54	15 0	9 18	16 8	15 1
22	M	Proper [Hab. ii; Luke vii. Lessons. [Prov. i; Ephes. i.	9 42	16 9	10 2	18 4	15 2
23	Tu	R. Exchange fd. 1667	10 22	18 3	10 45	19 6	15 3
24	W	Chaucer died, 1400	11 5	19 4	11 26	20 3	15 4
25	Th	Crispin, Martyr	11 47	20 0	— —	— —	15 4
26	F	Hogarth died, 1764	0 9	20 3	0 33	19 10	15 5
27	S	Servetus burnt, 1553	0 55	19 5	1 20	18 10	16 1
28	G	22 Sun. after Trinity	1 44	17 10	2 12	17 4	16 6
29	M	Proper [Prov. ii; Luke xiv. Lessons.] — iii; Phil. ii.	2 37	15 11	3 3	15 10	16 10
30	Tu	St. Marcellus	3 31	14 0	4 4	14 1	16 14
31	W	All Hallow Eve	4 39	12 6	5 18	13 1	16 16



Bristol tides				SUN.								MOON.				M D.	ASPECTS AND WEATHER.
morn.	even.	hei	t	rises.	sets.	rt. ascen.	declin.	S.	rises.	souths	declin.	sets.	sets.	declin.	sets.		
H. M.	H. M.	F. I.		H. M.	H. M.	H. M.	° ' "	° ' "	H. M.	H. M.	° ' "	H. M.	H. M.	° ' "	H. M.		
11 45	—	24	9	6 35	36	12 29	38	3 12	7	10a56	5m53	17n58	22	1	1	1	♂♂ (, 1 a 44
0 15	0 52	22	4	6 55	33	12 33	16	3 35	25	morn	6 50	16 43	23	2	2	2	The month
1 33	2 21	22	8	6 75	31	12 36	53	3 58	41	0 2	7 43	14 27	24	3	3	3	♂ sup. ♂ ☉, 0
3 12	3 50	25	3	6 95	28	12 40	32	4 21	54	1 11	8 31	11 25	25	4	4	4	will [m] 19
4 22	4 49	27	9	6 105	26	12 44	10	4 45	3	2 22	9 23	7 50	26	5	5	5	probably
5 15	5 37	29	7	6 125	23	12 47	49	5 8	10	3 33	10 10	3 54	27	6	6	6	begin
6 59	6 18	30	5	6 145	21	12 51	29	5 31	12	4 42	10 55	0 s 8	28	7	7	7	with
6 40	6 58	31	6	6 165	18	12 55	9	5 54	10	sets.	11 40	4 7	N	8	8	8	☉ ecl, visib.
7 16	7 34	32	1	6 185	16	12 58	49	6 17	4	5a43	0a25	7 51	1	9	9	9	♂♂ (, 1 m 34
7 52	8 7	31	11	6 205	13	13 2	30	6 39	53	6 9	1 9	11 11	2	10	10	10	storms,
8 22	8 38	31	4	6 225	11	13 6	11	7 2	36	6 38	1 55	13 59	3	11	11	11	wind,
8 52	9 8	30	2	6 245	9	13 9	52	7 25	13	7 10	2 40	16 9	4	12	12	12	♂♂ (, 5 a 48
9 24	9 41	28	6	6 255	7	13 13	35	7 47	45	7 47	3 27	17 34	5	13	13	13	♂ gr. H. L. S.
9 55	10 11	26	8	6 275	4	13 17	17	8 10	10	8 30	4 14	18 11	6	14	14	14	and rain.
10 29	10 48	24	5	6 295	2	13 21	0	8 32	27	9 21	5 2	17 56	7	15	15	15	♂♂ Ant. 4a16
1 9	11 37	22	0	6 315	0	13 24	44	8 54	38	10 19	5 50	16 50	8	16	16	16	Changeable
—	0 7	20	0	6 334	57	13 28	29	9 16	41	11 22	6 38	14 51	9	17	17	17	☉ ☉, 7 m 32
0 42	1 20	20	1	6 354	54	13 32	13	9 38	35	morn	7 27	12 3	10	18	18	18	but
2 6	2 53	22	8	6 374	52	13 35	59	10 0	22	0 30	8 17	8 32	11	19	19	19	generally
3 31	4 2	26	1	6 394	50	13 39	45	10 22	0	1 42	9 7	4 24	12	20	20	20	in Apogee
4 28	4 53	29	3	6 414	48	13 43	32	10 43	28	2 57	9 58	0 n 7	13	21	21	21	fair,
5 19	5 42	32	1	6 434	46	13 47	19	11 4	46	4 16	10 52	4 47	14	22	22	22	and
6 4	6 30	33	5	6 454	43	13 51	7	11 25	55	5 38	11 47	9 15	15	23	23	23	perhaps
6 52	7 15	35	4	6 474	41	13 54	56	11 46	53	rises.	morn	—	F	24	24	24	♂♂ h, 10 m 3
7 38	8 0	36	3	6 494	39	13 58	45	12 7	40	6 a 1	0 45	13 9	17	25	25	25	in Perigee
8 23	8 44	35	11	6 514	37	14 2	35	12 28	16	6 47	1 45	16 6	18	26	26	26	frosty
9 6	9 28	34	2	6 534	35	14 6	26	12 48	41	7 43	2 45	17 50	19	27	27	27	towards.
9 54	10 15	31	8	6 554	32	14 10	18	13 8	54	8 45	3 46	18 14	20	28	28	28	♂♂ (, 2 a 13
10 37	11 1	28	5	6 574	30	14 14	10	13 28	54	9 52	4 44	17 20	21	29	29	29	♂♂ (, 5 a 52
11 30	12 0	25	1	6 594	28	14 18	4	13 48	42	11 1	5 39	15 21	22	30	30	30	the end of
—	0 33	22	7	7 14	26	14 21	58	14 8	17	morn	6 32	12 30	23	31	31	31	the month.

LUNAR DISTANCES FROM THE SUN.
Mean Astronomical Time at Greenwich.

NOON.			3 HOURS.			6 HOURS.			9 HOURS.			MIDN.			15 HOUR.			18 HOUR.			21 HOUR.		
° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "
86 50 47	85 14 11	83 37 50	82 1 43	80 25 50	78 50 12	77 14 48	75 39 38	74 4 43	72 30 2	70 55 35	69 21 21	67 47 22	66 13 26	64 40 3	63 6 45	61 33 39	60 0 47	58 28 9	56 55 43	55 23 31	53 51 31	52 19 45	50 48 11
49 16 49	47 45 40	46 14 44	44 44 0	43 13 28	41 43 8	40 13 1	38 43 6	37 13 22	35 43 51	34 14 32	32 45 24	31 16 28	29 47 44	28 19 12	26 50 52	25 11 10	23 33 47	22 56 18	21 18 41	20 40 58	19 27 3	18 25 13	17 29 47 11
31 9 4	32 30 50	33 52 32	35 14 9	36 35 40	37 57 8	39 18 31	40 39 51	42 1 7	43 22 20	44 43 30	46 4 38	47 25 45	48 46 50	50 7 53	51 28 57	52 50 0	54 11 4	55 32 8	56 53 14	58 14 21	59 35 31	60 56 43	62 17 59
63 39 18	65 0 42	66 22 11	67 43 45	69 5 25	70 27 11	71 49 5	73 11 6	74 33 15	75 55 33	77 18 1	78 40 39	80 3 27	81 26 26	82 49 37	84 13 1	85 36 37	87 0 26	88 24 30	89 48 49	91 13 22	92 38 12	94 3 18	95 28 41
96 54 21	98 20 20	99 46 38	101 13 14	102 40 11	104 7 27	105 35 5	107 3 3	108 31 24	110 0 6	111 29 11	112 58 39	114 28 31	115 58 47	117 29 26	119 0 31	120 32 0	122 3 54	123 36 13	125 8 58	126 42 9	128 15 45	129 49 47	131 24 16
132 59 10	134 34 31	136 10 17	137 46 29	139 23 6	141 0 9	142 37 37	144 15 30	132 59 10	134 34 31	136 10 17	137 46 29	139 23 6	141 0 9	142 37 37	144 15 30	130 51 36	129 9 11	127 27 3	125 45 14	124 3 44	122 22 33	120 41 41	119 1 10
117 20 58	115 41 8	114 1 39	112 22 30	110 43 43	109 5 18	107 27 14	105 49 32	104 12 11	102 35 12	100 58 35	99 22 20	97 46 26	96 10 53	94 35 42	93 0 52	91 26 23	89 52 16	88 18 28	86 45 1	85 11 55	83 39 8	82 6 41	80 34 33
79 2 45	77 31 16	76 0 5	74 29 12	72 58 38	71 28 21	69 58 21	68 28 39	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

brilliancy this year will be as an evening star on the 5th November, when this beautiful planet will appear to great advantage.
MARS [♂] will be a morning star throughout the year.

PHASES OF THE MOON. { NEW MOON, 7th day, at 10h. 25m. morning.
FIRST QUARTER, 15th day, at 2h. 7m. afternoon.
FULL MOON, 22nd day, at 10h. 15m. morning.
LAST QUARTER, 29th day, at 3h. 5m. morning.

Day	Twi.	☉'s	☿ Mercury	♀ Venus.	♂ Mars.	♃ Jupiter.	♄ Saturn.	M
D.	brek.	ends.	semi.	sets. sout.	sets. sout.	rises. sout.	sets. sout.	D.
1	5 m 2	6 a 21	16 10	4 a 46 0 a 52	5 a 31 2 a 35	8 a 39 5 m 7	5 a 59 5 a 6	1
8	5 13 6	13 16 12	4 40 1 5	5 20 2 24	8 21 4 48	3 37 4 43	rises. 11 m 4	8
15	5 24 6	5 16 13	4 38 1 16	5 6 2 7	8 1 4 28	3 15 4 20	6 m 40 11 1	15
22	5 34 5	58 16 14	4 37 1 17	4 48 1 42	7 38 4 5	7 54 3 58	6 18 10 5	22
29	5 44 5	53 16 16	4 28 0 55	4 27 1 8	7 11 3 41	7 34 3 35	5 55 10 31	29

M	W	Remarkable Days	HIGH WATER.—LIVERP. OL.				Equation
D	D		MORNING.		EVENING.		of Time.
			Time.	Height.	Time.	Height.	
1	Th	All Saints	5 59	11 11	6 40	13 2	16 18
2	F	Michaelmas Ter. beg.	7 18	12 6	7 54	14 0	16 19
3	S	H souths 3 m 47	8 22	13 8	8 49	15 2	16 19
4	☿	23 Sun. after Trinity	9 13	14 10	9 35	16 2	16 18
5	M	Proper [Prov. xi; Luke xx. Lessons. — xii; Coloss. iv.	9 55	15 10	10 13	16 9	16 17
6	Tu	1st English Paper, 1665	10 29	16 6	10 47	17 1	16 14
7	W	Neptune s. 9 a 34	11 3	16 11	11 19	17 2	16 11
8	Th	Cam. Term div. N	11 34	17 1	11 51	17 1	16 7
9	F	P. of Wales born	—	—	0 7	16 8	16 2
10	S	Pleiades souths 0 m 24	0 24	16 7	0 42	16 4	15 56
11	☿	24 Sun. after Trinity	0 57	15 11	1 13	15 11	15 49
12	M	Proper [Prov. xiii; John iii. Lessons. — xiv; 2 Thess. ii.	1 33	15 0	1 51	15 1	15 42
13	Tu	Britius, Bishop	2 9	13 11	2 30	14 2	15 34
14	W	Leibnitz died, 1716	2 50	13 0	3 13	13 2	15 25
15	Th	Machutus, Bishop	3 39	12 0	4 10	12 6	15 15
16	F	Pleiades south 11 a 56	4 45	11 6	5 24	12 4	15 4
17	S	Hugh, Bishop	6 2	11 9	6 37	13 2	14 52
18	☿	25 Sun. after Trinity	7 13	13 0	7 45	14 6	14 40
19	M	Pro. [Proverbs xv; John x. Les. — xvi; 2 Tim. i.	8 14	14 8	8 42	16 2	14 27
20	Tu	Edward, King.	9 6	16 5	9 32	17 10	14 13
21	W	Princess of Prussia b.	9 59	18 2	10 21	19 0	13 58
22	Th	Cecilia V and M	10 44	19 1	11 5	19 7	13 42
23	F	St. Clement	11 28	19 10	11 53	19 9	13 26
24	S	Neptune souths 8 a 26	—	—	0 17	19 10	13 9
25	☿	26 Sun. after Trinity	0 40	19 2	1 7	19 2	12 51
26	M	Proper [Proverbs xvii; John xvii. Lessons. — xix; Heb. i.	1 33	17 10	1 58	17 11	12 32
27	Tu	Capella souths 0 m 43	2 24	16 2	2 51	16 4	12 12
28	W	H souths 2 m 6	3 20	14 6	3 46	14 10	11 52
29	Th	Pleiades south 11 a 5	4 16	13 1	4 50	13 8	11 31
30	F	St. Andrew, Ap.	5 25	12 2	5 59	13 1	11 10

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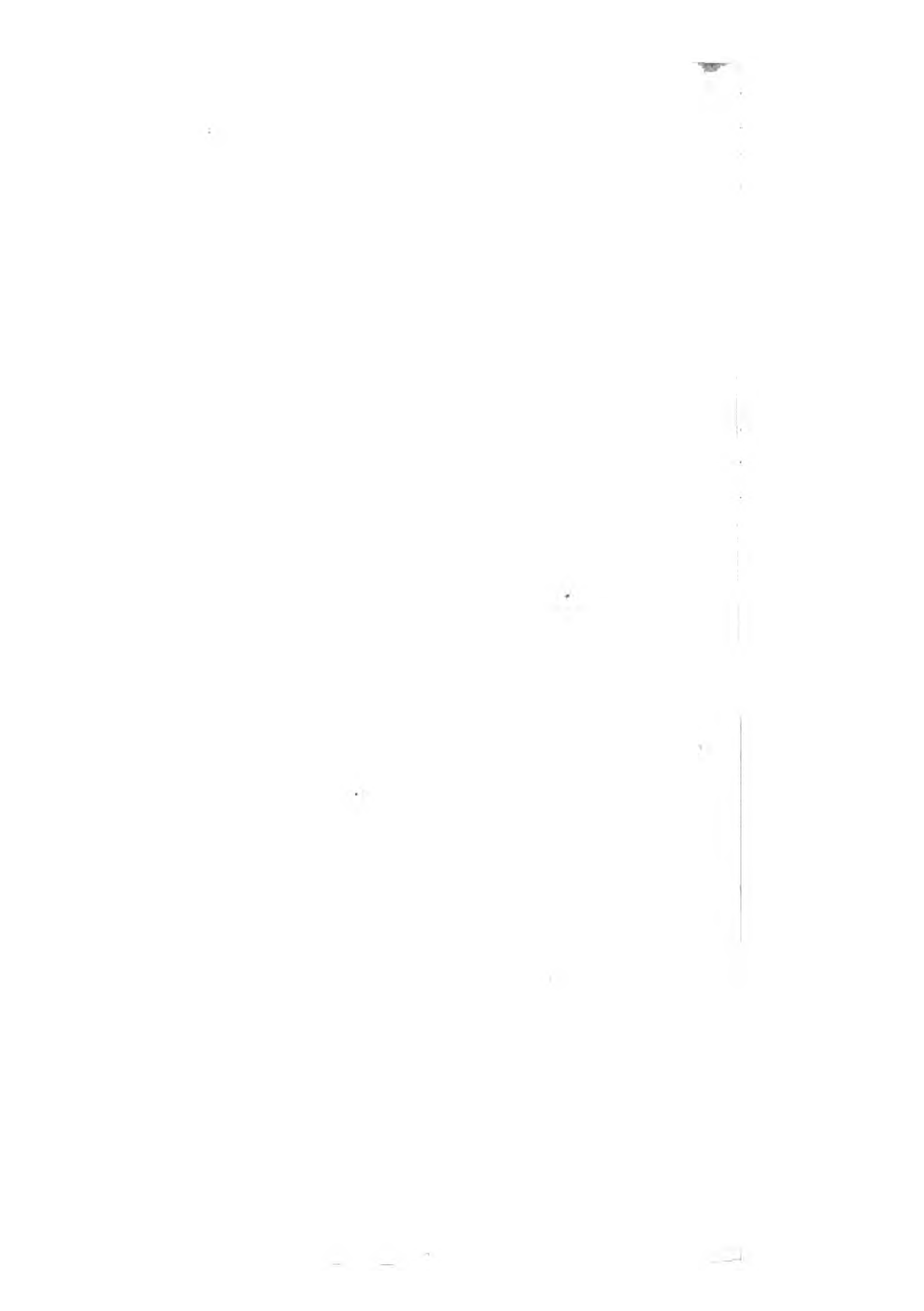
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M	Bristol tide				SUN.						MOON.				M	ASPECTS AND WEATHER.	
	moru.	even	height.		rises.	sets.	rt' ascen.	declin.	S.		rises.	souths	declin.				
D.	H. M.	H. M.	F. I		H. M.	H. M.	H. M.	M. S.	° / "		H. M.	H. M.	° / "		D.		
1	1 10	1 55	22	7	7 34	4 24	14 25	53	14 27	38	0m 12	7m 21	9n 22	2	1	Fair	
2	2 42	3 24	24	4	7 6	4 22	14 29	48	14 46	45	1 23	8 8	5 12	2	2	and	
3	3 55	4 23	26	7	7 8	4 20	14 33	45	15 5	38	2 32	8 54	1 12	2	3	mild	
4	4 48	5 11	28	3	7 9	4 18	14 37	42	15 24	17	3 40	9 38	2s 47	27	4	☽ at gr. brill.	
5	5 33	5 53	29	6	7 11	4 16	14 41	40	15 42	39	4 47	10 22	6 36	28	5	for the	
6	6 11	6 32	30	0	7 13	4 14	14 45	39	16 0	47	5 53	11 6	10 6	29	6	season.	
7	6 49	7 7	30	6	7 15	4 12	14 49	39	16 18	38	sets	11 5	13 7	N	7	☽ ☽ ☽, 3 a 48	
8	7 24	7 42	30	9	7 16	4 11	14 53	40	16 36	13	5 a 9	0 a 37	15 32		8	Showery	
9	7 58	8 14	30	4	7 18	4 9	14 57	41	16 53	31	5 45	1 2	17 15	2	9	☽ ☽ ☽, 4 m 42	
10	8 31	8 45	29	8	7 20	4 7	15 1	43	17 10	32	6 26	2 10	18 11	3	10	☽ ☽ ☽, 7 a 12	
11	8 59	9 17	28	7	7 22	4 5	15 5	47	17 27	15	7 14	2 5	18 16	4	11	with	
12	9 34	9 49	27	3	7 24	4 3	15 9	51	17 43	40	8 9	3 45	17 29	5	12	cold	
13	10 6	10 24	25	8	7 26	4 2	15 13	56	17 59	46	9 9	4 33	15 52	6	13	☽ ☽ ☽, 2 a 2	
14	10 44	11 6	23	9	7 28	4 0	15 18	1	18 15	34	10 13	5 20	13 26	7	14	and	
15	11 33	—	—	22	7 30	3 59	15 22	8	18 31	2	11 22	6 8	10 17	8	15	high	
16	0 4	0 38	21	4	7 32	3 57	15 26	15	18 46	11	morn	6 56	6 31	9	16	winds.	
17	1 13	1 52	22	7	7 34	3 56	15 30	23	19 0	59	0 34	7 45	2 16	10	17	Now	
18	2 36	3 15	25	6	7 36	3 54	15 34	32	19 15	27	1 49	8 36	2 16	11	18	☽ gr. elg. 22°	
19	3 47	4 16	28	7	7 38	3 53	15 38	42	19 29	34	3 6	9 29	6 50	12	19	more ☽ E.	
20	4 41	5 9	31	6	7 40	3 51	15 42	52	19 43	20	4 26	0 25	11 5	13	20	fair	
21	5 38	6 3	33	8	7 42	3 50	15 47	4	19 56	45	5 49	11 24	14 40	14	21	☽ Stationary	
22	6 29	6 52	34	4	7 43	3 49	15 51	16	20 9	48	rises	morn	—	F	22	☽ in Perigee	
23	7 17	7 44	35	6	7 45	3 47	15 55	29	20 22	28	5a 24	0 26	17 10	16	23	and frosty	
24	8 8	8 30	35	6	7 47	3 46	15 59	43	20 34	46	6 25	1 28	18 19	17	24	☽ ☽ ☽, 10 a 18	
25	8 55	9 19	34	3	7 49	3 45	16 3	57	20 46	40	7 32	2 30	18 3	18	25	Changeable	
26	9 42	10 4	32	1	7 51	3 44	16 8	13	20 58	12	8 4	3 29	16 28	19	26	☽ ☽ ☽, 0 a 57	
27	10 27	10 52	29	5	7 52	3 43	16 12	29	21 9	20	0 0	4 25	13 1	20	27	☽ stationary	
28	11 15	11 41	26	4	7 54	3 42	16 16	45	21 20	4	1 1	5 17	10 25	21	28	with	
29	—	0 11	23	10	7 56	3 41	16 21	3	21 30	24	morn	6 6	6 40	22	29	frequent	
30	0 40	1 10	22	5	7 57	3 40	16 25	21	21 40	20	0 23	6 52	2 39	23	30	showers.	

LUNAR DISTANCES FROM THE SUN.

Mean Astronomical Time at Greenwich.

M.	NOON.			3 HOURS.			6 HOURS.			9 HOURS.			MIDN.			15 HOUR.			18 HOUR.			21 HOUR.		
D.	°	'	"	°	'	"	°	'	"	°	'	"	°	'	"	°	'	"	°	'	"	°	'	"
1	66	59	13	65	30	4	64	1	11	62	32	33	61	4	11	59	36	4	58	8	12	56	40	35
2	55	13	12	53	46	3	52	19	8	50	52	26	49	25	58	47	59	42	46	33	40	45	7	49
3	43	42	11	42	16	45	40	51	32	39	26	30	38	1	40	36	37	1	35	12	34	33	48	18
4	32	27	14	31	0	21	29	36	40	28	13	11	26	49	54	25	26	50	24	3	59	22	41	21
5	22	55	7	24	15	12	25	35	22	26	55	35	28	15	53	29	36	14	30	56	38	32	17	5
6	33	37	35	34	58	9	36	18	46	37	39	27	39	0	11	40	20	59	41	41	51	43	2	48
7	44	23	49	45	44	55	47	6	6	48	27	23	49	48	46	51	10	15	52	31	51	53	53	34
8	55	15	25	56	37	24	57	59	31	59	21	47	60	44	12	62	6	47	63	29	33	64	52	29
9	66	15	37	67	38	56	69	2	27	70	26	12	71	50	9	73	14	21	74	38	47	76	3	27
10	77	28	24	78	53	36	80	19	4	81	44	50	83	10	53	84	37	14	86	3	54	87	30	53
11	88	58	12	90	25	50	91	53	50	93	22	10	94	50	52	96	19	56	97	49	23	99	19	13
12	100	49	26	102	20	3	103	51	4	105	22	30	106	54	20	108	26	36	109	59	17	111	32	24
13	113	5	56	114	39	55	116	14	20	117	49	12	119	24	30	121	0	15	122	36	26	124	13	4
14	125	50	8	127	27	38	129	5	34	130	43	56	132	22	43	134	1	55	135	41	32	137	21	32
15	136	18	42	134	37	15	132	56	9	131	15	26	129	35	5	127	55	9	126	15	37	124	36	29
16	122	57	46	121	19	29	119	41	37	118	4	11	116	27	10	114	50	35	113	14	26	111	38	43
17	110	3	26	108	28	34	106	54	8	105	20	7	103	46	32	102	13	21	100	40	36	99	8	15
18	97	36	17	96	4	44	94	33	35	93	2	48	91	32	25	90	2	23	88	32	44	87	3	26
19	85	34	30	84	5	54	82	37	38	81	9	43	79	42	6	78	14	49	76	47	50	75	21	9
20	73	54	45	72	28	39	71	2	49	69	37	16	68	11	58	66	46	55	65	22	7	63	57	33

JUPITER [4] will be a morning star from the beginning of January to the 20th July, then an evening star to the end of the year.

SATURN [6] will be a morning star to the 29th April, then an evening star to the 7th November, and from thence a morning star to the end of the year.

PHASES OF THE MOON.	NEW MOON,	7th day, at 5h. 25m. morning.
	FIRST QUARTER,	15th day, at 4h. 43m. morning.
	FULL MOON,	21st day, at 8h. 34m. night.
	LAST QUARTER,	28th day, at 7h. 23m. night.

M D.	Day brek.	Twil. ends.	☉'s semi.	♂ Mercury		♀ Venus.		♂ Mars.		♂ Jupiter.		♂ Saturn.		M D.
				sets.	sout.	sets.	sout.	rises.	sout.	sets.	sout.	rises.	sout.	
1	5m48	5 a 50	16 16	4 a 21	0 a 46	4 a 20	0 a 57	7 a 3	3m 3	7 a 28	3 a 29	5m48	10m 24	1
8	5 53	5 50	16 17	rises.	11 m45	3 53	0 14	6 31	3 5	7 8	3 7	5 25	9 59	8
15	6 15	5 51	16 17	6m39	10 50	rises.	11 m29	5 55	2 33	6 49	2 46	5 2	9 35	15
22	6 45	53	16 18	6 19	10 28	6m41	10 48	5 15	1 59	6 30	2 24	4 39	9 10	22
29	6 65	58	16 18	6 39	10 28	5 57	10 14	4 32	1 23	6 12	2 3	4 15	8 45	29

M D	W D	Remarkable Days	HIGH WATER.—LIVERPOOL.				Equation of Time.
			MORNING.		EVENING.		
			Time.	Height.	Time.	Height.	
1	S	Prcess. of Wls, b. 1844	6 33	12 2	7 6	13 4	10 47
2	G	Advent Sunday	7 39	12 10	8 10	14 0	10 24
3	M	Proper [Isaiah i; Acts iii. Lessons. [— ii; Heb. viii.	8 37	13 9	9 3	14 8	10 1
4	Tu	H Souths 1 m 42	9 25	14 9	9 45	15 5	9 36
5	W	Neptune souths 7 a 42	10 7	15 6	10 25	15 10	9 12
6	Th	Nicholas, Bishop	10 42	16 1	10 59	16 1	8 46
7	F	Aldebaran sou. 11a22	11 17	16 5	11 32	16 3	8 20
8	S	Conception V. Mary	11 50	16 8	—	—	7 54
9	G	2 Sunday in Advent	0 4	16 2	0 22	17 0	7 27
10	M	Proper [Isaiah v; Acts ix. Lessons. [— xxiv; James ii.	0 40	15 11	0 58	16 4	7 0
11	Tu	Capella souths 11a45	1 16	15 6	1 34	15 11	6 32
12	W	H souths 1 m 9	1 53	14 10	2 15	15 4	6 4
13	Th	Lucy V and M	2 35	14 2	2 54	14 7	5 36
14	F	Washington d. 1799	3 16	13 6	3 41	13 11	5 7
15	S	Aldebaran sou. 10 a 51	4 10	12 9	4 42	13 1	4 38
16	G	3 Sunday in Advent	5 15	16 6	5 51	13 3	4 9
17	M	Pro. [Isaiah xxv; Acts xvi. Les. [— xxvi; 1 Peter iv.	6 25	12 11	7 0	14 0	3 40
18	Tu	Regulus souths 4 m 15	7 35	14 2	8 7	15 4	3 10
19	W	Neptune souths 6 a 47	8 37	15 8	9 7	16 8	2 40
20	Th	H souths 0 m 36	9 33	17 3	10 1	17 11	2 11
21	F	St. Thomas. Sh. Day	10 26	18 6	10 51	18 9	1 41
22	S	Pleiades souths 9 a 34	11 18	19 5	11 42	19 2	1 11
23	G	4 Sunday in Advent	—	—	0 8	19 9	0 41
24	M	[Isaiah xxx; Acts xxiii. — xxxii; 1 John iii.	0 32	18 11	0 56	19 6	0 11
25	Tu	Christmas Day	1 20	18 1	1 44	18 6	0 19
26	W	St. Stephens	2 8	16 10	2 33	17 3	0 48
27	Th	St. John	2 57	15 4	3 21	15 9	1 18
28	F	Innocents	3 43	13 11	4 8	14 4	1 48
29	S	Neptune souths 6 a 8	4 34	12 9	5 2	13 2	2 17
30	G	1st Sun. after Christ.	5 36	11 11	6 9	12 5	2 46
31	M	[Isaiah xxxvii; Acts xxvii. — xxxviii; 3 John.	6 43	12 0	7 18	12 6	3 15



Bristol tides				SUN.				MOON.				ASPECTS AND WEATHER.	
M.	D.	morn. H. M.	even. H. M.	height F. 1.	rises. H. M.	sets. H. M.	rt. ascen. H. M. S.	declin. ° ' "	rises. H. M.	souths. H. M.	declin. ° ' "	M.	D.
1	1	46	2 27	22 10	7 59	3 39	16 29 40	21 49 50	1m31	7m37	1 4	24	1
2	3	7	3 42	24 7	8 0	3 39	16 34 0	21 58 56	2 38	8 21	5 18	25	2
3	4	11	4 37	26 1	8 2	3 38	16 38 20	22 7 36	3 44	9 5	8 56	26	3
4	5	0	5 21	27 4	8 3	3 37	16 42 41	22 15 50	4 48	9 49	12 8	27	4
5	6	46	6 6	28 3	8 5	3 37	16 47 2	22 23 39	5 47	10 34	14 48	28	5
6	7	4	6 44	28 9	8 6	3 36	16 51 24	22 31 1	6 41	11 20	16 48	29	6
7	8	7	7 21	29 2	8 7	3 36	16 55 46	22 37 57	sets.	0 a 7	18 3	N 7	7
8	9	7	7 55	29 6	8 8	3 35	17 0 9	22 44 27	5a10	0 55	18 27	1	8
9	10	8	8 39	29 11	8 10	3 35	17 4 33	22 50 30	6 2	1 42	17 59	2	9
10	11	8	9 3	29 2	8 11	3 35	17 8 57	22 56 5	6 59	2 30	16 40	3	10
11	12	9	9 37	28 6	8 12	3 35	17 13 21	23 1 14	8 2	3 17	14 32	4	11
12	13	9	10 14	27 7	8 13	3 34	17 17 45	23 5 55	9 9	4 4	11 40	5	12
13	14	10	10 48	26 5	8 14	3 34	17 22 10	23 10 8	10 18	4 51	8 11	6	13
14	15	11	11 36	24 11	8 15	3 34	17 26 36	23 13 54	11 29	5 38	4 13	7	14
15	16	—	0 4 23	8	8 16	3 34	17 31 1	23 17 12	morn	6 26	0 5	8	15
16	17	0	1 4 23	2	8 17	3 35	17 35 27	23 20 2	0 43	7 16	4n32	9	16
17	18	1	2 18 24	5	8 18	3 35	17 39 53	23 22 24	2 1	8 9	8 52	10	17
18	19	3	3 39 27	3	8 19	3 35	17 44 19	23 24 18	3 21	9 4	12 46	11	18
19	20	4	4 42 29	10	8 20	3 35	17 48 45	23 25 44	4 39	10 3	15 53	12	19
20	21	5	5 40 32	0	8 20	3 35	17 53 11	23 26 41	5 57	11 5	17 52	13	20
21	22	6	6 35 33	1	8 21	3 36	17 57 38	23 27 10	rises.	morn	—	F 21	21
22	23	7	7 31 34	5	8 21	3 36	18 2 4	23 27 11	5 a 7	0 8	18 27	15	22
23	24	7	8 23 34	11	8 22	3 37	18 6 30	23 26 44	6 20	1 10	17 36	16	23
24	25	8	9 8 34	6	8 22	3 37	18 10 57	23 25 48	7 34	2 10	15 28	17	24
25	26	9	9 52 33	0	8 22	3 38	18 15 23	23 24 25	8 49	3 6	12 20	18	25
26	27	10	10 34 30	10	8 23	3 38	18 19 50	23 22 32	10 5	3 58	8 35	19	26
27	28	11	11 14 28	3	8 23	3 39	18 24 16	23 20 12	11 17	4 47	4 30	20	27
28	29	11	11 58 25	6	8 23	3 40	18 28 42	23 17 24	morn	5 34	0 20	21	28
29	30	—	0 21 23	1	8 23	3 41	18 33 8	23 14 7	0 26	6 19	3s44	22	29
30	31	0	1 20 21	8	8 23	3 42	18 37 34	23 10 22	1 35	7 3	7 31	23	30
31	1	1	2 38 21	9	8 23	3 43	18 41 59	23 6 10	2 39	7 47	10 55	24	31

LUNAR DISTANCES FROM THE SUN.

Mean Astronomical Time at Greenwich.

M.	D.	NOON.	3 HOURS.	6 HOURS.	9 HOURS.	MIDN.	15 HOUR.	18 HOUR.	21 HOUR.
1	E	62 33 13	61 9 7	59 45 13	58 21 32	56 58 4	55 34 47	54 11 42	52 48 47
2		51 26 4	50 3 31	48 41 8	47 18 54	45 56 50	44 34 46	43 13 10	41 51 33
3		40 30 5	39 8 46	37 47 34	36 26 31	35 5 37	33 44 50	32 24 12	31 3 43
4		29 43 23	28 23 13	27 3 12	25 43 22	24 23 45	23 4 20	21 45 10	20 26 16
5		18 56 51	18 13 1	17 2 1	15 11 1	14 1 1	13 1 1	12 1 1	11 1 1
6	W	25 15 27	26 35 58	27 56 44	29 17 42	30 38 52	32 0 13	33 21 46	34 43 30
7		36 5 24	37 27 29	38 49 44	40 12 10	41 34 46	42 57 33	44 20 31	45 43 39
8		47 6 59	48 30 30	49 54 13	51 18 8	52 42 15	54 6 34	55 31 5	56 55 50
9		58 20 48	59 46 0	61 11 26	62 37 7	64 3 2	65 29 12	66 55 38	68 22 20
10		69 49 18	71 16 33	72 44 35	74 11 55	75 40 2	77 8 28	78 37 13	80 6 16
11		81 35 39	83 5 23	84 35 26	86 5 50	87 36 35	89 7 41	90 39 9	92 10 59
12		93 43 12	95 15 47	96 48 45	98 22 6	99 55 50	101 29 58	103 4 30	104 39 25
13		106 14 45	107 50 28	109 26 36	111 3 8	112 40 4	114 17 24	115 55 8	117 33 16
14		119 11 47	120 50 42	122 30 0	124 9 41	125 49 43	127 30 8	129 10 54	130 52 1
15		130 0 3	128 24 3	126 48 28	125 13 19	123 38 36	122 4 19	120 30 29	118 57 5
16		117 24 6	115 51 34	114 19 28	112 47 47	111 16 31	109 45 40	108 15 14	106 45 13
17		105 15 35	103 46 21	102 17 30	100 49 2	99 20 56	97 53 12	96 25 49	94 58 47
18		93 32 6	92 5 45	90 39 43	89 14 0	87 48 35	86 23 27	84 58 37	83 34 4
19		82 9 47	80 45 45	79 21 58	77 58 26	76 35 7	75 12 2	73 49 9	72 26 29
20		71 4 0	69 41 42	68 19 35	66 57 38	65 35 51	64 14 12	62 52 42	61 31 21
21		60 10 6	58 48 59	57 27 58	56 7 4	54 46 15	53 25 32	52 4 53	50 44 19

URANUS [♅] will be best observed in the evenings from January to the end of May, and in the mornings from July to the end of the year.

NEPTUNE will be best observed with a good telescope about its opposition in the beginning of October; it will appear in the constellation Pisces as a very small star.

M	JANUARY.		FEBRUARY.		MARCH.		APRIL.		MAY.		JUNE.		M
	Noon.	Midn.	Noon.	Midn.	Noon.	Midn.	Noon.	Midn.	Noon.	Midn.	Noon.	Midn.	
D.													D.
1	16 3	15 57	15 21	15 16	15 11	15 7	14 47	14 46	14 45	14 46	15 2	15 5	1
2	15 52	15 46	15 11	15 6	15 3	15 0	14 45	14 45	14 47	14 49	15 9	15 13	2
3	15 35	15 33	15 2	14 59	14 57	14 54	14 45	14 45	14 51	14 54	15 18	15 23	3
4	15 27	15 21	14 55	14 53	14 52	14 50	14 46	14 48	14 57	15 1	15 28	15 31	4
5	15 15	15 10	14 50	14 49	14 48	14 47	14 50	14 53	15 5	15 10	15 40	15 46	5
6	15 5	15 0	14 48	14 48	14 47	14 47	14 56	15 0	15 15	15 21	15 52	15 59	6
7	14 56	14 53	14 49	14 50	14 47	14 49	15 5	15 10	15 27	15 34	16 5	16 11	7
8	14 51	14 49	14 52	14 55	14 51	14 54	15 16	15 22	15 41	15 48	16 17	16 23	8
9	14 44	14 48	14 58	15 2	14 57	15 2	15 29	15 37	15 56	16 3	16 28	16 32	9
10	14 45	14 49	15 7	15 12	15 6	15 12	15 44	15 52	16 11	16 18	16 35	16 37	10
11	14 51	14 54	15 18	15 23	15 18	15 24	16 0	16 8	16 25	16 31	16 39	16 38	11
12	14 57	15 0	15 30	15 36	15 31	15 38	16 15	16 22	16 36	16 40	16 37	16 35	12
13	15 4	15 8	15 42	15 48	15 46	15 53	16 28	16 34	16 43	16 45	16 31	16 26	13
14	15 13	15 18	15 54	16 0	16 0	16 7	16 38	16 41	16 45	16 44	16 21	16 14	14
15	15 23	15 27	16 4	16 9	16 14	16 19	16 43	16 43	16 41	16 38	16 7	16 0	15
16	15 32	15 37	16 12	16 15	16 24	16 28	16 42	16 40	16 33	16 27	15 52	15 43	16
17	15 42	15 46	16 18	16 19	16 31	16 33	16 37	16 33	16 21	16 13	15 37	15 30	17
18	15 50	15 54	16 19	16 19	16 34	16 33	16 27	16 21	16 6	15 58	15 23	15 17	18
19	15 57	16 0	16 18	16 17	16 32	16 30	16 15	16 8	15 50	15 43	15 11	15 5	19
20	16 2	16 4	16 15	16 13	16 26	16 22	16 1	15 53	15 35	15 28	15 1	14 57	20
21	16 6	16 7	16 10	16 7	16 18	16 13	15 46	15 39	15 21	15 15	14 53	14 50	21
22	16 8	16 9	16 4	16 0	16 7	16 2	15 33	15 27	15 9	15 4	14 48	14 47	22
23	16 9	16 9	15 57	15 53	15 56	15 50	15 21	15 15	15 0	14 56	14 46	14 46	23
24	16 9	16 9	15 50	15 46	15 45	15 39	15 10	15 6	14 53	14 50	14 46	14 47	24
25	16 8	16 7	15 42	15 38	15 34	15 29	15 2	14 58	14 48	14 46	14 48	14 50	25
26	16 5	16 4	15 34	15 30	15 24	15 20	14 55	14 52	14 45	14 44	14 52	14 54	26
27	16 1	15 59	15 26	15 22	15 16	15 12	14 50	14 48	14 44	14 44	14 57	15 0	27
28	15 56	15 52	15 18	15 14	15 8	15 4	14 46	14 45	14 45	14 46	15 3	15 6	28
29	15 48	15 44	.. ..	.. ..	15 1	14 58	14 44	14 44	14 47	14 49	15 10	15 14	29
30	15 40	15 35	.. ..	.. ..	14 55	14 53	14 44	14 44	14 50	14 53	15 18	15 22	30
31	15 30	15 25	.. ..	.. ..	14 51	14 49	.. ..	.. ..	14 55	14 58	.. ..	.. ..	31

M	JULY.		AUGUST.		SEPT.		OCTOBER.		NOVEMBER.		DECEMBER.		M
	Noon.	Midn.	Noon.	Midn.	Noon.	Midn.	Noon.	Midn.	Noon.	Midn.	Noon.	Midn.	
D.													D.
1	15 26	15 30	15 59	16 2	16 11	16 10	16 1	15 56	15 27	15 22	15 4	15 0	1
2	15 35	15 39	16 4	16 7	16 8	16 6	15 52	15 47	15 17	15 12	14 56	14 53	2
3	15 44	15 48	16 9	16 11	16 4	16 2	15 43	15 38	15 8	15 4	14 50	14 48	3
4	15 53	15 58	16 12	16 13	15 59	15 56	15 34	15 29	15 1	14 58	14 46	14 45	4
5	16 2	16 7	16 14	16 14	15 53	15 49	15 25	15 21	14 55	14 52	14 44	14 43	5
6	16 11	16 15	16 14	16 13	15 46	15 42	15 17	15 13	14 50	14 48	14 43	14 43	6
7	16 18	16 21	16 12	16 10	15 38	15 34	15 10	15 6	14 46	14 45	14 43	14 44	7
8	16 24	16 26	16 7	16 4	15 29	15 25	15 2	14 59	14 44	14 43	14 45	14 47	8
9	16 27	16 27	16 0	15 56	15 20	15 16	14 56	14 54	14 43	14 43	14 49	14 51	9
10	16 27	16 24	15 52	15 47	15 12	15 7	14 51	14 49	14 44	14 45	14 54	14 57	10
11	16 21	16 18	15 41	15 36	15 3	15 0	14 47	14 46	14 47	14 49	15 0	15 4	11
12	16 13	16 8	15 30	15 25	14 56	14 53	14 45	14 45	14 52	14 55	15 9	15 14	12
13	16 2	15 56	15 19	15 14	14 51	14 49	14 45	14 46	14 59	15 3	15 19	15 25	13
14	15 50	15 43	15 9	15 4	14 48	14 47	14 48	14 50	15 8	15 14	15 31	15 38	14
15	15 36	15 29	15 0	14 57	14 47	14 48	14 53	14 56	15 20	15 27	15 45	15 52	15
16	15 23	15 17	14 54	14 51	14 49	14 52	15 0	15 5	15 34	15 42	15 59	16 6	16
17	15 11	15 6	14 50	14 49	14 54	14 58	15 11	15 17	15 50	15 58	16 14	16 20	17
18	15 1	14 57	14 48	14 49	15 2	15 7	15 24	15 31	16 6	16 14	16 27	16 32	18
19	14 54	14 51	14 50	14 52	15 12	15 18	15 38	15 46	16 21	16 28	16 37	16 41	19
20	14 49	14 48	14 54	14 57	15 24	15 31	15 54	16 1	16 34	16 39	16 44	16 45	20
21	14 48	14 48	15 1	15 5	15 37	15 44	16 9	16 16	16 43	16 46	16 45	16 43	21
22	14 49	14 50	15 10	15 15	15 51	15 57	16 22	16 28	16 47	16 47	16 40	16 36	22
23	14 52	14 54	15 20	15 26	16 4	16 9	16 32	16 36	16 45	16 42	16 31	16 25	23
24	14 57	15 0	15 31	15 37	16 14	16 18	16 38	16 40	16 38	16 32	16 18	16 10	24
25	15 4	15 8	15 4	15 47	16 22	16 24	16 39	16 38	16 26	16 19	16 2	15 54	25
26	15 12	15 16	15 52	15 56	16 26	16 26	16 36	16 32	16 12	16 4	15 46	15 38	26
27	15 4	15 25	16 0	16 4	16 26	16 25	16 28	16 23	15 56	15 49	15 31	15 23	27
28	15 29	15 34	16 7	16 9	16 23	16 20	16 17	16 11	15 41	15 34	15 17	15 11	28
29	15 38	15 42	16 11	16 12	16 17	16 14	16 4	15 58	15 27	15 21	15 5	15 0	29
30	15 46	15 50	16 13	16 13	16 9	16 5	15 51	15 45	15 15	15 9	14 56	14 53	30
31	15 53	15 56	16 13	16 12	.. ..	.. ..	15 39	15 33	.. ..	.. ..	14 50	14 47	31

M	JANUARY.		FEBRUARY		MARCH,		APRIL.		MAY.		JUNE.		M
	Noon.	Midn.	Noon.	Midn.	Noon.	Midn.	Noon.	Midn.	Noon.	Midn.	Noon.	Midn.	
D.	"	"	"	"	"	"	"	"	"	"	"	"	D.
1	58 47	58 28	56 13	55 55	55 36	55 23	54 11	54 6	54 1 54 4	55 3 55 16	1		1
2	58 7 57 45		55 38 55 21		55 10 54 57		54 3 54 2		54 10 54 16	55 31 55 46	2		2
3	57 22 56 59		55 6 54 52		54 46 54 36		54 2 54 4		54 25 54 35	56 4 56 22	3		3
4	56 36 56 14		54 40 54 30		54 27 54 20		54 7 54 13		54 47 55 0	56 41 57 2	4		4
5	55 52 55 32		54 23 54 17		54 14 54 10		54 21 54 31		55 16 55 33	57 24 57 46	5		5
6	55 14 54 58		54 14 54 14		54 6 54 9		54 43 54 58		55 53 56 14	58 9 58 33	6		6
7	54 44 54 33		54 16 54 21		54 12 54 17		55 15 55 35		56 37 57 2	58 56 59 19	7		7
8	54 24 54 18		54 28 54 38		54 25 54 35		55 56 56 20		57 28 57 55	59 41 60 1	8		8
9	54 14 54 13		54 51 55 6		54 48 55 3		56 45 57 12		58 22 58 51	60 19 60 31	9		9
10	54 14 54 19		55 22 55 41		55 21 55 41		57 40 58 8		59 17 59 43	60 46 60 54	10		10
11	54 25 54 34		56 2 56 23		56 3 56 27		58 37 59 6		60 8 60 30	60 59 60 58	11		11
12	54 45 54 58		56 46 57 9		56 52 57 19		59 33 59 58		60 48 61 4	60 53 60 44	12		12
13	55 12 55 28		57 32 57 54		57 45 58 13		60 21 60 41		61 14 61 20	60 31 60 14	13		13
14	55 45 56 2		58 16 58 36		58 39 59 4		60 56 61 8		61 22 61 18	59 53 59 30	14		14
15	56 20 56 38		58 54 59 10		59 27 59 49		61 14 61 16		61 9 60 55	59 4 58 37	15		15
16	56 56 57 13		59 23 59 34		60 7 60 21		61 13 61 5		60 38 60 17	58 10 57 42	16		16
17	57 30 57 46		59 42 59 47		60 32 60 39		60 53 60 37		59 53 59 26	57 14 56 48	17		17
18	58 0 58 14		59 49 59 48		60 41 60 40		60 17 59 55		58 59 58 30	56 22 55 59	18		18
19	58 25 58 36		59 45 59 40		60 35 60 26		59 31 59 5		58 2 57 33	55 37 55 17	19		19
20	58 45 58 53		59 33 59 25		60 14 59 59		58 39 58 13		57 6 56 40	55 0 54 45	20		20
21	58 59 59 4		59 15 59 3		59 42 59 24		57 47 57 22		56 16 55 53	54 32 54 22	21		21
22	59 8 59 10		58 52 58 39		59 4 58 44		56 58 56 35		55 32 55 14	54 15 54 9	22		22
23	59 12 59 12		58 26 58 13		58 23 58 2		56 13 55 53		54 57 54 43	54 6 54 5	23		23
24	59 11 59 9		57 59 57 45		57 42 57 22		55 35 55 19		54 31 54 21	54 6 54 9	24		24
25	59 7 59 2		57 31 57 17		57 3 56 44		55 4 54 51		54 13 54 7	54 13 54 19	25		25
26	58 57 58 50		57 2 56 48		56 27 56 10		54 39 54 29		54 2 54 0	54 27 54 36	26		26
27	58 42 58 33		56 33 56 19		55 55 55 40		54 20 54 13		53 59 54 0	54 45 54 56	27		27
28	58 21 58 9		56 5 55 50		55 26 55 13		54 7 54 3		54 2 54 5	55 8 55 21	28		28
29	57 55 57 40		.. ..		55 1 54 50		54 0 53 58		54 10 54 15	55 34 55 48	29		29
30	57 24 57 7		.. ..		54 40 54 31		53 58 53 59		54 23 54 31	56 2 56 17	30		30
31	56 49 56 31		.. ..		54 23 54 16		.. ..		54 40 54 51	.. ..	31		31

M	JULY.		AUGUST.		SEPT.		OCTOBER.		NOVEMBER		DECEMBER		M
	Noon.	Midn.	Noon.	Midn.	Noon.	Midn.	Noon.	Midn.	Noon.	Midn.	Noon.	Midn.	
D.	"	"	"	"	"	"	"	"	"	"	"	"	D.
1	56 32	56 49	53 35	58 45	59 19	59 14	58 41	58 24	56 38	56 18	55 14	54 58	1
2	57 4 57 21		58 54 59 3		59 8 59 1		58 7 57 51		56 0 55 43	54 44 54 32	54 44 54 32		2
3	57 37 57 54		59 10 59 16		58 53 58 44		57 34 57 18		55 28 55 13	54 22 54 13	54 22 54 13		3
4	58 12 58 29		59 22 59 25		58 34 58 23		57 1 56 46		55 0 54 49	54 7 54 2	54 7 54 2		4
5	58 46 59 2		59 28 59 29		58 11 57 59		56 30 56 15		54 38 54 29	53 58 53 56	53 58 53 56		5
6	59 17 59 32		59 28 59 25		57 45 57 31		56 0 55 46		54 20 54 13	53 55 53 55	53 55 53 55		6
7	59 45 59 56		59 20 59 13		57 16 57 1		55 32 55 19		54 7 54 2	53 57 54 0	53 57 54 0		7
8	60 5 60 11		59 3 58 52		56 45 56 28		55 7 54 55		53 59 53 57	54 4 54 10	54 4 54 10		8
9	60 15 60 15		58 39 58 23		56 12 55 56		54 44 54 34		53 56 53 57	54 16 54 25	54 16 54 25		9
10	60 12 60 5		58 6 57 48		55 40 55 24		54 25 54 17		53 59 54 3	54 34 54 46	54 34 54 46		10
11	59 55 59 42		57 29 57 8		55 10 54 56		54 11 54 6		54 9 54 17	54 59 55 13	54 59 55 13		11
12	59 26 59 7		56 48 56 27		54 44 54 34		54 3 54 2		54 27 54 39	55 29 55 47	55 29 55 47		12
13	58 46 58 23		56 7 55 48		54 25 54 18		54 3 54 7		54 53 55 9	56 7 56 28	56 7 56 28		13
14	57 59 57 35		55 30 55 13		54 13 54 11		54 12 54 20		55 28 55 49	56 51 57 16	56 51 57 16		14
15	57 10 56 45		54 58 54 45		54 11 54 13		54 30 54 43		56 12 56 37	57 41 58 7	57 41 58 7		15
16	56 22 55 59		54 34 54 26		54 19 54 26		54 59 55 17		57 4 57 32	58 34 59 1	58 34 59 1		16
17	55 39 55 20		54 19 54 16		54 37 54 49		55 37 55 59		58 1 58 30	59 27 59 52	59 27 59 52		17
18	55 3 54 48		54 15 54 16		55 5 55 22		56 24 56 50		58 59 59 28	60 16 60 36	60 16 60 36		18
19	54 36 54 26		54 21 54 27		55 42 56 3		57 37 57 45		59 55 60 20	60 54 61 8	60 54 61 8		19
20	54 19 54 14		54 36 54 43		56 26 56 50		58 14 58 42		60 43 61 1	61 17 61 21	61 17 61 21		20
21	54 12 55 13		55 1 55 17		57 15 57 40		59 9 59 35		61 15 61 25	61 21 61 15	61 21 61 15		21
22	54 15 54 20		55 33 55 52		58 4 58 28		59 59 60 19		61 29 61 28	61 5 60 50	61 5 60 50		22
23	54 27 54 36		56 11 56 31		58 51 59 11		60 36 60 50		61 22 61 11	60 31 60 8	60 31 60 8		23
24	54 47 54 59		56 51 57 11		59 29 59 45		60 58 61 2		60 55 60 36	59 42 59 15	59 42 59 15		24
25	55 12 55 26		57 31 57 50		59 57 60 6		61 2 60 57		60 13 59 48	58 46 58 16	58 46 58 16		25
26	55 42 55 57		58 8 58 24		60 12 60 14		60 48 60 35		59 21 58 53	57 47 57 18	57 47 57 18		26
27	56 13 56 29		58 39 58 52		60 13 60 9		60 19 60 0		58 24 57 56	56 50 56 24	56 50 56 24		27
28	56 43 57 1		59 2 59 11		60 2 59 52		59 39 59 17		57 28 57 2	55 59 55 37	55 59 55 37		28
29	57 17 57 31		59 18 59 22		59 41 59 27		58 53 58 30		56 37 56 13	55 16 54 59	55 16 54 59		29
30	57 46 57 59		59 25 59 26		59 13 58 57		58 6 57 43		55 51 55 32	54 43 54 30	54 43 54 30		30
31	58 12 58 24		59 25 59 23		.. ..		57 20 56 58		.. ..	54 19 54 11	54 19 54 11		31

Mean Refraction.

App. Alt.	Refr.	App. Alt.	Refr.	App. Alt.	Refr.	App. Alt.	Refr.	App. Alt.	Refr.
° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "
0 0	33 0	5 0	9 54	10 0	5 15	20 0	2 35	34 0	1 24
0 5	32 10	5 5	9 46	10 10	5 10	20 10	2 34	34 30	1 23
0 10	31 22	5 10	9 38	10 20	5 5	20 20	2 32	35 0	1 21
0 15	30 35	5 15	9 30	10 30	5 0	20 30	2 31	35 30	1 20
0 20	29 50	5 20	9 23	10 40	4 56	20 40	2 29	36 0	1 18
0 25	29 6	5 25	9 15	10 50	4 51	20 50	2 28	36 30	1 17
0 30	28 23	5 30	9 8	11 0	4 47	21 0	2 27	37 0	1 16
0 35	27 41	5 35	9 1	11 10	4 43	21 10	2 26	37 30	1 14
0 40	27 0	5 40	8 54	11 20	4 39	21 20	2 25	38 0	1 13
0 45	26 20	5 45	8 47	11 30	4 34	21 30	2 24	38 30	1 11
0 50	25 42	5 50	8 41	11 40	4 31	21 40	2 23	39 0	1 10
0 55	25 5	5 55	8 34	11 50	4 27	21 50	2 21	39 30	1 9
1 0	24 29	6 0	8 28	12 0	4 23	22 0	2 20	40 0	1 8
1 5	23 54	6 5	8 21	12 10	4 20	22 10	2 19	41 0	1 5
1 10	23 20	6 10	8 15	12 20	4 16	22 20	2 18	42 0	1 3
1 15	22 47	6 15	8 9	12 30	4 13	22 30	2 17	43 0	1 1
1 20	22 15	6 20	8 3	12 40	4 9	22 40	2 16	44 0	0 59
1 25	21 44	6 25	7 57	12 50	4 6	22 50	2 15	45 0	0 57
1 30	21 15	6 30	7 51	13 0	4 3	23 0	2 14	46 0	0 55
1 35	20 46	6 35	7 45	13 10	4 0	23 10	2 13	47 0	0 53
1 40	20 18	6 40	7 40	13 20	3 57	23 20	2 12	48 0	0 51
1 45	19 51	6 45	7 35	13 30	3 54	23 30	2 11	49 0	0 49
1 50	19 25	6 50	7 30	13 40	3 51	23 40	2 10	50 0	0 48
1 55	19 0	6 55	7 25	13 50	3 48	23 50	2 9	51 0	0 46
2 0	18 35	7 0	7 20	14 0	3 45	24 0	2 8	52 0	0 44
2 5	18 11	7 5	7 15	14 10	3 43	24 10	2 7	53 0	0 43
2 10	17 48	7 10	7 11	14 20	3 40	24 20	2 6	54 0	0 41
2 15	17 26	7 15	7 6	14 30	3 38	24 30	2 5	55 0	0 40
2 20	17 4	7 20	7 2	14 40	3 35	24 40	2 4	56 0	0 38
2 25	16 44	7 25	6 57	14 50	3 33	24 50	2 3	57 0	0 37
2 30	16 24	7 30	6 53	15 0	3 30	25 0	2 2	58 0	0 35
2 35	16 4	7 35	6 49	15 10	3 28	25 10	2 1	59 0	0 34
2 40	15 45	7 40	6 45	15 20	3 26	25 20	2 0	60 0	0 33
2 45	15 27	7 45	6 41	15 30	3 24	25 30	1 59	61 0	0 32
2 50	15 9	7 50	6 37	15 40	3 21	25 40	1 58	62 0	0 30
2 55	14 52	7 55	6 33	15 50	3 19	25 50	1 57	63 0	0 29
3 0	14 36	8 0	6 29	16 0	3 17	26 0	1 56	64 0	0 28
3 5	14 20	8 5	6 25	16 10	3 15	26 10	1 55	65 0	0 26
3 10	14 4	8 10	6 22	16 20	3 12	26 20	1 55	66 0	0 25
3 15	13 49	8 15	6 18	16 30	3 10	26 30	1 54	67 0	0 24
3 20	13 34	8 20	6 15	16 40	3 8	26 40	1 53	68 0	0 23
3 25	13 20	8 25	6 11	16 50	3 6	26 50	1 52	69 0	0 22
3 30	13 6	8 30	6 8	17 0	3 4	27 0	1 51	70 0	0 21
3 35	12 53	8 35	6 5	17 10	3 3	27 15	1 50	71 0	0 19
3 40	12 40	8 40	6 1	17 20	3 1	27 30	1 49	72 0	0 18
3 45	12 27	8 45	5 58	17 30	2 59	27 45	1 48	73 0	0 17
3 50	12 15	8 50	5 55	17 40	2 57	28 0	1 47	74 0	0 16
3 55	12 3	8 55	5 52	17 50	2 55	28 15	1 46	75 0	0 15
4 0	11 51	9 0	5 48	18 0	2 54	28 30	1 45	76 0	0 14
4 5	11 40	9 5	5 45	18 10	2 52	28 45	1 44	77 0	0 13
4 10	11 29	9 10	5 42	18 20	2 51	29 0	1 42	78 0	0 12
4 15	11 18	9 15	5 39	18 30	2 49	29 30	1 40	79 0	0 11
4 20	11 8	9 20	5 36	18 40	2 47	30 0	1 38	80 0	0 10
4 25	10 58	9 25	5 34	18 50	2 46	30 30	1 37	81 0	0 9
4 30	10 48	9 30	5 31	19 0	2 44	31 0	1 35	82 0	0 8
4 35	10 39	9 35	5 28	19 10	2 43	31 30	1 33	83 0	0 7
4 40	10 29	9 40	5 25	19 20	2 41	32 0	1 31	84 0	0 6
4 45	10 20	9 45	5 23	19 30	2 40	32 30	1 30	86 0	0 4
4 50	10 11	9 50	5 20	19 40	2 38	33 0	1 28	88 0	0 2
4 55	10 2	9 55	5 18	19 50	2 37	33 30	1 26	90 0	0 0

Dip of The Horizon.

Height of the Eye.	Dip of the Horizon.	Height of the Eye.	Dip of the Horizon.
ft.	ft.	ft.	ft.
1	0 59	19	4 17
2	1 24	20	4 24
3	1 42	21	4 31
4	1 58	22	4 37
5	2 12	23	4 43
6	2 25	24	4 49
7	2 36	25	4 55
8	2 47	26	5 1
9	2 57	27	5 7
10	3 7	28	5 13
11	3 16	29	5 18
12	3 25	30	5 24
13	3 33	31	5 29
14	3 41	32	5 34
15	3 49	33	5 39
16	3 56	34	5 44
17	4 4	35	5 49
18	4 11	38	6 4

Dip at Different Distances.

Miles.	Height of the Eye in Feet.
	5 10 15 20 25 30
4	11 23 34 45 57 68
4 1/2	6 12 17 23 28 34
5	4 8 12 15 19 23
1	3 6 9 12 15 17
1 1/2	3 5 7 10 12 14
1 1/4	3 4 6 8 10 12
2	2 4 5 7 8 9
2 1/2	2 3 4 6 7 8
3	2 3 4 5 6 7
3 1/2	2 3 4 5 6 6
4	2 3 4 5 5 6
5	2 3 4 4 5 6
6	2 3 4 4 5 5

Table Of Corrections
To be applied to the Rising and Setting of the Sun, Moon, and Planets, when viewed from elevations above the sea level—
Subtract from Rising, add to Setting.

ft.	s.	ft.	m.s.	ft.	m.s.
5	16	50	0 51	120	1 18
10	23	60	0 56	140	1 26
15	28	70	1 1	160	1 33
20	30	80	1 5	180	1 38
30	38	90	1 8	200	1 43
40	46	100	1 10	300	2 5

**Right Ascensions, and Declinations, and Semi-diurnal Arcs,
FOR LATITUDE 54° 10',
Of the Principal Fixed Stars**

NAMES.	Magni- tude.	Right Ascension.			Annual Variations "	Declination.			Annual Variations "	Semi-diurnal Arcs.		
		H.	M.	S.		°	'	"		H.	M.	S.
Andromedæ	2	0	1	28	+ 3'08	N	28	21	2	+19'90	9	19
Pegasi (Algenib)	3.2	0	6	20	+ 3'08		14	26	18	+20'03	7	27
Cassiopeæ	Var.	0	32	55	+ 3'36		55	48	7	+19'81	sets not	
Ceti	2	0	36	52	+ 3'01	S	18	43	22	+19'82	4	12
Ursæ Minor. (Polaris)	2	1	9	58	+18'84	N	88	35	42	+19'18	sets not	
Eripani (Achernar) ..	1	1	32	43	+ 2'24	S	57	55	5	+18'43	rises not	
Arietes.	2	1	59	37	+ 3'36	N	22	49	38	+17'25	8	27
Ceti	2.3	2	55	16	+ 3'13		3	33	43	+14'38	6	23
Persei	2	3	14	46	+ 4'24		49	22	52	+13'22	sets not	
Tauri	3	3	39	31	+ 3'55		23	41	17	+11'50	8	34
Tauri (Aldebaran) ..	1	4	28	14	+ 3'43		16	14	14	+ 7'67	7	39
Aurigæ (Capella)	1	5	6	48	+ 4'42		45	51	28	+ 4'22	sets not	
Orionis (Rigel)	1	5	8	6	+ 2'88	S	8	21	33	+ 4'50	5	17
Tauri	2	5	17	49	+ 3'79	N	28	29	27	+ 3'50	9	21
Orionis	2	5	25	10	+ 3'06	S	0	24	5	+ 3'02	6	1
Leporis	3	5	26	49	+ 2'64		17	55	14	+ 2'92	4	10
Orionis	2	5	29	25	+ 3'04		1	17	25	+ 2'68	5	57
Columbæ	2	5	34	48	+ 2'18		34	8	49	+ 2'22	sets not	
Orionis	Var.	5	47	55	+ 3'25	N	7	22	44	+ 1'08	6	45
Argus (Canopus)	1	6	20	59	+ 1'33	S	52	37	25	- 1'82	rises not	
Canis Majoris (Sirius)	1	6	39	15	+ 2'64		16	32	6	- 4'62	4	27
Geminorum (Castor)	2.1	7	26	3	+ 3'84	N	32	10	45	- 7'40	10	13
Canis Minoris (Proc.)	1	7	32	17	+ 3'14		5	33	58	- 8'87	6	35
Geminorum (Pollux)	1.2	7	37	7	+ 3'68		28	20	49	- 8'28	9	20
Hydræ	2	9	21	0	+ 2'95	S	8	4	46	-15'37	6	49
Leonis (Regulus)	1.2	10	1	14	+ 3'20	N	12	37	15	-17'40	7	17
Ursæ Majoris	2	10	55	26	+ 3'77		62	28	25	-19'34	sets not	
Leonis	2.3	11	6	59	+ 3'20		21	15	26	-19'66	8	16
Leonis	2	11	42	13	+ 3'06		15	19	16	-20'09	7	34
Ursæ Majoris	2.3	11	46	46	+ 3'19		54	26	23	-20'02	sets not	
Crucis	1	12	19	10	+ 3'26	S	62	21	18	-19'94	rises not	
Corvi	2.3	12	27	21	+ 3'13		22	39	20	-19'98	3	44
Virginis (Spica)	2	13	18	8	+ 3'15		10	27	40	-18'95	5	5
Centauri	1	13	54	24	+ 4'15		59	43	29	-17'69	rises not	
Bootis (Arcturus)	1	14	9	33	+ 2'73	N	19	52	53	-18'93	8	5
Centauri	1	14	30	32	+ 4'03	S	60	16	39	-15'06	rises not	
Bootis	2.3	14	39	8	+ 2'62	N	27	38	26	-15'42	9	13
Libræ	2.3	14	43	28	+ 3'30	S	15	28	59	-15'24	4	34
Ursæ Minoris	2	14	51	8	- 0'26	N	74	42	10	-14'75	sets not	
Libræ	2	15	9	48	+ 3'22	S	8	53	11	-13'60	5	14
Coronæ Borealis	2	15	29	1	+ 2'54	N	27	10	3	-12'36	9	8
Serpentis	2.3	15	37	40	+ 2'95		6	50	58	-11'63	6	42
Scorpii (Antares)	1.2	16	21	12	+ 3'67	S	26	7	54	- 8'44	3	15
Trianguli Australis ..	2	16	34	30	+ 6'27		68	46	35	- 7'44	rises not	
Herculis	Var.	17	8	32	+ 2'73	N	14	32	44	- 4'44	7	29
Draconis	3.2	17	27	24	+ 1'35		52	24	6	- 2'85	sets not	
Lyre (Vega)	1	18	32	24	+ 2'03		38	39	39	+ 3'10	sets not	
Lyre	Var.	18	45	8	+ 2'21		33	12	31	+ 3'88	10	31
Aquilæ	3	19	39	53	+ 2'85		10	17	20	+ 8'45	7	2
Aquilæ (Altair)	1.2	19	44	15	+ 2'93		8	31	0	+ 9'17	6	51
Aquilæ	4	19	48	44	+ 2'94		6	4	27	+ 8'66	6	37
Pavonis	2	20	15	2	+ 4'80	S	57	9	38	+11'08	rises not	
Cygni	2.1	20	36	52	+ 2'04	N	44	48	10	+12'66	sets not	
Cephei	3	21	15	23	+ 1'44		62	1	6	+15'10	sets not	
Aquarii	3	21	24	30	+ 3'16	S	6	9	32	+15'60	5	29
Cephei	3	21	26	55	+ 0'80	N	69	58	21	+15'70	sets not	
Aquarii	3	21	58	54	+ 3'08	S	0	58	11	+17'29	5	58
Gruis	2	21	59	46	+ 3'82		47	36	29	+17'16	rises not	
Piscium Australis	1.2	22	50	14	+ 3'33		30	19	54	+19'95	2	29
Pegasi (Markab)	2	22	58	5	+ 2'98	N	14	29	6	+19'30	7	27

N.B.—Add to the time of High Water in the Liverpool Tide Table in this Almanac the Hours and Minutes in the Column opposite the Place required.

The Tides at the following places are nearly the same as the Tide-Table:—					
Ardglass,	Chester	Dublin	Hastings	Mull of Galloway	St. Helen
A-ran Island	Conway	Dumfries	Kingstown	Newhaven	Strangford
Bangor	Cowes	Dundalk	Killough	Pargate	Stromness
Bathriggan	Copeland Island	Dundrum	Kirkcudbright	Preston	Troon
Belfast	Deal	Folkstone	Lancaster	Pentland Frith	Warren's Point
Ben-maris	Dover	Glasgow	Liverpool	Ramsgate	Ulverston, and
Cartingford	Downs	Harwich	Maryport	Rothsay	Whitehaven.
Carrikerfergus	Drogheda		Margate	Rosness	

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[illegible]

TIDE TABLES,—FEBRUARY, 1866.

Southampton & Portsmouth

M	D	Morn	Even	Portm. Height
		H. M.	H. M.	Ft. In.
1	2	0 15	0 36	19 2
2	3	0 56	1 14	19 1
3	4	1 30	1 47	18 10
4	5	2 4	2 21	18 6
5	6	2 39	2 56	18 0
6	7	3 16	3 33	17 5
7	8	3 53	4 12	16 11
8	9	4 33	5 0	16 6
9	10	5 31	6 9	16 4
10	11	6 49	7 27	16 3
11	12	8 5	8 43	16 8
12	13	9 15	9 42	17 3
13	14	10 6	10 29	17 11
14	15	10 50	11 11	18 6
15	16	11 32	11 51	19 0
16	17	0 35	0 13	19 4
17	18	1 16	1 37	19 7
18	19	1 57	2 17	19 6
19	20	2 38	3 1	19 3
20	21	3 27	3 49	18 1
21	22	4 12	4 40	17 4
22	23	5 14	5 53	17 1
23	24	6 35	7 17	16 9
24	25	8 0	8 38	17 1
25	26	9 13	9 45	17 8
26	27	10 12	10 37	18 3
27	28	10 58	11 17	18 9

Datum—Sill of North Dock Gates.

Hull & Bridport

Morn	Even	Hull Height
H. M.	H. M.	Ft. In.
7 23	7 43	21 1
8 2	8 20	20 11
8 36	8 55	20 6
9 11	9 28	19 9
9 46	10 4	18 10
10 22	10 40	17 10
11 4	11 27	16 9
11 53	1	15 8
0 24	1 15	15 4
1 32	2 10	15 7
2 47	3 23	16 4
4 1	4 30	17 5
4 55	5 18	18 9
5 39	6 1	19 9
6 22	6 42	20 10
7 1	7 20	21 7
7 42	8 3	22 0
8 23	8 43	21 10
9 1	9 22	21 3
9 44	10 9	20 4
10 33	10 57	19 0
11 27	12 0	17 9
1	0 39	17 2
1 19	1 57	16 7
2 37	3 18	17 2
3 56	4 29	18 3
4 59	5 24	19 4
5 47	6 8	20 2

Low Water Level of Ordinary Spring Tides.

Sunderland & Shields

Morn	Even	Sun. Height
H. M.	H. M.	Ft. In.
4 14	4 33	14 5
4 52	5 11	14 4
5 28	5 47	14 0
6 5	6 23	13 5
6 42	7 0	12 9
7 19	7 38	12 0
8 0	8 21	11 2
8 45	9 15	10 9
9 51	10 28	10 6
11 7	11 45	10 5
0 59	1 26	11 0
1 50	2 12	12 8
2 33	2 54	13 5
3 14	3 33	14 3
3 53	4 11	14 9
4 32	4 52	15 1
5 13	5 35	15 0
5 55	6 16	14 6
6 39	7 5	13 10
7 30	7 54	12 10
8 22	8 53	11 11
9 30	10 12	11 6
10 54	11 36	11 1
0 54	1 17	11 6
1 53	2 18	13 1
2 41	3 1	13 9

Low Water Level of Ordinary Spring Tides.

CORK

Morn	Even	Height
H. M.	H. M.	Ft. In.
5 57	6 16	12 0
6 34	6 50	11 11
7 6	7 25	11 9
7 43	8 1	11 5
8 21	8 36	11 0
8 58	9 14	10 5
9 34	9 52	9 9
10 12	10 42	8 9
11 15	11 52	8 10
1 10	1 46	9 6
2 25	2 56	10 2
3 21	3 45	10 8
4 7	4 29	11 2
4 49	5 14	11 9
5 33	5 53	12 4
6 14	6 33	12 7
6 52	7 16	12 7
7 36	7 57	12 4
8 20	8 44	11 10
9 10	9 32	11 2
9 54	10 24	10 3
10 56	11 39	9 6
0 58	1 18	9 5
1 53	2 19	11 7
2 35	3 50	11 1
3 53	4 15	11 4

Calculated from the Mean Level of Low Water Spring Tides.

LONDON

Morn	Even	Height
H. M.	H. M.	Ft. In.
3 2	3 22	19 4
3 41	3 59	19 4
4 16	4 32	19 2
4 51	5 8	18 9
5 25	5 43	18 3
5 59	6 17	17 6
6 35	6 56	16 9
7 16	7 39	16 1
8 8	8 42	15 5
9 20	10 0	15 2
10 39	11 19	15 6
11 57	0 54	16 0
0 29	1 38	17 8
1 16	2 20	18 7
1 59	3 0	19 4
2 40	3 40	19 11
3 19	4 18	20 1
3 58	4 59	20 5
4 39	5 41	19 5
5 19	6 28	18 7
6 4	7 17	17 7
6 51	8 22	16 8
7 47	9 3	16 3
8 30	11 13	16 2
9 53	0 57	16 8
11 22	1 46	18 0

Calculated from the Mean Level of Low Water Spring Tides.

GREENOCK

Morn	Even	Height
H. M.	H. M.	Ft. In.
0 44	1 5	9 10
1 25	1 41	9 9
1 57	2 15	9 8
2 32	2 49	9 5
3 8	3 22	9 2
3 40	3 55	8 11
4 14	4 31	8 6
4 53	5 20	8 2
5 52	6 28	8 0
7 7	7 46	8 1
8 24	9 4	8 5
9 36	10 2	8 9
10 26	10 49	9 1
11 11	11 31	9 4
11 56	0 41	9 8
0 16	1 24	10 2
1 4	2 6	10 2
1 43	2 45	10 0
2 25	3 29	9 9
3 7	4 12	9 3
3 51	5 2	8 8
4 33	6 15	8 5
5 33	7 35	8 4
6 53	8 58	8 8
8 18	9 34	9 0
9 34	10 57	9 3
10 32	11 38	9 5

Calculated from the Mean Level of Low Water Spring Tides.

TIDE TABLES—MARCH, 1866.

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GREENOCK.			LONDON.			CORK.			Bundard & Middle.			Hull & Belpoort.			Southampton & Portsmouth.					
M.	D.	Morn.	Even.	Height.	M.	D.	Morn.	Even.	Height.	M.	D.	Morn.	Even.	Height.	M.	D.	Morn.	Even.	Height.	
		n. m.	n. m.	n. m.			n. m.	n. m.	n. m.			n. m.	n. m.	n. m.			n. m.	n. m.	n. m.	n. m.
1	1	0 23	0 42	9 10	2 6	2	2 26	18 7	4 56	5 18	11 8	3 20	3 39	14 1	6 28	6 48	20 8	11 35		
2	2	1 1	1 18	9 10	2 45	3	3 41	9 1	5 39	5 55	11 11	3 57	4 13	14 3	7 5	7 22	20 11	0 14	19 0	
3	3	1 32	1 48	9 9	3 31	3	3 36	19 3	6 12	6 28	12 0	4 28	4 45	14 4	7 38	7 55	21 0	0 32	19 1	
4	4	2 5	2 20	9 7	4 24	4	4 40	18 11	7 15	7 31	11 7	5 1	5 19	14 1	8 10	8 29	20 8	1 3	21 18 11	
5	5	2 35	2 47	9 4	4 56	5	5 9	18 6	7 47	7 59	11 2	5 36	5 53	13 9	8 45	9 0	20 2	1 37	1 53 18 9	
6	6	3 5	3 21	9 1	5 24	5	5 41	17 10	8 19	8 36	10 8	6 7	6 23	13 1	9 12	9 28	19 4	2 7	2 21 18 3	
7	7	3 35	3 55	8 8	5 58	6	6 15	17 0	8 51	9 14	10 1	6 41	6 59	12 5	9 45	10 2	18 4	2 39	2 56 17 9	
8	8	4 14	4 36	8 4	6 37	6	6 58	16 4	9 34	9 57	9 5	7 17	7 40	11 7	10 21	10 43	17 3	3 13	3 34 17 2	
9	9	5 3	5 35	8 8	7 23	7	7 51	15 8	10 25	10 58	8 10	8 8	8 29	11 0	11 18	11 35	16 8	4 4	4 18 16 8	
10	10	6 17	6 57	8 8	8 27	8	8 15	3 3	11 41		8 8	8 58	9 35	10 6	0 44	1 27	15 5	4 44	5 17 16 4	
11	11	7 34	8 18	8 2	9 50	9	9 15	4 4	0 22	0 58	9 5	10 17	10 59	10 3	0 44	1 27	15 5	5 57	6 39 16 1	
12	12	8 57	9 27	8 8	11 12	11	10 48	6 6	1 40	2 18	9 5	0 17	0 49	11 6	2 3	3 18	17 2	7 18	7 59 16 5	
13	13	9 54	10 19	9 9	0 47	0	0 20	16 7	2 47	3 13	10 11	0 17	0 49	11 6	3 18	3 51	17 2	8 35	9 7 17 1	
14	14	10 43	11 8	9 9	1 32	1	1 10	17 7	3 38	4 11	11 4	1 18	1 44	12 7	4 21	4 48	18 8	9 34	9 59 17 11	
15	15	11 28	11 49	9 9	2 15	2	2 34	19 8	4 26	5 30	12 7	2 6	2 27	13 8	5 11	5 32	20 1	10 22	10 47 18 8	
16	16	0 36	1 0	10 5	2 54	3	3 14	20 3	5 5	6 11	12 11	2 50	3 9	14 6	5 56	6 16	21 2	11 7	11 25 19 3	
17	17	1 20	1 42	10 6	3 36	3	3 57	20 6	6 30	6 51	13 0	4 51	5 13	15 7	6 35	6 56	22 0	11 47		
18	18	2 3	2 25	10 3	4 18	4	4 39	20 4	7 13	7 36	12 8	4 51	5 13	15 6	7 16	7 44	22 6	0 8	0 31 19 11	
19	19	1 48	3 12	9 10	5 1	5	5 24	19 8	8 0	8 26	12 1	5 35	5 58	14 11	8 0	8 22	22 5	0 53	1 14 19 10	
20	20	3 32	3 55	9 4	5 47	6	6 9	18 9	8 47	9 14	11 2	6 22	6 48	14 0	9 28	9 53	20 7	1 35	1 57 19 6	
21	21	4 20	4 48	8 10	6 33	7	7 11	17 6	9 41	10 10	10 3	7 11	7 36	12 11	10 15	10 39	19 1	2 20	2 43 18 10	
22	22	5 21	5 59	8 5	7 30	8	8 51	16 9	10 42	11 23	9 5	8 5	8 38	11 11	11 7	11 43	17 8	3 7	3 32 18 2	
23	23	6 40	7 21	8 4	8 48	9	9 31	15 11	0 46	0 4	9 3	9 13	9 57	11 5	11 7	11 43	17 8	3 59	4 27 17 4	
24	24	8 3	8 42	8 7	10 14	10	10 57	16 5	0 46	1 25	9 4	10 41	11 23	10 11	1 4	1 44	16 3	4 59	5 40 17 1	
25	25	9 16	9 45	8 9	11 36	11	11 57	16 11	2 3	2 36	10 4	0 41	1 7	12 3	2 24	3 4	16 10	6 21	7 1 16 8	
26	26	10 11	10 36	9 2	0 9	0	0 37	16 11	3 4	3 29	10 11	0 41	1 7	12 1	3 42	4 9	17 11	7 44	8 22 16 11	
27	27	10 55	11 13	9 3	1 2	1	1 25	17 8	3 55	4 13	11 2	1 34	1 58	12 10	4 38	5 3	19 0	8 55	9 25 17 5	
28	28	11 31	11 53	9 6	1 45	2	2 21	18 4	4 31	4 48	11 6	2 20	2 40	13 6	5 26	5 47	19 10	9 52	10 16 18 1	
29	29	0 11	0 11	9 9	2 18	2	2 36	18 9	5 11	5 28	11 8	2 56	3 11	13 10	6 4	6 20	20 4	10 35	10 53 18 7	
30	30											3 28	3 46	14 0	6 36	6 55	20 7	11 9	11 29 18 9	
31	31																		11 46	18 10

GREENOCK			LONDON			CORK			Sunderland & Shields			Hull and Bridport.			Southampton & Portsmouth		
M	D	Height.	M	D	Height.	M	D	Height.	M	D	Height.	M	D	Height.	M	D	Height.
Even			Even			Even			Even			Even			Even		
M. Ft. in.			M. Ft. in.			M. Ft. in.			M. Ft. in.			M. Ft. in.			M. Ft. in.		
1	2	0 48	1	2	0 19	1	2	0 11	1	2	0 14	1	2	0 20	1	2	0 18
3	4	1 20	3	4	0 18	3	4	0 30	3	4	0 44	3	4	0 35	3	4	0 52
5	6	1 52	5	6	0 15	5	6	0 43	5	6	0 55	5	6	0 47	5	6	1 23
7	8	2 22	7	8	0 12	7	8	0 59	7	8	1 08	7	8	0 52	7	8	1 31
9	10	2 54	9	10	0 09	9	10	1 11	9	10	1 10	9	10	0 59	9	10	1 54
11	12	3 27	11	12	0 06	11	12	1 18	11	12	1 18	11	12	0 59	11	12	2 27
13	14	3 56	13	14	0 03	13	14	1 25	13	14	1 25	13	14	0 59	13	14	3 51
15	16	4 26	15	16	0 00	15	16	1 32	15	16	1 32	15	16	0 59	15	16	4 41
17	18	4 57	17	18	0 00	17	18	1 39	17	18	1 39	17	18	0 59	17	18	5 17
19	20	5 27	19	20	0 00	19	20	1 46	19	20	1 46	19	20	0 59	19	20	6 41
21	22	5 56	21	22	0 00	21	22	1 53	21	22	1 53	21	22	0 59	21	22	7 17
23	24	6 26	23	24	0 00	23	24	2 00	23	24	2 00	23	24	0 59	23	24	7 47
25	26	6 56	25	26	0 00	25	26	2 07	25	26	2 07	25	26	0 59	25	26	8 13
27	28	7 26	27	28	0 00	27	28	2 14	27	28	2 14	27	28	0 59	27	28	8 39
29	30	7 56	29	30	0 00	29	30	2 21	29	30	2 21	29	30	0 59	29	30	9 05
31		8 26	31		0 00	31		2 28	31		2 28	31		0 59	31		9 31
Calculated from the Mean Level of Low Water Spring Tides.			Calculated from the Mean Level of Low Water Spring Tides.			Calculated from the Mean Level of Low Water Spring Tides.			Calculated from the Mean Level of Low Water Spring Tides.			Calculated from the Mean Level of Low Water Spring Tides.			Calculated from the Mean Level of Low Water Spring Tides.		
Low Water Levels at Ordinary Spring Tides.			Low Water Levels at Ordinary Spring Tides.			Low Water Levels at Ordinary Spring Tides.			Low Water Levels at Ordinary Spring Tides.			Low Water Levels at Ordinary Spring Tides.			Low Water Levels at Ordinary Spring Tides.		
M. Ft. in.			M. Ft. in.			M. Ft. in.			M. Ft. in.			M. Ft. in.			M. Ft. in.		
1	2	0 20	1	2	0 19	1	2	0 11	1	2	0 14	1	2	0 20	1	2	0 18
3	4	0 52	3	4	0 18	3	4	0 30	3	4	0 44	3	4	0 35	3	4	0 52
5	6	1 23	5	6	0 15	5	6	0 43	5	6	0 55	5	6	0 47	5	6	1 23
7	8	1 54	7	8	0 12	7	8	0 59	7	8	1 08	7	8	0 52	7	8	1 31
9	10	2 27	9	10	0 09	9	10	1 11	9	10	1 10	9	10	0 59	9	10	1 54
11	12	3 51	11	12	0 06	11	12	1 18	11	12	1 18	11	12	0 59	11	12	2 27
13	14	4 41	13	14	0 03	13	14	1 25	13	14	1 25	13	14	0 59	13	14	3 51
15	16	5 17	15	16	0 00	15	16	1 32	15	16	1 32	15	16	0 59	15	16	4 41
17	18	5 47	17	18	0 00	17	18	1 39	17	18	1 39	17	18	0 59	17	18	5 17
19	20	6 17	19	20	0 00	19	20	1 46	19	20	1 46	19	20	0 59	19	20	5 47
21	22	6 47	21	22	0 00	21	22	1 53	21	22	1 53	21	22	0 59	21	22	6 17
23	24	7 17	23	24	0 00	23	24	2 00	23	24	2 00	23	24	0 59	23	24	6 47
25	26	7 47	25	26	0 00	25	26	2 07	25	26	2 07	25	26	0 59	25	26	7 17
27	28	8 17	27	28	0 00	27	28	2 14	27	28	2 14	27	28	0 59	27	28	7 47
29	30	8 47	29	30	0 00	29	30	2 21	29	30	2 21	29	30	0 59	29	30	8 17
31		9 17	31		0 00	31		2 28	31		2 28	31		0 59	31		8 47

TIDE TABLES—MAY, 1866.

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GREENOCK				LONDON				CORK				Sunderland & Shields				Hull & Bridport				Southampton & Portsmouth			
M	D	Height.		M	D	Height.		M	D	Height.		M	D	Height.		M	D	Height.		M	D	Height.	
		Morn	Even			Morn	Even			Morn	Even			Morn	Even			Morn	Even			Morn	Even
1	1	0 37	0 55	2	2	58	3 15	5	5	6 19	6 8	4	4	7 17	7 33	0	0	10 0	0 26	1	1	0 10	0 26
2	2	1 8	1 24	3	3	31	4 44	6	6	19	6 33	4	4	48	4 55	5	5	41 0	0 57	2	2	0 41	0 57
3	3	1 42	1 57	4	4	0	4 17	6	6	51	7 6	5	5	13	5 29	8	8	14 1	1 29	3	3	1 14	1 29
4	4	2 11	2 29	5	5	6	4 48	8	8	21	7 40	6	6	46	6 4	9	9	45 2	2 3	4	4	1 45	2 3
5	5	2 49	3 8	6	6	6	5 25	10	10	42	8 30	9	9	25	6 45	10	10	49 3	2 42	5	5	2 22	2 42
6	6	3 27	3 47	7	7	23	6 55	11	11	9	9 4	10	10	7	7 84	11	11	51 4	3 27	6	6	3 5	3 27
7	7	4 9	4 35	8	8	34	7 56	12	12	30	10 57	11	11	8	8 29	12	12	58 5	4 16	7	7	4 49	5 24
8	8	5 8	5 43	9	9	48	9 12	13	13	44	11 6	12	12	9	9 42	13	13	66 6	5 24	8	8	5 6	5 24
9	9	6 20	6 55	10	10	9	10 25	14	14	50	12 16	13	13	10	10 56	14	14	74 7	6 37	9	9	6 1	6 37
10	10	7 37	7 8	11	11	0	11 33	15	15	0	13 10	14	14	11	11 31	15	15	82 8	7 45	10	10	7 12	7 45
11	11	8 42	8 9	12	12	0	0 17	16	16	1	14 11	15	15	12	12 10	16	16	90 9	8 53	11	11	8 20	8 47
12	12	9 35	9 1	13	13	26	1 18	17	17	2	15 12	16	16	13	13 4	17	17	98 10	9 1	12	12	9 14	9 41
13	13	10 29	10 54	14	14	1	2 19	18	18	3	16 12	17	17	14	14 2	18	18	106 11	10 18	13	13	10 7	10 33
14	14	11 16	11 45	15	15	16	3 28	19	19	4	17 13	18	18	15	15 5	19	19	114 12	11 26	14	14	11 10	11 38
15	15	0 11	0 11	16	16	3	4 29	20	20	5	18 14	19	19	16	16 6	20	20	122 13	12 37	15	15	12 54	12 21
16	16	0 38	1 6	17	17	2	5 30	21	21	6	19 15	20	20	17	17 7	21	21	130 14	1 48	16	16	13 46	1 19
17	17	1 30	1 54	18	18	2	6 31	22	22	7	20 16	21	21	18	18 8	22	22	138 15	2 59	17	17	14 38	2 26
18	18	2 14	2 38	19	19	4	7 32	23	23	8	21 17	22	22	19	19 9	23	23	146 16	4 17	18	18	15 30	3 45
19	19	3 5	3 27	20	20	5	8 33	24	24	9	22 18	23	23	20	20 10	24	24	154 17	5 36	19	19	16 22	4 54
20	20	3 51	4 19	21	21	6	9 34	25	25	10	8 36	24	24	21	21 11	25	25	162 18	6 55	20	20	17 14	5 27
21	21	4 47	5 14	22	22	7	10 35	26	26	11	9 37	25	25	22	22 12	26	26	170 19	8 17	21	21	18 6	6 34
22	22	5 44	6 22	23	23	8	11 36	27	27	12	10 38	26	26	23	23 13	27	27	178 20	9 37	22	22	19 17	7 53
23	23	6 55	7 26	24	24	9	12 37	28	28	13	11 39	27	27	24	24 14	28	28	186 21	10 57	23	23	20 28	9 13
24	24	7 58	8 30	25	25	10	13 38	29	29	14	12 40	28	28	25	25 15	29	29	194 22	12 17	24	24	21 39	10 24
25	25	8 55	9 24	26	26	11	14 39	30	30	15	13 41	29	29	26	26 16	30	30	202 23	1 37	25	25	22 50	11 35
26	26	9 50	10 11	27	27	12	15 40	31	31	16	14 42	30	30	27	27 17	31	31	210 24	2 57	26	26	23 61	12 46
27	27	10 32	10 54	28	28	13	16 41	32	32	17	15 43	31	31	28	28 18	32	32	218 25	4 17	27	27	24 72	1 57
28	28	11 11	11 28	29	29	14	17 42	33	33	18	16 44	32	32	29	29 19	33	33	226 26	5 37	28	28	25 83	3 7
29	29	11 49	11 49	30	30	15	18 43	34	34	19	17 45	33	33	30	30 20	34	34	234 27	6 57	29	29	26 94	4 18
30	30	0 8	0 8	31	31	16	19 44	35	35	20	18 46	34	34	31	31 21	35	35	242 28	8 17	30	30	27 105	5 29
31	31	0 49	0 49					36	36	21	19 47	35	35	32	32 22	36	36	250 29	9 37	31	31	28 116	6 40

TIDE TABLES.—JUNE, 1866.

GREENOCK			LONDON			CORK			Sunderland and Shields.			Hull and Bridport			Southampton & Portsmouth		
M	D	Height.	M	D	Height.	M	D	Height.	M	D	Height.	M	D	Height.	M	D	Height.
		Ft. in.			Ft. in.			Ft. in.			Ft. in.			Ft. in.			Ft. in.
1	1	35	1	1	35	1	1	35	1	1	35	1	1	35	1	1	35
2	2	12	2	2	12	2	2	12	2	2	12	2	2	12	2	2	12
3	3	21	3	3	21	3	3	21	3	3	21	3	3	21	3	3	21
4	4	33	4	4	33	4	4	33	4	4	33	4	4	33	4	4	33
5	5	16	5	5	16	5	5	16	5	5	16	5	5	16	5	5	16
6	6	24	6	6	24	6	6	24	6	6	24	6	6	24	6	6	24
7	7	31	7	7	31	7	7	31	7	7	31	7	7	31	7	7	31
8	8	43	8	8	43	8	8	43	8	8	43	8	8	43	8	8	43
9	9	37	9	9	37	9	9	37	9	9	37	9	9	37	9	9	37
10	10	33	10	10	33	10	10	33	10	10	33	10	10	33	10	10	33
11	11	41	11	11	41	11	11	41	11	11	41	11	11	41	11	11	41
12	12	28	12	12	28	12	12	28	12	12	28	12	12	28	12	12	28
13	13	10	13	13	10	13	13	10	13	13	10	13	13	10	13	13	10
14	14	0	14	14	0	14	14	0	14	14	0	14	14	0	14	14	0
15	15	17	15	15	17	15	15	17	15	15	17	15	15	17	15	15	17
16	16	26	16	16	26	16	16	26	16	16	26	16	16	26	16	16	26
17	17	31	17	17	31	17	17	31	17	17	31	17	17	31	17	17	31
18	18	33	18	18	33	18	18	33	18	18	33	18	18	33	18	18	33
19	19	47	19	19	47	19	19	47	19	19	47	19	19	47	19	19	47
20	20	57	20	20	57	20	20	57	20	20	57	20	20	57	20	20	57
21	21	61	21	21	61	21	21	61	21	21	61	21	21	61	21	21	61
22	22	73	22	22	73	22	22	73	22	22	73	22	22	73	22	22	73
23	23	84	23	23	84	23	23	84	23	23	84	23	23	84	23	23	84
24	24	91	24	24	91	24	24	91	24	24	91	24	24	91	24	24	91
25	25	99	25	25	99	25	25	99	25	25	99	25	25	99	25	25	99
26	26	107	26	26	107	26	26	107	26	26	107	26	26	107	26	26	107
27	27	113	27	27	113	27	27	113	27	27	113	27	27	113	27	27	113
28	28	0	28	28	0	28	28	0	28	28	0	28	28	0	28	28	0
29	29	46	29	29	46	29	29	46	29	29	46	29	29	46	29	29	46
30	30	1	30	30	1	30	30	1	30	30	1	30	30	1	30	30	1

TIDE TABLES,—JULY, 1866.

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M	D	GREENOCK			LONDON			CORK			Sunderland and Shields			Hull and Bridport.			Southampton & Portsmouth		
		Morn	Even	Height.	Morn	Even	Height.	Morn	Even	Height.	Morn	Even	Height.	Morn	Even	Height.	Morn	Even	Height.
		H. M.	H. M.	Ft In	H. M.	H. M.	Ft In	H. M.	H. M.	Ft In	H. M.	H. M.	Ft In	H. M.	H. M.	Ft In	H. M.	H. M.	Ft In
1	1	1 42	2 36	9 5	3 57	4 16	18 5	6 51	7 10	11 4	5 11	5 31	13 6	8 21	8 40	19 10	1 14	1 32	18 7
2	2	2 18	3 20	9 4	4 35	4 53	18 4	7 29	7 48	11 3	5 50	6 11	13 3	8 58	9 17	19 6	1 50	2 9	18 4
3	3	3 0	3 42	9 3	5 13	5 36	18 2	8 13	8 34	11 1	6 35	6 58	12 11	9 41	10 3	19 1	2 33	2 54	18 2
4	4	3 4	4 28	9 1	5 57	6 19	17 10	9 0	9 25	10 10	7 21	7 46	12 6	10 25	10 49	18 6	3 18	3 41	17 10
5	5	4 24	4 55	8 10	6 43	7 10	17 6	9 49	10 17	10 6	8 15	8 43	12 2	11 18	11 48	18 0	4 7	4 33	17 6
6	6	5 23	5 54	8 8	7 37	8 8	17 1	10 46	11 19	10 1	9 16	9 51	11 11	11 18	11 48	18 0	5 2	5 34	17 4
7	7	6 29	7 0	8 9	8 42	9 20	16 11	11 53	12 26	11 0	10 28	11 0	11 9	0 59	1 37	17 6	6 9	6 42	17 3
8	8	7 37	8 9	8 11	9 53	10 28	17 0	0 25	1 10	5 11	11 36	0 37	12 0	2 6	2 38	17 10	7 15	7 48	17 5
9	9	8 43	9 18	9 2	11 3	11 36	17 4	1 31	2 40	11 5	0 8	1 36	13 6	3 9	3 39	18 11	8 22	8 57	18 0
10	10	9 50	10 20	9 6	0 40	1 9	18 4	2 38	3 9	11 5	1 8	2 36	14 0	4 11	4 40	19 10	9 30	10 0	18 7
11	11	10 48	11 15	9 9	1 36	2 22	19 4	3 38	4 6	11 8	2 4	3 36	14 4	5 9	5 36	20 7	10 26	10 53	18 10
12	12	11 24	0 10	9 9	2 27	3 41	19 6	4 32	5 0	11 11	3 57	4 21	14 4	6 4	6 29	21 0	11 19	11 44	19 1
13	13	0 10	0 38	9 9	3 17	4 22	19 4	5 27	6 37	12 1	4 34	5 47	14 5	7 44	8 48	20 10	0 37	1 0	19 3
14	14	1 6	1 27	9 9	4 4	5 31	18 4	6 59	7 19	11 1	5 18	6 26	13 6	8 27	9 31	19 11	1 19	1 40	19 0
15	15	1 47	2 29	9 9	5 25	6 27	17 8	7 38	8 8	11 6	6 46	7 51	12 10	9 50	10 12	19 0	2 42	3 22	18 7
16	16	2 27	3 11	9 9	6 6	7 10	17 0	8 25	9 27	10 9	7 29	8 36	11 6	10 32	10 55	18 1	3 25	3 51	18 1
17	17	3 11	4 7	9 9	7 31	8 47	16 4	9 9	10 9	9 9	8 14	9 35	11 1	11 19	11 43	17 2	4 7	4 26	17 1
18	18	4 28	5 11	9 8	8 26	9 56	16 7	10 33	11 1	9 4	9 4	10 39	10 10	0 44	1 15	16 7	5 53	6 21	16 7
19	19	5 11	6 13	8 8	9 32	10 5	15 7	11 37	0 37	9 0	10 10	11 45	10 9	1 43	2 14	16 0	6 56	7 25	16 6
20	20	6 13	7 12	8 8	10 39	11 13	15 16	0 3	1 7	9 6	11 12	0 17	11 1	2 46	3 19	16 7	7 59	8 32	16 9
21	21	7 12	8 53	8 8	11 46	0 16	16 0	1 14	2 43	10 0	0 46	1 14	11 9	3 45	4 16	17 5	9 3	9 31	17 3
22	22	8 20	9 49	8 8	0 16	1 26	17 1	2 14	3 8	10 5	1 39	2 41	12 4	4 42	5 48	19 0	10 38	10 59	18 1
23	23	9 23	10 37	8 11	1 46	2 7	17 4	3 55	4 18	10 7	2 21	3 19	13 4	5 27	6 27	19 8	11 17	11 38	18 5
24	24	10 14	11 20	9 9	2 25	3 45	18 10	4 38	5 40	11 5	3 38	4 57	13 9	6 47	7 62	20 2	11 58	12 18	9 18
25	25	11 0	0 24	9 9	3 4	4 58	19 1	5 58	6 13	10 9	4 14	5 33	14 0	7 24	8 43	20 7	0 18	0 35	18 10
26	26	11 41	0 3	9 9	4 1	5 22	19 1	6 31	6 50	11 10	4 52	5 12	14 2	8 1	9 22	20 9	11 17	11 38	11 1
27	27	0 3	1 3	9 9	5 3	6 40	19 1	7 10	7 29	11 10	5 31	5 51	14 4	8 8	9 58	20 8	1 32	1 51	18 10
28	28	1 22	2 19	9 9	6 4	7 47	19 2	8 17	8 36	11 10	6 31	6 51	14 4	9 8	10 58	20 7	2 0	2 19	18 10
29	29	2 1	3 1	9 9	7 4	8 58	19 2	9 10	9 29	11 10	7 10	7 29	14 4	10 8	11 58	20 7	3 0	3 19	18 10
30	30	3 1	4 1	9 9	8 5	10 9	19 2	10 1	10 20	11 10	8 1	8 20	14 4	11 8	12 58	20 7	4 0	4 19	18 10
31	31	4 1	5 1	9 9	9 1	11 1	19 2	11 1	11 20	11 10	9 1	9 20	14 4	12 8	13 58	20 7	5 0	5 19	18 10

TIDE TABLES—AUGUST, 1866.

[illegible]

[illegible]

TIDE TABLES—NOVEMBER, 1866.

[illegible]

[illegible]

Descriptive List of Principal Lights—Scotch Coast

Name of Light.	Situation.	No. of Light	Appearance.	Distance visible.	Points of Compass within which visible.	North latitude.	West longitude.
INCHKEITH	Summit of Island, Fifeshire..	One	Revolving once every minute ..	21—	All round the Compass	56° 2'	3° 8'
ISLE OF MAY	Isle of May, in Fifeshire .. .	Two	Fixed. Bear from each other .. N.E. & S.S.W. & W., 250 yards	21 & 15	All round Compass. The low light only towards the Carr	56 11	2 33
BELL ROCK	A sunk Reef, 11½ miles S. by E. of E. off Arbroath, Forfarshire	One	Revolving, shewing alternately a bright & red light every 2 min.	15—	All round the Compass	56 26	2 23
GIRDLENESS	Girdleness, Kincardineshire..	Two	Fixed Lights, one above the other	20 & 16	NNE to WSW & W. by E'ward	57 8	2 3
BUCHANNESS	Buchanness, Aberdeenshire..	One	Flashing once every 5 seconds..	16—	N by E to SW by W by E'ward	57 28	1 46
KINNHAIRDHEAD	Kinnairdhead, Aberdeenshire	One	Fixed	15—	WNW to SSE & E. N'y & E'y	57 42	2 1
TARBETNESS	Tarbetness, Cromartysire ..	One	Visible 2½ min., then eclipsed ¼ a min. To W. of the Ness Fixed	18—	All round the Compass	57 51	3 48
DUNNETHEAD	On the Head, Caithnesshire..	One	Fixed	23—	From SE & E to W. by N'ward	58 40	3 22
PENTLAND SKERRIES ..	On the Island	Two	Fixed N.N.E. & S.S.W., 100 feet	18 & 16	All round the Compass	58 41	2 55
START POINT	East point of Sanda Island ..	One	Fixed	15—	All round the Compass	59 17	2 22
SUMBURGHHEAD	On S.W. point of Shetlands ..	One	Fixed	21—	NE by E & E to NW by N & N by S	59 51	1 16
NORTH RONALDSHAY ..	On North point	One	Flashing once every 10 seconds	18—	All round the Compass	59 23	2 24
CAPE WRATH	On the Cape N. W. point of Scotland	One	Revolving, shewing alternately a bright & red light every 2 min.	23—	From S. & E. to S.W. by W. Northerly	58 37	5 0
ISLAND GLASS	N.E. point of Island, Harris Isle	One	Fixed	17—	W. by S. to E. NE & E. by S.	57 52	6 33
BARRAHEAD	Highest point on Bernera Isle	One	Intermittent, continuing in view 2½ min., then eclipsed ¼ min.	33—	From N. by E. to E. N. E. Westerly and Southerly	56 48	7 38
ARDNAMURCHAN	Southern point of Hebrides	One	Fixed	18—	From N. E. by E. & E. to S. W. by S. N'y and W'y.	56 44	6 13
LISMORE	Mousdale Island	One	Fixed, dark 2½ point over land ..	15—	From E. to N. E. by E. ..	56 27	5 36
CRINAN CANAL	East side	One	Fixed, red light	4—	All round the Compass	56 5	5 33
RHINS OF ISLAY	Oversay Island, off S. W. point of Islay, Argyleshire ..	One	Flashing once every 5 seconds; disappears ¼ a mile of Cul point	17—	From NNE. to S.E. Westerly	55 41	6 29
MULL OF CANTYRE ..	South Western headland of Cantyre	One	Fixed	22—	From NNE & E. to S. by W. & W. Westerly	55 19	5 49
SANDA ISLAND	Ship Rock	One	Fixed, red light	15—	NW & W to SE by E & E by SW'y	54 16	5 35
DEVAR ISLAND	Eastern part	One	Revolves every ¼ minute	17—	N. & W. to E. by S. by N.	55 26	5 32
PLADDA	Pladda Isle, off south east of Arran, county of Bute ..	Two	Fixed, vertical N. & S., 8 yards apart	14 & 17	From N.W. by W. Southerly to N. E. by E	55 26	5 7
CORSEWALL	W. Side of entrance to Loch Ryan, in Wigtonshire..	One	Revolving, shewing alternately a bright & red light every 2 min.	15—	From N. E. by E. Northerly to S. W.	55 0	5 9
MULL OF GALLOWAY ..	Southern extremity of mainland of Scotland, Wigtonsh	One	Intermittent, continuing in view 2½ min., then eclipsed ¼ a min.	23—	From N.E. to N. W. & W. ..	54 38	4 51

Descriptive List of Lights—Isle of Man

Name of Light.	Situation.	Latitude North.	Longitude West.	No. of Lights.	Fixed or Revolving.	Miles visible in clear weather.	Remarks.
POINT OF AYR	A quarter of a mile S.W. of the Point	54 25	4 22	One	R	—15—	Shewing alternately a bright and red light every 2 min. Visible from S. by W. N.E'y, to W. by N.
Peel Harbour	East side of Entrance	54 13	4 42	One	F	— 8—	Revolving every 2 min. When in one they lead on [the Chicken Rocks.
CALF OF MAN	West side of Calf Island	54 3	4 50	Two	R	24&22	To be kept on the port hand on entering.
Port St. Mary	Pier Head	54 4	4 44	One	F	— 9—	Also a light on Fort Island during herring fishing.
Castletown Harbour	New Pier Head	54 5	4 39	Two	F	— 8—	Not visible from Langness Point, but with 3 miles offing it will be seen N.E. $\frac{1}{2}$ E.; and the Calf
Derbyhaven	Entrance of the Harbour	54 5	4 36	One	F	— 2—	Light at the same time N.N. by W. $\frac{1}{4}$ W.
DOUGLAS	Douglas Head	54 9	4 28	One	F	—14—	Bright and Red. Sight Red Light to clear Break-Red Light.
Douglas Harbour	North Pier Head	54 10	4 28	Two	F	— 6—	A Gong is sounded during foggy weather. 'Bahama Bank,' is painted on her sides. King William
Ramsey Harbour	South side of Entrance	54 20	4 23	One	F	—10—	Bank Buoy, E. by N. $\frac{1}{4}$ N., nine miles.
Bahama Bank Light Vessel	A mile off the S.E. tail of the Shoal. Moored in Eleven fathoms.	54 20	4 12	Two	F	—10—	

Principal Lights—West Coast of England

Lee Scar	On the Rocks	54 52	3 25	One	F	— 6—	On Piles. Base dries at 6 feet at low water.
Solway Light Vessel	Robin Rigg Channel	54 48	3 32	One	F	— 6—	Red light. Moored in 4 $\frac{1}{2}$ fathoms. A Black Ball by [day. Tolls a bell in foggy weather.
ST. BEES	St. Bee's Head	54 31	3 38	One	F	—25—	Every minute. The Fixed Light is Red. N.W. by W. $\frac{3}{4}$ W., and S.E. by E. $\frac{3}{4}$ E., 340 yards.
WALNEY.	S. Point of Walney Island	54 3	3 11	Two	1 R 1 F	—13—	Every 30 seconds,—Red. Var. in 1865, 23 $\frac{1}{2}$ W.
Morecombe Bay Light Vessel	In 12 fathoms	53 54	3 31	One	R	—10—	Red Light. A Ball by day, and a M.M.M. Light by night every 20 secs. is shown at the bows when 8ft. water in Harbour Channel. Bell during foggs.
	Between Yeoman and Clark Wharf	54 1	3 0	One	F	— 5—	On Piles. A Bell is tolled in foggy weather.
River Wyre	N.E. elbow of N. Wharf Bank	53 57	3 2	One	R	—10—	N. and S. 850 feet. Shown while 9 feet water in Bright 3 $\frac{1}{2}$ min.; dark $\frac{1}{2}$ min. [the Channel.
Fleetwood	H. Lt. in Town, L. Lt., Espd.	53 56	3 1	Two	F	13 & 9	White between the bearings of S.E. by E. $\frac{3}{4}$ E. round by the S. to W.; and Red from W. to W. $\frac{1}{4}$ N.
River Ribble	Stanner Point, N. of entrance	53 44	3 1	One	Int	—12—	Red Light. Painted Red; carries Red Ball. In 25 feet at low water. Crosby Lightship S.E. $\frac{1}{4}$ S., 2 $\frac{1}{2}$ miles. N.W. Mark, E. by N. $\frac{1}{4}$ N., 3 $\frac{1}{2}$ miles.
GREAT ORMSHEAD	North Point, Steep Cliff	53 20	3 52	One	F	—24—	
Formby Light Vessel	In the New Channel	53 32	3 11	Two	F	— 8—	
Crosby Light Vessel	N.E. elbow of Gt. Burbo Bank	53 31	3 7	One	F	— 6—	

Principal Lights—West Coast of England, continued

Name of Light.	Situation.	Latitude North.	Longitude West.	No. of Lights.	Fixed or Revolving.	Miles visible in clear weather.	Remarks.
Black Rock	Rock Point, West side of the entrance to the Mersey ..	53 27	3 3	One	R	14—	Making a revolution every three minutes, showing two Bright Lights and one Red Light in due succession. A Bell is tolled in foggy weather.
Leasowe	On the shore, between the Mersey and the Dee Rivers	53 25	3 7	One	F	15—	Bidston Light open E. of Leasowe, and afterward to the W., lead up the Horse Channel.
BIDSTON	Bidston Hill ..	53 24	3 4	One	F	23—	Obscured when inward bound, bearing S. by W. ½ W.
Hoylake	Near the Church ..	53 24	3 11	Two	F	13 & 11	The Upper Light ex. from N.N.W. round to the E'ward, the Lower from N. round to E'ward.
Liverpool N.W. Light Ship.	W. extreme of 3 and 4 fathoms ..	53 27	3 17	One	R	11—	Black Ball during day. Blue Lt. every 2 hrs. during darkness after 6 p.m. Bell and gong alt. in fogs.
AIR	Tongue in 6½ fathoms ..	53 22	3 19	One	F	9—	On Piles. A Bell is sounded in foggy weather, Flashing once every ten seconds.
LYNAS	Air Point, at low water mark ..	53 25	4 17	One	FL.	16—	
SKERRIES	Point Lynas ..	53 25	4 36	One	F	16—	Revolving every 2 min. During foggy weather a smaller Bright Light is occasionally shown, 40 ft. above the sea and 30 yards N. of main Lighthouse.
STACK	Highest Island ..	53 18	4 42	One	R	20—	[sounded in foggy weather.
	South Stack Rock, off N.W. Point of Holyhead l... ..	53 45	4 48	One	F	17—	Red Light. Revolving every 30 seconds. A Gong is
BARDSEY	Bardsey Island ..	52 22	4 54	One	R	9—	Revolving every 20 seconds.
Cardigan Bay Light Vessel.	Cardigan Bay ..	51 51	5 25	One	R	18—	Erected upon pillars 40 feet high.
SOUTH BISHOP	South Bishop Rock ..	51 43	5 40	One	F	15—	High Light N. by W. ½ W., 609 feet from Low Light, when in one they lead clear of the Crow and Toes Rocks.
SMALLS	Smalls Island ..	51 41	5 10	Two	F	20 & 18	
ST. ANN'S	St. Ann's Point, Milford Haven ..	51 38	4 41	One	F	20—	
CALDY	Caldy Island, southern part ..	51 34	3 58	One	F	15—	High Light S.E. by E. ½ E. and N.W. by W. ½ W., 1000 feet from Low Light. The Lights in one lead a cable's length Southward of the Nash Sand.
MUMBLES	Mumbles Head ..	51 24	3 33	Two	F	19 & 17	Red. A Red Light is also shown up the river.
NASH..	Nash Point ..	51 32	3 0	Two	F	11—	
USK	W. side of entrance to River ..	51 23	3 7	One	F	18—	The Low Light (fixed) is only visible from the Westward between N.N.W. and W.S.W. The Revolving Light flashes every two minutes.
FLATHOLM	Flatholm Island, South point ..	51 10	4 40	Two	1 R	31—	The Lower Light is 50 ft. in advance of the high one.
LUNDY	On the ridge of Lundy Island ..	50 33	5 1	Two	1 F	20 & 17	
TREVOSE HEAD	On north-western part ..	50 33	5 1	Two	F	20 & 17	

Descriptive List of Principal Lights—South and East Coasts of Ireland

Name of Light.	Situation.	Latitude North.	Longitude West.	No. of Lights.	Fixed or Revol. vng.	Miles visible in clear weather	Remarks.
FASTNET	Summit of Rock	51 23	9 36	One	R	—18—	Attaining its greatest brilliancy every 2 minutes, Red light is shown in a line to the Horse Rock in Courtmacsherry Bay, Bright to Seaward.
KINSALE	South Point of Old Head	51 36	8 32	One	F	—21—	Red. White between the bearings of N.E. by E. and N.E. $\frac{1}{2}$ N. to pass E'wards of Daunt's Rock. A Bell 8 times a minute in foggy weather.
CORK HARBOUR or Queenstown	Roche Point, E. side of Entrance	51 48	8 15	Two	R&F	8 & 10	Red. From N.N.E. $\frac{1}{2}$ E. to S.E. by E. $\frac{1}{2}$ E. round by E. Every 10 secs. From W. $\frac{1}{2}$ S. round N. to E. $\frac{1}{2}$ S. Bright 50 sec., obscured 10 secs. From E. by N. Carries 2 Balls. Moored in 32 fathoms. During foggy weather a Gong is sounded.
BALLYCOTTIN	East Elbow of Spit Bank, in 9 feet	51 51	8 16	One	F	—5—	Every 2 min. Two sides Bright, one Red. During foggy weather a Bell is tolled every $\frac{1}{2}$ min. Red Light vis. every 6th min., and seen 10 miles.
MINEHEAD	Outer Island, West side of Bay	51 49	7 59	One	Fl.	—18—	Every $\frac{1}{2}$ min. Carries a Ball. A Gong is sounded during foggy weather.
HOOK TOWER	South side of Head	52 0	7 35	One	Int.	—21—	Every half min., showing a Bright and Red Light alternately. During foggy weather a Bell is tolled. A small Red Light.
SALTEE'S LIGHT	East side entrance Waterford	52 7	6 56	One	F	—16—	The Lower Light, which is much fainter than the Upper, is exhibited from half-flood to half-ebb. A Ball is hoisted at the same period during day-time.
VESEL	Off Conningbeg Rock, the Southern-most of the Saltee Islands	52 2	6 40	Two	F	10 & 8	During foggy weather a Bell is tolled. A Ball is hoisted during the same period by day; and in foggy weather a Bell is tolled every half-minute. Red Light. Every minute, 45 secs. red, and 15 Every minute and a half. [secs. obscured.
TUSKAR	Tuskar Rock	52 12	6 12	One	R	—15—	
ARKLOW LT.-VESSL.	S. end of Arklow Bank, in 22 fms.	52 42	6 0	One	R	—10—	
WICKLOW	Wicklow Head	52 58	6 0	One	F	—16—	
WICKLOW Lt. VESSL.	8 miles S.E. by E. $\frac{1}{2}$ E. from W. Hd.	53 19	5 56	One	F	—9—	
KISH LIGHT	Off N. Point of Kish Bank, moored in 10 fathoms	53 18	6 8	One	R	—10—	
VESEL	Centre of East Pierhead of Kings-town Harbour	53 20	6 9	One	F	—2—	
Kingstown	West Pierhead	53 21	6 14	One	F	—10—	
POOLBEG	End of S. Wall, at the entrance to the River Liffy	53 22	6 3	Two	F	—15—	
BAILEY	End of N. Wall or N. Quay; Dublin	54 1	6 5	One	F	—12—	
CARLINGFORD	S.E. Point of Howth Island	54 13	5 40	One	Int.	—12—	
DUNDRUM BAY	Haulbowline Rock	54 24	5 25	One	R	—12—	
SOUTH ROCK	St. John's Point	54 42	5 25	One	Int.	—12—	
COPELAND	On the Rock	54 42	5 25	One	R	—12—	
	Small Copeland Island	54 42	5 25	One	F	—12—	

Isle of Man Fairs

JANUARY.—5. St. Mark's, Malew.
FEBRUARY.—2. Greeba—12. Kirk Bride.
 —27. Baldwin.
MARCH.—17. St. John's.—25. Ramsey.
 28. Peel.
APRIL.—5. Jurby.
MAY.—1. St. John's.—3 Sulby Cladagh.—10. Laxey.—12. St. Mark's.—15 Ballaugh.—26. Kirk Santon.
JUNE.—4. Sulby.—16. Kirk Michael.
JULY.—5. St. John's.—23. Sulby.
AUGUST.—5. Laxey.—12. Ballasalla.—26. Ballaugh.
SEPTEMBER.—29. Ballasalla.
OCTOBER.—10. Michael.—28. Arbory.
NOVEMBER.—1. St. John's.—8. Ramsey.—12. Douglas.—18. St. John's.
DECEMBER.—6. Colby, Kirk Arbory.—11. Kirk Andreas.

Those falling on Saturday, Sunday, or Monday, to be held on the following Tuesday—except the Tynwald Fair, which must be held on the 5th July, unless that day fall on a Sunday.

Cumberland—Abbey-Holme, Tuesday before Whitsunday, Oct. 29.—Alston Moor, last Thursday in May, Friday before 27th Sept., 1st Thur. in Nov.—Arclecdon, Ap. 24, 1st Friday in June, 17 Sep.—Bootle, April 5, 26, August 3, Sept. 24.—Brampton, April 22, 2nd Wed. after Whit. 2nd Wed. after 15th Sept.—Carlisle, Sat. next Whit., Aug. 26, Sep. 16, Sat. nearest 11th Nov.—Cockermouth, Feb. 18, Mon. before Easter, 1st and 3rd Wed. in May, Oct. 10.—Egremont, Feb. 18, 3rd Frid. in May, Sept. 13.—Ennerdale, 2nd Tues. in Sept.—Eskdale, 2nd Mon. in Sep. Garrigill, 3rd Frid. in May, 1st Frid in Sep.—Gosforth, April 25th, Oct. 18.—Hesket Newmarket, every alternate Fri. from May till Whit., last Thur. in Aug., 2nd Thur. in Oct.—Ireby, Feb. 21, Oct. 18.—Keswick, 3rd Thursday after 1st May, Oct. 11, Sat. after 29th Oct.—Kirkoswald, Thur. before Whit. Sun., Aug. 5.—Longtown, Thur. before Whit. Sun., Thur. before Sept. 30.—Nether Wasdale, 1st Mon. in Sept.—Newlands 1st Fri. in Sept.—Penrith, March 1, April 24, 25, 3rd Tues. in Oct., Tues. after Nov. 11.—Ravenglass, May 6, June 8, Aug. 5.—Rosely Hill, Whit. Mon. and every alter. Mon. till Michael.—Skinburnness, June 24th.—Threldkeld, 1st Thur. in Sept.—Uldale August 22.—Ulpha, Mon. before Easter. July 5.—Whitehaven, Aug. 12.—Wigton, Feb. 20, April 5.—Workington, Wed. before Holy Thursday, Oct. 18.

Cheshire—Altringham, Ap. 22, Aug. 8, Nov. 22.—Budworth, Feb. 13, Ap. 5, Oct. 2.—Congleton, May 12, July 5, Nov. 22.—Chester, Feb. 23, April 27, July 5, Oct. 2, Nov. 24.—Knutsford, Whit. Tues., July 10, Nov. 8.—Macclesfield, May 6, June 22, July 11, Oct. 4, Nov. 11.—Malpas, Ap. 5,

July 25, Dec 8.—Middlewich, Holy Th., Aug. 6.—Nantwich, Feb. 4, Mar. 15, Sep. 4, Dec. 11.—Northwich, August 2, Dec. 6.—Over, May 16, Sep. 25.—Sandbach, East. Tues., Tues. after Sept. 10.—Stockport, March 4, 25, May 1, Oct. 23.—Tarporeley, May 1, last Monday in August, Dec. 11.—Winsford, May 8, Nov. 25.

Lancashire.—Blackburn, Easter-Mon., May 12, Oct. 17, every fortnight on Wed. from Feb. till Oc.—Bolton-le-moors 1st Mon. after Jan. 5, and every Mon. fortnight till May 12, July 30, 31, Oct. 13, 14.—Burnley, March 6, East. Eve., May 6, 13, July 10, Oct. 11.—Broughton-in-F., Aug. 1.—Bury, March 5, May 3, Second Thursday after Whit. S., Sept. 18.—Cartmell, March 22, Whit. Mon., Oct. 24, Nov. 5.—Chorley, March 26, May 5, Aug. 20.—Clithero, March 24, 25, August 1, 2, the 5th Thur. and Fri. after St. Michael's day.—Conistone, 3rd Saturday in Sept.—Darwen, Holy Thurs., 1st Thurs. in Oct.—Dalton, April 28, June 6, Oct. 23.—Great Harwood, Mar. 3, Aug. 21.—Hasiingden, May 8, July 1, Oct. 10.—Hawkshead Mon before Holy Thurs., Whit Mon., Oct. 2.—Inglewhite, Oct. 5.—Kirkham, June 24.—Lancaster, May 1, July 5, Aug. 11, Oct. 10.—Liverpool, July 25, Nov. 11; Horse fair every alternate Wednesday.—Longridge, May 13, Nov. 6.—Manchester, Whit Mon., Oct. 1, Nov. 6.—Middleton, Thurs. after March 11, Thurs. after April 15, 2nd Thur. after Sept. 29.—Newburg, June 21.—Newbury, June 21.—Newchurch, April 29, Sept. 30.—Newton, May 17, July 15, and every Mon. fortnight, Aug. 12.—Oldham, May 2.—Ormskirk, Whit Mon., Sept. 8.—Poulton, Feb. 6, Ap. 13, Nov. 3.—Prescot, June 12, Aug. 24, 25, Nov. 1.—Preston, 1st Satur. after Jan. 6, March 27, Aug. 25, last 10 days, Nov. 7.—Rufford, May 19.—Radcliffe Bridge, April 29, 30, Sep. 21, 22.—Rochdale, May 14, Whit Tues., Nov. 7.—Ulverstone, March 22, October 27.—Warrington, July 18, Nov. 30, each lasts 10 days; every Wed. fortnight.—Wigan, Holy Thursday, June 27, Oct. 21.

Irish Fairs—Antrim

Ahoghill, June 4, Aug. 26, Dec. 5.—Antrim, Jan. 1, May 12, Aug. 1, Nov. 12.—Armoy, Jan. 25, Feb. 25, Mar. 29, May 25, Aug. 16, Nov. 12, Dec. 25.—Ballinagabob, July 26.—Ballindery, second Monday in Feb., May, Aug., and Nov.—Ballintoy, June 3, Sept. 4, Oct. 14.—Ballicary, 2nd Mon. in Jan., 3rd Mon. in April, August and Nov.—Ballycastle, Easter Tues., last Tues. in May, Aug., Oct., and Nov., July 26.—Ballyclare, last Tues. in Jan., 2nd Tues. in May, July, and Nov. o.s. Ballymena July 26, Oct. 21.—Ballamoney, May 5, July 10, October 6.—Ballybernice, 1st Tues. after 12th Jan. and Feb.—Ballynure, May 15, Sep. 4, 2nd Tues. in Oct. o.s.—Belfast, 1st Wed. in each month, Aug. 12, Nov. 1.—Broughshane, June 17, Sept. 1.—

ISLE OF MAN INFORMATION.

Manx Legislature

H. B. Loch, Esq., C.B... Lieut.-Governor
Sec. to his Excellency .. J. F. Clucas

COUNCIL.

Hon. & Rt. Rev. H. Powys, D.D., Lord Bishop
Charles R. Ogden Attorney-General
Hon. W. L. Drinkwater, South. Deemster
Hon. J. C. Stephen, Northern Deemster
Wm. W. Christian Water-Bailiff
Hon. Mark H. Quayle, Clerk of the Rolls
Ven. Joseph C. Moore Archdeacon
Richard Jebb Vicar General
J. T. Clucas Clerk of Council

HOUSE OF KEYS.

Edw. Moore Gawne, Speaker, Kentraugh
Robert John Moore, Secretary Peel
John F. Crellin Orrisdale
Evan Gell Whitehouse
Alexander Spittall Laureston
Richard Quirk Rheaby, Patrick
William Callister Thornhill
J. G. Bennett Willaston
Edward Curphey Farrant.. Ballakillingan
Patrick T. Cunningham .. Lorn House,
Castletown.
John Gell Kennaa
Philip Killey Douglas
John M. Jeffcott Castletown
Ridgway Harrison Douglas
William Harrison German
W. F. Moore Cronkbourne
William Haslam Ballaglass
J. S. Goldie Taubman Nunnery
Edward Faulder Ellerslie
R. T. Quayle Castletown
Thomas Moore Billown
C. E. Cowle Andreas
J. C. T. Harrison.. Spring Valley, Braddan

Committee of the Legislature

FOR REGULATING ALL MATTERS RELATIVE
TO HIGHWAYS, BRIDGES, &c.

W. Callister, E. C. Farrant, Ridgway
Harrison, J. M. Jeffcott. and R. J.
Moore.
Surveyor-General,

Constituted Authorities

HIGH BAILIFFS.

Samuel Harris Douglas
James Gell Castletown
Frederick Tellet Ramsey
Robert J. Moore Peel

Coroner-General for holding Inquests of
Death.... W. W. Christian, Andreas
Registrar of Deeds .. S. Harris, Douglas
Registrar General of Births and Mar-
riages.. S. Harris, Douglas
Deputy Registrars do., R. Harrison, Dou-
glas; James Gell, Castletown; Robert
J. Moore, Peel; F. Tellet, Ramsey.
Episcopal Registrar Samuel Harris.
Archdeacon's Official T. C. Callow

Archdeacon's Registrar.. R. H. L. Brown
Seneschal L. Adamson, Douglas
Acting Attorney-General..... A. W.
Adams, Douglas.
Regulator of Weights and Measures .. F.
L. Gelling, Castletown
Agent for Woods and Forests F. C.
Skrimshire, Douglas
Tithe Agent R. Harrison, Douglas
Southern Deemster's Clerk, R. Harrison
Northern Deem. do.. D. F. Wilson
Clerk to the Vicar General.. H. B. Watts

Magistrates

The Members of the Council.... }
The High Bailiff of Castletown.. } For the
The High Bailiff of Douglas } time
The High Bailiff of Ramsey } being.
The High Bailiff of Peel }
Thomas Moore Ballown
Mark H. Quayle, C.R. Castletown
Wm. Watson Christian Ballacurry
James Campbell New Zealand
Evan Gell Whitehouse
Richard Quirk Rheaby
Cesar Bacon Seafield
William Callister..... Thornhill
Ewan Cameron..... Ballatessen
Clarence Horatio Cary Beach House
John Frissell Crellin Orrisdale
Edward Moore Gawne.... Kentraugh
Alexander Taubman Goldie .. Douglas
Richard Simpson Onchan
J. G. Bennett.. Williston
P. T. Cunningham Castletown
William Farrant Ballamoar
John Gell..... Kennaa
William Haslam .. Ballaglass
W. F. Moore Cronkbourne
G. H. Newton Westham
J. S. Goldie Taubman..... Nunnery
CLERKS—James Spittall..... Douglas
Henry C. Gill.... Castletown
R. J. Kelly, Ramsey
John Kelly Peel

Members of Manx Bar

* Members of the House of Keys.

Frederick Tellet, H.B. Ramsey
Frederick L. Gelling .. Castletown
James Quirk Douglas
William W. Christian Andreas
William Clagne Peel
Mark H. Quayle, C.R..... Castletown
George Wm. Dumbell ... Douglas
Henry B. Watts Douglas
J. C. Stephen, Deemster Ramsey
Edward H. Frizelle Peel
Robert J. Kelly .. Ramsey
*Robert J. Moore, H.B... Peel
Thomas C. Howard New Zealand
*John M. Jeffcott Castletown
Laurence Craigie Douglas
*Ridgway Harrison .. Douglas

Samuel Harris, H.B. Douglas
 Edward Callow Manchester
 Charles J. Stewart Lancashire
 Chas. R. Ogden Liverpool
 John Kelly Peel
 Thomas C. Callow Douglas
 James Gell, H.B. Castletown
 Daniel F. Wilson Ramsey
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 James Spittall Douglas
 Alfred Walter Adams Douglas
 Frederick Call Australia
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 Thomas A. Corlett Ramsey
 Laurence W. Adamson Douglas
 Henry C. Gill Castletown
 *J. C. Tobin Harrison Douglas
 Richard Tuton Douglas
 John Thomas Clucas Castletown
 Richard Sherwood Douglas
 Alured Dumbell Ramsey
 Henry Evans Gelling Castletown
 Henry T. Lamothe Ramsey
 Claude Cannell, B.A. Douglas
 J. C. Lamothe Ramsey
 W. E. S. Moore Peel
 John Quayle Douglas
 John Frederick Gill Castletown
 C. W. Beckwith Douglas
 J. J. Gell Castletown
 G. J. McDonald Peel

Notaries Public

DOUGLAS.—John Moore, Henry B. Watts, J. C. T. Harrison, James Spittall, Ridgway Harrison, T. C. Callow, A. N. Laughton, R. Tuton, Claude Cannell, B.A., John Quayle.

CASTLETOWN.—Frederick L. Gelling, H. C. Gill.

RAMSEY.—Robt. J. Kelly, D. F. Wilson
 PEEL.—J. Kelly

Commissioners to take Affidavits.

English Court of Chancery & Irish Courts of Queen's Bench, and Common Pleas.—Robt. J. Kelly, Advocate, Ramsey.

English Courts of Queen's Bench, Exchequer, and Common Pleas, Thomas Cheslyn Callow, Douglas.

English Court of Chancery, Queen's Bench, Common Pleas, Exchequer, and Probate.—Jas. Gell, Advocate, Castletown; James Spittall, Douglas.

English Court of Probate—L. W. Adamson, Douglas, Alfred N. Laughton, Douglas.

Her Majesty's Court of Chancery..... L. W. Adamson, Douglas.

Coroners

Glenfaba Wm. Quayle
 Michael Thomas Clarke
 Garff John Stephen
 Ayre John Chrystall
 Middle G. H. Wood
 Rushen J. Thompson

Summers

Sumner-General John Quayle
 Kirk Maughold John Bridson
 — Lonan Jas. Cannon
 — Onchan George Maley
 — Braddan George Maley
 — Marown T. Christian
 — Santon Wm. Corlett
 — Malew Wm. Corlett
 — Arbory Richard Corrin
 — Christ Rushen John Hodson
 — Patrick P. Clucas
 — German Robert Kewin
 — Michael Edward Cannell
 — Andreas Matthias Curphey
 — Bride John Kneale
 Ballaugh John Stephen
 Jurby J. Moughtin
 Lezayre John Cain

Officers of Police.

Head Constable, Isle of Man.... Capt. Geo. P. Goldie.

John Sayle, Inspector Douglas
 James Martin, Sergeant .. Castletown
 W. Kermode .. do. Ramsey
 Matthias Collister, do. Peel
 William Hollinrake .. Mounted Sergeant of Police.

Officers of Customs

PORT DOUGLAS.

Collector R. S. D'Ousely
 Collector's First Clerk N. W. Walker
 Collector's 2nd Clerk }
 and Assistant Exam- } G. A. M'Cammon
 ining Officer
 Examining Officer R. J. Weaver
 Locker and Weigher .. Robert Guine
 Out-Door Officers Wm. Kirkbride,
 J. Quine, John Kelly, and G. Wainman.

CREEK OF PEEL.

Principal Coast Officer .. Leslie Lockhart
 Out-Door Officers..... J. Cowley and J. J. Corlett

PORT RAMSEY.

Collector T. Jackson
 Examining Officer G. A. Adams
 Out-Door Officers..... Thos. Corlett, S. Farrington, and J. Quayle

PORT CASTLETOWN.

Collector R. Q. Crellin
 Assist. Examining Officer.. J. Watterson
 Out-Door Officers.. W. Archer, W. Bell, and T. W. Lawson

Customs Brokers

H. Johnson Market Place, Douglas
 W. Berey North Quay, Douglas
 John Clucas Castletown

Vice Consuls

Danish W. F. Moore
 Swedish and Norwegian .. H. B. Noble

Harbour Masters

Douglas..... { John Clague
 Deputy, Robert Gelling
 Ramsey..... Charles Teare
 Castletown..... John Caveen
 Peel..... J. Gill
 Port St. Mary..... Thomas Qualtrough

Commissioners of Harbours

R. Quirk, Receiver General
 R. S. D'Ousely James Corlett
 James Gell Robert J. Moore
 R. J. T. Quayle William Callister
 R. J. Weaver Robert Corrin
 William F. Moore

Douglas Town Commissioners.

T. Richards, (Chairman), R. Clague,
 (Vice Chairman), J. Mylrea, J. Dearden,
 R. Quayle, J. R. Bowman, T. Teare, W. A.
 Brearey, and C. Caley.
 C. Craine, Clerk to Commissioners,
 J. Robertson, Out-door Overseer.
 D. Callister, Inspector of Cars.

Ramsey Town Commissioners.

R. Teare, J. J. Cleator, Thos. Moore,
 W. Brown, R. O. Christian, Wm. Callow,
 Thomas Looney.

Receiver of Droits of Admiralty

R. S. D'Ousely Douglas

Agents for Lloyd's

Southern District, William Berey, Douglas
*Also for the Underwriters of Glasgow
 and Liverpool*
 Northern District.. Hugh Brown, Ramsey

Bankers

Bank of Mona, Douglas—(Draw on Pres-
 cott, Grote, & Co., London) — J. S.
 Jackson, Manager
 Douglas and Isle of Man Bank—(Draw on
 Glynn, Mills, & Co., London)—Dum-
 bell, Son, & Howard.
 Bank for Savings, Atholl-street, Douglas
 —J. Spittall, Secretary
 Isle of Man Banking Company (Limited)
 Atholl-street.

Law Courts

COMMON LAW.—*Castletown*, Feb. 6,
 May 8, July 3, October 9. — *Ramsey*,
 Feb. 13, May 15, July 10, Oct. 16.

CHANCERY AND EXCHEQUER.—On the
 first THURSDAY in each month; the
 months of Jan., August, and September
 excepted; besides which, Special Courts
 are held as occasion may require.

ADMIRALTY, OR WATER-BAILIFF'S.—
 Weekly during the fishing season.

DEEMSTERS' SUMMARY.—At Castle
 Rushen, Douglas, Ramsey, and Peel,
 every fortnight.

VICAR'S GENERAL.—At Douglas, Cas-
 tletown, Peel, and Ramsey once monthly.

CHAPTER.—Half-yearly, in Spring and
 Autumn.

HIGH BAILIFFS'.—At Castletown, Doug-
 las, Peel, and Ramsey, weekly.

BARON.—Held in April and October.

MAGISTRATES'.—Fortnightly.

Isle of Man Post-Office

Atholl Street, Douglas... Miss Macadam
 SUB-POST-OFFICES & RECEIVING HOUSES.

Duke Street, Douglas..... R. Cain
 Pillar Letter Box, Osborne Terrace, Douglas
 Shore Road, Douglas..... E. G. Smith

Crescent, Douglas..... Geo. M. Jones
 Wall Box Ballaughton, near Douglas....

Ballasalla..... H. Caugherty
 CASTLETOWN..... John Kinvig

Wall Box, the Green, Castletown..
 Port St. Mary..... William Skillicorn

Union Mills..... W. Dalrymple
 Crosby..... R. Kelly

St. John's..... John Garrett
 PEEL..... John Morrison

Onchan..... J. Lewin
 Laxey..... J. Kinley

RAMSEY..... John Hampton
 Wall Box, Sandy Road, Ramsey..

Kirk Andreas..... Fred. Radcliffe
 Sulby..... J. McWhannell

Ballaugh..... W. Teare
 Michael..... J. Cannan

Jurby..... A. Joughin
 St. Mark's..... P. Mylrea

Foxdale..... T. Buzzo
 Glenmay..... W. Quayle

Maughold..... D. Kinrade
 Bride..... R. Pass

Colby..... Wall Letter Box
 Port Erin..... J. McComb

LIVERPOOL INFORMATION.**Pilot Boat Stations.**

Notice.—From the Liverpool Pilot Boats
 is shown a single Light at the mast
 head.

The boat having the turn to board
 displays a Red and White Flag at the
 masthead by day; by night a white light,
 and exhibits a flare-up light every 15

minutes; the other boats a white light
 only.

The two western boats cruise off Point
 Lynas, and as far to the westward as the
 Middle Mouse, and to the eastward until
 Priestholm Island bears S.S.W.

The third western boat cruises from
 Point Lynas to S.S.W. off west end of
 Great Ormshead, to board any vessels

that may pass the first and second boats. The fourth western boat cruises from eastern limits of third boat's station, and eastward to N.N.E. from west end of Bar Land.

The fifth, or first Hoylake boat cruises to the westward so as to keep sight of the Northwest Light Ship from the deck.

The sixth, or second Hoylake boat, to board vessels after they pass the line of the Northwest Light Ship and point of Air, when the first boat is not within a reasonable distance, and after high water to take Pilots from vessels outward bound.

Rates of Pilotage.

For all Vessels Trading Foreign.

	INWARD.	PER FOOT.
From the length of the west end of the Great Ormshead bearing S. by W. or before Penman Bachan be shut in with the Great Ormshead, at the rate of	9	0
From the Eastward of the Great Ormshead, as above	8	0
From the only house now on Great Hilbre Island, bearing S.S.W. by the compass, or shall be Piloted from the road of Hoylake only, or from the Buoy of the Fairway in Formby Channel	4	0

OUTWARD.

Whether through the Rock or Formby Channel	4	0
--	---	---

No Vessel trading to Foreign Parts, inward or outward bound, is to refuse a Pilot; but, if such Vessel has passed the Brazil Buoy in the Rock Channel, or the Middle Patch Buoy in Formby Channel, or if a Pilot-boat falls in with a vessel in the narrows of the Channels in stormy weather, that she cannot board her without eminent danger, the Pilot shall then lead the way, and in either case be entitled to such Pilotage as shall be awarded by the Committee at their next meeting.

For Coasting Vessels, and those trading to and from Ireland, the Islands of Faro or Ferro, Jersey, Guernsey, Alderney, Sark, and Man.

INWARDS.

From the length of the Great Ormshead, as above at the rate of	4	6
From the Eastward of the Great Ormshead, as above	4	0
From the only house now on Great Hilbre Island, &c., as above	2	0

OUTWARD.

	OUTWARD.	PER FOOT.
Whether through the Rock or <i>s. d</i>		
Formby Channel		2 0

No coasting Vessel to pay for less than eight feet of water, nor any Vessel to pay nor odd inches under half a foot. No coasting vessel, inward or outward bound

of the burden of one hundred tons or upwards (unless she be in ballast), is to refuse a Pilot, as the Master or owner, &c., must pay the full Pilotage, if one is offered. No vessel to be deemed a coaster unless she has been six months in that trade.

EXTRA PAY. PER DAY.

For every day of attendance whilst in the River, except the day of going to sea with such ships or vessels as shall be outward bound and the day of returning from sea and the day of docking for such as shall be inwards, bound	5	0
And if the attendance of a Pilotboat be required	42	0
Though the Pilot or boat be not employed a whole day, to be paid for a day.		

CHARGES ON THE MERSEY—For taking a vessel from one dock to another, £1; from Liverpool to Garston, £2, and vice versa.

Pilots' Rules and Regulations.

Any person acting as Pilot without a license, to forfeit £20.

Pilots refusing to conduct or assist ships in distress, to forfeit £10 and license.

Masters of vessels forcibly taking Pilots beyond the limits of port, to forfeit not more than £20, nor less than £5.

Pilots misbehaving to have their license recalled, and if they act afterwards the same penalties as if they were not Pilots.

Vessels liable to pay Pilotage coming into port to display signal for Pilot, under a penalty of £5, and must pay Pilotage to the first Pilot that offers, whether taken or not.

Reward for Pilots assisting ships in distress to be settled by the Committee.

Compensation to be made to Pilots for taking vessels out of port which have been forced back, to be fixed by the Committee.

When in stormy weather a vessel cannot be boarded with Pilots' small boats, the vessel should be steered with the wind on the quarter, the yards braced by: then the large boat will sheer under the ship's lee quarter and a Pilot will jump on board.

Life Boats.

All Masters and others, entering or quitting the port, and requiring the assistance of the Life Boats are requested to hoist the Distress Signal, in order that they may be despatched to their assistance as soon as possible. Vessels aground on the Banks, and not hoisting the Distress Signal, will be supposed not to require the assistance of the Life Boats.

Life Boat Stations.

At Liverpool, on the North Landing Stage, two boats; the key kept at the

Marine Surveyor's Office, Custom-house, and at the Life Boat Master's house, Pownall-street. Magazines, two boats, the key left at the Life Boat Master's house. Hoylake, one boat; the key kept at the Lower Hoylake Light-house. Point of Air, two boats; the key kept at the Master's house. Formby, one boat; the key kept at the Life Boat House by the keeper. Hilbre Island, one boat.

Bidston Hill Signals.

SIGNALS OF DISTRESS.—For vessels in distress or on shore in the Rock Channel or about Hoyle—coming in; on the oblique pole to the southward of the

lighthouse—for every ship, a ball with a flag half-mast; for every snow a cone, broad end up and a flag half-mast; for every brig or small vessel, a cone small end up and a flag half-mast. Going out, the same as above, but a broad pendant instead of a flag.

N.B.—For vessels in distress to the southward, when on shore to the main, the ball or cone to be put on the outside of the flag or pendant: but if on shore on Hoyle Bank, then the ball or cone to be put on the inside of the flag or pendant.

In Formby Channel.—The same signals to the northward of the Lighthouse.

Pilot Boats.

- | NO. | NAMES. | MASTERS AND SECOND MASTERS. |
|-----|--------------------------------|---|
| 1. | Queen (schooner) | —R. Taggart, Olive Cottage, St. George's Road, West Derby Road; E. Callister, 37 Erskine Street, Liverpool. |
| 2. | Leader (schooner) | —Joseph Powell, 169, Islington; Samuel Jones, 115, Vine St. |
| 3. | The Duke (schooner) | —Thos. Parry, 33 Sackville-street, Everton; Wm. Harris, 74, South Chester street. |
| 4. | Auspicious (cutter) | —J. Shepherd, 40, Wesley-street; M. N. Bridge, 6, Myrtle street, South. |
| 5. | Victoria and Albert (schooner) | —Isaac Williams, Middle Lane, Wallasey, Cheshire; Peter Dickinson, 23, Lower Mersey View, North-shore. |
| 6. | Pioneer (schooner) | —T. Parry, 18, Stafford-street; T. Davis, 3, Vernon Place, Birkenhead. |
| 7. | Lancashire Witch (schooner) | —W. Rowlands, 28, Great Mersey-street; John Williams, 56, Raglan Terrace, Everton. |
| 8. | Pride of Liverpool (schooner) | —J. Christie, 19, Upper Warwick street; William J. Mc. Cracken, 16, Everton Valley. |
| 9. | Guide (schooner) | —John Corrin, 126, Duke-street; John Pritchard, 63, St. George's Hill, Everton. |
| 10. | Criterion (schooner) | —J. Wilson, 294, Upper Parliament-street; H. Williams, 16, Percy-street. |
| 11. | Mersey (cutter) | —R. Williams, 22, Clarence-street, Everton; John Scott, 42, Sussex-street, Toxteth Park. |
| 12. | Perseverance (schooner) | —George Bark, 10, Juvenal-street; John Tunstall, 164, Grove-street. |

Superintendent of Pilots, Robert P. J. Simpson, Church-street, Birkenhead.

The Pilotage Committee meet for the transaction of business every Monday, at twelve o'clock, at the Committee Room, south end of Prince's Dock.

Mersey Docks and Harbour Board.

OFFICERS.

- | | |
|--|--|
| Mr. John North, Solicitor.—Office Dock Office. | Mr. Wm. Laidlaw, Receiver of Duties on Goods Outwards. |
| Mr. George Fosbery Lyster, Engineer of the Docks. &c.—Office, south side of Coburg Dock. | Mr. George Jones, Receiver of Duties on Goods Coastwise. |
| Mr. John Harrison, Secretary. | Mr. Richard Jones, Receiver of Duties at Runcorn. |
| Mr. G. J. Jefferson, Treasurer. | Mr. Thomas Hanlon, Superintendent of Albert Dock Warehouses |
| Lieut. M. T. Parks, R.N., Marine Surveyor.—Office, Dock Office. | Mr. W. D. Turner, Superintendent of Stanley Dock Warehouses. |
| Mr. A. E. Parks, R.N., Water Bailiff—Office, George's Pier. | Mr. J. Ayre, Superintendent of Wapping Warehouses. |
| Mr. Robert Williams, Receiver of Duties on Tonnage. | Mr. W. H. Sloman, Superintendant of Birkenhead Warehouses. |
| Mr. John Evans, Receiver of Duties on Goods Inwards. | |
| Mr. Thomas Hodgson, Harbour Master.—Office, George's Dock Passage. | |
| Mr. T. H. Cox, North Assistant Harbour Master.—Office, Sandon Graving Docks. | |
| Mr. Wm. Foyle, South Assistant Harbour Master.—Office, south end of Wapping Dock. | |
| Capt. Jas. Hookey, R.N., Birkenhead Assistant Harbour Master.—Office, Morpeth Dock Entrance. | |

Dock Masters.

Canada..... Mr. Josh. Woods.
 Huskisson..... George Corfield.
 Sandon Thomas Barnes.
 Wellington & Half-tide .. Edward Carey.
 Nelson & Bramley Moore . Jas. Saunders.
 Salisbury, Collingwood, and Stanley Edward Edwards.
 Clarence Half-tide, Clarence, Trafalgar, and Victoria Thomas Stirzeker.
 Waterloo..... (under alteration.)
 Prince's H. M. Liardet.
 George's Geo. A. Bond.
 Canning and Half-tide.... John Williams.
 Albert and Salthouse Docks and Wapping Basin George Wilson.
 King's and Wapping Joseph Curry.
 Queen's and Half-tide.... George Palmer.
 Coburg ... Shadrach Williams.
 Brunswick J. H. Hinrichson.
 Toxteth and Harrington .. Shomas King.
 BIRKENHEAD—Morpeth Basin and Morpeth & Egerton Docks .. S. Stokes.
 Birkenhead Low Water Basin and Great Float J. Shepherd.
 The Dock Masters' Offices are at the entrances of the respective docks.

Dock and Basin Signals.

All vessels are allowed to enter the Docks when signals are not hoisted at the respective pier heads. All owners, masters, and consignees are, however, recommended to register their vessels as expeditiously as possible, in order the better to secure their right of turn to accommodation at the Dock quays.

DOCK SIGNALS.

HUSKISSON—Flag on N. pier of Sandon Basin entrance.

SANDON—Flag on N. side of gateway.

WELLINGTON AND HALF-TIDE.—Flag on S. pier of Sandon Basin entrance.

SALISBURY, COLLINGWOOD, AND STANLEY—Flag on S. pier of Salisbury Dock entrance.

CLARENCE AND HALF-TIDE—Flag on N. pier of Clarence Half-tide entrance.

TRAFALGAR—Flag on S. pier of Clarence Half-tide Dock entrance.

WATERLOO AND VICTORIA.—Flag on N. pier of Prince's Basin entrance.

PRINCE'S NORTH ENTRANCE—Flag on S. pier of Prince's Basin entrance.

PRINCE'S SOUTH ENTRANCE—Flag on N. pier of George's Basin entrance.

GEORGE'S—Flag on S. pier of George's Basin entrance.

CANNING AND HALF-TIDE—Flag on N. pier of Canning half-tide entrance.

ALBERT AND SALTHOUSE.—Flag on S. pier of Canning half-tide entrance.

KING'S—Flag on N. pier of King's and Queen's Basin entrance.

WAPPING—Flag on N. end of the King's Parade.

QUEEN'S—Flag on S. pier of King's and Queen's Basin entrance.

COBURG.—Flag on S. pier of Coburg entrance.

BRUNSWICK—Flag on S. side of entrance

TOXTETH—Flag on N. side of entrance.

HARRINGTON—Flag on S. side of en.

BASIN SIGNALS.

SANDON—Ball on the north side.

PRINCE'S—Ball on S. pier of entrance.

GEORGE'S—Ball on S. pier of entrance.

Abstract of Dock Laws.

Goods causing obstruction on the Dock quays, may be removed by the Trustees at expense of owners.

Such a quantity of cargo or ballast to be kept on board each vessel as to enable it to be safely removed: penalty, £50.

Harbour and Dock Masters may remove vessels in dock, or from one dock to another, at owner's expense: penalty for obstructing them, disobeying their orders, or using abusive or offensive language to them, £10.

Vessels on which dues, &c., are owing, may be detained until such are paid.

Shipowners have a lien for freight and all other lawful claims on goods discharged into dock warehouses.

Manifest of all goods imported or exported to be delivered at the Dock Office within 14 days after the discharge inwards or clearance outwards; penalty, £20.

Collector, &c., not to receive entry of any vessel until the dock and light duties are paid; penalty, £20.

No ballast to be thrown into the docks, penalty, £50.

After ballast is discharged to be carted away as the trustees of the docks shall appoint; penalty, £5.

Vessels not to come into dock under sail; penalty, £5.

Persons wilfully and maliciously damaging docks, &c., adjudged guilty of felony.

Water-bailiff empowered to remove vessels lying in the river; penalty for obstructing him, £10.

Persons firing cannon, &c., within the port (except signals of distress) to forfeit £10 for every offence.

CUMBERLAND INFORMATION.

Members of Parliament, &c.

WHITEHAVEN.—G. A. C. Bentick, Esq., 48, Charles-st., Berkley-square, London.

COCKERMOUTH.—J. Steel, Esq., 13 Bury Street, London. Lord Nass, 79 Eccleston Square, Palmerston House, London.

EASTERN DIVISION.—Hon. Chas. W. G. Howard, Naworth Castle; 56 Park street, Grosvenor square, London. W. Marshall, Esq., Patterdale Hall; 85, Eaton Square, London.

WESTERN DIVISION.—Hon. Percy Wyndham. H. Lowther, Esq., 21 Wilton Crescent, London.

CARLISLE.—E. Potter, Esq., Manchester, Reform Club, London. Wm. Nicholson Hodgson, Esq., 37 Jermyn-street, St. James's, London.

Lord Lieutenant Earl of Lonsdale.
Clerk of the Peace .. T. H. Hodgson, Esq.
County Treasurer .. Mr. Dobson, Carlisle.
Gov. of Gaol .. Mr T. H. Redin, Carlisle.

County Coroners.

Wm. Carrick, Esq., Wigton.

W. Lumb, jun., Esq., Whitehaven.

Dr. Bell, Cockermouth.

J. P. Myres, Esq., Broughton, Furness.

Quarterly Sessions.

Easter, in the first week after 31 March
Midsummer, first week after 21 June
Michaelmas, first week after 11 October
Christmas, first week after 28 Dec.

The Easter, Midsummer, Michaelmas, and Christmas Sessions for Cumberland are held at Carlisle.

Bankers.

WHITEHAVEN.—The Whitehaven Joint Stock Banking Company, Peter Cameron, Manager.—London Joint Stock Bank, 5, Princes's Street.

Bank of Whitehaven, G. W. Brown, Manager.—Price, Marryatt, and Co., 54, King William Street, City.

Cumberland Union Branch Bank, W. Miller, Manager.—Barnett and Co., 62, Lombard Street, London.

Savings' Bank—Open Saturdays, from 6 to 8 p.m.—J. F. Lowes, Sec.

WORKINGTON.—Cumberland Union Banking Company, W. B. Gordon, Manager.—Barclay, Bevan, and Co., 54, Lombard Street.

Bank of Whitehaven Branch, Henry Bowes, Manager.

MARYPORT.—Branch of the Cumberland Union Banking Company, Joseph Thompson, Agent.—Barclay, Bevan, and Co., 54 Lombard Street.

COCKERMOUTH.—Branch of the Cumberland Union Banking Company. J. H. Tandy, Agent.—Barclay, Bevan, and Co., 54, Lombard Street.

WHITEHAVEN & WEST CUMBERLAND BENEFIT LAND AND BUILDING SOCIETY.—Public Office, Lowther Street; open on Saturdays, from six to eight p.m.—S. Armstrong, Secretary.

The Whitehaven and Furness Junction Railway.

Trains leave Bransty Station three times daily (Sunday excepted) for Bootle Ulverston, Broughton, Fleetwood, Preston, Manchester, Liverpool, &c. This is the nearest route to Preston, Manchester, Liverpool, &c.—(See *West Cumberland Railway Guide*.)

The Whitehaven and Maryport Junction Railway.

Trains leave Bransty Station four times daily (Sunday excepted) for Workington, Maryport, Wigton, Carlisle, and Cockermouth; three times daily for Edinburgh, London, Birmingham, Liverpool, Manchester, Preston, Newcastle, York, and Darlington.—(See *West Cumberland Railway Guide*.)

The Whitehaven, Cleator, and Egremont Railway.

Trains leave Whitehaven three times daily (Sundays excepted) for Cleator Moor, Frizington, Woodend, and Egremont.—(See *West Cumberland Railway Guide*.)

Steamers and Traders.

LIVERPOOL.—The Whitehaven Steam Navigation Company's powerful and commodious first-class steamers sail regularly with passengers and goods.—Fares: Cabin 7s., Deck, 4s. Passengers are conveyed, in connection with the Railway Companies, between Newcastle, Carlisle, Dalston, and Wigton, to Liverpool, at a through fare. Passengers by Railway arrive at Whitehaven by the last train before the steamer's sailing, and those from Liverpool being forwarded by first train after the vessel's arrival in Whitehaven.—Fares: Cabin and First-class, 10s.; Deck and Third-class, 4s. Agents—Carlisle, Edward Jobling; Liverpool, Fisher, Wilson, and Co.; Whitehaven, J. and J. Hodgson.

BELFAST.—The Whitehaven Steam Navigation Company's steamers sail regularly with passengers and goods.—Fares: Cabin, 10s., Deck, 3s. Passengers are conveyed, in connection with the Railway Companies, between Carlisle, Dalston, and Wigton, to Belfast, at a through fare. Those from Carlisle, &c., arriving in Whitehaven by the last train before the steamer's sailing, and those from Belfast being forwarded by first train after the vessel's arrival in Whitehaven.—Fares: Cabin and First-class, 12s.;

Deck and Third Class, 5s. Agents: Belfast, R. Henderson, and Son, Donegal Quay; Carlisle, Edward Jobling; Whitehaven, J. and J. Hodgson.

BELFAST.—The North British Steam Packet Company's first-class fast sailing Steamers sail between Silloth and Belfast once a week. Fares from Silloth to Belfast, first cabin, 10s.; second do., 3s.

DUBLIN.—The North British Steam Packet Company's first-class fast sailing Steamers sail between Silloth and Dublin twice a week, calling off Whitehaven (weather permitting) to land and embark passengers. Fares from Whitehaven to Dublin, first cabin, 15s.; second cabin, 6s. Agents for Whitehaven, J. and J. Hodgson, 36, King Street.

DOUGLAS (Isle of Man).—The North British Steam Packet Company's first-class fast sailing Steamers sail between Silloth and Douglas TWICE a week, calling off Whitehaven (weather permitting) to land and embark passengers. Fares from Whitehaven to Douglas, first cabin, 6s. 6d.; second cabin, 3s. 6d. Agents for Whitehaven, J. & J. Hodgson, 36, King Street.

RAMSEY (Isle of Man).—The Isle of Man Company's Steam ship "Mona's Isle" sails between Ramsey and Whitehaven ONCE a week, with goods and passengers and goods to Douglas. Fares—Saloon 6s.; Fore cabin, 3s. Agents for Whitehaven—Frost and Nelson, Shipbrokers, 7½, West Strand.

LONDON.—The Whitehaven Steam Navigation Company in connection with the Belfast Screw Steam Company, sail a vessel ONCE a week. Agents;—Belfast, Robert Henderson & Son, London, Ogilby Moore & Co., Ingram Court, Fenchurch Street; Whitehaven, J. & J. Hodgson.

DUNDRUM.—The 'Ansbro,' and 'Robert Burns,' Screw Steamers, sail regularly between Dundrum and Whitehaven. Agent—Charles Fisher & Co., 36, King Street, Whitehaven.

LIVERPOOL.—The North British Steam Packet Company's first-class fast sailing Steamers sail between Silloth and Liverpool TWICE weekly calling off Whitehaven in the summer months. Fares: Carlisle and Liverpool first cabin, 8s.; Second cabin, 4s. Silloth and Liverpool first cabin, 7s.; second cabin, 3s. 6d. Whitehaven and Liverpool first cabin, 7s.; second cabin, 3s. 6d. Agent for Whitehaven—J. & J. Hodgson, 36, King street.

Carriers

Leave Whitehaven for Harrington, Workington, Cockermouth, Keswick, and Egremont, every Tuesday, Thursday, and Saturday; for Wigton every Wednesday; and for Gosforth every Tuesday, Thursday, and Saturday.

Rates for the Steam Tugs.

Vessels employed in the Coal or Coasting Trade shall pay every voyage on clearing for sea one half-penny per Ton Register. Vessels arriving from a Foreign port or from a discharging Port one Penny per Ton Register.

Vessels engaged in the Coal or Coasting Trade pay an additional half-penny per ton when they require the use of the Steam Tug Outward, and the same Inwards.

No Vessel towed out for less than 1s.

Foreign Vessels as above one penny per ton.

That the limits for towing vessels into and out of the harbour for one half-penny and one penny per ton respectively, be as follows, viz.: say a line drawn from St. Bee's head to Mickleham Pit, on the Hill north of Parton, and two lines intersecting the above, from Redness Point and Tom Hurd Rock, bearing N.W. by N. and S.E. by S. by compass.

If the vessel first in turn be not afloat or not ready for the Tug Boat, then she is to take the first that is.

Vessels wanting the use of the Steam Tug are to hoist the Union Jack on the Main Top Gallant Masthead.

Harbour Boat Rates.

A Boat is stationed at the Old Quay Watch House, to attend on vessels entering the Port and also to give assistance to those outward bound, charges, are as follows, viz:—

	s	d
Vessels of 120 tons and upwards	4	0
Vessels from 100 to 120	3	6
Vessels from 80 to 100	3	0
Vessels from 60 to 80	2	6
Vessels from 40 to 60	2	0
Vessels from 20 to 40	1	6
Vessels less than 20	1	0

FOREIGN LADEN VESSELS.

Under 120 tons	4	0
Above 120 tons	6	0

The Harbour Boat to be paid as above by all vessels entering the port; but if not employed by those leaving it, no charge to be demanded.

Rates for the Gridiron.

Every vessel previous to going on must be entered at the Harbour Office, and payment made according to the established rates, for which she may remain on four tides, counting the tide going on and the tide coming off.

	s	d	s	d
Vessel not excee. 50 tons	5	0	1	0
About 50 & not excee. 100	7	6	2	6
.. 100	10	0	3	4
.. 150	15	0	5	0
.. 200	20	0	6	8
.. 250	25	0	8	4
.. 300				

Post Office, Whitehaven.—WILLIAM B. GIBSON, POSTMASTER.

Arrivals.—*Week Days*—London and all parts 9h., a.m.; 8h. 30m., p.m.,
Sundays—London and all parts 10h. 35m., a.m. Despatches.—*Week Days*—Local
 parts, 9h. 30m., a.m.; North mail 2h. 50m., p.m.; London and all parts, 6h. 15m.
 p.m. *Sundays*—North mail, 7h. 50m., a.m.; Local parts, 11h. 30m., a.m.; London
 and all parts, 5h. p.m. The letter box is closed 15 minutes before each despatch.
 Letters bearing one additional stamp will be forwarded for the first ten minutes.
 The deliveries by letter carriers commence during the week days at 9h. 35m., a.m.,
 and 8h. 55m. p.m.; and on Sundays at 12h. 45m.

POST OFFICES IN CONNECTION WITH THE WHITEHAVEN POST OFFICE.

Those marked thus † are empowered to grant and pay Money Orders.

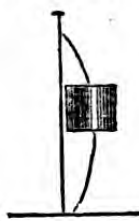
OFFICES.	ARRIVAL.	DESPATCH.	RECEIVER.
Sandwith.....	10 30 a.m.	4 55 p.m.	A. Leeson
† St. Bees.....	7 15 ..	8 58 a.m.	J. Mossop
Ditto	11 25 ..	4 10 p.m.	Ditto
Parton	10 30 ..	4 50 ..	E. Lightfoot
Distinguon	12 10 ..	3 20 ..	E. Lawrence
Hensingham	9 40 ..	5 26 ..	J. Sumpton
Cleator Lane End	10 1 ..	5 5 ..	C. McGinn
Cleator	10 51 ..	4 5 ..	J. Harkness
† Cleator Moor	11 30 ..	3 20 ..	Jno. Atkinson
Arlecdon	1 45 p.m.	2 0 ..	J. James
† Egremont	10 12 a.m.	4 54 ..	G. Selkirk
Beckermont.....	10 34 ..	4 32 ..	M. Gilliot
Calderbridge	10 45 ..	4 21 ..	W. Mossop
Gosforth	11 0 ..	4 6 ..	P. Mossop
† Holm Rook	11 22 ..	3 44 ..	J. Birkett
Eskdale	12 21 p.m.	9 30 a.m.	J. Porter
Wasdale	1 41 ..	5 10 p.m.	M. Pharoah
† Ravenglass	11 41 ..	3 25 ..	R. Askew
Waberthwaite.....	12 16 ..	2 50 ..	J. Woodhall
† Bootle.....	12 46 ..	2 20 ..	J. Parker

STORM-WARNING SIGNALS.

Gale probably from the Northward.



Gale probably from the Southward.



Dangerous winds may be expected from nearly opposite quarters successively.



Dangerous wind probably at first from the Northward.



Dangerous wind probably at first from the Southward.

Whenever such a signal is shown (in consequence of a telegram from London) it will be kept up, shown distinctly, till dusk of *that day only*, unless otherwise specially directed. These cautionary or warning signals advert to winds during some part of the next nights or two or three days; therefore due *vigilance* should prevail (until the weather is again thoroughly settled), but without suspending *departures* or any operations *unnecessarily*.

It should be remembered that only the greater and more *general* disturbances of the atmosphere are to be made known by this method (Warning Signals), not merely local or sudden changes (however violent or dangerous) which are not felt at a certain distance, and do not therefore affect other localities.

MERSEY DOCKS AND HARBOUR.

Tabular Statement, showing the Area of Water, Quay Space, Width of Entrance and Depth of Sill for each Dock, also the length of Graving Docks, &c.

The Old Dock contains an area of 3 acres 1890 yds., and 557 lineal yds. quay space
Its Passage do 675½ do., 90 do.

The level of the Old Dock Sill is the Datum to which the Depth of Sills refer, is preserved on a Tide Gauge on the west side of the Centre Pier of the entrance to the Canning Half-tide Dock.

LIVERPOOL DOCKS.	Width of Entrance.		Sill under Old Dock Datum.		Coping at Hollow Quoins, above Sill		Water Area.		Quay Space
	Ft	In	Ft	In	Ft	In	Acr.	Yd	
North Carrier's Dock West Passage	40	0	6	0	33	0	2	3423	
South ditto..... West Passage	40	0	6	0	33	0	1	4515	
Canada Half-tide Dock.....	..	..	..	..	..	..	3	4380	
West Entrance	60	0	7	9	35	9			
Northern West Lock Entrance	32	0	6	0	34	0			
Southern West Lock Entrance ..	20	0	6	0	34	0			
North Passage	20	0	3	0	30	0			
South Passage	80	0	7	9	35	9			
Canada Dock	..	..	..	..	..	..	17	4043	1
South Passages..... East	50	0	6	6	35	6			
West	80	0	6	6	35	6			
Canada Lock	100	0	7	9	35	9	1	3479	
Huskisson Dock	..	..	..	..	..	..	14	3451	1
Huskisson Branch Dock	..	..	..	..	..	..	7	592	
Huskisson East Lock	80	0	6	6	44	6	0	4682	
Huskisson West Lock	45	0	6	0	32	0	0	3650	
Sandon Dock	70	0	6	6	37	5	10	100	
Wellington Half tide Dock, East Entr.	70	0	6	9	37	6	3	813	
West Entrance	50	0	6	6	34	6			
Wellington Dock	70	0	6	6	37	6	7	4120	
Bramley-Moore Dock .. North Passage	65	0	6	0	32	0	9	3106	
South Passage	60	0	6	0	32	0			
Nelson Dock..... South Passage	60	0	6	6	32	6	7	4786	
Stanley Dock..... West Passage	51	0	5	8	34	8	7	120	
Collingwood Dock	60	0	6	9	32	9	5	244	
Salisbury Dock	..	..	..	..	..	..	3	2146	
West Entrances	60	0	6	11	32	11			
North	50	0	6	11	32	11			
South	45	0	4	9	30	9	1	1056	
Clarence Graving } North Passage	45	0	4	6	31	0			
Dock Basin } South Passage	45	0	4	6	31	0			
Clarence Half-tide Dock.... West Entr.	50	0	5	6	34	0	4	1794	
Clarence Dock	47	0	3	2	29	2	6	273	
Trafalgar Lock ... Nth. & Sth. Passages	45	0	6	7	30	5	0	2937	
Trafalgar Dock	45	0	4	11	31	4	5	4546	
Victoria Dock	40	0	4	11	31	3	5	3559	
Waterloo Dock	..	..	..	..	..	..	5	3056	
Waterloo Lock..... North Passage	45	0	6	5	33	0	0	2937	
South Entrance	45	0	6	8	33	3			
Prince's Dock & Locks, North Entrance	45	0	5	11	34	1	11	3889	16
South Entrance	44	11	5	11	34	1			
George's Dock & Passage.. North Entr.	41	11	4	6	29	0	5	2593	10
South Passage	40	1	4	6	28	11			
Manchester Dock	32	10	† Note		23	0	1	595	3
Manchester Lock	33	8	3	9	28	0	0	315	
Canning Dock	45	0	6	1	32	3	4	376	58
Canning Half-tide Basin	..	..	..	..	..	..	2	2688	48
Two West Entrances	45	0	6	3	34	6			
Albert Dock	45	0	6	4	32	4	7	3542	8
East Passage	45	0	6	0	32	0			
Salthouse Dock	45	0	6	0	32	0	6	2019	78
Wapping Basin..... West Passage	40	0	6	0	31	0	1	3151	48
North and South Passages each	50	0	6	0	32	0			

† The Sill of the Manchester Dock is 3 inches above Old Dock Datum.

LIVERPOOL DOCKS.		Width of Entrance.		Sill under Old Dock Datum	Coping at Hollow Quoins above Sill.	Water Area.	Quay Space.
		Ft.	In.	Ft.	In.	Acr. Yd.	Mile Yd.
Wapping Dock.....	West Passage	50	0	6	0	32 0	5 499 815
	South Passage	50	0	6	0	32 0	
King's Dock....	South Passage	42	0	5	0	31 1	7 3896 875
Basin to Queen's Dock		..	..	..	..	3 3542	445
West Entrances	North	70	0	6	9	37 9	
	South	50	0	6	9	37 9	
Queen's Dock	West Passage	50	0	6	0	32 0	10 1564 1214
	South Passage	60	0	6	6	35 3	
Coburg Dock.....	West Entrance	70	1	6	0	32 3	8 26 1053
Brunswick Dock	North Passage	60	0	6	6	33 6	12 3010 1086
Brunswick half-tide Dock,..	East Pass.	42	0	5	6	31 6	1 3358 491
	West Entrance	45	0	6	0	32 6	
Toxteth Dock.....	West Entrance	40	0	5	0	31 0	1 469 393
Harrington Dock.....	West Entrance	29	9	1	2	24 3	0 3740 315

Total Water Area and Quay Space of the Liverpool Docks .. 228 630 16 923

LIVERPOOL BASINS.		Width of Entrance.		Height of Piers above Old Dock Sill		Water Area.	Quay Space.
		Ft.	In.			Acr. Yd.	Mile Yd.
Canada Basin		250	0	32	0	.. ..	6 4528 546
Sandon Basin		200	0	31	0	.. ..	6 904 702
Prince's Basin		156	0	27	10	.. ..	4 1549 509
Seacombe Basin		52	0	..	..	.. ..	0 1805 188
George's Basin		147	0	25	0	.. ..	3 1852 455
George's Ferry Basin		70	0	..	..	.. ..	0 1344 160
Manchester Basin	West Passage	36	0	..	..	.. ..	0 2568 288
South Ferry Basin		60	0	..	..	.. ..	0 2927 205
Harrington Basin		40	0	..	..	.. ..	0 3817 308
Total Water Area and Quay Space of the Liverpool Basins.....						23 2034	1 1600
Do. do. do. Docks						228 630	16 923
Total						251 2664	18 763

BIRKENHEAD DOCKS.		Width of Entrance.		Sill under Old Dock Datum	Coping at Hollow Quoins above Sill.	Length at Bottom.	Total Length at Bottom.
		Ft.	In.	Ft.	In.	Lineal Yd.	Lineal Yd.
Wallasey Pool.....	Western Float	..	..	..	..	52 319	2 210
Ditto.....	Eastern Ditto	..	..	..	..	59 3786	1 1506
Ditto	Passage	100	0	7	6	33 6	
Ditto, Basin near Canada Works, West		50	0	..	..	.. ..	1 2554 543
Ditto, ditto	East	50	0	..	..	.. ..	1 84 390
Ditto, Railway Company's Basin .....		..	..	..	..	.. ..	0 606 113
Egerton Dock.....	West Passage	70	0	7	0	28 6	3 4011 754
Morpeth Dock	West Passage	70	0	5	3	30 0	3 1189 790
	East Entrance	50	0	5	0	30 0	
Total Water Area and Quay Space of the Birkenhead Docks ..						121 2869	5 786
Ditto ditto Liverpool Docks and Basins ..						251 2664	18 763
Total						373 693	23 1549

LIVERPOOL GRAVING DOCKS.		Width of Entrance.		Sill under Old Dock Datum.	Coping at Hollow Quoins above Sill	Length at Bottom.	Total Length at Bottom.
		Ft.	In.	Ft.	In.	Lineal Yd.	Lineal Yd.
Canada Lock and Graving Dock		100	0	7	9	35 9	 167
Huskisson Lock and Graving Dock....		80	0	6	6	44 6	 132
Sandon Graving Docks, No. 1—East ..		60	0	3	6	29 6	180
No. 2— ..		70	0	3	6	29 6	180
No. 3— ..		60	0	3	6	29 6	180
No. 4— ..		70	0	3	6	29 6	180
No. 5— ..		45	0	3	6	29 6	180

TABULAR STATEMENT, Continued.

GRAVING DOCKS, Continued.		Width of Entrance.		Sill under Old Dock Datum.		Coping at Hollow Quoins above Sill		Length at Bottom.	Total Length at Bottom.
		Ft.	In.	Ft.	In.	Ft.	In.	Lineal Yd	Lineal Yd
Sandon Graving Docks, No. 6—West Clarence Graving Docks—		45	0	3	6	29	6	180	1080
No. 1—Outer Gates		45	0	3	0	29	6	135	
No. 1—Inner Gates		45	0	0	6	18	6	97	
No. 2—Outer Gates		45	0	3	0	29	6	138	
No. 2—Inner Gates		32	10	0	6	18	6	96	
Canning Graving Docks No. 1....		35	9	†		21	6½	147	466
No. 2....		35	9	0	0½	23	4	160	
Queen's Graving Docks No. 1....		42	0	1	8½	29	4	146	307
No. 2....		70	1	3	6	30	11	145	
Brunswick Graving Docks .. No. 1....		42	0	26		29	0	133	291
No. 2....		42	0	26		29	0	133	
								266	2709
Total measure at the bottom.....									
† Sill 1 foot 8½ inches ABOVE Old Dock Datum.									

LIVERPOOL CORPORATION DOCKS.		Width of Entrance.		Level of Sill.		Level of Coping above Sill.		Water Area.	
		Ft.	In.	Above Datum.	Below Datum.	Ft.	In.	Acre.	Yd
River Craft Dock, Lock, & Eagle Basin		30	0	0	3	25	1	1	3416
Outer Gates		30	0	1	3	24	7		
Inner Gates.....		40	0	..	..	30	0		
Duke of Bridgewater's Dock—		28	10	0	6	22	3	2	1336
Outer Gates.....		40	0	..	..	31	0		
Middle Gates		40	0	..	..	31	0		
Inner Gates.....		40	0	..	..	31	0		

A Tide-Gauge Table for the Entrance of the Mersey,

Adapted to shew the Height of Water above low-water level of ordinary Spring Tides, at any required period.

When it is High Water at or near either of the following times.	H. W.												L. W.
	hour.	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	
12 o'clock	30	29	27	25	22	19	16	13	10	8	5	3	2
11 or 1	29	28	27	25	22	19	16	13	10	8	6	4	3
10 or 2	27	26	25	24	21	19	16	13	11	9	7	6	5
9 or 3	26	25	24	23	21	18	16	13	11	9	8	7	6
8 or 6	25	24	23	22	20	18	16	14	12	10	9	8	7
7 or 5	24	23	22	21	20	18	16	14	12	11	10	9	8
6	23	22	21	20	19	18	16	14	13	12	11	10	9

Graving Dock Rates

FOR		£ s.		£ s.		£ s.	
2	Tides, the tide in & next tide out	1	16	2	2	0	6
3	—, includ. going in & coming out	2	2	2	9	0	7
4	—	2	8	2	16	0	8
5	—	2	14	3	3	0	9
6	—	3	0	3	10	0	10
7	—	3	6	3	17	0	11
8	—	3	12	4	4	0	12
9	—	3	18				
10	—	4	4				
11	—	4	10				
12	—	4	16				
2	Neaps	12	0	16	0	2	
3	—	18	0	24	0	3	0
4	—	24	0	32	0	4	0
5	—	30	0	40	0	5	0
6	—	36	0	48	0	6	0
7	—	42	0	56	0	7	0
8	—	48	0	64	0	8	0

Latitude and Longitude of Liverpool

Lat. of the Observatory .. 53° 24' 47.8" N.
Longitude in Time 12m. 0.11s. before Greenwich Time.

MISCELLANEOUS INFORMATION.

Eclipses, 1866.

In the year 1866 there will be three Eclipses of the Sun and two of the Moon—the Greenwich mean time of their occurrence will be as follows:—

First. A partial Eclipse of the Sun on the 16th March, beginning on the Earth generally at 8h. 50m. in the evening; greatest eclipse at 9h. 51m., magnitude 0.216; and ending at 10h. 52m. Visible in the Northeastern parts of Asia.

Second. A total Eclipse of the Moon on the 31st March, visible until moon set. The first contact with the Earth's dark shadow will take place at a point on the moon's disc 72 degrees from the vertex towards the East, at 2h. 38m. in the morning, middle of the Eclipse 4h. 33m., and the moon will set at Douglas 5h. 58m., partially eclipsed.

Third. A partial Eclipse of the Sun on the 15th April, beginning on the Earth generally at 5h. 11m. in the morning, greatest Eclipse at 6h. 51m., magnitude 0.665, and ending at 8h. 32m. Visible only in the Southern parts of Australia and the Great Southern Ocean.

Fourth. A total Eclipse of the Moon on the 24th September, the middle of which will occur at 2h. 7m. in the afternoon. Invisible in these parts, the Moon being below the horizon.

Fifth. A partial Eclipse of the Sun on the 8th October, beginning on the Earth generally at 2h. 52m. in the afternoon, greatest Eclipse at 4h. 44m., magnitude 0.573, in Lat. 72° 1' N., Long. 2° 50' W.: and ending on the Earth generally at 6h. 37m. This Eclipse will be visible in the North-eastern parts of America, the North Atlantic, and the Western parts of Europe. As seen at the following places the phenomena will occur as follows:—

	BEGINNING	MIDDLE	SUNSET	MAGNITUDE
Greenwich.....	4h 26m after.	5h 26m after.	5h 21m	0.454
Liverpool	4h 20m ..	5h 21m ..	5h 31m	0.478
Douglas	4h 17m ..	5h 20m ..	5h 36m	0.485
Dublin.....	4h 18m ..	5h 21m ..	5h 44m	0.480
Edinburgh.. ..	4h 13m ..	5h 16m ..	5h 29m	0.501

The first contact will take place about 75° from the vertex towards the west, varying a little in the different places.

Chronological Notes.

Lunar Cycle or Golden Number	5	Septuagesima Sunday	January 28
Epact.....	14	Lent begins	February 14
Solar Cycle	27	Easter Day	April 1
Dominical Letter	G	Ascension Day	May 10
Roman Indiction	9	Trinity Sunday	May 27
Julian Period	6579	Advent Sunday	December 2

The Revolutions, Distances, &c., of the Planets

Names.	Periodical Revolution.					Mean distance from Sun.		Time of Rotation upon their Axis.				Inclination of Axis to Ecliptic.			Hourly motion in their Orbits.	
	Yrs	d	h	m	s	English miles.	Eng. miles	d	h	m	s	°	'	"	Miles.	
Sun.....							887,076	25	7	48	0					
Mercury..	0	87	23	15	44	36,890,000	2,950	1	0	5	28				111,256	
Venus ..	0	224	16	49	8	68,770,000	7,900	0	23	21	8				81,398	
Earth	1	0	5	48	48	95,298,260	7,912	0	23	56	4	23	28	0	75,222	
Moon.....	0	27	7	43	5	95,268,260	2,160	27	7	43	5	1	43	0	2,335	
Mars	1	321	22	18	27	145,205,000	4,500	1	0	37	20	28	42	0	56,121	
Jupiter ..	11	315	14	39	2	495,917,000	88,780	0	9	55	21	3	22	0	30,358	
Saturn ..	29	164	7	21	50	909,026,000	77,230	0	10	16	1	30	0	0	22,351	
Uranus ..	83	294	8	39	0	1,828,071,000	35,000								15,846	

Population of the United Kingdom according to the Census of 1861.

	Popula. Enumerated.		Increase, 1861.		Decrea. 1861.	
	1851.	1861.	Persons.	Rate per cent.	Persons.	Rate per cent.
ENGLAND AND WALES	17,927,609	20,061,725	2,134,116	12	—	—
SCOTLAND	2,888,742	3,061,117	172,375	6	—	—
IRELAND	6,552,385	5,764,543	—	—	787,842	12
ISLANDS IN THE BRIT. SEAS	143,126	143,779	653	—	—	—
TOTAL UNITED KINGDOM ..	27,511,862	29,031,164	2,307,144	—	787,842	—

Net Increase 1,519,302, or 6 per cent.

Fair and Foul Weather Prognosticator

The following Table and the accompanying remarks, are the results of many years actual observation; and will show the observer what kind of weather will probably follow the entrance of the Moon into any of her Quarters.

MOON	TIME OF CHANGE	IN SUMMER.	IN WINTER.
If New Moon—First Quarter—Full Moon—or last Quarter happens	Between Midnight and 2 in the Morn..	Fair	Hard Frost, unless the wind be S. or W.
	—2 and 4 do {	Cold, with frequent Showers	Snow and stormy.
	—4 and 6 ..	Rain	Rain.
	—6 and 8 ..	Wind and Rain	Stormy.
	—8 and 10 {	Changeable	Cold rain, if the wind be W. Snow, if E.
	—10 and 12..	Frequent Showers	Cold and high winds.
	At 12 o'clock at Noon and to 2 P.M.....	Very Rainy	Snow or rain.
	Between 2 and 4 After.	Changeable	Fair and mild.
	—4 and 6	Fair	Fair.
	—6 and 8.... {	Fair, if the wind N. W. Rainy, if S. or S. W.	Fair and frosty, if N. or N. E. Rain or Snow, if S. or S. W.
	—8 and 10	Ditto	Ditto.
	—10 and 12	Fair	Fair and Frosty.

REMARKS.—1. The nearer the time of the Moon's Change, First Quarter, Full; and Last Quarter to MIDNIGHT, the fairer will the weather be during the 7 days following. The space for this calculation occupies from 10 at night to 2 next morning.—2. The nearer to MIDDAY these phases happen, the more foul or wet the weather may be expected the next 7 days. The space for this calculation occupies from 10 in the forenoon to 2, afternoon.—3. The phases happening from 4 to 10 in the afternoon, may be followed by fair weather, but this mostly depends upon the wind.—4. To prognosticate correctly, where the WIND is concerned, a good VANE should be within sight. Dr. Kirwan remarks, if a storm arise from the East on or immediately preceding the time of the Spring Equinox, or from any point of the compass near a week after; then, in either of these cases, the succeeding summer is dry, four times out of five; but if a storm arise from the S.W., or W.S.W., on or just before the Spring Equinox then the summer following is wet, five times in six.

Useful Stamp Tables

BONDS.		INLAND BILLS.		APPRENTICES' INDENTURES	
Given as security for money		Not exceeding £5 .. 0s 1d		If no Premium £0 2 6	
Not exceeding £50 .. 1s 3d		£5 10 .. 0 2		Prem. under £30 .. 1 0 0	
£50 100 .. 2 6		10 25 .. 0 3		If 30 50 .. 2 0 0	
100 150 .. 3 9		25 50 .. 0 6		50 100 .. 3 0 0	
150 200 .. 5 0		50 75 .. 0 9		100 200 .. 6 0 0	
200 250 .. 6 3		75 100 .. 1 0		200 300 .. 12 0 0	
250 300 .. 7 6		100 200 .. 2 0		300 400 .. 20 0 0	
For every £100 above		200 300 .. 3 0		400 500 .. 25 0 0	
£300, or any frac-		300 400 .. 4 0		500 600 .. 30 0 0	
tional part of £100 .. 2 6		400 500 .. 5 0		600 800 .. 40 0 0	
		500 750 .. 7 6		800 1000 .. 50 0 0	
		750 1000 .. 10 0		1000 and upwards .. 60 0 0	
		1000 1500 .. 15 0			
		1500 2000 .. 20 0		SEA INSURANCE POLICIES	
		2000 3000 .. 30 0		Upon any voyage, for every	
				£100 charged as follows:	
				s. d.	
				Not exc. 10s. per cent. .. 0 3	
				10s. .. not .. 20s. 0 6	
				20s. .. and .. 30s. 1 0	
				30s. .. and .. 40s. 2 0	
				40s. .. and .. 50s. 3 0	
				50s. 4 0	
				For every £100 insured	
				for a term,	
				Not exc. six months 2 6	
				Exc. six months 4 0	

AGREEMENTS.

Of the value of £20 and upwards, containing only 1080 words, 2s. 6d.; and for every further 1080 words 2s. 6d.

Letter of Power of Attorney £1 10 0
Bills of Lading, each 0 0 6
Charter Party 0 5 0

Table of Wages and Expences

TO WHICH A WITNESS ATTENDING THE MANX COURTS, AS UNDER, IS ENTITLED.

PARISHES.	Patrick.	German.	Michael.	Ballaugh.	Jurby.	Andreas.	Bride.	Lezayre.	Maughhold.	Lonan.	Ouchan.	Braddan.	Marown.	St. Ann.	Arbory.	Malew.	Rushen.
	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.
Castletown {																	
Gentleman . . .	3	6	5	7	0	8	9	10	6	12	5	10	6	8	9	7	0
Tradesman . . .	2	11	3	6	4	1	4	8	5	3	5	3	4	8	4	1	3
Tradeswoman . .	2	4	2	11	3	6	4	1	4	8	5	3	4	8	4	1	3
Labourer . . .	1	10	2	2	2	6	2	10	3	2	3	6	2	2	6	1	10
Douglas {																	
Gentleman . . .	8	9	7	6	8	9	10	6	12	3	8	9	8	9	7	0	5
Tradesman . . .	4	8	4	1	1	8	5	3	5	10	4	8	4	1	3	6	2
Tradeswoman . .	4	13	6	4	1	4	8	5	3	4	1	3	6	2	11	2	11
Labourer . . .	2	10	6	2	10	3	2	3	2	10	2	10	2	2	2	10	2
Ramsey {																	
Gentleman . . .	10	6	8	9	7	0	5	3	7	0	5	3	3	6	2	4	3
Tradesman . . .	5	3	4	8	4	1	3	6	3	6	2	11	1	9	2	11	3
Tradeswoman . .	4	8	4	13	6	2	11	3	6	2	11	3	6	2	11	3	6
Labourer . . .	3	2	2	10	2	6	2	2	2	2	1	10	1	6	1	10	2

A Tradesman attending to give evidence respecting matters connected with his trade, to be allowed at the discretion of the Court, any sum not exceeding 12s. 3d.; a professional Gentleman any sum not exceeding 24s. 6d.

General Marketing Table

	2d.	2½d	3d	3½d	4d	4½d	5d	5½d	6½d	7d	7½d	8d	8½d	9d	9½d	10d	10½	11d	11½d	
N	s	d	s	d	s	d	s	d	s	d	s	d	s	d	s	d	s	d	s	d
2	0	4	0	5	0	6	0	7	0	8	0	9	0	10	0	11	1	1	1	1
4	0	8	0	9	1	0	1	2	1	4	1	6	1	8	1	10	2	2	2	2
6	1	0	1	0	1	0	1	2	1	4	1	6	1	8	1	10	2	2	2	2
8	1	1	4	1	8	2	0	2	4	2	8	3	0	3	4	3	6	3	4	3
10	1	8	2	1	2	6	2	11	3	4	3	9	4	2	4	7	5	10	6	3
12	2	0	2	6	3	0	3	6	4	0	4	6	5	0	5	6	6	7	0	7
14	2	4	2	11	3	6	4	1	4	8	5	3	5	10	6	5	7	7	8	2
16	2	8	3	4	4	0	4	8	5	4	6	0	6	8	7	6	8	7	4	8
18	3	0	3	9	4	6	5	3	6	0	6	9	7	6	8	3	9	10	6	11
20	3	4	4	2	5	0	5	0	6	8	7	6	8	4	9	2	10	10	11	12
22	3	8	4	7	5	6	5	7	4	8	3	9	2	10	11	11	12	13	14	15
24	4	0	5	0	6	0	7	0	8	0	9	0	10	0	11	0	13	0	14	0
26	4	4	5	5	6	6	7	7	8	8	9	9	10	10	11	11	14	1	15	2
28	4	8	5	10	7	0	8	2	9	4	10	6	11	8	12	10	15	2	16	3
30	5	0	6	3	7	6	8	9	10	9	11	3	12	6	13	9	16	3	17	4
32	5	4	6	8	8	0	9	4	10	8	12	0	13	4	14	8	17	4	18	5
34	5	8	7	1	8	6	9	11	11	4	12	9	14	2	15	7	18	5	19	6
36	6	0	7	0	9	0	10	6	12	0	13	6	15	0	16	6	19	6	21	7
38	6	4	11	9	6	11	1	12	8	14	3	15	10	17	5	20	7	22	2	3
40	6	8	4	10	0	11	8	13	4	15	0	16	8	18	4	21	8	23	4	5
42	7	0	8	9	10	6	12	3	14	0	15	9	17	6	19	3	22	9	24	6
44	7	4	9	2	11	0	12	10	11	8	16	6	18	4	20	2	23	10	25	7
46	7	8	9	11	6	13	5	15	4	17	3	19	2	21	1	24	11	26	10	8
48	8	0	10	0	12	0	14	0	16	0	18	0	20	2	22	0	26	0	28	0
50	8	4	10	5	12	6	14	7	16	8	18	9	20	10	22	11	27	1	29	1

Even numbers only are given in the above Table to make it more comprehensive.—For example, required the value of 17 yards of calico, at 8d. per yard. By referring to the Table, you will find 16 yards to be 10s. 8d., and by adding the price of the odd yards will give you the correct amount.

Table to calculate Wages, &c

Year	Per M.	P. W.	P. D.	Year	P.	M.	P.	W.	P.	D.
£	£ s d	s d	d	£	£ s d	s d	s d	s d	s d	d
1	0 1 8	0 4	0 3	15	1 5 0	0 5	9	0 0 9		
2	0 3 4	0 9	1 4	16	1 6 8	0 6	13	0 10 1		
3	0 5 0	1 1	2 2	17	1 8 4	0 6	16	0 0 11		
4	0 6 8	1 6	3 2	18	1 10 0	0 6	19	0 0 11		
5	0 8 4	1 11	3 3	19	1 11 8	0 7	22	1 0 0		
6	0 10 0	2 3	4 4	20	1 13 4	0 7	25	1 1 1		
7	0 11 8	2 8	4 4	30	2 10 0	0 11	34	1 7 2		
8	0 13 4	3 9	5 4	40	3 6 8	0 15	44	2 2 2		
9	0 15 0	3 5	6 6	50	4 3 4	0 17	54	2 2 9		
10	0 16 8	3 10	6 6	60	5 0 0	1 3	64	3 3 3		
11	0 18 4	4 2	7 7	70	5 16 8	1 6	74	3 10 0		
12	1 0 0	4 7	8 8	80	6 13 4	1 10	84	4 4 4		
13	1 1 8	4 11	8 9	90	7 10 0	1 14	94	4 11 1		
14	1 3 4	4 9	9 9	100	8 6 8	1 18	104	5 5 5		

If the Wages be Guineas instead of Pounds, for each Guinea add One Penny to each Month, or One Farthing to each Week.

RULE FOR CALCULATING INTEREST, at 5 per cent.
—Multiply the Pounds by the Days, and divide the Product by 365. The Quotient gives the interest at 5 per cent. in Shillings.

Weights

BY WHICH GRAIN, ETC., ARE SOLD.

ISLE OF MAN.

lbs.

lbs.

WHEAT, per bushel of 64, or boll of 256
BARLEY, per bushel of 50, or boll of 200
OATS, per bushel of . . . 40, or boll of 240
BEANS or PEAS, per
bushel of 60, or boll of 240
POTATOES, per stone of 14, or boll of 448

LIVERPOOL.

WHEAT, per bushel 70
BARLEY . . . do 60
OATS do 45
BEANS, per 480 lbs. and 564
INDIAN CORN 480
FLOUR, per sack 280
FLOUR, per barrel 196
OATMEAL, per load 240
POTATOES, per measure 90

MARINERS' GUIDE
TO THE
Principal Ports and Harbours
IN THE
BRISTOL AND ST. GEORGE'S
CHANNELS,
THE IRISH SEA,
AND THE NORTH CHANNEL;
CONTAINING A SERIES OF CLEAR AND CONCISE
SAILING DIRECTIONS
FOR THE
WEST COASTS OF ENGLAND, WALES, AND
SCOTLAND, THE ISLE OF MAN,
AND THE
EAST, SOUTH-EAST, NORTH-EAST, AND
NORTH-WEST COASTS OF IRELAND;
WITH
Tables of the Magnetic Bearings and Distances
OF DIFFERENT
HEADLANDS, HARBOURS, AND LIGHTS
ON THOSE COASTS.

* * The Bearings and Courses in these Directions are those by compass,
and the Distances are nautical miles, of 60 to a degree.

MARINERS' GUIDE.

ISLE OF MAN.

The **ISLE OF MAN** lies in a N.E. by E. and S.W. by W. direction, and is about 30 miles in length and 11 in breadth. The Northernmost Point of Ayre is in lat. 54 deg. 27 min. N., and long. 4 deg. 20 min. W. The

Calf Island,

At the S.W., is in lat. 54 deg. 3 min. N. and lon. 4 deg. 50 min. W. On this Island are two Lighthouses, 187 yards distant from each other, bearing N.E. $\frac{1}{2}$ E. and S.W. $\frac{1}{2}$ W. The *higher* Light bears from the dangerous sunken rocks called the *Chickens* N.E. $\frac{1}{2}$ E., distant about a mile and a quarter: when the Lights are in one they lead on the Chickens. These Lights are **DOUBLY** revolving, without color, making their revolution in 2 minutes, and becoming gradually fainter during that time, until, at a distance, they appear totally obscured. At their brightest period they may be seen seven leagues off, resembling a planet. Between the Chickens and Calf is a passage about a mile broad, through which the tide sets from the W. round the Calf Point *very strong* outside of the Eye Rock, and also through the passage between the Island and S.W. Point of Man. There has been erected in the Sound of the Calf, on the "Thusla Rock," a Large Oblong Beacon. $2\frac{1}{2}$ miles to the east is **PORT ST. MARY**, where there is good anchorage behind the Pier, which has been lately very much improved, but a dangerous rock called Carrick, lies about $\frac{3}{4}$ of a mile S.S.E. $\frac{1}{2}$ E. from the Village. This harbour has about 9 or 10 feet water at neap tides, and 14, 15, 18, &c. at spring tides. In running for it, keep Scarlet Head to the S. of Castletown, a good sail's breadth open, to avoid the Carrick Rock. On entering, take the quay as close as circumstances will admit. A **LIGHT** is exhibited throughout the year, on the larboard hand on entering the harbour. Five miles E. from the Chickens and $2\frac{1}{4}$ from Port St. Mary, is Scarlet Head, the westernmost point of

Castletown Bay.

The bottom towards the entrance is generally rocky, and there are three shoals or rocks dry at low water, the largest of which, Lheeabrio, is a quarter of a mile long and 500 feet wide, and is marked on the east end by a large Black Buoy. A **RED** stationary light, to be kept on the larboard hand on entering, is erected on the new pierhead, which lies 80 yards

outside the old pierhead, in a S.S.E. direction therefrom. The Buoy on Lheeabrio Rock is placed in five fathoms at low water, having Langness Point, by compass bearing S. $\frac{3}{4}$ E., and the lighthouse on the pierhead, N. $\frac{3}{4}$ E. On entering the Bay, be careful to leave the Buoy on the *larboard* hand, and in working into the Bay from the Westward, you must not bring the Buoy to the Southward of E.S.E.; nor open Spanish Head to the Northward of the Stack of Scarlet until Eastward of the Buoy, or until the lighthouse on the pierhead bears N. $\frac{1}{2}$ E., then steer for the harbour. The anchorage is sheltered from N.W. round by N. to S.S.E., the marks for which are, Spanish Head just open to the Southward of the Stack of Scarlet; the Steeple of Castletown Chapel in line with the Eastern part of a Gap in the Mountain bearing N. by W., and King William's College N.E. by N., where there are 9 fathoms at low water, spring tides, and safe anchorage.

Langness Point,

An isthmus running out from the main land, 2 miles to the S.W., has a turret on the point to identify its situation. There are **SUNKEN** rocks all about it, and the tide sets like a race upon the Point from the Chickens, at the rate (spring tides) of 6 miles an hour, and runs E.N.E. from 2 to 5 or 6 miles from the land, diminishing in strength to Maughold Head. To avoid the inset between the Chickens and Langness Point, it is advisable for strangers on no account to come within 3 or 4 miles of the land. On the E. side is

Derbyhaven,

Affording anchorage for large merchant ships, and sheltered from all winds except E. to S.E. The best **ANCHORAGE** is on the N. side of St. Michael's Island, in 3 or 4 fathoms, the castle (or fort) on it bearing S.E. by S. Small vessels may run further up. There is a **LIGHT** at the entrance of the harbour, which is lighted only during the herring fishing season. The stream, or rather eddy, along the E. side of Langness runs 10 hours S., from 2 hours of flood to the last of ebb on the shore. About 3 miles to the E. of Derbyhaven is St. Ann's Head, from which to

Douglas Head,

E. is about 2 miles, upon which a **LIGHTHOUSE** has been erected, the light from which is **STATIONARY**, and appears like a star of the first magnitude at the distance

of 14 miles. The bearings of the light are as follows:—From CLAY HEAD, W. by S. $\frac{1}{2}$ S., 4 miles; from LANGNESS POINT, E. by N. $7\frac{1}{2}$ miles. The light will not be visible from Langness Point; but with an offing of 3 miles from that Point, the light will be seen bearing N.E. $\frac{1}{2}$ E., and the Calf Lights at the same time bearing N. W. by W. $\frac{1}{2}$ W. Vessels running for Douglas, between E. by N. $\frac{1}{2}$ N. to W. by S. $\frac{1}{2}$ S., will see the light at 5 miles' distance. Blowing fresh from the W. and bound for the bay, a vessel should keep pretty close to Douglas Head, or she will be thrown to the leeward of St. Mary's Rock, by the strong and variable gusts off the high land to the S.W., where she will be exposed and in bad anchorage. On this rock a TOWER has been erected, the appearance of which in the night is like a square-rigged sloop under sail. Anchor in the bay between St. Mary's and the S. shore, 3 or 4 cables E. of the pierhead, where there are two lights, white and red, exhibited throughout the year. No vessel should enter Douglas Bay from the westward until having sighted the red light from the Pierhead, so as to clear the Breakwater Works. To enter the harbour keep close to the Pierhead. Four miles E.N.E. from Douglas Head is

Clay Head,

Round which is Laxey Bay, where there is good anchorage in 6 fathoms depth. From Clay Head to Maughold Head the course is N.E. $\frac{1}{2}$ E. 7 miles, and round the latter to

Ramsey,

N.W. N'y. $2\frac{1}{2}$ miles. To the E.S.E. of the town is Port Lewague. There is excellent anchorage and shelter from 1 to $1\frac{1}{2}$ miles opposite the town, as the bottom is good stiff clay; but there is generally a heavy sea and hard riding in it with winds from S. to E.N.E., to all of which it is open. The harbour, which is a dry one, will admit vessels drawing 17 or 18 feet water at spring tides, and 11 or 12 feet at neap tides. There is a lighthouse on the quay, a stationary light, of a RED colour, is exhibited throughout the year. In the bay the stream runs nine hours N. and three hours S., beginning at 2 hours' flood. There are three banks off this bay that deserve notice. The BAHAMA BANK, or RIG, bears N.E. 2 leagues from Ramsey town, and is about 6 miles in length from S.S.E. to N.N.W., with only 6 feet depth of water at the S. end, differing in other parts from 9 to 12 feet, and is rather more than $\frac{1}{2}$ a mile broad. The BAHAMA FLOATING LIGHT, exhibiting two BRIGHT FIXED LIGHTS, is moored a mile off the S.E. tail of the shoal, in eleven fathoms, low water, spring tides, and with the following compass bearings:—King William's Bank Buoy, E. by

N. $\frac{1}{2}$ N. nine miles; Point of Ayre lighthouse, N. by W. $\frac{3}{4}$ W.; Maughold Head, W. by S.; Clay Head, S.W. by W. $\frac{1}{4}$ W. WHITESTONES BANK, so called from its composition, lies S.S.E. $1\frac{1}{2}$ miles from the extreme Point of Ayre, with a good passage between them; it bears N.N.E. from Maughold Head, and is $\frac{1}{2}$ a mile in length N. and S., and a $\frac{1}{2}$ in breadth E. and W., with 6 feet at low water spring tides. POINT OF AYRE BANK is a ridge extending $\frac{1}{2}$ a mile from the Point to the distance of 1 mile E., and thence circularly to the S. and E., always with a considerable ripple, nearly in a line with the BAHAMA BANK. KING WILLIAM'S BANK is 8 miles in length from S.E. to N.W., and $\frac{1}{2}$ a mile broad: the N.W. end is E. $6\frac{1}{2}$ miles from the Point of Ayre, and N.E. 11 miles from Maughold Head, from which the S.E. end bears E.N.E. $\frac{1}{2}$ E. $13\frac{1}{2}$ miles, and from the Point of Ayre E.S.E. 12 miles distant. The least depth of water on it is 18 feet. A Green Buoy, marked "wreck," is moored on the wreck of a vessel which lies about 4 miles N.E.'ward off Ramsey, in the fairway of vessels coasting along the E. side of the island. The Buoy is moored about 10 fathoms to the Eastward on outside of the wreck in 6 fathoms low water spring tides. The following are the bearings from the buoy:—Point of Ayre Lighthouse, N.; Lighthouse on Ramsey Pier, S.W. $\frac{1}{2}$ W.; Maughold Head, S. $\frac{1}{4}$ W. Another Green Buoy, marked "wreck," is moored on the wreck of a second vessel in Ramsey Bay, about 4 miles N. Eastward off Maughold Head, in the way of vessels coasting along the E. side of the Island. The Buoy is moored about 10 fathoms to the Eastward on outside of the wreck in $9\frac{1}{2}$ fathoms. The following are the bearings from the buoy:—Ramsey Mill, N.W. by W.; Maughold Head, S.W. The

Point of Ayre Lighthouse

Bears N.N.E. $\frac{1}{2}$ E. from Maughold Head, distant 8 miles, and the lantern is 106 feet above the sea. It is REVOLVING, showing alternately a BRIGHT and RED coloured light, becoming from a star-like appearance gradually stronger, until the attainment of the utmost brilliancy every two MINUTES. The light of the common colour is to be seen 4 or 5 leagues off; but the RED one is not distinct at so great a distance. Maughold Head prevents the light being seen by a navigator S. of it, as does Rue Point when he is W. of it. N. by W. $\frac{1}{4}$ W. $1\frac{1}{2}$ miles from the Point of Ayre is STRUNAKILI BANK, bearing from Jurby Point E. by N. 5 miles; it is $1\frac{1}{2}$ miles long E.S.E. and W.N.W., and nearly $\frac{1}{2}$ a mile broad. There are 3 fathoms on the shoalest end, but the sea breaks and the tide sets strong upon it; keeping WITHIN $1\frac{1}{2}$

miles of the land will clear the whole.—From the Point of Ayre to Jurby is 7 miles to the W. and hence to the Peel Light, S.W. $\frac{1}{2}$ W. 11 miles; 4 miles from Jurby W. $\frac{1}{2}$ N. and about 3 miles from the land abreast, is a BLIND ROCK, and from

Peel Light,

N.E. by E., 9 miles. This light is stationary, is exhibited throughout the night, and is visible at a distance of eight miles in clear weather. The harbour at Peel is a dry one. Between Jurby and Peel, off Ballabui, lies a shoal $1\frac{1}{2}$ miles from the land, and $3\frac{1}{2}$ miles N.E. $\frac{1}{2}$ E. from the light. A vessel may ride in the bay with the Castle bearing from S.S.W. to S.W. in 6 or 7 fathoms' depth of water. On entering the Harbour, keep the point of the Jetty close on board on the starboard hand and run in, keeping the light on the pierhead on the port hand. A light is exhibited from the end of the breakwater. The Mull of Galloway light adds to the convenience of this Harbour, being visible from the Castle, and only distant N. by E. 26 miles. The Peel Light is about 300 yards S.S.W. from the N.E. point of the Castle. The streams of flood that come to the E. from along the S. coast, and along the N. coast of Ireland, meet about a mile W. of Contrary Head, so called from this circumstance, and there divide into two branches, one of which runs N.E. to the Point of Ayre, and on to Maughold Head, the other S.W. to the Calf; one proceeding round the Calf at 6, the other round the Point of Ayre at 4 miles an hour, meeting off Maughold Head. From Contrary Head to abreast the Calf Lights the course is S.W. 10 miles; and $4\frac{1}{2}$ miles from the W. end of that Isle is

Port Erin,

a sheltered little creek, surrounded by very high land, easy of access, and affording shelter against all E. winds. At the entrance, between the headlands, there is a depth of about 15 fathoms water; here the tide runs very strong at the rate of 6 miles an hour. In the Sound of the Calf the stream runs W. 2 hours before high water on the shore, and continues 6, i.e., two hours before it ebbs on shore. Keep the Calf Lights well open when passing Langness Point.

TIDES.—On the full and change days, it is high water on the shore at Peel at 10h. 48m.; in the Calf Sound, 10h. 57m.; at Douglas, 10h. 48m.; at Ramsey, 10h.; and at the Point of Ayre, 10h. In the Isle of Man, spring tides rise 18 or 20 feet perpendicular; neap tides 9 or 10.

Magnetic Bearings & Distances,

FROM THE HEADLANDS OR HARBOURS IN THIS ISLAND, TO OTHER HEADLANDS OR HARBOURS IN THE CHANNEL.

FROM DOUGLAS HEAD TO MILES.
St. Bees Light E. by N. 42

Ravenglass E. by S. 40
Lancaster Channel S.E. $\frac{3}{4}$ E. 54
Liverpool Floating Light, S. by E. $\frac{1}{2}$ E. 59
Chester Bar S. by E. 60
Great Ormshead S. $\frac{1}{2}$ W. 54
Skerries Light S.W. by S. 46
Langness Point..... S.W. by W. 8

FROM THE POINT OF AYRE TO

Maughold Head..... S.S.W. $\frac{1}{2}$ W. 8
St. Bees Light E.S.E. $\frac{1}{2}$ E. 26
Whitehaven E.S.E. $\frac{3}{4}$ E. 28
Maryport E. $\frac{1}{2}$ N. 37
Ross Light, Kirkcudbright N.E. $\frac{1}{2}$ E. 24
Burrow Head N.N.E. 16
Mull of Galloway... N.W. by N. $\frac{3}{4}$ N. 21
Copeland Light, Belfast.. N.W. $\frac{1}{2}$ N. 44
Liverpool Floating Light S. $\frac{1}{2}$ E. 70

FROM MAUGHOLD HEAD TO

Skerries Light..... S.W. $\frac{1}{2}$ S. 56
Great Ormshead S. by W. 60
Liverpool Floating Light S. $\frac{3}{4}$ E. 63
Lancaster Channel S.E. $\frac{1}{2}$ S. 50
St Bees Head E. 27
Ravenglass E.S.E. 32
Whitehaven E. $\frac{1}{2}$ N. 31

FROM THE CALF OF MAN TO MILES.

Langness E.S.E. $\frac{1}{2}$ S. 7
Mull of Galloway N.N.E. 38
Copeland Light N. $\frac{1}{2}$ W. 48
South Rock Light.... N. by W. $\frac{3}{4}$ W. 31
Strangford Lough N.N.W. $\frac{1}{2}$ W. 31
Carlingford Lough..... W.N.W. 45
Drogheda W. $\frac{3}{4}$ N. 55
Howth Head W.S.W. $\frac{3}{4}$ W. 60
Kish L'ship, Dublin Bay W.S.W. $\frac{1}{2}$ W. 60
Holyhead S.S.W. 41
Great Ormshead S. by E. 54
Liverpool Floating Light S.S.E. $\frac{1}{2}$ E. 65
Skerries Light S. by W. $\frac{1}{2}$ W. 38
Point Lynas..... S. $\frac{1}{2}$ E. 42

FROM PEEL TO

Mull of Galloway Light.... N. by E. 26
Copeland Light..... N.N.W. $\frac{1}{2}$ N. 40
Strangford Lough..... N.W. $\frac{1}{2}$ W. 29
Maidens Light N. by W. $\frac{1}{2}$ W. 57

Free Harbours

No tolls are exigible on vessels entering any of the Harbours in the Isle of Man.

Abstract of the Bye-Laws for regulating the Harbours.

1. Any vessel, through mismanagement, injuring the quays, &c., such injury to be repaired, under penalty of double the value of the damage.
2. No chain cables to be used for mooring vessels, under penalty of £2.
3. No ballast to be discharged without a port sail, under penalty of £2.
4. Vessels heaving ballast or stones into the harbours, penalty £2 per ton.
5. That no person heave stones, dung, &c., into the harbours, under the penalty of £2; and if not removed when ordered, a further penalty of £2.

6. Masters of vessels not obeying Harbour Masters in mooring vessels, penalty £2: all expenses incurred by the Harbour Master in mooring vessels to be paid by master or owners of said vessel. Any person obstructing Harbour Master in executing his duty, penalty £5.

7. No person to make a fire on the quays without permission, penalty £3.

8. No clog fenders to be used, under penalty of £1, unless hung lengthways.

9. Any person throwing off ends or cutting hawsers, besides paying the damage to the owners, to forfeit £5.

10. That all gunpowder be landed immediately after arrival, under penalty of £10 for every 24 hours it remains on board; and no fire or light to be kept on board while such gunpowder remains in the vessel, further penalty £20.

11. Any dock made for repairing vessels in harbour to be filled up in 24 hours after removal of the vessel, under penalty of £5 for every 24 hours it lies open.

12. No vessel to unload ballast at night under penalty of £10.

13. That no timber, iron, &c. (unless for repairing vessels) be left on the quays longer than two days, on penalty, for every day longer than the said two days, after notice given by the Pier Master, of £1.

14. That no vessel be allowed to take ballast from another, penalty £1, unless by leave of the Harbour Commissioners.

15. Ballast not to lie on the quay longer than 24 hours, under penalty of 5s. per day.

16. All vessels unloading merchandize to have preference of berth in turn.

17. Vessels taking in goods to have any unoccupied berth, but to give it up on the arrival of a loaded vessel.

18. & 19. One person at least to be on board every vessel when afloat, in harbour or bay, under penalty of £2.

20. & 21. No person to act as pilot without commission, under penalty of £10. No vessel compelled to take a pilot.

22. Proprietors of lime-kilns to screen their lights, if liable to be mistaken for harbour lights, under penalty of £5.

23. Persons firing on pier, &c., (except on days of public rejoicing,) penalty 10s.

24. Boats plying for passengers without licence, penalty £2; and owners to be accountable for breach of harbour laws by any of the crew.

25. No person to erect stalls on the quays to cure fish, or deface the quays, &c. under penalty of £2 for every offence.

26. No person to enforce higher rates for pilotage than as follows, which include attendance of boat and four men:

Vessels of 40 Tons	£0 5 0
Vessels above 40 and under 60	0 7 0
Vessels above 60 and under 100	0 13 0
Vessels 100 Tons and larger	1 0 0

27. Vessels must allow ropes or warps of other vessels to be made fast to them, under penalty of £2.

28. All vessels in harbour must keep in their jib and mizen booms, under penalty of £2.

29. No lumber to remain on the quays or steps, under penalty of £1.

30. No conveyance having wheels shod with iron, allowed on Douglas pier, under penalty of £2.

WEST COAST OF ENGLAND.

RIVER RIBBLE TO SOUTHERNESS LIGHT.

The River Ribble.—PORT OF PRESTON.—The entrance to the River Ribble and Port of Preston is indicated by a large buoy at sea called *Nelson*, which should be observed by vessels bound for the river. It is a large Black Buoy with a Cage-Ball at the top, stands 26 feet out of the water, and may be seen in clear weather 10 miles. *Nelson of Preston* is painted upon it. Having observed the Nelson Buoy, the entrance to the River may be made by the North Channel or the Gut. The entrance to the North Channel is northward, and to the Gut southward of Nelson Buoy. The North Channel is buoyed by 10 buoys, numbered 1 to 10, and marked with the letter N.; the Gut by 5 buoys with cages on the top. The buoys are placed in the deepest parts of the Channels. The Gut joins the North Channel at No. 8 buoy, nearly opposite Lytham Lighthouse. The outer buoys of

both Channels are placed in 3 fms. water, and from them the other buoys can be seen. From No. 10 buoy to the commencement of the stone embankments, about three miles east of the town of Lytham, the Channel is marked by perches placed upon the north side, and from thence to Preston by perches placed on the stone embankments on both sides of the Channel. Between buoys four and six in the North Channel vessels drawing 14 feet of water may lie at anchor afloat at low water. A lighthouse has been erected S.E. of Stanner Point, N. side of entrance, showing an Intermittent light, 3½ min. bright, ½ min. dark. On the north shore of the Ribble, and 3 miles east of the lighthouse, is the town of Lytham, before which there is a small tide light. Here also is a dock, where vessels can lie in safety. Vessels drawing 12 to 14 ft. can go up to Preston Quays at spring tides. The

quays are connected by a branch with the Railways leading to Manchester, Bolton, Blackburn, Bury, Accrington, and the various other manufacturing towns of Lancashire and Yorkshire, and the Wigan and Burnley coal fields. Mr. W. Allsup's two Steam Tug Boats ply upon the River for the purpose of towing vessels to and from Preston, and at present, when required, tow vessels at the following rates per reg. ton:—No. 1 buoy to Preston and back, 1s. 4d.; No. 1 buoy to Preston, or Preston to No. 1 buoy, 1s.; No. 1 buoy to Lytham, or Lytham to No. 1 buoy, 6d.; Lytham to Preston and back, 8d.; Lytham to Preston, or Preston to Lytham, 6d. Masters of vessels requiring a pilot or tug-boat, and not meeting with one outside the channels, should signal in sight of the lighthouse. A pilot will also, if required, go to any port to conduct vessels into the river on a letter being addressed to Captain Ashburn, Harbour Master, Lytham, Lancashire.—By applying to the Admiralty agent, J. D. Potter, 31, Poultry, London, a Chart of the Entrance to the Ribble, published in 1860, can be had for 1s. 6d.

Morecambe Bay.—In sailing towards this bay, from the southward, which is about 8 leagues from Formby Point, keep full 4 miles from the shore, on account of the flat shoal water, known by the name of "Shell Wharf," this begins nearly abreast of the "Red Banks," and extends to the south side of Lune Deep. The western edge of these grounds is steep-to, and there are on some parts of the Shell Wharf not more than 6 and 9 feet at low water. The entrance to Morecambe Bay is known by the name of Lune Channel, and is $2\frac{1}{2}$ miles wide at the west end. On the southern side is the Point of Rossall, and on the northern side is the Island of Walney; on the former is a conspicuous beacon or landmark, and on the latter a lighthouse, which bear from each other nearly north and south, distant 8 miles. The Point of Rossall is low land, and the beacon, when seen at the distance of about 5 miles, has the appearance of a vessel under sail. Morecambe Bay is encumbered with numerous large sandbanks, many of which dry at low water, and some at half-ebb. The general direction for the mariner, if bound to Lancaster, will be to attend particularly to his soundings, taking care to get into the deep water of the Lune Channel, and to remain there until he obtains a pilot. When in 24 and 25 fathoms, you will perceive the ends of the rock weeds floating, and the water of a darker blue than when you are over any of the banks. A Light Vessel is moored off the entrance of Morecambe Bay, in 12 fathoms at low water spring tides, with the following

compass bearings:—St. Bee's Head Light, N. by E. $\frac{1}{2}$ E., distant 36 miles; Walney Light, E. by N., distant $14\frac{1}{2}$ miles; Foot of Wyre Light, E. by S. $\frac{1}{2}$ S., distant $16\frac{1}{2}$ miles; Blackpool Church, S.E. $\frac{1}{4}$ E., distant $17\frac{1}{2}$ miles; Calf of Man Light, N.W. by W., distant 49 miles; Liverpool N.W. Lightship, S. by W., distant 25 miles.

The River Wyre.—The following are the directions for entering the Port of Fleetwood:—On coming from sea, keep the westernmost part of Walney Island to the eastward of Blackcombe until Rossall Landmark bears S.E.; here you are entering the deep water of Lune, where you will have 28 fathoms at low water. The shoals to be avoided on approaching Wyre are, Shell Wharf, North Wharf, and King's Scar Ridge. A large red buoy is laid down nearly on the point of the Ridge, to which a good berth should be given; it also marks the southern side of the Lune deep. A black perch is placed on North Wharf, about three-quarters of a mile S.E. by S. from the King's Scar Buoy. On the north side of Lune deep a black buoy, with globe on the top, and marked "Danger Patch," is placed a few fathoms westward of a shoal patch bearing that name. Between these buoys is the Lune deep or channel, the course up which is E. $\frac{1}{2}$ N. Rossall Landmark is a large wooden structure (of a conical shape) built on the shore of Rossall point, and denotes the southern limit of Morecambe Bay. Walney Island, on which is a revolving light, is the northern limit. Shell Wharf extends to the westward of Rossall Landmark and North Wharf upwards of three miles. If in hazy weather you fall in with low land, and not knowing whether it is Walney or Rossall land, your lead, which should never be neglected, will at once inform you; for 4 or 5 miles off Walney, you will have 8 or 10 fathoms, but at the same distance off Rossall only 4 or 5 fathoms. After passing the Danger Patch and King's Scar buoys, you will observe the Fairway Buoy to Fleetwood channel. It is a vertically striped black and white buoy, and lies half-a-mile N.N.W. from the Screw Pile or Fleetwood Lighthouse. Enter the channel between the Fairway Buoy and the lighthouse, giving the lighthouse a good berth on the starboard hand, and running up for the No. 2 black buoy on the Little Ford, leaving that buoy on the port hand. You will now have come up with the red buoy guarding the north end of the Big Ford; leave that on the starboard hand; then leaving all the black buoys, which mark the eastern side of the channel, on the port hand, and the red buoys and perches (the latter having red globes on the top) on the starboard hand, round close to the Steep Breast, on the edge of which stands the Lower Shore Lighthouse, and where the tides

run very strong: you then enter the Harbour. There are large red buoys for mooring ships to. Sail between the buoys and the shore, letting go your anchor when you reach the upper part of the Canshe Hole; but be careful not to foul the moorings of the buoys, as they run in various directions across the harbour. Strangers visiting this port should always hoist signal for a pilot, several of whom are constantly on the look-out. There are two pilot cutters (numbered 1 and 2) with pilots for any of the ports in the bay, and are generally cruising off the bay. The Screw Pile or Fleetwood Light is a Fixed Bright Light, seen 8 or 10 miles in clear weather. There are also two Fixed Shore Lights, lighted from half-flood to half-ebb. By day, a black ball hoisted on a pole at the Screw Pile Light and Lower Shore Lighthouses, denotes the same interval of tide. A bell, tolling three strokes per minute in foggy weather, is sounded from the Screw Pile Lighthouse, and may be heard at the distance of two miles. There is good anchorage off North Wharf, anywhere between the King's Scar Buoy and the Lighthouse, in such water as the state of the tides and a vessel may require. A green buoy is placed near a wreck on the Bernard Sand, about half-a-mile N.E. of the Screw Pile Lighthouse; but your vessel should never be that far to the eastward, as the Flood tides run across there, and will set you ashore. There is now at low water Spring Tides, 6 feet of water from sea into the Harbour, by the buoyed channels, keeping the best of the deep. The powerful steam tug "Wyre" belonging to the Port, tows vessels in and out of the Harbour at moderate rates.

The River Lune.—SUNDERLAND, GLASSON, and LANCASTER.—Sunderland harbour is at the mouth of the River Lune, and is dry. Large vessels may go in after half-flood, and lie on clean ground below the houses, and with neap tides, ships of 12 feet water may ride afloat in the pool, off the westernmost houses in the village. It is not safe riding in the pool with spring tides, because of the rapidity of the stream, which runs there about $4\frac{1}{2}$ miles an hour when strongest. The channel leading into Sunderland is buoyed, and there is a Lighthouse on the south side, over against the point of Sunderland. Bernard's Wharf, the westernmost bank, begins to dry at half-ebb. At the easternmost buoy there is a patch of sand that dries with spring tides only. To come up with the outer or westernmost buoy of the channel of Lune River, take half-flood, and stand no nearer the North Wharf Bank than 8 fathoms water; or keep Lancaster Church Steeple a small sail's breadth open to the southward of the Bluff End of Highfieldor

Lawson's Wood,—a long hill under the same high land, which terminates in a remarkable Bluff Point, a little to the northward of the Church Steeple. This mark will bring you up to the Outermost Buoy, clear of North Wharf and Bernard's Wharf; or, when this mark can not be seen, keep the westernmost part of Walney Island to the eastward of Blackcombe, until the Landmark bears about S.E. In this situation you are entering the deep water of the Lune, where you will have 28 fathoms at low water, and the Outermost Buoy bearing about east from you; and should you be forced in by strong gales, or night coming on with a flood-tide, that you cannot keep an offing, you may by observing these directions bring your vessel to an anchor to the southward of the buoy.—If in dark hazy weather you should fall in with low land, bearing E.N.E., &c., and not know whether it is Walney or Rossall land, your lead will at once inform you; for at the distance of 4 or 5 miles from Walney, in that direction you will have 8 or 10 fathoms water, but at that bearing and distance from Rossall, only 4 or 5 fathoms.—*To avoid the Shoals on the north side of the Bay:*—Near low water come no further in, with a vessel of considerable draft of water, than where Walney Lighthouse is open to the eastward of the highest part of Blackcombe, when the Landmark bears S.E., as you are here to the westward of the Stony Patches on the north side of the Lune, where you may safely stand off and on for a pilot.—*To avoid the Shoals on the south side of the Bay*—Shell Wharf extends W. by N. to W. by S. from the Landmark, therefore you must take care about low water to keep the Landmark to the southward of E.S.E., and when you steer for the buoy at the proper time of the tide, and having fallen into the deep water of the Lune, by observing the foregoing directions, you must allow for North Scar and North Wharf, a high bank, which runs out 2 miles northward of the Landmark, and covers about half-flood. About high water, you may venture in the day time to stand over any part of the bay from Pile of Foudry to the Outermost Buoy in the Lune; but in the night or thick weather, keep further out to the westward, taking care to keep the lead constantly going, and watch every opportunity to take the bearings of the marks before mentioned, until you obtain a pilot.—The *First*, or Outermost Buoy, lies in $6\frac{1}{2}$ fathoms at low water, neap tides, pass on the south side of the Buoy, with Pile Castle bearing N.N.W. $\frac{1}{2}$ N.; Lighthouse on Walney, N.W. by N. $\frac{1}{2}$ N.; North End of North Wharf, W. by S.; Landmark on Rossall Point, S.W.; Foot of Wyre Lighthouse, S.W. by W.; Lancaster Church

Steeple, a little open with Highfield, E. by N.; Second Buoy, E.S.E. The First Buoy must be passed on the south side. If too early of the tide, or too late in the evening to proceed up the river, you have good anchorage one cable's length to the westward of the Second Buoy, under Bernard's Wharf, where you will have 3 fathoms at low water, and little current; but you must not proceed up the river with a vessel of considerable water draft until after half-flood. The *Second Buoy* lies in 3 fathoms, with Outermost Buoy bearing W. N. W.; Third Buoy, E. S. E. The *Third Buoy* lies in 3 feet, with Second Buoy bearing W. N. W.; Fourth Buoy, S.E. by S. The *Fourth Buoy* lies in 3 feet, with Third Buoy bearing N. W. by N.; Fifth Buoy, E. $\frac{3}{4}$ S. The *Fifth*, or Innermost Buoy, lies in 3 feet, with Fourth Buoy bearing West $\frac{3}{4}$ N.; Lighthouse on Abbey Scar, East. Keep the Upper and Lower Lighthouses in a line, and guard against the flood-tide setting strong to the southward, up Cocker. Soon after you have passed the Lower Lighthouse, keep Basil Barn a little open to the southward of Overton Chapel, which will take you clear of Thornbush Fishery and Town's Skear, to Sunderland, where you may obtain a pilot. The deepest water is on the south side of all the Buoys, and the River Buoys are placed on the north side of the channel.—GLASSON is about 5 miles before you reach Lancaster. Upon the pier is a harbour light, shown at tide time. The tide flows at the dock gates the same time as at Liverpool; adding two inches to every foot of water at Liverpool, will give the height at Glasson. Every vessel going into the dock must clew up her sails, and (if the wind be any way to the northward) let go an anchor before coming into the Dock Gut, to prevent her anchor bills running through her bows and destroying the works. If the wind be from the westward, and a flowing tide, she may safely touch on the west side, and be veered alongside the pier-head, by a line from the westward; but on no pretence whatever is any vessel to attempt going in under ever so easy sail, as several serious losses have already been sustained thereby; and no steam-vessel is to use her paddle wheels either in going in or out of dock, but to let off steam before doing so. Masters of vessels offending in these particulars are liable to a penalty of £5, besides having to repair the damage.—From Glasson to LANCASTER the Channel is irregular, variable, and shallow; the shallowest part of it having no more than 7 feet water at high water with neap tides, and 12 or 14 at high water with spring tides. Pilots, legally appointed to conduct vessels to and from the quays at Lancaster, may be obtained at Snatchems, near Sunderland.

Morecambe Harbour.—This harbour is situate at the terminus of the North Western Railway, and is connected with the Midland, and Lancaster and Carlisle Railways. A new stone pier has recently been constructed, and superior accommodation provided for the transshipment of passengers and merchandise between the railway trains and steamboats. The dues levied on vessels in respect of lights and buoys are 2d. per ton on vessels from ports in the United Kingdom, and 3d. per ton on vessels from ports beyond, but when such dues have been paid three times in one year by any vessel, they are then reduced to 1d. per ton on the same vessel for the remainder of the year. There are no other dues or port charges on vessels.—The sailing directions for Fleetwood or Lancaster must be still adhered to until the Light at Foot of Wyre bears South one mile distant, then, if flood-tide, haul up N.E. by N., and, if ebb, N.E., this course leads to the Entrance of the Channel to Morecambe Harbour, which is defined by No. 1 Red on the Starboard, and No. 1 Black Buoys on the Port hand, moored as hereinafter described:—A *NEW LIGHT SHIP* has been substituted for the Screw Pile Lighthouse, formerly on Clark's Wharf, and is now moored in Mid-Channel, about three-quarters of a mile Eastwards of No. 1 Black Buoy, in four fathoms low water of ordinary Spring Tides; the Compass bearing of this Lightship are as follows:—To Walney Light, N.W. $\frac{3}{4}$ W. distance $6\frac{1}{2}$ miles; Wyre Light S.W. by S. distance $4\frac{1}{2}$ miles; Morecambe Harbour Pier Head Light, E. $\frac{3}{4}$ N., distance $5\frac{1}{2}$ miles. The Ship is painted Red with "Morecombe" in large white letters on her sides, has one Mast with Circular Beacon and exhibits a RED LIGHT from Sunset to Sunrise, visible all round the horizon in clear weather $5\frac{1}{2}$ miles; when there is 8 feet of water in the Channel up to the Harbour, a Black Ball will be hoisted on the Flagstaff aft by day and a White Light shown on the bluff of the Bows at night. During Foggy Weather or Snow, a bell will be struck three times every minute. N.B.—The Lightship is moored with a single anchor, and in rough weather will ride with 100 fathoms of chain out. Masters of vessels running in or out of the Channel are therefore requested to give the Ship a sufficiently wide berth. Seven Buoys define the Channel leading to Morecambe Harbour, viz.:—No. 1 Red Buoy on the Western Point of Clark's Wharf Spit, the compass bearings from which are:—To Foot of Wyre Light, S.W. by S. $\frac{1}{4}$ S.; to Walney Light, N.W. $\frac{1}{4}$ N.; to New Light Ship, N.E. $\frac{1}{4}$ E.; to No. 1 Black Buoy, N.E. by N. $\frac{1}{4}$ N. No. 1 Black Buoy on the Western Point of Yeoman's Wharf Spit, the

compass bearings from which are:—To Foot of Wyre Light, S.W. by S. $\frac{1}{2}$ S.; to Walney Light, N.W. $\frac{1}{2}$ W.; to New Light Ship, E. by N. $\frac{1}{2}$ N.; to No. 1 Red Buoy, S.W. by S. $\frac{1}{2}$ S. N.B.—These two Buoys define the Mouth of the Channel; they are about one Sea mile apart, and have a depth of about 9 feet between them at dead Low Water Spring Tides. From New Lightship to No. 2 Red Buoy on the North side of Clark's Wharf, the compass bearings are E. $\frac{1}{2}$ N. No. 2 Red Buoy to No. 3 Red Perch Buoy, N.E. by E. From New Lightship to No. 2. Black Buoy on the South side of Yeoman's Wharf, the compass bearings are, N.E. by E. $\frac{1}{2}$ E. No. 2 Black Buoy to No. 3 Red Perch Buoy, E. $\frac{1}{2}$ N. No. 3 Red Perch Buoy has a circular Cage on the top, is placed on the Western Point of Low Scare, and may be passed on either hand. Vessels approaching the Harbour at low water, should anchor below this Buoy, where there is excellent holding ground in a depth of not less than 5 fathoms at dead Low Water of Spring Tides, and remain there until a Black Ball, by day, is exhibited at the end of the Pier, and at night until Half Flood, when there will be depth of 8 feet in a clear course between the No. 4 Buoys up to the harbour. The Compass bearings from the Red Perch Buoy are.—To No. 4 Red and No. 4 Black Buoys, E. $\frac{1}{2}$ S. No. 4, Red Buoy is on the end of Old Scare, and No. 4. Black Buoy is on the end of Stone Scare. The Lighthouse on the Stone Pier exhibits a White Light from Sunset to Sunrise; in day time a Ball is hoisted when there is 8 feet of water between the No. 4 Red and Black Buoys. The Pier Heads are distinguished at night by four Gas Lamps coloured Green to the West and Red to the North. Two Red Lamps about one-third up the Pier, when brought into one will lead between the No. 4 Red and Black Buoys.

Pile of Foudry.—Pile of Foudry is a harbour near the south end of Walney Island, where large merchant ships may ride in good shelter near the west or south-west side of Roe Island, in from 3 to 5 fathoms water. Small vessels commonly lie aground in the bight, on the east side of Pile of Foudry Island, about a cable's length from high water mark, when the house bears S. by W. In the anchorage near Roe Island the streams of flood meet; one from the north, the other from the south, and make it troublesome to keep the anchor clear. The stream here runs about 3 miles an hour when strongest. On the south end of Walney Island is a stone lighthouse, exhibiting a revolving light 70 feet above high water, flashing every minute, visible in clear weather 3 or 4 leagues; there is also a small fixed light of a red colour.

On the north side of this channel is Walney Island, which is low land, and on the south side are several sandbanks or stony ledges; the most dangerous of these is the Stony Patch, which lies to the westward of all the others, distant from the lighthouse on Haw's Point about four miles; to clear it to the westward, bring the Old Castle on Pile Island just open to the eastward of the lighthouse. The lead should be kept constantly going, and if coming from the southward, bring Blackcombe Hill on with the north end of Walney Island, and keep them so until Walney Lighthouse comes E.N.E., and the ruin upon Foula Island touches Haw's Point. The Helpsford Sand is on the S.E. side of Walney, within a mile of the shore, to clear which, you must bring the dwelling-house near the lighthouse a sail's breadth open of the southernmost sandhills, or the lighthouse just clear of the eastern chimney of the same house, bearing N.E. by E.; then, as you advance, bring the ruin of the house on Foula, before mentioned, on with Haw's Point, and these marks will lead you in. Upon the bar is 15 feet water at 2 hours' flood, and the rise of tide is sometimes $29\frac{1}{2}$ feet. The strength of the flood tide is $2\frac{1}{2}$ knots an hour, and the ebb nearly the same. In leading to the anchorage with a flood tide, and the wind scant, you may stand along the southern part of Walney about a mile from the shore, and have regular soundings. In dark weather, should you fall in with land bearing E.N.E., and uncertain whether it is Walney Island or the land adjacent to Rossall Point, then you must be guided by your lead, for at the distance of 5 miles from the former are 7 and 8 fathoms, but at the same distance from Rossall there are only 4 or 5 fathoms; allowance must be made for the rise and fall of the tides, making high water full and change at 11 o'clock. In running for the Pile of Foudry anchorage at half-flood, give Haw's Point a berth of half a cable's length, and keep off Pile Castle Point a similar distance, then, should your vessel draw 10 feet water, anchor in the bight below the house on Pile Island, or near to Roe Island, in 5 fathoms, with the lighthouse open to the starboard of Pile Castle. The breadth of the anchorage above Roe Island is nearly 2 cables. Here the ground holds well; as the tide ebbs you become quite landlocked and may shorten your cable, to enable you to swing clear of either side at low water in 3 fathoms.—Vessels bound from Pile to Barrow should leave Roe Island Pier Lighthouse on the starboard hand, when they will fall in with the Fairway Buoy for Barrow, painted black and white. Further on they will find Six Red Buoys. Nearly in a line by keeping them on the starboard hand will lead vessels up to

Barrow Pier, where they will have 18 feet water spring tides, and 10 feet neaps. A strong flashing light from the Iron Works lately erected at Hindpool, $1\frac{1}{2}$ miles north of Barrow, may be seen bearing from Walney Island Light N. $\frac{1}{2}$ W.; Hilp's Ford N. N. E. $\frac{1}{2}$ N.; Cockspeck Scar, E., and may be seen 15 miles seaward.

Ravenglass is a dry harbour, where three rivulets, the Esk, Mite, and Orte, unite about 12 miles to the southward of St. Bee's Head. There is a buoy placed a little within the mouth of the channel, in the middle, near the Fish Wear, which marks the entry. At this buoy, and in most parts of the channel, the depth is 3 fathoms at high water, with neap tides. The best part for vessels to lie aground on is, half a cable's length from the west end of the town of Ravenglass, on the south side of a perch which stands on the point of a sand there. At this anchorage, in the mouth of the river Esk, and also at the meeting of the other rivers, there are 3 fathoms at high water with spring tides, and 10 ft. with neaps. To sail into Ravenglass Harbour, take 4 hours of flood, keep above a mile from the coast to avoid Selker and Drig rocks (till Ravenglass town bears E. N. E.): steer in that course till you see the buoy bearing east. and then steer right for it, keeping within a ship's length off it on either hand; when you are just past the buoy, steer E. N. E., or keep Ravenglass a sail's breadth open to the north of your stern, till you are about half a mile from the east end of the sandy hillocks; hook the small bay, which begins there; keep near a cable's length from the point at the end of the small bay, and anchor half a cable's length from the west end of the town, or off the perch, in the meeting of the three rivers. When the buoy in the entrance bears E., it is also in a line with the south shoulder of Newton Knot Hill, which is a small hill half a mile south of Ravenglass. The tide flows here, full and change, at 11 o'clock; and off the Bar runs as follows: the last half-flood and the first half-ebb set northward, at the rate of 2 miles per hour, spring-tides; and the last half-ebb and first half-flood southward at the same rate. There is a foot of water more on the Bar than shown in the Liverpool Tide Table in this Almanack.

St. Bee's Head.—To the northward of Ravenglass harbour, distant 13 miles, is St. Bee's Head. On its summit is a LIGHTHOUSE, the light from which is *stationary*, appearing like a bright star at the distance of 6 or 7 leagues in clear weather. From the entrance of Formby Channel to this Head, the course and distance are N. by E. 20 leagues. In sailing along from Walney Island to St. Bee's Head, keep 2 or 3 miles from the shore, and you will

you will clear every danger. Vessels in moderate weather, may stop a tide any where along the coast, for the stream seldom runs more than a mile an hour.

Whitehaven.—About 3 miles E. N. E. from St. Bee's Head is the town of Whitehaven: the harbour is dry, and divided into basins by strong quays, which break off the sea. Within the second basin is the best place for vessels drawing above 10 feet water. Here you will find 18 to 22 feet water spring-tides, and 12 to 14 neap. The HARBOUR LIGHTS are upon the outer and inner Pierheads. The inner Light is *stationary*, of a RED colour, and is lighted while there are 9 ft. water between the Pierheads. The outer Light *revolves*, is lighted all night, and is seen at a distance of 3 or 4 leagues in clear weather. The light appears in its brightest state once every 2 min., and gradually becomes less luminous, till eclipsed. In the day a *Flag* is hoisted on a pole at the top of the old Lighthouse, while there are 9 feet water in the harbour, on entering which, keep both lights on the starboard hand.—A BLUE Light is shown from a lighthouse on the end of the north pier, which has been extended 352 yards.

Harrington Harbour is 4 miles Northward of Whitehaven. A *Lantern* is hoisted upon a pole on the starboard side of the entrance, while there are 8 feet of water in the harbour, and in the day a RED BALL, at the inner end of the pier, during the same interval of tide.

Workington is 2 or 3 miles North-eastward of Port Harrington. A red ball is hoisted upon a pole on St. John's pier when there are 8 feet water in the harbour; and at night a light is exhibited on the pier-head, which answers a like purpose and can be seen in clear weather at about 3 leagues from any point seaward. The channel into this port is along the south shore, its entrance bearing from St. John's pier nearly E. by S. by compass. It is formed by red buoys on the south side and black buoys and perches on the north side. the deepest water being midway between. The outer perch has a cask upon it painted black, which must be kept on the port side in entering. Steer in between the perches and red buoys, giving St. John's pier-head a berth of about 100 feet on the starboard side. After passing St. John's pier a perch with a white board upon it is the leading mark for the channel by day; and by night, the southernmost of the blast furnaces on the north side kept right a-head, until an inner light which is on a wooden pier bears about S. E. $\frac{1}{2}$ S.; then steer S. E. $\frac{1}{2}$ E. for the entrance to the harbour, keeping the light upon the wooden pier on the

starboard side, and passing a perch with a small black cask upon it by about 10 feet on the larboard side, when the harbour boat will be in attendance.

Maryport, situate about 5 miles N.E. of Workington, is easy of access, free from sand banks, and has a capacious dock, in which vessels are kept constantly afloat, as well as its original tidal harbour and basin. Depth of water in ordinary spring tides; 21 ft. 6 in., neap tides, 13 ft. 6 in.; or by adding 3 feet to the water shewn in Holden's Liverpool, and the Manx tide tables, a near approximation for each tide will be obtained. A fixed bright light is exhibited on the outer pierhead all night, and another on the inner stone pier whilst there are 8 feet in the harbour; both lights are on the starboard side in entering, and are visible at sea from E.N.E. to W.S.W., the former at a distance of 15 miles, and the latter 10 miles. A Red Ball near the inner lighthouse denotes 8 feet in the day time. The jetty on the south side is distinguished by a Red light, and the north tongue by a Green one. Steam tugs are in readiness every tide, and when required by vessels at night, two lights must be shown one above the other; or by day a union jack at the main. There is good anchorage in stiff clay, about 1½ miles off shore, the outer lighthouse bearing S.E.

Solway Frith.—The entrance to Solway Frith may be considered to commence abreast of Workington, on the English, and at Abbey Head on the Scottish shore, the distance between which is 5 leagues. On the eastern side of the Frith of Solway, about 10 miles northwards from Maryport, is

Port Silloth.—This place is daily increasing in importance, being connected by railway with Carlisle, Newcastle, and Edinburgh, the rails of which are laid on the quays. It contains a wet dock, with entrance gates 60 feet wide, and a jetty from the dock entrance 1000 feet outwards to low water mark. The dock is fitted up with Hydraulic Machinery, by which vessels are discharged and loaded with the greatest possible dispatch. The dock sill is 3 feet six inches above low water mark, and, by adding 5 feet to the Liverpool tide table in this Almanack, the depth over the sill will be given for high water. A Yellow Light is shown in the Lighthouse at the outer end of the jetty from sunset to sunrise; except during the time the gates are open, when the Yellow Light is discontinued and a Green Light is exhibited in its place. A Red Ball is hoisted on a pole at the Lighthouse during the time gates are open by day.

In Silloth Bay (between Lee Scar Light and the jetty) there is excellent anchorage in from 4 to 6 fathoms at low water, clay bottom. There is also good anchorage in Catherine Hole, a little above the fairway buoy. It is high water here, full and change, 11h. 35m.; spring tides rise 26 feet and neaps 20 feet. The fairway course, from about a mile off Workington to the Lightship at the entrance of the channel, is N.E. ¼ N., and to avoid the tail of Robin Spit, care should be taken not to bring the vessel to the eastward of N.E. by E. This Light vessel is in the middle of the channel, in 3½ fathoms at low water, and exhibits a fixed Red Light at 25 feet above the water, visible six miles. From it Maryport outer light bears S. by W. ½ W., 4¼ miles; Southernness light, N. ¼ E., 5½ miles; and Lee Scar light, E.N.E. 6 miles. It has a black ball at the mast head during the day, and in fogs a bell is tolled. Having passed the Light ship, run up N.E. by N. ¼ N., keeping the West Furnace Light at Workington a ship's length S. of the Lightship, which will lead up mid-channel to near the turn buoys B 2 black, and B 2 red, where the bright light on Lee Scar comes in one with the Cott red light, bearing E. by N. ¼ N., alter your course to that direction, which will carry you up the fairway to Lee Scar. On passing the lighthouse, keep a good cable's length to the northward of it. Silloth Dock is about half-a-mile above Lee Scar. When following the preceding instructions, it is necessary to bear in mind that, as far as Silloth Bay, the black nun buoys should be kept on the port, and the red can buoys on the starboard hand. The black and white striped buoy marked E, in the fairway off Beckfoot is passable on either side. The shoalest part of the channel, in which there are 2¼ fathoms at low water, is a little below the turn buoys; thence up to Silloth the depths are from 3 to 5 fathoms. At Lee Scar there is a tide gauge indicating in large figures the depth of water in Dock Entrance Channel. A bell is tolled in the lighthouse during a fog. A steam tug is in attendance to tow vessels in or out of Dock on reasonable terms. Branch pilots may be had (if required) off Maryport; charge, 1s. 9d. per foot to Silloth. The harbour expenses are (including buoy and light charges):—Coasting vessels, 6d.; vessels to or from foreign ports, 9d. per register ton.

Port Carlisle, a dry harbour, 10 or 11 miles up the Frith from Silloth Bay, is connected with Carlisle by railway, the rails of which run on the quays. It is high water here, full and change, at 12h. 10m.; springs rise 18 feet, and neaps 11 feet; the flood runs 3 hours. Vessels

running up from sea and bound to Port Carlisle should alter course for the North Channel at the Fairway Buoy, and haul across N.E. by E. to buoy marked No. 1, from which N. by E. $\frac{3}{4}$ E. leads up past buoy No. 2 to buoy No. 3; thence N.E. $\frac{3}{4}$ E. leads up to Perch Buoy in Powfoot Channel. Vessels in the anchorage at Silloth bound up, may, after half-flood, take the South Channel, after leaving the Bay N.E. $\frac{3}{4}$ N. will lead up past buoy No. 1, thence N.N.E. leads up past No. 2, and White Buoy into Powfoot Channel; afterwards follow the buoys up, which are all placed in the fairway. The harbour expenses, including light charges, are:—coasting vessels, 4d.; to or from foreign ports, 9d. per register ton. Pilots may be had off Maryport; charge, 3s. 6d. per foot. At Annan Foot there is a bright tide-light, and two perches on the western side of the entrance; the light is shown from half-flood to half-ebb. A bell is tolled at tide time during fogs. There is also a tide-light on the end of the jetty at Port Carlisle, three miles above Annan Foot, on the opposite or southern side of the channel; this light opens off Knockcross Point, on a S.E. by E. bearing. After passing Annan, soundings should be taken off the English side of the channel up to Port Carlisle.

Magnetic Bearings & Distances

FOR THE WEST COAST OF ENGLAND.
WESTERLY VARIATION 25 TO 26 DEGREES.

BUOY NELSON, OFF PRESTON (Lat. 53 43 N., Long. 3 11 14 W.)	MILES.
To Beaumaris entrance.... W. by S.	39
Dundalk Bar..... N.W. by W.	112
Douglas Head Light N.N.W. $\frac{3}{4}$ W.	50
Ross Light, Kirkcudbright.... N.	71
WYRE LIGHT, FLEETWOOD (Lat. 53 57 14 N., Long. 3 1 46 W.)	
To Great Orms Head.. S.W. by W. $\frac{3}{4}$ W.	45
Dundalk Bar.... N.W. by W. $\frac{3}{4}$ W.	112
WYRE LIGHT, FLEETWOOD	MILES.
To Wicklow Head Light W. $\frac{1}{4}$ S.	118
Calf of Man L'ts. N.W. by W. $\frac{1}{4}$ W.	65
Walney Light N. by W. $\frac{1}{4}$ W.	8
WALNEY LIGHT (Lat. 54 2 56 N., Long. 3 10 32.)	
To Wyre Light S. by E. $\frac{1}{4}$ E.	8
N.W. L'tship, L'pool. . S.W. by S.	35
Kish Lightship W. $\frac{1}{4}$ N.	104
Calf of Man N.W. by W. $\frac{3}{4}$ W.	57
ST. BEES' HEAD (Lat. 54 30 50 N., Long. 3 18 W.)	MILES.
To N.W. L'tship, L'pool S. by W. $\frac{1}{4}$ W.	65
Tuskar Rock Light S.W. by W. $\frac{1}{4}$ W.	162
Douglas Head Light .. W. by S.	42
WHITEHAVEN (Lat. 54 33 N., Long. 3 26 2 W.)	
To Beaumaris entrance .. S.W. $\frac{3}{4}$ S.	76
Skerries Light .. S.W. $\frac{3}{4}$ W.	65
Bahama Lightship W. by S.	244

WEST COAST OF SCOTLAND.

SOUTHERNESS LIGHT TO THE MULL OF CANTYRE.

Southernness Light, at the west side of Solway Frith, is chiefly useful as a direction to the harbour of Dumfries. It shows a fixed bright light, from N.E. seaward to W., which can be seen at the distance of 11 miles in clear weather.

Little Ross Island—A Lighthouse has been erected upon this Island, which lies off the entrance of Kirkcudbright bay and harbour. It bears a fixed and flashing light, producing 12 bright flashes in a minute, visible from N. by E. to N.W. by W. Southerly, at the distance of 6 leagues.

Kirkcudbright is formed by the Points Balmae and Torrs to the E., and the Island of Little Ross to the W. There are two Towers on Little Ross bearing S.W. from each other, which being kept in one lead over the Bar in the best water to the First Perch on the S.E. shore; thence running N.E. about 300 yards, passing a Red Buoy on the point of the bank on the larboard hand; thence

N.N.W. passing the Perch on the point of St. Mary's Isle on the starboard hand; thence direct to the lower Fish-house, where is a Pool a vessel can ride afloat at spring ebbs. Abreast and above the upper Fish-house there is excellent lying on soft mud, moored to rings on the rocks, and no stream of tide. On the bar of Kirkcudbright River there are about 7 feet water at half-flood. Vessels running for this place, and not having water over the Bar, will find good anchorage in the Ross Roads in from 2 to 3 fathoms at low water, in good clay ground. Should the wind be Southerly, blowing hard, a vessel should bring up on the W. side of the beach just as the sound begins to open, the closer to the beach the better, as it is very steep-to and quite out of the sea. At half-tide she can trip and run up the lake to the Lake or Fish-house, or waiting 4 hours' flood may run up for the Perch off St. Mary's, and proceed to Fish-house or the town. The coast from Kirkcudbright to Belcarey Bay

and River Urr is a bold rocky shore, with neither beach nor harbour.

Belcarey Bay, about 8 miles to the E. of Abbey Head, is formed by the High Lands of Aairds to the W., and Heston Island to the E.; entrance $\frac{1}{2}$ a mile wide. The Heston Island is also high, and high est in the middle: this is an excellent place and too little known. Vessels running for it should keep close past the Aairds, and keep close up till they come above the first salmon weir opposite the large house in the bight, when they may go as far in as water will admit, as it is all clean ground, and quite landlocked from all weathers. The tide sets strong E. and W. past all these places, till a vessel comes within the points mentioned.

Wigton Bay lies to the westward of Kirkcudbright Bay, and has a spacious entrance, with several places where vessels may stop in moderate weather, or when the wind blows off the shore. The river channel at the north-west or upper end of the bay, leading to the town of Wigton, is intricate, and only fit for small vessels who know the place. Vessels may stop with good anchorage in 7 or 8 fathoms water, about a mile to the northward of Stein Head, and half a mile from the shore, where the bottom is clean sand.

Garlieston.—This is a safe and sheltered dry harbour in the north-west corner of Wigton Bay, with a convenient quay, against which small vessels lie on an even and soft bottom. The outer bay has shelter from W. winds, and good anchorage between Criggleton Point and Eagerness Point. There is a small ship yard, and a town with good supplies at Garlieston. When desired a light is shown from the pier-head, which has been recently extended 250 feet, and where are at springs, 18 to 20 feet, and 11 to 12, neaps. From the pier-head the Ross Light bears S.E. by E. In taking the harbour, keep the perch off the breakwater on the larboard hand. Port charges, 1d. per ton; harbour boat, 3s. to 6s.

Whitehorn.—To the southward of Stein Head and near Burrow Head is Whitehorn Island, between which and the coast is Whitehorn harbour, in which vessels drawing 12 feet water cannot be neaped above twice a year at the quay. It is well sheltered from all winds. The only danger is the Screen's Reef, a rocky ledge, marked by a perch, extending from the west point, upon which the tide sets very strong. Going into the harbour from the west, if Stein Head be kept open of Kairnharrah Hill it will clear the rocks on the west side.

Glenluce Bay.—To the westward of Burrow Head is the bay of Luce, within which and near to the Mull of Galloway lie the Scar Rocks, always above water. There are no shoals near them; but off the Little Scar are two or three rocks, which the sea sometimes washes over. In moderate weather, with W. and S.W. winds, vessels may stop anywhere on the west side of the bay of Luce.

Mull of Galloway.—On the Southern point of the Mull of Galloway, a Lighthouse has been erected, and bears, by compass, from the largest of the Scar Rocks, W. $\frac{1}{2}$ N., 6 miles; from Burrow Head, W. by N. $\frac{1}{4}$ N., 18 miles. The light is intermittent, $2\frac{1}{2}$ minutes bright, then eclipsed $\frac{1}{2}$ a minute; is visible seaward 23 miles from N. E. to N. W. $\frac{1}{4}$ W.; but the high lands of Dramore shut the light from the view of the mariner in coasting along the Port Patrick shores. After rounding the Mull, which is a rocky shore, you will soon reach

Cromack Point, about 4 miles from which is

Port Nessie Harbour, fit only for small craft; but a vessel drawing not more than 6 or 7 feet, may find shelter from N. or N. W. winds, by running aground near the pier head. Seven and a half miles further is

Port Patrick, a small and dry harbour open to the westward. Small vessels must go in at high water, and run aground on the N. side of the creek, or within the pier, so as to be out of the reach of the sea, in case the wind should blow from the W. or South-westward.

Point Corsewall is about 14 miles to the northward of Port Patrick, and is the north-west point of entrance to Loch Ryan; between are some rocks, but they lie close in shore, and are mostly above water. On the rocks off Laggan Point called Ebbstone Rocks, which dry at low water, is a red beacon consisting of a pyramid of iron pillars, 40 feet high, with a cylindrical open cage on the top. From it Corsewall Lighthouse bears N.E. by E.; the highest point of Ailsa Craig, N.E. $\frac{3}{4}$ N.; and Laggan Point, S.S.E. $\frac{1}{2}$ E. On Corsewall stands a Lighthouse, exhibiting a white and red light alternately; these lights revolve, and attain their greatest brilliancy every 2 minutes. They may be seen, like a star of the first magnitude, at the distance of 5 or 6 leagues, and are visible from N.E. by E. northerly, to S.W.

Loch Ryan is capacious, of easy access, well sheltered, with good holding

ground, and depth sufficient for large vessels. The only danger to be avoided is the Scar, a tongue of sand on the western side of the Loch, and about 3 miles up the harbour, which extends $1\frac{1}{2}$ miles south-eastward from Kirkholm Point. There is a large Red Nun Buoy on the S. end of the Scar, which distinctly shews its position. The best anchorage is about $\frac{1}{2}$ a mile to the southward of Cairn Point in 6 or 7 fathoms. On this point is a tower, exhibiting a fixed light of the natural appearance, serving to lead to the anchorage. Opposite the Lighthouse Tower is a small Red buoy to mark the eastern edge of the Scar. Fourteen miles N.N.E. from Loch Ryan is the

Craig of Ailsa, a rock 940 feet high, with deep water all round it, serving as a beacon to guide ships to the entrance of the Clyde.

The **Frith of Clyde** makes a fine open entry to several rivers, having no danger more than a quarter of a mile from the shore, excepting the Brist Rock, which lies three-quarters of a mile W. $\frac{1}{2}$ S. from Turnberry Point; it dries at half-ebb, and is about half a mile from shore.

Ayr.—Ten miles from Turnberry Point is the Town of Ayr, with a lofty Spire seen from a considerable distance. Here is a commodious harbour fit for vessels drawing 12 to 14 feet water. The bar, at low water, has from 4 to 6 feet water over it, and with spring-tides at high water there are from 13 to 15 feet, and with neap from 11 to 12 feet over it; with fresh southerly winds there will be a foot more; for S. and S.W. winds raise the tides in all the rivers of the Frith of Clyde, and N. and N.E. winds have a contrary effect. On the north side of the harbour is a lighthouse exhibiting two lights; the upper bright, having a star-like appearance, and the lower red. There is also tide-light red, shown when 8 feet of water is on the bar. The distance between the lights is 850 feet; and they bear from one another S.E. by E. $\frac{1}{4}$ E., and N.W. by W. $\frac{1}{4}$ W., and are leading lights for entering the harbour, and when kept in one lead over the bar in the deepest water. The upper or bright light may be seen 12 miles off; the red 9 miles; and the tide light 4 miles off. Vessels drawing 7 feet water may make directly for the bar so soon as the tide-lamp is lighted. A flag is hoisted in day-time at half-flood, and continues to be so until half-ebb. About a cable's length S.W. of the south pier lies St. Nicholas Rock, which dries with spring tides only; you will avoid it by keeping the two red buoys on the starboard hand coming into the harbour, the breakwater

being on the port hand. There is an iron steam tug for towing vessels in and out, and the bar and harbour are being further deepened by means of a powerful dredging machine.

Troon Harbour has an extensive pier and breakwater, with 4000 feet quayage room, and an average depth 12 feet at low water; at the outer pier the rise and fall of the tide is from 8 to 10 feet. About 1 mile S.S.W. of Troon Point is the Lady Isle, a large patch of rock with a large and small Beacon on it. The Beacons are not leading marks, and there is plenty of water inside the Isle. At a distance of half-a-mile N.E. from the pier is a half-tide shoal, on which is a red buoy. Here are exhibited two Lights: one on the inner end of the Pier, intermittent, 40 seconds bright and 20 obscured; the other on the Pier-head, red. They bear from each other N.E. $\frac{1}{4}$ N. and S.W. $\frac{1}{4}$ S. 350 yards; and are visible, respectively, 9 and 6 miles. This harbour is perfectly safe, and may be run for in all weather by vessels of moderate draught of water, as there are no dangers but which are to be seen, and pilots are always at attendance. An extensive open wet dock or basin, 400 feet long by 300 wide, with 20 feet at low water tides, and capable of admitting the largest ships or steamboats, adds to the importance of this port. A branch of the Glasgow and Ayr Railway comes down to the harbour, as does also the Railway of the Duke of Portland from Kilmarnock. There is also an extensive ship-yard, with one of the finest graving docks in the west of Scotland, capable of receiving ships of the largest size. The magnetic bearings and nautical distances are as follows:—From Troon pier head to Ayr Harbour, S. by W. 12 miles; Dunure Point, S.W., 9 miles; Beacon on Lady Isle, W. by S. $2\frac{1}{2}$ miles.

Irvine.—Four miles and a half from Troon are the town and harbour of Irvine, and nearly midway is Lappock Rock, upon which was erected, in 1843, a beacon about 40 feet above the level of the sea, bearing S.W. Southerly, distant about 12 miles from Irvine Bar. There are from 12 to $13\frac{1}{2}$ feet water on the bar at high water spring tides; ordinary tides 12 feet; and at low water 4 feet. There is a red warping buoy placed in the fairway of the river, about two cables' length from the bar perch, which perch must be kept on the starboard hand on going in. There are also pawls all the way up the river on both sides. Vessels running up should keep the middle of the river, and run right up till they come to the end of the stone quay, where they can either beach or anchor. There is a steam tug for vessels frequenting this harbour.

Ardrossan.—At about a mile to the N.N.W. of Saltcoats are the spacious wet dock and harbour of Ardrossan, in which 100 sail of coasters can lie with ease. The pier and breakwater completely shelter the harbour from southerly and westerly winds; and Horse Isle, with the other rocks, protect it from the N.W. The greatest depth at low water in the Inner Tidal Harbour is 10 feet, and in the Outer Harbour 18 feet. The entrance lock to the wet dock is 160 feet long and 40 feet wide; and at average tides there is a depth of 18 feet over the sill of the lock. The railway trains come alongside all the berths in the wet dock and harbour. There are a graving dock and patent slip attached to the wet dock. —In place of the two previously existing harbour lights, a new lighthouse, exhibiting a red light, has been erected at the extremity of the Breakwater. This light illuminates an arc of from 15° to 20° in the direction of the open channel leading into the harbour, and bears from the middle of this channel E. and by N., on which bearing it is brightest. A vessel running for the harbour should steer the usual course from Pladda towards Cumbray Light, and when about 14 miles past the former, and 7 miles from the latter light, the Ardrossan Light will be seen, in favourable states of the weather, on the starboard, at the distance of about 5 miles, and bearing E. by N. In running into the harbour the light should never be closed; but the vessel must be kept within the illuminated space, in which there is nowhere less than 22 feet at low water. A black buoy marks the north side of the channel by day, which is on the west Grinan Rock, and there is a perch on the Grinan Rock, both to be kept on the Port hand in entering.

THE River Clyde is remarkable for the ease and safety with which it may be navigated. It is provided with numerous well sheltered harbours, and spacious arms of the sea, of easy access, and capable of containing the largest fleets. In approaching it, there are neither rocks nor shoals, nor rapid tides to be feared. Ailsa is a high mountainous rock in the mouth of it, conspicuous at more than 10 leagues' distance, and serves as a remarkable beacon to direct ships to it; there are 4 Lighthouses to direct mariners farther up, and to good shelter in the night; and there is hardly one opening to be seen but what a stranger, without chart or pilot, might safely venture to run for in the day time, and find good anchorage within it. On coming up the S. or St. George's Channel, and passing Ailsa Rock at 2 miles distance, the course by compass for Cumbray Head is N.N.E. $\frac{1}{2}$ E. nearly, and will carry you clear of Holy Island

which forms the harbour of Lamlash. If at night, the LIGHTS will be seen on Pladda, a small low island off the S.E. of Arran Isle. The distance between Ailsa Rock and Pladda Lights is about 11 miles, and from Pladda Lights to the Light on Cumbray Island $18\frac{1}{2}$. There are very large Furnaces of Iron Works between Troon and Ardrossan, which shew for a long distance at night, and might mislead a stranger, unless aware of what they are. It would, however, be advisable for strangers to keep between the Rock Ailsa and the Island of Arran, till daylight. When coming in the NORTH Channel, particularly during the winter months, with a N.W. gale, ships should never run to leeward of Arran during the night, but as soon as they pass the Island of Sanda, inside the Mull of Cantyre, they should haul by the wind, on the larboard tack, with the ship under easy sail, standing 2 hours each way. By this you keep in smooth water, and when daylight comes, can act according to circumstances. Should you run to the leeward of Arran, the wind, which was N.W. will be found at N.W. by N., and sometimes N.N.W., blowing heavy, with very heavy gusts. Keeping to windward, should the gale increase or continue long, you have Loch Ryan under your command; its entrance about 17 miles S. $\frac{1}{2}$ W. from Ailsa; but once getting to leeward you can never regain your ground. On approaching the Cumbray Islands, 3 entrances appear before you: the middle one is the main ship channel. In clear weather you cannot mistake the Cumbray Island, being distinguished by an old Light Tower on its highest part, a little to the southward of the present Lighthouse, which is low down on the hill side. There is a good ship channel to the eastward of the Cumbray Island, but strangers should never attempt it without a pilot. The part of the Island of Cumbray on which the Light stands is bold and steep close to. Opposite to it lies the Island of Bute, the nearest point of which is Garroch Head, distant about 3 miles. Entering between these two headlands, with the Cumbray Light on your starboard hand, when in mid-channel your course to the Light on the Point of Clough is N.E. $\frac{1}{2}$ E., 12 or 13 miles. In proceeding on this course, a little more than half-distance, you will see a REVOLVING LIGHT on your larboard hand, situated on the Point of Toward, which forms the starboard side of the entrance of Rothsay Bay. The Clough light stands on a bold shore. On the opposite side is the town of Dunoon, off which lies a ledge of half-tide rocks, called Gantocks. The position of these rocks is marked by a large stone obelisk, which can be seen from a considerable distance. The river afterwards inclines a little to

he eastward, until you get opposite to Gourrock, in a small bay on your starboard side. Opposite the middle of this bay is good anchorage; and here it is advisable to anchor till a pilot comes on board. The mark, the centre of the bay with the Clough Light on with Kempuck.

Greenock, which is the chief port for large vessels in the Clyde, has three fine basins adjacent to each other. They are known as the west, the east, and the Victoria harbours. Between the pier-heads, at the entrance of the west harbour, there are about 20 feet at high water, spring tides, and from 10 to 12 feet at low water; alongside the quays is a depth of from 17 to 19 feet. The east harbour contains about the same depth of water, but is more spacious; on the quay is a crane capable of raising 50 tons. The custom-house stands between these two basins. On the eastern side of the east basin is the Victoria harbour, opened in 1851. It has an area of 6 acres, is 563 feet long, and 458 feet wide, with a uniform depth of 26 feet at high water, and 14 feet at low water, spring tides. On the quay is a large crane of 70 tons lift; there is also 2 steam cranes of 15 tons lift, for loading coals. Connected with the east and west harbours are graving docks, the widths of their respective entrances being 34 and 38 feet. There are two lines of Rails all round the Victoria and East Harbours, in connection with the Caledonian Railway. A large Coal Shoot has been erected at the East Harbour, from which a great quantity of Coals are shipped daily. A small light is placed on the quay, in front of the custom-house, as a guide to the shipping, and lights of a red colour are exhibited at the several entrances of the port. In the roadstead are warping buoys; but in order to avoid the shoal off the custom-house, care must be taken to anchor as close as possible *outside* the line of buoys. The best anchorage for small vessels is off Albert Quay, in 4 fathoms water. About a mile N. N. W. of the custom-house are two fixed red lights, visible at the distance of two leagues: when in one, bearing W.S.W. $\frac{3}{4}$ W., they lead to the anchorage below the "Tail of the Bank."—**COCKLE BANK** reaches from the east end of the town of Greenock to the *Old Castle of Newark* at Port Glasgow. A new harbour is now building to the N.W. of Mr. Scott's Building Yard, for the discharge of timber laden vessels, the depth of water at spring tides to be 27 feet, with a large space for storing deals.

Port Glasgow.—The channel from Greenock to Port Glasgow is narrow and intricate as far as *Garville Point*, and should not be attempted without a pilot; about a $\frac{1}{4}$ of a mile N. from Garville Point

is a buoy on the south edge of the *Cockle Bank*. Keep that buoy on the larboard hand, and run about a cable's length from it. Near the E. side of Garville Point is a beacon, which pass on the starboard hand, keeping not less than 2 ships' length from it, nor more than half a cable, to avoid the Cockle Bank. Between this last-mentioned beacon and *Inch Green* is first a buoy and then a beacon; keep both on the starboard side, sailing at the distances before directed. There is also a beacon near the quay of Port Glasgow, which you must pass at 2 ships' length on the starboard side, and enter the harbour about high water. At the quay there is water for small craft only. At low water it is dry, and with spring tides is capable of containing vessels that draw 10 and 11 feet water; the ground is soft and easy to lie on, and a good place for graving ships' bottoms is made here. A light is exhibited on the pier to direct the steamers; and at the entrance of the harbour is a light of a red colour on the west quay. About four miles from Port Glasgow is

Dumbarton, a creek in the mouth of the river Leven. Vessels drawing not more than 8 or 9 feet may go in at high water. If pilots cannot be had, the following directions may be useful. Weigh anchor and sail from Port Glasgow at half flood; keep a cable's length from shore at the Old Castle of Newark; from thence steer eastward between Audoch and Dumbarton Castle, about 2 miles, until you come abreast of Finlayston; then steer south-eastward for the western buoy off Dumbarton Castle; there anchor until it is high-water. Leave that buoy to the larboard, and the other on the starboard, and stand in for the entry, keeping that side close until you have passed the Castle.

Between Port Glasgow and Bowling Bay are three Lights: at Auchenleck, the Garmoyle Floating Light, and the third about a mile above Dumbarton: all to be left on the starboard hand in going up the river.

Glasgow.—On the lower or western extremity of Broomielaw Quay, and larboard hand going up the river, a light, of star-like appearance, is placed for the direction of shipping.

Isle of Bute.—To the westward of the Isles of Cumbray is the Isle of Bute, on the eastern side of which, directly opposite Great Cumbray, is Killichattan Bay, where vessels may anchor in from 11 to 16 fathoms. To the northward is the Bay of Rothsay, the ground good and clean, and well sheltered: you may anchor in any part on the E. side of the Bay: but the most convenient place is 2 cables'

length N. of the pier-head, in order to be clear of the tract of the numerous steamers going from the pierhead to all parts of the Clyde.

Kyles of Bute.—The channels between Bute and the Main are termed the Kyles of Bute: their access is easy, well sheltered, the bottom is extraordinarily good, and the depth sufficient for the largest ships. They are distinguished by the names of the East and West Kyles.

Island of Arran lies to the south-east: at its S. E. extremity lies the **Island of Pladda**, upon which a **Lighthouse** is erected, 3 miles north-easterly from which is the **Island of Lamlash**. This island lies right in the front of the Loch and forms a good and well-sheltered anchorage: the N. side of it is shallow about 3 cables' length from the shore, the best parts to ride in are off the houses in Holy Island, in 9 or 10 fathoms, or about 2 cables' length E. N. or E.N.E. from the pier at the town of Lamlash. A red buoy (called *St. Andrew's*) is placed on a rock, with 14 fathoms water in the south entrance to the Loch. You can go either side; but the west side is best. At the north entrance the mainland side is **Hamilton's Rock**, which, in thick weather, a good look should be kept, though it is scarce a mile from the shore and never quite clear. The lighthouse on Pladda exhibits two bright fixed lights, and may be seen from N.W. by W. southerly, to N.E. by E.; the upper at 17 and lower at 14 miles' distance. At the northern extremity of Arran Island is

Loch Ranza, the ground in which is very good, and water sufficient for large ships, but the place being narrow renders it fit for small vessels only. On the east side of the entrance there is a rocky ledge, dry at low water, which extends near one-third over to the opposite side; to avoid this ledge, keep in the middle of the channel. Anchor abreast of the houses of Ballin, in 5 or 6 fathoms water, nearest the E. side of the Bay, about a cable's length north of the Old Castle, which stands quite at the bottom of the Bay.

Loch Fyne.—After passing **Ardnamurchan Point**, the entrance opens to the northward, and is about 7 miles from **Skipness Point**, forming an arm of the sea running in northwardly then eastwardly for a distance of 35 miles. The water in the middle is too deep for vessels to anchor. The east side from **Skate Island** to **Kilfinan Bay** is rocky, but does not extend far from shore, and they are mostly above water, so can be seen;

but deep water close to them. There is good anchorage in **Kilbrennan Bay**, and from there to the **Spit of Otter Ferry**, which is a shoal about two cables' length from shore, having a beacon on the **North Point**. On the west side of the Loch, about 6 miles from **Skipness Point**, is the little harbour of **EAST TARBET** well sheltered and good bottom, much frequented by steamers and small vessels; but the entrance narrow. From there, passing northward, you leave **Barmore Island** on the left, giving it a berth of a cable's length or so, to avoid some half-tide rocks off its N.E. end, and from there to **Invermel Bay** the coast is bold. Off the Church at **Invermel** there is a shoal about 2 cables' length from shore, with only 8 feet water on it. From thence to **Ardrihaig Point** the coast is clear, up to the **Pier Head**, on which there is a **Lighthouse** showing a fixed light. There is good anchorage on the north side of the **Pierhead**, and on the opposite side, north of **Ilan Yone**, in a line from the **Pier**, and about half a mile distant, there is a shoal near mid-channel, marked by a white buoy, and having only about 4 feet of water over it at low water. The shoal can be passed on either side: but the west side is the best. It is foul ground from **Ilan Yone** to **Silver Craig**. Abreast of the beacon on **Otter Shoal**, which you pass on the right, the channel is narrow, but clear, with strong tides. Sailing up **Upper Loch Fyne** the south side is clear to the head, and is the side used by sailing vessels. On the north side, passing the narrows at **Otter** about one mile, you open **Gaerloch**, a fine safe bay, much used by fishing vessels, having good anchorage in 3 fathoms water, but only narrow. Passing on you come to **Minard Point**, behind which there is good anchorage. Opposite **Minard Castle**, there is a shoal in the middle of the Lough, marked by a beacon on each end, the middle dries at low water. You can go on either side, but the west is the safest. Nearly abreast of **Castle Lachlan** is **Paddy's Rock**, keep the south side. Following the north shore, the whole coast round **Furnace Point** to **Inverary** is clear. South of the **Pier of Inverary** is a shoal called the **Otter**, to which a berth of 2 cables' length from the shore must be given. Anchor north of the **Pier**, and nearly opposite the large bridge, in a line with **Inverary Castle**, in 8 or 9 fathoms water. From **Inverary** to the head of the Loch is clear, and very deep water, so that it is safe sailing up at any time.

Campbeltown Harbour lies about 11 miles south westward of **Point Carradale**; it is large, well sheltered, the ground good, and there is very little to be feared in sailing into it. On coming

from the S. or S.E., you will first see the Island of Devar and the *blind* sound to the southwest of it, through which is a view of the town. On Otter Buoy the north-east point of Devar Island, is a light-house, from which is exhibited a bright light every half minute: it is visible from N. $\frac{1}{2}$ W. to E. by S. by the N., and may be seen in clear weather about 15 miles. This light is a good light for clearing Paterson's Rock; if kept in sight, it will lead about 3 miles to the eastward of it. In standing in for Campbeltown at night, be careful to keep to the eastward until the light upon Devar Island is fairly open; then stand for it, keeping it on the port hand, and steering about one or two cables' length from the point of the Island, until you open the harbour; then haul up W. $\frac{1}{2}$ N., or W. by N., still keeping about the same distance from the shore. When abreast of the western end of Devar, a black buoy will be observed on Mulbeg Bank, about 60 fathoms from the Island; this must be passed on the port hand. Steering half a point more northerly, you will next pass on your starboard hand, a red buoy, placed nearly opposite a sandbank, which is always dry, except with spring tides. On this bank is a beacon, painted black. There is also another beacon, painted red, on Trench Flat. Hence the red light on the north pier will be seen, and soon after, on passing Trench Point, the green light shown from Dolintober Quay. Now steer W.N.W., or N. W. by W., and you may come to an anchor in any part of the loch—observing, however, to give the west shore a berth of two cables' length. In the loch, inside the beacons, the deepest water is on the north side; a stranger should, however, keep the lead going, if working in, and put about the first shoal cast, as the bank is steep on both sides. The harbour has a depth of water of from 5 to 10 fathoms. Masters of vessels turning in from a west wind at night, must be careful not to shut the light on the Island when atanding south, but tack as soon as it becomes obscured by the high land of the Island, for in that case they are close to the South Bank, and the water shoals at once; but by keeping the light E. by S. they will go clear. At night, however, it will be better to anchor at Black Rock, on the north side, about a quarter of a mile E.N.E. from the red buoy, or when Devar light bears about S.E. in 4 or 5 fathoms water, good holding ground, and well sheltered, being within Macrinian's Point, which forms the north entrance to the harbour.

Sanda Island.—About 9 miles south of the Island Devar is the Island of Sanda, a dangerous Island, being surrounded by ledges of Rocks. There are several ledges

of rocks about the east and west end extending about a cable's length from shore; and near Gluinmore, which is always above water, there are several rocks that dry at low water, also off the east end around Island Ilanagurach. The sound, between Ilanagurach and Sanda, is the anchorage, a kind of harbour fit only for small vessels in summer time or in moderate weather. It is protected by the reefs in the sound—the reef to the west, on which there is a beacon pointing out the anchorage. Anchor when Fair Head is shut up on the end of Sanda in about 10 feet water, close to the houses, off an old quay. No vessel should attempt to pass between Sanda and Island Ilanagurach, the tide being strong and running very irregular. Round Gluinmore and Island Ilanagurach are reefs and sunken rocks with deep water. On the ship rock of Sanda, in lat. $54^{\circ} 16' 30''$ N., and lon. $5^{\circ} 34' 55''$ W., a lighthouse exhibiting a fixed red light, has been erected. It is visible from N.W. $\frac{1}{2}$ W. S.E. by E. $\frac{1}{2}$ E. by south-westerly, and may be seen at the distance of 5 leagues. It bears by compass from Pladda Light W. by S. $\frac{3}{4}$ W., 18 miles; from Ailsa Craigh N.W. by W. $\frac{1}{2}$ W. 16 miles; from Corsewall Light, N. by W. $\frac{1}{2}$ W. 22 miles; from the Maiden's Rocks Lights, N.E. $\frac{1}{2}$ N., 2 miles; from N'most Point of Rathlin Island, S.E. by E. $\frac{1}{2}$ E., 21 miles; and from S'most Point of the Mull of the Cantyre S.E. $\frac{3}{4}$ E., 6 miles. From Sanda Light E. by S., distant $1\frac{1}{2}$ miles, is the Paterson's Rock Buoy, pointing out a dangerous rock, uncovered at low water. When the Mull Head of Cantyre is seen to the southward of Sanda, you are to the southward of this rock; when the Mull Head is to the northward of Sanda, you are to the northward of it. When Gluinmore Rock appears to the west end of Ilanagurach you are to the eastward; and when Gluinmore Rock appears to the east end of Ilanagurach, you will be to the westward of Paterson's Rock. A beacon is now erecting on Patterson's Rock. In sailing east along the south end of Sanda keep the light in sight; you will pass south of the rock: the light is shut when you are in a line with the rock, and when the light is seen over the hill on east end you are within the reef.—Tides.—High water inshore 9, in the channel 10 30, a.m.

Tides.—The stream of flood within a mile of the Mull Head runs southward and turns sooner than at a greater distance from the land, so that a vessel keeping near the west coast of Cantyre, will have the benefit of the stream 2 hours before one above a mile from the land.

Magnetic Bearings & Distances

FOR THE WEST COAST OF SCOTLAND.
WESTERLY VARIATION, 25 TO 26
DEGREES.

ROSS, OFF KIRKCUDBRIGHT, (Lat. 45° 46'
N., Long. 4° 5' 1" W.) Miles

To Maryport SE by E 20
St. Bees' Head Light .. S by E $\frac{1}{2}$ E 21 $\frac{1}{2}$
Rossall Landmark S $\frac{1}{2}$ E 61 $\frac{1}{2}$
Buoy Nelson, off Preston..... S 71
N.W. Lightship, Liverpool.. S $\frac{1}{2}$ W 83
Beaumaris entrance SSW 85
Bahama Lightship. I. M. ... SW by S 26

MULL OF GALLOWAY (Lat. 54 38 9 N.,
Long. 4 51 20 W.)

To Beggar Scar Rock..... E $\frac{1}{2}$ S 6
St. Bees' Head Light..... SE $\frac{1}{2}$ E 43
Point of Ayre, I. M. SE by S $\frac{1}{2}$ S 21
Bardsey Island Light SSW $\frac{1}{2}$ W 113
Smalls Light SW $\frac{1}{2}$ S 180
Tuskar Rock Light..... SW 153

POINT OF CORSEWALL (Lat. 55 0 29 N.,
Long. 5 9 28 W.)

To Larne Loch Light W $\frac{1}{2}$ N 24
Fair Head NW $\frac{1}{2}$ N 37
Mull of Cantyre NNW 30
Sanda Light N by W $\frac{1}{2}$ W 26
Pladda Light NE by N $\frac{1}{2}$ N 25
Ailsa Rock NE by N 14 $\frac{1}{2}$
Cumbay Light NE $\frac{1}{2}$ N 43
Ardrossan Harbour..... NE 40

TROON (Lat. 55 32 N., Long. 4 41 W.)

To Heads of Ayr SW $\frac{1}{2}$ S 8
Corsewall Light..... SW $\frac{1}{2}$ W 36
Copeland Light SW by W 58
Ailsa Rock SW $\frac{1}{2}$ W 22 $\frac{1}{2}$
Larne Loch Light WSW 56
Maidens Lights W by S $\frac{1}{2}$ S 55
Pladda Light W 16

ARDROSSAN (Lat. 55 38 37 N., Long. 4 49
28 W.)

To Troon S by E 7 $\frac{1}{2}$
Ayr Harbour..... S 11 $\frac{1}{2}$

Heads of Ayr S by W $\frac{1}{2}$ W 13
Loch Ryan SW $\frac{1}{2}$ S 38
Corsewall Light SW 40
Ailsa Rock SW $\frac{1}{2}$ W 26
Copeland Light..... SW $\frac{1}{2}$ W 61
Pladda Light SW by W $\frac{1}{2}$ W 17

CUMBRAY LIGHT, (Lat. 55 43 16 N., Long.
4 58 W.)

To Ardrossan S $\frac{1}{2}$ E 6
Ayr Harbour S $\frac{1}{2}$ E 12
Heads of Ayr S by W 18 $\frac{1}{2}$
Turnberry Point SSW 23
Loch Ryan entrance... SW by W 42
Corsewall Light SW $\frac{1}{2}$ S 43
Ailsa Rock SW $\frac{1}{2}$ S 29 $\frac{1}{2}$
Copeland Light SW 64

PLADDA ISLAND LIGHT, (Lat. 55 26 N.,
Long. 5 7 6 W.)

To Cumbay Light, from 1 mile
North of Pladda Light NE 19
Irvine Harbour E by N 18
Troon do E 16
Ayr do E by S $\frac{1}{2}$ S 16
Turnberry Point SE by S 11
Loch Ryan entrance SSW 24 $\frac{1}{2}$
Ailsa Rock SW by S $\frac{1}{2}$ S 11
Corsewall Light..... SW by S $\frac{1}{2}$ S 25
Copeland Light SW 45
Belfast Lock entrance..... SW $\frac{1}{2}$ W 43
Larne Loch Light SW by W $\frac{1}{2}$ W 42
Maidens Lights SW by W $\frac{1}{2}$ W 36

MULL OF CANTYRE, (Lat. 55 19 N., Long.
4 49 W.)

To Sanda Light SE by E $\frac{1}{2}$ E 5
Ailsa Rock SE $\frac{1}{2}$ E 24
Corsewall Light..... SSE 30
Calf of Man..... S $\frac{1}{2}$ W 84
Maidens Lights..... SSW 24
Fair Head W $\frac{1}{2}$ S 13
Inisterhul Light NW by W 49
Loch Ryan entrance SE by S $\frac{1}{2}$ S 31
Larne Loch do SW by S $\frac{1}{2}$ S 28
Rathlin Island, N. end.. W by N $\frac{1}{2}$ N 13
Sound of Islay, E. end .. N by E $\frac{1}{2}$ E 28

MULL OF CANTYRE TO THE NORTH END OF SCOTLAND.

The Mull of Cantyre is a high rocky promontory, running to the southward, and approaching within 11 miles of the coast of Ireland. On its south-western extremity is a lighthouse, which exhibits a fixed bright light, visible 22 miles in clear weather, from N.N.E. $\frac{1}{2}$ E. to S. by W. $\frac{1}{2}$ W. by W. Off Dunimore Head, which is about 5 miles to the northward of the lighthouse, is a rock, lying about a cable's length from the shore, which dries at half-ebb. A rocky shoal, with 3 or 4 feet on it at low water, lies further north, about a quarter of a mile off Usid Point, at the Saltpans: on this shoal the sea always swells, and breaks in the calmest weather.

West Loch Tarbit, on the main of

Cantyre; the bay of which is well sheltered, and the depth of water for a mile up sufficient for the largest ships; but the ground, being of soft mud, does not hold well with hard gales, except there is a full cable out. The common places of anchorage are, for large ships, off Ardfarik, in the mouth of the loch; and for small vessels, on the east side of Ilanagalligan. On the S. side of Ilan Trayn are several rocks above $\frac{1}{2}$ a cable's length from the island, or $\frac{1}{2}$ from it, and $\frac{1}{2}$ from the starboard side of the entry. There is also a sandbank extending from the E. point of Corran, nearly $\frac{1}{2}$ over to the N. side of the loch; to avoid which, keep nearest to the N. side, or keep the easternmost extremity of Ilan Trayn in a line with the W. end of the highest hill in Gila Island. About 3 miles up the

loch, off Duneturik, nearest to the N. shore is a small blind rock, having 5 feet water over it. Keep the middle of the Loch, and you will avoid it.

Loch Achastil is a fine harbour, and fit for ships of any size; the ground good, and only one rock, about midway, within it, covered only with spring tides. Ships may anchor in any part of this loch above Castle Swein. The danger to be avoided in sailing towards Achastil is a small rock on the N. side of the two Mackcarmack Islands, which dries with spring-tides only

Jura Island—To the westward is the Island of Jura; on the S.E. side of which is Loch Daguall, with good anchorage, well sheltered, and water enough for a merchant ship. This anchorage is very convenient for vessels bound to the southward. You will anchor near the middle of the bay, when Gia Island is just shut in by the N. point of the entry, and the northernmost Pap of Jura bears N.W. $\frac{1}{2}$ W. In running either in or out, stand not too near the sides, for on the N.N.E. and N.W. sides of the bay it shoals nearly 2 cables' length from shore.

Sound of Islay is the common track for shipping to and from the N. A Lighthouse has been erected on Rudha Mhail Point showing a Fixed Light, visible 15 miles. It shows RED from about NNE $\frac{1}{2}$ E.W'y. to about N. $\frac{1}{2}$ W.; MASKED W'y. from about N $\frac{1}{2}$ W. to about NbyW $\frac{1}{2}$ W. and from about NbyW $\frac{1}{2}$ W. round S'y and E'y to about NNE $\frac{1}{2}$ E it will show WHITE, excepting where intercepted by the land. When proceeding into, or through Islay Sound, this light kept in view clears the Black rock and other shoals at the south entrance. A Lighthouse is also erected on MacArthur's Head, on East side of Islay, and south entrance to the Sound, showing a Fixed Light, visible 17 miles. It shows WHITE up the Sound till it bears S. $\frac{1}{2}$ W.; RED towards Jura from S $\frac{1}{2}$ W. till it bears about W; and WHITE from about W. round by the S., or until obscured by the south side of Islay. A tide or a night is the longest any vessel should stop here except in Macdougall's Bay, where one cable may be made fast to a ring or rock on the shore. In entering Islay Sound from the southward, you are to bring Glashilan Island to bear N., or to keep within a cable's length or two from the Islay shore, and you will clear the Skerch-ray Rock, which lies on the starboard side, W. of the small Island of Frochilan.

Loch Tarbet is filled with small rocks, especially on its southern side, it is therefore hazardous to enter. The anchorage is $\frac{1}{2}$ of a mile above Guimore, but the best and safest place is

near the mouth of the Loch in Glenaberig Bay. This is easy of access, and has 3 and 4 fathoms water. Keep a cable's length from the point in passing, and anchor the same distance eastward of it. About a mile eastward of this anchorage is a cluster of small rocks above water; on the E. side of these a ship may ride safe in five fathoms water, keeping $\frac{1}{2}$ cable's length from them in going up.

Loch Indaal.—Having rounded the Mull of Kinho, which is the south-western part of Islay, you will open Loch Indaal. This may be said to be the only place in Islay where vessels in winter time can ride in safety. Here small vessels drawing 9 or 10 feet of water may ride, and be well sheltered; larger ships, drawing 15 feet, must ride with the mouth of the loch open, and will therefore not be so safe when the wind blows from the W. or S.W. But the best anchorage is at the further end of the loch called Kilirn Bay, when Bomore House bears S.S.E., lying somewhat nearer to the S. than to the N. side of the harbour, in 3 fathoms, sandy ground. Larger ships anchor more to the westward bringing Bomore House S.E. by E. in 4 fathoms. At the entrance to this harbour are 2 spits of sand; one on the S. side, which never dries, extending from Atturach Point northwards; the other running from the opposite side southward, which dries gradually. These two spits of sand almost enclose the harbour. In the channel between their two points are 2 and 2 $\frac{1}{2}$ fathoms, low water, spring tides.

Rhins of Islay Light, on the northern side of the entrance to Loch Indaal, upon the small Island of Oversa, bearing by compass from the Mull of Kinho, N. by W. $\frac{1}{2}$ W., distant 10 miles; and from the STATIONARY LIGHT of the Mull of Cantyre, N. by W. $\frac{1}{2}$ W., 33 miles. From the north eastern extremity of the Island of Rachlin, N. $\frac{1}{2}$ E., distant 25 miles. From the REVOLVING LIGHT of Innistrathul, E. distant 28 miles. From the Revolving Light, producing a bright flash once in every minute, on the Rock of Skerryvore, distant from Hynish Point, in Tyree, W. S.W. $\frac{1}{2}$ W., 10 $\frac{1}{2}$ miles, it bears S. $\frac{1}{2}$ W., distant 44 miles. From the Rocks of Dunheertach, lying 11 miles S.W., from Icolmkill, it bears S.S.W., distant 28 miles; and from Tranvore Head, S.W. by S., distant 6 $\frac{1}{2}$ miles. It will be known to Mariners as a STATIONARY and a FLASHING LIGHT. To a distant observer it appears like a star of the first magnitude, producing a bright flash of light every 5 seconds, without those intervals of total darkness which characterise other Revolving Lights upon the coast. In clear weather it will be visible at the distance of 6 leagues, and is open from N.N.E. to

S.E. (westerly); half a mile off Cull Point it disappears.

Oronsa and Colinsa Islands.—

Oronsa is much the smaller Island, and is nearly 4 miles to the northward of Ruinishag Point, in Islay. Off its southern sides are several Rocks, one of which extends W.S.W., from Gudimel, a small Island on the S.E. part of Oronsa. This rock dries at half-ebb. There is a shoal also about a $\frac{1}{2}$ mile to the southward of the middle of the rock, on which are 6 feet at low water. At the S.W. point of Oronsa is Ilana Roan; one mile S.W. of which are 2 or 3 rocks, which dry with Spring-tides only, and some shoals on which the sea always break. A leading mark to go to the southward of these dangers is Ruvaal Point in Islay, on with the S. end of Beninore Hill in Jura. Sail not nearer to Colinsa than till Ruvaal Point, bears on the middle of the hill. To the W. of Colinsa are several Rocks and Shoals, lying a mile out from Ardskinish Point, some are above, some below, and others dry only at low water; you will avoid the whole of them by keeping about 2 miles from the shore, or one mile from those rocks you see above water. There is no anchorage on the W. side of Colinsa, and but indifferent on the E. side.

The **Gulf of Coryvreckan**, which is formed by the N. end of Jura, and the Island Scarba, is distinguished by a violent breaking sea with whirlpools, partly occasioned by an excessively rapid stream running over a steep rock, at the N. side of the Sound, near the W. Point of Scarba. On the Jura side of the Gulf the sea rages, and forms whirlpools, both with ebb and flood: but the waves do not rise so high as on the Scarba side of the Gulf.

The **Sound of Mull Lighthouse** is situated on a small rock called Runa Gall, on the south shore of the Sound of Mull, Argyshire, about one mile northwards from Tobermory. The Tower is about 50 yards within the high water mark of spring-tides, and is connected with the shore by a bridge of two spans. The Light is an azimuthal condensing Light, and shows a **FIXED RED LIGHT** northwards out to sea; a **FIXED GREEN LIGHT** towards the New Rocks, the Red Rocks, and the Stirks Rocks, in the Sound of Mull; a **FIXED WHITE LIGHT** southwards into the sound of Mull. The Light is exhibited from a tower of masonry about 55 feet above high water of spring tides, and may be seen in clear weather at the distance of about twelve nautic miles.

Adnamurchan Point.—A Lighthouse, exhibiting a **Fixed Light** of the natural appearance, has been erected on this point; and bears by compass from

Caillach Head, N.E. $\frac{1}{2}$ E., distant 7 miles; from the Cairns of Coll, S.S.E., 8 miles; from Kana Head, S $\frac{1}{2}$ E., 30 miles; from Scour of Eigg, S.W. by S. $\frac{1}{2}$ W., 11 miles; from Bo Askadil Rock, W.S.W., 7 miles. It is visible 18 miles in clear weather.

Ushenish Lighthouse is situated on the most easterly head land on the eastern side of the Island of South Uist, one of the Hebrides, in the county of Inverness. The Light is a dioptric first-class **FIXED RED LIGHT**, and is exhibited from a tower of masonry erected on the headland. The Light is about 176 feet above high water of spring tides, and may be seen in clear weather at the distance of about 12 nautic miles.

Island Glass Light, situate on the eastern side of Glass, and on the western side of the channel between Skye and the Long Island. The Light is **STATIONARY**, appearing like a star of the first magnitude, at the distance of 5 or 6 leagues, from W. by S. to E.N.E. $\frac{1}{4}$ E. by the S.

Skergratiack Rock.—A Beacon, painted black, has been erected on this rock, situate in the Minsh. It consists of a Frame-work of Iron, surmounted by a cylindric cage, and rising to about 30 feet above high water spring tides. There are steps leading from the rock to the cage in which shipwrecked mariners may find a temporary shelter. This Beacon bears by compass from Skernamule beacon N.N.W., distant 3 miles; from Dunvegan Head, in Skye, N.E. $\frac{1}{2}$ E., 18 miles; from Island Glass Lighthouse, S.E. by S. $\frac{1}{2}$ S., $7\frac{1}{2}$ miles; from the Greater Galtimore (one of the Shiant Islands), S.W. $\frac{1}{4}$ S., 8 miles. There is foul ground nearly all the way from Skergratiack Rock to Fladdahuan Island, from which the beacon lies $2\frac{1}{2}$ miles to the N. by E.

Loch Terriden.—In entering Loch Terriden avoid Runawagh Point, its southern entrance, a little way off which point is a rock under water, which dries at spring tides. Excepting this rock, there is no danger in sailing into or up this Loch; for Skerintram Rock, which lies on the North side, is always above water, with deep water all round. Here therefore the access is easy, the ground good and so well sheltered, that several hundreds of the largest Ships may ride with safety in all weathers. Its Entry is $2\frac{1}{2}$ miles wide, the Loch running in S. by E. $\frac{1}{2}$ E. to abreast of Loch Shieldag, then S.E. by E. to the furthest end. The best place for Anchorage is in Loch Shieldag, between the two narrows, on the S. side of the Basin, or any where above the second Narrow, which is what may properly be called Loch Terriden.

Loch Gerloch.—About 4 miles further N. is Loch Gerloch, a large and well

sheltered harbour, the ground in all parts clean, holding well, and capable of containing a fleet of the largest ships; its entrance is between Coupachar Point and Longa Island; distant from each other nearly two miles. There are no dangers either in or near it; and when it does not blow hard from the W. or S.W. ships may ride in any part, particularly on the E. side of Island Longa. In winter the best anchorages is between Flowerdale and the Island of Horisdale, in from 9 to 20 fathoms water. Small vessels may ride on the W. side of this Island, S. E. of a rock above water.

Loch Yew.—From Longa Island to Ru Rhea the bearing and distance are N. E. $\frac{1}{2}$ N., $3\frac{1}{2}$ leagues. Five miles to the eastward is Loch Yew, a place large and well sheltered, forming a bay of easy access, a moderate depth of water, and having good holding anchorage, where whole fleets may ride in the greatest safety at all times. The entrance to Loch Yew is a mile wide, and nearly off its western point lies the small Island of Fura, with 2 or 3 islets to the eastward of it; there is also a little rock off the northern point of Fura; keep therefore at a distance in passing it, and the channel in is free from danger. In the middle of the bay is Yew Island, at the northern point of which are some rocks above water. The best places to ride are on the E. side of the Island Yew, or on the E. side of the bay, off Tunag, and off Inveraspadae at the opposite side of the Loch.

Loch More or Great Loch Brim.—To the northward of Loch Beg, are several Islands, lying before Loch More, or Great Loch Brim. Loch More is a great and safe branch of the sea, capable of accommodating the largest fleets, and having no rocks or dangers within it, except a small ledge on the E. side of Ullapool extending above a cable's length from that shore, which is avoided by keeping $\frac{1}{2}$ from the Ullapool side. You may anchor in this bay in 14 or 15 fathoms water above a cable's length from the shore, or any where above Logie Point, in from 13 to 24 fathoms. Should you, in entering or sailing from this Loch, go between the larboard point, or Ru Handerrick, and the Carniskere Islands, remember to give the former a berth on account of a rock called Nuela, which lies nearly a cable's length from the shore, and dries about half ebb.

Loch Kylescough is nearly 7 miles E.S.E. $\frac{1}{4}$ E. from Ru Stoir, and $3\frac{1}{2}$ miles in the same direction from Ouldenay Island. This is a large and well sheltered branch of the sea, the approach to which is safe, and the anchorage good; but for some miles within the Loch the water is too

deep for ordinary vessels, being from 30 to 50 fathoms, unless you carry an anchor on shore. Above the Island Ranich where the contracted channel commences again to widen, ships may anchor any where, the stream in the narrowest part running not more than 1 mile an hour.—The only rock necessary to notice, lies near the Island Caraway, off the larboard side of entrance; it bears W.S.W. from it and dries at low water; keep Runachusan Point in Ouldenay Island on with the extremity of Ru Stoir, and you will clear this rock to the Southward. At the N. side of the entrance to Loch Kylescough is Loch Shark, and N.E. of Shark lies Loch Calaway.

Loch Inshard.—One league to the eastward of Lusford is Loch Inshard, the last bay before you round Cape Wrath. In sailing in, great caution must be observed, as there is a rock lying right at the entrance, which appears at spring ebbs only. Within the Loch you will be well sheltered, your depth moderate, and your ground good. Sail up until you are landlocked, and anchor near the north or east side. To the north west of Loch Ardcar are some Islands, close to the main, called Ilanarone; and nearly N.N. E. of these 4 miles, is Balag Island, having a small rock above water, at both the N. and S. extremities. This Island lies about a mile from Ru Wochel. Near the latter is a rock above water, close to the land. From hence to Cape Wrath the coast is high and rocky. Off Cape Wrath are said to lie several rocks under water, called the Stags. Vessels in sailing round this headland should always give it a good berth, of $1\frac{1}{2}$ or two miles, and steering E'ward, they will reach the Pentland Frith.

Isle Oronsay Lighthouse is situated on a low point at the south-east end of the Island of Oronsay, Inverness-shire, in the Sound of Skyc, also called Sound of Sleat. The Light is an azimuthal condensing Light, and shows a **FIXED WHITE LIGHT**, from a tower of masonry about 58 feet above high water of spring tides. The Light may be seen in clear weather about twelve nautic miles.

Kyleakin Lighthouse is situated on a point of rock which covers at high water spring tides, and projects from the west end of Eilan Dool, or Gillean Island, in Ross-shire, at the western entrance of "The Narrows," leading to Loch Alsh. The tower is about fifty-three yards within the high water mark of spring tides, and is connected with the Island by a bridge of five spans. The Light is an azimuthal condensing Light, and shows a **FIXED WHITE LIGHT** in the fairway of the Sound of Loch Alsh, and a **FIXED WHITE LIGHT** in the fairway leading to the Sound of Applecross, and which White Light ex-

tends southwards to Pabba Island. From thence it shows a **FIXED RED LIGHT**, extending eastwards along the shore of Skye to the south of the fairway of Loch Alsh. It also shows a **FIXED RED LIGHT** to the north-eastwards of the fairway to the Sound of Applecross. To the north of the fairway of Loch Alsh the Light is not shown. It is exhibited from a tower of masonry about 53 feet above high water of spring tides, and may be seen in clear weather at the distance of about eleven nautic miles.

Rona Lighthouse is situated on the northern end of the Island of Rona, in Inverness-shire, between the west coast of Ross-shire and the Island of Skye. The Light is a catadioptric second-class holophotal **FLASHING WHITE LIGHT**, showing a flash EVERY TWELVE SECONDS. It is exhibited from a tower of masonry erected on a peak at the north-east point of the Island. It is elevated about 222 feet above high water of spring tides, and may be seen in clear weather at the distance of about twenty nautic miles.

Cape Wrath Lighthouse, erected on the Cape, forming the north-western extremity of the main land of Scotland, in lat. 58 deg. 37 min. N., and in lon. 5 deg. W., bears from Hoy Head in Orkney, W. $\frac{1}{2}$ N., distant 50 miles; from the Butt of the Lewis, E. by S. $\frac{1}{2}$ S., 41 miles; from the rocks called the Stags off the Cape, S. W. by W. $\frac{1}{4}$ W., about 1 mile; from the sunken Rock called the Nun, S.S.W. $\frac{1}{2}$ W., distant 15 miles; and from the Islands of Stack and Skerry, W.S.W., the former 35 $\frac{1}{2}$ and the latter 38 miles distant. It is known to mariners as a **REVOLVING LIGHT**, of the natural appearance, changing with one tinged red, which attain their most luminous effect every two minutes, and become, to a distant observer, totally eclipsed for a short time. The light is visible from S. $\frac{1}{2}$ E. to S. W. by W. by the N., at the distance of 23 miles.

Dunnethead Light, on the Northern extremity of the main land of Scotland, in lat. 58 deg. 40 min. N., bears by compass from the N. end of the Island of Stroma, in Pentland Frith, W.N.W., distant 7 $\frac{1}{2}$ miles; from Hoy Head, leading to Hoy Sound, S.S.W., distant 13 miles; from the Stack and Skerry, S. by E. $\frac{1}{2}$ E. distant thirty-three miles; and from Cape Wrath, in Sutherlandshire, S.E. by E. $\frac{1}{2}$ E., distant 54 miles. In reference to these bearings, the light will be visible to the mariner in a northerly direction from S.E. $\frac{1}{2}$ E. to W. by northward. The Light is **STATIONARY**, and being elevated 346 feet above the medium level of the sea, will be seen like a star of the first magnitude, at the distance of from 7 to 8 leagues, and at lesser distances according to the weather.

Magnetic Bearings & Distances FOR THE NORTH AND EAST COASTS OF SCOTLAND.

CAPE WRATH (Lat. 58 37 30 N., Long. 5 W.) MILES.

To Ru Store SW by W 26 $\frac{1}{2}$
Loch Maddy entrance ... W by S 92
Glass Island Light ... W by S $\frac{1}{4}$ S 70
Chicken Head W $\frac{1}{2}$ S 47
Tolsta Head W $\frac{1}{2}$ N 39
To Nun Rock NNE $\frac{1}{2}$ E 15
Hoy Mouth, Stromness E $\frac{1}{2}$ S 61
Holburn Head SE by E $\frac{1}{4}$ E 51

DUNNET HEAD (Lat. 58 40 16 N., Long. 3 22 20 W.)

To Thurso Bar SW by W $\frac{1}{4}$ W 5
Holburn Head..... W by S 5
Hoy Head..... NNE 13
Swona, South end of E by S 10
Pentland Skerries ESE 14

SULE SKERRIE (Lat. 59 3 N., Long. 4 13 W.)

To Dunnet Head SSE 33
Strathy Head S by W 28
Sumburgh Head, Shetland..... E 100
Westra Frith..... E by S 40

HOY MOUTH, STROMNESS (Lat. 59 3 N., Long. 3 23 W.)

To Scrabster Roads..... SW $\frac{1}{2}$ S 17
Strathy Head W by S $\frac{1}{4}$ S 23
Lock Erobol W 45
Cape Wrath W $\frac{1}{2}$ N 59

DENNESNESS LIGHT, NORTH RONALDSHA (Lat. 59 23 N., Long. 2 23 W.) MILES

To Foul Island NE 45
Pappa Island, Shetland .. NE $\frac{1}{2}$ E 60
Sumburgh Light, Shetland E $\frac{1}{2}$ N 46
Fair Island E by S 28

START POINT IN SANDA ISLAND (Lat. 59 16 39 N., Long. 2 22 25 W.)

To Foul Island..... NE $\frac{1}{2}$ N 50
Fair Isle E 30
Noss Head ... SW $\frac{1}{2}$ W 50
Copinsha Island SW $\frac{1}{2}$ W 22

SUMBURGH HEAD, SHETLAND (Lat. 59 51 N., Long. 1 16 W.)

To Noss Island NE by E 20
Bucanness Light SW by S 140
Fair Isle SW by W 21
Start Point, Sanda I. W by S $\frac{1}{4}$ S 48

Foul Island..... NW by N $\frac{1}{2}$ N 28
NOSS HEAD (Lat. 58 28 38 N., Long. 3 3 5 W.)

To Duncansby NE by N 10
Pentland Skerries Lights ... NE 12 $\frac{1}{2}$
Fair Isle ENE 78
Sumburgh Head.. NE by E $\frac{1}{2}$ E 96

TARBETNESS LIGHT (Lat 57 51 N., Long. 3 48 W.)

To Troup Head..... SE $\frac{1}{4}$ E 48
Cowsey Point SE by S $\frac{1}{4}$ S 18
Burgh Head S $\frac{1}{2}$ W 13
Mairn SW $\frac{1}{4}$ S 16

KINARD'S HEAD (Lat. 57 42 N., Long. 2 1 W.)

To Rattray Brigs SE by S $\frac{1}{2}$ S 8
Helmsdale NW by N 60
Noss Head..... N by W 61

Duncansby Head... ..N $\frac{1}{2}$ W	67	Arbroath	N by W $\frac{1}{2}$ W
Copinsha Island ... ..N by E	77	Dumbar Harbour.....	SW $\frac{1}{2}$ S
BUCANNESS LIGHT (Lat. 57 28 15 N.,		St. Abb's Head	S. by W. $\frac{1}{2}$ W
Long. 1 46 11 W.)		Fifeness	SW by W $\frac{1}{2}$ W
To Peterhead, S.H.....	NNE 2 $\frac{1}{2}$	MAY ISLAND (Lat. 56 11 8 N., Long. 2 20 W.)	
Rattray Brigs	NNE 9	To Fifeness	N $\frac{1}{2}$ E
Sumburgh Head....	NE by N 140	Arbroath	NE by N $\frac{1}{2}$ N
Bell Rock ..	SW 66	Bell Rock ..	NE $\frac{1}{2}$ E
St. Abb's Head	SW $\frac{1}{2}$ S 95	St. Abb's Head....	S $\frac{1}{2}$ E
Girdleness Light.....	SW $\frac{1}{2}$ W.. 25	Inchkeith	W $\frac{1}{2}$ N
THE GIRDLENESS (Lat. 57 2 15 N., Long. 2 3 2 W.)	MILES.	INCHKEITH (Lat. 56 2 N., Long. 3 8 W.)	
To Bucanness	NE $\frac{1}{2}$ E 25	To Kirkcaldy.....	N by E $\frac{1}{2}$ E
St. Abb's Head	SSW 72	Elie Ness	E by N $\frac{1}{2}$ N
Bell Rock	SW $\frac{1}{2}$ S 42	Fidra Island.....	E by S $\frac{1}{2}$ S 12
Flambrough Head	S $\frac{1}{2}$ W 193	Fisherow	S $\frac{1}{2}$ E
MONTROSE (Lat. 56 42 N., Long. 2 27 W.)		Colm Island	NNW
To St. Abb's Head.....	S by W $\frac{1}{2}$ W 48	Garvy Island..	W by N $\frac{1}{2}$ N
Bell Rock..	SSW 11	May Island.....	E $\frac{1}{2}$ S
May Island	SW by S 30	ST. ABB'S HEAD (Lat. 55 55 N., Long. 2 9 W.)	
Flambrough Head	S 174	To Buttonness	N 3
Longstone Light, Ferns....	S $\frac{1}{2}$ W 70	Bell Rock Light.....	N by E $\frac{1}{2}$ E
BELL ROCK (Lat. 56 26 3 N., Long. 2 23 6 W.)		Aberdeen, Girdleness	NNE 7
To Montrose entrance	NNE 11	Bucanness Light	NE $\frac{1}{2}$ N 9
Girdleness Lights.....	NE $\frac{1}{2}$ N 42	Bass Rock	NW by N 1
Bucanness Light	NE 66	Elie Ness	NW by N $\frac{1}{2}$ N 25
Flamborough Head.....	S $\frac{1}{2}$ E 158	May Island	N by W 2
Buttonness	NW $\frac{1}{2}$ W 13		

EAST COAST OF IRELAND.

POINT CARNSORE TO LOCH CARLINGFORD.

Point Carnsore is the S.E. point or extremity of Ireland, and lies about 42 leagues from Cape Cornwall, bearing N. by E. $\frac{1}{2}$ E.; from the Small's Light N. by W. $\frac{1}{2}$ W., distant 37 miles. Nearly E. by S. from Carnsore Point, distant 6 miles, lies the **TUSKAR**, a very remarkable rock 20 feet above the level of the sea at high water, upon which stands a lighthouse similar to that on the Eddystone, elevated 81 feet from its base. The light revolves every two minutes, showing two faces bright, and one red. The red light is visible 10 miles, and the bright 15 miles. During foggy weather a bell is tolled every half minute. This rock bears from the Smalls Lighthouse N. $\frac{1}{2}$ W., distant 33 miles. Ships coming from the westward and bound for St. George's Channel, should endeavour to see this rock before they shape their course to the northward.

Blackwater Bank, is a narrow sandbank running nearly in the direction of the coast at the distance of from 3 to 4 miles. A buoy is placed at each extremity of this bank. Moored off the north end in 18 fathoms, at low water, spring tides is a Light Vessel, which exhibits a Fixed Light. The Light is shown from the mainmast, and in clear weather can be seen at a distance of 10 miles. The vessel

has three masts, and carries a Ball at the main-mast-head; is painted black, with a White Band, having the word "*Black Water*," in white letters on her sides, and lies about 1 $\frac{1}{2}$ miles E. $\frac{1}{2}$ S. of the black buoy on the N. end of the Black Water Bank, with the following marks and compass bearings:—Arklow Light Vessel N.E. 13 miles; Cahore Point, N. by W. 5 miles; Tuskar Lighthouse, S.W. $\frac{1}{2}$ S., 1 miles. A gong is sounded in foggy weather.

Wexford Harbour, is capacious and sufficiently sheltered, but is obstructed by a bar extending across it over which there are at times but 7 feet water. Buoys are laid in the deepest water across the bar; but to enter this harbour a pilot is necessary.

Arklow Bank, is a narrow sandbank off Arklow Bay, about two leagues from the land, and nearly 11 miles long from N.E. by N. to S.W. by S. and from half to three-quarter of a mile broad; the shallowest part is near the N. end where the least water is 4 feet; the S. end has from 6 feet to 3 fms. on it, and except at slack water, you will perceive its ripple; near to its East side are from 13 to 20 fathoms; approach it no nearer than 30 fms. The marks for its southern end are Arklow

Rock N.W. by N. distant 7 miles, and in line with the northern declivity of the Copper Ore mountains; and the Great Sugar Loaf open to the eastward of the Ballynacarrig Hills, and also of Mizen Head, bearing about N. by E. There is a buoy placed to mark the south end, striped black and white vertically with the words "Arklow Bank South, No. 4" on it. The marks for its northern end are the top of Carrig Mc Keilly just open to the Nward of Maughry Point, bearing N.W. $\frac{1}{2}$ N., and the Great Sugar Loaf open to the eastward of Wicklow Head, N. $\frac{1}{2}$ W. Wicklow Head bearing N. $\frac{1}{2}$ W. clears it. There is also a buoy placed to mark the north end, striped black and white horizontally, surmounted by a staff and globe with the words "Arklow Bank North No. 1" on it. Two Can Buoys have been placed to mark the eastern edge, the northernmost of which is chequered red and white, with the words "Arklow Bank No. 2" on it. It is placed in 12 fathoms, with the following marks and compass bearings—Arklow Bank North Buoy, E. $\frac{1}{2}$ E.; highest part of Bray Head just open of the highest part of Wicklow Head, N. by E.; Mizen Tower on with the top of a small hill, N.W. by W. The southernmost is striped black and white horizontally, with the words "Arklow Bank No. 3" on it. It is moored in 10 fathoms, low water, with the following marks and compass bearings—Arklow Bank No. 2 Buoy, N.E. by N.: Arklow Bank South Buoy, S.W. $\frac{1}{2}$ S.: Arklow Light Vessel, S.W. $\frac{1}{2}$ W.; A Light Vessel is moored in 22 fathoms, on the south end of the bank. The vessel has two masts, showing a Revolving Light on main-mast, which attains its greatest brilliancy one every $\frac{1}{2}$ min visible 10 miles. It carries a ball at main-mast-head, and has the words "Arklow Bank" painted on the hull. During foggy weather a gong is sounded.

On **Wicklow Head** is a light house showing a bright fixed light visible 16 miles off.

Wicklow Harbour, fit for small boats only, there being only 9 feet in the entrance at low water, spring tides, and at neap tides. To make its entrance wider, a new channel has been opened; this is formed by 2 Piers about half a furlong to the westward of the Old Bar, and where the depth is 12 and 14 feet.

The **Wicklow Banks** are 2 narrow patches of sand, lying about 5 miles E. from Wicklow Head. The southern patch called the India Bank, is about one mile long, N.N.E. $\frac{1}{2}$ E. and S.S.W. $\frac{1}{2}$ W., and half of a mile broad. On its middle are 2 fathoms, on its S.W. end $3\frac{1}{2}$ fathoms; at the S.W. extremity is a black buoy having the words "India Grounds South" painted

in white letters on its broad end, and moored in five fathoms low water from which Wicklow Head light bears W. by S. 5 miles. A Light Vessel is moored 8 miles S. E. by E. $\frac{1}{2}$ E. from Wicklow Head, on the Mainmast of which a **FIXED RED LIGHT** is shown 39 feet above the level of the sea. The Light Vessel has two masts—a main mast with a Black Ball at its masthead, and a small mizen mast abaft. She is painted Black with a White Streak, has the words "Wicklow Swash" in white letters on her sides, and is moored in 13 fathoms at low water spring tides, with the following marks, compass bearings, and distances, viz:—Mizen Head, W. $\frac{1}{2}$ S., distant 12 miles; the two Lower Light-house Towers on Wicklow Head in one, N.W. by W. $\frac{1}{2}$ W., distant 8 miles; Six Mile Point, N.N.W. $\frac{1}{2}$ W., distant 11 $\frac{1}{2}$ miles. Variation of the compass $24^{\circ} 15' W.$

The **South Ridge** lies at the N. end of the India Bank, it is $1\frac{1}{2}$ miles long and half a mile broad, with $3\frac{1}{2}$ to 5 fms. water on it. Its direction is N.N.E. $\frac{1}{2}$ E., and S.S.W. $\frac{1}{2}$ W., and its N.W. end is nearly $5\frac{1}{2}$ miles S.E. by E. from Six Mile Point.

The **Codling Bank**.—The south end of this bank lies N.E. by E., 3 miles from the South Ridge; it then runs N. by E. 3 miles, and turns suddenly to W. by N. for 2 miles, then curving round to the S.E. till it joins the south point. In the middle of the bank, which is 2 miles broad are from $3\frac{1}{2}$ to 5 fathoms. The Great Sugar Loaf open north of the Gap N.W. $\frac{1}{2}$ N., leads between the Codling, and the South Ridge. A Black Buoy is placed on each extremity of the Codling, and lying off the south-eastern end, in 8 fathoms, low water, spring tides is a Black Spiral Buoy, surmounted by a Staff and Globe, and marked "**Codling Bank**," with the following marks and compass bearings:—Carrickgollogan Hill, in one with Bray Point, N.W. $\frac{1}{2}$ N.; Great Sugar Loaf, N.W. $\frac{1}{2}$ W.; Wicklow Head, W. by S. $\frac{1}{2}$ S.

The **Bray Bank** lies N.N.E. $\frac{1}{2}$ E. and S.S.W. $\frac{1}{2}$ W.; is 2 miles long and $\frac{1}{2}$ a mile broad, with twelve feet on it. In the Channel, between the N.W. end of the Codling and the South end of the Bray, which is half a mile wide, there are 9 fms. gravelly ground. Carrickgollogan Hill, two degrees open north of Bray Head, N.W. $\frac{1}{2}$ N., clears the Codling to the northward. This mark will lead across the bay in 3 fathoms at low water. The south hummock of the Little Sugar Loaf in one with Windgate Hill, W.N.W. $\frac{1}{2}$ W. leads between the Bray and the Kish Banks in $3\frac{1}{2}$ fathoms.

The **Kish** is a long narrow sand, stretching N. by E. $\frac{1}{2}$ E.; and S. by W. $\frac{1}{2}$ W., about $6\frac{1}{2}$ miles, and is from $\frac{1}{2}$ to $\frac{3}{4}$ of a mile broad; on its southern extremity is

a black buoy. From it Dublin Lighthouse bears N. by W. $\frac{1}{2}$ W., $12\frac{1}{2}$ miles; Howth Head Light N. $11\frac{1}{2}$ miles; and Bray Head W.N.W. $\frac{1}{2}$ W., 6 miles. On the Kish are from 9 feet to 3 fathoms, the latter depth being near its northern end. Three-quarters of a mile from the northern extremity of the Kish, a Floating Light Vessel is moored, with the following mark and bearing:—Ireland's Eye a little open of Howth Head, and Dublin Lighthouse, N.W. $\frac{1}{2}$ W., distance $7\frac{1}{2}$ miles. This vessel exhibits a White Revolving Light, which attains its greatest brilliancy once in every minute. At 3 miles to the southward of the light-vessel are only $7\frac{1}{2}$ feet water; at this spot the Great Sugar Loaf Hill appears on the saddle of Bray Head, bearing W. $\frac{1}{2}$ S., and Ireland's eye just open, and shut with the Head of Howth, N. $\frac{1}{2}$ W.

Bennett's Bank.—The S. end of this bank lies about 1 mile East of the Kish Lighthouse and 5 miles S.E. from Howth Head Lighthouse; it is about $2\frac{1}{2}$ miles in length, and has from 6 to $4\frac{1}{2}$ fathoms on it; at half mile southward are 12 to 14 fathoms.

The **Burford Bank**, at the entrance to Dublin Bay, is narrow, and runs in a N.N.E. $\frac{1}{2}$ E. and S.S.W. $\frac{1}{2}$ W. direction being about $1\frac{1}{2}$ mile long, but not a $\frac{1}{2}$ of a mile broad. Nelson's Pillar kept open to the southward of the Pigeon-house on Dublin Quay, will lead clear of its southern extremity in $4\frac{1}{2}$ and 5 fathoms water. There is a shallow part of this bank over which there is not more than 12 feet at low water. This lies with Malpas Obelisk in one with signal station, and Sutton Tower just open of Sheep's Hole Point. On all other points of the bank are from 3 to 4 fathoms. The mark to clear to the eastward of it, is Ireland's eye open to the Nose of Howth. Upon each end of this bank is a buoy; that on the southern end is a conical buoy, coloured red, surmounted by a staff and globe, and that on the northern chequered black and white.

Sailing for Dublin Bay from the Southward.—From the Taskar to Wicklow Head the bearing and distance are N.E. $\frac{3}{4}$ N. nearly $46\frac{1}{2}$ miles, but to pass to the eastward of the Arklow Bank the course is N.E., observing to make due allowance thereon for the set of the tide, whether flood or ebb. When Wicklow Head Lights bear N. by W. you will be clear of the Arklow Bank; then to sail within the Wicklow or India Banks bring the Great Sugar Loaf Hill well open of Wicklow Head, bearing N. by W. or Wicklow Lights in one; either of these will lead between the Arklow and India Banks, and when within 2 miles of the shore, a N. by E. $\frac{3}{4}$ E. course will carry

you past Moulditch Bank and Dalkey Island. In working up between the bank and the shore with a flood tide and northerly wind, do not stand further from the land than four miles; for the tide with little wind may drift you upon the bank while near the shore the stream common makes to the southward $1\frac{1}{2}$ hours before high water.

Stopping Places.—In moderate weather vessels may stop almost anywhere within the banks between Wicklow and Dublin, except off the Giant's Bed where lies the Moulditch Bank; the better part, with westerly winds, is between Bray Bank and the main from $\frac{1}{2}$ to miles from the shore. Here is very little stream of tide, and the violence of the sea is considerably broken by the bank.

In **Killiney Bay** vessels may anchor in 5 or 6 fathoms, sheltered from W.N.W. to N.N.E. winds.

Dublin Bay.—There is good anchorage in the mouth of Dublin Bay when the wind does not blow hard from the E. or S.E.; with these winds a great sea sets when it blows hard, so that vessels are obliged to run for some place of safety with north-easterly winds, vessels run to Kingstown harbour, which lies on the side of Dublin Bay, and is enclosed by two large piers; on the head of the eastern of which is a lighthouse showing a revolving light, presenting white and red faces alternately, and attaining the greatest brilliancy at intervals of thirty seconds. During foggy weather a bell tolled. There is also a fixed red light on the west pier-head. The entrance to the harbour faces the N.E., and has 4 fathoms water; within, from 4 to $2\frac{1}{2}$ fathoms at low water. When going in, leave the revolving light on the port hand, and round it close to. **BAILEY LIGHT**, exhibited from the S.E. point of Howth Peninsula, is stationary, and is visible a distance of fifteen miles. About a mile to W.S.W. of the Bailey lighthouse lies Rosebeg Bank, which is easily distinguished in blowing weather by the sea breaking over it: and on which are from $2\frac{1}{2}$ to 3 fathoms water. The **Reven Barrack** on with the Poolbeg Lighthouse bearing N.W. by W. $\frac{3}{4}$ W., leads clear to the southward of it.

Dublin Harbour lies between the banks, the North and South Bull, and is sheltered on the south side by a wall of piles, carried eastward about 3 miles into the bay. At the end of the south wall is the Poolbeg lighthouse showing a fixed light all night, and a lower light, from half flood to half-ebb: a ball is hoisted during the same period in the day. A bar across the entrance, on which are 12 fathoms at low water. Between the bar and

lighthouse are 14 to 27 feet. A red buoy is moored on the bar, in 9 feet at low water: it lies a mile E.S.E. $\frac{1}{4}$ E. from the lighthouse. Pass about a cable's length southward of this buoy, observing the before-mentioned mark and you will carry 12 feet over the bar at low water. On the north side of the channel, and bearing E., 3-10th's of a mile from the lighthouse, is a white buoy, moored in 9 feet at low water, between which and the lighthouse are from 14 to 27 feet. The bar buoy (black) lies S. $\frac{1}{4}$ W. 4-10th's of a mile from the lighthouse, on the eastern extremity of the south bar buoy, which commence about $\frac{1}{4}$ of a mile S.E. from the lighthouse, extending in that direction nearly $\frac{1}{2}$ a mile; then turning to the westward about the same distance, when they terminate where the bar buoy is placed. On these patches are only from 4 to 5 feet low water. At 10th's of a mile within the lighthouse a white buoy is placed, which must be passed to the northward. The channel is evenly buoyed on the north side with white buoys, and on the south with red buoys from the Pigeon House to Ring's End. Between Poolbeg and the Pigeon House there are several places where vessels may anchor, in from 16 to 20 feet at low water, the channel having been recently improved by means of power-driven dredges. Ships in general, with small draughts of water sail over the bar to the north of the east buoy. This is called the East Channel, and the mark for the Church of Irishtown just open to the northward of the lighthouse. This mark will lead you about a cable's length to the southward of the east buoy in no depth than 15 feet at half-flood. So soon as you are over the bar, the depth will increase to 18 and 20 feet. Keep about the channel between the Spit Buoy and the lighthouse, and when about $\frac{1}{4}$ a mile from the latter you may anchor in 15 or 16 feet at low water. This is called Poolbeg, and although a tolerably good place in summer, it is not so good in winter; it is then best to go a mile further so as to take the ground about half-flood, or to lie along the wall or along the pier above Ring's End. To sail in through the West Channel, you must pass to the southward of the South Bar Buoy; when the lighthouse bears N.E. $\frac{1}{4}$ N., and on with Baldoyle Chapel, or the ruins of Kilbrack Church, steer for it in that direction, giving it a berth on your larboard head, as you haul round to the westward. When coming from the southward, keep Sandy Cove Tower on with the eastern extreme of the pier at Kingstown, S. $\frac{1}{4}$ E., until you bring the lighthouse on the above bearing: this will lead you in the best water, and well to the westward of the south bar buoy. In the channel are

only 6 feet at low water, spring tides. The tide flows at the lighthouse, on full and change days, 11 hours 12 minutes, and rises 13 feet on springs. Vessels coming from the northward, bound for Dublin, must give the Hill of Howth a berth, to avoid the bank called Rosebeg. To avoid it on the east side, bring the eastern extreme of Howth open of the Bailey, or the Bailey Light N.E. $\frac{1}{4}$ N.; and on the south side, Poolbeg Lighthouse, N.W. by W. $\frac{1}{4}$ W.

Ireland's Eye is a small island $\frac{1}{2}$ miles to the north of Howth Head; on its eastern side is anchorage in 6 fathoms; on its north in 7; but the best is on the west side in about 4 fathoms, with the Stack open to the southward of the height, and from whence it is easy to run for the pier of Howth in case of necessity.

Howth Harbour, which is at present being deepened and improved, to the S. of Ireland's Eye half a mile. There are two piers, on the easternmost of which there is a lighthouse exhibiting a fixed red light to seaward 45 ft. high, on the west side of the entrance and towards the end of the west pier there is 7 feet of water at low water spring tides, (rise of tides 13 feet at springs) and alongside the eastern pier there is 4 to 5 ft. at low water spring tides. The centre of the Harbour, from three-quarter cable length inside the jetty is a Rock, that dries at low water, and should be avoided. Entering the Harbour from the eastward keep Howth Church, W. $\frac{1}{4}$ S., open S. of the lighthouse to clear the rocks off Ireland's Eye; and entering from the northward keep the Martello tower between the Pier heads S. $\frac{1}{4}$ W. Give the eastern pier a wide berth to avoid the loose stones under it that dry at low water. List of Tolls, Rates, License, Duties, and Charges authorized by the Lords Commissioners of Her Majesty's Treasury, to be levied and paid at the Harbour of Howth:—On Vessels freighted with Coal, Dressed Stone, Bricks, Grain, or General Merchandise, per Ton Register, not exceeding 6d. On Vessels freighted with Limestone, Sand, Manure, Undressed Building or Road Stone, per Ton Register, not exceeding 2d. On Vessels engaged in Fishing, if exceeding 5 Tons burthen, a charge of 1s. for each Cargo landed, or an annual licence of 10s. On Vessels engaged in Fishing, if under 5 Tons burthen, a charge of 6d. for each cargo landed, or an annual licence of 5s. On small Boats, plying for Hire, an annual licence of 2s. 6d. Vessels engaged in Trade if occupying a Berth at the Quays for a period exceeding Ten Days, to pay a charge of $\frac{1}{4}$ d. per Ton Register for each day exceeding such period.

Harbour of the Skerries—This Harbour may be easily known by Rockabill and St. Patrick's Islands; the former is a remarkable rock, always above water, and steep to all round, having from 9 to 18 fathoms close to it, and on the summit of which a Lighthouse is erected exhibiting a FLASHING light every 12 seconds, and can be seen 18 miles. The flash is white between N. $\frac{1}{2}$ W. and S.W. by S.; red between the same bearings round westward or towards the land. It lies 4 miles E. by S. of the Skerries, and about $2\frac{1}{2}$ miles from St. Patrick's Island. To sail in, after you have rounded St. Patrick's Island, steer N.W. by W. until all the town of Skerries appears open of the pier-head; you will then be clear of the Cross, and may round into the road, where you will have 4 or 5 fms. of water. Here the riding is safe, unless it come to blow hard from the E. or N.E.; but if you intend going up to the pier, stop about a cable's length from the pier-head, in 3 fathoms, until the tide serves.

Balbriggan Harbour is sheltered from the east by a Pier, on the S. side of the Bay, which runs northward. Within the Pier Head, at high spring-tides, are 12 feet water, and with neap-tides, 9 or 10. On the pier, S. side of entrance, is a white lighthouse, exhibiting a fixed light, visible at the distance of 10 miles, between W. S. W. and S.S.E. $\frac{1}{2}$ E.

Drogheda Bar lies $27\frac{1}{2}$ miles N. of Dublin, about 10 miles N. of Skerries, and 7 miles from Balbriggan, the river running due E. and W. Formerly the river from the Maiden Tower to the bar had a tendency to run N.E., but an annual outlay of nearly £6000 a-year in its improvements has contributed to give the entrance to the river an E. and W. direction, thereby enabling vessels to take the bar with much more safety than heretofore. The parallel walls at the mouth of the river having been extended within the last few years 1800 lineal yards seaward, and now nearly reaching the bar, has caused the water in the river adjacent to the bar to be comparatively smooth in the severest weather. These walls have also had the effect of deepening the channel, and directing its course in a more southerly direction, thereby making the bar much easier of access in bad weather. The continual dredging of the river has removed the banks and shoals which previously existed, leaving the navigable channel of a uniform depth, not less than from 18 ft. 6 in. to 19 ft. at high water of ordinary spring tides. The water on the bar at spring tides from 18 to 22 feet., with from 15 to 16 feet at neaps. There is an excellent tug-boat in attendance on vessels requiring her assistance, with a number of experienced licensed pilots always

looking out for vessels bound for this port. There are fifty sailing vessels, with first-class paddle-steamers, having in whole a registered tonnage of 7327 t. trading to this port, exclusive of other vessels which frequent this place with occasional cargoes. Four lighthouses are placed at the entrance of the river and a number of stone towers built the N. side, with wooden perches, landmarks on the S. side; the centre between them denoting the channel. The relative bearings of the E. and W. Lights will be occasionally changed, as the sandbanks alter their places. The present entrance of the river, keeping these lights in one, is W. $\frac{1}{2}$ S., until you come abreast of the large Stone Pillar on the north side, then steer N.W. $\frac{1}{2}$ W. for the North Red Light. There has lately been placed at the East end of the North Wall a large Wooden Perch, with a Cage and Barrel placed on the top of it, and may be kept about 100 feet on the starboard side in coming in. Ships drawing $10\frac{1}{2}$ feet should have at least 4 hours' flood tide in bad weather before taking the bar.

Dundalk.—Sailing N. you will pass Clogher Head and reach Dunany Point off which, about a mile E. of high water mark, lies a small rock, drying with low water spring tides. The first buoy is in 6 fathoms at low water, about 4 miles from Dunany, bearing from it N. by E. keeping Clogher Head well open, and bearing from Cooley Point W. by N. distant about 4 miles. The second and third buoys bears N.N.W. $\frac{1}{2}$ N. from the first buoy. The second buoy is in $3\frac{1}{2}$ fathoms at low water; and the third is on the bar, on which there are, at low water springs, 3 and at low water neaps, 6 feet. The depth on the bar at high water springs, varies from 24 to 18 feet; and neaps, from 16 to 13 feet. These depths continue up to Soldier's Point, whence, to the quays, the depth is at high water springs 19 feet, and neaps 13 feet. A Lighthouse, on screw piles has been erected at the entrance of the Harbour Channel. The Light is a Fixed Light, varied by Flashes, giving a flash once in every 15 seconds; its focal point 33 feet over the level of the sea, at high water; and in clear weather it is visible at the distance of about 9 miles. To seaward the Light appears of the natural colour, Bright, between the bearings of W. by N. and N. $\frac{1}{2}$ W.; it is masked in the direction of the Dunany Reefs between the bearings of N. $\frac{1}{2}$ W. and N. by E. $\frac{1}{2}$ E.; it is coloured Red towards the west side of Dundalk Bay; and shows Bright towards the Harbour Channel, northerly. The Lighthouse is borne on screw piles of red colour, braced into an open framing below the dwelling, which is of octagonal form, and coloured

over this the Lighthouse has a conical top. It stands within the Channel, in lat. $53^{\circ} 58' 40''$ N. $6^{\circ} 18' W.$; and bears from the rocks off Cooley Point N.W. $\frac{1}{2} W.$, $6\frac{1}{2}$ nautic miles; from Dundalk (rocky shoal), N. by W. $\frac{1}{2} W.$, distant 10 nautic miles; from Dunany Reefs, N. of Dunany Point, N.W. distant 10 miles. A large bell has been placed on the roof of the lighthouse which strikes six times per minute in fair weather. All vessels entering the Harbour keep the Lighthouse on the starboard hand. Masters of vessels are cautioned to give the beacons and perches a berth. When vessels bound to the East come between Cooley Point and the Head, they are required to hoist a red flag. Vessels wanting the use of the Tug are requested to hoist by day a red Ensign at the Fore-top-gallant mast, by night, Two Lights, one red, one white. Masters of vessels needing to enter the Harbour without a pilot should observe the following lights: the first and second lights are white, the third is green, the fourth light is red, these are all to be kept on the port hand; the fifth light, placed on the Rock off the Head, is red, which is to be kept on the starboard hand; all the lights from thence to the Quays are white, and are to be kept on the starboard hand. On entering the channel in daylight the beacons and all perches with black balls on top are to be kept on the starboard hand, and all the red beacons and perches with red conical signals on top are to be kept on the starboard hand. The Commissioners for Improving the Port and Harbour of Dundalk are erecting a Guide Light from the North Bull towards the Head, running in a direct line to and ending at the seaward of the Lighthouse; it is marked by a red buoy, and the distance from it N. by W. $\frac{1}{2} W.$, said to be kept on the starboard hand. Jettyes have been constructed on each side of the Channel, the river which is marked by perches with black balls on top; these perches are the first three lights on entering the Channel. Two Jettyes are also in course of construction on the East side of the Channel, the river ends of which are marked by perches with red conical signals on top.—The Dundalk Harbour Commissioners have had built, at a cost of £10,000, a new and powerful Iron Steam Tug for the accommodation of vessels coming to this Port.

DUNANY AND IMOGENE ROCKS DUNDALK BAY.—A black conical buoy, surmounted by a staff and ball, has been placed in 3½ fathoms, at low water, spring tides, to mark the position of the Imogene Rocks, which lie about a mile and three

quarters S.S.E. off Cooley Point, north side of entrance to Dundalk Bay, and with the following marks and compass bearings:—Dundalk High Chimney, open of Rathcor Point, N.W. $\frac{1}{2} W.$; Cooley Point, N.N.W. $\frac{1}{2} W.$; Carlingford Lighthouse, N.E. $\frac{1}{2} N.$ —A red conical buoy, surmounted by a staff and ball, has been placed in 4 fathoms, low water, spring tides, on the outside of the Dunany Reefs, which lie off Dunany Point, south side of entrance to Dundalk Bay, and with the following marks and compass bearings:—Clogher Head, S. W. $\frac{1}{2} S.$; Dunany Church, W. $\frac{1}{2} S.$; Dundalk High Chimney, N. by W. $\frac{1}{2} W.$; Tipping Mountain on the East with a saddle in the distance, N.W. $\frac{1}{2} W.$

Loch Carlingford lies two leagues to the eastward of Dundalk Harbour entrance, and forms a large well sheltered bay, the ground good, and water sufficient for the largest ships; but there are several rocks and dangers which must be attended to. Its entrance is between Ballaggan and Cranfield Points, which bear from each other nearly E. by N. and W. by S., distant 1½ miles. The following Iron Nun Buoys have been laid down at low water, spring tides:—Black Buoy on the Shoal N.E. of the lighthouse, in 7 feet water at low water, lighthouse S.W., distant about 40 fathoms; Blockhouse, W.N.W. Red Buoy off the tail of the Scar, Cranfield Bay, in 8 feet water, lighthouse S.W.; Greencastle N. Red Buoy on the south end of the Earls Rock and shoal, in 8 feet water, Greenore Point W. by S.; Greencastle E.; distant from Greenore Point ½ mile. Red Buoy on the S.W. end of Ballyedmont Bank, in 9 feet water, Monument N.; Old Castle, Carlingford, W.S.W. Black Buoy on the eastern edge of Carlingford Bank, in 8 ft. water, Greenore, S.S.E.; Old Castle of Carlingford, S.W. by S. When inward bound, masters of vessels will keep the red buoys on the starboard hand and black on the port. The Helly Hunter, upon which a large Red Buoy has been placed, is a rocky shoal lying to the eastward of the entrance of the Loch, and stretching about 1 mile S.W. and N.E.; its western end dries with extraordinary low tides only, and on the other parts the least water is 6 feet. To avoid the Helly Hunter, as you sail to Carlingford from the E. or S., do not bring Mount Culy to the westward of W. $\frac{1}{2} N.$ until the Blockhouse comes on with the top of Foy Mountain, bearing N.W. $\frac{1}{2} N.$ Then steer for the N. end of Blockhouse or Haulbowline Island, giving the Point of Cranfield and the Island a berth of a Cable's length each from the high-water mark. Between the W. side of Blockhouse Island and Ballaggan Point are several rocks and shoals, and consequently this passage must not be attempted.

Carlingford Loch Light, situate on Greenore Point, on the larboard side in going up Carlingford Loch, revolves, is of the natural appearance, attains its greatest magnitude every 45 secs., and is visible at a distance of 9 miles.

To Sail into Loch Carlingford, take flood-tide; and with the Blockhouse bearing from N. by W. $\frac{1}{2}$ W. to N.W. $\frac{1}{2}$ N. sail in for the E. side of the Island, giving it a berth of a cable's length or two on the larboard. Steer thence for Greenore Point keeping between $\frac{1}{2}$ a cable and 2 cables' length from it; then run N. by W. up the middle of the channel; and abreast of Killeen Point or above it, nearest the E. side, drop your anchor, in from 2 to 6 fathoms water. Small vessels may lie on

the W. side, easy and safe, about 2 cables length eastward of Carlingford Castle, in soft mud.

Carlingford Lights are shown by a tower erected on Hauibowline Rock, which lies upon the bar $\frac{1}{2}$ a mile W. by N. from Cranfield Point, on the larboard of the entrance to the Loch. The upper light is a fixed light, and the lower revolves. The higher light is shown throughout the night, and may be seen like a star of the first magnitude, at the distance of 15 miles. The lower light, having also a star-like appearance, is exhibited from half-flood to half-ebb. In the day during the spring period, a ball is hoisted; and in foggy weather, a bell is tolled every half-minute.

NORTH-EAST AND NORTH-WEST COASTS OF IRELAND.

LOCH CARLINGFORD TO SLIGO BAY.

Annalong.—A small dry harbour, with excellent shelter for coasters after passing a narrow but easy entrance.

Newcastle.—A dry harbour, surrounded by a quay and sea-wall, affording good shelter for coasters, with an even bottom, and very easy access between the two pierheads.

Dundrum Harbour.—The entrance to Dundrum Harbour (a dry one) lies $2\frac{1}{2}$ miles eastward off Newcastle at the mountain foot. The Marquis of Downshire, has built a long two storied House, close to the western side of the entrance, the light colour of which is a useful guide for vessels endeavouring to make the harbour in thick weather. In the middle of the entrance channel a black buoy is laid down in 14 feet, low water spring tides. It may be picked up by keeping the old castle that stands above the town a sail's breadth in on the west point that forms the entrance. Steering north from this, you will arrive at a smaller buoy lying in the middle of the river; then by steering N.W. by W. you will come up with the first perch on the banks to the west, having on it a small barrel—give this a berth of half a cable's length on your larboard hand; after which by changing your course N. by E. you reach the second perch, having a triangle on it: allow this the same berth as the first. The third perch has a round black top. From the second perch, from which you have the town and pier open, steer N.N.W. up the river until abreast of the red topped perch, to which give a berth of half a cable's length on

your starboard hand, and then keep for the pier end.

St. John's Point.—On this Point in lat. $54^{\circ} 13' 10''$ N., and lon. $5^{\circ} 39' 5''$ W. is erected a tower, shewing an intermittent light, Red appearing of its full brightness during 45 secs. and ob. 15 secs. The light bears from Newcastle pier (Dundrum bay) E. by S. $\frac{1}{2}$ S., $7\frac{1}{2}$ miles, and from the Calf of Man revolving light N.W. $\frac{1}{2}$ W., 33 miles, and can be seen seaward from W. by N. $\frac{1}{2}$ N. to E. $\frac{1}{2}$ N. The light kept open will lead clear of Gun Island and of the St. Patrick's rock, off the entrance of Strangford Lough.

Killough, half a league East of St. John's Point, has a good roadstead in off-shore winds, and, within, offers to coasters a safe dry harbour, with a muddy bottom. Killough Pier is built from the West side, and, between it and a smaller Pier on the East side, called Coney Island, lies the entrance to the port. Outside the entrance of the bay an Iron Perch marks the Water Rock, which is covered only at high water: to avoid it, bring a remarkable two-storied house, with white front and slate roof, (called Cotter's House, and situated inside the harbour,) one-third inboard from the West Pier-head, until you have passed the Perch; then keep more to the Eastward till you bring the House over to the extreme end of the Pier. Two cables N.N.E. $\frac{1}{2}$ E. from the Perch is the Little Plate Rock, and half a cable N. from this is the Big Plate, both covered except at spring ebbs; and, consequently, when there is water to enter the harbour, there is also water over these rocks. The

Garret, on which is an Iron Perch, is a ledge of foul ground which runs off from the Western side of the bay, under the Old Mill Stamp. There is also a spit of rough stones, called Crane's Point, extending S.W. a short distance from Coney Island; but by keeping Cotter's House midway between the two Pier-ends, when you come within two cables' length of them, you avoid this spit. The best anchorage in the Bay is within the Water and Plate Rocks, in from about five to seven fathoms, with shelter from all but southerly winds.

Ardglass Harbour, $2\frac{1}{2}$ miles E. of St. John's Point, is easily known by several old Castles and a rising town on the W. side of the bay. You can anchor at the mouth of the bay, between Ringfad and Fennick Points, in from 6 to 10 fathoms water, but if the wind blows on shore, a small vessel may shelter inside the pier under the middle castle in from $1\frac{1}{2}$ to $2\frac{1}{2}$ fathoms water, with a warp to the quay, or run aground on the beach. A temporary red light is shown from the inner shore of harbour, 2 cables' length from entrance N. by W.

Loch Strangford lies N.E. at the distance of 60 miles from the Hill of Howth, and nearly E.N.E. $\frac{1}{2}$ E. 28 miles from Loch Carlingford. The stream at the entrance is very rapid, and when the tide is ebbing and wind strong at S., S.E., or E., the sea is short and broken, which gives the bar across the river the appearance of a ridge of sunken rocks; but there are not less than four fathoms at low water on any part of the bar, and it is quite free from rocks. Few places afford such safety to wind-bound vessels as this Loch, ships having at all times of tide abundance of water, not only on the bar, but also in the two principal roadsteads, *Ballyhenry* on the east, after passing Portaferry, and *Audley's Road* on the west side of the river, after passing Strangford. A small pillar or obelisk, lately built on the outer point of Gun's Isle is a guide to vessels from the southward, for making the square headed Iron Perch on Rock Patrick. This rock covers at half-flood. It is $\frac{1}{2}$ of a mile outside Killard Point, and has deep water on both sides, but it is best to leave it on the port hand, and steer for the Northern Bar or entrance, giving it a wide berth to the Garret Perch, which marks the south end of the Reef of Rock Angus, on account of the western, set of flood tide at this spot. On Rock Angus itself, stands a stone tower, to be left on the port hand. The star-board side or opposite side of the entrance is marked by the Perch on Pladdy Lug, which must not be approached nearer than 25 fathoms, on account of small outlying rocks. Off the north entrance

and in a direct line with Kilclief Castle and Ballyculter Church spire (which when brought in one, are the marks for vessels from the N. and E.) is a black fairway Buoy, lately placed there by the Ballast Board. It should be rounded on the star-board hand, as there are several Pladdies between it and Ballyquintin Point. Having passed the Tower on Rock Angus $1\frac{1}{2}$ mile, come to anchor, if you are late for the tide, opposite a White Beacon on the south shore, called Cross Roads, where you can stop a tide until you can get to Ballyhenry or Audley's Road, 2 miles further, and just beyond Strangford and Portaferry towns. A short half a mile above Cross Roads the mid-channel is marked by a tall red and white Pillar on the W. side, and a short white Beacon on the E. side of the Lough. The "Hole" of Strangford is a perfectly sheltered anchorage between the town and Swan Island, and there are 2 Quays opposite the Customhouse, with berths alongside them, and a little Bay with an even beach and smooth water for vessels desirous of taking the ground. There is also at PORTAFERRY (opposite) a good Quay, with berths and a smooth beach along the shore, under the town. A Horse Ferry plies between the two towns. There is a Red Pillar Beacon on the outer end of Swan Island, which marks the entrance into the "Hole" of Strangford. On hoisting a signal, experienced pilots can be had.

South Rock Light is erected on the South Rock, about 2 leagues northward from the entrance to Loch Strangford. The light revolves, attaining its greatest lustre every $1\frac{1}{2}$ minutes, and is visible at a distance of 12 miles. A reef of rocks called the Ridge, extends $1\frac{1}{2}$ miles to the E. of the lighthouse, on the extremity of which is a red buoy, which bears about S. by E. from the North Rock Beacon. The North Rock, about a mile N. by W. of the lighthouse, is marked by a solid Beacon, like a small church spire, erected in 1856. The Butter Pladdy, about $1\frac{1}{2}$ miles S.W. of the lighthouse, is marked by a black buoy, to be left on their outer hand by vessels taking the "Sound of the Light"—a channel much frequented by coasters and now well marked, between the lighthouse and the North Rock Beacon. Sailing along the Downshire shore from the Copeland to the North and South Rock, the South Light should be kept outside of Burr Isle, or the Black-head of the Gabbans, in Isle Magee, a sail's breadth outside of Donaghadee shore, or the Copeland Light North, to clear Sculmartin Rock that lies N. $\frac{1}{2}$ E. $3\frac{1}{2}$ miles from Burr Isle, and S.E. 1 mile from the town of Ballywater. To the northward of Sculmartin, on which is an Iron Perch, lie Ballawater Rocks, which stretch out about $\frac{1}{2}$ a mile, commencing

at Ballyferris Point, and run S. 2 miles. The S. end is seldom covered, the middle is covered at half-tide, the N. end seldom bare. Vessels of 60 and 70 tons frequently go in to discharge; and there is good shelter from all but N. E. winds, though the space is small, because after building the Quay, the Board of Works never cleared away the loose stones inside it. Six and a half miles N. of Ballywater is

Donaghadee.—This harbour has been greatly improved, and there is now a depth of 10 feet water at low water, spring tides, in the improved portion of the harbour, which extends along the S. Pier, from 100 feet west of the western crane to the black buoy, and thence to the N. Pier head. From the S.E. pier head a Light is shown, red to seaward from N. by E. $\frac{1}{2}$ E. to S. $\frac{1}{2}$ E., and bright towards the harbour and the entrance of Belfast Bay. Sailing in from the S'ward keep above half a cable's length from the shore until the harbour is open, then run in and let go your anchor inside the pier head. No buoys are allowed to anchors on account of the steampackets. Mariners must be on their guard not to lose sight of the red Part of the light in sailing N. or S. of Donaghadee. About a mile north of Donaghadee is Foreland Point, from whence extends a ledge of rocks to the E., with an Iron Perch on it, and outside of that again is a large black buoy, which should not be rounded too close, particularly at low water. Deputy Rock, on which is a red buoy, lies half way between Donaghadee and Copeland, and has about 8 ft. at low water. The proper course through the sound is between the Foreland and Deputy buoys: but there is a channel on the E. side of the latter, keeping $\frac{1}{2}$ from the Copeland, as a shelf of foul ground runs out after passing the Deputy. Cairn Point, at N.W. end of Copeland, must have a good berth on the starboard hand, to avoid a rock called Gordon's Bush, that lies a cable's length S. of it, and is seldom bare at low water. These are all to be feared in the Sound of Donaghadee.

Copeland Island lies $2\frac{1}{2}$ miles N.E. $\frac{1}{2}$ N. from Donaghadee, and 1 mile to the E'ward of Nout Head. E.N.E. 1 mile from Copeland, are the Cross and Mew Islands, between which is a narrow channel not navigable. On the cross Island is the Copeland Light. Between these small islands and the Copeland is the outer sound. On the E. side of the Copeland, near the S. point, is a ledge of rocks extending above two cables' length to the E'ward: there is also a ledge extending from the Mew Island to the W'ward, between these is the channel. Half way between the sound of Copeland and Cross Island, is a small rock called the Pladdins, over which are, with common spring tides

3 or 4 feet water; it bears S. $\frac{1}{4}$ W. $\frac{1}{2}$ the light. To avoid this rock on the east side, bring the lighthouse N. by W.; on the south side, bring the S.W. house in Donaghadee in sight with the S. end of Copeland Island: in this sound the currents are strong, and, as there are no buoys, to be avoided by strangers.

Belfast.—The entrance to Belfast Lough is immediately to the N. of Copeland Light, and lies between Said Light and Black Head; the latter bearing from the former N. N. W., distant about eight miles. At the larboard side of the entrance, about a mile to the W. of Orloch Point, is a rocky ledge called the Briggs stretching out $\frac{3}{4}$ of a mile, and upon which is a red buoy. About 6 miles to the W. of the Briggs is Grey Point, and, in sort of bight between them, is the town and harbour of Bangor, which has about the same depth of water at the quay as is to be found at Carrickfergus, and, as an addition, a wooden wharf for the accommodation of steamers has been attached to the back of the stone pier, at which 7 feet will be found at ordinary low water. 2 miles further W. from Grey Point, a small ridge of rocks runs out from the shore rather more than a $\frac{1}{2}$ of a mile, on which is a buoy to be kept on the port hand. On the opposite side of the Lough, and bearing W by N $\frac{1}{2}$ N from Orloch Point, distant 9 miles, is the town of Carrickfergus, where there is a pier, having, with spring tides, 10 feet water, and with neaps 7 feet. As a guide to the entrance of this harbour at night, a red light is shown 2 hours before and 2 hours after high water: this light to be brought immediately over a street lamp in Governor's place—the red light showing about 2 feet above the white light, and from a vessel coming in due north. Off this town, to the S. and W. is a bank running out $1\frac{1}{2}$ miles from the shore, and extending N. $1\frac{1}{2}$ miles; the least water over it is 7 feet. Extending a mile from the shore on the S. side of the Lough, and opposite the village of Hollywood is Hollywood Bank, on which is a lighthouse built on screw piles, which shows a pale red light, visible 8 miles in clear weather. Between the Hollywood and middle bank is the commencement of the pool of Garmoyle, which extends from abreast the large red buoy on the starboard hand, having from 3 to 4 fathoms at low water. From Garmoyle the channel up to Belfast is now nearly straight, having above 10 feet at low water, spring tides; it is well buoyed—red on the larboard, and black on the starboard hand going up the quays. There is also a green light on Hollywood Bank, with three more of the same colour towards Belfast, all of which are to be left on the port side when going up. There is also a red light S.W. of the stone beacon

on the starboard side. Large vessels usually anchor off the town of Larne, near the middle of the Lough. Many vessels frequent this anchorage, which is marked on all the Admiralty Charts of the Lough, and Masters pronounce it excellent. Vessels do not more than 16 feet water may anchor higher up in the Folly Roads—the Carrick bank and abreast of the Abbey; smaller vessels in White Roads. Large vessels drawing 18 feet, intending to reach the quays, anchor in Garmoyle. A large pilot is constantly under weigh during the day, and at night also (weather permitting) and generally boards vessels bound to Belfast abreast of Grey Point. The rocks of Kilroot, now a perch on the north side of the Lough, which almost from Kilroot Point to the head, and about a quarter of a mile from the shore to avoid which keep Black Head with the White Head, and a vessel will be clear of all danger.—The Admiralty Chart of 1856, as surveyed and corrected by R. Hoskin, Master R.N., of Belfast Loch is an admirable harbour. Above Grey Point ships anchor securely against all winds.

Larne—A lighthouse is erected on the north side of the Point, on the larboard hand, into this spacious Loch, opposite to the Maiden or Hulin Rocks. From Larne from the S.E. pass Muck Brown's Point and Bay; give a berth near half a mile, as a shoal runs off above a quarter of a mile, give Farras Point on which is a lighthouse, a berth of half a cable's length, run for Corran Point on Larne which stand the ruins of an old castle, giving the Isle Magee side a large berth, as a long shoal runs out from it nearly half way across to the steam-ship wooden wharf opposite the salt stack continue to near the Point of View, round which is Yellow Stone, sheltered from all sea, and little distance there is a long flat runs out from the W. side of the entrance which, covered, is so deceitful to strangers, that they should open the mouth of the Lough; keep no more than two cables' length from the lighthouse, run up past the pier wharf, giving it a berth on the larboard hand. Anchor $\frac{1}{2}$ of a Cable's length from Isle Magee shore. Small vessels should anchor above the wharf should run abreast of Corran Point in two fathoms, one third from Corran shore, and one third from the Island. Large vessels should come to further out, about one mile from Corran side. There are many in Larne Loch and should a vessel go too far, she will only go on soft mud. A stranger going in, in the day, should take his soundings from the Magee shore; but going to the Yellow

low Stone Roads should take a pilot. Vessels may run in without anchors or cables—there are no rocks or shoals to interrupt them, coming from the southward, except Barr's Point before mentioned, and Hunter's Rock. Four miles of the mouth of Larne Loch, and 4 miles N. $\frac{1}{2}$ W. from Knee or Muck Island, the Sound of Muck appears open, and Corran Castle on with Larne Lighthouse.

Maiden, or Hulin Rocks Light

Two lighthouses marked with broad red and white belts, are erected on the Maiden or Hulin Rocks. These rocks bear by compass from the Mull of Cantyre Light, S.S.W., distant 24 miles; from Sanda Island, S.S.W. $\frac{1}{2}$ W., 18 $\frac{1}{2}$ miles; from Ailsa W.S.W., 23 miles; from Copeland Island Light, N. $\frac{1}{2}$ E., 16 $\frac{1}{2}$ miles, and from the eastern extremity of Rachlin Island, S. by E., distant 20 and a half miles. The lights are distant from each other 320 fathoms, and bear N.W. by W. and S.E. by E. The mariner in passing should give them a wide berth, there being a number of sunken rocks extending upwards of 3 miles N. and 1 $\frac{1}{2}$ miles S. of them.

Ballincastle Harbour.—Opposite Church Bay on the Irish Coast, is Ballincastle Harbour, formed at the mouth of a small rivulet near the town, affording shelter for small vessels drawing 7 feet water, for at high water there are 9 or 10 feet between the pier heads, with spring-tides, and 8 feet with neaps. In summer ships may ride near the W. side of the bay in 9 or 10 fathoms water, the glass-house bearing S.S.W., Sheep Island being shut in with Kinbane Head, and Clare House bearing on the top of the cliff near it; but it will not be prudent to lie long here. Should the wind blow from the N. or N.W., and a swell begin to set in, weigh anchor, and rounding Tor Point, make for Cushinden, Cushindaal, or Larne.

The **Skerries** lie W. by N. 5 miles from Bengore head, and about a mile from the shore: on the south side of the largest of these islands, where it appears lowest, a vessel may anchor in 6 or 7 fathoms water, a little more than a cable's length from shore. In sailing into this anchorage be careful of the Stirks on the east side, and of the Kers on the west side: they lie a little to the southward of a cluster of rocks about half a mile westward of the Skerries, and dry at four hours' ebb.

Port Rush is much improved by a pier and quay; there are from 8 to 24 feet within the harbour, while off the mouth of the port a vessel may anchor in 6 to 8 fathoms, on a bottom of sand. On entering the harbour you must give the North Pier a berth of at least fifteen yards, to clear the stones which have been placed to break off the swell, and which are covered at $\frac{1}{2}$ flood.

Loch Foyle is a capacious harbour

waiting to go over the bar, the best places are on the S. side of the bar, the harbour mouth bearing N.N.E., in 3 or 4 fathoms; or on the north side of Cable Island, in 3 to 6 fathoms, about 2 cables' length from the shore. From a tower on the west side and within the entrance, is shown a fixed bright light, open to the harbour, and seaward to S.W. by S., and may be seen at a distance of six miles.

Cork Harbour.—From a tower on Roche Point, at the east side of the entrance, is shown a red light, revolving every minute, and visible at the distance of 8 miles. From it Cork Head bears S.W. by W. about 4 miles. A fixed white light is also exhibited, visible between the bearings of N.E. by E. and N.E. $\frac{1}{2}$ N., to pass eastward of the Daunt's Rock. From the Longship Lighthouse off the Land's End to the entrance of Cork Harbour is 46 leagues N. by W. $\frac{1}{2}$ W. Coming from the southward, and bound to this harbour, keep Knockmeldown Hill about N.E. by E. until you see the Old Head of Kinsale, a bluff point of land with a lighthouse on it. From this Head the entrance of Cork Harbour lies E. $\frac{3}{4}$ N., distant about 5 leagues. When off the harbour, Roche Tower with its lighthouse is remarkable. A little without the point, on E. side of entrance, lie the Stag Rocks. There is clean ground in a moderate depth without the harbour's mouth, where ships may, with a northerly wind, wait the flood or daylight. A red buoy is placed on the edge of the bank off Fort Camden; another red buoy about a mile further in, to the northward of the entrance to Cross Haven; a third, of the same colour, off the east side of Spike Island; and a red buoy on the eastern extremity of East Haulbowline Bank. Each of these buoys is numbered. There are also several black buoys on the side opposite, on the edge of the mud flat: they lie in 4 fathoms, and are likewise numbered. Having passed the narrows, which is about 450 fathoms over, the channel continues that width on a N. by E. and N.E. direction, between the red buoys on W., and black buoys on E. side, to the anchorage off Spike Island, on sandy ground: thence it leads upwards, narrowing round the beacons on the northern side of the Spit extending E.S.E. from Haulbowline Island, close in to Queenstown on the north shore. At the entrance of the passage to Queenstown is a white buoy; and at about 160 fms. to the S.W. of this, in $2\frac{1}{2}$ fathoms, is the Lower Spit Buoy, red. The Upper Spit Buoy, red, lies in 9 feet, N.W. by W. $\frac{1}{4}$ a mile from the Lower Spit Buoy. Here the tide runs 2 or 3 knots; it is high water on the full and change at half-past 4, and the tide rises from 9 to 13 feet. Large ships going in at or near low water, must be careful to avoid the Harbour

Rock, which lies a little within the S. Rocks, on the east side. On it are two iron trunk buoys about $1\frac{1}{2}$ cables' length apart: one on the eastern chequered red and white with beacon; the other on the western edge, chequered black and white. It has fifteen feet on it at low water spring-tides. About half a mile N. by $\frac{1}{2}$ E. from the Harbour Rock lies the S. end of the Turbot Bank, extending thence N.W., and which has on its shoalest part, the north end, 18 feet low water average springs. The middle of this bank lies with a remarkable dark stone building, on the precipitous part of Ken Cove, bearing W.S.W., and touching the projecting part of the land south-eastward of Temple Breedy Church. It has on it two iron trunk buoys about cable's length apart: one on the eastern chequered red and white, with beacon the other on the west side, chequered black and white. In order to avoid the shoals on the east side, keep within two cables' length of the eastern shore; or bring the lower part of the white wall, which stands to the S'ward of the fort upon Dog's Nose, on, or under the west bastion of that fort. To go to the westward of the Harbour Rock and Turbot Bank, keep the fort on Dog's Nose open to the westward of the lower part of the white wall above-mentioned, or when without the harbour, bring and keep a village which appears upon a hill on Great Island, over some pine trees, touching the point of Dog's Nose, bearing N. 21 degrees E. which will lead clear of all dangers on that side. To go between the shoals, keep the flag-staff in the fort of Dog's Nose, on, or over the lower part of the white wall. To avoid the Harbour Rock on the S. side, keep the Crow Rock on with Poor Head. The Turbot Bank may be avoided by keeping nearer to the E. than to the W. side of the entrance. Between the Harbour Rock and the east point are 5 to 6 fathoms; between the Harbour Rock and Turbot Bank are 6 to 7 fathoms; and between the bank and the western shore are 5 and 6 fathoms at low water. About a mile E. by N. from Haulbowline Island, extends the Spike Sand, which begins to dry on the north side at half ebb, and shelters the anchorage at Queenstown. On the east elbow of this bank a lighthouse has been erected on screw piles, in 9 feet; it exhibits a fixed Red light, visible from N.N.E. $\frac{1}{2}$ E., to S.E. by E. $\frac{1}{4}$ E., round by eastward, and at a distance of 8 miles. Masters of vessels are cautioned not to cross the bank between the lighthouse and Haulbowline Island, and to give the lighthouse and detached beacon pillar sufficient berth in passing. In going from Dog's Nose for the anchorage off Queenstown, keep Dog's Nose Point S. by W. $\frac{3}{4}$ W.; or steer for the easternmost part of the fort on the

N. shore, between the black and red buoys to avoid a flat which extends in some parts a mile from the E. shore, and also a rock that lies to the westward of Cork Beg, which appears at half-ebb, with a beacon on it. The best place for large ships to anchor is off the garrison, in from 6 to 5 fathoms. Merchant ships may ride off the town of Queenstown in smoother water and less tide, they may go also further up the harbour of Passage, and ride any where between the best houses and Ronan's Point. In proceeding from Queenstown to Passage, do not approach nearer than half a cable's length to the south side of Black Point; and give the W. side of it a berth of about a cable's length, to avoid a sand which extends from that shore, and dries at low water. You may go westward from Haulbowline Island, until you see Ronan's Point in the channel of Passage; then steer N'ward along the W. side of the channel, for the anchorage. Vessels drawing 16 feet may, with spring tides go up to Black Rock or to the town of Cork, and lie at the quays with 9 feet at low water, average tides. Between Passage and Horse Head is a spit of sand, of 6 feet water, extending above a cable's length eastward from the Clay Cliff: you will avoid the extremity of this spit by keeping Dunkettle House on with a grove of trees which stand on the top of a hill above the House. The point of this spit lies with Belveley Castle and Ronan's Point in one; and vessels which anchor near it, should have the castle fairly without Ronan's Point, or wholly shut in with it. In a small creek called Cross

Haven, within the entrance of Cork Harbour, and on the west side, opposite Dog's Nose, vessels may ride in 10 or 12 feet.

Kinsale Harbour.—A new lighthouse has been erected on the Rocky Point at the S. end of the Old Head, distant half a mile S.S.W. $\frac{1}{2}$ W. from the old lighthouse, bearing from Bulman's Rock S.W. $\frac{1}{2}$ W. $4\frac{1}{2}$ miles. This light is a fixed bright light, similar to that heretofore shown from the old lighthouse, and is visible from N.E. $\frac{1}{2}$ N. seaward to W. by N., and at the distance of 21 miles. In sailing towards the harbour from the southward, keep Knockmeldown Hill N. E. by E. until you see the Old Head of Kinsale: after making that, which is about $3\frac{1}{2}$ miles S.W. by S. from the entrance of the harbour, run in until the old lighthouse on it bears W.N.W. about 3 miles; then run in N.W. by W. until the old lighthouse bears S.W. by S.; and then steer N.E. by N. until you are abreast of the lower cove, where you may anchor in 6 fathoms. The only danger near Kinsale Harbour is Bulman Rock, which lies about a cable's length S.S.W. $\frac{1}{2}$ W. from Hangman's Point on the E. side of the entrance, and has 4 feet on it at low water. This rock is buoyed, and may be passed on either side, but the channel on its W. side is the safest for ships coming in or going out.

Baltimore Harbour lies about $5\frac{1}{2}$ miles to the north eastward of Cape Clear, and is very convenient for ships bound either eastward or westward. Small vessels may ride 2 or 3 cable-lengths N.N.W. of Baltimore Town, in 10 or 11 feet at low water, sheltered from all winds.

BRISTOL CHANNEL.

LIGHT VESSELS AND BUOYS.

Light Vessels are moored, and Buoys laid in this Channel as follows:—

Light Vessels.

A **LIGHT VESSEL**, exhibiting a bright light, which revolves every minute, and is visible 10 miles, lies near the English and Welsh Grounds, on the south side of the Bristol Channel, and in lat. 51 deg. 26 min. N., and long. 2 deg. 58 min. W. This vessel is painted red, carries a ball during the day, has the words *English and Welsh Grounds* upon her sides, and is moored on the northern edge of the sand in 6 fathoms low water, spring tides, about 10 miles from King Road, with the high land at Minehead on with Flat-holm Light Tower, W. by S.; the Usk Light Tower, N. by E. $\frac{1}{2}$ E.; a remarkable Peak on the distant Land (See-mee

or See-me-not), on with St. Thomas' Head, S. $\frac{1}{2}$ W. A gong is sounded in foggy weather.

Off the West end of the Skerweather Sand there is a **LIGHT SHIP** placed to prevent the stranger from passing into the dangers of Swansea Bay. It exhibits a Red Revolving Light, shewing a flash every 20 seconds, at an elevation of 38 feet above the level of the sea. It is intended to show half a globe above the usual globe. Calculations for bearings and distances can be ascertained sufficiently accurate, by judging that of the West Skerweather Buoy.—This light is regarded as being very obscure, and this is accounted for by the lowness of the north shore, which conveys a mist over the Swansea Bay. It is, however, very serviceable, and is relied on when entering the Bay.

A LIGHT VESSEL, bearing a bright light, which revolves every minute, and is visible 10 miles, lies off the western end of the Helwick Shoals, and in lat. 51 deg. 31 min. N., and long. 4 deg. 24 min. W. This vessel is painted red, shows a ball in the daytime, has the word *Helwicks* upon her sides, and is moored in 17 fathoms, low water, with Oxwich Point, E. by S. $\frac{3}{4}$ S.; Worm's Head, N. E. by E. $\frac{3}{4}$ E.; Caldy Lighthouse, N.N.W. $\frac{3}{4}$ W.; Lundy Island, S.W. $\frac{3}{4}$ W., 22 miles. During foggy weather a gong is sounded.

CARDIGAN BAY LIGHT VESSEL lies in 26 fathoms, low water, spring tides, one Red revolving light, shewing a flash every 30 seconds, 25 feet above the level of the sea, South Bishop Lighthouse, S.W. by W., 36 $\frac{1}{2}$ miles; Strumble Head, S.W. $\frac{1}{4}$ S., 21 $\frac{1}{2}$ miles; Kenmaes Head, S. $\frac{1}{4}$ W., 16 $\frac{1}{2}$ miles; Causeway Buoy, E. by N. $\frac{3}{4}$ N., 25 miles; Bardsey Lighthouse, N. E. by N., 23 miles.

Buoys.

MORTE STONE, Black, Staff and Globe, lies in 9 fathoms low water, spring tides, 1 $\frac{1}{2}$ cable's length to the N.W. of the Ledge; Bull Point, E. $\frac{1}{4}$ S., 1 $\frac{1}{2}$ miles; Morte Point, S.E. $\frac{1}{4}$ S., $\frac{1}{2}$ mile; Baggy Point S.W. by S., 2 7-10 miles; Hartland Point, W. by S. $\frac{3}{4}$ S., 14 4-10 miles; Lundy Lighthouse, W. by N. $\frac{3}{4}$ N. 16 miles. This Buoy warns mariners of a dangerous and rocky locality over which the tide sweeps at a terrific rate.

SAND RIDGE, Black, lies in 4 fathoms low water spring tides, with the Valley of Rocks Hotel, midway between Linton church and a conspicuous house on a hill westward, bearing S.W.; Hurststone, apparently a cable's length outside the Foreland, S. E. by E. $\frac{1}{4}$ E.; Rillage bearing W. by N. $\frac{1}{2}$ N., 10 miles.

GORE, Black, lies in 18 feet, Burnham High Light its length open northward of Low Light, bearing E. by S. $\frac{3}{4}$ S.; Flatholms Island, its apparent length open west of Steepholms; the Lighthouse, N. E. by N., 9 miles; Sand Point appearing open of Brean Down Point, N. E. by E. $\frac{1}{2}$ E.

WEST CULVER, Red and White striped, with Beacon, lies in 4 fathoms, with Swallow Cliff, a little open of the South of Steepholme Island, E. $\frac{1}{4}$ N.; Willet's Tower, well open to the Westward of West Quantocks Wood, S.S.W. $\frac{1}{4}$ W. Westerly; East Culver Buoy, E. $\frac{1}{4}$ S., 5 miles.

EAST CULVER, Red, lies in 6 $\frac{1}{2}$ fathoms, with Penarth Head, on with Lavernock Point, N.N.E. $\frac{1}{4}$ E.; Black Nose Point, just open Southward of Steepholm Island, E. by N. $\frac{1}{4}$ N.; Flatholm Lighthouse, N. E. $\frac{1}{4}$ E.; Burnham Church Tower, S.E. by S.

ONE FATHOM, Black, lies in 4 $\frac{1}{2}$ fathoms,

with Barry Church (with Belfry) two its apparent breadth on the West of Barry Island, N. by W.; Lavernock Point, N.E. $\frac{3}{4}$ E. Flatholm Lighthouse, E. $\frac{1}{4}$ N., 4 $\frac{1}{2}$ miles; Steepholm Flagstaff, E. S. E., 4 $\frac{1}{2}$ miles; Brean Down, S. by E. $\frac{1}{4}$ E.

HONEYCOMB, Black, lies in 5 fathoms about 35 fathoms N.W. of the Rock with Weston-super-mare Church, with W. end of Piggot's Summer House, S.E. $\frac{3}{4}$ E.; Kewstock Church about ship's length open N. of Breanbeckland, E. by S. $\frac{1}{4}$ S.; Brean Down Point, W.; Swallow Cliff Point, N.E. by E. $\frac{1}{4}$ E. Flatholm Lighthouse, N.W. $\frac{1}{4}$ W., 4 miles.

NEW PATCH, Black, lies in 9 feet, with the high land of Minehead just off Southward of the South end of Flatholm Island, W. $\frac{3}{4}$ S.; Flatholm Lighthouse, W. $\frac{1}{4}$ S. S'y., $\frac{1}{2}$ mile; Grounds Light, by N N'y. 6 5-10 miles; Cardiff Church Tower, and the two Glass House Churches at Cardiff, apparently at equal distances, the Church Tower being the Eastern object, N. $\frac{1}{4}$ E.; Hayes' Windmill over the East end of Sully Island, N.W. $\frac{1}{4}$ W.; Penarth Church, N. $\frac{3}{4}$ E.

WOLVES, Red and White chequered, lies in 5 fathoms, half a cable's length westward of the rocks, with Hayes' Windmill on with the West end of Sully Island, N.W.; Breaksea Buoy bears N.W.W'y., 10 miles; Penarth Head, by E. $\frac{1}{4}$ E.; Flatholm Lighthouse, S. $\frac{1}{4}$ S. The Wolves are a dangerous cluster of rocks: the tides both ebb and flow, set directly on them, therefore great caution is requisite.

SOUTH WEST PATCH, Red, with Beacon, lies in 4 fathoms, with Worle Mill in line with the western side of Midgehope Beach, S. $\frac{1}{4}$ E.; Monkstone Beach, W. $\frac{1}{4}$ S., 4 miles; Flatholm Lighthouse, W. by S. $\frac{3}{4}$ S.; Usk Lighthouse, N.N. $\frac{1}{4}$ E. N'y.; Grounds Light Vessel, S. by E. $\frac{3}{4}$ E. The Buoy, formerly called the Spit, protects one of the quicksands in the Channel, and, like many other dangers, the tides set directly on them. The old passage between the sand and the Welsh Hook is now filled up, and rendered unnavigable.

WELSH HOOK, Black, lies in 5 fathoms low water spring tides, with Aust Head a ship's length open southward; Denny Island, E. by N. $\frac{1}{4}$ N.; Usk Lighthouse, N.N.W., 6 miles; See-me-not on with Clevedon Church, S.S.W. $\frac{1}{4}$ W.; Grounds Light Vessel, W.S'y., 3 $\frac{1}{2}$ miles.

RANNEY FLOATING BEACON, placed on the S.S.W. part of Ranney Spit, lies in 4 fathoms low water spring tides. Sailors Home at Cardiff, just open off Penarth Head, N. by E. $\frac{1}{4}$ E.; the Western point of Brean Down on with Flatholm Island at low water; the Lighthouse, S. by E.; Ball Point, W. $\frac{1}{4}$ N.;

highest part of Sully Island, W. $\frac{1}{4}$ S.

WEST CARDIFF, Black, with Beacon, lies in $4\frac{1}{2}$ fathoms, with the Monkstone Beacon in line with Clevedon New Church, E. by S. $\frac{1}{4}$ S.; Grounds Light, E. $\frac{1}{2}$ S., $6\frac{1}{2}$ miles; Cardiff Hook Buoy, S. W. $\frac{1}{4}$ W., 27-10 miles; Usk Lighthouse, N. E. by E. $\frac{1}{4}$ E., $9\frac{1}{2}$ miles; the Eastern side of Steephholm, just open West of Flatholm, at high water, the Lighthouse S. E'ly.; Sully Island open a ship's length Southward of Ball Point, W. $\frac{1}{4}$ S.; Penarth Church, N.

EAST CARDIFF, Red, lies in 6 fathoms, low water, spring tides; Hook Buoy, S. W. by W. $\frac{1}{4}$ W., 1 mile; Monkstone Beacon on with S. E. end of Steephholm, S. S. W. $\frac{1}{4}$ W.; Penarth Church, W. $\frac{1}{4}$ S.; Usk Lighthouse, E. N. E.

CARDIFF HOOK, Black and White chequered, lies in 2 fathoms, with Cardiff Church Tower its apparent length open Eastward of a conspicuous Clump of Trees, N. N. W. $\frac{1}{4}$ W.; Grounds Light, S. E. by E. $\frac{1}{4}$ E., $5\frac{1}{2}$ miles; Peterstone Church Tower apparently midway between the Spire of Newport New Church and the Tower of the Old Church, N. E. $\frac{1}{4}$ E.; the Usk Light Tower, N. E. by E. $\frac{1}{2}$ E.

NORTH WEST SPIT, Black and White, Vertical Stripes, lies in 2 fathoms low water spring tides; Cardiff Hook, N. E. $\frac{1}{4}$ E., $2\frac{1}{2}$ miles; West Cardiff Buoy 2 cables distant, S. S. E. Easterly; the eastern part of Steepholms on with the western high water mark of Flatholms, S. $\frac{1}{4}$ E.; Penarth Church, N. $\frac{1}{4}$ E.

BREAKESEA, Black and White striped horizontally, with Beacon, lies in 5 fathoms, about one cable's length from low water mark, and $\frac{1}{2}$ a cable's length without the Rocks, with the Nash Low Light Tower apparently midway between the High Light Tower and the White Beacon upon St. Donant's Cliff, N. W. $\frac{1}{4}$ W.; One Fathom Bank Buoy, S. E. $7\frac{1}{2}$ miles; Evans' Farm House, apparently midway between a large Yellow Dwelling House and Limpert House, the latter being the Eastern object, N. N. E. $\frac{1}{4}$ E.; Brereton Windmill, N. N. W. $\frac{1}{4}$ W.

COCKBURN SHOAL, Black, lies in 4 fathoms, about 20 fathoms S. E. from the shoal, with the Avon Lighthouse one-third between Penpole House and Miles' House, S. E.; High water mark of Black Nose Point on with Portishead Point, W. $\frac{1}{4}$ S.

WEST USK, Black, dries at low water; a farm house at St. Brides in line with a bluff tree on the western land, N. W. by W. $\frac{1}{4}$ W.; Usk Lighthouse, N. by W. $\frac{1}{4}$ W.; Windbound Point, N. by E. $\frac{1}{4}$ E.

EAST USK, Black, dries at low water; a clump of tiles on Stone Hill just open Westward of Windbound Point, N. N. W.

$\frac{1}{4}$ W.; West Usk Buoy in line with Peterstone Church W. $\frac{1}{4}$ N.

EAST NASH, Black and White chequered, lies in $4\frac{1}{2}$ fathoms, with Groes' House, (yellow) twice its apparent width open Westward of the Tower upon Dunraven Promontory, N.; the North side of the Nash High Light Tower on with the South side of the Low Light Tower, S. E. by E. $\frac{1}{4}$ E.; Nash Swatchway Buoy, N. W. $\frac{1}{4}$ W., $4\frac{1}{2}$ miles; Tusker Beacon, N. N. W. $\frac{1}{4}$ W. $4\frac{1}{2}$ miles; the fair channel course from the Mumbles to this buoy inside the sands, with the Mumbles Light Tower N. N. W. $\frac{1}{4}$ W., and the Nash Low Light Tower S. S. E. $\frac{1}{4}$ E.

NASH SWATCHWAY, Black, lies in $2\frac{1}{2}$ fathoms, with Sker House on with Rhwychwyn Point, N. $\frac{1}{4}$ E.; Newton Down Windmill, its apparent length open Northward to Newton Nottage Church Tower, N. N. E. $\frac{1}{4}$ E.; the Nash High Light Tower, its apparent length open Northward of the Low Light Tower, S. E. $\frac{1}{4}$ E.; Tusker Beacon, N. E. $\frac{1}{4}$ N.; East Nash Buoy, S. E. $\frac{1}{4}$ E., $4\frac{1}{2}$ miles; West Nash Buoy, N. W. by W. N'ly., $2\frac{1}{2}$ miles.

WEST NASH, Black and White chequered, with Beacon, lies in 6 fathoms, with Newton Down Windmill on with the centre of the Breakwater at Porth Cawl, N. E. by E. $\frac{1}{4}$ E.; Nash High Light Tower, S. E. $\frac{1}{4}$ E., $7\frac{1}{2}$ miles; the Nash Low Light Tower, S. E. $\frac{1}{4}$ E.; East Skerweather Buoy, N. by E., 26-10 miles; West Skerweather, N. W. $\frac{1}{4}$ N., $6\frac{1}{2}$ miles; Mumbles Light Tower, N. N. W.; Nash Swatchway Buoy, right between the Lighthouses, S. E. by E. S'ly., 2 miles; Tusker Beacon, E. by S., 3 miles.

EAST SKERWEATHER, Red and White striped, lies in 6 fathoms, with a conspicuous Shaft on the summit of the highest Hill, open Eastward of Constantinople Cottages, the apparent length of them, N. N. E. $\frac{1}{4}$ E.; Margam Trees, on with the West end of a long stone wall terminating near the Beach E. $\frac{1}{4}$ N.; the Windmill inland of Cwm Mawr on with Dunraven Point, S. E. $\frac{1}{4}$ E.; Kemfig Church $2\frac{1}{2}$ points open Westward of the Scar House, N. E. by E. $\frac{1}{4}$ E.; Nash Low Light Tower, S. E. $\frac{1}{2}$ S., 9 miles; Mumbles Light Tower, N. N. W. $\frac{1}{4}$ W.; West Nash Buoy, S. by W., 24-10 miles; West Skerweather Buoy, N. W. by W. $\frac{1}{4}$ W., 5 miles; Mixon Buoy, N. N. W. $\frac{1}{4}$ W., 9 miles; Tusker Beacon, S. E. $\frac{1}{4}$ E., 4 miles.

WEST SKERWEATHER, Red, with a Beacon, lies in $4\frac{1}{2}$ fathoms, with Constantinople Cottages on with the mouth of Aberafon Harbour, E. N. E. Northerly; Margam Trees open Southward of Sker House three times their apparent width E. by S.; Nash High Light Tower, S. E.,

Easterly, 14 miles; Mumbles Light Tower, N., Easterly, 6 miles; East Skerweather Buoy, S. E. by E. $\frac{1}{2}$ E., 5 miles.

HUGO, Black, lies about a cable's length from the dry sand on the N.E. side of the Bank, in 3 fathoms low water with a large square House on with the South end of the large Store House at Porth Cawl, S. E. $\frac{1}{2}$ E.; Kemfig Church its apparent breadth open South of a White Cottage (the Northernmost in the Village), E. $\frac{1}{2}$ N.; Nash Low Light Tower, S. E. by S.; Mumbles Light, N. N. W. $\frac{3}{4}$ W.; Constantinople Cottages N. E. $\frac{1}{2}$ N.; East Skerweather Buoy, S. by E.

INNER GREEN GROUNDS, Red Nun, lies in $3\frac{1}{2}$ fathoms, about one and a half cable's length from 5 feet on the S.E. end of the Shoal, with Kilvey Old Mill, $\frac{1}{2}$ distant from the Inn (a large brick house), towards Tennant's Look-out House, N.N.E. $\frac{1}{2}$ E.; Swansea East Pier Head, N. by E. $\frac{3}{4}$ E., 2 3-10 miles; Mumbles Lighthouse, W. $\frac{1}{2}$ N.; Woodland Castle, N.W. N'ly.

OUTER GREEN GROUNDS, Black and White chequered, lies in $2\frac{1}{2}$ fathoms, with the Tut between the two Houses on the Mumbles Point, W. $\frac{1}{2}$ N.; Woodland Castle, N. N. W. $\frac{3}{4}$ W.; Swansea Pier and Lighthouse, N.E. by N.; Kilvey Old Mill, N.E. $\frac{1}{2}$ N.; Green Grounds Buoy, E.

MIXON, Black, with Bell, lies in 10 fathoms, with Porth Einion Point on with Oxwich Point, W. by N. $\frac{1}{2}$ N.; Kilvey Old Mill Tower on with Swansea East Pier Head, N. E. $\frac{1}{2}$ E.; Mumbles Light Tower, N. E. $\frac{1}{2}$ N.; West Skerweather Buoy, S. $\frac{1}{2}$ E., 5 $\frac{1}{2}$ miles.

WEST HELWICK, Black, with Beacon, lies in 6 fathoms, and is surrounded by 11, 14, and 15 fathoms. Worms Head, bears N.E. by E. $\frac{1}{2}$ E.; Helwick Light Vessel, W. by N. $\frac{1}{2}$ N.; West Scar, S. E. $\frac{1}{2}$ S.

HELWICK SWATCHWAY, Black and White striped, lies in $4\frac{1}{2}$ fathoms, with Barry Holmes appearing in the centre of Worms Sound, N.N.E. N'ly; Oxwich Point on with Porth Einion Point, E. by S. $\frac{1}{2}$ S., Easterly; East Helwick Buoy, E. by S. $\frac{3}{4}$ S., $3\frac{1}{2}$ miles; Worms Head, N., 2 4-10 miles; West Helwick Buoy, W. by N. $\frac{3}{4}$ N., $2\frac{1}{2}$ miles.

EAST HELWICK, Black, lies in $2\frac{1}{2}$ fathoms, with Rhossily Point open westward of Tears Point the supposed breadth of a ship, N. W. $\frac{3}{4}$ N.; a White Building upon the high land, apparently midway between two White Cottages below that building, N.N.E. $\frac{1}{2}$ E.; Helwick Swatchway Buoy, W. by N. $\frac{3}{4}$ N., $3\frac{1}{2}$ miles; West Skerweather Buoy, S. E. $\frac{1}{2}$ E. S'ly., $12\frac{1}{2}$ miles; Mixon Buoy, E. by S. $\frac{1}{2}$ S., $9\frac{1}{2}$ miles; Worms Head, N. W. $\frac{1}{2}$ N., 5 miles. —

TUSKER AND MONKSTONE.—A mast with a large red ball attached is erected as a

beacon upon each of these rocks. From the Tusker Beacon, Porth Cawl Point N. $\frac{1}{2}$ W., is $1\frac{1}{2}$ miles; Mumbles Lighthouse, N. W. by N. 13 miles; Nash Low Light Tower, S. S. E. $\frac{1}{2}$ E., $5\frac{1}{2}$ miles; East Skerweather Buoy, N. W. $\frac{1}{2}$ W. 4 miles; East Nash Buoy, S.S.E. $\frac{3}{4}$ E. 5 miles; West Nash Buoy, W., 1 miles.

BEACON ON THE WOLF ROCK.

This Beacon consists of an artificial con bearing a mast having a large ball upon its summit at an elevation of 36 feet above the level of the sea at high water; the mariners are to observe that spring tide rise at this station 19 feet, and that low water of those tides, the rock is uncovered to the height of 15 feet. St Michael's Mount open of Larnor Cove leads $2\frac{1}{2}$ miles to the Eastward of it Longships Lighthouse touching Cap Cornwall leads $1\frac{1}{2}$ miles Westward of it The Bearings and Distances of the under mentioned objects from this Beacon, are as follows, viz.:—Longships Lighthouse N. E. $\frac{1}{2}$ N., $7\frac{1}{2}$ miles; Scilly Lighthouse W. by N. $\frac{1}{2}$ N., 21 miles; Rundlestone Rock, which covers at half-flood, E. by N. $\frac{1}{2}$ N., 7 miles; Seven Stones Light-vessel, N.N.W. $\frac{1}{2}$ W., Westerly, $12\frac{1}{2}$ miles; Lizard Lighthouses, E. S. E., 23 miles.

Directions for Sailing up the Bristol Channel.

The introduction of Railway communication between Kingroad and the City of Bristol, together with the contemplated formation of Channel Docks at the mouth of the River Avon, induces us to submit the following illustrations of the dangers of the Bristol Channel, which by way of preface, we may quote the remark of an eminent nautical man, "that the Bristol Channel is a harbour of refuge in itself," the dangers are many, but their avoidance is easy when judiciously encountered—hence the object of this paper. It will be needful to state that the lights and buoys are fully described in another column. We will place a stranger in the Chops of the Channel about 45 miles Northward of the Scilly Islands. The first place he must make is Lundy Island, which can be obtained by steering east. Should it be thick weather he will be cautioned on nearing it by the sound of a gun placed on the west-side which reports every 15 minutes; on making the Island, either north or south, difficulty is met with by the set of the tide. The proper passage is between the Island and Hartland Point. The ebb-tide sets W.S.W.; flood, E.N.E. Being bound up the course to avoid the dangers of Morte Bay, which consists of Baggy Leap, Rockham, Morte Stone, and a dead lee shore when the wind is from

the N.W. is to steer on an ebb-tide N.E., and on the flood East until Morte Point bears S.S.W. This brings the vessel abreast the point, and a good berth off; the most experienced always think it right to keep the south side in sight, it is a bold high land up as far as the forehead, and perceivable in thick weather, therefore good for a departure. The next course is E. by S. $\frac{1}{2}$ S. which will clear the dangers which are close to the shore, and comprise the following:—Copperas Rock, Sandrige, and Foreland Ledge. On departure from the Foreland ship on course E. by S., this will leave the West buoy of the Culver sands a peice on the starboard hand, make the One Fathom buoy which is black, and bring her on to the Flatholmes; but if Bridge-water is the destination, when at the Foreland alter the course to S.E. by E. $\frac{1}{2}$ E. when the Culvers are left on the port hand the Gabriel and Kelve Patch will be on the starboard, continue this course until you see Burnham Lights, on making them keep the high light a sail's breadth open of the low one, until the Flat Holm Light is open eastward of the Deep Holms, then draw both Lights in, this will clear the Sturt and Lark Sands, giving the Gore a berth northward and bring the ship safely in Bridgewater Bay; we may remark, the course E. by S. $\frac{1}{2}$ S. will take you to the projected harbour at Brecan down. Should Kingroad be your object you must (after steering E. by S. as stated before) haul up to N.E. which will bring you direct to the Light ship on the English and Welsh grounds. This course will take you clear of the N.W. elbow of the English Grounds and pass you between that and a sand as black as any in the Channel known as the S.W. Patch. When abreast this Welcome Light steer East, which will carry deep water and leave Clevedon Rocks on the Starboard hand and the black sand on the port, on which a black buoy is placed in 5 fathoms, (en passant you must refer to a fine roadstead, when Kingroad cannot be reached, called Walton's bay, it affords fine anchorage when the Light Ship bears W. by N.) at this time you will shorten sail for coming to anchor in Kingroad keeping the same course until you are opposite the Fort, which is a low bluff point: then steer E. by S. to avoid the Horse Shew, a sand midway between Portshead and the Cockburn Rock. Taking the ship southward of both dangers, we now approach Kingroad, which affords the best holding ground, and can show accommodation for large vessels rarely equalled. The best berths are generally found when the Avon Light bears S.S.E., this will give 7 fathoms low water; the roadstead is on its own merits considered safe from every wind that blows, lue clay bottom, and

the only wind that can influence it is N. W., when if a vessel forsakes her anchors a soft bed of mud will receive her on the east bank. Many ship have resorted to this under loss of anchors and chains. To enter the Avon steer E. by S. until you get the red light of the tower, open then port, this will take you over the Swatch, but must not be attempted by large vessels before half-flood, We will now turn our attention to the down Channel Voyage, and until we get the English and Welsh Grounds Light Ship it will serve to "box the compass," on arrival there, and, bound to Newport Roads, it is necessary to bring up at anchor at the back or westward part of the S.W. Patch to wait the coming flood, getting the Light Ship to bear S.E. by E. you will then obtain 5 fathoms of water, which will increase as you near it, in fact 5 fathoms can be relied on after the western side of this sand, but shallows as you approach the eastward. On the flood steer N.N.E. which will find the Usk light then make the Red light bear N. by W. $\frac{1}{2}$ W., then steer North and you will get into Sea Reach. We are once more at the English and Welsh Grounds Light-ship, bound for Penarth Roads, then ship a course W. by N. $\frac{1}{2}$ N. you will make Monkstone on your starboard hand, alter it, N.W. which will make the buoy on the West Cardiff Grounds. There is an eastern passage which it is not prudent to attempt at all times, and has got into disuse seeing that the western one can be obtained in the same time without the danger. It is now our object to get a good anchorage in Penarth Roads which can be secured by getting the Steep Holmes open West of the Flat Holmes. This roadstead cannot be relied upon, it has a very uneven bottom, and very little shelter, and it very frequently occurs that vessels bound out from Cardiff on meeting with an adverse wind rather than anchor there run for Kingroad, or under some circumstances anchor under the Flat Holmes, where good anchorage can be found. The ship is now bound out from Penarth Roads, the first danger is the Ranney Spit and Lavernock Point, over which the tide runs rapidly, to avoid which steer S.S.W. which will leave these dangers on the starboard hand, continue this course until the Flat Holmes Light bears S. by E. The ship is now making her passage North of the Flat Holmes, and will next encounter a cluster of rocks called the Wolves, which will be escaped by steering W. by N., the tide sets on these rocks at a tremendous rate direct from Monkstone. This same course will take you off the Nash Point, and clear of a rock known as the Old Chapel, on which small vessels have met with mishaps, (it is close in on the North shore) and also take you southward of a dangerous point

known as Breaksea Point, which is 11 miles from the Flat Holmes, and give the One Fathom Bank a berth southward, to continue this course you will clear the Nash Sands, Scarweather, and all other dangers, on the North side of the Channel. If Swansea is the Port and you want to go inside the Nash Sands, then haul up N. W. by N., which must make the Nash Lights. On effecting an entrance steer N.W. by N. $\frac{1}{2}$ N. this course will clear the Tuskar on the starboard hand, and the E. buoy off the Scarweather on the port, leaving Hugo Bank on the port side, and Kenfig Patches on the Starboard, follow this course until you get the Mumble Light to bear W. by N., this will leave the Green Grounds on the starboard hand, and will find good anchorage. It is our intention to proceed further down the Channel, and if a direct course for Lundy Island is required steer W.S.W. but we want to visit the North Shore, when under weigh for either, we must notice the Mixon which bears from the Mumble Light S.W. $\frac{1}{2}$ S. consequently we steer W. by S., until we get the light to bear N.E. by E.; then steer W. by N. which will bring you a

peice to the South of the East end of Helwick Sand, to run down after the sand steer W.N.W. this sand is 6 miles length, and is divided by what is called swatch way, the marks for passing through which is to see Burry Holm through Worms Sound, there is a good passage inside, the entrance is narrow but deep water exists. The western entrance is obtained by getting Oxwich Head in one with Einion point. At the western part of these sands a bay called Rhossily, which is unfortunately situated for the safety of the Mariner, the Southern extremity of this bay has an obstruction, named the Worms Head, which is very prominent but has a tell tale of its own; a large cavity in the rocks causes a roar when the sea breaks on it, it bears from the Helwick Light Ship N. by E. $\frac{3}{4}$ E. to continue our voyage, after making the Helwick, steer N.W. $\frac{1}{2}$ N. which will find Caldy. With a good offing the Channel course will be well if bound from between the Holmes for Lundy steer W. by N. which will make the Foreland, Ship a W.N.W. course and this will take you clear of all dangers until you get Lundy Island.

WEST COASTS OF ENGLAND AND WALES.

SMALLS LIGHT TO THE PORT OF LIVERPOOL.

Smalls Light is placed on Smalls Rocks, lying off St. David's Head in Pembrokeshire, and bearing from St. Ann's Point, N.W. by W., distant 18 miles. This light is stationary, appearing like a star of the first magnitude, at the distance of 13 miles. To avoid these rocks, keep above a mile from the highest on all sides, and do not attempt to pass inside of them without a good chart and ample directions, or a pilot; with these there is excellent anchorage to be found in St. Bride's Bay in 8 or 9 fathoms.

South Bishop Light.—The Bishop and Clerks are a number of dangerous rocks, with great overfalls, lying north-west of Ramsey Island, at the distance of $2\frac{1}{2}$ miles. On the southernmost, called the South Bishop, is a lighthouse, exhibiting a revolving light, visible in all directions, and appearing with great brilliancy at intervals of 20 seconds, whereby it will be readily distinguished from the Smalls and other lights in its vicinity; it can be seen at the distance of 18 miles. This light is the principal guide the mariner has to enable him to know his exact situation, when sailing near this dangerous part of the coast of Wales. The light must be always

passed to the westward, and when to the northward of it never bring it to the westward of south, until you are $3\frac{1}{2}$ or 4 miles from it, particularly on a flood tide, in moderate weather, for then you have the tide nearly on the beam, which runs rapidly through amongst the islands; at spring tides nearly 5 knots and causes several overfalls. The passages between the rocks must not be attempted by strangers.

From St. David's Head to Strumble Head the course is E. N. E. $\frac{1}{4}$ E., distant $10\frac{1}{2}$ miles; between them at the distance of $5\frac{1}{2}$ miles from the former, is Abercastle Island, lying close to the land. In sailing from St. David's Head to Cardigan Bay you must give the shore a good berth, for several rocks under water lie scattered about, some of which are nearly a mile from shore; they are called the Sledges, and are 2 miles eastward of St. David's Head.

Fishgard Bay.—Three miles to the eastward of Strumble Head you open Fishgard Bay, having good anchorage with any wind, except from the N. to the E., the ground holding well. The best anchorage will be to the southward of the Crow Rock, which is always above water.

for 5 fathoms, the rock bearing N. by E. distant $\frac{1}{2}$ to $\frac{3}{4}$ a mile. This bay is desirable for vessels seeking shelter from S. and W. than Studwall's, which is $5\frac{1}{2}$ miles to the leeward, is well sheltered from these gales, but Studwall's Road is not, and the bay is a more ready outlet to the S. or N. than any place in the neighbourhood.

Newport Bay opens when you are 6 miles distant from Strumble Head.—The bar and channel to Newport lie about a cable's length from the shore, directly to the village of Newport. On the bar is 13 feet water with spring tides, and 7 feet at neaps. When a vessel is over the bar, she will be sheltered from all winds.

Cardigan Bay.—The Buoy on the Causeway in Cardigan Bay has been removed, and now lies near the extremity of the Causeway Reef, in five fathoms at low water springs, with the following bearings and compass bearings; Slandebrog Light in line with the east side of West Head at St. Studwall, N. by E.; Penkilan Light, N. by W.; Bardsey Lighthouse, N. $\frac{1}{2}$ W. A LIGHT VESSEL in this bay—see page 101

Cardigan Harbour is adapted for vessels drawing about 15 feet. In the channel over the bar, which is liable to shoal, are 14 feet water with spring tides, 13 or 9 with neap; but in Cardigan a ship may stop, in moderate weather, almost any part without the bar, at two cables' length from the shore, in 10 fathoms water.

Aberystwith Harbour is fit for vessels which draw 15 feet. There are marks to lead you over the bar, one of which is moored on wheels, as the bar is low. When any vessel is seen off the bar in the evening, there are lights put on the marks, which must be brought to bear, to direct you over the bar.

Aberdovey is about 3 leagues to the northward and eastward of Aberystwith, 6 miles to the south of the Diamond on Beach Head. This harbour has a shifting bar about a cable's length long, and about half that in and out. The Trinity Board have placed a large Black Buoy at the entrance, outside, and one inside the bar. A good look-out should be kept for a small Buoy between the Black and Red Buoys, which marks the angle of the passage if any. The Buoys are all placed in the fairway. Vessels may come to anchor half a mile from the Red Buoy, and which is about the same distance below the town, where 12 to 15 sail, drawing from 12 to 15 feet water may ride in safety and in good anchorage.

Barmouth Bay may be known at a distance by the highest mountain on that coast: it has two tops—the southmost is the highest; and when seen from the west-

ward, is in a line with the N. side of the entrance of Barmouth. From the N. side of the Bay, and about 1 mile from the main, a shoal called the Causeway, extends W. by S. 3 leagues: at low water there is not more than 2 or 3 feet water all along the edge of it, where at a cable's length the compass is so affected by magnetism, as to vary 90 degrees, and, as you approach nearer, quite reverse the points.

Studwall's Road affords excellent anchorage for the largest ships, sheltered from all winds except from E. to S. E. by E. It is easily known by two Islands that lie off the point, and there is no danger except a small rock about $\frac{1}{4}$ of a mile eastward of the Islands, between which there is a good passage, as well as between the westernmost and the main, at a cable and a half's length from them.

Bardsey Island is separated from the mainland by a channel more than a mile and a half wide, having from 15 to 25 fathoms in it. On the S.W. part of this Island is a Lighthouse exhibiting a bright fixed light, visible seaward from E. $\frac{3}{4}$ S. to N.E. $\frac{1}{4}$ E., and at a distance of 17 miles; but masked between the bearings of N. 50 deg. E. to S. 70 deg. E. If in a gale of wind from the W.N.W. vessels should be unable to weather Bardsey Island, this light will point out a secure asylum in Studwall's Road, enabling them to preserve a proper position until daylight, when they can proceed to the anchorage therein. Vessels bound to Studwall's Road, or laying-to for daylight, must not bring the light to bear to the westward of W. N. W.; and if they lose sight of the light when it bears from them nearly in that direction, they will be too far to the northward, and in danger of getting embayed in Hell's Mouth.

Carnarvon.—From Brauchypool Head the shore lies nearly E. N. E. to Carnarvon Bar, and from thence nearly N. by W. $\frac{1}{2}$ W. to Holyhead Island, forming Carnarvon Bay. Vessels going in are to leave the outer or Black Buoy on the port hand, the Red Buoys on the starboard hand, and the Perch beacon on the port hand. The black and white chequer buoy is placed in mid-channel. Nun buoys, painted green, denoting sunken rocks, are placed off Llanddwyn Point. This Point may be distinguished in the daytime by two white towers (a large and a small one), and during the night by a fixed red light, visible in clear weather about five miles to seaward, between the bearings (from Llanddwyn by compass) of N. W. by N., and S. W. by W.; and which is intended solely as a leading light for the entrance to the Menai Straits. The bar should not be attempted until daylight, nor by vessels drawing more than 10 feet before half flood. During gales from W. to N., vessels may find shelter

on the S.E. side of Llanddwyn Point. The proper anchorage is about a quarter of a mile from the shore, with the small tower a little open to the northward of the large tower. In running in give a good berth to the sunken rocks (the green buoys indicating which are placed to seaward); but it is much preferable for strangers to heave-to outside sufficiently to windward and make signals for Pilot, four of whom are stationed at Llanddwyn, with a lifeboat, and Marryat's code of signals. Vessels wishing to communicate will be answered from the large tower.

South Stack Light.—Off the N.W. point of Holyhead Island is the South Stack Rock, upon which is a lighthouse, bearing a brilliant light, which revolves every 2 minutes, whereby it will be readily distinguishable from the light on the Skerries, which is a stationary light, and bears from the light on the South Stack N.E. $\frac{1}{2}$ E., distant 8 miles, and may be seen through a great part of Carnarvon Bay. During foggy weather, a smaller bright light, revolving in $1\frac{1}{2}$ minutes, is occasionally shown, about 40 feet above the sea, and 30 yards north of the main lighthouse. Any vessel making either of these two great lights, can find no difficulty in navigating round the head, or into the harbour of Holyhead, if the wind permits; and no directions that could be given would serve equal to that of having the two lights in sight, as will be the case in the situation above mentioned.

Holyhead Refuge Harbour is chiefly formed by an immense breakwater the heel resting on Soldier's Point, from whence it projects N.E. by E. nearly one and a half cables' length, then E.S.E. about five cables' length, and then E.N.E. to its end, which is marked by a red light, visible at a distance of 8 or 9 miles. The end of the breakwater is N.N.E., one mile from the Old Harbour Light.—To sail into Holyhead Refuge Harbour, give the end of the breakwater a good berth, as a strong tide sets to the westward nine hours out of the twelve, and strikes hard upon it. Having rounded the breakwater, steer to the W.S.W., between it and the outer Platters, leaving all the black buoys on the port hand, and anchor well in, close to the beach. There are passages between the Platters and Salt Island; but these should never be attempted by strangers. Vessels should have both anchors ready for letting go, with 50 or 60 fathoms of chain ranged according to the weather, and should be careful to anchor well up, or they will have to shift berth. Vessels disabled or without ground-tackle, may be laid on a beaching slope at the head of the harbour which has been prepared for the purpose.

Old Harbour of Holyhead.—A wooden pier extends from the Old Harbour Lighthouse in a direction E.

by S.: at its eastern end is a bright light of the sixth order, supported on iron pillars superseding that formerly exhibited from the stone lighthouse.

Vessels bearing up for Holyhead Harbour should be prepared with both bower anchors ready to let go, and the end of a good warp for a boat to take to one of the dolphins, moored along the passage for that purpose. The course round the pier up the harbour, is W. by N., then W.N.W. therefore, with the wind at N., and to the westward of that point, a press of sail should be carried, especially after-sail run the jetty close on board, and neither start tack nor sheet till the vessel is well inside the lighthouse and the packed moorings, then act as circumstances may require. Rise of water at spring tide 17 feet; depth of water at the entrance at low water, spring tides, about 12 feet. Holyhead harbour being a tide harbour, and frequently with many anchors down in the way, vessels drawing 12 feet should not run in until about two hours' flood, and those of a heavy draught should, if possible, keep off until four hours' flood. In tempestuous weather no vessel should run for the harbour at night. There is no occasion to use this as a harbour or shelter now the new harbour is established. All vessels anchoring outside must keep a light up during the night.

Holyhead Harbour Lights, situate on the starboard hand in entering the harbour, are stationary. The higher fixed white light formerly shewn from the Light Tower on the Old Pier Head of the Old Harbour is discontinued, and a fixed white light, at an elevation of 20 ft. above high water, shewn from the structure above named on the end of the wooden pier which now forms the entrance to the harbour. The small red light is still exhibited from the Light Tower on the Old Pier Head of the Old Harbour, between the bearings of S.S.W. $\frac{1}{2}$ W. and S.W. The former bearing clears the end of the Breakwater, and the latter all danger, on the east side of the bay. A red light is shown from a mast 84 yds. from the eastern extremity of the new breakwater of the New Harbour at an elevation of forty feet above the level of high water. A gong is sounded in foggy weather. At night vessels should not steer in for the New Harbour until the small red light in the Old Harbour is seen, and in entering or leaving the harbour they should not approach the breakwater light nearer than $\frac{1}{2}$ of a cable.

FOG SIGNAL STATION.—On the North Stack Point is a fog-gun of large size, battery, attendants' residence, magazine and flagstaff, all painted white. For the greater security of vessels navigating in the vicinity of Holyhead, and of Her Majesty's packets in particular, the above gun is fired during foggy weather.

every half hour; except from 10.45 a.m. to 11.15 a.m., and the same time p.m., when for 15 minutes, or till the arrival of the day mail packets, it is fired every 15 minutes, Greenwich time being observed.

the Skerries is a cluster of islets and rocks 13-5ths mile to the northward of Carmel Point, occupying a space of half a mile. Upon the centre and east islet of the group is a lighthouse 115 feet high, showing a fixed bright light 7 feet above the level of high water, 16 miles. The position of this lighthouse is lat. $53^{\circ} 25' 18''$ N., and long. $4^{\circ} 24''$ W. A short distance all round the islands is deep water, except on the eastern side of the group, where is a shoal rock of $2\frac{3}{4}$ fathoms, called the *an*, lying with the lighthouse in one line. Pengarn Hill bearing S.S.E. Upon the rock there is a great overfall when the tide is running either way. Between the Skerries Islets and Carmel Point is a shoal ledge of rocks, drying with low tides only, called the East Platters. The rocks all round are 8 to 16 fathoms, there is a strong rippling when the tide is heavy. You may sail between the Skerries and the Skerries by bringing the North Stack Bridge over the North Stack, between them and Carmel Point by bringing the South Stack and North Stack in one line. The Beacon on the West Mouse is in one with the Middle Mouse, also is it on the south side.

Point Lynas lies S.E. by E. $\frac{1}{2}$ E. of the eastern point of Amlwch Bay, distant 11 miles, and is situate in lat. $53^{\circ} 25' 18''$ N., and long. $4^{\circ} 17'$ W. It is a bold conspicuous point of land both from the east and westward. A lighthouse is situated on the high pitch of the point, in a castellated building, with a white lantern. It exhibits a flashing light, which becomes instantaneously obscured at intervals of 10 seconds, and remains visible 2 seconds only, so that it is readily distinguishable from the Skerries and other lights in the vicinity. From Lynas lighthouse to Great Orms Head, S.E., 16 miles; N.W. Lightship, Liverpool, E.S.E., 11 miles; Calf of Man, N. $\frac{1}{2}$ W. 42 miles; Nelson, off Preston, E., 41 miles; Lee's Head, N.E., 70 miles.

Port of Amlwch, Anglesea.—In low water, when the Breakwater Balks are down, a Ball is fixed on a pole at the easternmost point of the harbour. When many vessels lie at the entrance of the harbour, a Red Light will be shown, and when the entrance is clear a White Light.

Sail into Beaumaris Harbour, THROUGH THE SOUND IN LOW WATER.—Steer in for Table Land, till the end of Puffin Island comes open with the end of Penmaenmawr Hill. These hills will clear the Dinmora Bank on your starboard hand. You then have the

Sound fairly open; but to avoid the rocks off Trwyndu Point, keep more to the Perch on your left; and when Beaumaris comes open off Trwyndu Point, haul up for the red buoy off Penman, keeping it on your starboard hand, and off the red buoy of the Causeway on your left. Anchor in 4 fathoms off Penman red buoy, clean and good holding ground, well sheltered from a north-westerly wind; but if one hour's flood, you will carry 15 feet over the flats off Penryn Point. Steer for the black buoy on the Spit of the Levan Sand, abreast of Friar's House, where anchor in 5 fathoms low water spring tides, or at half flood steer for the town, keeping the red buoy on Watch House Point on your starboard hand, in 6 and 7 fathoms. Keep that depth of water until the Church at Beaumaris bears N. N. E. by compass when you may anchor in 9 fathoms at that time of tide. Thence you will see Bangor Pool, which is above Ferry Point. But if any of the buoys should be missing as you steer up, keep the Church Tower and Lodge Hill in one.—Opposite the Friar's House, in mid-channel, is a sandbank, marked by a red and white chequered buoy: in sailing up to Beaumaris, keep this buoy on the starboard hand.

To Sail out of Beaumaris Harbour, FROM THE ANCHORAGE OFF THE TOWN.—Weigh at high water, and drop down to Friar's Road. Give the black buoy off the Spit a berth on your starboard hand, and the red buoy off Penman on your larboard. At half ebb, take the eastern passage, keeping off the red buoy of the Causeway on your larboard hand. From the latter steer for the east end of Puffin Island, on your larboard hand, keeping off it half a cable's length, and the black buoy off the Dutchman's Spit the same distance on your starboard hand.

Menai Lighthouse is erected at the north-eastern entrance of the Menai Straits. The light is STATIONARY and of a RED colour, visible from N.W. $\frac{1}{2}$ W. seaward, to S.W. $\frac{1}{2}$ W. excepting that by the intervention of Puffin Island the light will be eclipsed to vessels upon the bearings from it of E. by N. $\frac{1}{2}$ N., to E. $\frac{1}{2}$ S. A ledge of rocks extending under water from the base of the lighthouse nearly 50 yards, it is advisable not to approach the building within that distance.

Conway Harbour.—There are two channels leading into this harbour—the west and north. For the west channel, steer from the N.W. black buoy to the second black buoy, leaving them on your port hand; keep the red buoy off Penmaenbach, the chequered red and white buoy, the two red buoys, and the perch, on your starboard hand; haul up, and steer for the quay, keeping close to Deganwy Point on the port hand. The entrance to the north channel is

marked with a black perched buoy: the second, third, and fourth are all black, and moored in the best of the channel. Vessels drawing from 10 to 12 feet may lash alongside the quay, on mud and sand, dry at low water.

To Sail from Point Lynas to the Great Ormshead.—The course from Point Lynas to the Great Ormshead is S.E. per compass; from whence keep the Ormshead as the line is drawn on the chart, till Rhyland Castle and St. Asaph Church are in one; then haul in till the south mark on Helbre and Bidstone Lighthouse come in one. Steer forward on that line which is the deepest water along the shore. It will also clear the Middle Patch on the left, which is dry at low water, spring tides. Buoys are placed here; red on the starboard, and black on the larboard hand, coming in. Give the Point of Ayr Lighthouse a berth of a mile on the starboard hand: and when it bears W. haul up S.S.E. for mid-channel. At that time the rippling of the tide on the edge of the Salisbury Bank will be very perceptible, as well as on the Welsh side. Continue that course, in mid-channel, till the Grange Mill bears N.E. by E. by compass, then haul quick for Dawpool, and keep that bearing till Burton Mill comes over the town of Parkgate. That course clears the south end of Salisbury Bank, and the Bagilt Flats on your right. As you advance, keep the lead going, and borrow on the Haswell Church side of the shore. It will carry you clear to Bear-house Pool, where anchor till you obtain a pilot. The leading mark for passing at high water across the Salisbury Bank to Hoyle Lake is Helbre Eye on with the Grange Mill.

Chester Bar is a narrow sandbank between 3 and 4 miles in length, stretching rather circularly from S.E. to N.W.; its south end is near to Nant House, and is called the Middle Patch, sometimes drying, the middle of it is called Earwick, and dry at low water; but much the greater part of it never dries, having from 3 to 6 feet water over it at all times. To clear the Earwick to the eastward, bring Nant House and the barn above it in one. To SAIL OVER CHESTER BAR in a ship drawing 12 feet, take half-flood; and when Craig Disart Hill bears S. S. E., which with Middle Hill and Comb Hill form an equilateral triangle, keep the two Ormsheads shut below, and a little open above; by this you will avoid all danger on the southward. To avoid the banks and shallows on the north side, open the Ormsheads below near a ship's length, but not more. If a vessel comes to Chester Bar before half-flood, and is apprehensive of not having sufficient water to cross it, she may sail between the Middle Patch and the Earwick, keeping the Ormsheads a little open below;

and when Craig Disart Hill and Middle Hill are in a line, steer N.E. by E. and you deepen your water to 4 or 5 fathoms, and sail along Hoyle Sand for the Point of Air, giving that point a berth of half a mile. To avoid that part of Hoyle which is opposite to Air, keep Bidstone Windmill to the south of Helbre Sandmerhouse; this will carry you through the Swashway toward Hoyle Lake. The mark which leads clear of the northern part of the Hoyle Sand, and directly to Hoyle Lake, is the Point of Air Lighthouse open to the northward of Hoyle Island.

The River Dee.—Vessels may go at a tide about a mile to the eastward of Point of Air, upon which a lighthouse is erected. The tide runs, when strong, $3\frac{1}{2}$ miles an hour; and when the tide and wind are contrary to each other, makes a rough sea here. At this place, which is called Wild Road, you can anchor in 6 fathoms; or you may proceed higher up to the anchorage off Linacre Crags, where, in 6 or 7 fathoms, you will be much better sheltered than in Wild Road from north-westerly winds, and ride the ground that holds well. To sail from Wild Road to Dawpool, a distance of 6 miles, bring the southernmost head of Dawpool, which stands below a cliff, exactly in a line with the barn, showing a white end, standing on the top of the cliff, but the barn must not be brought on either side of the house, anchor about 2 cables' length from high water mark in $3\frac{1}{2}$ or 4 fathoms at low water. In the stream runs 5 miles an hour with the strongest. At Parkgate, which is more than 4 miles up the river, vessels may lie aground on the beach; for there are $2\frac{1}{2}$ fathoms in the channel below the town, and 3 fathoms above it, yet the stream is so strong, and the ground so indifferent, that a vessel would drag anchor. Take the ground about 2 cables before high water, below the house at Parkgate. Vessels in making their passage to Parkgate must use the utmost caution to avoid the Salisbury Bank, a dangerous shoal, and lying in the direction of the river. The channel now at Parkgate is opened into a swashway between Bagilt and Flint; four red buoys are placed on the edge of the Mostyn and Bagilt Banks, and two black ones on the Salisbury Bank, the former of these to be left on the starboard side, the latter on the larboard. A black buoy marks the SELDOM SEEN ROCKS in the channel between the Salisbury Bank and Lime Wharf. There are three small islands or rocks, called the Helbre Flats, lying to the southward of Hoyle Sands: on the northernmost of which is called Great Helbre, are two wooden beacons or marks, distant from each other 633 yards.

BAY AND HARBOUR OF LIVERPOOL.

the vicinity, and to the northward westward of the Rivers Dee and Mersey, lie the banks which form the principal channels to Liverpool, viz., the Great Burbo Banks, the Burbo Sands and Flats, the Jordan Banks, Formby Point Flats, &c. The principal channels are, the Victoria Channel, the Queen's Channel, the Old Formby Channel, and the Crosby or Main Channel.

The principal lights and sea-marks of Liverpool Bay are as follow:—

AT ORMSHEAD.—A first order Diaphanous Fixed Light is exhibited from a Lighthouse, situate on the Northern point of the Great Ormshead, at an elevation of about 325 feet above the sea level. It will appear as a fixed Light when seen from any point between the bearings NW by W round by the North to East, and as a Diaphanous Light from East to E. $\frac{1}{2}$ S. By arrangement the light will be found to flash suddenly when standing into Harris Bay, if brought to bear to the westward of S.E. by E. $\frac{1}{2}$ E., warning of approach to shoal water; when to the eastward of Ormshead, the change from bright to Red arises upon the change of bearing of the Fairway Bell Buoy, off the entrance to the Queen's Channel, in Liverpool Bay, and the Red light will finally disappear if brought to the northward of W. $\frac{1}{2}$ N., warning of the approach to the northern edge of the East and East Hoyle; if the Red light be kept in sight, those banks cannot be approached nearer than one mile.

The **NORTH-WEST LIGHT SHIP** has been removed to the position indicated for a transition of the Ormshead Light from Bright to Red, and by the masking and unmasking of the Upper Holylake Beacon on a N.N.W. bearing; she will lie to the West extreme of Three and Four Tom Tongue, in 6 $\frac{1}{2}$ fathoms at low water, and will exhibit a powerful bright flashing Light, appearing once in every minute, with the following bearings. Ormshead Light West, 20 miles; Queen's Channel Bell Beacon East, 3 $\frac{1}{2}$ miles; Crosby Light Ship, E. $\frac{1}{2}$ S., 6 miles; Buoy of East Hoyle, S.S.E. 4 $\frac{1}{2}$ miles; Helbre Swash Fairway Buoy, S. 4 $\frac{1}{2}$ miles.

BELL BEACON, in the form of a square Pyramid, the body of open lattice work, painted RED, and marked in white with the words "HORSE CHANNEL, S.E. $\frac{1}{4}$ S." has been removed in the fair-way to the Horse Channel. This Beacon occupies the position formerly held by the N. W. Lightship; the marks for its station are, the Beacon on the Eye, and Helbre Beach Beacon in one S. $\frac{1}{2}$ E. (nearly). Bidston Lighthouse open Eastward of Leasowe Lighthouse S.E. $\frac{1}{4}$ S.

The **FORMBY LIGHT VESSEL**, at the elbow of the Crosby and Queen's Channels, moored in 25 feet at low water, shows one Red light visible 8 miles; a red ball is exhibited during the day. Her hull is painted red. In foggy weather a bell is tolled. Crosby Lightship, S. E. $\frac{1}{2}$ S., 2 $\frac{1}{2}$ miles; N. W. Mark, E. by N. $\frac{1}{4}$ N., 3 $\frac{1}{2}$ miles; Buoy Q. Fy. (bell beacon), N. W. by W. $\frac{1}{2}$ W., 2 $\frac{1}{2}$ miles.

The **CROSBY LIGHTHOUSE**, situated to the north-eastward of Crosby Point, shows a fixed Bright light, elevated 96 ft. above the level of the sea at half-tide, and visible between the bearings of S.S. E. $\frac{1}{4}$ E. and E., which limits indicate respectively when a ship is westward of Formby Spit, or to the southward of Crosby Lightship.

About a mile and a quarter to the north-eastward of Crosby Lighthouse is the **FORMBY OLD LIGHTHOUSE**, the light from which has been discontinued. Near the latter, on the strand, is a beacon, which formerly formed a leading mark for Victoria Channel; further to the northward is the Life Boat House; and near it just round Formby Point, is the North-west Mark. This mark is one with another on Mad Wharf, bearing S. E. by E. $\frac{1}{4}$ E., is the leading direction for entering the Old Formby Channel.

The **CROSBY LIGHT VESSEL**, at the north-east elbow of the Great Burbo Bank, moored in 44 feet at low water, shows a yellow fixed light, visible 8 miles, and carries a red ball at the mast-head in the daytime. Her hull is painted red. From hence the fairway course up the Mersey is S. by E. $\frac{1}{2}$ E. In sailing through Crosby Channel during ebb-tide, to avoid the indraught through the gullies in Great Burbo Bank, vessels should be kept well to the eastward of a line drawn between the Rock Lighthouse and Crosby Lightship.

At Bootle, near Liverpool, are two obelisks on the shore, and behind Bootle, near Walton Church, is a beacon, called Bootle Inner or Walton Mark.

On the south side of Liverpool Bay, on the peninsula separating the Mersey from the Dec, are many objects used as sea-marks, several of which will have been seen before arriving at the North-west Light Vessel. Off the west end of the peninsula are the islets, called the Great and Little Helbre, upon which are placed two beacons. On the mainland, within two miles S.E. by S. of the Helbre Islets, are the village and church of Kirby, to the east of which is Grange Hill, surmounted by a beacon, in the form of a pillar, at 173 feet above half-flood. Within two miles S. S. E. from Kirby, is Irby Hill, with its mill and wood.

About a mile and a quarter north of Kirby, near the shore, is the Hoylake

Hotel, and within half a mile E.N.E. from this are the HOYLAKES LIGHTHOUSES, showing fixed lights. The Upper Light will be exhibited from a bearing of NNW round to the eastward, masking suddenly on the bearing just named, indicating thereby the line of bearing of the N.W. Buoy of East Hoyle, and of the N.W. Lightship. The Lower Light will be exhibited from a bearing of North round to the Eastward, masking suddenly on the bearing just named, to indicate the sailing line between the East Hoyle Bank and the Four and Six Feet Flats. The lower light must be sighted (instead of the upper as formerly) to clear the Flats. The Hoylake Lights in a line indicate the turning point from the Horse into the Rock Channel, or the contrary, between Spencer's Spit and Dove Spit. At a mile to the eastward of the lower light are the Dove Beacons, erected as a mark for the eastern passage into Hoylake, the interior channel of communication between Helbre Swatch, and the Horse Channel, which is, at times, a very desirable harbour.

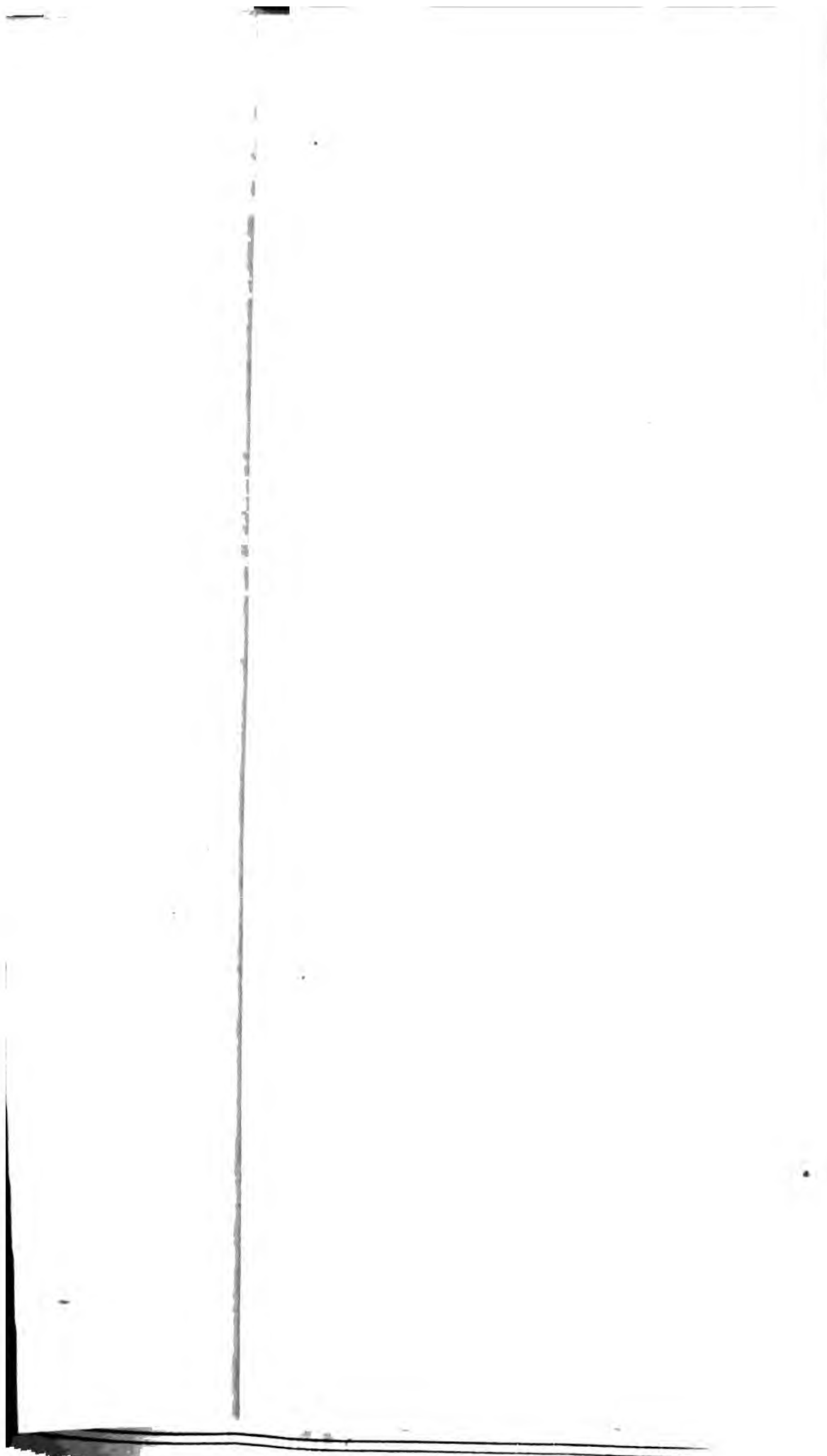
The Old Bell Beacon lies at the entrance of the Rock Channel. It bears a self-acting bell, and is marked, "R 1, Spencer's Spit."

The next conspicuous object is the LEASOWE LIGHTHOUSE, which is white; its light brilliant and fixed, 110 feet above the level of half-tide, is seen 5 leagues off, and is so masked as to give a defined light in the Rock Channel, within certain limits, and suddenly disappears, bearing S.W. $\frac{1}{4}$ S. to vessels inward bound, when off West Wharf Buoy, R 3, Red, and suddenly appears when outward-bound. This is succeeded inland by the BIDSTON LIGHTHOUSE, upon the summit of Bidston Hill, with its church and mill. This lighthouse is of stone, but appears of a dark colour, and shows a brilliant fixed light at 244 feet above the level of half-tide. Its light can be seen 23 miles off. This light is so masked as to give

defined light in the Rock Channel, within certain limits, and to vessels inward bound it suddenly disappears on the bearing S. by W. $\frac{1}{4}$ W. when abreast of East Wharf Buoy, R. 4, Red, and suddenly appears when outward bound. The lights of Leasowe and Bidston are called the Mersey Lights. At three-quarters of a mile eastward from the Leasowe Light is the Mowbray beggar Hall, and $2\frac{1}{4}$ miles further east is the Black Rock Lighthouse, standing upon the reef, so called, at the entrance of the Mersey.

THE BLACK ROCK LIGHTHOUSE is built on the rocks off New Brighton, on the west side of the entrance of the River Mersey, and is a handsome round tower of Anglesea limestone. It is surrounded by water at nearly half-tide. The height of the building, from the lantern to the base, is 75 feet, and the whole height above the level of the sea is 88 feet. The light revolves, exhibiting alternately from the same light room, two bright lights, one of a red colour, each at intervals of a minute, the whole revolution being completed in 3 minutes. Having acquired their brightest state, they gradually become less luminous, and are eclipsed. The light in clear weather can be seen about 5 leagues off. A bright fixed light from a lower chamber is also shown down the Rock Channel and up the River while 11 feet water remain in the Gut, and a black ball denotes the same by day. Three bells toll in succession during foggy weather; and a blue flag summons the Magazine life-boat when distress appears.

Garston Dock.—This Dock, which is 4 miles south of the Liverpool Docks and on the same side of the river, is free from the Liverpool dock rates, vessels entering it being only liable for the harbour and light dues. The channel from Liverpool is buoyed with red and black buoys.





VIEW H.

on E. side of Leasowe Castle (bearing S.S.E.) Emures being from $\frac{1}{2}$ to 1 mile W. of Barbo Flats.

[ENTERED AT STATIONERS' HALL.]

QUIGGIN'S
ISLE OF MAN
ALMANACK

FOR THE YEAR OF OUR LORD

1867,

Being the Third after Bissextile or Leap-Year,
AND THE 30th-31st OF THE REIGN OF HER PRESENT MAJESTY

WITH CORRECT

TIDE TABLES,

FOR

LIVERPOOL, BRISTOL, GREENOCK,
LONDON, CORK, SUNDERLAND, SHIELDS, HULL,
BRIDPORT, SOUTHAMPTON, AND PORTSMOUTH,

AND

MARINERS' COMPANION;

CONTAINING ALSO EVERY CALCULATION NECESSARY FOR

WORKING A LUNAR DISTANCE.

CALCULATED TO MEAN TIME, IN LATITUDE $54^{\circ} 10'$ N. AND LONGITUDE
 $4^{\circ} 30'$ W.

 The Liverpool Tides are calculated for Greenwich mean time.

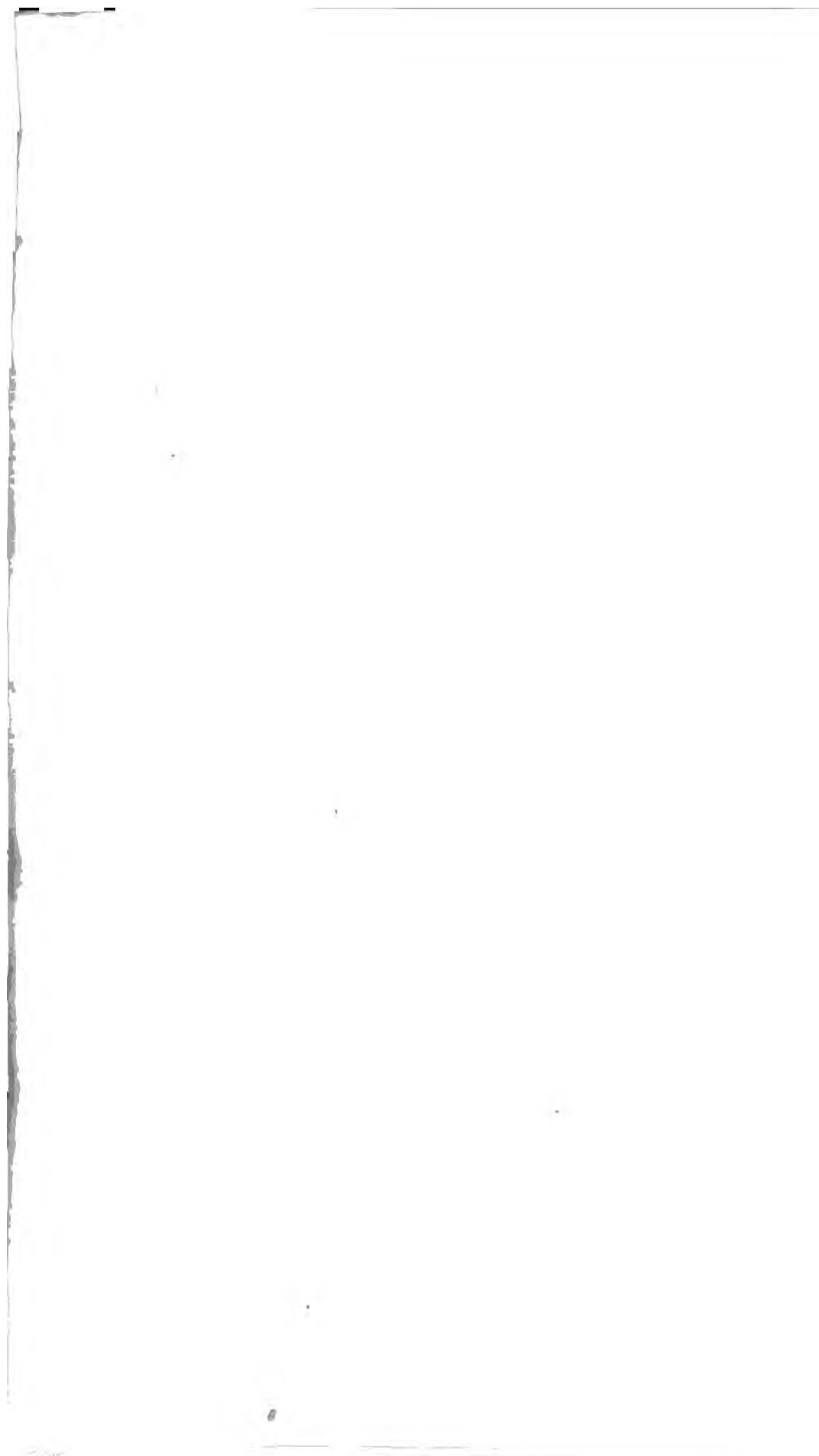
FORTY-SECOND ANNUAL IMPRESSION.

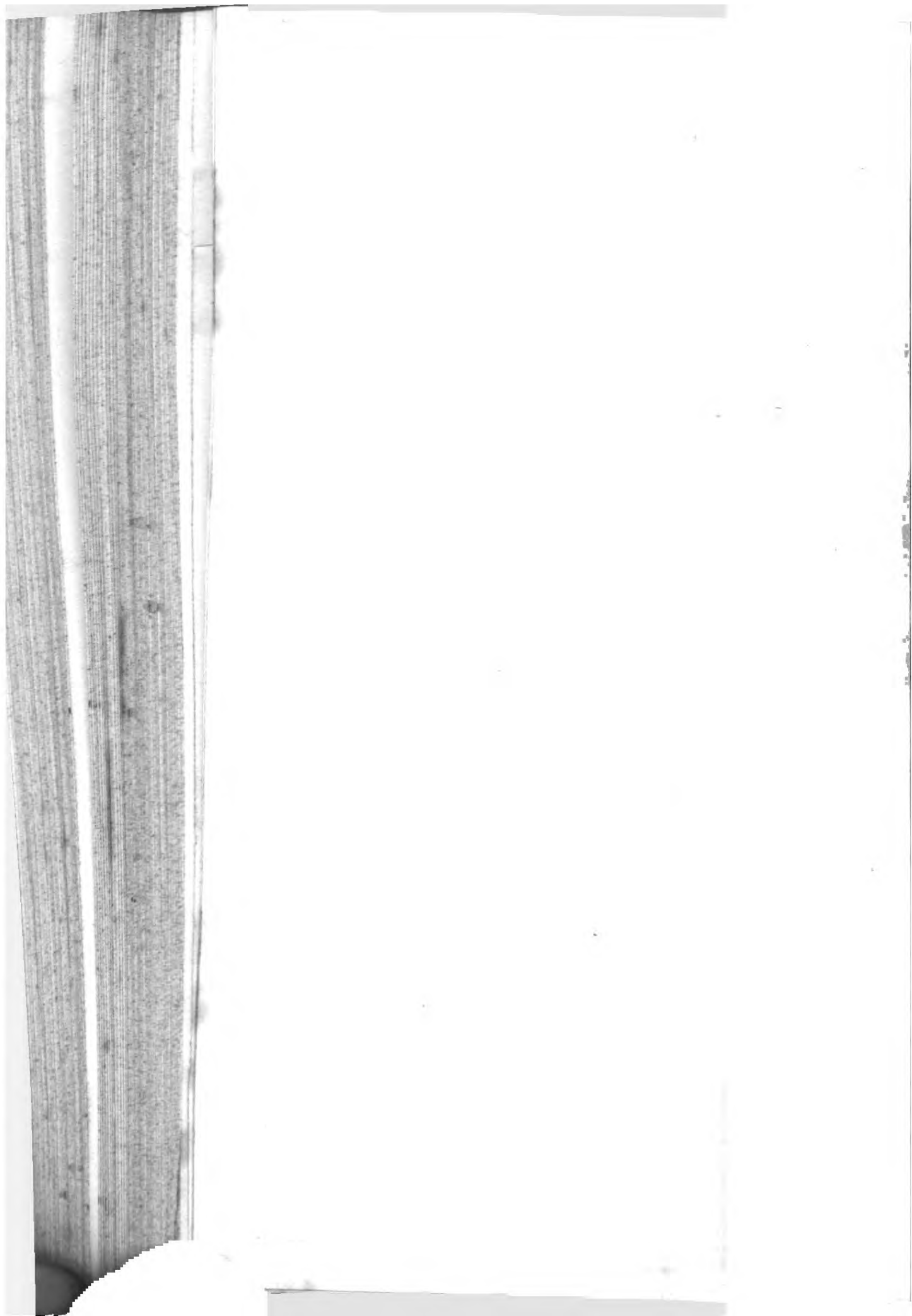
DOUGLAS, ISLE OF MAN:
PRINTED AND PUBLISHED BY MATTHEW GLOVER,
52, NORTH QUAY.

PHASES OF THE MOON. { NEW MOON, 6th day, at 0h. 30m. morning.
FIRST QUARTER, 13th day, at 4h. 34m. evening.
FULL MOON, 20th day, at 7h. 36m. morning.
LAST QUARTER, 27th day, at 2h. 47m. evening.

M D.	Day	Twil. brek.	☉'s ends.	☿ Mercury. rises.	☿ Mercury. sout.	♀ Venus. rises.	♀ Venus. sout.	♂ Mars. rises.	♂ Mars. sout.	♃ Jupiter. sets.	♃ Jupiter. sout.	♄ Saturn. rises.	♄ Saturn. sout.
1	6m	76	a 0	16 18	6m 41	10m 30	5m 42	10m 1	4a 13	1m 6	6a 31	a 54	4m 18m 35
8	6	66	7	16 18	7 2	10 42	5 18	9 39	3 28	0 27	5 45	1 33	3 39 8 10
15	6	36	16	16 18	7 24	10 58	5 2	9 22	sets. 11	42	5 27	1 12	3 16 7 44
22	5	58	6	27 16 17	7 39	11 17	4 54	9 11	8m 11	11 3	5 9	0 51	2 51 7 19
29	5	49	6	29 16 16	7 57	11 37	4 51	9 5	7 35	10 27	4 51	0 30	2 26 6 53

M D.	W D.	Remarkable Days	HIGH WATER.—LIVERPOOL.				Equ. of T.
			MORNING.		EVENING.		
			Time.	Height.	Time.	Height.	
1	Tu	New Year's Day	7 50	12 5	8 24	13 0	3
2	W	H souths 11 a 42	8 51	13 4	9 16	13 9	4
3	Th	Neptune souths 5 a 48	9 39	14 4	10 1	14 7	4
4	F	R. Ascham died, 1568	10 22	15 4	10 41	15 2	5
5	S	Bank Dividends due	10 59	15 11	11 15	15 8	5
6	F	2 Sun. aft. Christmas	11 34	16 6	11 48	16 2	6
7	M	Pro. [Isa. xli; Luke iii to v. 23 Les. [— xliii; John ii to v. 12	—	—	0 5	17 0	6
8	Tu	Lucian, P. & M.	0 23	16 5	0 40	17 3	6
9	W	Fontenelle died, 1801	0 59	16 5	1 18	17 4	7
10	Th	Royal Ex. built, 1838	1 36	16 2	1 56	16 10	7
11	F	Hilary Term begins	2 16	15 8	2 36	16 2	8
12	S	Lavater died, 1801	2 56	15 1	3 17	15 5	8
13	F	1 Sun. aft. Epiphany	3 40	14 3	4 4	14 5	8
14	M	Pro. [Isa. xlii; Matt. xi. [Ox. Term Les. [— xlii; Rom. xi. [begins.	4 33	13 5	5 5	13 8	9
15	Tu	H souths 10 a 45	5 43	13 1	6 40	13 5	9
16	W	B. of Corunna, 1809	7 0	13 5	7 39	14 1	9
17	Th	Battle of Falkirk, 1756	8 14	14 9	8 49	15 4	10
18	F	Prisca, V. & M.	9 19	16 3	9 49	16 8	10
19	S	Copernicus b., 1473	10 19	17 9	10 43	17 10	10
20	F	2 Sun. aft. Epiphany	11 6	19 0	11 33	18 6	11
21	M	Proper [Isa. li; Matt. xviii. Lessons. [— lii; 1. Cor. ii.	11 55	19 8	—	—	11
22	Tu	Vincent, Martyr.	0 18	18 9	0 40	19 8	11
23	W	H souths 10 a 12	1 2	18 6	1 24	19 3	12
24	Th	R. Boyle died, 1627	1 45	17 7	2 6	18 1	12
25	F	Conver. of St. Paul	2 28	16 4	2 48	16 2	12
26	S	Dr. Jenner died, 1823	3 7	15 0	3 28	15 1	12
27	F	3 Sun. aft. Epiphany	3 49	13 8	4 11	13 6	12
28	M	Proper [Isa. lv; Matt. xxiv. Lessons. [— lvi; 1. Cor. viii.	4 35	12 4	5 5	12 1	13
29	Tu	H souths 9 a 48	5 40	11 6	6 16	11 3	13
30	W	Neptune south 4 a 3	6 53	11 5	7 31	11 5	13
31	Th	Hilary Term ends	8 7	12 1	8 42	12 2	13





Bristol tides				SUN.				MOON.				ASPECTS AND WEATHER	
morn.	even.	height		rises.	sets.	rt. ascen.	declin. S.	rises.	souths	declin.		D.	
H. M.	H. M.	F. I.		H. M.	H. M.	H. M. S.	° / "	H. M.	H. M.	° / "	asc.		
1	3 17	3 55	23 4	8 23	3 45	18 46 24	23 1 30	3m42	8m31	13s49	25 1		Expect
2	4 25	4 50	24 9	8 23	3 46	18 50 49	22 56 22	4 43	9 17	16 5	26 2		☾ in Apogee
3	5 14	5 37	26 2	8 23	3 47	18 55 14	22 50 47	5 42	10 3	17 39	27 3		☾ ☽ ☾, 5 m 38
4	6 0	6 22	26 10	8 22	3 48	18 59 38	22 44 45	6 35	10 51	18 24	28 4		☾ ☽ ☾, 2 m 7
5	6 42	7 1	27 11	8 22	3 50	19 4 2	22 38 15	7 23	11 39	18 17	29 5		the gear
6	7 21	7 37	29 0	8 21	3 51	19 8 25	22 31 19	sets.	0a27	17 17	N 6		to begin
7	7 56	8 14	29 10	8 21	3 52	19 12 48	22 23 56	5a56	1 15	15 25	1 7		☾ ☽ ☾, 11 a 42
8	8 30	8 49	30 4	8 20	3 54	19 17 10	22 16 7	7 0	2 2	12 48	2 8		with
9	9 7	9 23	30 7	8 19	3 55	19 21 32	22 7 51	8 7	2 49	9 31	3 9		fair.
10	9 41	10 0	29 11	8 18	3 57	19 25 53	21 59 10	9 18	3 36	5 43	4 10		☽ in ☽, 0 a 20
11	10 17	10 34	29 3	8 17	3 58	19 30 14	21 50 3	10 32	4 23	1 34	5 11		☽ in Perihel.
12	10 52	11 12	27 11	8 17	4 0	19 34 34	21 40 30	11 44	5 11	2a25	6 12		and
13	11 32	11 58	26 1	8 16	4 2	19 38 53	21 30 32	morn	6 1	7 2	7 13		frosty
14	—	0 26	24 5	8 15	4 3	19 43 12	21 20 9	1 0	6 53	11 1	8 14		weather,
15	0 58	1 31	23 9	8 14	4 5	19 47 30	21 9 22	2 18	7 48	14 25	9 15		changing
16	2 14	3 2	25 1	8 13	4 7	19 51 48	20 58 10	3 33	8 46	16 55	10 16		to high
17	3 45	4 2	27 9	8 12	4 9	19 56 4	20 46 35	4 44	9 47	18 14	11 17		winds,
18	4 54	5 25	30 4	8 11	4 10	20 0 20	20 34 36	5 50	10 48	18 12	12 18		☾ ☽ ☾, 4 a 49
19	5 58	6 25	31 5	8 10	4 12	20 4 36	20 22 13	6 51	11 49	16 48	13 19		☽ ☽ ☾, 0 a 42
20	6 51	7 20	33 4	8 9	4 14	20 8 50	20 9 28	rises.	morn	—	F 20		☽ in Aphelion
21	7 44	8 9	34 6	8 8	4 16	20 13 4	19 56 20	6a21	0 47	14 13	15 21		and
22	8 31	8 52	34 5	8 7	4 18	20 17 17	19 42 49	7 41	1 43	10 44	16 22		stormy.
23	9 13	9 31	34 0	8 5	4 20	20 21 29	19 28 57	8 57	2 35	6 43	17 23		Probably
24	9 51	10 11	32 1	8 4	4 22	20 25 41	19 14 43	10 9	3 24	2 28	18 24		snow
25	10 28	10 44	29 10	8 2	4 24	20 29 51	19 0 7	11 17	4 11	1s46	19 25		or rain.
26	11 2	11 20	27 4	8 1	4 26	20 34 1	18 45 11	morn	4 57	5 47	20 26		Now
27	11 35	12 0	24 5	7 59	4 28	20 38 10	18 29 55	0 23	5 42	9 25	21 27		more
28	—	0 25	21 8	7 58	4 30	20 42 19	18 14 18	1 28	6 27	12 34	22 28		☾ ☽ ☾, 2 a 32
29	0 56	1 28	20 1	7 56	4 32	20 46 26	17 58 21	2 32	7 12	15 7	23 29		mild.
30	2 5	2 51	20 4	7 54	4 34	20 50 33	17 42 5	3 33	7 58	16 59	24 30		☽ in Apogee.
31	3 34	4 13	22 3	7 52	4 36	20 54 39	17 25 30	4 28	8 45	18 4	25 31		☽ ☽ ☾, 6 a 12

LUNAR DISTANCES FROM THE SUN.

Mean Astronomical Time at Greenwich.

M.	NOON.	3 HOURS.	6 HOURS.	9 HOURS.	MIDN.	15 HOUR.	16 HOUR.	21 HOUR.
D.	° / "	° / "	° / "	° / "	° / "	° / "	° / "	° / "
1	49 23 49	48 3 24	46 3 1	45 22 42	44 2 25	42 42 11	41 22 0	40 1 51
2	38 41 44	37 21 38	36 1 35	34 41 33	33 21 34	32 1 36	30 41 41	29 20 48
3	28 1 58	26 42 12	25 22 30	24 2 53	22 43 24	21 24 3	20 4 53	18 45 56
4	17 0 14	18 21 35	19 43 30	21 5 55	22 28 46	23 52 1	25 15 37	26 39 32
5	28 3 45	29 28 16	30 53 3	32 18 5	33 43 23	35 8 55	36 34 42	38 0 43
6	39 26 58	40 53 27	42 20 9	43 47 5	45 14 15	46 41 39	48 9 16	49 37 7
7	51 5 12	52 33 31	54 2 4	55 30 52	56 59 54	58 29 10	59 58 41	61 28 27
8	62 58 29	64 28 45	65 59 17	67 30 5	69 1 8	70 32 28	72 4 4	73 35 56
9	75 8 5	76 40 32	78 13 15	79 46 15	81 19 33	82 53 8	84 27 1	86 1 12
10	87 35 40	89 10 27	90 45 33	92 20 56	93 56 38	95 32 38	97 8 57	98 45 34
11	100 22 30	101 59 45	103 37 18	105 15 9	106 53 18	108 31 45	110 10 31	111 49 33
12	113 28 53	115 8 31	116 48 25	118 28 36	120 9 2	121 49 45	123 30 42	125 11 54
13	126 53 20	128 35 0	130 16 52	131 58 56	133 41 11	135 23 37	137 6 12	138 48 56
14	138 2 29	136 29 11	134 56 16	133 23 45	131 51 37	130 19 53	128 48 33	127 17 36
15	125 47 3	124 16 53	122 47 6	121 17 42	119 48 41	118 20 2	116 51 45	115 23 49
16	113 56 15	112 29 2	111 2 9	109 35 36	108 9 23	106 43 28	105 17 52	103 52 35
17	102 27 35	101 2 51	99 38 25	98 14 14	96 50 18	95 26 38	94 3 11	92 39 58
18	91 16 59	89 54 11	88 31 36	87 9 11	85 46 57	84 24 53	83 2 59	81 41 14
19	80 19 37	78 58 7	77 36 45	76 15 29	74 54 18	73 33 13	72 12 13	70 51 17
20	69 30 25	68 9 35	66 48 48	65 28 3	64 7 19	62 46 36	61 25 54	60 5 11
21	58 44 28	57 23 44	56 2 58	54 42 10	53 21 19	52 0 25	50 39 28	49 18 27
22	47 57 22	46 36 12	45 14 58	43 53 38	42 32 13	41 10 41	39 49 4	38 27 20

Explanations

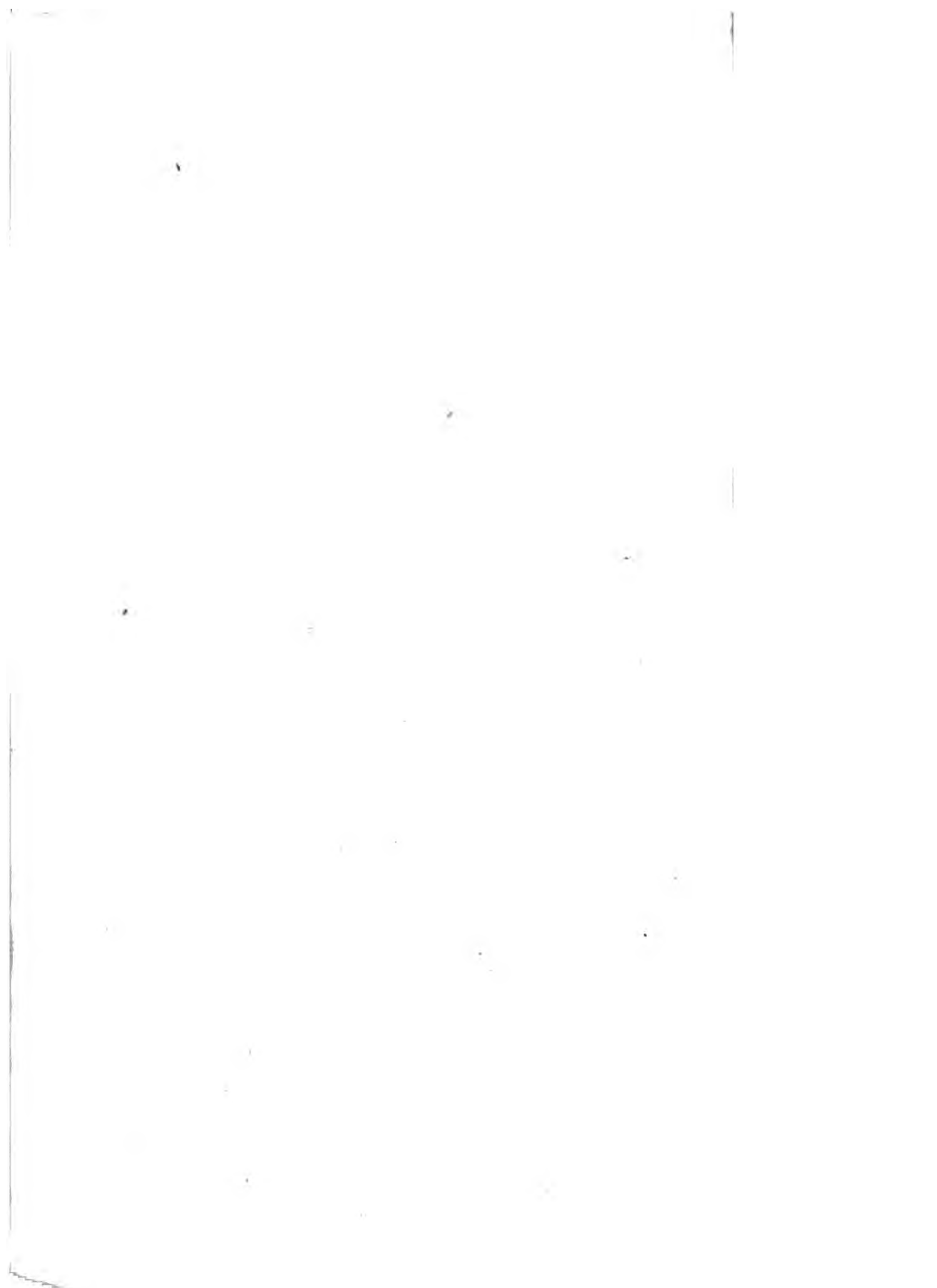
The LIVERPOOL TIDES on the left-hand Calendar pages are calculated for Greenwich mean time; with the height above the level of the Old Dock Sill, now represented by the marks on the east side of the Canning Dock, and include the

PHASES OF THE MOON.	}	NEW MOON,	4th day, at 6h. 17m. evening.
		FIRST QUARTER,	12th day, at 1h. 40m. morning.
		FULL MOON,	18th day, at 7h. 41m. evening.
		LAST QUARTER,	26th day, at 11h. 32m. morning.

M D.	Day brek.	Twil. ends.	☉'s semi.	♂ Mercury rises. sout.	♀ Venus. rises. sout.	♂ Mars. sets. sout.	♃ Jupiter. sets. sout.	♄ Saturn. rises. sout.	M D.
1	5m46	6a43	16 16	7m50 11m46	4m51 9m3	7m20 10a12	4a44 0a22	2m15 6m42	1
8	5 35	6 55	16 15	sets. 0a7	4 52 9 1	6 47 9 39	4 26 0 1	2 49 6 16	8
15	5 22	7 8	16 13	5a18 0 29	4 54 9 1	6 15 9 9	rises. 11m40	1 23 5 49	15
22	5 8	7 21	16 12	6 11 0 50	4 55 9 3	5 45 8 41	6m47 11 19	0 56 5 22	22
28	4 54	7 32	16 10	6 56 1 5	4 56 9 6	5 21 8 20	6 26 11 1	0 33 4 59	28

M D	W D	Remarkable Days	HIGH WATER.—LIVERPOOL.				Equation of Time.
			MORNING.		EVENING.		
			Time.	Height.	Time.	Height.	' "
1	F	St. Bridget.	9 9	13 2	9 35	13 3	13 50
2	S	Purifica. B. V. Mary	9 57	14 5	10 19	14 5	13 58
3	F	4 Sun. aft. Epiphany	10 40	15 8	10 57	15 6	14 5
4	M	Pro. [Isaiah lvii; Mark iii. Les. [— lviii; 1 Cor. xiii.	11 15	16 8	11 32	16 4	14 11
5	Tu	Agatha Sicil. Ves.	11 51	17 7	— —	— —	14 16
6	W	Pleiades souths 6 a 41	0 6	17 1	0 23	18 2	14 20
7	Th	Day long, 9h. 11m.	0 39	17 6	0 57	18 5	14 24
8	F	Mary Q. of Scots beh.	1 17	17 8	1 36	18 3	14 27
9	S	Dr. Maskelyne d. 1811	1 54	17 3	2 13	17 6	14 29
10	F	5 Sun. aft. Epiphany	2 34	16 5	2 56	16 5	14 30
11	M	Proper [Isaiah lix; Mark x. Lessons. [— lxiv; 2 Cor. vi.	3 17	15 5	3 40	15 3	14 31
12	Tu	Rigel souths 7 a 48	4 7	14 3	4 36	13 10	14 30
13	W	Revolution, 1688	5 10	13 3	5 52	12 11	14 29
14	Th	Valentine, Bishop	6 34	13 1	7 16	13 2	14 27
15	F	Atterbury died, 1732	8 0	14 1	8 37	14 3	14 24
16	S	H souths 8 a 35	9 11	15 8	9 42	15 10	14 21
17	F	Septuagesima Sun.	10 9	17 4	10 37	17 2	14 17
18	M	Pro [Genises i; Luke i. to v. 39 Les. [— ii; 2 Cor. xiii.	10 59	18 7	11 20	18 1	14 12
19	Tu	Galileo born, 1564	11 41	19 5	— —	— —	14 6
20	W	Procyon souths 9 a 30	0 1	18 7	0 20	19 9	14 0
21	Th	Trinidad taken, 1797	0 40	18 7	1 1	19 5	13 53
22	F	Fren. Revolution, 1848	1 20	18 1	1 37	18 6	13 46
23	S	Sir J. Reynolds d. 1792	1 58	17 1	2 16	17 2	13 38
24	F	Sexagesima Sunday	2 35	15 10	2 50	15 7	13 29
25	M	Proper [Gen. iii; Luke vii. Lessons. [— vi; Ephes. i.	3 8	14 6	3 28	14 0	13 20
26	Tu	Cam. term divides M.	3 48	13 0	4 11	12 2	13 10
27	W	Arcturus rises 7 a 34	4 40	11 8	5 15	10 11	12 59
28	Th	Elliott's Engagement off Ramsey, 1760.	5 53	10 11	6 33	10 5	12 48

To reduce the Liverpool Tides for the Isle of Man generally, subtract twelve minutes; for the rise or fall of the water from tide to tide, subtract one sixth for the approximate rise or fall in Douglas.



1867.

FEBRUARY 28 Days.

5

Bristol tides				SUN.				MOON.				ASPECTS AND WEATHER	
morn.	even.	height		rises.	sets.	rt. ascen.	declin. S.	rises.	souths.	declin.		D.	
H. M.	H. M.	F. I.		H. M.	H. M.	H. M. S.	° / "	H. M.	H. M.	° / "	age		
1 4 43	5 9 24	3	7 51	4 37	20 58	44	17 8 37	5m18	9m33	18s19	26	1	Rain
2 5 32	5 56 26	4	7 49	4 39	21 2 48	16 51 26	6 2	6 2	10 21	17 42	27	2	♂ gr. H. L. N
3 6 19	6 39 27	5	7 47	4 41	21 6 52	16 33 57	6 41	6 41	11 10	16 11	28	3	♂ ☉, 6 a 3
4 6 59	7 18 29	1	7 46	4 43	21 10 54	16 16 10	sets.	sets.	11 58	13 50	N 4	4	♂ ☉, 10 m 2
5 7 39	7 55 30	8	7 44	4 45	21 14 56	15 58 7	5a57	5a57	0a46	10 45	1 5	5	or snow
6 8 14	8 29 31	11	7 42	4 47	21 18 57	15 39 48	7 7	7 7	1 34	7 6	2 6	6	about
7 8 46	9 5 32	6	7 40	4 49	21 22 57	15 21 12	8 20	8 20	2 22	3 1	3 7	7	♂ ☉, 9 m
8 9 23	9 40 32	5	7 38	4 51	21 26 57	15 2 21	9 35	9 35	3 10	1a18	4 8	8	this
9 9 57	10 17 31	6	7 36	4 53	21 30 56	14 43 14	10 51	10 51	3 59	5 35	5 9	9	time.
10 10 35	10 53 30	2	7 34	4 55	21 34 53	14 23 53	morn	4 50	9 39	6 10	10	10	♂ gr. H. L. S
11 11 12	11 36 27	11	7 32	4 57	21 38 50	14 4 18	0 4	5 43	13 12	7 11	11	11	♀ Sup. ☉
12 —	0 2 25	4	7 30	4 59	21 42 46	13 44 29	1 14	6 38	15 58	8 12	12	12	h ☉, 10 a 2
13 0 30	1 7 23	3	7 28	5 1	21 46 42	13 24 26	2 19	7 35	17 43	9 13	13	13	Frosty
14 1 45	2 33 23	7	7 26	5 3	21 50 36	13 4 11	3 19	8 34	18 16	10 14	14	14	♂ ☉, 11 a 5
15 3 26	4 9 26	3	7 24	5 6	21 54 30	12 43 42	4 18	9 33	17 32	11 15	15	15	♂ ☉, 11 m 4
16 4 45	5 17 29	1	7 22	5 8	21 58 23	12 23 2	5 15	10 31	15 34	12 16	16	16	unless
17 5 46	6 17 30	5	7 20	5 10	22 2 16	12 2 10	6 11	11 27	12 35	13 17	17	17	the
18 6 42	7 6 32	4	7 17	5 12	22 6 7	11 41 6	rises.	morn	—	F 18	18	18	♂ stationary
19 7 28	7 50 34	0	7 15	5 14	22 9 58	11 19 51	6a30	0 21	8 51	15 19	19	19	wind
20 8 11	8 31 34	6	7 13	5 16	22 13 49	10 58 26	7 44	1 12	4 41	16 20	20	20	be
21 8 51	9 9 34	1	7 11	5 18	22 17 38	10 36 50	8 56	2 0	0 23	17 21	21	21	♀ gr. elon. W.
22 9 24	9 44 32	9	7 9	5 20	22 21 27	10 15 5	10 6	2 48	3 49	18 22	22	22	south or
23 10 0	10 17 30	10	7 7	5 22	22 25 16	9 53 10	11 13	3 34	7 42	19 23	23	23	southwest.
24 10 28	10 44 28	6	7 5	5 24	22 29 4	9 31 6	morn	4 20	11 8	20 24	24	24	Cold
25 11 1	11 18 25	9	7 2	5 26	22 32 51	9 8 53	0 17	5 6	14 0	21 25	25	25	h ☉, 7 m 31
26 11 38	— 22 7	7	7 0	5 28	22 36 38	8 46 32	1 18	5 52	16 11	22 26	26	26	☉ in Apogee
27 0 3	0 33 19	11	6 58	5 30	22 40 24	8 24 4	2 17	6 39	17 36	23 27	27	27	and
28 1 6	1 44 19	0	6 55	5 32	22 44 9	8 1 27	3 9	7 26	18 13	24 28	28	28	windy.

LUNAR DISTANCES FROM THE SUN.
Mean Astronomical Time at Greenwich.

M.	Noon.	3 Hours.	6 Hours.	9 Hours.	Midn.	15 Hour.	18 Hour.	21 Hour.
D.	° / "	° / "	° / "	° / "	° / "	° / "	° / "	° / "
1	37 5 30	35 43 33	34 21 28	32 59 17	31 36 59	30 14 34	28 52 2	27 29 23
2	37 5 30	35 43 33	34 21 28	32 59 17	31 36 59	30 14 34	28 52 2	27 29 23
3	20 29 42	21 58 32	23 27 41	24 57 8	26 26 52	27 56 53	29 27 38	30 57 38
4	32 28 23	33 59 21	35 30 33	37 1 57	38 33 4	40 5 24	41 37 27	43 9 41
5	44 42 7	46 14 45	47 47 35	49 20 37	50 53 50	52 27 14	54 0 49	55 34 36
6	57 8 34	58 42 43	60 17 3	61 51 34	63 26 16	65 1 9	66 36 13	68 11 27
7	69 46 52	71 22 29	72 58 15	74 34 13	76 10 21	77 46 39	79 23 9	80 59 48
8	82 36 38	84 13 39	85 50 50	87 28 11	89 5 43	90 43 24	92 21 15	93 59 17
9	95 37 28	97 15 49	98 54 19	100 32 58	102 11 47	103 50 44	105 29 50	107 9 5
10	108 48 28	110 27 59	112 7 37	113 47 23	115 27 16	117 7 16	118 47 22	120 27 34
11	122 7 51	123 48 13	125 28 41	127 9 12	128 49 47	130 30 25	132 11 5	133 51 48
12	134 31 36	133 3 53	131 36 28	130 9 22	128 42 33	127 16 4	125 49 52	124 23 57
13	122 58 19	121 32 58	120 7 53	118 43 4	117 18 31	115 54 12	114 30 7	113 6 16
14	111 42 39	110 19 14	108 56 2	107 33 2	106 10 12	104 47 34	103 25 5	102 2 46
15	100 40 37	99 18 35	97 56 41	96 34 54	95 13 14	93 51 40	92 30 11	91 8 47
16	89 47 27	88 26 11	87 4 57	85 43 46	84 22 37	83 1 28	81 40 21	80 19 13
17	78 58 4	77 36 54	76 15 42	74 54 27	73 33 10	72 11 49	70 50 23	69 28 53
18	68 7 17	66 43 35	65 23 47	64 1 52	62 39 49	61 17 38	59 55 19	58 32 51

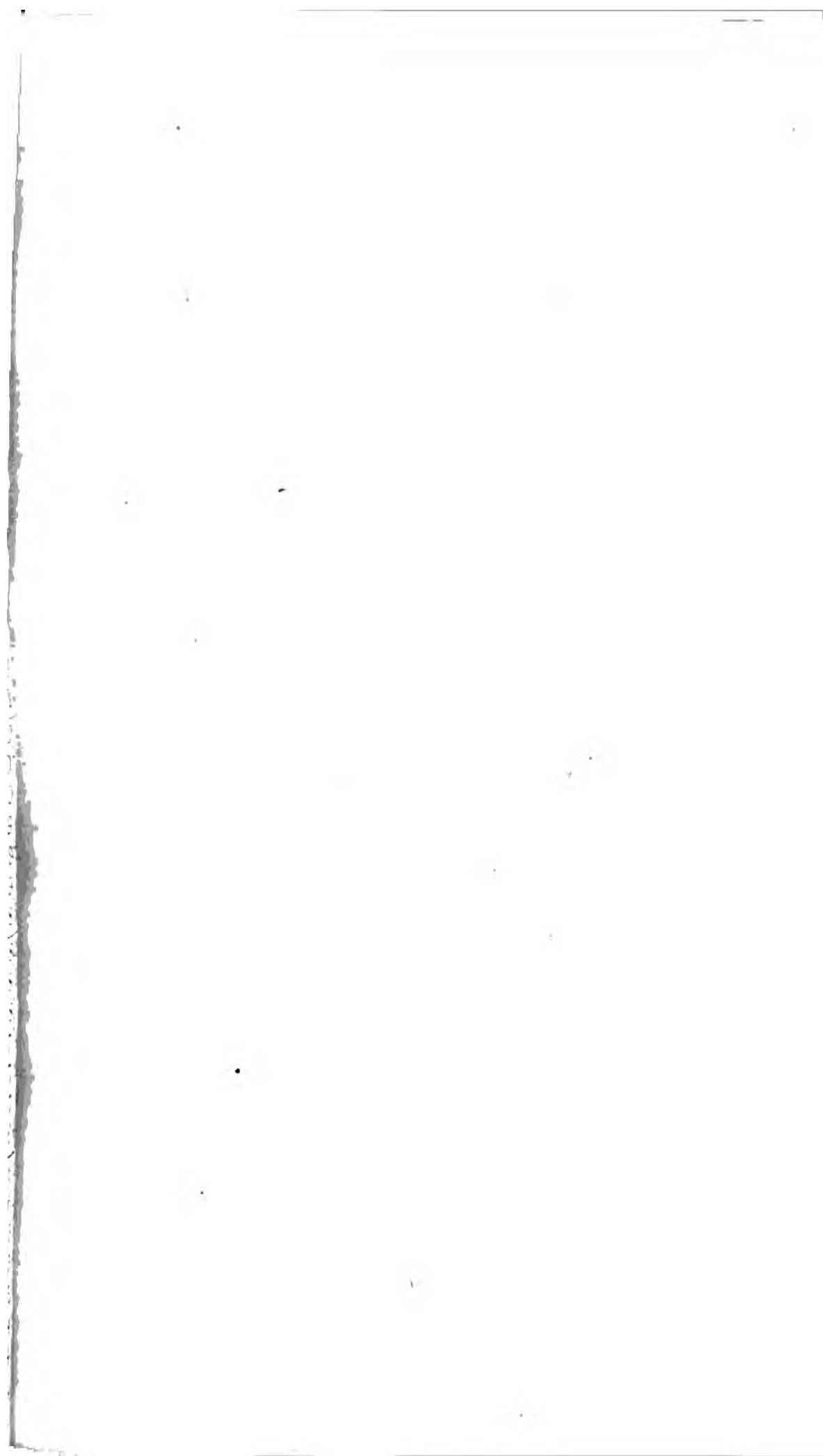
diurnal inequality in the height of each Tide.

The EQUATION of TIME is given to the nearest second for Greenwich mean noon ; and as the difference between the equation of time for mean noon and apparent noon does not in any instance amount to the fifth part of a second, the given minutes and seconds may be used for reducing mean time into apparent time, or the contrary. When the column is headed "Clock before Sun," the Equation is to be subtracted from mean time to reduce it to apparent ; or, in the case of a celestial observation, the result being apparent time, the equation must be added to reduce it to mean time. And when "after Sun," the equation must be added to mean time, to reduce it to apparent time, or subtracted from apparent time

PHASES OF THE MOON. { NEW MOON, 6th day, at 9h. 38m. morning.
FIRST QUARTER, 13th day, at 8h. 47m. morning.
FULL MOON, 20th day, at 9h. 55m. morning.
LAST QUARTER, 28th day, at 7h. 46m. morning.

M D.	Day brek.	Twil. ends.	☉'s semi.	♂ Mercury sets. sout.	♀ Venus. rises. sout.	♂ Mars. sets. sout.	♃ Jupiter. rises. sout.	♄ Saturn. rises. sout.	M D.
1	4m54	7a55	16 10	7 a 3 l a 7	4m56 9 m 6	5m18 8 a 16	6m23 10m 58	0a29 4m55	1
8	4 34	7 50	16 8	7 41 1 15	4 54 9 10	4 52 7 54	5 58 10 36	0 14 28	8
15	4 16	8 41	6 6	7 47 1 4	4 50 9 14	4 27 7 33	5 34 10 15	11a29 4 0	15
22	3 56	8 19	16 4	rises. 0 30	4 44 9 18	4 47 14 5	9 9 53	11 03 32	22
29	3 34	8 36	16 3	5m19 11m44	4 34 9 22	3 43 6 56	4 45 9 32	10 31 3 3	29

M W D D	Remarkable Days	HIGH WATER.—LIVERPOOL.				Equation of Time.	
		MORNING.		EVENING.			
		Time.	Height.	Time.	Height.		
1 F	St. David	7 11	11 3	7 54	11 1	12	37
2 S	Chad. Archbishop	8 29	12 4	9 2	12 5	12	24
3 F	Shrove Sunday.	9 29	13 11	9 51	14 0	12	12
4 M	Proper [Gen. ix to v 20; Luke xiv. Lessons. — xii; Phil. ii.	10 12	15 6	10 32	15 1	12	0
5 Tu	Shrove Tuesday	10 50	16 11	11 8	16 8	11	46
6 W	Ash Wednesday	11 26	18 1	11 43	17 9	11	32
7 Th	Perpetua, Martyr	11 58	19 0	—	—	11	18
8 F	Regulus sou. 10 a 53	0 15	18 6	0 34	19 5	11	3
9 S	Procyon souths 8 a 22	0 54	18 8	1 14	19 2	10	48
10 F	1 Sunday in Lent	1 34	18 5	1 53	18 5	10	33
11 M	Pro. [Genesis xix to v. 30; Ln. xxi. Les. — xxii; 1 Thess. i.	2 15	17 1	2 38	17 2	10	17
12 Tu	Gregory M. B.	3 2	16 3	3 26	15 6	10	1
13 W	H discovered, 1781	3 52	14 8	4 20	13 10	9	45
14 Th	Admiral Byng shot.	4 54	13 4	5 36	12 6	9	28
15 F	Julius Cæsar assass.	6 21	12 10	7 5	12 7	9	11
16 S	Le Brun b. 1739	7 58	13 10	8 29	13 9	8	54
17 F	2 Sunday in Lent	9 2	15 5	9 39	15 3	8	36
18 M	Proper [Genesis xxvii; John iv. Lessons. — xxxiv; 2 Thess. iii.	9 54	17 0	10 20	16 8	8	19
19 Tu	Prin. Louisa b. 18th	10 42	18 3	11 4	17 8	8	1
20 W	Newton died, 1727.	11 23	19 0	11 39	18 3	7	43
21 Th	Benedict, Abbot.	11 56	19 3	—	—	7	25
22 F	Goethe died, 1822.	0 14	18 4	0 32	18 11	7	6
23 S	Day long, 12h. 17m.	0 51	18 0	1 9	18 2	6	48
24 F	3 Sunday in Lent	1 26	17 3	1 43	17 0	6	29
25 M	Pro. [Genesis xxxix; John ii. Les. — xlii; 2 Tim ii.	2 1	16 2	2 18	15 6	6	11
26 Tu	Lady Day, 25th	2 35	14 11	2 54	14 0	5	52
27 W	Peace of Amiens, 1802	3 12	13 6	3 33	12 5	5	34
28 Th	Castor souths 6 a 58	3 56	12 2	4 24	11 0	5	16
29 F	Pleiades set 11 a 40	5 2	11 3	5 42	10 4	4	57
30 S	Pro. [Genesis xliii; John xviii. Les. — xlv; Heb. ii.	6 24	11 2	7 2	10 9	4	38
31 F	4 Sunday in Lent	7 42	12 1	8 16	12 0	4	20





1867.

MARCH 31 Days.

7

Bristol tides					SUN.					MOON.					ASPECTS AND WEATHER.	
M	D.	morn. H. M.	even. H. M.	height P. I.	rises H. M.	sets H. M.	rt. ascen. H. M.	declin. S. ° ' "	rises H. M.	souths H. M.	declin. ° ' "	C. of day	M	D.		
1	2	28	3 16	20 3	6 52	5 34	22 47 54	7 38 44	3m56	8m14	17s58	25	1	♂ in ☿, 2m23		
2	3	59	4 35	23 0	6 50	5 36	22 51 39	7 15 54	4 37	9 2	16 50	26	2	♀ ☿, 11m36		
3	5	3	5 26	25 9	6 48	5 38	22 55 23	6 52 58	5 13	9 50	14 51	27	3	Changeable		
4	5	49	6 11	27 1	6 46	5 40	22 59 7	7 29 56	5 45	10 38	12 5	28	4	♂ ☿, 3 a 29		
5	6	31	6 51	29 6	6 44	5 42	23 2 50	7 6 49	6 13	11 27	8 38	29	5	☿ in Perihel.		
6	7	11	7 30	31 8	6 41	5 44	23 6 32	5 43 36	sets.	0a16	4 39	N	6	Inclined		
7	7	48	8 6	33 5	6 39	5 46	23 10 15	5 20 19	7a20	1 5	0n19	1	7	♂ ☿, 6 a 11		
8	8	25	8 44	34 2	6 36	5 48	23 13 57	4 56 58	8 36	1 55	4 5	2	8	to rain.		
9	9	3	9 22	34 3	6 34	5 50	23 17 38	4 33 33	9 50	2 46	8 20	3	9	☿ gr. elong. E		
10	9	39	10 0	33 2	6 31	5 52	23 21 19	4 10 5	11 2	3 39	12 7	4	10	Still		
11	10	20	10 40	31 6	6 29	5 54	23 25 0	46 33	morn	4 34	15 10	5	11	showery		
12	11	1	11 23	28 9	6 26	5 56	23 28 41	3 22 59	0 12	5 31	17 15	6	12	and		
13	11	47	—	25 8	6 24	5 57	23 32 21	2 59 22	1 21	6 28	18 10	7	13	stationary		
14	0	16	0 52	22 10	6 21	5 59	23 36 1	2 35 44	2 28	7 26	17 52	8	14	♂ gr. hel. l. N.		
15	1	33	2 20	22 9	6 19	6 1	23 39 40	2 12 4	3 25	8 23	16 23	9	15	☿ gr. hel. l. N.		
16	3	20	4 0	25 7	6 16	6 3	23 43 20	1 48 23	4 8	9 18	13 50	10	16	stationary		
17	4	35	5 14	28 4	6 14	6 5	23 46 59	1 24 42	4 45	10 11	10 28	11	17	changeable.		
18	5	31	5 59	30 9	6 11	6 7	23 50 37	1 0 59	5 16	11 2	6 33	12	18	☿ in Perigee		
19	6	23	6 48	31 9	6 9	6 9	23 54 16	0 37 17	5 43	11 51	2 20	13	19	☉ eclips. invis		
20	7	9	7 27	33 2	6 6	6 11	23 57 55	0 18 36	rises.	morn	—	F	20	Expect		
21	7	46	8 5	33 9	6 4	6 13	0 1 33	0 10 6	7a47	0 39	1s55	15	21	☉ ent. r.		
22	8	23	8 41	33 5	6 1	6 15	0 5 11	0 33 46	8 56	1 25	5 59	16	22	some		
23	8	58	9 14	32 6	5 59	6 16	0 8 49	0 57 25	10 3	2 12	9 40	17	23	fine		
24	9	29	9 45	30 8	5 56	6 18	0 12 28	1 21 3	11 6	2 58	12 49	18	24	♂ ☿, 3 a 24		
25	10	1	10 15	28 7	5 54	6 20	0 16 6	1 44 38	morn	3 45	15 20	19	25	weather		
26	10	31	10 46	26 3	5 51	6 22	0 19 44	2 8 11	0 5	4 31	17 6	20	26	☿ in int. ☿ ☉		
27	11	4	11 23	23 4	5 49	6 24	0 23 22	2 31 42	1 0	5 48	18 3	21	27	to		
28	11	49	—	20 10	5 46	6 26	0 27 0	2 55 9	1 50	6 6	18 10	22	28	end		
29	0	21	0 56	19 1	5 44	6 27	0 30 38	3 18 34	2 33	6 53	17 26	23	29	the month.		
30	1	35	2 17	19 7	5 41	6 29	0 34 16	3 41 54	3 10	7 41	15 50	24	30	☿ in ☿, 6 a 32		
31	3	5	3 46	22 4	5 39	6 31	0 37 54	4 5 10	3 43	8 29	13 26	25	31	♂ ☿, 8 a 34		

LUNAR DISTANCES FROM THE SUN.

Mean Astronomical Time at Greenwich.

M.	NOON.	3 HOURS.	6 HOURS.	9 HOURS.	MIDN.	15 HOUR.	18 HOUR.	21 HOUR.
D.	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "
1	57 10 13	55 47 25	54 24 26	53 1 17	51 37 56	50 14 23	48 50 38	47 26 41
2	46 2 31	44 38 7	43 13 30	41 48 38	40 23 33	38 58 12	37 32 37	36 6 47
3	34 40 41	33 14 20	31 47 43	30 20 50	28 53 41	27 26 16	25 58 34	24 30 36
4	22 48 51	21 22 29	19 55 52	18 29 0	17 2 11	15 35 22	14 8 33	12 41 44
5	10 57 0	9 30 38	8 4 6	6 37 17	5 10 28	3 43 39	2 16 50	1 50 1
6	— 48 9	— 21 47	— 15 56	— 9 6	— 2 15	— 4 24	— 11 33	— 18 42
7	— 36 18	— 10 36	— 4 45	— 1 35	— 11 44	— 19 53	— 28 2	— 36 11
8	26 23 33	27 59 50	29 36 16	31 12 52	32 49 37	34 26 31	36 3 33	37 40 43
9	39 18 0	40 55 25	42 32 56	44 10 34	45 48 18	47 26 7	49 4 2	50 42 2
10	52 20 6	53 58 15	55 36 28	57 14 45	58 53 5	60 31 29	62 9 55	63 48 24
11	65 26 55	67 5 29	68 44 5	70 22 42	72 1 20	73 40 0	75 18 41	76 57 23
12	78 36 5	80 14 48	81 53 31	83 32 14	85 10 56	86 49 39	88 28 21	90 7 3
13	91 45 43	93 24 23	95 3 1	96 41 38	98 20 14	99 58 48	101 37 20	103 15 50
14	104 54 17	106 32 43	108 11 6	109 49 26	111 27 43	113 5 56	114 44 7	116 22 14
15	118 0 17	119 38 16	121 16 10	122 54 1	124 31 46	126 9 26	127 47 1	129 24 31
16	131 1 54	132 39 12	134 16 23	135 53 27	137 30 25	139 7 15	140 43 58	142 20 32
17	144 13 41	145 51 29	147 29 17	149 6 5	150 43 31	152 21 18	153 59 4	155 37 11
18	157 21 28	158 59 16	160 37 4	162 14 51	163 52 38	165 30 25	167 8 13	168 46 0
19	170 29 15	172 6 3	173 44 50	175 22 37	176 60 24	178 38 11	180 16 0	181 53 48
20	183 37 2	185 14 50	186 52 37	188 30 24	190 8 11	191 46 0	193 23 48	195 1 35
21	196 45 9	198 22 57	200 0 44	201 38 0	203 15 47	204 53 34	206 31 21	208 9 8
22	209 53 16	211 31 4	213 9 51	214 47 38	216 25 25	218 3 12	219 41 0	221 18 49
23	222 61 3	224 39 51	226 18 38	227 56 25	229 35 12	231 13 0	232 30 49	234 8 36
24	235 69 10	237 47 58	239 26 45	240 45 32	242 24 19	244 2 6	245 20 53	247 19 40
25	248 77 17	250 56 5	252 35 52	253 54 39	255 33 26	257 12 13	258 31 0	260 9 47
26	261 85 24	263 64 12	265 43 0	266 61 47	268 40 34	270 19 21	271 38 8	273 17 0
27	274 93 31	276 72 19	278 51 6	279 69 53	281 48 40	283 27 27	284 46 14	286 25 1
28	287 101 38	289 80 26	291 59 13	292 78 0	294 56 47	296 35 34	298 14 21	300 3 8
29	299 109 45	301 88 33	303 67 20	304 86 7	306 65 54	308 44 41	310 23 28	312 2 15
30	312 117 52	314 96 40	316 75 27	317 94 14	319 73 1	321 51 48	322 30 35	324 9 22
31	325 125 59	327 104 47	329 83 34	330 102 21	332 81 8	334 59 55	336 38 42	338 17 29

to reduce it to mean time.

IN THE TIDE TABLE FOR BRISTOL, on the right-hand pages, the heights are given of those Tides which happen nearest to noon in each day at the Cumberland Gates, without taking into account the diurnal inequality of the height.

PHASES OF THE MOON.	NEW MOON,	4th day, at 10h. 4m. evening.
	FIRST QUARTER,	11th day, at 3h. 9m. evening.
	FULL MOON,	18th day, at 11h. 6m. evening.
	LAST QUARTER,	27th day, at 2h. 1m. morning.

M	Day	Twil.	☉'s	♂ Mercury	♀ Venus.	♂ Mars.	♃ Jupiter.	♄ Saturn.	M
D.	brek.	ends.	semi.	rises. sout.	rises. sout.	sets. sout.	rises. sout.	rises. sout.	D.
1	3m26	8 a 43	16 2	5 m 9 11m 25	4 m 30 9 m 25	3 m 33 6 a 49	4 m 34 9 m 22	10 a 19 2 m 51	1
8	3 49	9 21	16 0	4 50 10 49	4 20 9 28	3 12 6 33	4 9 9 0	9 49 2 22	8
15	2 40	9 23	15 58	4 35 10 29	4 7 9 31	2 51 6 18	3 44 8 38	9 19 1 53	15
22	2 12	9 45	15 56	4 20 10 21	3 54 9 34	2 30 6 3	3 19 8 15	8 49 1 23	22
29	1 42	10 12	15 54	4 7 10 22	3 40 9 37	2 9 5 49	2 53 7 52	8 19 0 54	29

M	W	Remarkable Days	HIGH WATER.—LIVERPOOL.				Equation of Time.
D	D		MORNING.		EVENING.		
			Time.	Height.	Time.	Height.	
1	M	Day incr. 5h. 45m.	8 49	13 8	9 15	13 9	4 2
2	Tu	Bat. of Copln., 1801	9 36	15 6	9 58	15 7	3 44
3	W	Richard, Bishop	10 17	17 1	10 38	17 0	3 26
4	Th	Ambrose, Bishop	10 55	18 5	11 11	18 3	3 9
5	F	Regulus souths 9 a 4	11 32	19 4	11 50	19 1	2 51
6	S	Altair rises 11 a 57	—	—	0 8	19 9	2 34
7	J	5 Sunday in Lent	0 29	19 4	0 51	19 7	2 16
8	M	Proper Lessons. [Exodus iii; Acts iv. — v; Heb. ix.	1 13	19 0	1 34	18 8	1 59
9	Tu	Lord Bacon d., 1626	1 58	18 0	2 22	17 1	1 42
10	W	Regulus souths 8 a 47	2 47	16 7	3 11	15 6	1 26
11	Th	W.&M. crowned 1689	3 42	15 0	4 13	13 7	1 9
12	F	Dr. Young died, 1765	4 48	13 7	5 30	12 5	0 53
13	S	Arcturus souths 0m44	6 11	13 1	6 52	12 6	0 37
14	J	Palm Sunday	7 35	13 11	8 11	13 6	0 22
15	M	Proper Lessons. [Exodus ix; Mat. xxvi. — x; Heb. v to v 11.	8 44	15 3	9 13	14 11	0 7
16	Tu	B. of Culloden, 1746	9 36	16 10	9 58	16 1	0 8
17	W	B. Franklin died 1790	10 19	17 6	10 39	16 11	0 22
18	Th	Judge Jeffries d. 1689	10 57	18 0	11 16	17 6	0 37
19	F	Good Friday	11 31	18 2	11 48	17 8	0 50
20	S	Span, Fleet des 1657	—	—	0 4	18 0	1 4
21	J	Easter Sunday	0 23	17 6	0 40	17 5	1 17
22	M	Proper Lessons. [Exodus xii; Rom. vi. — xiv; Acts ii to v 22.	0 58	17 1	1 13	16 7	1 29
23	Tu	Easter Tuesday	1 30	16 2	1 49	15 4	1 41
24	W	Oxford Term begins	2 6	15 4	2 27	14 6	1 52
25	Th	St. Mark, Evangelist	2 46	14 3	3 7	12 9	2 3
26	F	Cam. Term begins	3 29	12 10	3 54	11 7	2 14
27	S	Sir W. Jones d. 1794	4 22	11 11	4 57	10 11	2 24
28	J	1st Sun. after Easter	5 36	11 8	6 12	11 1	2 34
29	M	Proper Lessons. [Numbers xvi; Acts xxv. — xxii; 1 John iv.	6 51	12 4	7 29	12 1	2 43
30	Tu	Pleiades sets 9 a 43	8 1	13 10	8 30	13 8	2 51

1867.

APRIL 30 Days.

1

Bristol tides										SUN.					MOON.					ASPECTS AND WEATHER							
morn.			even.			height.		rises.		sets.		rt. ascen.		declin.		N.		rises.		souths		declin.		age.		D.	
H. M.			H. M.			F. I.		H. M.		H. M.		H. M.		S.		° /		H. M.		H. M.		° /		°		D.	
1	4	22	4	49	25	6	5	36	6	33	0	41	33	4	28	22	4m13	9m17	10	18	26	1	♀♂☾, 1 a				
2	5	12	5	35	28	7	5	33	6	35	0	45	11	4	51	20	4	40	10	5	6	32	27	2	Fair		
3	5	56	6	19	29	10	5	31	6	37	0	48	50	5	14	31	5	4	10	54	2	19	28	3	♂♂☾, 7 a 11		
4	6	38	6	57	32	3	5	28	6	39	0	52	29	5	37	28	sets. 11 45		2 9 9		N	4	and				
5	7	20	7	40	34	1	5	26	6	41	0	56	8	6	0	18	7 a 33	0a37	6	37	1	5	fine				
6	7	59	8	20	35	0	5	24	6	43	0	59	47	6	23	3	8	51	1	31	10	44	2	6	weather		
7	8	41	9	2	35	0	5	21	6	45	1	3	26	6	45	40	10	7	2	27	14	12	3	7	♂ stationary		
8	9	21	9	43	33	10	5	19	6	47	1	7	6	7	8	11	11	19	3	24	16	43	4	8	♂ in ☿, 11m30		
9	10	4	10	27	31	9	5	16	6	48	1	10	45	7	30	35	morn	4	23	18	4	5	9	during			
10	10	46	11	13	29	1	5	14	6	50	1	14	25	7	52	51	0	27	5	21	18	9	6	10	♂♂☾, 11m30		
11	11	40	—	—	25	8	5	11	6	52	1	18	5	8	14	58	1	23	6	19	17	0	7	11	♂♂☾, 9 a 31		
12	0	10	0	46	23	1	5	9	6	54	1	21	46	8	36	58	2	10	7	14	14	46	8	12	the former		
13	1	23	2	6	23	0	5	7	6	56	1	25	27	8	58	49	2	48	8	7	11	41	9	13	part of		
14	3	0	3	41	25	4	5	4	6	58	1	29	8	9	20	30	3	19	8	57	7	59	10	14	the		
15	4	17	4	47	27	8	5	2	7	0	1	32	49	9	42	3	3	46	9	46	3	54	11	15	♂☐☉, 11 a 30		
16	5	12	5	35	29	9	5	0	7	1	1	36	31	10	3	25	4	11	10	33	0	18	12	16	month.		
17	5	59	6	20	30	6	4	57	7	3	1	40	13	10	24	38	4	35	11	19	4	25	13	17	Now		
18	6	41	7	2	31	7	4	55	7	5	1	43	55	10	45	40	rises. morn		—		F		18	♂ in Aphelion			
19	7	19	7	38	32	1	4	53	7	7	1	47	38	11	6	32	7a48	0	5	8	16	15	19	expect			
20	7	55	8	14	31	11	4	51	7	9	1	51	21	11	27	13	8	53	0	51	11	40	16	20	♂☾☾, 8 a 35		
21	8	30	8	47	31	3	4	48	7	11	1	55	5	11	47	42	9	55	1	38	14	28	17	21	frequent		
22	9	2	9	17	30	1	4	46	7	13	1	58	49	12	8	0	10	53	2	25	16	34	18	22	showers,		
23	9	33	9	48	28	4	4	44	7	15	2	2	34	12	28	6	11	45	3	12	17	53	19	23	♂ gr. elong. W		
24	10	7	10	23	27	5	4	41	7	16	2	6	19	12	48	0	morn	3	59	18	21	20	24	and			
25	10	41	11	0	24	4	4	39	7	18	2	10	4	13	7	42	0	31	4	47	17	57	21	25	changeable		
26	11	21	11	46	22	1	4	37	7	20	2	13	50	13	27	10	1	10	5	34	16	43	22	26	towards		
27	—	—	0	16	20	5	4	35	7	22	2	17	37	13	46	25	1	43	6	21	14	41	23	27	the		
28	0	50	1	23	20	4	4	33	7	24	2	21	24	14	5	27	2	12	7	8	11	53	24	28	end of		
29	2	6	2	53	22	3	4	30	7	25	2	25	11	14	24	15	2	39	7	55	8	27	25	29	♂☾☾, 6m 23		
30	3	31	4	3	25	5	4	28	7	27	2	28	59	14	42	49	3	5	8	43	4	28	26	30	the month.		

LUNAR DISTANCES FROM THE SUN.

Mean Astronomical Time at Greenwich.

N. D.	NOON.	3 HOURS.	6 HOURS.	9 HOURS.	MIDN.	15 HOUR.	18 HOUR.	21 HOUR.
° /	° /	° /	° /	° /	° /	° /	° /	° /
1	42 48 28	41 18 57	39 49 6	38 18 54	36 48 22	35 17 28	33 46 14	32 14 39
2	30 42 44	29 10 28	27 37 52	26 4 57	24 31 41	22 58 7	21 24 14	19 50 4
3	21 18 58	22 59 37	24 40 26	26 21 23	28 2 27	29 43 37	31 24 52	33 6 11
4	34 47 34	36 28 58	38 10 24	39 51 51	41 33 17	43 14 43	44 56 8	46 37 31
5	48 18 51	50 0 7	51 41 20	53 22 29	55 3 32	56 44 31	58 25 23	60 6 8
6	61 46 47	63 27 19	65 7 43	66 47 59	68 28 7	70 8 6	71 47 55	73 27 36
7	75 7 7	76 46 28	78 25 40	80 4 41	81 43 31	83 22 11	85 0 40	86 38 59
8	88 17 6	89 55 2	91 32 47	93 10 20	94 47 43	96 24 53	98 1 52	99 38 40
9	101 15 16	102 51 40	104 27 53	106 3 54	107 39 43	109 15 20	110 50 45	112 25 59
10	114 1 1	115 35 51	117 10 30	118 44 56	120 19 11	121 53 14	123 27 5	125 0 44
11	126 34 11	128 7 26	129 40 29	131 13 21	132 46 0	134 18 26	135 50 41	137 22 43
12	139 58 23	138 36 35	137 14 52	135 53 14	134 31 40	133 10 9	131 48 43	130 27 20
13	129 5 59	127 44 41	126 23 25	125 2 11	123 40 58	122 19 46	120 58 34	119 37 22
14	118 16 9	116 54 55	115 33 39	114 12 22	112 51 1	111 29 38	110 8 10	108 46 39
15	107 25 2	106 3 20	104 41 33	103 19 38	101 57 37	100 35 28	99 13 11	97 50 45
16	96 28 10	95 5 24	93 42 29	92 19 22	90 56 3	89 32 33	88 8 49	86 44 52
17	85 20 41	83 56 15	82 31 34	81 6 38	79 41 26	78 15 56	76 50 10	75 24 6
18	73 57 43	72 31 2	71 4 1	69 36 41	68 9 1	66 41 0	65 12 38	63 43 55
19	62 14 50	60 45 23	59 15 33	57 45 21	56 14 46	54 43 48	53 12 27	51 40 42
20	50 8 34	48 36 1	47 3 6	45 29 46	43 56 4	42 21 58	40 47 28	39 12 36

The SUN'S RIGHT ASCENSION is given in time to the nearest second for Greenwich mean noon, and with the table of the right ascension of the principal fixed stars, given in page 29, is useful to find the time by the meridian distance of those stars.

The SUN'S DECLINATION is also given for Greenwich mean noon, and may be reduced to any other place by applying the proportional part of the daily difference.

PHASES OF THE MOON. { NEW MOON, 4th day, at 7h. 40m. morning.
FIRST QUARTER, 10th day, at 10h. 4m. evening.
FULL MOON, 18th day, at 1h. 52m. afternoon.
LAST QUARTER, 26th day, at 5h. 22m. evening.

M	Day	Twil.	☉'s	☿ Mercury	♀ Venus.	♂ Mars.	♃ Jupiter.	♄ Saturn.	M		
D.	brek.	ends	semi.	rises.	sout.	sets.	sout.	rises.	sout.	D.	
1	1m31	10a28	15 54	4 m 1	10m23	3m36	9m38	2m 4 5a 45	2m46 7m45	8a 10 0m45	1
8	0 25	11 16	15 52	3 50	10 33	3 22	9 41	1 43 5 31	2 20 7 22	7 40 0 16	8
15	noreal night.		15 51	3 38	10 49	3 8	9 45	1 22 5 18	1 54 6 58	sets. 11a42	15
22	noreal night.		15 50	3 30	11 12	2 54	9 41	1 15 5	1 28 6 33	4m50 11 12	22
29	noreal night.		15 49	3 29	11 40	2 41	9 52	0 40 4 52	1 26 8	3 21 10 43	29

M W D D		Remarkable Days	HIGH WATER.—LIVERPOOL.				Equation of Time.
			MORNING.		EVENING.		
			Time.	Height.	Time.	Height.	
1	W	St. Philip & St James	8 56	14 7	9 19	15 5	2 59
2	Th	Camden born, 1551	9 42	16 11	10 5	17 1	3 6
3	F	Invent. of the Cross	10 24	18 3	10 44	18 3	3 13
4	S	Dr. Barrow d. 1677	11 6	19 2	11 26	19 2	3 19
5	J	2 Sun. after Easter	11 56	19 7	—	—	3 25
6	M	Pro. [Num. xxiii, xxiv; Matt. iii. Les. [— xxv; Rom. iv.	0 9	19 6	0 32	19 5	3 30
7	Tu	Altair rises 9 a 52	0 55	19 3	1 20	18 6	3 35
8	W	Procyon sets 11 a 12	1 44	18 3	2 11	17 1	3 39
9	Th	Antares souths 1 m 12	2 37	16 11	3 4	15 5	3 42
10	F	Battle of Lodi, 1778	3 35	15 5	4 6	13 9	3 45
11	S	Lord Chatham d. 1778	4 38	14 1	5 15	12 7	3 47
12	J	3 Sun. after Easter	5 52	13 5	6 29	12 6	3 49
13	M	Proper [Deut. iv; Matthew x. Lessons. [— v; Rom. ii.	7 4	13 10	7 41	13 4	3 50
14	Tu	Fahrenheit born, 1686	8 14	14 10	8 40	14 4	3 51
15	W	Cuvier died, 1832	9 6	15 8	9 28	15 4	3 51
16	Th	D. O'Connel d., 1847	9 53	16 4	10 15	16 1	3 51
17	F	Dr. Jenner born 1794	10 32	16 9	10 50	16 7	3 50
18	S	B. Franklin died 1790	11 8	17 0	11 24	16 11	3 48
19	J	4 Sun. after Easter	11 41	16 10	11 59	16 10	3 46
20	M	Pro. [Deut. vi; Matt. xvii. Les. [— vii; 1 Cor. ii.	—	—	0 16	16 6	3 44
21	Tu	Spica souths 9 a 22	0 34	16 7	0 51	16 0	3 41
22	W	Arcturus souths 10 a 9	1 7	16 2	1 26	15 2	3 37
23	Th	Linnaeus born, 1707	1 54	15 4	2 4	14 3	3 32
24	F	Q. Victoria b. 1819	2 22	14 7	2 44	13 5	3 28
25	S	Prin. Helena b. 1846	3 6	13 9	3 28	12 6	3 22
26	J	Rogation Sunday	3 52	13 0	4 20	11 11	3 16
27	M	Proper [Deut. viii; Matt. xxiv. Lessons. [— ix; 1 Cor. ix.	4 49	12 7	5 26	11 8	3 10
28	Tu	Wm. Pitt born, 1759	6 3	12 8	6 35	12 4	3 3
29	W	K. Chas. II. restored	7 7	13 7	7 38	13 7	2 56
30	Th	Ascension Day	8 10	14 11	8 38	15 2	2 48
31	F	A. Pope died 1744	9 3	16 5	9 29	16 8	2 40

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Bristol tides										SUN.										MOON.										ASPECTS AND WEATHER.									
morn. even. height										rises. sets. rt. ascen. declin. N										rises. souths declin.																			
D. H. M. H. M. P. I.										H. M. H. M. H. M. S. ° ' "										H. M. H. M. ° ' "																			
1	4	30	4	54	28	4	1	26	7	29	2	32	48	15	1	9	3	m	31	9	m	32	0	s	7	27	1	1	♀♂ (, 0 a 46										
2	5	19	5	44	31	1	4	24	7	30	2	36	37	15	19	13	3	56	10	23	4	n	24	28	2	2	♀♂ (, 11 m 12												
3	6	5	6	28	32	2	4	22	7	32	2	40	27	15	37	3	4	21	11	16	8	48	29	3	3	♀ in Aphelion													
4	6	51	7	14	33	11	4	20	7	34	2	44	17	15	54	37	sets.		0	a	12	12	43	N	4	4	Expect												
5	7	46	8	0	35	1	4	18	7	36	2	48	8	16	11	55	9	a	4	1	11	15	50	1	5	5	(in Perigee												
6	8	24	8	45	35	0	4	16	7	38	2	52	0	16	28	57	10	16	2	11	17	47	2	6	6	6	wind												
7	9	9	9	29	33	11	4	14	7	39	2	55	52	16	45	43	11	19	3	12	18	25	3	7	7	7	♂ (, 8 a 11												
8	9	54	10	17	31	10	4	12	7	41	2	59	44	17	2	12	morn		4	12	17	42	4	8	8	8	and												
9	10	40	11	7	29	4	4	10	7	43	3	3	37	17	18	24	0	11	5	9	15	46	5	9	9	9	♀ gr. hel. la. S												
10	11	34	—	—	26	3	4	8	7	45	3	7	31	17	34	18	0	51	6	4	12	52	6	10	10	10	10	♂♂ (, 1 m 55											
11	0	3	0	33	23	9	4	6	7	47	3	11	25	17	49	55	1	24	6	55	9	18	7	11	11	11	11	rain.											
12	1	5	1	40	23	2	4	5	7	48	3	15	20	18	5	14	1	52	7	44	5	18	8	12	12	12	12	Then											
13	2	23	3	8	24	9	4	3	7	50	3	19	15	18	20	15	2	18	8	31	1	8	9	13	13	13	13	more											
14	3	46	4	14	26	8	4	2	7	52	3	23	11	18	34	57	2	42	9	17	3	s	1	10	14	14	14	warm											
15	4	40	5	4	28	1	4	0	7	54	3	27	7	18	49	20	3	4	10	2	6	58	11	15	15	15	15	and											
16	5	30	5	55	29	2	3	59	7	56	3	31	4	19	3	25	3	27	10	48	10	32	12	16	16	16	16	fair.											
17	6	14	6	34	29	9	3	57	7	57	3	35	2	19	17	10	3	52	11	34	13	34	13	17	17	17	17	h♂ (, 11 a 28											
18	6	54	7	12	30	3	3	56	7	59	3	39	0	19	30	35	rises. morn		—	—	—	—	F	18	18	18	18	Frequent											
19	7	31	7	50	30	2	3	54	8	0	3	42	59	19	43	40	8	a	45	0	20	15	58	15	19	19	19	showers											
20	8	7	8	24	29	10	3	52	8	2	3	46	58	19	56	26	9	39	1	7	17	37	16	20	20	20	20	and											
21	8	40	8	55	29	2	3	51	8	3	3	50	58	20	8	51	10	27	1	55	18	25	17	21	21	21	21	(in Apogee											
22	9	13	9	29	28	2	3	49	8	5	3	54	58	20	20	56	11	9	2	42	18	22	18	22	22	22	22	more											
23	9	47	10	3	26	11	3	48	8	7	3	58	59	20	32	39	11	45	3	29	17	28	19	23	23	23	23	changeable,											
24	10	22	10	40	25	8	3	47	8	8	4	3	0	20	44	2	morn		4	16	15	44	20	24	24	24	24	inclined,											
25	10	59	11	20	24	0	3	45	8	10	4	7	2	20	55	3	0	16	5	2	13	16	21	25	25	25	25	to											
26	11	45	—	—	22	9	3	44	8	11	4	11	5	21	5	43	0	43	5	48	10	8	22	26	26	26	26	♀ gr. hel. la. S.											
27	0	9	0	41	21	11	3	42	8	13	4	15	7	21	16	1	1	8	6	35	6	26	23	27	27	27	27	4☉, 10 a 48											
28	1	15	1	46	22	7	3	41	8	14	4	19	11	21	25	57	1	32	7	22	2	18	24	28	28	28	28	fair											
29	2	27	2	5	25	1	3	40	8	15	4	23	15	21	35	31	1	55	8	10	2	n	5	25	29	29	29	and											
30	3	42	3	12	27	9	3	39	8	17	4	27	19	21	44	42	2	21	9	1	6	31	26	30	30	30	30	mild.											
31	4	38	4	5	30	2	3	38	8	18	4	31	24	21	53	31	2	50	9	55	10	43	27	31	31	31	31	♀♂ (, 9 a 26											

LUNAR DISTANCES FROM THE SUN.
Mean Astronomical Time at Greenwich.

H.	NOON.			3 HOURS.			6 HOURS.			9 HOURS.			MIDN.			15 HOUR.			18 HOUR.			21 HOUR.		
	°	'	"	°	'	"	°	'	"	°	'	"	°	'	"	°	'	"	°	'	"	°	'	"
1	37	37	21	36	1	45	34	25	46	32	49	27	31	12	48	29	35	51	27	58	35	26	21	3
6	30	51	35	32	35	13	34	18	50	36	2	25	37	45	55	39	29	19	41	12	36	42	55	46
7	44	38	47	46	21	38	48	4	18	49	46	46	51	29	2	53	11	5	54	52	54	56	34	29
8	58	15	48	59	56	52	61	37	40	63	18	12	64	58	27	66	38	25	68	18	5	69	57	27
9	71	36	32	73	15	18	74	53	46	76	31	55	78	9	46	79	47	18	81	24	31	83	1	26
10	84	38	1	86	14	18	87	50	16	89	25	55	91	31	16	92	36	18	94	11	2	95	45	27
11	97	19	34	98	53	25	100	26	54	102	0	7	103	33	3	105	5	41	106	38	3	108	10	7
12	109	41	54	111	13	25	112	44	40	114	15	38	115	46	20	117	16	47	118	46	57	120	16	53
13	121	46	33	123	15	58	124	45	9	126	14	5	127	42	45	129	11	12	130	39	25	132	7	23
14	133	35	8	135	2	38	136	29	55	137	56	58	139	23	47	140	50	23	142	16	44	143	42	51
22	136	46	59	135	26	2	134	5	2	132	43	57	131	22	48	130	1	35	128	40	17	127	18	54
23	125	57	25	124	35	50	123	14	9	121	52	21	120	30	26	119	8	24	117	46	13	116	23	53
24	115	1	25	113	38	47	112	16	0	110	53	1	109	29	52	108	6	31	106	42	59	105	19	13
25	103	55	15	102	31	3	101	6	37	99	41	57	98	17	1	96	51	50	95	26	23	94	0	39
26	92	34	38	91	8	19	89	41	41	88	14	45	86	47	30	85	19	55	83	52	0	82	23	44
27	80	55	7	79	26	9	77	56	48	76	27	5	74	56	59	73	26	30	71	55	38	70	24	22
28	68	52	41	67	20	36	65	48	7	64	15	12	62	41	53	61	8	8	59	33	58	57	59	23
29	56	24	23	54	48	57	53	13	6	51	36	49	50	0	8	48	23	2	46	45	32	45	7	38
30	43	29	21	41	50	41	40	11	38	38	32	15	36	52	31	35	12	28	33	32	7	31	51	29
31	30	10	37	28	29	32	26	48	17	25	6	55	23	25	31	21	44	8	20	2	53	18	21	54

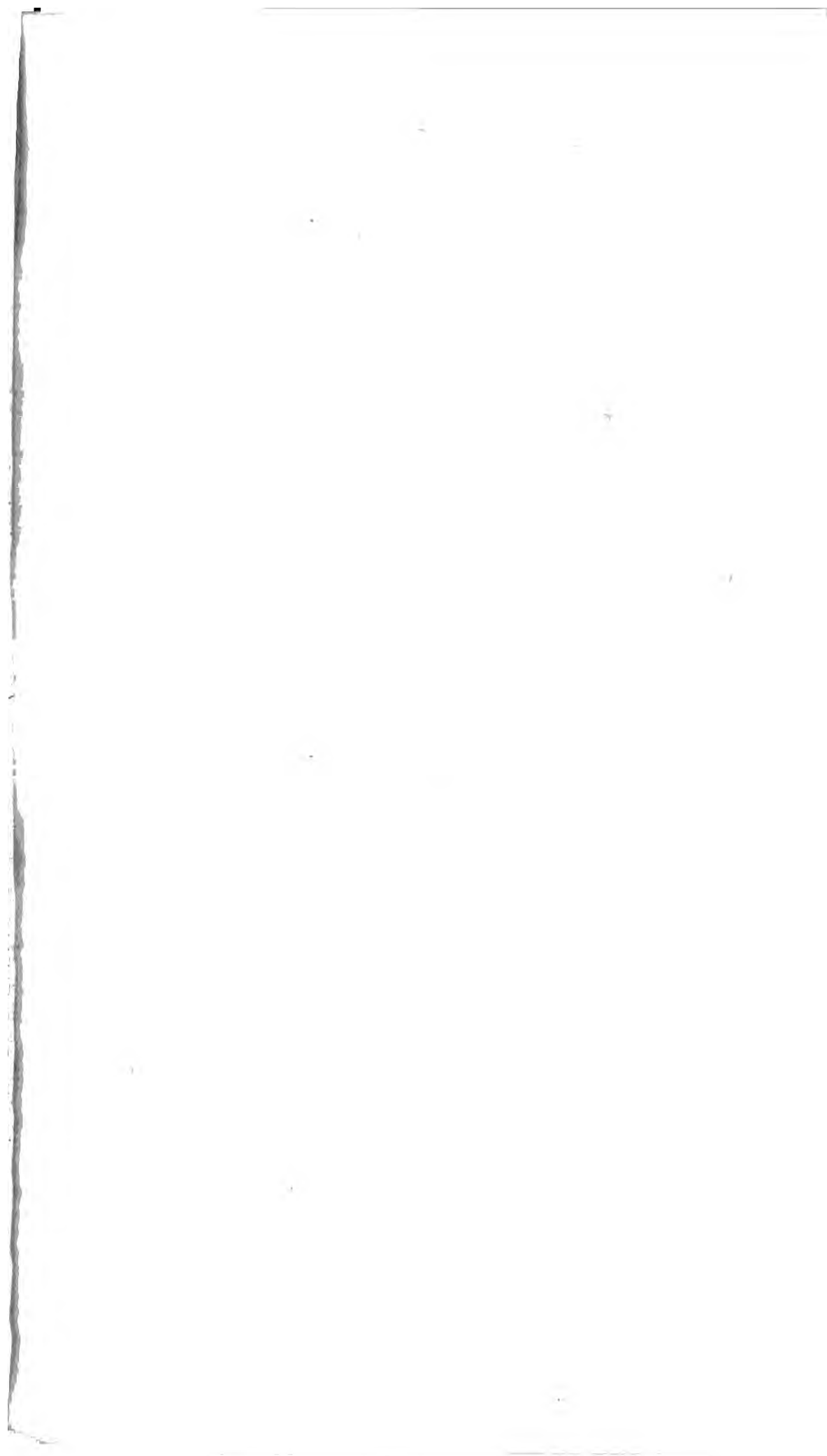
THE SUN'S RISING AND SETTING, and the MOON'S RISING, SOUTHING, AND SETTING are given, for Latitude 54° 10' N., and Longitude 4° 30' W.

THE MOON'S DECLINATION is given to the nearest minute for her transit over the meridian of Greenwich.

PHASES OF THE MOON.	NEW MOON,	2nd day, at 3h. 12m. evening.
	FIRST QUARTER,	9th day, at 6h. 37m. morning.
	FULL MOON,	17th day, at 4h. 54m. morning.
	LAST QUARTER,	25th day, at 5h. 28m. morning.

M D.	Day brek.	Twil. ends.	☉'s semi.	♂ Mercury sets. sout.	♀ Venus. rises. sout.	♂ Mars. sets. sout.	♂ Jupiter. rises. sout.	♂ Saturn. sets. sout.	M D.
1	no real ni. this mon.	no real ni. this mon.	15 48	8 a 31 0 a 1	2 m 36 9 m 54	0 m 28 4 a 47	0 m 46 5 m 57	3 m 9 10 m 30	1
8			15 47	9 27 0 39	2 24 10 0	0 10 4 34	0 20 5 32	2 40 10 1	8
15			15 47	10 0 1 12	2 15 10 6	11 a 45 4 22	11 a 54 5 5	2 12 9 32	15
22			15 46	10 9 1 37	2 8 10 13	11 24 4 9	11 27 4 39	1 43 9 3	22
29			15 46	10 0 1 51	2 4 10 21	11 23 57	10 59 4 11	1 15 8 34	29

M D.	W D.	Remarkable Days	HIGH WATER.—LIVERPOOL.				Equation of Time.
			MORNING.		EVENING.		
			Time.	Height.	Time.	Height.	
1	S	Nicomede, Martyr	9 55	17 8	10 19	17 11	2 31
2	F	Sun. af. Ascens. Day	10 42	18 7	11 7	18 11	2 22
3	M	Pro. [Deut. xii; Mark iii. Les. [— xiii; 1 Cor. xvi.	11 30	19 1	11 52	19 5	2 12
4	Tu	Br. Inst. founded 1805	—	—	0 18	19 2	2 2
5	W	Boniface, Bishop.	0 42	19 4	1 9	18 5	1 52
6	Th	J. Bentham d. 1832	1 35	18 8	2 3	17 2	1 42
7	F	Reform Bill pas. 1832	2 30	17 5	2 55	15 9	1 32
8	S	Lyra souths 1 m 29	3 22	16 1	3 49	14 4	1 20
9	F	Whit Sunday.	4 17	14 10	4 50	13 2	1 8
10	M	[Deut. xvi to v 18; Acts x to v. 34. [Isaiah xi; Acts xix to v 21.	5 23	13 11	5 57	12 7	0 56
11	Tu	Whit Tuesday	6 31	13 7	6 59	12 10	0 45
12	W	Stafford behd. 1641	7 30	13 10	8 2	13 6	0 33
13	Th	Regulus sets 11 a 51	8 31	14 5	9 0	14 4	0 20
14	F	B. of Marengo, 1800	9 25	15 0	9 48	15 0	0 8
15	S	Luther excom. 1520	10 11	15 5	10 30	15 7	0 4
16	F	Trinity Sunday.	10 48	15 8	11 4	16 1	0 17
17	M	Proper [Genesis i; Matt. iii. Lessons. [— xviii; 1 John v.	11 25	15 10	11 41	16 4	0 30
18	Tu	B. of Waterloo, 1815	11 56	15 10	—	—	0 42
19	W	Mag. Char. sig. 1215	0 13	16 5	0 32	15 9	0 55
20	Th	Corpus Christi.	0 49	16 4	1 7	15 5	1 8
21	F	Queen Victoria, Proc.	1 25	16 0	1 45	15 0	1 21
22	S	Machiavelli d. 1527.	2 5	15 6	2 25	14 4	1 34
23	F	1 Sun. after Trinity	2 45	14 11	3 5	13 10	1 47
24	M	Pro. [Joshua x; Luke vii. Les. [— xxiii; Ephes i..	3 26	14 4	3 50	13 2	2 0
25	Tu	Midsummer day 24th	4 19	13 7	4 47	12 9	2 13
26	W	George IV. d. 1830	5 18	13 4	5 52	12 9	2 25
27	Th	Dr. Dodd, exec. 1774	6 25	13 6	6 56	13 5	2 38
28	F	Lord Raglan d., 1855	7 29	14 4	8 1	14 8	2 50
29	S	Proper [Judges iv; Luke xii. Lessons. [— v; Ephes. vi.	8 32	15 7	9 4	16 2	3 3
30	F	2 Sun. after Trinity	9 33	16 11	10 1	17 10	3 15





Bristol tides				SUN.				MOON.				M	D.	ASPECTS AND WEATHER
morn. H. M.	even. H. M.	height F. I.		rises. H M	sets. H M	rt. ascen. H. M. S.	declin. N. ° ' "	rises. H. M.	souths H. M.	declin. ° ' "	age.			
1	5 33	6 0	32 2	3 36	8 19	4 35 29	22 1 58	3m22	10m52	14s20	28	1	♂ in Perihel.	
2	6 25	6 53	33 2	3 34	8 20	4 39 35	22 10 1	sets.	11 52	17 0	N	2	♂ δ (, 6 a 5	
3	7 18	7 42	34 5	3 34	8 21	4 43 41	22 17 41	9 a 2	0a54	18 23	1	3	(in Pergee.	
4	8 9	8 34	34 8	3 33	8 22	4 47 48	22 24 58	10 1	1 57	18 20	2	4	♂ δ (, 7m46	
5	8 58	9 21	34 0	3 33	8 23	4 51 54	22 31 51	10 48	2 58	16 54	3	5	Changeable	
6	9 47	10 12	32 3	3 32	8 24	4 56 1	22 38 21	11 26	3 56	14 17	4	6	but	
7	10 33	10 56	30 2	3 32	8 25	5 0 9	22 44 27	11 57	4 50	10 50	5	7	♂ δ (, 10m24	
8	11 20	11 44	27 6	3 31	8 26	5 4 17	22 50 9	morn	5 41	6 52	6	8	inclined	
9	—	0 13	25 2	3 31	8 27	5 8 24	22 55 26	0 24	6 30	2 39	7	9	to	
10	0 40	1 10	23 5	3 30	8 28	5 12 33	23 0 20	0 48	7 16	1 s 34	8	10	ruiny	
11	1 41	2 16	23 6	3 30	8 29	5 16 41	23 4 50	1 10	8 1	5 37	9	11	♂ gr hel. l.N.	
12	2 56	3 32	24 11	3 29	8 30	5 20 50	23 8 55	1 32	8 47	9 20	10	12	and	
13	4 4	4 34	26 1	3 29	8 31	5 24 58	23 12 35	1 56	9 32	12 35	11	13	wet	
14	5 0	5 24	27 0	3 29	8 31	5 29 7	23 15 51	2 23	10 18	15 13	12	14	♂ δ (, 1 m 40	
15	5 49	6 11	27 6	3 28	8 32	5 33 16	23 18 42	2 53	11 4	17 10	13	15	weather.	
16	6 30	6 48	28 2	3 28	8 32	5 37 26	23 21 9	3 27	11 51	18 18	14	16	which	
17	7 12	7 29	28 8	3 28	8 32	5 41 35	23 23 11	rises.	morn	—	F	17	(in Apogee	
18	7 46	8 4	28 11	3 28	8 33	5 45 44	23 24 49	9a10	0 39	18 35	16	18	may	
19	8 22	8 38	28 11	3 28	8 33	5 49 54	23 26 1	9 48	1 26	18 0	17	19	continue.	
20	8 56	9 13	28 6	3 28	8 33	5 54 3	23 26 49	10 21	2 13	16 34	18	20	with	
21	9 31	9 49	28 1	3 28	8 34	5 58 13	23 27 12	10 49	3 0	14 22	19	21	☉ enters ☿	
22	10 7	10 24	27 5	3 28	8 34	6 2 22	23 27 10	11 14	3 46	11 29	20	22	[Sun. com.	
23	10 41	11 0	26 5	3 29	8 34	6 6 32	23 26 44	11 37	4 31	8 1	21	23	♂ δ (, 6 m 25	
24	11 20	11 46	25 1	3 29	8 34	6 10 41	23 25 52	11 59	5 17	4 7	22	24	intervals	
25	—	0 11	24 1	3 29	8 34	6 14 50	23 24 36	morn	6 3	0 n 5	23	25	of warm	
26	0 37	1 6	23 4	3 30	8 34	6 19 0	23 22 55	0 23	6 51	4 25	24	26	and	
27	1 36	2 12	24 3	3 30	8 34	6 23 9	23 20 50	0 49	7 42	8 39	25	27	♂ stationary	
28	2 54	3 31	26 9	3 31	8 34	6 27 18	23 18 19	1 18	8 36	12 31	26	28	sunny	
29	4 5	4 38	29 2	3 31	8 34	6 31 27	23 15 25	1 53	9 33	15 42	27	29	days.	
30	5 9	5 39	31 7	3 32	8 34	6 35 35	23 12 5	2 37	10 34	17 48	28	30	♀ δ (, 5 m 50	

LUNAR DISTANCES FROM THE SUN.

Mean Astronomical Time at Greenwich.

M.	NOON.			3 HOURS.			6 HOURS.			9 HOURS.			MIDN.			15 HOUR.			18 HOUR.			21 HOUR.		
D.	°	'	"	°	'	"	°	'	"	°	'	"	°	'	"	°	'	"	°	'	"	°	'	"
1	27	1	56	28	45	52	30	29	47	32	13	38	33	57	22	35	40	58	37	24	23	39	7	37
2	40	50	37	42	33	22	44	15	51	45	58	3	47	39	57	49	21	32	51	2	48	52	43	44
3	54	24	19	56	4	33	57	44	25	59	23	54	61	3	2	62	41	47	64	20	8	65	58	6
4	67	35	41	69	12	53	70	49	41	72	26	5	74	2	5	75	37	42	77	12	56	78	47	46
5	80	22	13	81	56	17	83	29	58	85	3	17	86	36	13	88	8	46	89	40	58	91	12	49
6	92	44	18	94	15	26	95	46	13	97	16	40	98	46	47	100	16	34	101	46	2	103	15	11
7	104	44	2	106	12	34	107	40	49	109	8	46	110	36	26	112	3	50	113	30	57	114	57	49
8	116	24	25	117	50	46	119	16	52	120	42	43	122	8	21	123	33	45	124	58	55	126	23	53
9	127	48	37	129	13	9	130	37	29	132	1	36	133	25	32	134	49	17	136	12	50	137	36	12
10	132	51	23	131	28	26	130	5	19	128	42	1	127	18	33	125	54	53	124	31	1	123	6	58
11	121	42	43	120	18	14	118	53	33	117	28	39	116	3	31	114	38	8	113	12	31	111	46	39
12	110	20	32	108	54	9	107	27	29	106	0	33	104	33	20	103	5	49	101	38	0	100	9	53
13	98	41	27	97	12	41	95	43	36	94	14	11	92	44	25	91	14	19	89	43	51	88	13	1
14	86	41	50	85	10	16	83	38	19	82	6	0	80	33	17	79	0	10	77	26	40	75	52	46
15	74	18	27	72	43	44	71	8	37	69	33	5	67	57	8	66	20	46	64	44	0	63	6	49
16	61	29	13	59	51	13	58	12	48	56	33	59	54	54	47	53	15	10	51	35	11	49	54	49
17	48	14	6	46	33	0	44	51	33	43	9	47	41	27	42	39	45	18	38	2	37	36	19	40
18	34	36	29	32	53	4	31	9	28	29	25	44	27	41	52	25	57	57	24	14	2	22	30	11

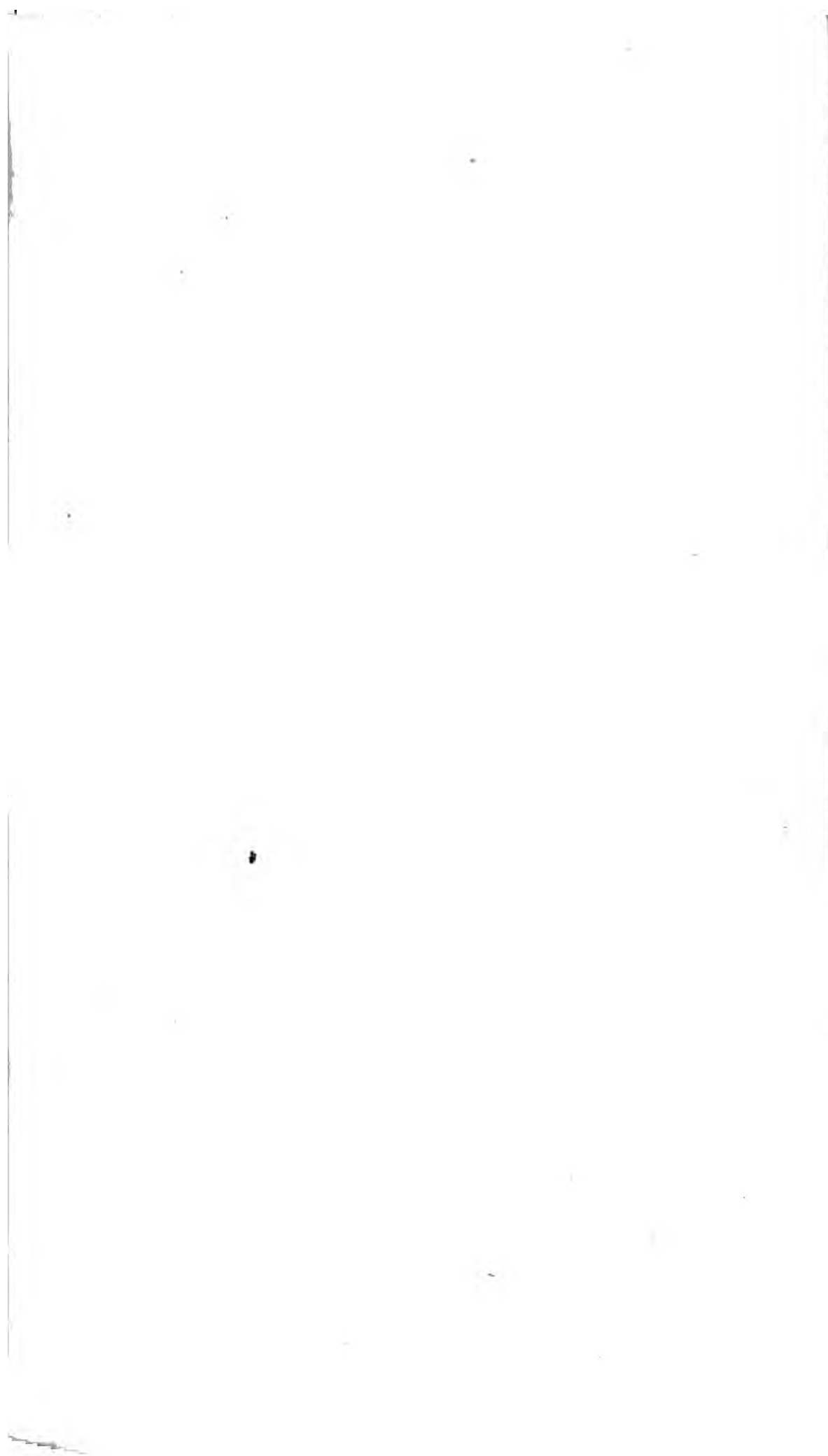
THE MOON'S SEMI-DIAMETER is given to the nearest second for Greenwich mean noon and midnight on page 26, and the HORIZONTAL PARALLAX on page 27.

THE LUNAR DISTANCES FROM THE SUN are given with a view to assist those who may not have an opportunity of using the Nautical Almanack, and are given for every three hours of Greenwich astronomical mean time. As the rest of the Almanack is adapted to Civil time, this distinction must be kept in mind; the Civil

PHASES OF THE MOON.	NEW MOON,	1st day, at 9h. 48m. evening.
	FIRST QUARTER,	8th day, at 5h. 31m. evening.
	FULL MOON,	16th day, at 7h. 56m. evening.
	LAST QUARTER,	24th day, at 2h. 32m. afternoon.
	NEW MOON,	31st day, at 4h. 43m. morning.

M	Day	Twil	☉'s	♂ Mercury	♀ Venus	♂ Mars.	♂ Jupiter.	♂ Saturn.	M
D.	brek.	end.	semi.	sets. sout.	rises. sout.	sets. sout.	rises. sout.	sets. sout.	D.
1	no real ni.	no real ni.	15 46	9 a 47 1 a 53	2 m 4 10 m 24	10 a 56 3 a 54	10 a 51 4 m 3	1 m 7 8 a 26	1
8	no real ni.	no real ni.	15 46	9 33 1 53	2 5 10 32	10 39 3 41	10 23 3 35	0 39 7 58	8
15	no real ni.	no real ni.	15 46	9 31 40	2 11 10 42	10 12 3 29	9 55 3 7	0 11 7 30	15
22	no real ni.	no real ni.	15 47	8 26 1 14	2 21 10 51	9 50 3 17	9 27 2 37	11 a 39 7 2	22
29	no real ni.	no real ni.	15 48	7 44 0 33	2 37 11 1	9 29 3 5	9 0 2 8	11 11 6 35	29

M D	W D	Remarkable Days	HIGH WATER.—LIVERPOOL.				Equation of Time.
			MORNING.		EVENING.		
			Time.	Height.	Time.	Height.	
1	M	Bat. of Boyne, 1690	10 25	18 3	10 49	19 3	3 27
2	Tu	Visit. B. V. M.	11 18	18 10	11 42	19 5	3 38
3	W	Dog Days begin	—	—	0 7	18 10	3 50
4	Th	Trans. St. Martin	0 32	19 7	0 57	18 6	4 1
5	F	Chusan taken, 1840	1 23	19 2	1 48	17 7	4 12
6	S	Oxford Term ends	2 12	17 7	2 38	16 4	4 22
7	F	3 Sun. after Trinity	3 3	16 10	3 27	15 0	4 32
8	M	Proper Lessons. [1 Samuel ii; Luke xix. — iii; Coloss. iii.	3 50	15 4	4 16	13 8	4 42
9	Tu	Sheridan died, 1816	4 35	14 0	5 13	12 9	4 51
10	W	Columbus born, 1447	5 45	13 1	6 15	12 2	5 0
11	Th	Lalande born, 1732	6 48	12 8	7 20	12 6	5 8
12	F	Erasmus died, 1526	7 53	12 11	8 27	13 1	5 16
13	S	Dr. Bradley d, 1752	8 57	13 6	9 23	14 1	5 23
14	F	4 Sun. after Trinity	9 44	14 2	10 5	14 11	5 30
15	M	Pro. [1 Samuel xii; John ii. Less. — xiii; 2 Thess. i.	10 27	14 9	10 45	15 7	5 37
16	Tu	Swithin, Bishop, 15th	11 4	15 4	11 22	16 2	5 43
17	W	Dr. Watts b. 1674	11 40	15 8	11 55	16 7	5 48
18	Th	Earl Grey died, 1845	—	—	0 11	16 0	5 53
19	F	B. Hallidon Hill, 1233	0 28	16 11	0 46	16 1	5 58
20	S	Margaret V, & M.	1 5	16 11	1 23	16 0	6 2
21	F	5 Sun. after Trinity	1 41	16 8	1 59	15 7	6 5
22	M	[1 Samuel xv; John ix. — xvii; 1 Tim. vi.	2 19	16 2	2 39	15 1	6 8
23	Tu	R. Burns died, 1796	3 2	15 5	3 23	14 5	6 10
24	W	Gibraltar taken, 1804	3 47	14 8	4 11	13 8	6 12
25	Th	St. James, Apostle.	4 40	13 9	5 12	13 2	6 13
26	F	St. Anne.	5 47	13 4	6 22	13 2	6 14
27	S	Fren. Revolution, 1830	6 59	13 8	7 37	14 3	6 14
28	F	6 Sun. after Trinity	8 13	14 9	8 47	15 6	6 13
29	M	Proper Lessons. [2 Samuel xii; John xvi. — xix; Philemon.	9 19	16 1	9 50	17 2	6 12
30	Tu	Cook's First V. 1768	10 18	17 4	10 44	18 7	6 10
31	W	Igna. Loyola d. 1556	11 9	18 3	11 32	19 6	6 8



tol tides				SUN.						MOON.						M	D.	ASPECTS AND WEATHER.
even.	height			rises.	sets.	rt. asc.	declin.	N.	sets.	souths	declin.	°	'	°	'			
H. M. P.	I.	H	M	H	M	H. M. S.	°	'	H. M.	H. M.	°	'	°	'	°	'		
6 33	33	0		3 33	8 33	6 39 44	23	8 22	7a44	11m36	18N35	N	1					
7 31	34	4		3 34	8 33	6 43 52	23	4 14	8 38	0a39	17 53	1	2			☿ ☿ (, 9 a 2		
8 24	34	6		3 35	8 33	6 48 0	22	59 42	9 21	1 40	15 49	2	3			☉ in Apogee		
9 12	34	3		3 36	8 32	6 52 7	22	54 46	9 55	2 38	12 40	3	4			☿ ☿ (, 7 a 2		
9 56	33	0		3 37	8 32	6 56 15	22	49 27	10 25	3 33	8 47	4	5			Fair		
0 41	31	3		3 38	8 31	7 0 22	22	43 43	10 52	4 24	4 32	5	6			☿ ☿ (, 9 a 56		
1 21	28	10		3 39	8 31	7 4 28	22	37 36	11 16	5 12	0 10	6	7			☿ gr. elon. E.		
2 0	26	1		3 40	8 30	7 8 34	22	31 5	11 39	5 59	4s 3	7	8			and		
0 32	23	9		3 41	8 29	7 12 40	22	24 10	morn	6 45	7 57	8	9			warm.		
1 27	22	4		3 42	8 28	7 16 46	22	16 53	0 3	7 30	11 24	9	10			Now		
2 40	22	4		3 43	8 27	7 20 51	22	9 13	0 29	8 16	14 17	10	11			expect		
3 59	23	9		3 44	8 26	7 24 55	22	1 9	0 57	9 2	16 30	11	12			☿ ☿ (, 5 m 24		
4 58	25	1		3 45	8 25	7 28 59	21	52 43	1 29	9 49	17 56	12	13			showers		
5 43	26	4		3 46	8 24	7 33 3	21	43 55	2 7	10 36	18 23	13	14			and		
6 26	26	11		3 47	8 23	7 37 6	21	34 44	2 51	11 24	18 17	14	15			changeable		
7 8	27	10		3 49	8 22	7 41 8	21	25 12	rises.	morn	—	F	16			☿ in Aphelion		
7 45	28	8		3 50	8 20	7 45 10	21	15 17	8a24	0 11	17 10	16	17			weather,		
8 19	29	4		3 51	8 19	7 49 12	21	5 1	8 53	0 58	15 14	17	18			which		
8 54	29	9		3 53	8 18	7 53 13	20	54 23	9 19	1 44	12 35	18	19			may		
9 27	29	8		3 54	8 17	7 57 13	20	43 24	9 44	2 30	9 19	19	20			☿ stationary		
10 2	29	4		3 56	8 15	8 1 13	20	32 4	10 7	3 15	5 34	20	21			☿ ☿ (, 10 m 28		
10 40	28	7		3 57	8 14	8 5 12	20	20 21	10 29	4 1	1 30	21	22			☿ in ☿, 9 a 52		
11 18	27	4		3 59	8 12	8 9 11	20	8 23	10 53	4 48	2N44	22	23			☿ stationary		
—	25	10		4 0	8 11	8 13 10	19	56 1	11 20	5 36	6 56	23	24			continue		
0 32	24	3		4 2	8 9	8 17 7	19	43 20	11 51	6 27	10 52	24	25			until		
1 33	23	9		4 3	8 8	8 21 4	19	30 19	morn	7 20	14 17	25	26			the		
3 2	25	4		4 4	8 6	8 25 1	19	16 58	0 28	8 18	16 51	26	27			end of		
4 21	27	7		4 6	8 4	8 28 57	19	3 19	1 16	9 18	18 17	27	28			the		
5 27	30	5		4 8	8 3	8 32 52	18	49 20	2 15	10 19	18 23	28	29			month.		
6 26	31	7		4 9	8 1	8 36 47	18	35 3	3 23	11 21	17 3	29	30			☿ ☿ (, 2 a 58		
7 20	33	5		4 11	7 59	8 40 41	18	20 27	4 37	12a21	14 28	N	31			☿ ☿ (, 3 m 27		
																	☿ ☿ (, 11 m 46	

LUNAR DISTANCES FROM THE SUN.

Mean Astronomical Time at Greenwich.

MON.	3 HOURS.			6 HOURS.			9 HOURS.			MIDN.			15 HOUR.			18 HOUR.			21 HOUR.		
°	'	°	'	°	'	°	'	°	'	°	'	°	'	°	'	°	'	°	'	°	'
51 58	24 34	46	26 17	33	28 0	15	29 42	48	31 25	10	33 7	18	34 49	11	30 48	38 12	6	39 53	4	41 33	42
30 48	38 12	6	39 53	4	41 33	42	43 14	0	44 53	54	46 33	26	48 12	35	51 20	51 29	41	53	7	36	54
51 20	51 29	41	53	7 36	54 45	7	56 22	13	57 58	54	59 35	9	61 10	59	46 23	64 21	21	65	55	54	67 30
46 23	64 21	21	65	55 54	67 30	2	69 3	44	70 37	2	72 9	54	73 42	23	14 26	76 46	6	78 17	22	79 48	15
14 26	76 46	6	78 17	22	79 48	15	81 18	44	82 48	52	84 18	36	85 48	0	17 1	88 45	42	90 14	2	91 42	3
17 1	88 45	42	90 14	2	91 42	3	93 9	43	94 37	5	96 4	8	97 30	53	57 20	100 23	30	101 49	24	103 15	1
57 20	100 23	30	101 49	24	103 15	1	104 40	23	106 5	30	107 30	22	108 55	0	19 24	111 43	36	113 7	35	114 31	21
19 24	111 43	36	113 7	35	114 31	21	115 54	56	117 18	20	118 41	33	120 4	36	27 29	122 15	13	124 12	48	125 35	14
27 29	122 15	13	124 12	48	125 35	14	126 57	32	128 19	42	129 41	45	131 3	41	25 31	133 47	14	135 8	51	136 30	23
25 31	133 47	14	135 8	51	136 30	23	137 51	49	139 13	11	140 34	27	141 55	39	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..
.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	1 40	137 36	3	136 10	13	134 44	11
1 40	137 36	3	136 10	13	134 44	11	133 17	56	131 51	28	130 24	47	128 57	52	30 44	126 3	22	124 35	45	123 7	55
30 44	126 3	22	124 35	45	123 7	55	121 39	49	120 11	29	118 42	54	117 14	3	44 56	114 15	34	112 45	55	111 16	0
44 56	114 15	34	112 45	55	111 16	0	109 45	48	108 15	18	106 44	31	105 13	27	42 4	102 10	24	100 38	24	99 6	6
42 4	102 10	24	100 38	24	99 6	6	97 33	29	96 0	32	94 27	10	92 53	40	19 45	89 45	29	88 10	52	86 35	55
19 45	89 45	29	88 10	52	86 35	55	85 0	38	83 24	59	81 49	6	80 12	40	35 58	76 58	56	75 21	32	73 43	47
35 58	76 58	56	75 21	32	73 43	47	72 5	41	70 27	14	68 48	27	67 9	18	29 49	63 50	0	62 9	51	60 29	21
29 49	63 50	0	62 9	51	60 29	21	58 48	33	57 7	25	55 25	51	53 44	14	2 12	50 19	53	48 37	13	46 54	25
2 12	50 19	53	48 37	13	46 54	25	45 11	19	43 27	58	41 44	2	40 0	36	8 16	36 32	28	34 48	10	33 3	43
8 16	36 32	28	34 48	10	33 3	43	31 19	9	29 34	30	27 49	4	26 5	2							

commences at *Midnight*, and the *Astronomical day* at the following *Noon*, being hours later; thus the hours named 15, 18, and 21, on the 1st January, are ing to Civil reckoning, 3, 6, and 9 in the morning of the 2nd of January, and

PHASES OF THE MOON. { FIRST QUARTER, 7th day, at 7h. 9m. morning.
FULL MOON 15th day, at 10h. 37m. morning.
LAST QUARTER, 22nd day, at 9h. 22m. evening.
NEW MOON, 29th day, at 1h. 5m. afternoon.

M	Day	Twil.	☉'s	☿ Mercury	♀ Venus.	♂ Mars.	♃ Jupiter.	♄ Saturn.	M
D.	brek.	ends.	semi.	sets. sout.	rises. sout.	sets. sout.	rises. sout.	sets. sout.	D.
1	no	night	15 48	7 a 27 0 a 12	2m 45 11m 5	9a 19 3 a 0	8 a 47 1m 55	10a 59 6 a 23	1
8	1m 17	10a 49	15 49	rises. 11 m 27	3 5 11 13	8 57 2 49	8 19 1 24	10 32 5 56	8
15	1 52	10 15	15 50	3m 16 10 57	3 26 11 21	8 36 2 37	7 50 0 54	10 55 5 30	15
22	2 18	9 45	15 51	3 4 10 50	3 49 11 28	8 14 2 26	sets. 0 23	9 38 5 3	22
29	2 41	9 17	15 53	3 26 11 4	4 13 11 35	7 53 2 15	4m 47 11a 47	9 11 4 37	29

M	W	Remarkable Days	HIGH WATER.—LIVERPOOL.				Equation
D	D		MORNING.		EVENING.		of Time.
			Time.	Height.	Time.	Height.	
1	Th	Lammas Day	11 54	18 10	— —	— —	6 5
2	F	Battle of Nile, 1798	0 18	19 11	0 41	18 9	6 1
3	S	E. Baines died, 1848	1 4	19 8	1 25	18 2	5 57
4	F	7 Sun. after Trinity	1 47	18 8	2 8	17 0	5 52
5	M	Proper Lessons. [1 Samuel xxi; Acts ii. xxiv; Heb. vii.	2 30	17 4	2 55	15 8	5 47
6	Tu	Transfiguration	3 15	15 9	3 39	14 3	5 41
7	W	Name of Jesus	4 1	14 1	4 25	12 10	5 34
8	Th	Lyra souths 9 a 25	4 53	12 7	5 25	11 11	5 27
9	F	J. Dryden born, 1631	6 0	11 7	6 36	11 7	5 19
10	S	St. Lawrence	7 11	11 6	7 50	12 1	5 11
11	F	8 Sun. after Trinity	8 19	12 2	8 53	13 1	5 2
12	M	Proper Lessons. [1 Kings xiii; Acts ix. xvii; James i.	9 19	13 1	9 43	14 3	4 52
13	Tu	Old Lammas Day	10 4	14 2	10 26	15 5	4 42
14	W	Printing inventd. 1437	10 45	15 1	11 3	16 2	4 31
15	Th	Napoleon I. b., 1769	11 19	15 11	11 35	17 2	4 20
16	F	Bomarsund tkn. 1854	11 50	16 8	— —	— —	4 8
17	S	Neptune souths 3 m 17	0 7	17 9	0 24	17 1	3 56
18	F	9 Sun. after Trinity	0 41	17 11	0 58	17 3	3 43
19	M	Proper Lessons. [1 Kings xviii; Acts xvi. xix; 1 Peter iii.	1 16	17 10	1 35	16 11	3 30
20	Tu	R. Bloomfield d. 1823	1 56	17 4	2 16	16 4	3 16
21	W	Cnt. Rumford d., 1814	2 34	16 5	2 55	15 6	3 2
22	Th	B. of Bosworth, 1485	3 17	15 4	3 40	14 5	2 47
23	F	Herschell died, 1822	4 10	14 0	4 42	13 5	2 32
24	S	St. Bartholomew	5 17	13 0	5 59	13 0	2 16
25	F	10 Sun. after Trinity	6 40	12 11	7 20	13 9	2 0
26	M	Proper Lessons. [1 Kings xxi; Acts xxiii. xxii; 1 John ii.	8 0	13 11	8 36	15 4	1 44
27	Tu	Thomson died, 1748	9 9	15 6	9 38	17 1	1 27
28	W	St. Augustine, Bishop	10 8	17 0	10 31	18 7	1 10
29	Th	St. John Baptist behd	10 53	18 1	11 17	19 7	0 53
30	F	Paley born, 1743	11 36	18 10	11 56	20 0	0 35
31	S	J. Bunyan died, 1688	— —	— —	0 19	18 11	0 17

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1867.

AUGUST 31 Days.

1

Bristol tides				SUN.				MOON.				M	D.	ASPECTS AND WEATHER
morn. H. M.	even. H. M.	height F. I.		rises. H. M.	sets. H. M.	rt. ascen. H. M. S.	declin. N. ° ' "	sets. H. M.	souths. H. M.	declin. ° ' "	° ' "			
1 7 44	8 9 34	9	4 13 7 57	8 44 35	18 5 33	8a26	1a18	10N54	1 1	1	1	1	1	Showery
2 8 31	8 53 34	10	4 15 7 56	8 48 28	17 50 22	8 54	2 12	6 43	2 2	2	2	2	2	and
3 9 13	9 33 33	11	4 17 7 54	8 52 20	17 34 53	9 19	3 3	2 17	3 3	3	3	3	3	☽ in inf. ☽ ☾
4 9 52	10 12 32	1	4 18 7 52	8 56 12	17 19 8	9 43	3 52	2 s 8	4 4	4	4	4	4	wet,
5 10 34	10 51 29	11	4 20 7 50	9 0 3	17 3 5	10 7	4 39	6 17	5 5	5	5	5	5	☽ gr. hel. I. S
6 11 12	11 31 27	1	4 22 7 48	9 3 54	16 46 45	10 33	5 26	10 0	6 6	6	6	6	6	which
7 11 51	— — —	2	4 24 7 46	9 7 44	16 30 10	11 1	6 12	13 10	7 7	7	7	7	7	☽ ☽ ☽, 0 a 2
8 0 16	0 42 22	6	4 25 7 44	9 11 33	16 13 18	11 31	6 58	15 39	8 8	8	8	8	8	may
9 1 13	1 46 20	5	4 27 7 42	9 15 22	15 56 11	morn	7 45	17 24	9 9	9	9	9	9	continue
10 2 29	3 15 21	4	4 29 7 40	9 19 10	15 38 49	0 6	8 32	18 19	10 10	10	10	10	10	☽ ☽ ☽, 0 a 1
11 3 49	4 26 23	3	4 31 7 38	9 22 58	15 21 12	0 48	9 19	18 24	11 11	11	11	11	11	for some
12 4 53	5 18 25	1	4 32 7 36	9 26 44	15 3 19	1 36	10 7	17 36	12 12	12	12	12	12	☽ stationary
13 5 41	6 5 26	10	4 34 7 34	9 30 31	14 45 13	2 30	10 54	15 58	13 13	13	13	13	13	days
14 6 26	6 46 27	7	4 36 7 32	9 34 17	14 26 52	3 30	11 41	13 34	14 14	14	14	14	14	with
15 7 4	7 22 29	3	4 38 7 30	9 38 2	14 8 18	rises. morn	— —	— —	F 15	15	15	15	15	intervals
16 7 39	7 58 30	7	4 40 7 28	9 41 47	13 49 30	7a50	0 28	10 29	16 16	16	16	16	16	☽ ☽ ☽, 11 m;
17 8 15	8 31 31	5	4 41 7 25	9 45 31	13 30 29	8 13	1 14	6 51	17 17	17	17	17	17	of
18 8 47	9 4 31	9	4 43 7 23	9 49 15	13 11 15	8 36	2 0	2 51	18 18	18	18	18	18	fine
19 9 21	9 40 31	6	4 45 7 21	9 52 58	12 51 48	9 0	2 46	1n21	19 19	19	19	19	19	weather;
20 9 59	10 15 30	7	4 47 7 18	9 56 41	12 32 9	9 24	3 34	5 34	20 20	20	20	20	20	but
21 10 33	10 52 29	2	4 49 7 16	10 0 23	12 12 18	9 52	4 23	9 34	21 21	21	21	21	21	☽ gr. elon. W.
22 11 11	11 38 27	0	4 50 7 14	10 4 5	11 52 15	10 27	5 15	13 6	22 22	22	22	22	22	still
23 — —	0 7 24	8	4 52 7 11	10 7 46	11 32 1	11 9	6 9	15 56	23 23	23	23	23	23	inclined
24 0 36	1 12 23	1	4 54 7 9	10 11 27	11 11 36	morn	7 6	17 47	24 24	24	24	24	24	☽ in Perihel.
25 1 51	2 40 24	0	4 55 7 7	10 15 8	10 51 0	0 1	8 5	18 26	25 25	25	25	25	25	to wet.
26 3 29	4 9 26	11	4 57 7 4	10 18 48	10 30 15	1 3	9 5	17 46	26 26	26	26	26	26	☽ ☽ ☽, 7 m25
27 4 43	5 14 29	11	4 59 7 2	10 22 28	10 9 17	2 13	10 4	15 49	27 27	27	27	27	27	fair if
28 5 46	6 12 32	4	5 0 7 0	10 26 7	9 48 11	3 30	11 2	12 46	28 28	28	28	28	28	☽ ☽ ☽, 10 m33
29 6 37	7 3 33	4	5 2 6 57	10 29 47	9 26 55	sets. 11 57	8 53	N 29	29 29	29	29	29	29	☽ ☽ ☽, 1 m33
30 7 25	7 47 34	8	5 4 6 55	10 33 25	9 5 31	7a20	0a50	4 32	1 30	30	30	30	30	wind be
31 8 10	8 30 34	11	5 6 6 53	10 37 4	8 43 57	7 44	1 41	2s11	2 31	31	31	31	31	northerly.

LUNAR DISTANCES FROM THE SUN.

Mean Astronomical Time at Greenwich.

M.	NOON.	3 HOURS.	6 HOURS.	9 HOURS.	MIDN.	15 HOUR.	18 HOUR.	21 HOUR.
D.	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "
2w	31 26 30	33 5 22	34 43 51	36 21 59	37 59 43	39 37 4	41 14 1	42 50 34
3	44 26 42	46 2 25	47 37 43	49 12 36	50 47 5	52 21 8	53 54 46	55 27 59
4	57 0 47	58 33 10	60 5 9	61 36 43	63 7 54	64 38 41	66 9 4	67 39 4
5	69 8 41	70 37 56	72 6 49	73 35 20	75 3 30	76 31 20	77 58 49	79 25 59
6	80 52 49	82 19 21	83 45 35	85 11 31	86 37 10	88 2 32	89 27 38	90 52 29
7	92 17 5	93 41 26	95 5 34	96 29 29	97 53 11	99 16 41	100 40 0	102 3 7
8	103 26 5	104 48 52	106 11 31	107 34 0	108 56 22	110 18 36	111 40 43	113 2 44
9	114 24 39	115 46 28	117 8 13	118 29 53	119 51 30	121 13 3	122 34 33	123 56 1
10	125 17 27	126 38 52	128 0 15	129 21 38	130 43 1	132 4 25	133 25 49	134 47 14
11	132 31 57	131 0 48	129 29 27	127 57 52	126 26 5	124 54 4	123 21 51	121 49 24
12	120 16 44	118 43 50	117 10 43	115 37 23	114 3 49	112 30 0	110 55 58	109 21 42
13	107 47 13	106 12 28	104 37 30	103 2 18	101 26 51	99 51 9	98 15 13	96 39 3
14	95 2 38	93 25 58	91 49 4	90 11 56	88 34 33	86 56 55	85 19 2	83 40 56
15	82 2 35	80 24 0	78 45 10	77 6 7	75 26 50	73 47 19	72 7 35	70 27 37
16	68 47 27	67 7 4	65 26 28	63 45 40	62 4 41	60 23 30	58 42 9	57 0 37
17	55 18 55	53 37 3	51 55 2	50 12 53	48 30 36	46 48 12	45 5 41	43 23 4
18	41 40 21	39 57 34	38 14 43	36 31 49	34 48 52	33 5 54	31 22 55	29 39 56
19	25 35 36	27 11 9	28 46 18	30 21 6	31 55 31	33 29 34	35 3 13	36 36 30

in any other part of the Almanack would be set down as such. The letters E. and W. inserted in the first column refer to the position of the Sun; E. East, W. West.

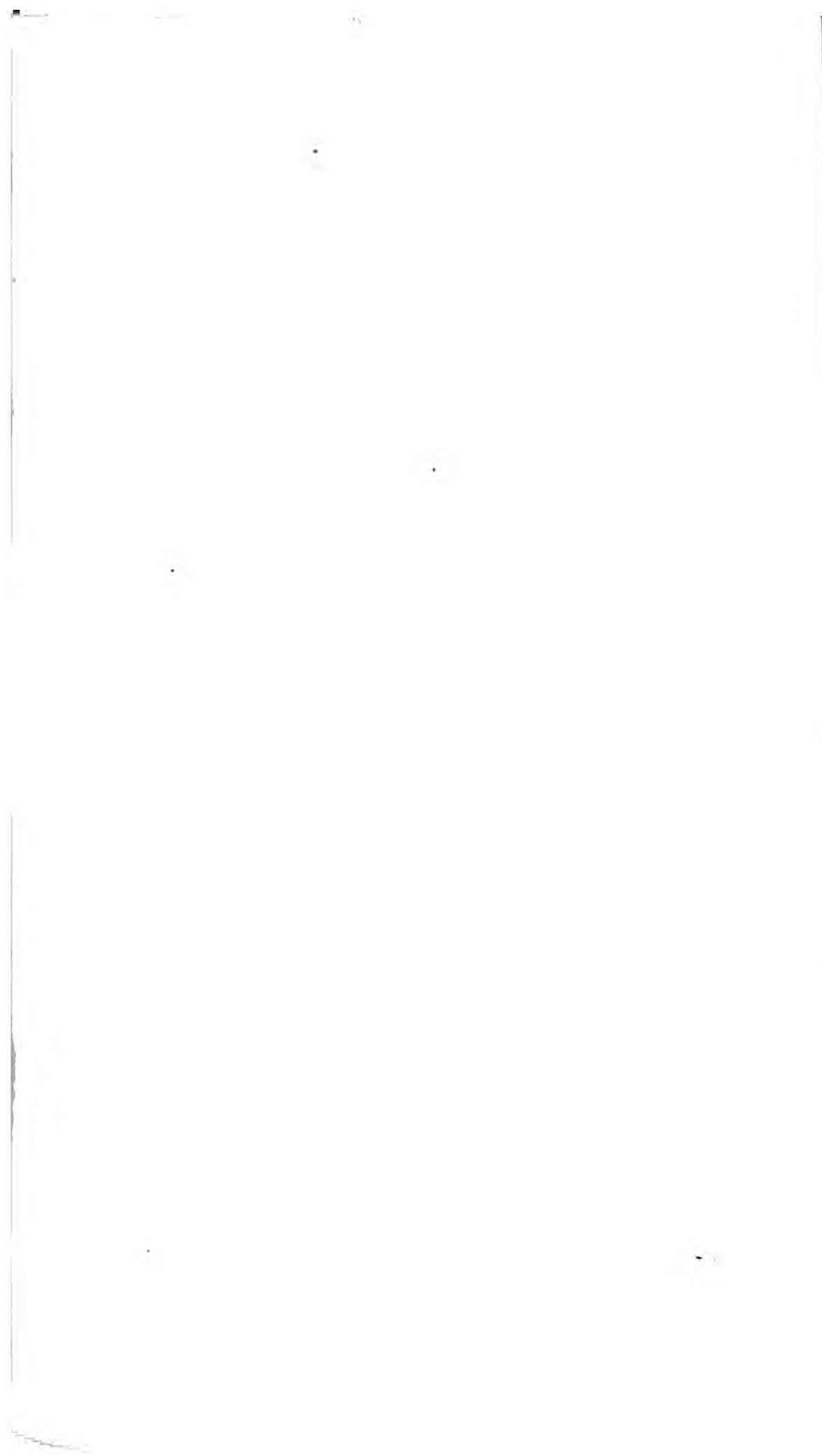
The Planets

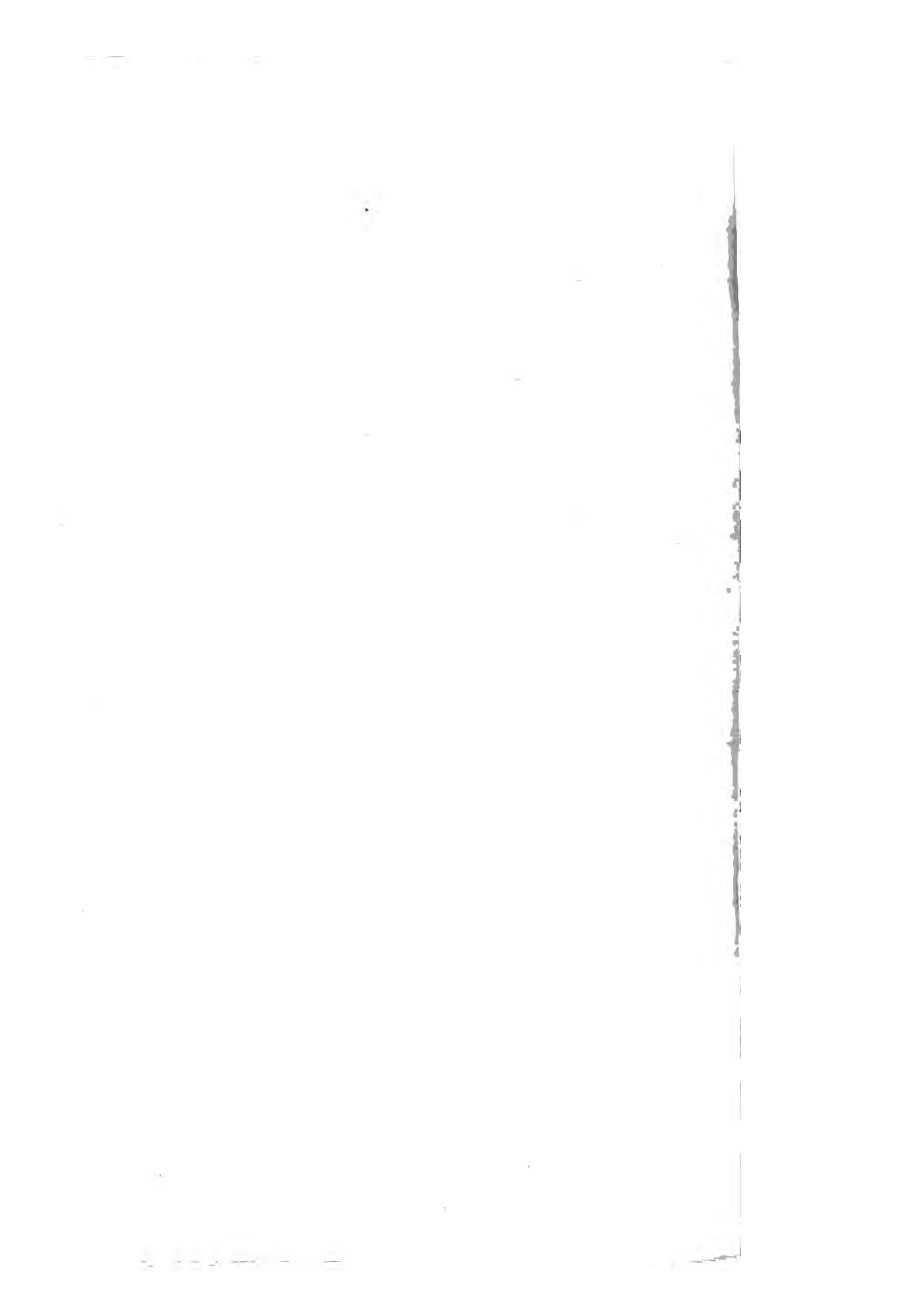
MERCURY [☿] will be visible in the mornings about the 23rd April, 20th August,

PHASES OF THE MOON. { FIRST QUARTER, 5th day, at 11h. 31m. evening.
FULL MOON, 14th day, at 0h. 33m. morning.
LAST QUARTER, 21st day, at 3h. 9m. morning.
NEW MOON, 27th day, at 11h. 42m. evening.

M D.	Day brek.	Twil. ends.	☉'s semi.	♂ Mercury rises. sout.	♀ Venus. rises. sout.	♂ Mars. sets. sout.	♂ Jupiter. sets. sout.	♂ Saturn. sets. sout.	M D.
1	2m52	9 a 6	15 54	3m44 11 m13	4m24 11m 37	7 a 44 2 a 10	4m23 11a34	9 a 0 4 a 26	1
8	3 10	8 44	15 55	4 34 11 37	4 48 11 43	7 23 1 59	4 0 11 3	8 33 4 18	8
15	3 27	8 21	15 57	sets. 11 58	5 12 11 47	7 21 49	3 27 10 33	8 6 3 35	15
22	3 45	8 0	15 59	6 a 13 0 a 16	5 36 11 52	7 42 1 39	2 55 10 2	7 40 3 10	22
29	3 58	7 40	16 1	5 58 0 30	6 0 11 56	6 22 1 29	2 24 9 32	7 14 2 45	29

M W D D	Remarkable Days	HIGH WATER.—LIVERPOOL.				Equation of Time.	
		MORNING.		EVENING.			
		Time.	Height.	Time.	Height.	' "	' "
1 F	11 Sun. after Trinity	0 40	19 9	1 2	18 5	0	2
2 M	Proper [2 Kings v; Matt. ii. Lessons. [— ix; Romans ii.	1 21	18 11	1 41	17 5	0	20
3 Tu	Neptune souths 2 m 9	2 1	17 5	2 20	16 2	0	39
4 W	John Home d. 1808	2 38	15 10	2 58	14 8	0	59
5 Th	1st Amer. Con. 1774	3 19	14 1	3 38	13 2	1	18
6 F	Hannah More d. 1823	4 2	12 4	4 32	11 10	1	38
7 S	Enurchus, Bishop	5 3	11 0	5 43	11 1	1	58
8 F	12 Sun. after Trinity	6 22	10 7	7 2	11 5	2	18
9 M	[2 Kings x; Matt. ix. — xv; Romans ix.	7 42	11 2	8 19	12 5	2	39
10 Tu	Neptune s. 1 m 41	8 49	12 4	9 14	13 11	3	0
11 W	Mahomed born, 569	9 36	13 10	9 58	15 5	3	21
12 Th	Sir W. Dugdaleb. 1605	10 18	15 3	10 36	16 7	3	42
13 F	Battle of Quebec, 1769	10 51	16 3	11 8	17 7	4	3
14 S	Holy Cross day	11 24	17 4	11 39	18 5	4	24
15 F	13 Sun. after Trinity	11 57	18 0	—	—	4	45
16 M	Proper [2 Kings xix; Matt. xvi. Lessons. [— xxiii; Rom. xvi.	0 14	18 11	0 33	18 2	5	6
17 Tu	Lambert, Bishop	0 52	18 9	1 10	18 0	5	27
18 W	George I & II landed	1 30	18 1	1 50	17 4	5	49
19 Th	Battle Poitiers, 1356	2 11	17 0	2 34	16 0	6	10
20 F	Manx fish ft. lt. 1787	2 55	15 6	3 22	14 11	6	31
21 S	St. Matthew, Apostle	3 50	13 11	4 24	13 5	6	52
22 F	14 Sun. after Trinity	5 3	12 8	5 46	12 11	7	13
23 M	Proper [Jeremiah v; Matt. xxiii. Lessons. [— xxii; 1 Cor. vii	6 31	12 7	7 13	13 8	7	34
24 Tu	Neptune souths 0m45	7 54	13 6	8 27	15 2	7	54
25 W	Porson died, 1808	8 58	15 2	9 28	17 1	8	15
26 Th	St. Cyprian	9 54	16 9	10 18	18 5	8	35
27 F	Andromeda s. 11 a 34	10 37	17 8	10 58	19 3	8	56
28 S	St. Michael 29th	11 16	18 6	11 35	19 7	9	16
29 F	15 Sun. aft. Trinity.	11 54	18 8	—	—	9	35
30 M	Proper [Jerc. xxxv; Mark ii. Lessons. [— xxxvi; 1 Cor. xiv.	0 14	19 4	0 32	18 4	9	55





Bristol tides				SUN.								MOON.					ASPECTS. AND WEATHER.	
M	morn.	even.	height	rises.	sets.	rt. ascen.	declin. N.	sets.	souths	declin.	M							
D.	H. M.	H. M.	F. I.	H. M.	H. M.	H. M.	° / '	H. M.	H. M.	° / '	D.							
1	8 51	9 9	34 3	5 8 6	51 10	40 42	8 22 16	8 a 9	2a30	4s20	3 1	Expect						
2	9 27	9 45	32 5	5 10 6	48 10	44 19	8 0 26	8 35	3 18	8 21	4 2	the						
3	10 2	10 18	30 7	5 12 6	46 10	47 57	7 38 29	9 2	4 5	11 50	5 3	♂ δ ♀, 10 a 57						
4	10 35	10 53	27 7	5 14 6	43 10	51 34	7 16 24	9 31	4 52	14 40	6 4	month						
5	11 8	11 29	24 4	5 16 6	40 10	55 11	6 54 12	10 5	5 39	16 44	7 5	to commence						
6	11 56	—	21 6	5 18 6	38 10	58 48	6 31 53	10 44	6 26	18 0	8 6	with						
7	0 21	0 56	19 5	5 20 6	36 11	2 24	6 9 28	11 30	7 14	18 25	9 7	☿ gr. H.L., N.						
8	1 32	2 17	19 7	5 21 6	33 11	6 0	5 46 57	morn	8 1	17 58	10 8	fine						
9	3 7	3 49	21 9	5 23 6	31 11	9 37	5 24 20	0 22	8 48	16 40	11 9	harvest						
10	4 22	4 48	23 4	5 25 6	28 11	13 12	5 1 38	1 19	9 35	14 33	12 10	☿ δ ♀, 9 a 2						
11	5 11	5 35	26 10	5 26 6	26 11	16 48	4 38 51	2 21	10 22	11 43	13 11	weather,						
12	5 57	6 17	27 11	5 28 6	23 11	20 24	4 15 59	3 27	11 9	8 15	14 12	♂ δ ♀, 11 a 53						
13	6 34	6 54	29 9	5 30 6	21 11	23 59	3 53 2	4 36	11 56	4 20	15 13	which						
14	7 12	7 29	31 8	5 31 6	18 11	27 35	3 30 2	rises.	morn	—	F 14	may						
15	7 48	8 5	33 0	5 33 6	16 11	31 10	3 6 57	7 a 4	0 43	0 s 7	17 15	☿ gr. H.L., N.						
16	8 23	8 41	33 5	5 35 6	13 11	34 45	2 43 49	7 29	1 31	4 s 12	18 16	continue						
17	8 58	9 16	33 1	5 37 6	11 11	38 21	2 20 38	7 58	2 20	8 21	19 17	until						
18	9 34	9 53	32 0	5 38 6	8 11	41 56	1 57 24	8 31	3 12	12 6	20 18	the						
19	10 14	10 31	30 2	5 40 6	6 11	45 31	1 34 7	9 9	4 5	15 10	21 19	Equinox.						
20	10 55	11 19	27 6	5 42 6	3 11	49 7	1 10 48	9 55	5 1	17 20	22 20	Now						
21	11 49	—	24 7	5 44 6	1 11	52 42	0 47 27	10 51	5 59	18 22	23 21	more						
22	0 22	0 59	22 8	5 46 5	58 11	56 18	0 24 5	11 58	6 57	18 9	24 22	♂ δ ♀, 5 m 12						
23	1 42	2 34	23 8	5 48 5	56 11	59 54	0 0 41	morn	7 54	16 42	25 23	☉ enters ♄,						
24	3 24	4 0	26 7	5 50 5	53 12	3 29	s 0 22 44	1 10	8 51	14 8	26 24	Autm.com.						
25	4 32	5 4	29 8	5 52 5	51 12	7 5	0 46 9	2 26	9 46	10 39	27 25	♀ in sup, ♂ ☉						
26	5 31	5 58	31 11	5 54 5	48 12	10 42	1 9 34	3 44	10 38	6 33	28 26	changeable						
27	6 19	6 43	32 9	5 56 5	46 12	14 18	1 32 59	sets.	11 29	2 7	N 27	and						
28	7 3	7 24	34 0	5 57 5	43 12	17 55	1 56 24	6 a 8	0a19	2s20	1 28	☿ δ ♀, 0 m 28						
29	7 45	8 5	34 4	5 59 5	41 12	21 31	2 19 47	6 34	1 7	6 34	2 29	showery.						
30	8 22	8 39	33 8	6 1 5	39 12	25 8	2 43 10	7 1	1 55	10 22	3 30	♂ δ ♀, 0 m 10						

LUNAR DISTANCES FROM THE SUN.

Mean Astronomical Time at Greenwich.

M.	NOON.			3 HOURS.			6 HOURS.			9 HOURS.			MIDN.			15 HOUR.			18 HOUR.			21 HOUR.		
D.	°	'	"	°	'	"	°	'	"	°	'	"	°	'	"	°	'	"	°	'	"	°	'	"
1w	38	9	23	39	41	54	41	14	2	42	45	47	44	17	9	45	48	9	47	18	46	48	49	1
2	50	18	55	51	48	26	53	17	36	54	46	25	56	14	53	57	43	1	59	10	48	60	38	16
3	62	5	25	63	32	14	64	58	45	66	24	59	67	50	54	69	16	33	70	41	55	72	7	1
4	73	31	51	74	56	27	76	20	48	77	44	55	79	8	49	80	32	30	81	55	58	83	19	16
5	84	42	22	86	5	17	87	28	3	88	50	40	90	13	8	91	35	27	92	57	40	94	19	45
6	95	41	44	97	3	38	98	25	26	99	47	10	101	8	50	102	30	27	103	52	1	105	13	33
7	106	35	3	107	56	32	109	18	1	110	39	30	112	0	59	113	22	30	114	44	3	116	5	38
8	117	27	16	118	48	57	120	10	42	121	32	32	122	54	26	124	16	26	125	38	31	127	0	43
9	128	23	1	129	45	27	131	8	0	132	30	41	133	53	31	135	16	30	136	39	37	138	2	54
10	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
17E	137	0	38	135	25	23	133	49	58	132	14	24	130	38	42	129	2	50	127	26	50	125	50	42
18	124	14	25	122	38	0	121	1	27	119	24	47	117	47	58	116	11	2	114	33	59	112	56	48
19	111	19	30	109	42	5	108	4	34	106	26	55	104	49	10	103	11	19	101	33	21	99	55	17
20	98	17	7	96	38	51	95	0	29	93	22	2	91	43	29	90	4	51	88	26	7	86	47	19
21	85	8	26	83	29	28	81	50	26	80	11	20	78	32	9	76	52	55	75	13	37	73	34	16
22	71	54	51	70	15	25	68	35	55	66	56	22	65	16	48	63	37	13	61	57	36	60	17	58
23	58	38	19	56	58	40	55	19	1	53	39	22	51	59	44	50	20	8	48	40	34	47	1	1
24	45	21	32	43	42	5	42	2	42	40	23	24	38	44	10	37	5	1	35	25	58	33	47	2
25	32	8	13	30	29	31	28	50	58	27	12	33	25	34	19	23	56	15	22	18	23	20	40	43
26	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
29w	19	4	29	20	35	27	22	6	10	23	36	37	25	6	48	26	36	41	28	6	17	29	35	36
30	31	4	37	32	33	20	34	1	46	35	29	54	36	57	45	38	25	18	39	52	33	41	19	32

and 9th December; and in the evenings about the 9th March, 6th July, and 31st October. The most favourable time for seeing this beautiful planet will be at its eastern elongation in March, being then in the best position for observation in the evening sky.

VENUS [♀] will be a morning star to the 25th September, then an evening star to the end of the year.

PHASES OF THE MOON. { FIRST QUARTER, 5th day, at 6h. 17m. evening.
FULL MOON, 13th day, at 1h. 24m. afternoon.
LAST QUARTER, 20th day, at 9h. 17m. morning.
NEW MOON, 27th day, at 1h. 3m. afternoon.

M D.	Day brek.	Twil. end.	☉'s semi	♂ Mercury		♀ Venus.		♂ Mars.			♃ Jupiter.			♄ Saturn.			M D.
				sets.	sout.	rises.	sout.	sets.	sout.		sets.	sout.		sets.	sout.		
1	4 m 3	7 a 36	16 1	5 m 54	0 a 34	6 m 8	11 m 57	6 a 16	1 a 27		2 m 16	9 a 24		7 a 6	2 a 38	1	
8	4 18	7 19	16 3	5 38	0 46		sets.	0 a 2	5 57	1 18	1 44	9 55		6 40	2 13	8	
15	4 30	7 0	16 5	5 23	0 57	5 a 17	0 7	5 39	1 9		1 12	8 26		6 14	1 49	15	
22	4 44	6 46	16 7	5 10	1 7	5 0	0 12	5 21	1 1		0 44	7 58		5 48	1 24	22	
29	4 56	6 31	16 9	4 58	1 15	4 51	0 19	5 40	54		0 17	7 31		5 23	1 0	29	

M W D D		Remarkable Days	HIGH WATER.—LIVERPOOL.				Equation of Time.	
			MORNING.		EVENING.			
			Time.	Height.	Time.	Height.	' "	' "
1	Tu	Cambridge T. begins	0 50	18 16	1 9	17 6	10	14
2	W	F. Arago died, 1583	1 27	17 3	1 46	16 4	10	33
3	Th	R. Barclay died, 1690	2 4	15 6	2 22	14 11	10	52
4	F	Neptunesou. midnight	2 40	14 0	3 2	13 6	11	10
5	S	H souths 6 m 2	3 23	12 3	3 49	12 1	11	28
6	J	16 Sun. after Trinity	4 20	10 11	4 53	11 2	11	46
7	M	Pro. [Ezekiel ii; Mark ix. Less. [— xiii; 2 Cor. v.	5 36	10 3	6 16	11 2	12	3
8	Tu	Cassiopea s. 11 a 23	6 58	10 9	7 36	12 1	12	20
9	W	St. Denys	8 7	12 0	8 37	13 7	12	36
10	Th	Oxford Term begins	9 1	13 7	9 22	15 3	12	53
11	F	Old Michaelmas day	9 43	15 3	10 3	16 10	13	8
12	S	Wat Tyler died, 1381	10 21	16 8	10 36	17 11	13	24
13	J	17 Sun. after Trinity	10 54	17 9	11 9	18 9	13	38
14	M	Proper [Ezekiel xiv; Mark xvi. Lessons. [— xviii; 2 Cor. xii.	11 28	18 7	11 47	19 3	13	52
15	Tu	H Souths 5 m 23	—	—	0 8	19 0	14	6
16	W	Battle of Leipsic, 1813	0 28	19 2	0 49	18 9	14	19
17	Th	Ethelred V. Q.	1 9	18 5	1 31	17 11	14	32
18	F	St. Luke, Evangelist	1 54	17 3	2 19	16 8	14	43
19	S	Neptune souths 11 a 0	2 44	15 7	3 11	15 3	14	55
20	J	18 Sun. after Trinity	3 39	13 10	4 13	13 8	15	5
21	M	Proper [Ezekiel xx; Luke vi. Lessons. [— xxiv; Gala. vi.	4 52	12 6	5 36	13 2	15	15
22	Tu	H souths 3 m 56	6 21	12 5	7 1	13 10	15	24
23	W	R. Exchange fd. 1667	7 39	13 4	8 14	15 2	15	33
24	Th	Chaucer died, 1400	8 43	14 10	9 9	16 8	15	41
25	F	Crispin, Martyr	9 35	16 3	9 56	17 9	15	48
26	S	Hogarth died, 1764	10 18	17 3	10 35	18 4	15	54
27	J	19 Sun. after Trinity	10 55	17 10	11 11	18 7	16	0
28	M	Proper [Daniel iii; Luke xiii. Lessons. [— vi; Phil. i.	11 28	18 1	11 46	18 4	16	5
29	Tu	St Sim. & Jude, 28th	—	—	0 5	17 11	16	9
30	W	St. Marcellus	0 23	17 9	0 41	17 4	16	13
31	Th	All Hallow Eve	0 58	16 8	1 16	16 5	16	15





Bristol tides										SUN.										MOON.										ASPECTS AND WEATHER.	
M	D.	morn.		even.		height	rises.		sets.		rt. ascen.		declin.		S.	sets.	souths		declin.		M	D.									
		H. M.	H. M.	H. M.	H. M.		H. M.	H. M.	H. M.	H. M.	H. M.	H. M.	°	'			°	'	°	'											
1	8	57	9	13	32	2	6	3	5	36	12	28	46	3	6	30	7a30	2a43	13s33	4	1	h δ (, 0 a 10									
2	9	30	9	46	29	11	6	5	5	33	12	32	23	3	29	49	8 1	3 31	16 0	5	2	Expect									
3	10	1	10	16	27	6	6	7	5	31	12	36	1	3	53	5	8 38	4 19	17 38	6	3	wind									
4	10	35	10	53	24	9	6	9	5	28	12	39	39	4	16	19	9 22	5 6	18 25	7	4	and									
5	11	16	11	43	21	10	6	10	5	26	12	43	18	4	39	29	10 12	5 54	18 19	8	5	) in Apogee									
6	—	—	0	11	19	6	6	12	5	23	12	46	57	5	2	36	11 7	6 41	17 22	9	6	☐ ☉, 2 a 57									
7	0	50	1	26	19	1	6	14	5	21	12	50	36	5	25	39	morn	7 28	15 35	10	7	rain									
8	2	14	3	120	11	1	6	16	5	19	12	54	15	5	48	37	0 7	8 15	13 3	11	8	for the									
9	3	37	4	10	23	8	6	18	5	16	12	57	55	6	11	31	1 11	9 1	9 51	12	9	☿ ☽, 3 a 57									
10	4	35	4	57	26	6	6	20	5	14	13	1	36	6	34	21	2 18	9 47	6 6	13	10	greatest									
11	5	20	5	42	29	3	6	22	5	11	13	5	17	6	57	4	3 28	10 35	1 56	14	11	☿ in Aphelion									
12	6	2	6	19	30	6	6	24	5	9	13	8	58	7	19	43	4 40	11 23	2 N26	15	12	part									
13	6	39	6	56	32	5	6	25	5	7	13	12	40	7	42	15	rises.	morn	—	—	F	13	of								
14	7	17	7	38	33	11	6	27	5	4	13	16	22	8	4	40	5a58	0 13	6 47	17	14	this									
15	7	59	8	18	34	6	6	29	5	2	13	20	5	8	26	59	6 30	1 5	10 50	18	15	) in Perigee									
16	8	38	8	57	34	2	6	31	5	0	13	23	49	8	49	11	7 7	1 59	14 17	19	16	month									
17	9	17	9	38	32	9	6	33	4	57	13	27	33	9	11	15	7 52	2 56	16 51	20	17	with									
18	10	0	10	21	30	8	6	35	4	54	13	31	18	9	33	12	8 47	3 54	18 18	21	18	intervals									
19	10	45	11	8	27	9	6	37	4	52	13	35	3	9	55	0	9 51	4 52	18 28	22	19	☿ ☽ (, 11 m 7									
20	11	38	—	—	24	4	6	39	4	50	13	38	49	10	16	40	11 0	5 50	17 24	23	20	of									
21	0	11	0	50	22	9	6	41	4	48	13	42	36	10	38	11	morn	6 46	15 10	24	21	sunshine									
22	1	33	2	21	23	7	6	43	4	46	13	46	23	10	59	32	0 13	7 40	12 0	25	22	and									
23	3	8	3	46	26	5	6	45	4	43	13	50	11	11	20	43	1 28	8 32	8 9	26	23	mild									
24	4	17	4	44	29	0	6	47	4	41	13	54	0	11	41	45	2 44	9 22	3 54	27	24	stationary									
25	5	11	5	35	30	10	6	49	4	39	13	57	49	12	2	35	3 59	10 11	0 s31	28	25	weather.									
26	5	59	6	18	31	7	6	51	4	37	14	1	39	12	23	15	5 13	10 59	4 50	29	26	Still									
27	6	49	6	59	32	6	6	53	4	35	14	5	30	12	43	43	sets.	11 47	8 51	N	27	very									
28	7	18	7	37	32	10	6	55	4	33	14	9	22	13	3	59	5a28	0a35	12 20	1	28	☿ ☽ (, 10 a 38									
29	7	55	8	12	32	4	6	57	4	31	14	13	14	13	24	3	5 58	1 23	15 9	2	29	☿ ☽ (9 m 15									
30	8	29	8	45	31	3	6	59	4	29	14	17	7	13	43	55	6 33	2 11	17 11	3	30	changeable									
31	9	2	9	18	29	6	7	0	4	27	14	21	1	14	3	33	7 14	2 59	18 22	4	31	☿ gr. elon. W.									

LUNAR DISTANCES FROM THE SUN.
Mean Astronomical Time at Greenwich.

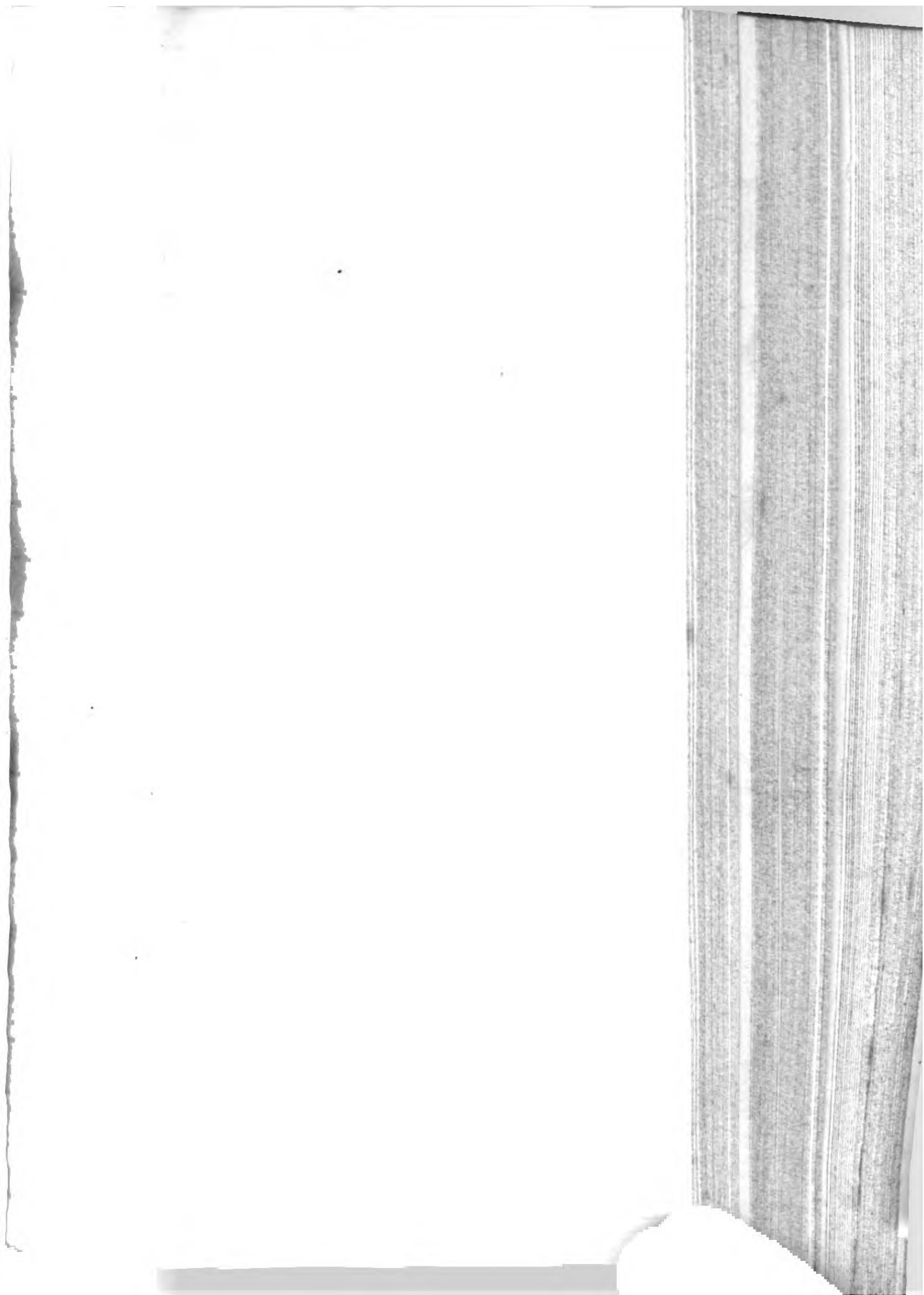
M D.	NOON.			3 HOURS.			6 HOURS.			9 HOURS.			MIDN.			15 HOUR.			18 HOUR.			21 HOUR.		
	°	'	''	°	'	''	°	'	''	°	'	''	°	'	''	°	'	''	°	'	''	°	'	''
1w	42	46	14	44	12	39	45	38	48	47	4	41	48	30	18	49	55	40	51	20	46	52	45	38
2	54	10	15	55	34	38	56	58	48	58	22	44	59	46	28	61	10	0	62	33	19	63	56	28
3	65	19	25	66	42	12	68	4	50	69	27	18	70	49	37	72	11	49	73	33	52	74	55	49
4	76	17	39	77	39	23	79	1	2	80	22	36	81	44	5	83	5	32	84	26	55	85	48	15
5	87	9	34	88	30	52	89	52	9	91	13	26	92	34	44	93	56	3	95	17	23	96	38	46
6	98	0	12	99	21	42	100	43	15	102	4	59	103	26	38	104	48	27	106	10	24	107	32	27
7	108	54	37	110	16	56	111	39	24	113	2	0	114	24	47	115	47	43	117	10	51	118	34	9
8	119	57	39	121	21	22	122	45	17	124	9	25	125	33	46	126	58	21	128	23	10	129	48	14
9	131	13	32	132	39	6	13	4	55	135	31	0	136	57	20	138	23	57	139	50	50	141	18	0
10	141	21	21	139	42	21	138	3	17	136	24	7	134	44	54	133	5	38	131	26	19	129	46	57
11	128	7	34	126	28	10	124	48	45	123	9	19	121	29	54	119	50	30	118	11	6	116	31	44
12	114	52	23	113	13	5	111	33	49	109	54	35	108	15	25	106	36	17	104	57	14	103	18	14
13	101	39	19	100	0	28	98	21	41	96	42	59	95	4	22	93	25	50	91	47	24	90	9	3
14	88	30	47	86	52	38	85	14	35	83	36	38	81	58	47	80	21	2	78	43	25	77	5	54
15	75	28	30	73	51	13	72	14	3	70	37	1	69	0	6	67	23	19	65	46	39	64	10	8
16	62	33	44	60	57	29	59	21	23	57	45	25	56	9	36	54	33	56	52	58	25	51	23	3
17	49	47	52	48	12	50	46	37	59	45	3	18	43	28	48	41	54	29	40	20	22	38	46	26
18	37	12	43	35	39	13	34	5	56	32	32	53	31	0	4	29	27	31	27	55	15	26	23	16
19	23	21	17	24	45	34	26	9	44	27	33	48	28	57	44	30	21	33	31	45	13	33	8	45
20	34	32	7	35	55	21	37	18	26	33	41	22	40	4	9	41	26	47	42	49	16	44	11	37
21	45	33	51	46	55	56	48	17	53	49	39	43	51	1	27	52	23	3	53	44	33	55	5	58

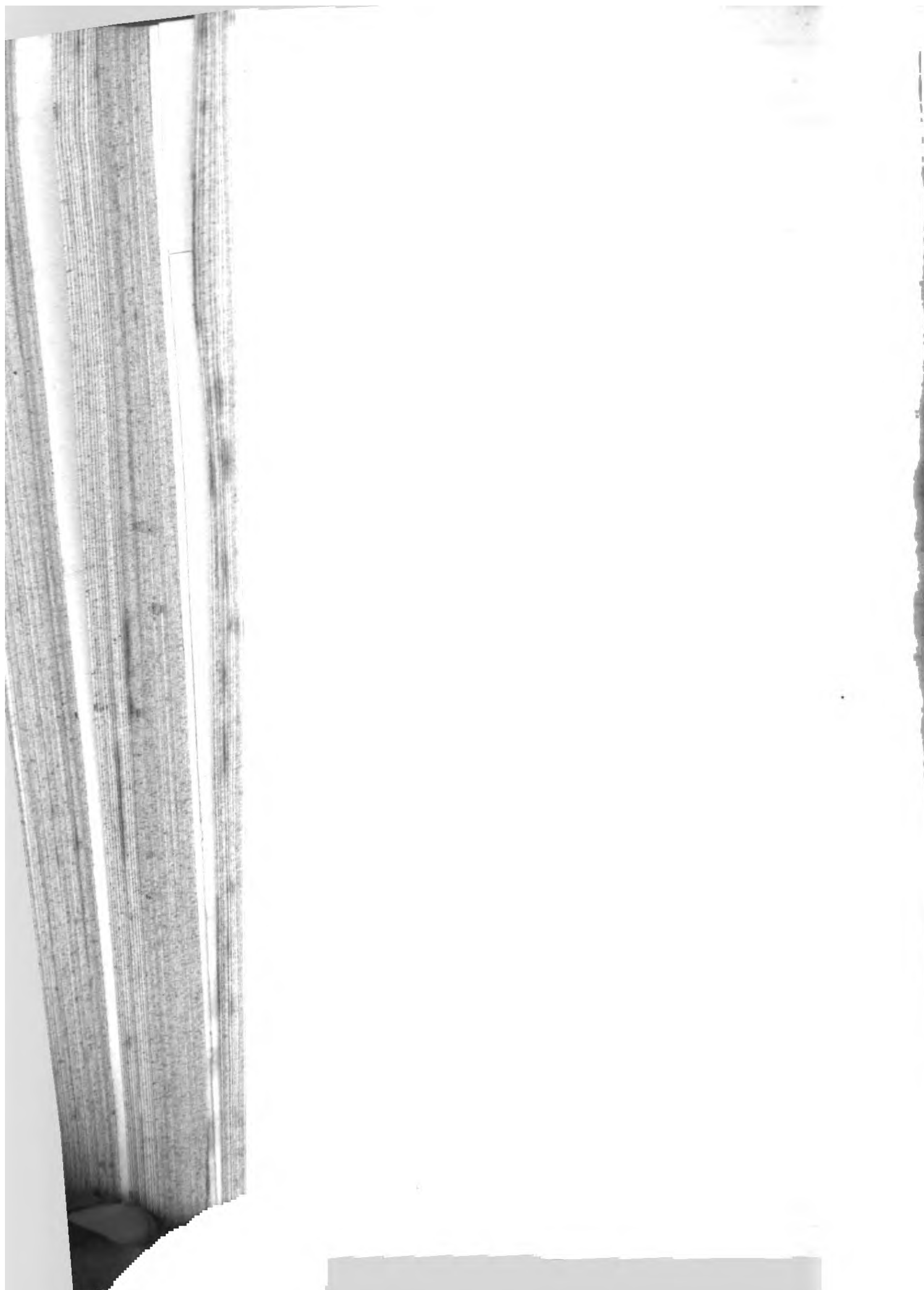
MARS (♂) will be a morning star until its opposition on the 10th January, during that month it will appear as a large star of a red colour in the south-eastern sky in the evenings. From the 10th January to the end of the year it will be an evening star.

PHASES OF THE MOON. { FIRST QUARTER, 4th day, at 2h. 27m. afternoon.
FULL MOON, 12th day, at 1h. 9m. morning.
LAST QUARTER, 18th day, at 5h. 6m. evening.
NEW MOON, 26th day, at 5h. 11m. morning.

M D.	Day brek.	Twil. ends.	☉'s semi.	♂ Mercury		♀ Venus.		♂ Mars.		♃ Jupiter.		♄ Saturn.		M D.
				sets.	sout.	sets.	sout.	sets.	sout.	sets.	sout.	sets.	sout.	
1	5 m 2	6 a 24	16 10	4 a 54	1 a 16	4 a 46	0 a 22	4 a 57	0 a 50	0 m 9	7 a 19	5 a 12	0 a 49	1
8	5 13	6 13	16 12	4 43	1 10	4 35	0 30	4 42	0 44	11 a 10	6 53	4 46	0 25	8
15	5 24	6 5	16 13	4 24	0 41	4 31	0 38	4 28	0 37	11 15	6 27	rises.	0 1	15
22	5 34	5 58	16 14	rises.	11 m 43	4 29	0 48	4 16	0 31	10 51	6 2	7 m 18	11 m 37	22
29	5 44	5 53	16 16	6 m 20	10 49	4 31	0 59	4 5	0 26	10 28	5 37	6 55	11 13	29

M W D D	Remarkable Days	HIGH WATER.—LIVERPOOL.				Equation of Time.
		MORNING.		EVENING.		
		Time.	Height.	Time.	Height.	
1 F	All Saints	1 34	15 5	1 54	15 2	16 17
2 S	Michaelmas Ter. beg.	2 11	14 1	2 29	14 1	16 18
3 F	20 Sun. after Trinity	2 50	12 9	3 14	12 6	16 19
4 M	Proper [Joel ii; Luke xix. Lessons [Micah vi; Coloss. iii.	3 39	11 6	4 9	11 10	16 18
5 Tu	Gunpowder Plot	4 43	10 9	5 21	11 6	16 17
6 W	Leonard, Confessor	6 2	10 11	6 38	12 1	16 15
7 Th	Neptune s. 9 a 43	7 14	11 10	7 50	13 5	16 12
8 F	Cam. Term div. N	8 17	13 4	8 43	14 10	16 8
9 S	P. of Wales born	9 7	15 0	9 28	16 5	16 4
10 F	21 Sun. after Trinity	9 50	16 4	10 9	17 8	15 58
11 M	Proper [Hab. ii; John ii. Lessons [Prov. i; 2 Thess. i.	10 27	17 9	10 46	18 8	15 52
12 Tu	H souths 3 m 32	11 6	18 7	11 25	19 3	15 45
13 W	Britius, Bishop	11 46	19 3	—	—	15 37
14 Th	Leibnitz died, 1716	0 8	19 4	0 32	19 3	15 28
15 F	Machutus, Bishop	0 54	18 7	1 18	18 5	15 18
16 S	Pleiades south 11 a 57	1 42	17 4	2 9	17 3	15 8
17 F	22 Sun. after Trinity	2 37	15 10	3 4	15 10	14 57
18 M	Pro. [Proverbs ii; John ix. Les. [— iii; 1 Tim. vi.	3 33	14 2	4 5	15 3	14 44
19 Tu	Neptune souths 8 a 55	4 38	12 11	5 17	13 9	14 31
20 W	Edward, King.	5 58	12 6	6 36	13 10	14 17
21 Th	Princess of Prussia b.	7 13	13 2	7 46	14 8	14 3
22 F	Cecilia V and M	8 18	14 2	8 45	15 7	13 47
23 S	St. Clement	9 11	15 4	9 34	16 6	13 31
24 F	23 Sun. after Trinity	9 57	16 3	10 17	17 0	13 13
25 M	Proper [Prov. xi; John xvi. Lessons [— xii; Philemon.	10 36	16 10	10 54	17 4	12 56
26 Tu	Michael. T. ends, 25th	11 11	17 3	11 28	17 2	12 37
27 W	Capella souths 0 m 44	11 46	17 2	—	—	12 17
28 Th	H souths 2 m 27	0 3	16 10	0 20	16 11	11 57
29 F	Pleiades south 11 a 6	0 37	16 3	0 54	16 6	11 36
30 S	St. Andrew, Ap.	1 12	15 6	1 31	15 8	11 15





Bristol tides				SUN.				MOON.				M	D.	ASPECTS AND WEATHER.												
orn.	even.	height.		rises.	sets.	rt. ascen.	declin. S.	sets.	souths	declin.	age.															
M.	H.	M.	P.	I.	H.	M.	H.	M.	S.	°	'	''	H.	M.	H.	M.	°	'	''	age.						
36	9	51	27	8	7	2	4	25	14	24	56	14	22	58	8	a	2	3	a	47	18	s	38	5	1	♂ ♂ h, 3 a 3
6	10	24	25	7	7	4	4	23	14	28	51	14	42	9	8	55	4	34	18	3	6	2	6	2	Weather	
45	11	16	23	1	7	6	4	21	14	32	47	15	1	5	9	53	5	21	16	37	7	3	7	3	fair	
33	—	—	21	0	7	8	4	19	14	36	44	15	19	47	10	54	6	7	14	24	8	4	8	4	and	
2	0	35	19	10	7	10	4	17	14	40	42	15	38	13	11	59	6	53	11	31	9	5	9	5	mild	
13	1	52	20	8	7	12	4	15	14	44	41	15	56	24	morn	7	38	8	1	10	6	10	6	10	6	♂ ♂ (, 0 m 31
35	3	11	23	2	7	14	4	13	14	48	40	16	14	19	1	7	8	24	4	3	11	7	11	7	7	♀ ♂ h, 10 a 52
49	4	17	26	1	7	16	4	11	14	52	41	16	31	57	2	17	9	12	1 n	15	12	8	12	8	for the	
41	5	4	28	11	7	18	4	9	14	56	42	16	49	19	3	30	10	1	4	40	13	9	13	9	season.	
58	5	49	31	2	7	20	4	7	15	0	44	17	6	23	4	45	10	52	8	59	14	10	14	10	10	♀ in ♂, 11 m 17
9	6	31	32	3	7	22	4	5	15	4	47	17	23	10	6	3	11	46	12	52	15	11	15	11	11	♀ stationary
53	7	14	33	8	7	24	4	3	15	8	50	17	39	39	rises.	morn	—	—	—	—	F	12	12	12	12	Frosty
37	7	59	34	7	7	26	4	2	15	12	55	17	55	49	5 a 45	0	43	15	59	17	13	17	13	13	unless	
22	8	43	34	6	7	28	4	0	15	17	0	18	11	41	6	37	1	43	18	1	18	14	18	14	14	♀ ♂ ♂, 11 m 45
9	9	26	33	2	7	30	3	59	15	21	6	18	27	13	7	39	2	43	18	45	19	15	19	15	15	the
51	10	15	31	3	7	32	3	57	15	25	13	18	42	27	8	50	3	43	18	6	20	16	20	16	16	♀ ♂ ♂, 4 m 10
38	11	3	28	8	7	34	3	56	15	29	21	18	57	20	10	3	4	41	16	12	21	17	21	17	17	wind
131	—	—	25	9	7	36	3	54	15	33	30	19	11	53	11	17	5	37	13	15	22	18	22	18	18	be south
0	1	0	32	8	7	38	3	53	15	37	40	19	26	6	morn	6	30	9	34	23	19	19	19	19	19	h ♂ ♂, 11 m 42
1	1	50	23	8	7	40	3	51	15	41	50	19	39	51	0	32	7	20	5	24	24	20	24	20	20	or south west.
36	3	16	25	7	7	42	3	50	15	46	1	19	53	27	1	48	8	8	1	3	25	21	25	21	21	♂ □ ♂, 6 a 19
51	4	19	27	4	7	43	3	48	15	50	14	20	6	35	3	1	8	56	3 s	18	26	22	26	22	22	♀ in inf. ♂ ♂
46	5	10	29	0	7	45	3	47	15	54	26	20	19	21	4	12	9	43	7	24	27	23	27	23	23	Now
55	5	58	29	11	7	47	3	46	15	58	40	20	31	45	5	22	10	29	11	5	28	24	28	24	24	♀ in Perihel.
619	6	39	30	3	7	49	3	45	16	2	55	20	43	46	6	30	11	17	14	12	29	25	29	25	25	more
658	7	17	30	7	7	51	3	44	16	7	10	20	55	24	sets.	0	a	4	16	35	N	26	26	26	26	inclined
737	7	54	30	7	7	52	3	43	16	11	26	21	6	38	5 a 9	0	53	18	8	1	27	27	27	27	27	♂ ♂ D, 0 m 10
810	8	26	30	2	7	54	3	42	16	15	43	21	17	28	5	54	1	41	18	48	2	28	28	28	28	to wind
842	8	59	29	4	7	56	3	41	16	20	0	21	27	55	6	44	2	29	18	35	3	29	29	29	29	and
916	9	33	28	0	7	57	3	40	16	24	18	21	37	56	7	39	3	16	17	29	4	30	30	30	30	rain.

LUNAR DISTANCES FROM THE SUN.

Mean Astronomical Time at Greenwich.

NOON.	3 HOURS.	6 HOURS.	9 HOURS.	MIDN.	15 HOUR.	18 HOUR.	21 HOUR.
° / "	° / "	° / "	° / "	° / "	° / "	° / "	° / "
56 27 17	57 48 31	59 9 40	60 30 46	61 51 47	63 12 46	64 33 42	65 54 35
67 15 27	68 36 18	69 57 8	71 17 58	72 38 49	73 59 41	75 20 34	76 41 29
78 2 27	79 23 29	80 44 34	82 5 44	83 26 58	84 48 19	86 9 46	87 31 19
88 53 0	90 14 49	91 36 46	92 58 53	94 21 10	95 43 37	97 6 14	98 29 4
99 52 5	101 15 20	102 38 47	104 2 28	105 26 24	106 50 34	108 15 0	109 39 41
111 4 39	112 29 54	113 55 26	115 21 16	116 47 24	118 13 51	119 40 37	121 7 42
122 35 6	124 2 51	125 30 56	126 59 21	128 28 7	129 57 14	131 26 42	132 56 31
132 30 24	130 48 52	129 7 27	127 26 10	125 45 0	124 4 0	122 23 10	120 42 30
119 2 0	117 21 42	115 41 36	114 1 42	112 22 1	110 42 33	109 3 18	107 24 16
105 45 29	104 6 55	102 28 36	100 50 32	99 12 42	97 35 7	95 57 47	94 20 42
92 43 52	91 7 17	89 30 57	87 54 53	86 19 4	84 43 30	83 8 11	81 33 7
79 58 18	78 23 45	76 49 26	75 15 23	73 41 34	72 8 0	70 34 41	69 1 36
67 28 46	65 56 10	64 23 49	62 51 42	61 19 49	59 48 10	58 16 45	56 45 34
55 14 38	53 43 55	52 13 26	50 43 11	49 13 9	47 43 22	46 13 49	44 44 29
43 15 24	41 46 32	40 17 55	38 49 33	37 21 25	35 53 32	34 25 55	32 58 34
31 31 29	30 4 40	28 38 10	27 11 59	25 46 8	24 20 38	22 55 32	21 30 51
25 48 31	27 8 49	28 29 10	29 49 32	31 9 55	32 30 18	33 50 41	35 11 3
36 31 25	37 51 46	39 12 6	40 32 25	41 52 44	43 13 2	44 33 20	45 53 39
47 13 57	48 34 16	49 54 35	51 14 56	52 35 18	53 55 42	55 16 8	56 36 37

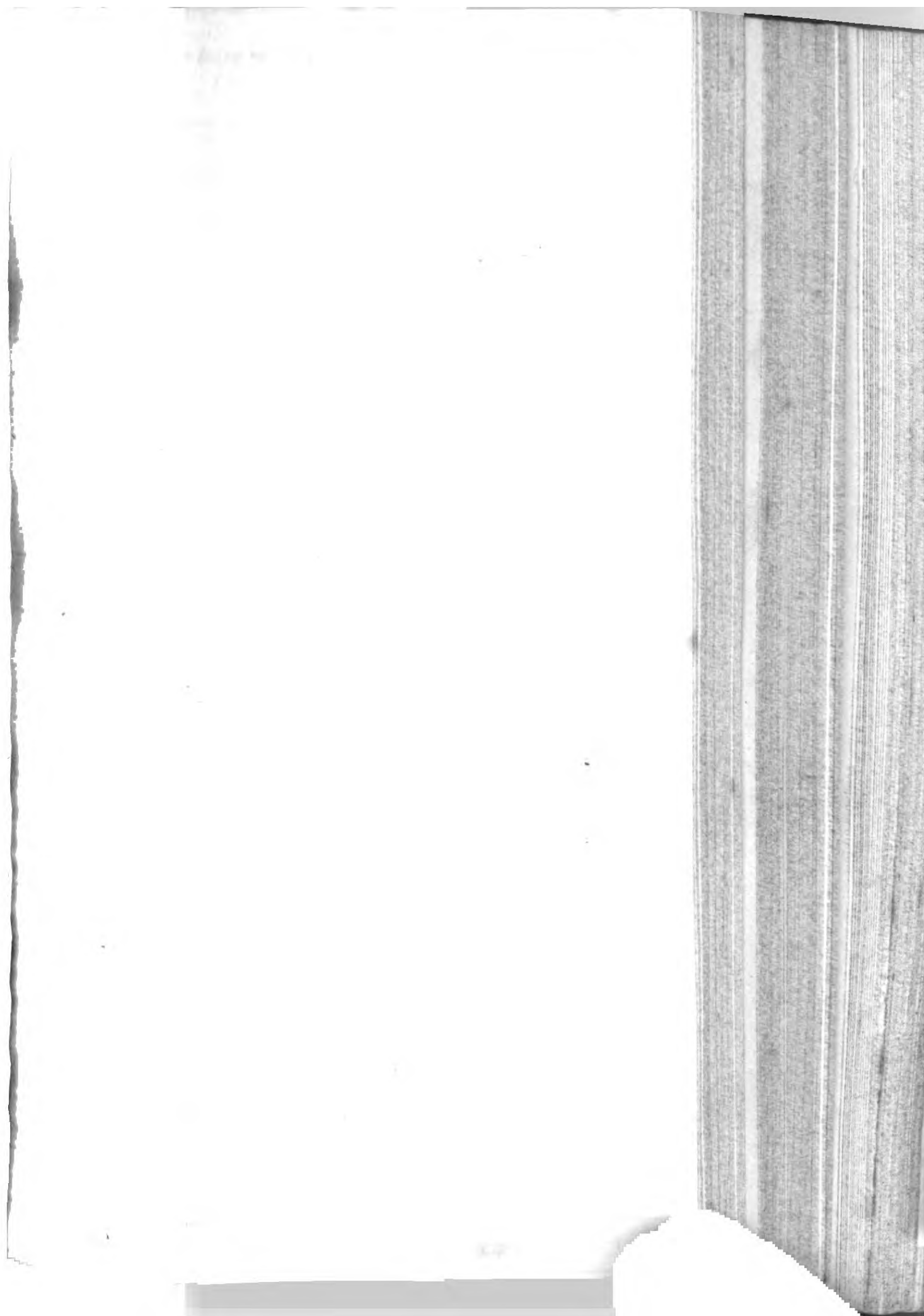
JUPITER [♃] will be an evening star to the 3rd February; a morning star to the 25th August; then an evening star to the end of the year.

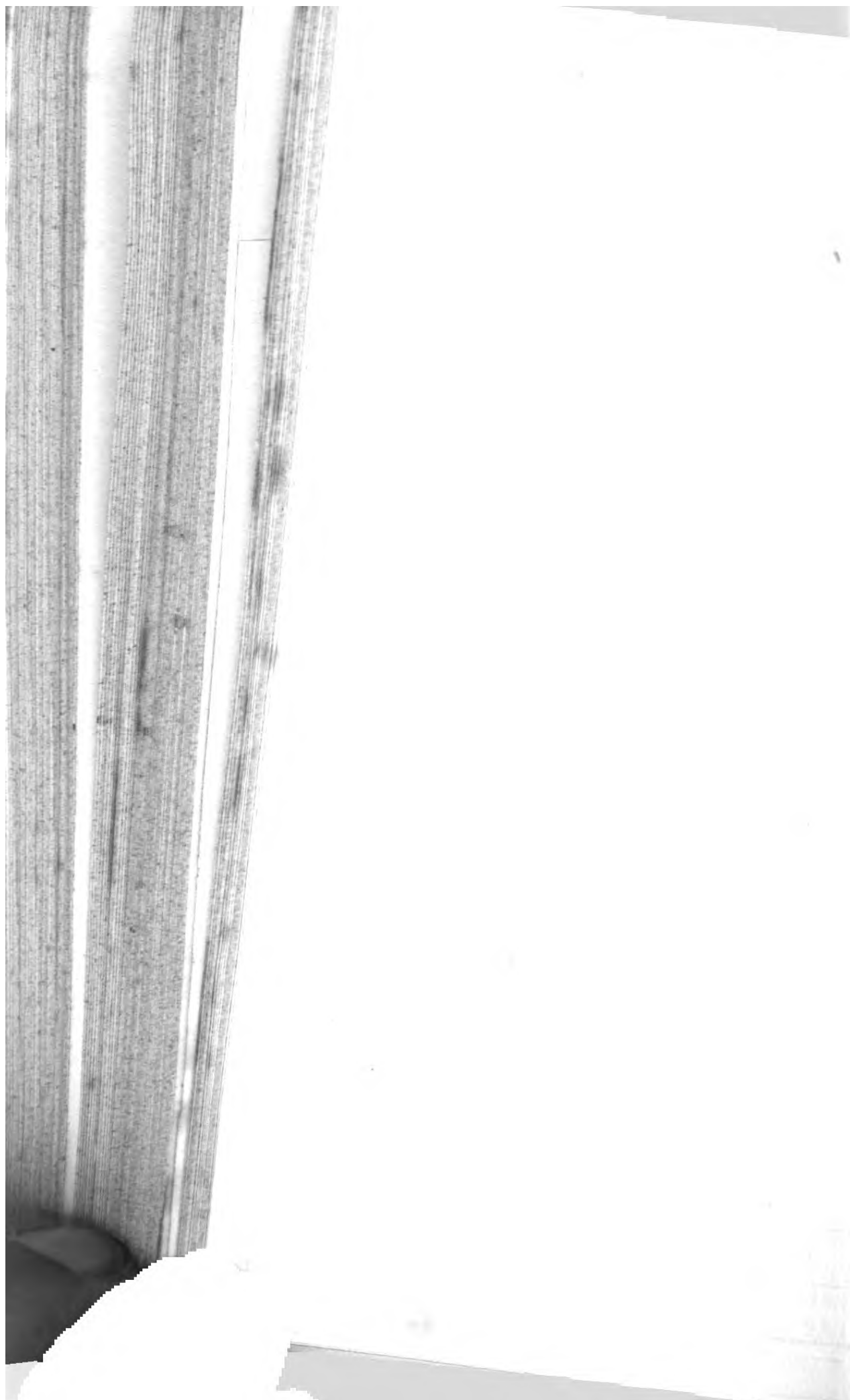
SATURN [♄] will be a morning star to the 29th April, an evening star to the 19th November; then a morning star to the end of December.

PHASES OF THE MOON. { FIRST QUARTER, 4th day, at 10h. 21m. morning.
FULL MOON, 11th day, at 0h. 10m. noon.
LAST QUARTER, 18th day, at 3h. 34m. morning.
NEW MOON, 25th day, at 11h. 39m. night.

M D.	Day brek.	Twi. ends.	☉'s semi.	☿ Mercury rises. sout.	♀ Venus. sets. sout.	♂ Mars. sets. sout.	♃ Jupiter. sets. sout.	♄ Saturn. rises. sout.
1	5m48	5 a 50	16 16	6 m 8 10 m40	4 a 33 1 a 2	4 a 20 a 25	10 m22 5 a 30	6m49 11m6
8	5 53	5 50	16 17	6 0 10 27	4 42 1 12	3 54 0 20	10 0 5 6	6 26 10 42
15	6 15	5 51	16 17	6 23 10 30	4 56 1 23	3 47 0 15	9 38 4 42	6 3 10 17
22	6 45	5 53	16 18	6 49 10 42	5 14 1 34	3 42 0 11	9 17 4 19	5 40 9 53
29	6 65	5 58	16 18	7 20 10 59	5 36 1 43	3 39 0 6	8 57 3 56	5 16 9 29

M W D D		Remarkable Days	HIGH WATER.—LIVERPOOL.								Equation of Time.
			MORNING.				EVENING.				
			Time.		Height.		Time.		Height.		
1	F	Advent Sunday	1	50	14	6	2	10	14	10	10 53
2	M	Proper [Isaiah i; Acts ii. Lessons. [— ii; Heb. vii.	2	29	13	7	2	48	13	11	10 30
3	Tu	H souths 2 m 7	3	9	12	8	3	33	13	0	10 6
4	W	Neptune souths 7 a 55	3	58	11	9	4	27	12	5	9 42
5	Th	Bible Translated 1611	5	1	11	6	5	38	12	3	9 18
6	F	Nicholas, Bishop	6	13	11	10	6	48	13	0	8 53
7	S	Aldebaran sou. 11a23	7	19	12	11	7	49	14	2	8 27
8	F	2 Sunday in Advent	8	19	14	4	8	47	15	7	8 1
9	M	Proper [Isaiah v; Acts viii. Lessons. [— xxiv; James i.	9	12	15	11	9	36	16	11	7 34
10	Tu	Capella souths 11 a 50	10	0	17	3	10	22	18	0	7 7
11	W	Aldebaran sou. 11 a 8	10	47	18	5	11	10	18	10	6 40
12	Th	H souths 1 m 30	11	31	19	4	11	54	19	2	6 12
13	F	Lucy V and M	—	—	—	—	0	15	19	7	5 44
14	S	Washington d. 1799	0	45	18	11	1	10	19	3	5 16
15	F	3 Sunday in Advent	1	35	17	10	2	4	18	2	4 47
16	M	Pro. [Isaiah xxv; Acts xv. Les. [— xxvi; 1 Peter iii.	2	31	16	7	2	55	16	11	4 18
17	Tu	Oxford T. ends	3	21	15	1	3	47	15	6	3 48
18	W	Regulus souths 4 m 16	4	16	13	8	4	46	14	3	3 19
19	Th	Neptune souths 6 a 56	5	20	12	9	5	56	13	8	2 49
20	F	H souths 0 m 57	6	30	12	7	7	5	13	7	2 19
21	S	St. Thomas.	7	41	12	11	8	10	14	1	1 49
22	F	4 Sunday in Advent	8	40	14	0	9	9	14	9	1 19
23	M	[Isaiah xxx; Acts xxii. — xxxii; 1 John ii.	9	31	14	11	9	53	15	6	0 42
24	Tu	Pleiades souths 9 a 27	10	16	15	8	10	36	15	8	0 19
25	W	Christmas Day	11	54	16	2	11	12	15	11	0 11
26	Th	St. Stephens	11	30	16	6	11	46	16	1	0 41
27	F	St. John	—	—	—	—	0	4	16	8	1 10
28	S	Innocents	0	21	16	0	0	39	16	8	1 40
29	F	1st Sun. after Christ.	0	57	15	9	1	13	16	4	2 10
30	M	[Isaiah xxxv i; Acts xxvi. — xxxviii; 2 John.	1	31	15	3	1	48	15	10	2 39
31	Tu	Silvester, Bishop	2	8	14	8	2	28	15	3	3 8





TOL TIDES				SUN.				MOON.				ASPECTS AND WEATHER.		
even.	height			rises.	sets.	rt. ascen.	declin. S.	rises.	souths	declin.	M			
H. M. F. I.	H. M. F. I.	H. M. F. I.	H. M. F. I.	H. M. S.	H. M. S.	H. M. S.	° ' "	H. M. S.	H. M. S.	° ' "	D.			
10 8 26 9	7 59 3 39	16 28 37	21 47 33	8a40	4a2	15s36	5 1	10 42 25 2	8 0 3 39	16 32 56	21 56 45	9 43	4 47 13 0 6 2	Expect cold
11 24 23 4	8 2 3 38	16 37 16	22 5 32	10 48	5 32	9 48	7 3	11 56	6 17 6 6	8 4	8 4	11 56	6 17 6 6	♂ gr. H.L.N.
— 21 11	8 3 3 37	16 41 37	22 13 53	morn	7 2	2 1	9 5	1 6	7 49	2s18	10 6	2 18	8 38 6 39	and high winds,
0 52 21 3	8 5 3 37	16 45 58	22 21 48	3 32	9 29	10 48	12 8	4 49	10 25	14 25	13 9	6 10	11 24 17 9	succeeded
2 6 22 5	8 6 3 36	16 50 20	22 29 17	6 10	11 24	17 9	14 10	ris.	morn	—	F 11	ris.	morn	♂ gr. elong W by rain
3 19 25 0	8 7 3 36	16 54 42	22 36 19	5a19	0 25	18 39	16 12	5a19	0 25	18 39	16 12	6 30	1 28 18 43	♂ ♀ H, 0 a 33 or
4 21 27 8	8 8 3 35	16 59 5	22 42 55	6 30	1 28	18 43	17 13	7 44	2 30	17 21	18 14	9 1	3 29 14 43	♀ in Aphelion
5 13 30 1	8 10 3 35	17 3 28	22 49 4	9 1	3 29	14 43	19 15	10 21	4 25	11 10	20 16	10 21	4 25 11 10	snow.
6 3 32 1	8 11 3 35	17 7 51	22 54 46	11 38	5 17	7 2	21 17	11 38	5 17	7 2	21 17	11 38	5 17 7 2	Changeable, inclined to mild and fair.
6 56 33 0	8 13 3 35	17 12 15	23 0 1	morn	6 7	2 38	22 18	morn	6 7	2 38	22 18	0 52	6 55 1s47	♂ enters ♀
7 45 34 5	8 14 3 34	17 16 40	23 4 48	0 52	6 55	1s47	23 19	0 52	6 55	1s47	23 19	2 3	7 41 6 0	[Win. com.]
8 34 34 19	8 15 3 34	17 21 4	23 9 8	2 3	7 41	6 0	24 20	2 3	7 41	6 0	24 20	3 13	8 28 9 50	♂ ♀ (, 9 m 44 Fair
9 21 34 2	8 16 3 34	17 25 29	23 13 1	4 21	9 14	13 9	26 22	4 21	9 14	13 9	26 22	5 26	10 1 15 48	♂ ♀ (, 4 m 7
10 13 32 6	8 17 3 34	17 29 55	23 16 25	5 26	10 1	15 48	27 23	5 26	10 1	15 48	27 23	6 27	10 49 17 41	♂ in Apogee
10 55 30 4	8 18 3 35	17 34 20	23 19 22	6 27	10 49	17 41	28 24	6 27	10 49	17 41	28 24	7 32	2 44 14 11	♀ ♀ (, 4 m 49 and frosty.
11 43 27 7	8 19 3 35	17 38 46	23 21 51	sets.	11 37	18 43	N 25	sets.	11 37	18 43	N 25	8 36	3 29 11 13	♂ ♀ (, 3 m 52
0 8 25 1	8 19 3 35	17 43 12	23 25 52	4a38	0a24	18 51	1 26	4a38	0a24	18 51	1 26	9 42	4 13 7s44	
1 9 23 5	8 20 3 35	17 47 38	23 25 24	5 32	1 12	18 6	2 27	5 32	1 12	18 6	2 27			
2 25 23 5	8 20 3 35	17 52 5	23 26 29	6 30	1 58	16 31	3 28	6 30	1 58	16 31	3 28			
3 41 24 11	8 21 3 36	17 56 31	23 27 5	7 32	2 44	14 11	4 29	7 32	2 44	14 11	4 29			
4 43 26 4	8 21 3 36	18 0 58	23 27 13	8 36	3 29	11 13	5 30	8 36	3 29	11 13	5 30			
5 30 27 5	8 22 3 37	18 5 25	23 26 53	9 42	4 13	7s44	6 31	9 42	4 13	7s44	6 31			
6 17 28 0	8 22 3 37	18 9 51	23 26 4											
6 57 28 6	8 22 3 38	18 14 18	23 24 47											
7 36 29 1	8 22 3 39	18 18 44	23 23 2											
8 12 29 4	8 23 3 39	18 23 11	23 20 49											
8 46 29 4	8 23 3 40	18 27 37	23 18 7											
9 18 28 11	8 23 3 41	18 32 3	23 14 58											
9 51 28 2	8 23 3 42	18 36 29	23 11 20											
10 25 27 5	8 23 3 43	18 40 54	23 7 15											

LUNAR DISTANCES FROM THE SUN.
Mean Astronomical Time at Greenwich.

NOON.	3 HOURS.	6 HOURS.	9 HOURS.	MIDN.	15 HOUR.	18 HOUR.	21 HOUR.
° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "
57 57 9 59	17 44 60 38	23 61 59 7	63 19 56	64 40 49	66 1 49	67 22 55	
58 44 8 70	5 28 71 26	56 72 48 33	74 10 18	75 32 13	76 54 18	78 16 34	
59 39 1 81	1 40 82 24	32 83 47 36	85 10 54	86 34 26	87 58 13	89 22 14	
60 46 32 92	11 6 93 35	57 95 1 6	96 26 32	97 52 17	99 18 22	100 41 45	
61 11 29 103	38 34 105 6	0 106 33	47 108 1	56 109 30	28 110 59	22 112 28	40
62 58 21 115	28 26 116 58	56 118 29	50 120 1	8 121 32	51 123 5	0 124 37	34
63 10 32 127	43 56 129 17	46 130 52	0 132 26	40 134 1	44 135 37	13 137 13	6
64 48 0 136	5 18 134 22	50 132 40	36 130 58	38 129 16	56 127 35	32 125 54	25
65 13 38 122	33 9 120 53	0 119 13	11 117 33	43 115 54	35 114 15	49 112 37	24
66 59 20 109	21 39 107 44	19 106 7	21 104 30	45 102 54	32 101 18	40 99 43	10
67 8 2 96	33 16 94 58	51 93 24	48 91 51	6 90 17	46 88 44	46 87 12	7
68 39 48 84	7 50 82 36	11 81 4	52 79 33	52 78 3	11 76 32	49 75 2	45
69 33 0 72	3 32 70 34	21 69 5	28 67 36	51 66 8	30 64 40	26 63 12	38
70 45 5 60	17 47 58 50	44 57 23	56 55 57	22 54 31	1 53 4	55 51 39	2
71 13 22 48	47 55 47 22	41 45 57	40 44 32	50 43 8	13 41 43	49 40 19	36
72 35 35 37	31 45 36 8	8 34 44	43 33 21	30 31 58	29 30 35	40 29 13	4
73 50 42 26	28 34 25 6	40 23 45	2 22 23	42 21 2	40 19 42	0 18 21	45
74 21 24 28	41 13 30 1	10 31 21	12 32 41	20 34 1	33 35 21	52 36 42	16
75 2 45 39	23 20 40 44	1 42 4	47 43 25	39 44 46	37 46 7	42 47 28	53
76 50 11 50	11 36 51 33	9 52 54	50 54 16	40 55 38	38 57 0	45 58 23	2
77 45 28 61	8 5 62 30	53 63 53	52 65 17	4 66 40	27 68 4	3 69 27	52

URANUS (♅) will be best observed in the evenings from January to June, and the mornings from August to the end of the year.
NEPTUNE will be best observed with a good telescope about its opposition in the beginning of October; it will appear in the constellation Pisces as a very small star.

M D.	JANUARY.		FEBRUARY.		MARCH.		APRIL.		MAY.		JUNE.	
	Noon.	Midn.	Noon.	Midn.	Noon.	Midn.	Noon.	Midn.	Noon.	Midn.	Noon.	Midn.
1	14 46	14 45	14 51	14 53	14 54	14 57	15 25	15 31	15 56	16 3	16 35	16 15
2	14 44	14 44	14 56	14 59	15 1	15 5	15 38	15 44	16 10	16 16	16 42	16 16
3	14 44	14 45	15 2	15 6	15 9	15 14	15 50	15 56	16 21	16 26	16 43	16 16
4	14 46	14 48	15 10	15 14	15 19	15 24	16 2	16 6	16 30	16 32	16 39	16 16
5	14 50	14 52	15 18	15 22	15 29	15 34	16 11	16 14	16 34	16 35	16 31	16 16
6	14 55	14 57	15 26	15 30	15 39	15 44	16 17	16 19	16 34	16 32	16 19	16 16
7	15 0	15 3	15 34	15 38	15 48	15 52	16 20	16 21	16 30	16 26	16 5	15 13
8	15 7	15 11	15 42	15 45	15 56	15 59	16 21	16 20	16 22	16 17	15 51	15 13
9	15 15	15 19	15 49	15 53	16 2	16 4	16 18	16 16	16 12	16 6	15 37	15 13
10	15 23	15 28	15 56	16 0	16 6	16 8	16 13	16 10	16 1	15 55	15 24	15 13
11	15 33	15 38	16 3	16 6	16 9	16 10	16 7	16 4	15 49	15 43	15 13	15 15
12	15 43	15 49	16 9	16 12	16 10	16 10	16 0	15 56	15 38	15 33	15 4	15 15
13	15 54	16 0	16 14	16 16	16 10	16 10	15 52	15 48	15 28	15 23	14 57	14 14
14	16 6	16 11	16 18	16 19	16 9	16 8	15 44	15 40	15 18	15 14	14 51	14 14
15	16 16	16 21	16 19	16 18	16 6	16 4	15 36	15 32	15 10	15 6	14 47	14 14
16	16 25	16 29	16 17	16 15	16 2	16 0	15 28	15 24	15 3	15 0	14 45	14 14
17	16 31	16 33	16 13	16 9	15 57	15 54	15 20	15 16	14 57	14 56	14 44	14 14
18	16 34	16 34	16 5	16 0	15 50	15 46	15 12	15 9	14 52	14 49	14 44	14 14
19	16 32	16 30	15 55	15 50	15 42	15 37	15 5	15 1	14 48	14 46	14 46	14 14
20	16 26	16 21	15 44	15 37	15 33	15 28	14 58	14 55	14 45	14 45	14 50	14 14
21	16 16	16 10	15 31	15 25	15 23	15 18	14 53	14 50	14 44	14 45	14 55	14 14
22	16 3	15 56	15 19	15 13	15 14	15 9	14 49	14 47	14 45	14 47	15 3	15 15
23	15 48	15 41	15 8	15 3	15 5	15 1	14 47	14 46	14 49	14 51	15 12	15 15
24	15 33	15 26	14 59	14 56	14 57	14 54	14 46	14 48	14 54	14 58	15 24	15 15
25	15 20	15 13	14 53	14 50	14 52	14 50	14 49	14 52	15 2	15 7	15 37	15 15
26	15 8	15 3	14 49	14 48	14 48	14 48	14 55	14 59	15 30	15 19	15 52	15 15
27	14 58	14 54	14 48	14 48	14 48	14 49	15 3	15 8	15 25	15 32	16 7	16 16
28	14 51	14 49	14 50	14 52	14 50	14 53	15 14	15 20	15 40	15 47	16 21	16 16
29	14 47	14 46	..	..	14 55	14 59	15 27	15 34	15 55	16 3	16 33	16 16
30	14 46	14 46	..	..	15 3	15 8	15 41	15 48	16 11	16 18	16 41	16 16
31	14 47	14 49	..	..	15 13	15 19	..	..	16 25	16 30	..	..

M D.	JULY.		AUGUST.		SEPT.		OCTOBER.		NOVEMBER.		DECEMBER.	
	Noon.	Midn.	Noon.	Midn.	Noon.	Midn.	Noon.	Midn.	Noon.	Midn.	Noon.	Midn.
1	16 45	16 44	16 24	16 18	15 40	15 33	15 11	15 7	14 48	14 47	14 46	14 43
2	16 43	16 40	16 11	16 4	15 26	15 20	15 2	14 58	14 47	14 47	14 50	14 43
3	16 36	16 30	15 56	15 49	15 14	15 9	14 55	14 52	14 48	14 50	14 57	15 1
4	16 24	16 18	15 41	15 34	15 4	14 59	14 50	14 49	14 52	14 55	15 6	15 1
5	16 10	16 2	15 27	15 20	14 56	14 53	14 48	14 48	14 59	15 3	15 18	15 1
6	15 55	15 47	15 14	15 8	14 50	14 49	14 49	14 50	15 8	15 14	15 32	15 1
7	15 39	15 32	15 3	14 59	14 48	14 47	14 53	14 55	15 20	15 27	15 48	15 1
8	15 25	15 19	14 55	14 52	14 48	14 49	14 59	15 3	15 33	15 40	16 4	16 1
9	15 13	15 7	14 49	14 47	14 51	14 53	15 7	15 12	15 47	15 54	16 18	16 1
10	15 2	14 58	14 46	14 46	14 56	14 59	15 17	15 23	16 1	16 7	16 30	16 1
11	14 54	14 51	14 46	14 46	15 2	15 6	15 28	15 34	16 12	16 17	16 38	16 1
12	14 49	14 47	14 47	14 49	15 10	15 14	15 40	15 45	16 21	16 24	16 41	16 1
13	14 45	14 44	14 51	14 53	15 19	15 23	15 50	15 55	16 26	16 27	16 39	16 1
14	14 44	14 44	14 55	14 58	15 27	15 32	15 59	16 3	16 28	16 27	16 32	16 1
15	14 44	14 45	15 1	15 5	15 36	15 40	16 6	16 9	16 25	16 23	16 22	16 1
16	14 46	14 48	15 8	15 12	15 44	15 48	16 11	16 12	16 20	16 17	16 10	16 1
17	14 49	14 51	15 16	15 20	15 51	15 55	16 13	16 13	16 13	16 8	15 56	15 56
18	14 54	14 57	15 24	15 28	15 58	16 0	16 13	16 13	16 4	15 59	15 43	15 37
19	15 0	15 3	15 32	15 37	16 3	16 5	16 12	16 11	15 54	15 50	15 31	15 28
20	15 7	15 11	15 41	15 46	16 7	16 9	16 9	16 7	15 45	15 40	15 20	15 15
21	15 16	15 20	15 50	15 55	16 11	16 12	16 5	16 2	15 36	15 31	15 10	15 6
22	15 26	15 31	15 59	16 4	16 13	16 13	16 0	15 57	15 27	15 23	15 2	14 59
23	15 37	15 43	16 8	16 12	16 13	16 13	15 54	15 51	15 19	15 15	14 56	14 53
24	15 49	15 55	16 16	16 20	16 12	16 10	15 47	15 43	15 11	15 8	14 51	14 49
25	16 2	16 8	16 22	16 24	16 8	16 5	15 40	15 36	15 4	15 1	14 47	14 46
26	16 14	16 20	16 26	16 26	16 2	15 58	15 31	15 27	14 58	14 55	14 45	14 44
27	16 25	16 30	16 26	16 25	15 54	15 49	15 23	15 18	14 52	14 50	14 43	14 43
28	16 33	16 36	16 23	16 20	15 44	15 39	15 14	15 10	14 48	14 47	14 44	14 44
29	16 38	16 39	16 16	16 11	15 33	15 28	15 6	15 2	14 46	14 45	14 46	14 47
30	16 38	16 36	16 6	16 0	15 22	15 17	14 58	14 55	14 45	14 45	14 50	14 52
31	16 33	16 29	15 53	15 47	..	..	14 52	14 50	..	..	14 56	15 0

MOON'S HORIZONTAL PARALLAX.

27

JARY.	FEBRUARY		MARCH.		APRIL.		MAY.		JUNE.		M
Midn.	Noon.	Midn.	Noon.	Midn.	Noon.	Midn.	Noon.	Midn.	Noon.	Midn.	D.
54 1	54 23	54 32	54 36	54 47	56 29	56 52	58 21	58 47	60 47	61 1	1
53 59	54 42	54 54	55 1	55 16	57 16	57 39	59 12	59 35	61 11	61 16	2
54 3	55 6	55 19	55 32	55 49	58 1	58 23	59 56	60 13	61 16	61 11	3
54 13	55 33	59 48	56 8	56 26	58 43	59 1	60 27	60 36	61 1	60 48	4
54 28	56 2	56 17	56 45	57 3	59 17	59 30	60 42	60 44	60 30	60 10	5
54 47	56 32	56 47	57 21	57 38	59 40	59 48	60 41	60 35	59 47	59 22	6
55 10	57 1	57 16	57 54	58 9	59 52	59 54	60 25	60 13	58 57	58 30	7
55 37	57 30	57 44	58 22	58 34	59 53	59 49	59 57	59 40	58 4	57 38	8
56 6	57 58	58 11	58 44	58 53	59 43	59 36	59 21	59 0	57 13	56 49	9
56 40	58 24	58 37	59 0	59 6	59 26	59 15	58 39	58 18	56 27	56 6	10
57 16	58 49	59 1	59 10	59 13	59 4	58 51	57 57	57 37	55 46	55 28	11
57 56	59 12	59 21	59 14	59 15	58 37	58 24	57 17	56 57	55 12	54 58	12
58 37	59 30	59 37	59 14	59 12	58 9	57 55	56 39	56 21	54 45	54 34	13
59 18	59 42	59 46	59 9	59 5	57 40	57 26	56 4	55 49	54 25	54 16	14
59 54	59 46	59 45	59 0	58 53	57 11	56 56	55 34	55 20	54 10	54 4	15
60 23	59 41	59 34	58 46	58 36	56 41	56 26	55 8	54 56	54 1	53 58	16
60 39	59 24	59 11	58 26	58 14	56 11	55 57	54 45	54 35	53 57	53 57	17
60 41	58 56	58 39	58 1	57 46	55 43	55 28	54 27	54 19	53 59	54 2	18
60 26	58 20	57 59	57 31	57 15	55 15	55 3	54 13	54 7	54 6	54 12	19
59 56	57 37	57 14	56 58	56 40	54 51	54 40	54 4	54 1	54 20	54 29	20
59 13	56 52	56 29	56 22	56 4	54 31	54 23	54 1	54 2	54 40	54 53	21
58 21	56 7	55 47	55 47	55 30	54 16	54 11	54 4	54 9	55 8	55 24	22
57 27	55 27	55 10	55 15	55 0	54 8	54 7	54 16	54 25	55 43	56 3	23
56 34	54 54	54 41	54 47	54 36	54 9	54 13	54 36	54 49	56 25	56 49	24
55 47	54 30	54 22	54 27	54 20	54 19	54 28	55 5	55 23	57 14	57 40	25
55 7	54 16	54 13	54 15	54 13	54 39	54 53	55 43	56 6	58 7	58 35	26
50 54 37	54 13	54 15	54 13	54 16	55 9	55 27	56 30	56 56	59 2	59 29	27
25 54 17	54 19	54 27	54 22	54 30	55 48	56 11	57 23	57 51	59 55	60 18	28
17 54 7	..	..	54 41	54 54	56 35	57 1	58 20	58 49	60 38	60 56	29
6 54 7	..	..	55 9	55 27	57 27	57 54	59 17	59 43	61 9	61 18	30
9 54 16	..	..	55 46	56 7	..	..	60 8	60 29	..	..	31

ILV.	AUGUST.		SEPT.		OCTOBER.		NOVEMBER		DECEMBER		M.
Midn.	Noon.	Midn.	Noon.	Midn.	Noon.	Midn.	Noon.	Midn.	Noon.	Midn.	D.
61 20	60 4	59 42	57 23	56 58	55 40	55 22	54 15	54 11	54 7	54 14	1
61 3	59 18	58 52	56 34	56 11	55 6	54 52	54 10	54 11	54 22	54 33	2
60 29	58 24	57 56	55 49	55 29	54 40	54 30	54 14	54 20	54 47	55 3	3
59 41	57 29	57 1	55 11	54 55	54 22	54 17	54 29	54 40	55 21	55 42	4
58 46	56 35	56 11	54 42	54 30	54 14	54 14	54 54	55 10	56 5	56 30	5
57 49	55 48	55 27	54 22	54 16	54 17	54 23	55 28	55 49	56 56	57 24	6
56 55	55 8	54 52	54 13	54 12	54 30	54 41	56 11	56 35	57 53	58 22	7
56 5	54 38	54 27	54 13	54 17	54 53	55 8	57 0	57 25	58 50	59 18	8
55 24	54 18	54 11	54 23	54 31	55 24	55 42	57 50	58 15	59 44	60 7	9
54 50	54 7	54 5	54 41	54 53	56 1	56 21	58 39	59 2	60 27	60 44	10
54 26	54 5	54 7	55 6	55 20	56 41	57 2	59 22	59 40	60 57	61 4	11
54 9	54 11	54 16	55 34	55 50	57 22	57 42	59 54	60 6	61 8	61 6	12
54 1	54 23	54 31	56 6	56 22	58 1	58 18	60 14	60 18	61 0	60 50	13
53 59	54 40	54 51	56 38	56 54	58 34	58 47	60 19	60 16	60 35	60 18	14
54 3	55 2	55 14	57 10	57 25	58 59	59 9	60 10	60 2	59 58	59 36	15
54 12	55 27	55 41	57 39	57 52	59 17	59 22	59 51	59 38	59 12	58 48	16
54 26	55 55	56 9	58 5	58 17	59 25	59 27	59 23	59 8	58 24	57 59	17
54 45	56 24	56 40	58 28	58 39	59 26	59 24	58 51	58 34	57 35	57 12	18
55 9	56 55	57 12	58 48	58 57	59 21	59 16	58 16	57 59	56 50	56 30	19
55 38	57 28	57 45	59 4	59 11	59 10	59 3	57 42	57 25	56 10	55 52	20
56 12	58 2	58 19	59 17	59 21	58 55	58 46	57 8	56 52	55 36	55 20	21
56 51	58 35	58 52	59 24	59 26	58 37	58 26	56 36	56 21	55 7	54 54	22
57 34	59 8	59 23	59 26	59 24	58 15	58 3	56 6	55 52	54 43	54 33	23
58 20	59 37	59 49	59 20	59 15	57 50	57 37	55 38	55 25	54 24	54 17	24
59 7	59 59	60 7	59 7	58 57	57 22	57 8	55 12	55 0	54 10	54 5	25
59 50	60 12	60 14	58 45	58 31	56 52	56 36	54 49	54 39	54 1	53 58	26
60 26	60 13	60 9	58 15	57 58	56 20	56 4	54 29	54 21	53 56	53 56	27
60 50	60 1	59 49	57 39	57 19	55 48	55 33	54 14	54 9	53 58	54 0	28
57 60 59	59 35	59 17	56 59	56 39	55 18	55 4	54 5	54 2	54 5	54 11	29
56 60 49	58 58	58 36	56 18	55 59	54 51	54 39	54 2	54 4	54 29	54 30	30
38 60 23	58 12	57 48	..	..	54 29	54 21	..	..	54 42	54 57	31

Mean Refraction.

App Alt.	Refr.	App Alt.	Refr.	App. Alt.	Refr.	App. Alt.	Refr.	App. Alt.	Refr.
° / ' "	° / ' "	° / ' "	° / ' "	° / ' "	° / ' "	° / ' "	° / ' "	° / ' "	° / ' "
0 0 33 0	5 0 9 54	10 0 5 15	20 0 2 35	34 0 1 24					
0 5 32 10	5 5 9 46	10 10 5 10	20 10 2 34	34 30 1 23					
0 10 31 22	5 10 9 38	10 20 5 5	20 20 2 32	35 0 1 21					
0 15 30 35	5 15 9 30	10 30 5 0	20 30 2 31	35 30 1 20					
0 20 29 50	5 20 9 23	10 40 4 56	20 40 2 29	36 0 1 18					
0 25 29 6	5 25 9 15	10 50 4 51	20 50 2 28	36 30 1 17					
0 30 28 23	5 30 9 8	11 0 4 47	21 0 2 27	37 0 1 16					
0 35 27 41	5 35 9 1	11 10 4 43	21 10 2 26	37 30 1 14					
0 40 27 0	5 40 8 54	11 20 4 39	21 20 2 25	38 0 1 13					
0 45 26 20	5 45 8 47	11 30 4 34	21 30 2 24	38 30 1 11					
0 50 25 42	5 50 8 41	11 40 4 31	21 40 2 23	39 0 1 10					
0 55 25 5	5 55 8 34	11 50 4 27	21 50 2 21	39 30 1 9					
1 0 24 29	6 0 8 28	12 0 4 23	22 0 2 20	40 0 1 8					
1 5 23 54	6 5 8 21	12 10 4 20	22 10 2 19	41 0 1 5					
1 10 23 20	6 10 8 15	12 20 4 16	22 20 2 18	42 0 1 3					
1 15 22 47	6 15 8 9	12 30 4 13	22 30 2 17	43 0 1 1					
1 20 22 15	6 20 8 3	12 40 4 9	22 40 2 16	44 0 0 59					
1 25 21 44	6 25 7 57	12 50 4 6	22 50 2 15	45 0 0 57					
1 30 21 15	6 30 7 51	13 0 4 3	23 0 2 14	46 0 0 55					
1 35 20 46	6 35 7 45	13 10 4 0	23 10 2 13	47 0 0 53					
1 40 20 18	6 40 7 40	13 20 3 57	23 20 2 12	48 0 0 51					
1 45 19 51	6 45 7 35	13 30 3 54	23 30 2 11	49 0 0 49					
1 50 19 25	6 50 7 30	13 40 3 51	23 40 2 10	50 0 0 48					
1 55 19 0	6 55 7 25	13 50 3 48	23 50 2 9	51 0 0 46					
2 0 18 35	7 0 7 20	14 0 3 45	24 0 2 8	52 0 0 44					
2 5 18 11	7 5 7 15	14 10 3 43	24 10 2 7	53 0 0 43					
2 10 17 48	7 10 7 11	14 20 3 40	24 20 2 6	54 0 0 41					
2 15 17 26	7 15 7 6	14 30 3 38	24 30 2 5	55 0 0 40					
2 20 17 4	7 20 7 2	14 40 3 35	24 40 2 4	56 0 0 38					
2 25 16 44	7 25 6 57	14 50 3 33	24 50 2 3	57 0 0 37					
2 30 16 24	7 30 6 53	15 0 3 30	25 0 2 2	58 0 0 35					
2 35 16 4	7 35 6 49	15 10 3 28	25 10 2 1	59 0 0 34					
2 40 15 45	7 40 6 45	15 20 3 26	25 20 2 0	60 0 0 33					
2 45 15 27	7 45 6 41	15 30 3 24	25 30 1 59	61 0 0 32					
2 50 15 9	7 50 6 37	15 40 3 21	25 40 1 58	62 0 0 30					
2 55 14 52	7 55 6 33	15 50 3 19	25 50 1 57	63 0 0 29					
3 0 14 36	8 0 6 29	16 0 3 17	26 0 1 56	64 0 0 28					
3 5 14 20	8 5 6 25	16 10 3 15	26 10 1 55	65 0 0 26					
3 10 14 4	8 10 6 22	16 20 3 12	26 20 1 55	66 0 0 25					
3 15 13 49	8 15 6 18	16 30 3 10	26 30 1 54	67 0 0 24					
3 20 13 34	8 20 6 15	16 40 3 8	26 40 1 53	68 0 0 23					
3 25 13 20	8 25 6 11	16 50 3 6	26 50 1 52	69 0 0 22					
3 30 13 6	8 30 6 8	17 0 3 4	27 0 1 51	70 0 0 21					
3 35 12 53	8 35 6 5	17 10 3 3	27 15 1 50	71 0 0 19					
3 40 12 40	8 40 6 1	17 20 3 1	27 30 1 49	72 0 0 18					
3 45 12 27	8 45 5 58	17 30 2 59	27 45 1 48	73 0 0 17					
3 50 12 15	8 50 5 55	17 40 2 57	28 0 1 47	74 0 0 16					
3 55 12 3	8 55 5 52	17 50 2 55	28 15 1 46	75 0 0 15					
4 0 11 51	9 0 5 48	18 0 2 54	28 30 1 45	76 0 0 14					
4 5 11 40	9 5 5 45	18 10 2 52	28 45 1 44	77 0 0 13					
4 10 11 29	9 10 5 42	18 20 2 51	29 0 1 42	78 0 0 12					
4 15 11 18	9 15 5 39	18 30 2 49	29 30 1 40	79 0 0 11					
4 20 11 8	9 20 5 36	18 40 2 47	30 0 1 38	80 0 0 10					
4 25 10 58	9 25 5 34	18 50 2 46	30 30 1 37	81 0 0 9					
4 30 10 48	9 30 5 31	19 0 2 44	31 0 1 35	82 0 0 8					
4 35 10 39	9 35 5 28	19 10 2 43	31 30 1 33	83 0 0 7					
4 40 10 29	9 40 5 25	19 20 2 41	32 0 1 31	84 0 0 6					
4 45 10 20	9 45 5 23	19 30 2 40	32 30 1 30	86 0 0 4					
4 50 10 11	9 50 5 20	19 40 2 38	33 0 1 28	88 0 0 2					
4 55 10 2	9 55 5 18	19 50 2 37	33 30 1 26	90 0 0 0					

Dip
The HHeight of
the Eye.
ft.

1	0 58
2	1 24
3	1 42
4	1 58
5	2 12
6	2 28
7	2 36
8	2 47
9	2 57
10	3 7
11	3 16
12	3 25
13	3 33
14	3 41
15	3 49
16	3 56
17	4 4
18	4 11

Dip at D
DistaHeight
Eye

5	10 15
7	7 7
11	23 34
6	12 17
4	8 1
1	3 6
1 1/2	3 5
1 1/4	3 4
2	2 4
2 1/2	2 3
3	2 3
3 1/2	2 3
4	2 3
5	2 3
6	2 3

Tab
Of Corre

To be appli
Rising and
the Sun, M
Planets, wh
ed from e
above the se
Subtract fro
add to Se

ft.	s.	ft.	m.s.
5	16	50	0 5
10	23	60	0 5
15	28	70	1
20	30	80	1
30	38	90	1
40	46	100	1

**Right Ascensions, and Declinations, and Semi-diurnal Arcs,
FOR LATITUDE 54° 10',
Of the Principal Fixed Stars**

NAMES.	Magni- tude.	Right Ascension.			Annual Variations "	Declination.			Annual Variations "	Semi-diurn Arcs.	
		H.	M.	S.		°	'	"		H.	M.
Procyon	2	0	1	31	+ 3.08	N	28	21	+19.90	9	19
Sirius (Algenib)	3.2	0	6	23	+ 3.08		14	26	+20.03	7	27
Aldebaran	Var.	0	32	59	+ 3.36		55	48	+19.81	sets not	
Polaris	2	0	36	55	+ 3.01	S	18	43	+19.82	4	12
Minor. (Polaris)	2	1	10	17	+19.77	N	88	36	+19.12	sets not	
Achernar	1	1	32	45	+ 2.23	S	57	54	+18.42	rises not	
Antares	2	1	59	41	+ 3.36	N	22	49	+17.23	8	27
Arcturus	2.3	2	55	20	+ 3.13		3	33	+14.35	6	23
Regulus	2	3	14	50	+ 4.25		49	23	+13.18	sets not	
Aldebaran	3	3	39	35	+ 3.55		23	41	+11.48	8	34
Capella	1	4	28	17	+ 3.43		16	14	+ 7.63	7	39
Rigel	1	5	6	52	+ 4.42		45	51	+ 4.17	sets not	
Rigel	1	5	8	9	+ 2.88	S	8	21	+ 4.48	5	17
Antares	2	5	17	53	+ 3.79	N	28	29	+ 3.46	9	21
Antares	2	5	25	13	+ 3.06	S	0	24	+ 2.99	6	1
Antares	3	5	26	52	+ 2.65		17	55	+ 2.89	4	10
Antares	2	5	29	28	+ 3.04		1	17	+ 2.65	5	57
Antares	2	5	34	50	+ 2.18		34	8	+ 2.19	sets not	
Antares	Var.	5	47	58	+ 3.25	N	7	22	+ 1.05	6	45
Antares	1	6	21	0	+ 1.33	S	52	37	- 1.83	rises not	
Antares	1	6	39	17	+ 2.64		16	32	- 4.65	4	27
Antares	2.1	7	26	7	+ 3.84	N	32	10	- 7.44	10	13
Antares	1	7	32	20	+ 3.14		5	33	- 8.90	6	35
Antares	1.2	7	37	10	+ 3.68		28	20	- 8.31	9	20
Antares	2	9	21	3	+ 2.95	S	8	5	-15.39	6	49
Antares	1.2	10	1	17	+ 3.20	N	12	36	-17.41	7	17
Antares	2	10	55	30	+ 3.77		62	28	-19.35	sets not	
Antares	2.3	11	7	2	+ 3.20		21	15	-19.67	8	16
Antares	2	11	42	16	+ 3.06		15	18	-20.09	7	34
Antares	2.3	11	46	49	+ 3.19		54	26	-20.02	sets not	
Antares	1	12	19	13	+ 3.26	S	62	21	-19.93	rises not	
Antares	2.3	12	27	24	+ 3.13		22	39	-19.98	3	44
Antares	2	13	18	11	+ 3.15		10	27	-18.94	5	5
Antares	1	13	54	28	+ 4.16		59	43	-17.67	rises not	
Antares	1	14	9	36	+ 2.73	N	19	52	-18.91	8	5
Antares	1	14	30	36	+ 4.03	S	60	16	-15.03	rises not	
Antares	2.3	14	39	11	+ 2.62	N	27	38	-15.40	9	13
Antares	2.3	14	43	31	+ 3.30	S	15	29	-15.22	4	34
Antares	2	14	51	8	- 0.25	N	74	41	-14.76	sets not	
Antares	2	15	9	51	+ 3.22	S	8	53	-13.57	5	14
Antares	2	15	29	3	+ 2.54	N	27	9	-12.35	9	8
Antares	2.3	15	37	43	+ 2.95		6	50	-11.61	6	42
Antares	1.2	16	21	15	+ 3.67	S	26	8	- 8.40	3	15
Antares	2	16	34	37	+ 6.28		68	46	- 7.37	rises not	
Antares	Var.	17	8	35	+ 2.73	N	14	32	- 4.41	7	29
Antares	3.2	17	27	26	+ 1.35		52	24	- 2.84	sets not	
Antares	1	18	32	26	+ 2.03		38	39	+ 3.11	sets not	
Antares	Var.	18	45	10	+ 2.21		33	12	+ 3.90	10	31
Antares	3	19	39	56	+ 2.85		10	17	+ 8.47	7	2
Antares	1.2	19	44	17	+ 2.93		8	31	+ 9.20	6	51
Antares	4	19	48	47	+ 2.95		6	4	+ 8.69	6	37
Antares	2	20	15	7	+ 4.80	S	57	9	+11.12	rises not	
Antares	2.1	20	36	54	+ 2.04	N	44	48	+12.68	sets not	
Antares	3	21	15	24	+ 1.44		62	1	+15.10	sets not	
Antares	3	21	24	33	+ 3.16	S	6	9	+15.62	5	29
Antares	3	21	26	56	+ 0.80	N	69	58	+15.70	sets not	
Antares	3	21	58	57	+ 3.08	S	0	57	+17.31	5	58
Antares	2	21	59	50	+ 3.81		47	36	+17.18	rises not	
Antares	1.2	22	50	18	+ 3.33		30	19	+18.96	2	29
Antares	2	22	58	8	+ 2.98	N	14	29	+19.30	7	27

General Tide Table,

By which the times of High Water may be CORRECTLY FOUND on ANY DAY.
N.B.—ADD to the time of High Water in the Liverpool Tide Table in this Almanac the Hours and Minutes in the Column opposite the Place required.

ENGLAND		H.M.			H.M.
Alderney Pier.	7	35	Burrey Harbour.	6	50
Alne River	3	35	Cardiff	6	50
Barnstaple Bar	6	20	Cardigan Bar	7	50
Berwick	3	8	Caermarthen Bar	7	0
Blakeney	7	40	Carnarvon Bar	9	50
Blythe	3	35	Denbigh	3	5
Boston.	8	5	Fisgard Bay	7	20
Bridgewater	7	35	Milford Haven.	6	35
Bridlington.	5	20	Newport	7	35
Carlisle	0	50	Pembroke	6	54
Chatham	1	44	Skerries	10	35
Christchurch	9	40	Smalls and Swansea.	6	40
Dartmouth.	6	55	Strumble Head	7	5
Exmouth Bar	7	15	IRELAND.		
Falmouth	6	20			
Flamboro' Head	5	20	Arklow	10	5
Flatholm	7	18	Baltimore	4	35
Fowey	6	20	Bantry Bay	4	36
Gravesend	2	20	Broadhaven	6	50
Guernsey (Eng.Chan)	7	20	Crookhaven	4	20
Hartlepool	4	35	Donaghadee.	10	5
Humber River	6	20	Donegal Bar	5	55
Ilfracombe	6	20	Downing Bay	6	10
Ipswich	0	50	Dungarvon.	5	20
Jersey (En. Ch.)	7	0	Foyn's Island	4	50
Land's End	5	20	Galway Bay	5	20
Longships	5	20	Kinsale.	5	20
Lyme Regis	7	20	Limerick	6	50
Needles Point	10	35	Lough Swilly	8	20
Newcastle	4	50	Londonderry	6	50
Penzance	5	20	Malbay	4	50
Plymouth Dock.	6	20	Newry	0	50
Poole	9	50	Port Rush	6	35
Ramsgate	0	36	Saltees.	6	30
Robin Hood's Bay	4	35	Shannon	4	35
Scarborough	5	15	Skerries	5	35
Scilly Islands	5	0	Sligo Bay	5	35
Sheerness	1	29	Tory Island.	6	50
Spithead	10	20	Tralee Bay.	4	35
St. Ives	5	20	Valentia Harbour	4	20
Tees River	4	20	Waterford	6	40
Torbay.	6	50	Wexford	8	20
Tynemouth Bar	3	40	Wicklow	9	50
Weymouth.	7	20	Youghal	5	50
Whitby	4	35	SCOTLAND.		
Wisbeach	8	20			
Yarmouth Roads	9	30	Aberdeen	2	2
Yarmouth, Isle Wight	10	20	Banff	0	20
WALES.			Buchanness	0	50
			Burnt Island	3	20
Aberdovey	8	20	Cromarty	0	35
Aberystwith	8	20	Dee (River)	1	35
Barmouth	8	45	Dunbar	2	50
Bardsey Island	9	5	Dundee	3	5

EYEMOUTH
LEITH PIER
MONTROSE
TAY BAR
WICK

SHETLANDS.

BALTA
BRASSA SOUND
LERWICK HARBOUR
WESTRA

ORKNEYS.

CAIRSTON
FAIR ISLE
POMONA
RONALDSHA

FOREIGN PORTS.

AMSTERDAM
ANTWERP
BAHIA, BRAZIL
BILBOA, SPAIN
BISCAY, SPAIN
BONNY RIVER, AFRICA
BORDEAUX
BREMEN, GERMANY
BREST, FRANCE
CADIZ, SPAIN
CALABAR, AFRICA
CALCUTTA
CARTHAGENA, S. AMERICA
CHARLESTON BAR, U.S.
CHARANTE, FRANCE
CAPE COAST, AFRICA
CAPE GOOD HOPE TOWN
FORT ST. JOHN, N.A.
FUNCHAL, MADEIRA
HAMBURG
RIO JANEIRO, BRAZIL
ST. JOHN'S, N. FOUNDLAND
LISHON
L'ORIENT, FRANCE
NEW YORK E. RIVER
OPORTO, PORTUGAL
PANAMA, S. A.
PERNAMBUCO, S. A.
PHILADELPHIA, U.S.
QUEBEC, CANADA
ROTTERDAM
SANTA CRUZ, S.A.
WHAMPOA, CHINA

The Tides at the following places are nearly the same as the Tide-Table:—

Ardglass,	Chester	Dublin	Hastings	Mull of Galloway	St. Helen
Arran Island	Conway	Dumfries	Kingstown	Newhaven	Stranorlar
Bangor	Cowes	Dundalk	Killough	Pargate	Stroness
Balbriggan	Copeland Island	Dundrum	Kirkcudbright	Preston	Trillick
Belfast	Deal	Folkstone	Lancaster	Pentland Frith	Warren's
Beaumaris	Dover	Glasgow	Liverpool	Ramsgate	Whitehaven
Carlisle	Downs	Harwich	Maryport	Rothsay	
Garrickfergus	Drogheda		Margate	Rosness	

TIDE TABLES—JANUARY, 1867.

31

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31			
Datum—Sill of North Dock Gates.																																	
11	11	3	8	11	2	4	6	7	7	5	0	8	3	1	3	9	6	11	3	6	7	6	2	8	0	4	10	6	4	8			
8	34	16	11	3	27	17	3	9	2	9	39	10	13	17	8	10	34	10	54	17	11	30	18	2	4	6	18	16	6	4	8		
7	59	8	34	16	11	3	27	17	3	9	2	9	39	10	13	17	8	10	34	10	54	17	11	30	18	2	4	6	18	16	6	4	8
11	11	3	8	11	2	4	6	7	7	5	0	8	3	1	3	9	6	11	3	6	7	6	2	8	0	4	10	6	4	8			
8	34	16	11	3	27	17	3	9	2	9	39	10	13	17	8	10	34	10	54	17	11	30	18	2	4	6	18	16	6	4	8		
7	59	8	34	16	11	3	27	17	3	9	2	9	39	10	13	17	8	10	34	10	54	17	11	30	18	2	4	6	18	16	6	4	8
11	11	3	8	11	2	4	6	7	7	5	0	8	3	1	3	9	6	11	3	6	7	6	2	8	0	4	10	6	4	8			
8	34	16	11	3	27	17	3	9	2	9	39	10	13	17	8	10	34	10	54	17	11	30	18	2	4	6	18	16	6	4	8		
7	59	8	34	16	11	3	27	17	3	9	2	9	39	10	13	17	8	10	34	10	54	17	11	30	18	2	4	6	18	16	6	4	8
11	11	3	8	11	2	4	6	7	7	5	0	8	3	1	3	9	6	11	3	6	7	6	2	8	0	4	10	6	4	8			
8	34	16	11	3	27	17	3	9	2	9	39	10	13	17	8	10	34	10	54	17	11	30	18	2	4	6	18	16	6	4	8		
7	59	8	34	16	11	3	27	17	3	9	2	9	39	10	13	17	8	10	34	10	54	17	11	30	18	2	4	6	18	16	6	4	8
11	11	3	8	11	2	4	6	7	7	5	0	8	3	1	3	9	6	11	3	6	7	6	2	8	0	4	10	6	4	8			
8	34	16	11	3	27	17	3	9	2	9	39	10	13	17	8	10	34	10	54	17	11	30	18	2	4	6	18	16	6	4	8		
7	59	8	34	16	11	3	27	17	3	9	2	9	39	10	13	17	8	10	34	10	54	17	11	30	18	2	4	6	18	16	6	4	8
11	11	3	8	11	2	4	6	7	7	5	0	8	3	1	3	9	6	11	3	6	7	6	2	8	0	4	10	6	4	8			
8	34	16	11	3	27	17	3	9	2	9	39	10	13	17	8	10	34	10	54	17	11	30	18	2	4	6	18	16	6	4	8		
7	59	8	34	16	11	3	27	17	3	9	2	9	39	10	13	17	8	10	34	10	54	17	11	30	18	2	4	6	18	16	6	4	8
11	11	3	8	11	2	4	6	7	7	5	0	8	3	1	3	9	6	11	3	6	7	6	2	8	0	4	10	6	4	8			
8	34	16	11	3	27	17	3	9	2	9	39	10	13	17	8	10	34	10	54	17	11	30	18	2	4	6	18	16	6	4	8		
7	59	8	34	16	11	3	27	17	3	9	2	9	39	10	13	17	8	10	34	10	54	17	11	30	18	2	4	6	18	16	6	4	8
11	11	3	8	11	2	4	6	7	7	5	0	8	3	1	3	9	6	11	3	6	7	6	2	8	0	4	10	6	4	8			
8	34	16	11	3	27	17	3	9	2	9	39	10	13	17	8	10	34	10	54	17	11	30	18	2	4	6	18	16	6	4	8		
7	59	8	34	16	11	3	27	17	3	9	2	9	39	10	13	17	8	10	34	10	54	17	11	30	18	2	4	6	18	16	6	4	8
11	11	3	8	11	2	4	6	7	7	5	0	8	3	1	3	9	6	11	3	6	7	6	2	8	0	4	10	6	4	8			
8	34	16	11	3	27	17	3	9	2	9	39	10	13	17	8	10	34	10	54	17	11	30	18	2	4	6	18	16	6	4	8		
7	59	8	34	16	11	3	27	17	3	9	2	9	39	10	13	17	8	10	34	10	54	17	11	30	18	2	4	6	18	16	6	4	8
11	11	3	8	11	2	4	6	7	7	5	0	8	3	1	3	9	6	11	3	6	7	6	2	8	0	4	10	6	4	8			
8	34	16	11	3	27	17	3	9	2	9	39	10	13	17	8	10	34	10	54	17	11	30	18	2	4	6	18	16	6	4	8		
7	59	8	34	16	11	3	27	17	3	9	2	9	39	10	13	17	8	10	34	10	54	17	11	30	18	2	4	6	18	16	6	4	8
11	11	3	8	11	2	4	6	7	7	5	0	8	3	1	3	9	6	11	3	6	7	6	2	8	0	4	10	6	4	8			
8	34	16	11	3	27	17	3	9	2	9	39	10	13	17	8	10	34	10	54	17	11	30	18	2	4	6	18	16	6	4	8		
7	59	8	34	16	11	3	27	17	3	9	2	9	39	10	13	17	8	10	34	10	54	17	11	30	18	2	4	6	18	16	6	4	8
11	11	3	8	11	2	4	6	7	7	5	0	8	3	1	3	9	6	11	3	6	7	6	2	8	0	4	10	6	4	8			
8	34	16	11	3	27	17	3	9	2	9	39	10	13	17	8	10	34	10	54	17	11	30	18	2	4	6	18	16	6	4	8		
7	59	8	34	16	11	3	27	17	3	9	2	9	39	10	13	17	8	10	34	10	54	17	11	30	18	2	4	6	18	16	6	4	8
11	11	3	8	11	2	4	6	7	7	5	0	8	3	1	3	9	6	11	3	6	7	6	2	8	0	4	10	6	4	8			
8	34	16	11	3	27	17	3	9	2	9	39	10	13	17	8	10	34	10	54	17	11	30	18	2	4	6	18	16	6	4	8		
7	59	8	34	16	11	3	27	17	3	9	2	9	39	10	13	17	8	10	34	10	54	17	11	30	18	2	4	6	18	16	6	4	8
11	11	3	8	11	2	4	6	7	7	5	0	8	3	1	3	9	6	11	3	6	7	6	2	8	0	4	10	6	4	8			
8	34	16	11	3	27	17	3	9	2	9	39	10	13	17	8	10	34	10	54	17	11	30	18	2	4	6	18	16	6	4	8		
7	59	8	34	16	11	3	27	17	3	9	2	9	39	10	13	17	8	10	34	10	54	17	11	30	18	2	4	6	18	16	6	4	8
11	11	3	8	11	2	4	6	7	7	5	0	8	3	1	3	9	6	11	3	6	7	6	2	8	0	4	10	6	4	8			
8	34	16	11	3	27	17	3	9	2	9	39	10	13	17	8	10	34	10	54	17	11	30	18	2	4	6	18	16	6	4	8		
7	59	8	34	16	11	3	27	17	3	9	2	9	39	10	13	17	8	10	34	10	54	17	11	30	18	2	4	6	18	16	6	4	8
11	11	3	8	11	2	4	6	7	7	5	0	8	3	1	3	9	6	11	3	6	7	6	2	8	0	4	10	6	4	8			
8	34	16	11	3	27	17	3	9	2	9	39	10	13	17	8	10	34	10	54	17	11	30	18	2	4	6	18	16	6	4	8		
7	59	8	34	16	11	3	27	17	3	9	2	9	39	10	13	17	8	10	34	10	54	17	11	30	18	2	4	6	18	16	6	4	8
11	11	3	8	11	2	4	6	7	7	5	0	8	3	1	3	9	6	11	3	6	7	6	2	8	0	4	10	6	4	8			
8	34	16	11	3	27	17	3	9	2	9	39	10	13	17	8	10	34	10	54	17	11	30	18	2	4	6	18	16	6	4	8		
7	59	8	34	16	11	3	27	17	3	9	2	9	39	10	13	17	8	10	34	10	54	17	11	30	18	2	4	6	18	16	6	4	8
11	11	3	8	11	2	4	6	7	7	5	0	8	3	1	3	9	6	11	3	6	7	6	2	8	0	4	10	6	4	8			
8	34	16	11	3	27	17	3	9	2	9	39	10	13	17	8	10	34	10	54	17	11	30	18	2	4	6	18	16	6	4	8		
7	59	8	34	16	11	3	27	17	3	9	2	9	39	10	13	17	8	10	34	10	54	17	11	30	18	2	4	6	18	16	6	4	8
11	11	3	8	11	2	4	6	7	7	5	0	8	3	1	3	9	6	11	3	6	7	6	2	8	0	4	10	6	4	8			
8	34	16	11	3	27	17	3	9	2	9	39	10	13	17	8	10	34	10	54	17	11	30	18	2	4	6	18	16	6	4	8		
7	59	8	34	16	11	3	27	17	3	9	2	9	39	10	13	17	8	10	34	10	54	17	11	30	18	2	4	6	18	16	6	4	8
11	11	3	8																														

TIDE TABLES,—FEBRUARY, 1867.

GREENOCK			LONDON			CORK			Sunderland & Shields			Hull & Bridport			Southampton & Portsmouth		
M	D	Height.	Morn	Even	Height.	Morn	Even	Height.	Morn	Even	Height.	Morn	Even	Height.	Morn	Even	Height.
		Ft. In.	H. M.	H. M.	Ft. In.	H. M.	H. M.	Ft. In.	H. M.	H. M.	Ft. In.	H. M.	H. M.	Ft. In.	H. M.	H. M.	Ft. In.
1	1	7	0 33	0 58	15	2 31	2 59	9 11	1 1	1 3	1 30	4 4	5 4	33	9 19	9 46	17 2
2	2	9	1 19	1 40	17	3 25	3 46	10 5	1 54	2 15	2 15	5 41	6 21	31	10 9	10 31	17 8
3	3	0	2 0	2 18	17	4 9	4 31	10 8	2 35	2 55	12 4	6 21	7 14	20	10 53	11 10	18 0
4	4	1	2 2	2 55	18	4 49	5 10	11 1	3 13	3 31	13 2	6 57	7 49	20	11 29	11 47	18 3
5	5	9	2 37	3 29	18	5 29	5 51	11 6	3 48	4 5	13 7	7 31	8 23	20	0	0	7 18
6	6	9	3 13	4 2	19	6 4	6 20	11 9	4 21	4 40	14 0	8 5	9 23	20	0 23	0 41	18 10
7	7	10	3 47	4 38	19	6 34	6 51	12 0	4 56	5 14	14 2	9 8	10 5	20	0 58	1 17	19 0
8	8	10	4 19	5 14	19	7 11	7 31	11 11	5 34	5 53	14 2	9 17	10 5	20	1 35	1 53	19 0
9	9	8	4 56	5 52	18	7 51	8 9	11 9	6 12	6 30	14 0	9 58	10 5	20	2 11	2 29	18 10
10	10	9	5 32	6 36	18	8 31	8 52	11 5	6 53	7 16	13 5	10 42	11 6	18	2 49	3 12	18 6
11	11	9	6 14	7 28	17	9 14	9 36	10 10	7 38	8 3	12 6	11 38	12 17	10	3 33	3 55	17 10
12	12	8	7 0	8 33	17	10 5	10 35	10 2	8 32	9 5	12 0	11 38	12 17	10	4 23	4 51	17 6
13	13	8	7 58	9 56	16	11 9	11 50	9 11	9 42	10 24	11 7	0	1 13	2	5 25	6 4	17 2
14	14	8	9 15	10 23	16	6	0 28	9 9	11 3	11 44	11 5	1 29	2 5	11	6 45	7 27	16 11
15	15	8	10 38	11 16	11	1	1 51	10 4	1	0 26	12 0	1 245	3 27	17	8 10	8 46	17 6
16	16	9	0 34	1 16	11	2 27	3 1	11 1	1	1 31	12 11	2 45	3 27	17	9 22	9 54	18 2
17	17	9	1 30	2 17	10	3 32	4 0	11 6	2 0	2 25	13 9	4 3	5 31	20	10 20	10 49	18 8
18	18	9	2 20	3 17	9	4 29	5 11	11 11	2 53	3 15	14 4	5 5	6 23	21	11 12	11 34	19 2
19	19	0	3 4	4 22	19	5 18	5 40	12 4	3 36	3 57	14 8	6 45	7 62	1	11 57	12 19	20 5
20	20	1	4 34	5 25	19	5 58	6 19	12 6	4 17	4 36	14 11	8 7	9 26	21	0 19	0 39	19 7
21	21	0	5 3	6 19	10	6 36	6 57	12 4	5 57	5 18	14 11	8 7	9 26	21	1 0	1 21	19 7
22	22	10	6 4	7 41	19	7 17	7 32	12 0	6 37	5 53	14 7	8 43	9 28	21	1 39	1 55	19 3
23	23	9	7 4	8 17	19	7 54	8 12	11 6	6 15	6 32	13 11	9 21	9 37	20	2 15	2 32	18 10
24	24	9	8 34	9 52	18	8 31	8 45	10 11	6 53	7 10	13 1	9 57	10 14	19	2 50	3 6	18 3
25	25	8	9 5	10 25	10	9 5	9 25	10 3	7 30	7 49	12 4	10 33	10 53	18	3 23	3 44	17 8
26	26	8	6 48	7 9	17	9 44	10 7	9 6	8 14	8 39	11 6	11 17	11 45	17	4 4	4 26	17 0
27	27	8	7 33	8 3	16	10 37	11 11	8 7	9 10	9 45	10 8	0	18	15	4 54	5 28	16 5
28	28	7	8 37	9 16	15	11 48			10 24	11 4	10 2	0	54	15	6	6	44 16

TIDE TABLES—MARCH, 1867.

D	H.	M.	Pt	In	Calculated from the Mean Level of Low Water Spring Tides.	Mo	Even	Height.	Low Water Levels of Ordinary Spring Tides.	Mo	Even	Height.	Datum—Sill of North Dock Gates.	Mo	Even	Height.				
	H.	M.	Pt	In	Calculated from the Mean Level of Low Water Spring Tides.	Mo	Even	Height.	Low Water Levels of Ordinary Spring Tides.	Mo	Even	Height.		H.	M.	Pt	In			
1	7	40	8	1	1	0	27	1	1	0	27	1	1	7	22	8	1	1		
2	8	57	9	5	4	1	42	2	18	1	42	2	18	8	38	9	12	2		
3	10	0	10	22	8	2	52	3	19	10	52	3	19	9	42	10	3	4		
4	10	44	11	4	9	3	41	4	2	10	41	4	2	10	24	10	4	1		
5	11	23	11	44	9	4	22	5	10	11	22	5	10	11	3	11	22	6		
6						5	0	6	21	11	0	6	21	11	41	11	59	10		
7	0	25	0	44	9	5	41	7	57	12	41	7	57	12	0	15	19	2		
8	1	3	1	21	10	6	14	8	31	12	6	14	8	31	0	54	19	6		
9	1	41	2	1	10	7	52	9	11	12	7	52	9	11	1	32	19	7		
10	2	19	2	37	9	8	29	10	49	12	8	29	10	49	1	51	19	5		
11	2	59	3	20	9	9	12	11	34	11	9	12	11	34	2	10	19	5		
12	3	42	4	5	9	10	59	12	25	11	10	59	12	25	3	18	3	4		
13	4	29	4	56	8	11	52	13	11	17	11	52	13	11	4	7	4	8		
14	5	18	6	8	8	12	40	14	15	17	0	40	14	15	5	17	5	4		
15	6	52	7	35	8	13	58	15	44	16	4	58	15	44	6	32	7	15		
16	8	27	8	59	8	14	0	16	22	16	2	0	16	22	7	15	16	10		
17	9	32	10	10	9	15	59	17	32	16	16	59	17	32	8	38	17	3		
18	10	27	10	54	9	16	2	18	45	11	0	2	18	45	9	12	9	50		
19	11	17	11	40	9	17	4	19	35	11	6	4	19	35	10	6	10	32		
20						18	57	20	20	12	1	57	20	20	10	55	11	18	19	
21	0	22	0	42	10	19	38	21	55	12	3	38	21	55	11	38	11	55	19	
22	1	2	1	19	9	20	2	2	45	12	4	2	2	45	0	14	19	4	3	
23	1	38	1	54	9	21	6	3	38	19	7	6	3	38	0	52	19	4	4	
24	2	11	2	27	9	22	13	4	13	19	5	13	22	1	1	44	1	59	18	
25	2	44	3	0	9	23	19	5	20	18	4	19	23	2	2	17	2	34	18	
26	3	15	3	32	8	24	56	6	53	17	7	56	24	3	3	20	3	9	17	
27	3	49	4	9	8	25	8	7	32	16	11	8	25	4	4	28	3	49	17	
28	4	29	4	59	8	26	9	9	36	13	6	9	26	5	5	2	50	3	4	
29	5	33	6	13	7	27	10	10	48	10	5	10	27	5	5	4	11	4	38	16
30	6	54	7	31	8	1	56	11	37	8	7	56	1	5	5	15	5	54	16	
31	8	10	8	46	8	2	0	12	19	8	10	0	2	1	6	35	7	13	16	
						3	56	1	32	9	5	56	3	2	8	51	8	26	16	

GREENOCK

LONDON

CORK

Sunderland & Shields

Hull and Bridport.

Southampton & Portsmouth

M	D	Even	Height.	Morn	Even	Height.	Morn	Even	Height.	Morn	Even	Height.	Morn	Even	Height.	Morn	Even	Height.	Morn	Even	Height.	Morn	Even	Height.	
		H. M.	Ft. in.	H. M.	Ft. in.	H. M.	Ft. in.	H. M.	Ft. in.	H. M.	Ft. in.	H. M.	Ft. in.	H. M.	Ft. in.	H. M.	Ft. in.	H. M.	Ft. in.	H. M.	Ft. in.	H. M.	Ft. in.	H. M.	Ft. in.
1	1	0 37	15	0 12	15	0 37	15	0 12	15	0 44	15	0 15	10	3 46	17	8 59	26	3							
2	2	0 31	16	0 08	16	0 31	16	0 08	16	1 39	11	1 59	12	4 43	18	9 48	11	0							
3	3	0 16	17	0 58	17	0 16	17	0 58	17	2 17	11	3 36	13	5 23	19	10 29	18	7							
4	4	0 11	18	1 39	18	0 11	18	1 39	18	2 55	14	4 14	2	6 2	20	11 9	26	0							
5	5	0 14	10	2 17	10	0 14	10	2 17	10	3 28	7	4 47	14	6 36	21	11 48	19	4							
6	6	0 56	10	3 32	10	0 56	10	3 32	10	4 4	5	5 24	15	7 14	22	0	7								
7	7	1 38	10	4 13	10	1 38	10	4 13	10	5 28	6	6 15	22	8 36	21	0 49	10	8							
8	8	2 18	10	5 4	10	2 18	10	5 4	10	6 15	5	7 32	13	9 20	20	1 31	15	6							
9	9	3 3	9	6 45	9	3 3	9	6 45	9	7 6	4	8 14	10	10 10	19	2 14	37	0							
10	10	4 48	9	7 33	9	4 48	9	7 33	9	8 5	3	9 38	12	11 11	28	3 3	27	18							
11	11	5 22	8	8 5	8	5 22	8	8 5	8	9 16	2	10 11	11	1 7	36	4 28	17	8							
12	12	6 41	8	9 17	8	6 41	8	9 17	8	10 42	1	11 23	11	1 25	37	5 1	42	17							
13	13	7 23	8	9 34	8	7 23	8	9 34	8	11 2	0	12 11	3	2 46	16	6 23	7	0							
14	14	8 40	8	10 58	8	8 40	8	10 58	8	12 11	23	1 23	11	3 2	17	7 45	3	16							
15	15	9 44	9	11 35	9	9 44	9	11 35	9	0	2	2 11	9	4 3	21	8 54	20	17							
16	16	10 30	9	12 17	9	10 30	9	12 17	9	1 31	1	3 13	6	5 4	18	9 48	9	10							
17	17	11 14	9	1 59	9	11 14	9	1 59	9	2 17	2	4 13	3	6 5	19	10 31	10	18							
18	18	11 55	9	2 18	9	11 55	9	2 18	9	2 56	3	5 11	14	7 3	20	11 11	11	18							
19	19	0 13	9	3 37	9	0 13	9	3 37	9	3 29	4	6 14	1	8 38	19	11 47	19	0							
20	20	0 52	9	4 19	9	0 52	9	4 19	9	4 4	4	7 13	2	9 6	20	0	23	18							
21	21	1 27	9	5 18	9	1 27	9	5 18	9	5 15	5	8 7	13	10 6	21	0 43	1	0							
22	22	2 32	9	6 18	9	2 32	9	6 18	9	6 47	6	9 13	6	11 8	22	1 17	1	32							
23	23	3 8	8	7 17	8	3 8	8	7 17	8	7 24	7	10 11	5	12 9	23	2 22	2	42							
24	24	4 43	8	8 17	8	4 43	8	8 17	8	8 24	6	11 13	7	13 8	24	3 2	3	11							
25	25	5 44	8	9 17	8	5 44	8	9 17	8	9 24	7	10 11	3	10 10	33	4 4	9	16							
26	26	6 49	16	10 15	16	6 49	16	10 15	16	10 31	6	11 23	11	11 59	25	5 48	7	38							
27	27	7 44	15	11 31	15	7 44	15	11 31	15	11 36	5	12 44	10	12 48	26	6 43	8	16							
28	28	8 53	15	12 41	15	8 53	15	12 41	15	12 46	4	1 46	9	1 53	27	7 37	9	4							
29	29	10 51	14	1 51	14	10 51	14	1 51	14	1 56	3	2 53	10	3 0	28	8 32	10	7							
30	30	12 15	15	3 11	15	12 15	15	3 11	15	3 16	2	4 0	11	4 0	29	9 27	11	16							

TIDE TABLES—MAY, 1867.

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[illegible]

GREENOCK			LONDON			CORK			Sunderland and Shields.			Hull and Bridport			Southampton & Portsmouth		
M	D	Height.	M	D	Height.	M	D	Height.	M	D	Height.	M	D	Height.	M	D	Height.
Calculated from the Mean Level of Low water Spring Tides.			Calculated from the Mean Level of Low water Spring Tides.			Calculated from the Mean Level of Low water Spring Tides.			Low water Levels of Ordinary Spring Tides.			Low water Levels of Ordinary Spring Tides.			Datum.—Sill of North Dock Gates.		
Morn	Even	Ft. in.	Morn	Even	Ft. in.	Morn	Even	Ft. in.	Morn	Even	Sunld. Height.	Morn	Even	Hull Height.	Morn	Even	Portm. Height.
H. M.	H. M.	H. M.	H. M.	H. M.	H. M.	H. M.	H. M.	H. M.	H. M.	H. M.	H. M.	H. M.	H. M.	H. M.	H. M.	H. M.	H. M.
1	10 28	10 55	9	9	9	3	20	3 46	1	47	2 11	4	52	5 17	10 8	10 32	11
2	11 19	11 45	1	1	1	4	13	4 37	2	36	3 0	5	42	6 7	10 56	11 22	3
3		0 11	8	2	5	5	52	5 28	3	25	3 46	6	33	6 55	11 46		5
4	0 38	1 5	11	3	3	6	40	6 16	4	8	4 34	7	17	7 44	0 10	0 38	7
5	1 31	1 55	10	4	4	7	29	7 41	5	1	5 26	8	10	8 34	1 3	1 27	5
6	2 19	2 45	9	5	5	8	25	8 50	6	52	6 20	9	58	9 26	1 52	2 19	2
7	3 11	3 34	8	6	6	9	20	9 47	7	49	7 14	10	54	10 18	2 45	3 11	7
8	4 0	4 26	7	7	7	10	16	10 48	8	42	8 11	11	46	11 15	3 38	4 5	1
9	4 54	5 25	6	8	8	11	19	11 52	9	52	9 17	12	48	12 18	4 32	5 4	7
10	5 55	6 28	5	9	9			0 24	10	11	10 28	13	0	0 58	5 36	6 9	10
11	6 59	7 30	4	10	10	0	54	1 28	11	59	11 27	14	24	2 21	6 42	7 10	11
12	8 6	8 34	3	11	11	1	55	2 22			11 6	1	32	3 0	7 40	8 11	12
13	9 2	9 31	2	12	12	2	50	3 17	0	27	0 54	2	29	3 57	8 41	9 10	13
14	9 57	10 20	1	13	13	3	39	4 2	1	21	1 44	3	27	4 48	9 36	10 17	14
15	10 44	11 6	0	14	14	4	24	4 40	2	5	2 26	4	25	5 32	10 23	10 43	15
16	11 23	11 40	0	15	15	5	40	5 22	3	46	3 4	5	10	6 11	11 2	11 18	16
17		0 6	0	16	16	6	48	6 11	4	58	4 12	6	29	7 48	11 40	11 58	17
18	0 24	0 42	0	17	17	7	58	7 22	5	6	5 24	7	7	8 21		0 15	18
19	1 1	1 19	0	18	18	8	12	8 29	6	29	6 49	8	15	9 59	0 32	0 52	19
20	1 35	1 52	0	19	19	9	20	9 47	7	42	7 2	9	28	10 32	1 8	1 25	20
21	2 10	2 29	0	20	20	10	17	10 45	8	56	8 15	10	50	11 19	1 42	2 2	21
22	2 48	3 8	0	21	21	11	17	11 48	9	62	9 26	11	50	12 4	2 21	2 40	22
23	3 26	3 44	8	22	22	12	17	12 48	10	7	10 26	12	50	13 17	3 1	3 21	23
24	4 4	4 26	8	23	23	13	25	13 47	11	49	11 11	13	50	14 17	3 41	4 6	24
25	4 55	5 22	8	24	24	14	17	14 45	12	45	12 11	14	21	15 16	4 34	5 2	25
26	5 53	6 24	8	25	25	15	17	15 48	13	48	13 4	15	21	16 11	5 32	6 4	26
27	6 55	7 26	8	26	26	16	50	16 49	14	55	14 26	16	27	17 17	6 36	7 7	27
28	8 2	8 32	8	27	27	17	54	17 51	15	59	15 11	17	27	18 18	7 39	8 10	28
29	9 9	9 36	9	28	28	18	54	18 54	16	59	16 12	18	28	19 19	8 42	9 15	29
30	10 10	10 35	9	29	29	19	55	19 55	17	1	17 13	19	28	20 20	9 45	10 14	30

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M		D		Morn		Even		Height.		Morn		Even		Height.		Morn		Even		Height.		Morn		Even		Height.		Portmth. Height.	
				H. M.		H. M.		Ft In		H. M.		H. M.		Ft In		H. M.		H. M.		Ft In		H. M.		H. M.		Ft In		Ft In	
1	1	11	57	0	26	10	0	3	53	4	18	12	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
2	2	11	57	0	26	10	0	3	53	4	18	12	5	6	5	12	6	5	12	6	5	12	6	5	12	6	5	12	6
3	3	0	26	0	53	10	1	4	44	5	14	12	5	6	5	12	6	5	12	6	5	12	6	5	12	6	5	12	6
4	4	1	20	1	43	10	0	4	44	5	14	12	5	6	5	12	6	5	12	6	5	12	6	5	12	6	5	12	6
5	5	2	9	2	32	9	10	5	8	7	19	8	1	8	8	35	11	8	35	11	8	35	11	8	35	11	8	35	11
6	6	2	55	3	21	9	8	5	56	6	20	18	0	9	9	25	11	0	9	25	11	0	9	25	11	0	9	25	11
7	7	3	53	4	5	9	3	6	45	7	9	17	4	10	16	10	4	9	47	10	16	10	4	9	47	10	4	9	47
8	8	4	26	4	54	8	10	7	36	8	4	17	9	11	9	9	9	10	33	11	9	9	9	9	10	33	11	9	9
9	9	5	11	5	46	8	6	8	35	9	8	16	9	12	11	11	5	10	10	42	11	11	11	11	10	42	11	11	11
10	10	6	18	6	45	8	4	9	39	10	11	16	1	13	12	12	4	11	11	48	11	12	12	12	11	48	11	12	12
11	11	7	17	7	49	8	4	10	43	11	17	16	0	14	13	13	5	12	12	11	13	13	13	13	12	11	13	13	13
12	12	8	24	8	57	8	6	11	50	12	17	16	0	15	14	14	6	13	13	12	14	14	14	14	13	12	14	14	14
13	13	9	28	9	55	8	8	12	50	13	17	16	0	16	15	15	7	14	14	11	15	15	15	15	14	11	15	15	15
14	14	10	16	10	37	8	10	13	19	14	16	16	0	17	16	16	8	15	15	10	16	16	16	16	15	10	16	16	16
15	15	11	5	11	20	9	0	14	19	15	16	16	0	18	17	17	9	16	16	11	17	17	17	17	16	11	17	17	17
16	16	11	40	11	20	9	2	15	26	16	17	16	0	19	18	18	10	17	17	12	18	18	18	18	17	12	18	18	18
17	17	0	1	0	23	9	3	16	26	17	17	16	0	20	19	19	11	18	18	13	19	19	19	19	18	13	19	19	19
18	18	0	41	0	59	9	4	17	26	18	18	16	0	21	20	20	12	19	19	14	20	20	20	20	19	14	20	20	20
19	19	1	15	1	33	9	5	18	35	19	18	16	0	22	21	21	13	20	20	15	21	21	21	21	20	15	21	21	21
20	20	1	50	2	25	9	5	19	43	20	18	16	0	23	22	22	14	21	21	16	22	22	22	22	21	16	22	22	22
21	21	2	25	2	42	9	5	20	51	21	19	16	0	24	23	23	15	22	22	17	23	23	23	23	22	17	23	23	23
22	22	3	1	3	21	9	0	21	58	22	20	16	0	25	24	24	16	23	23	18	24	24	24	24	23	18	24	24	24
23	23	3	43	4	46	8	10	22	57	23	21	17	11	26	25	25	17	24	24	19	25	25	25	25	24	19	25	25	25
24	24	4	23	4	46	8	10	23	57	24	22	17	11	27	26	26	18	25	25	20	26	26	26	26	25	20	26	26	26
25	25	5	16	5	45	8	8	24	56	25	23	17	11	28	27	27	19	26	26	21	27	27	27	27	26	21	27	27	27
26	26	6	20	6	52	8	6	25	56	26	24	16	8	29	28	28	20	27	27	22	28	28	28	28	27	22	28	28	28
27	27	7	30	8	7	8	9	26	56	27	25	16	7	30	29	29	21	28	28	23	29	29	29	29	28	23	29	29	29
28	28	8	44	9	20	9	2	27	56	28	26	16	6	31	30	30	22	29	29	24	30	30	30	30	29	24	30	30	30
29	29	9	52	10	24	9	6	28	56	29	27	16	6	32	31	31	23	30	30	25	31	31	31	31	30	25	31	31	31
30	30	10	53	11	18	9	8	29	56	30	28	16	5	33	32	32	24	31	31	26	32	32	32	32	31	26	32	32	32
31	31	11	47	11	18	9	11	30	56	31	29	16	4	34	33	33	25	32	32	27	33	33	33	33	32	27	33	33	33

TIDE TABLES—AUGUST, 1867.

GREENOCK										LONDON										CORK										Sunderland and Shields										Hull and Bridport										Southampton & Portsmouth																					
M		D		Even		Height.		Ft.		In		M		D		Even		Height.		Ft.		In		M		D		Even		Height.		Ft.		In		M		D		Even		Height.		Ft.		In		M		D		Even		Height.		Ft.		In		M		D		Even		Height.		Ft.		In	
Calculated from the Mean Level of Low Water Spring Tides.										Calculated from the Mean Level of Low Water Spring Tides.										Calculated from the Mean Level of Low Water Spring Tides.										Low Water Levels of Ordinary Spring Tides.										Low Water Levels of Ordinary Spring Tides.										Datum.										Sill of North Dock Gates.											
1 1 0 14 0 1 6 1 49 2 31 2 51 9 9 5 5 3 11 3 53 4 19 9 0 8 5 28 5 57 8 19 8 2 2 4 6 7 49 9 25 8 6 11 12 9 51 10 15 8 9 1 1 20 11 39 9 9 4 6 1 16 0 16 0 54 1 12 1 57 0 16 0 54 1 1																																																																							

TIDE TABLES—SEPTEMBER, 1867.

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GREENOCK										LONDON										CORK										Sunderland and Shields.										Hull and Newport.										Southampton and Portsmouth.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
		Morn		Even		Height.				Morn		Even		Height.				Morn		Even		Height.				Morn		Even		Height.				Morn		Even		Height.				Morn		Even		Height.				Morn		Even		Height.				Morn		Even		Height.				Morn		Even		Height.				Morn		Even		Height.				Morn		Even		Height.				Morn		Even		Height.				Morn		Even		Height.				Morn		Even		Height.				Morn		Even		Height.				Morn		Even		Height.				Morn		Even		Height.				Morn		Even		Height.				Morn		Even		Height.				Morn		Even		Height.				Morn		Even		Height.				Morn		Even		Height.				Morn		Even		Height.				Morn		Even		Height.				Morn		Even		Height.				Morn		Even		Height.				Morn		Even		Height.				Morn		Even		Height.				Morn		Even		Height.				Morn		Even		Height.				Morn		Even		Height.				Morn		Even		Height.				Morn		Even		Height.				Morn		Even		Height.				Morn		Even		Height.				Morn		Even		Height.				Morn		Even		Height.				Morn		Even		Height.				Morn		Even		Height.				Morn		Even		Height.				Morn		Even		Height.				Morn		Even		Height.				Morn		Even		Height.				Morn		Even		Height.				Morn		Even		Height.				Morn		Even		Height.				Morn		Even		Height.				Morn		Even		Height.				Morn		Even		Height.				Morn		Even		Height.				Morn		Even		Height.				Morn		Even		Height.				Morn		Even		Height.				Morn		Even		Height.				Morn		Even		Height.				Morn		Even		Height.				Morn		Even		Height.				Morn		Even		Height.				Morn		Even		Height.				Morn		Even		Height.				Morn		Even		Height.				Morn		Even		Height.				Morn		Even		Height.				Morn		Even		Height.				Morn		Even		Height.				Morn		Even		Height.				Morn		Even		Height.				Morn		Even		Height.				Morn		Even		Height.				Morn		Even		Height.				Morn		Even		Height.				Morn		Even		Height.				Morn		Even		Height.				Morn		Even		Height.				Morn		Even		Height.				Morn		Even		Height.				Morn		Even		Height.				Morn		Even		Height.				Morn		Even		Height.				Morn		Even		Height.				Morn		Even		Height.				Morn		Even		Height.				Morn		Even		Height.				Morn		Even		Height.				Morn		Even		Height.				Morn		Even		Height.				Morn		Even		Height.				Morn		Even		Height.				Morn		Even		Height.				Morn		Even		Height.				Morn		Even		Height.				Morn		Even		Height.				Morn		Even		Height.				Morn		Even		Height.				Morn		Even		Height.				Morn		Even		Height.				Morn		Even		Height.				Morn		Even		Height.				Morn		Even		Height.				Morn		Even		Height.				Morn		Even		Height.				Morn		Even		Height.				Morn		Even		Height.				Morn		Even		Height.				Morn		Even		Height.				Morn		Even		Height.				Morn		Even		Height.				Morn		Even		Height.				Morn		Even		Height.				Morn		Even		Height.				Morn		Even		Height.				Morn		Even		Height.				Morn		Even		Height.				Morn		Even		Height.				Morn		Even		Height.				Morn		Even		Height.				Morn		Even		Height.				Morn		Even		Height.				Morn		Even		Height.				Morn		Even		Height.				Morn		Even		Height.				Morn		Even		Height.		</	

Datum—Sill of North Dock Gates.

Low Water Levels of Ordinary Spring Tides.

Low Water Levels of Ordinary Spring Tides.

Calculated from the Mean Level of Low Water Spring Tides.

Calculated from the Mean Level of Low Water Spring Tides.

Calculated from the Mean Level of Low Water Spring Tides.

GREENOCK			LONDON			CORK			Sunderland and Shields.			Hull and Bridport.			Portsmouth & Southampton		
M	D	Height.	M	D	Height.	M	D	Height.	M	D	Height.	M	D	Height.	M	D	Height.
Calculated from the Mean Level of Low Water Spring Tides.			Calculated from the Mean Level of Low Water Spring Tides.			Calculated from the Mean Level of Low Water Spring Tides.			Low Water Level of Ordinary Spring Tides.			Low Water Level of Ordinary Spring Tides.			Datum—Sill of North Dock Gates.		
Morn.	Even.	Ft. In.	Morn.	Even.	Ft. In.	Morn.	Even.	Ft. In.	Morn.	Even.	Ft. In.	Morn.	Even.	Ft. In.	Morn.	Even.	Ft. In.
1	1 36	9 9	1	3 54	4 11	1	6 45	7 3	1	5 6	5 25	1	8 15	8 33	1	9 1	27 18
2	2 11	9 5	2	4 29	4 46	2	7 21	7 40	2	5 44	6 2	2	8 51	9 8	2	1 44	2 18
3	2 47	9 0	3	5 4	5 21	3	7 59	8 16	3	6 22	6 41	3	9 27	9 45	3	2 19	2 38
4	3 18	8 8	4	6 21	5 58	4	8 30	8 52	4	7 0	7 24	4	10 4	10 27	4	3 56	3 18
5	3 56	8 4	5	7 10	6 43	5	9 16	9 43	5	7 47	8 15	5	10 50	11 19	5	4 34	4 16
6	4 52	8 0	6	8 16	7 42	6	10 14	10 45	6	8 48	9 23	6	11 53	12 15	6	5 48	5 16
7	5 7	7 11	7	9 39	8 58	7	11 31	11 57	7	10 6	10 46	7	0 30	1 12	7	7 8	7 46
8	6 33	6 8	8	10 50	10 15	8	0 9	0 57	8	11 25	11 5	8	1 50	2 27	8	8 16	8 47
9	7 38	5 8	9	0 25	0 45	9	1 30	2 52	9	0 3	0 32	9	3 3	3 34	9	9 12	9 34
10	8 32	4 8	10	1 5	1 24	10	2 29	3 55	10	0 58	1 23	10	4 48	5 6	10	10 34	10 50
11	9 16	3 9	11	2 17	2 33	11	3 13	4 49	11	1 43	2 13	11	5 25	6 43	11	11 8	11 24
12	10 56	2 9	12	4 10	4 29	12	4 4	5 6	12	2 19	2 36	12	6 0	7 18	12	12 11	12 44
13	11 31	1 10	13	5 36	5 59	13	5 38	6 10	13	3 26	3 45	13	6 33	7 54	13	1 44	2 19
14	0 33	0 56	14	6 59	7 17	14	6 45	7 12	14	4 4	4 25	14	7 12	8 33	14	0 4	0 27
15	1 15	1 34	15	8 30	8 48	15	8 34	8 52	15	5 25	5 47	15	8 33	9 54	15	1 27	1 48
16	2 36	2 54	16	10 1	10 19	16	10 7	10 25	16	6 11	6 38	16	9 17	10 37	16	2 10	2 34
17	3 23	3 41	17	11 37	11 55	17	11 45	12 3	17	7 5	8 34	17	10 9	11 29	17	3 0	3 27
18	4 14	4 32	18	0 5	1 18	18	0 5	1 18	18	8 9	9 11	18	11 8	12 11	18	4 28	4 48
19	5 23	5 41	19	2 17	2 34	19	2 17	2 34	19	9 23	10 7	19	1 13	2 30	19	5 5	6 32
20	6 52	7 10	20	3 47	4 6	20	3 47	4 6	20	10 50	11 28	20	2 30	3 48	20	6 32	7 11
21	8 13	8 31	21	5 11	5 29	21	5 11	5 29	21	0 36	1 15	21	3 38	4 57	21	7 48	8 24
22	9 16	9 34	22	6 17	6 35	22	6 17	6 35	22	1 28	2 7	22	4 32	5 51	22	8 54	9 21
23	10 8	10 26	23	7 18	7 36	23	7 18	7 36	23	2 13	2 42	23	5 18	6 37	23	9 47	10 14
24	11 10	11 28	24	8 19	8 37	24	8 19	8 37	24	3 52	4 21	24	6 59	8 18	24	10 31	10 58
25	0 32	0 50	25	9 20	9 38	25	9 20	9 38	25	4 40	5 9	25	7 50	9 9	25	11 10	11 37
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27	3 11	3 29	27	11 22	11 40	27	11 22	11 40	27	6 15	7 44	27	9 24	11 43	27	1 42	2 19
28	4 28	4 46	28	12 23	12 41	28	12 23	12 41	28	7 3	8 32	28	10 32	12 51	28	3 5	4 32
29	5 45	6 3	29	1 24	1 42	29	1 24	1 42	29	8 11	9 10	29	11 40	1 59	29	5 0	5 27
30	6 52	7 10	30	2 25	2 43	30	2 25	2 43	30	9 0	10 0	30	12 48	2 18	30	6 42	7 19
31	8 9	8 27	31	3 26	3 44	31	3 26	3 44	31	10 8	11 7	31	1 56	3 15	31	8 17	8 44

TIDE TABLES—NOVEMBER, 1867.

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GREENOCK										LONDON										CORK										Sunderland and Shields.										Hull and Bridport										Southampton & Portsmouth																																																																																																			
Morn					Even					Height.					Morn					Even					Height.					Morn					Even					Height.					Morn					Even					Height.					Morn					Even					Height.																																																																															
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GREENOCK			LONDON			CORK			Sunderland & Shields			Hull & Bridport			Southampton & Portsmouth		
M	D	Height.	M	D	Height.	M	D	Height.	M	D	Height.	M	D	Height.	M	D	Height.
Even			Even			Even			Even			Even			Even		
H	M	Ft In.	H	M	Ft In.	H	M	Ft In.	H	M	Ft In.	H	M	Ft In.	H	M	Ft In.
1	2	31	1	4	50	1	7	42	1	6	28	1	9	12	1	2	25
2	3	39	2	5	27	2	8	22	2	7	10	2	12	9	2	3	31
3	4	41	3	6	7	3	9	24	3	8	7	3	13	10	3	4	39
4	5	31	4	7	54	4	10	21	4	9	5	4	14	11	4	5	41
5	6	43	5	8	49	5	11	34	5	10	8	5	15	12	5	6	50
6	7	53	6	9	0	6	12	8	6	11	16	6	16	13	6	7	58
7	8	51	7	10	10	7	13	48	7	12	11	7	19	14	7	8	57
8	9	44	8	11	13	8	14	45	8	13	12	8	21	15	8	9	49
9	10	35	9	12	0	9	15	29	9	14	13	9	24	16	9	10	35
10	11	23	10	13	34	10	16	10	10	15	14	10	29	17	10	11	25
11	12	0	11	14	22	11	17	5	11	16	15	11	32	18	11	12	11
12	13	0	12	15	10	12	18	53	12	17	16	12	35	19	12	13	0
13	14	1	13	16	0	13	19	39	13	18	17	13	38	20	13	14	0
14	15	1	14	17	11	14	20	29	14	19	18	14	41	21	14	15	0
15	16	2	15	18	22	15	21	28	15	20	19	15	43	22	15	16	0
16	17	3	16	19	34	16	22	20	16	21	20	16	46	23	16	17	0
17	18	4	17	20	46	17	23	12	17	22	21	17	48	24	17	18	0
18	19	5	18	21	58	18	24	11	18	23	22	18	51	25	18	19	0
19	20	6	19	22	11	19	25	9	19	24	23	19	53	26	19	20	0
20	21	7	20	23	23	20	26	1	20	25	24	20	55	27	20	21	0
21	22	8	21	24	34	21	27	1	21	26	25	21	57	28	21	22	0
22	23	9	22	25	46	22	28	2	22	27	26	22	59	29	22	23	0
23	24	10	23	26	58	23	29	3	23	28	27	23	61	30	23	24	0
24	25	11	24	27	11	24	30	4	24	29	28	24	63	31	24	25	0
25	26	12	25	28	23	25	31	5	25	30	29	25	65	32	25	26	0
26	27	13	26	29	34	26	32	6	26	31	30	26	67	33	26	27	0
27	28	14	27	30	46	27	33	7	27	32	31	27	69	34	27	28	0
28	29	15	28	31	58	28	34	8	28	33	32	28	71	35	28	29	0
29	30	16	29	32	11	29	35	9	29	34	33	29	73	36	29	30	0
30		17	30	33	23	30	36	10	30	35	34	30	75	37	30		

Calculated from the Mean Level of Low Water Spring Tides.

Low Water Level of Ordinary Spring Tides.

Low Water Level of Ordinary Spring Tides.

Datum—Sill of North Dock Gates.

Descriptive List of Principal Lights—Scotch Coast

Name of Light.	Situation.	No. of Light.	Appearance.	distance visible	Points of Compass within which visible.	North latitude	West longitude.
INCHKEITH	Summit of Island, Fifehire ..	One	Revolving once every minute ..	21—	All round the compass ..	56° 2'	30 8'
ISLE OF MAY	Isle of May, in Fifehire ..	Two	Fixed. Bear from each other NNE½E. & SSW½W., 250 yards	21&15	All round compass. The low light only towards the cart	56 11	2 33
BELL ROCK	A sunk Reef, 11½ miles S. by E. of E. off Arbroath, Forfarshire	One	Revolving, shewing alternately a bright & red light every 2 min.	15—	All round the compass ..	56 26	2 23
GIRDLENESS	Girdleness, Kincardineshire ..	Two	Fixed Lights, one above the other	19&16	NNE to WSW½W by E'ward	57 8	2 3
BUCHANNESS	Buchanness, Aberdeenshire ..	One	Flashing once every 5 seconds ..	16—	N by E to S W by E'ward	57 28	1 46
KINNNAIRDHEAD	Kinnairdhead, Aberdeenshire ..	One	Fixed	15—	White to NNW½W, Red N.	57 42	2 1
TARBETNESS	Tarbetness, Cromartysire ..	One	Visible 2½ min., then eclipsed ½ a min. To W. of the Ness Fixed	18—	All round the Compass ..	57 51	3 48
DUNNETHEAD	On the Head, Caithnesshire ..	One	Fixed	23—	From SE½E to W by N'ward	58 40	3 22
PENTLAND SKERRIES	On the Island	Two	Fixed N.N.E. & S.S.W., 100 feet	18&16	All round the Compass ..	58 41	2 55
START POINT	East point of Sanda Island ..	One	Fixed	15—	All round the Compass ..	59 17	2 22
SUMBURGHHEAD	On S.W. point of Shetlands ..	One	Fixed	21—	NE by E to N W by N½N by S	59 51	1 16
NORTH RONALDSHAY	On North point	One	Flashing once every 10 seconds ..	18—	All round the Compass ..	59 23	2 24
CAPE WRATH	On the Cape, N. W. point of Scotland ..	One	Revolving, shewing alternately a bright & red light every 2 min.	23—	From S ½ E to S W by W	58 37	5 0
ISLAND GLASS	E. point of Island, Harris Isle	One	Fixed	17—	W by S to E N E ½ E by S	57 52	6 33
BARRAHEAD	Highest point on Bernera Isle, Southern point of Hebrides	One	Intermittent, continuing in view 2½ min., then eclipsed ½ min.	33—	From N by E to E N E ½ E	56 48	7 38
ARDNAMURCHAN	Ardnamurchan point, Argyle-shire ..	One	Fixed	18—	Westerly and southerly		
LISMORE	Mousdale Island	One	Fixed, dark 2½ point over land ..	15—	From N E by E ½ E to S ½ E	56 44	6 13
CRINAN CANAL	East side	One	Fixed, red light	15—	W by S N'ly and W'ly ..		
RHINS OF ISLAY	Oversay Island, off S.W. point of Islay, Argyleshire ..	One	Flashing once every 5 seconds; disappears ½ a mile of Cul point.	4—	From E to N E by E ..	56 27	5 36
MULL OF CANTYRE	South Western headland of Cantyre ..	One	Fixed	17—	All round the Compass ..	56 5	5 38
SANDA ISLAND	Ship Rock	One	Fixed, red light	22—	From NNE to SE Westerly	55 41	6 29
DEVAR ISLAND	Eastern part	One	Revolves every ½ minute ..	17—	From N N E ½ E to S by W	55 19	5 49
PLADDA	Pladda Isle, off south east of Arran, county of Bute	Two	Fixed, vertical N. & S., 8 yards apart	15—	½ W Westerly ..		
CORSEWALL	W. side of entrance to Loch Ryan, in Wigtonshire ..	One	Revolving, shewing alternately a bright and red light every 2 min	14&17	NW½W to SE by E by SW'ly	54 16	5 35
MULL OF GALLOWAY	Southern extremity of mainland of Scotland, Wigtonshire ..	One	Intermittent, continuing in view 2½ min., then eclipsed ½ a min.	15—	N ½ W to E by S by N ..	55 26	5 32
				23—	From S E by E N'ly to S ½ W by W ..	55 26	5 7
					From N E by E Northerly to S W ..	55 0	5 6
					From N E to N W ½ W ..	54 38	4 51

Descriptive List of Lights—Isle of Man

Name of Light.	Situation.	Latitude North.	Longitude West.	No. of Lights.	Fixed or Revolving.	Miles visible in clear weather.	Remarks.
POINT OF AYR ..	A quarter of a mile S.W. of the Point ..	54 25	4 22	One	R	—15—	Shewing alternately a bright and red light every 2 min. Visible from S. by W. N.E'y, to W. by N. Pierhead light Red, Breakwater White.
Peel Harbour ..	On Pier and Breakwater ..	54 13	4 42	Two	F	—8—	Revolving every 2 min. When in one they lead on [the Chicken Rocks, To be kept on the port hand on entering.
CALF OF MAN ..	West side of Calf Island ..	54 3	4 50	Two	R	24&22	Also a light on Fort Island during herring fishing.
Port St. Mary ..	Pier Head ..	54 4	4 44	One	F	—9—	Not visible from Langness point, but with 3 miles offing it will be seen N.E. $\frac{1}{2}$ E.; and the Calf
Castletown Harbour ..	New Pier Head ..	54 5	4 39	One	F	—8—	Light at the same time N.N. by W. $\frac{1}{2}$ W.
Derbyhaven ..	Entrance of the Harbour ..	54 5	4 36	One	F	—2—	Bright and Red. Sight Red Light to clear Break-
DOUGLAS ..	Douglas Head ..	54 9	4 28	One	F	—14—	Red Light. [water works. A Gong is sounded during foggy weather. 'Bahama Bank,' is painted on her sides. King William Bank Buoy, E. by N. $\frac{1}{2}$ N., nine miles.
Douglas Harbour ..	North Pier Head....	54 10	4 28	Two	F	—6—	
Ramsey Harbour ..	South side of Entrance..	54 20	4 23	One	F	4 or 5	
Bahama Bank Light Vessel	A mile off the S.E. tail of the Shoal. Moored in Eleven fathoms.	54 20	4 12	Two	F	—10—	

Principal Lights—West Coast of England

Lee Scar ..	On the Rocks ..	54 52	3 25	One	F	—6—	On Piles. Base dries at 6 feet at low water.
Solway Light Vessel ..	Robin Rigg Channel ..	54 48	3 32	One	F	—6—	Red light. Moored in 4 fathoms. A Black Ball by [day. Tolls a bell in foggy weather.
ST. BEES..	St. Bee's Head..	54 31	3 38	One	F	—25—	Every minute. The fixed light is Red. N.W. by W. $\frac{1}{2}$ W., and S.E. by E. $\frac{1}{2}$ E., 340 yards.
WALNEY..	S. Point of Walney Island ..	54 3	3 11	Two	1 R	—13—	Every 30 seconds.—Red. Var. in 1866, 23 $\frac{1}{2}$ W.
Morecombe Bay Light Vessel	In 12 fathoms ..	53 54	3 31	One	R	—10—	Red light. A Ball by day, and a M. M. M. Light by night every 20 secs. is shown at the bows when 8ft water in Harbour Channel. Bell during foggs.
	Between Yeoman and Clark Wharf. ..	54 1	3 0	One	F	—5—	On Piles. A bell is tolled in foggy weather.
River Wyre ..	N.E. elbow of N. Wharf Bank ..	53 57	3 2	One	R	—10—	N. and S. 850 feet. Shown while 9 feet water in Bright 3 $\frac{1}{2}$ min.; dark $\frac{1}{2}$ min. [the Channel.
Fleetwood ..	H. Lt. in Town, L. Lt., Espd. ..	53 56	3 1	Two	F	13 & 9	White between the bearings of S.E. by E. $\frac{1}{2}$ E. round by the S. to W.; and Red from W. to W. $\frac{1}{2}$ N.
River Ribble ..	Stanner Point, N. of entrance ..	53 44	3 1	One	Int	—12—	Red Light. Painted Red; carries Red Ball. In 25 feet at low water. Crosby Lightship S.E. $\frac{1}{2}$ S., 2 $\frac{1}{2}$ miles. N.W. Mark, E. by N. $\frac{1}{2}$ N., 3 $\frac{1}{2}$ miles.
GREAT ORMSHEAD ..	North Point, Steep Cliff ..	53 20	3 52	One	F	—24—	Yellow Light. Painted Red; carries Red Ball.
Formby Light Vessel ..	At the elbow of the Crosby and Queen's Channel..	53 32	3 11	One	F	—8—	
Crosby Light Vessel ..	N.E. elbow of Gt. Burbo Bank ..	53 31	3 7	One	F	—8—	

Name of Light.	Situation.	Lat. Tide North.	Long. West.	No. of Lights.	Revol- ving.	Miles visible in clear weather.	Remarks.
Black Rock	Rock Point, West side of the entrance to the Mersey ..	53 27	3 3	One	R	-14-	Every minute. White twice and Red once every 3rd minute. A Bell is tolled in foggy weather.
Leasowe	On the shore between the Mersey and the Dee Rivers	53 25	3 7	One	F	-15-	Bidston Light open E of Leasowe, and afterward to the W, lead up the Horse Channel.
BIDSTON ..	Bidston Hill ..	53 24	3 4	One	F	-23-	Obscured when inward bound, bearing S by W ½ W
Hoylake ..	Near the Church ..	53 24	3 11	Two	F	13 & 11	The Upper Light ex. from N N W round to the E'ward, the Lower from N round to E'ward.
Liverpool N.W. Light Ship..	W extreme of 3 and 4 fath Tongue in 6½ fathoms ..	53 27	3 17	One	R	-11-	Black Ball during day. Blue Lt every 2 hrs. during darkness after 6 p.m. Bell and Gong alt. in fogs.
AIR ..	Air Point, at low water mark	53 22	3 19	One	F	-9-	On Piles. A Bell is sounded in foggy weather.
LYNAS ..	Point Lynas ..	53 25	4 17	One	Fl.	-16-	Flashing once every ten seconds
SKERRIES ..	Highest Island..	53 25	4 36	One	F	-16-	Revolving every 2 min. During foggy weather a smaller Bright Light is occasionally shown, 40 ft
STACK ..	South Stack Rock, off N W Point of Holyhead Island	53 18	4 42	One	R	-20-	above the sea and 30 yards N of main Lighthouse
BARDSEY ..	Bardsey Island..	52 45	4 48	One	F	-17-	[sounded in foggy weather
Cardigan Bay Light Vessel..	Cardigan Bay ..	52 22	4 54	One	R	-9-	Red Light. Revolving every 30 seconds, A Gong is
SOUTH BISHOP ..	South Bishop Rock ..	51 51	5 25	One	R	-18-	Revolving every 20 seconds
SMALLS ..	Smalls Island ..	51 43	5 40	One	F	-15-	Erected upon pillars 40 feet high.
ST. ANN'S ..	St Ann's Point, Milford Haven ..	51 41	5 10	Two	F	20 & 18	High Light N by W ½ W, 609 feet from Low Light, when in one they lead clear of the Crow and Toes Rocks
CALDY ..	Caldy Island, southern part	51 38	4 41	One	F	-20-	High Light S E by E ½ E and N W by W ½ W, 1000 feet from Low Light. The Lights in one lead
MUMBLES ..	Mumbles Head ..	51 34	3 58	One	F	-15-	a cable's length Southward of the Nash Sand
NASH..	Nash Point ..	51 24	3 33	Two	F	19 & 17	Red. A Red Light is also shown up the river.
USK ..	W side of entrance to River	51 32	3 0	Two	F	-11-	The Low Light (fixed) is only visible from the West- ward between NNW and WSW. The Revolving
FLATHOLM ..	Flatholm Island, South point	51 23	3 7	One	F	-18-	Light flashes every two minutes
LUNDY ..	On the ridge of Lundy Island	51 10	4 40	Two	1 R 1 F	-31-	The Lower Light is 50 ft. in advance of the high one
TREVOSE HEAD ..	On north-western part..	50 33	5 1	Two	F	20 & 17	

Descriptive List of Principal Lights—South and East Coasts of Ireland

Name of Light.	Situation.	Latitude North. ° /	Longitude West. ° /	No. of Lights.	Fixed or Revolving.	Miles visible in clear weather	Remarks.
FASTNET	Summit of Rock	51 23	9 36	One	R	—18—	Attaining its greatest brilliancy every 2 minutes. Red light is shown in a line to the Horse Rock in Courtmacsherry Bay, Bright to seaward.
KINSALE	South Point of Old Head	51 36	8 32	One	F	—21—	
CORK HARBOUR or Queenstown	Roche Point, E. side of Entrance	51 48	8 15	Two	R&F	8 & 10	Red. White between the bearings of N.E. by E. and N.E. $\frac{1}{2}$ N. to pass E'wards of Daunt's Rock. A Bell 8 times a minute in foggy weather.
BALLYCOTTIN	East Elbow of Spit Bank, in 9 feet	51 51	8 16	One	F	—5—	Red. From NNE $\frac{1}{2}$ E to SE by E $\frac{1}{2}$ E round by E.
MINEHEAD	Outer Island, west side of Bay	51 49	7 59	One	Fl.	—18—	Every 10 secs. From W $\frac{1}{2}$ S round N to E $\frac{1}{2}$ S.
HOOK TOWER	South side of Head	52 0	7 35	One	Int.	—21—	Bright 50 secs., obscured 10 secs. From E by N
SALTEE'S LIGHT	East side entrance Waterford	52 7	6 56	One	F	—16—	[$\frac{1}{2}$ N to W $\frac{1}{2}$ S.
VESEL	Off Conningbeg Rock, the Southernmost of the Saltee Islands	52 2	6 40	Two	F	10 & 8	Carries 2 Balls. Moored in 32 fathoms. During foggy weather a Gong is sounded
TUSKAR	Tuskar Rock	52 12	6 12	One	R	—15—	Every 2 min. Two sides Bright, one Red. During foggy weather a Bell is tolled every $\frac{1}{2}$ min. Red Light vis. every 6th min., and seen 10 miles
ARKLOW LT.-VESSL.	S. end of Arklow Bank, in 22 fms.	52 42	6 0	One	R	—10—	Every $\frac{1}{2}$ min. Carries a Ball. A Gong in foggy [weather.
WICKLOW	Wicklow Head	52 58	6 0	One	F	—16—	Red Light. In 13 fathoms
WICKLOW Lt. Vessel.	8 miles S.E. by E. $\frac{3}{4}$ E. from W. Hd.	52 58	6 0	One	F	—9—	Every min. Carries a Ball. A Gong is sounded
KISH LIGHT	Off N. Point of Kish Bank, moored in 10 fathoms	53 19	5 56	One	R	—10—	during foggy weather
VESEL	Centre of East Pierhead of Kingstown Harbour	53 18	6 8	One	R	—9—	Every half min., showing a Bright and Red Light alternately. During foggy weather a Bell is tolled.
Kingstown	West Pierhead	53 20	6 9	One	F	—2—	A small Red Light
POOLBEG	End of S. Wall, at the entrance to the River Liffy	53 20	6 9	Two	F	—12—	The Lower Light, which is much fainter than the Upper, is exhibited from half-flood to half-ebb. A Ball is hoisted at the same period during the day-time
BAILEY	End of N. Wall or N. Quay; Dublin	53 21	6 14	One	F	—10—	During foggy weather a Bell is tolled
CARLINGFORD	S.E. Point of Howth Island	53 22	6 3	One	F	—15—	The Lower from $\frac{1}{2}$ fl. to $\frac{1}{2}$ ebb. A Ball is hoisted during the day, in foggs a Bell is tolled every $\frac{1}{2}$ min.
DUNDRUM BAY	Haulbowline Rock	54 1	6 5	Two	F	—15—	Red Light. Every minute, 45 secs. red, and 15 Every minute and a half [secs. obscured.
SOUTH ROCK	St. John's Point	54 13	5 40	One	Int.	—12—	
COPELAND	On the Rock	54 24	5 25	One	R	—12—	
	Small Copeland Island	54 42	5 32	One	F	—16—	

Isle of Man Fairs

JANUARY.—5. St. Mark's, Malew.
FEBRUARY.—2. Greeba—12. Kirk Bride.
 —27. Baldwin.
MARCH.—17. St. John's.—25. Ramsey.
 28. Peel.
APRIL.—5. Jurby.
MAY.—1. St. John's.—3 Sulby Clad-
 dagh.—10. Laxey.—12. St. Mark's.—15
 Ballaugh.—26. Kirk Santon.
JUNE.—4. Sulby.—16. Kirk Michael.
JULY.—5. St. John's.—23. Sulby.
AUGUST.—5. Laxey.—12. Ballasalla.—
 26. Ballaugh.
SEPTEMBER.—29. Ballasalla.
OCTOBER.—10. Michael.—28. Arbory.
NOVEMBER.—1. St. John's.—8. Ramsey.
 —12. Douglas.—18. St. John's.
DECEMBER.—6. Colby, Kirk Arbory.—
 11. Kirk Andreas.

Those falling on Saturday, Sunday, or
 Monday, to be held on the following
 Tuesday—except the Tynwald Fair, which
 must be held on the 5th July, unless that
 day fall on a Sunday.

Cumberland—Abbey-Holme, Tues-
 day before Whitsunday, Oct. 29.—Alston
 Moor, last Thursday in May, Friday be-
 fore 27th Sept., 1st Thur. in Nov.—Arcle-
 don, Ap. 24, 1st Friday in June, 17 Sep.—
 Bootle, April 5, 26, August 3, Sept. 24.—
 Brampton, April 22, 2nd Wed. after Whit.
 2nd Wed. after 15th Sept.—Carlisle, Sat.
 next Whit., Aug. 26, Sep. 16, Sat. near-
 est 11th Nov.—Cockermouth, Feb. 18,
 Mon. before Easter, 1st and 3rd Wed. in
 May, Oct. 10.—Egremont, Feb. 18, 3rd
 Frid. in May, Sept. 13.—Ennerdale, 2nd
 Tues. in Sept.—Eskdale, 2nd Mon. in Sep.
 Garrigill, 3rd Frid. in May, 1st Frid. in
 Sep.—Gosforth, April 25th, Oct. 18.—Hes-
 ket Newmarket, every alternate Fri. from
 May till Whit., last Thur. in Aug., 2nd
 Thur. in Oct.—Ireby, Feb. 21, Oct. 18.—
 Keswick, 3rd Thursday after 1st May,
 Oct. 11, Sat. after 29th Oct.—Kirkoswald,
 Thur. before Whit. Sun., Aug. 5.—Long-
 town, Thur. before Whit. Sun., Thur.
 before Sept. 30.—Nether Weddale, 1st
 Mon. in Sep.—Newlands, 1st Fri. in Sept.
 —Penrith, March 1, April 24, 25, 3rd
 Tues. in Oct.—Tues. after Nov. 11.—Ra-
 venglass, May 6, June 8, Aug. 5.—Rosely
 Hill, Whit. Mon. and every alter. Mon.
 till Michael.—Skinburnness, June 24th—
 Trelkeld, 1st Thur. in Sept.—Uldale
 August 22.—Ulpha, Mon. before Easter.
 July 5.—Whitehaven, Aug. 12.—Wigton,
 Feb. 20, April 5.—Workington, Wed. be-
 fore Holy Thursday, Oct. 18.

Cheshire—Altringham, Ap. 22, Aug.
 5, Nov. 22.—Budworth, Feb. 13, Ap. 5, Oc.
 2.—Congleton, May 12, July 5, Nov. 22,
 —Chester, Feb. 23, April 27, July 5, Oct.
 2, Nov. 24.—Knutsford, Whit. Tues., July
 10, Nov. 8.—Macclesfield, May 6, June 22,
 July 11, Oct. 4, Nov. 11.—Malpas, Ap. 5,

July 25, Dec. 8.—Middlewich, Holy Th.,
 Aug. 6.—Nantwich, Feb. 4, Mar. 15, Sep.
 4, Dec. 11.—Northwich, August 2, Dec.
 6.—Over, May 16, Sep. 25.—Sandbach,
 East. Tues., Tues. after Sept. 10.—Stock-
 port, March 4, 25, May 1, Oct. 23.—Tar-
 porley, May 1, last Monday in August,
 Dec. 11.—Winsford, May 8, Nov. 25.

Lancashire—Blackburn, Easter-
 Mon., May 12, Oct. 17, every fortnight on
 Wed. from Feb. till Oc.—Bolton-le-moors
 1st Mon. after Jan. 5, and every Mon.
 fortnight till May 12, July 30, 31, Oct. 13,
 14.—Burnley, March 6, East, Eve., May
 6, 13, July 10, Oct. 11.—Broughton-in-F.,
 Aug. 1.—Bury, March 5, May 3, Second
 Thursday after Whit. S., Sept. 18.—Cart-
 mell, March 22, Whit Mon., Oct. 24,
 Nov. 5.—Chorley, March 26, May 5, Aug.
 20.—Clithero, March 24, 25, August 1, 2,
 the 5th Thur. and Frid. after St. Michael's
 day.—Conistone, 3rd Saturday in Sept.—
 Darwen, Holy Thurs., 1st Thurs. in Oct.—
 Dalton, April 28, June 6, Oct. 23.—Great
 Harwood, Mar. 3, Aug. 21.—Haslingden,
 May 8, July 1, Oct. 10.—Hawkshead Mon
 before Holy Thurs., Whit Mon., Oct. 2.—
 Inglewhile, Oct. 5.—Kirkham, June 24.—
 Lancaster, May 1, July 5, Aug. 11, Oct. 10.
 —Liverpool, July 25, Nov. 11; Horse fair
 every alternate Wednesday.—Longridge,
 May 13, Nov. 6.—Manchester, Whit Mon.,
 Oct. 1, Nov. 6.— Middleton, Thurs. after
 March 11, Thurs. after April 15, 2nd Thur.
 after Sept. 29.—Newburg, June 21.—New-
 bury, June 21.—Newchurch, April 29,
 Sept. 30.—Newton, May 17, July 15, and
 every Mon. fortnight, Aug. 12.—Oldham,
 May 5.—Ormskirk, Whit Mon., Sept. 8.—
 Poulton, Feb. 6, Ap. 13, Nov. 3.—Prescot,
 June 12, Aug. 24, 25, Nov. 1.—Preston,
 1st Sat. after Jan. 6, March 27, Aug. 25,
 last 10 days, Nov. 7.—Rufford, May 19.—
 Radcliffe Bridge, April 29, 30, Sep. 21, 22,
 —Rochdale, May 14, Whit Tues., Nov. 7,
 —Ulverston, March 22, October 27.—
 Warrington, July 18, Nov. 30, each lasts
 10 days; every Wed. fortnight.—Wigan,
 Holy Thursday, June 27, Oct. 21.

Irish Fairs—Antrim.

Ahoghill, June 4, Aug. 26, Dec. 5.—An-
 trim, Jan. 1, May 12, Aug. 1, Nov. 12.—
 Armoy, Jan. 25, Feb. 25, Mar. 29, May 25,
 Aug. 16, Nov. 12, Dec. 25.—Ballinagabob,
 July 26.—Ballindery, second Monday in
 Feb., May, Aug., and Nov.—Ballintoy,
 June 3, Sept. 4, Oct. 14.—Ballycary, 2nd
 Mon. in Jan., 3rd Mon. in April, August
 and Nov.—Ballycastle, Easter Tues., last
 Tues. in May, Aug., Oct., and Nov., July
 26.—Ballyclare, last Tues. in Jan., 2nd
 Tues. in May, July, and Nov. o. s. Bally-
 mena July 26, Oct. 21.—Ballamoney, May
 5, July 10, October 6.—Ballybernice, 1st
 Tues. after 12th Jan. and Feb.—Ballynure
 May 15, Sep. 4, 2nd Tues. in Oct. o. s.—
 Belfast, 1st Wed. in each month, Aug. 12,
 Nov. 1.—Broughshane, June 17, Sep. 1.—

Bushmills, March 28, June 28, August 24, Oct. 21, Dec. 12. Cairnlough, Feb. 10, Easter Mon., June 12, Aug. 10, Oct. 12, Dec. 12. Carnmoney, 1st Tues. May and Nov. *o.s.* Carrickfergus, May 12, Nov. 1. Clough, May 5, July 5, Sept. 5, Nov. 22, Frid. before Christmas. Connor, Feb. 1, May 1, Aug. 2. Craigbilly, June 26, Aug. 21. Grumilin, 1st Mon. in month. Cushendale, Feb. 14th March 17, May 14, June 29, Aug. 14, Sept. 29, Nov. 14, Dec. 22, Cashendon, first Wednesday of Feb., April, June, Aug., Oct., and Dec. Der- vock, Jan. 12. Feb. 23, May 16, June 22, Aug. 12, October 27. Drinbar, May 21. Drumadoon, June 9, Nov. 26. Dunlce, Nov. 12. Giant's Causeway, August 13. Glenarm, Jan. 26, May 26, Aug. 30, Oct. 29. Glenavy, 3rd Mon. Feb., May, Aug., and Nov. Kells, Jan. 8, March 1, June 10, Sept. 12. Larne, July 31, Dec. 1. Lisburn, July 21, Oct. 5. Loughgill, 19th of Feb., June, Aug., and Nov. Mosside, Feb. 13, May 21, Nov. 21. Mounthill, July 1, Oct. 1. Newtoncrumlin, Feb. 5, May 11, Aug. 2, Nov. 5. Oldstone, June 13, Oct. 22. Pargate, Feb. 7, May 7, 2nd Monday in June, August 7, Nov. 4. Portglenone, 1st Tues. in each month, and 2nd Tues. in May, *o.s.* Randalstown, July 16, Nov. 1. Rasharkan, Nov. 16. Roughfort, 3rd Tues. in May and Nov. *o.s.* Straid, Sept. 4, Oct. 30. Stranocum, Feb. 10, March 10, April 20, June 16, July 14, Aug. 8, Sep. 28, Nov. 6, Dec. 29. Tallaght, July 7, Nov. 9. Templepatrick, May 11, July 10, last Tuesday in Oct. Troome, Easter Monday, December 4. Tullamore, November 17.

Down.

Annadoyne, May 14, Nov. 8. **Ardmillin**, 1st of Jan., April, July, Oct. **Balloo**, 1st Wednesday in Jan., April, July, and Oct. **Ballynahinch**, 3rd Thur. in each month. **Ballywater**, June 22, Nov. 8. **Banbridge**, Jan. 12, 1st Monday in Feb., March, April, May, July, Sept., October, November, and Dec., June 9, Aug. 26. **Bangor**, Jan. 12, May 1, Aug. 1, Nov. 22. **Carradore**, 7th, of Feb., May, Aug., & Nov. **Castlereagh**, July 5, Oct. 26, Nov. 20. **Castlewellan**, 2nd Mon. in Jan., Mar., Ap., July, Aug., Oct.; 1st Feb., May, June, Sept; Nov 13, and Tuesday before Christmas. **Clough**, May 27, July 5, Nov 22, 3rd Friday in October, and Friday before Christmas. **Comber**, Jan. 5, April 5, June 28, Oct. 19, Crossgar, 2nd Wednesday in each month. **Donaghadee**, last Wednesday in May, *o.s.* Aug. 16, Oct. 10, last Wednesday in Nov. *o.s.* **Donagmore**, 22nd of June and Oct. **Downpatrick**, 1st Satur. in each month. **Dromara**, 1st Friday in Feb., May, Aug., and Nov., and 1st Friday after March 15, June, Sept., and Nov. **Dromore**, 1st Sat. in March & Aug, May 12, Oct 10, and Sat. but one before Christmas. **Dundrum**, Jan 5, Thur. before Candlemas day, *o.s.*, May 12, Thursday before Aug 12, Oct 10.

Dec. 10.—Gilford, 2nd Tues. each month, and 21st of June and Nov.—Greencastle, 12th Jan. and Aug.—Greyabbey, March 28, June 22, Oc. 29, Dec. 4.—Hillsborough 3rd Wed. in each month.—Hollywood, 1st Monday in Feb., May, Aug., and Nov.—Kikeel, 1st Wed. in each month.—Killileagh, April 10, June 3 & 15, October 11
Dec. 11.—Killinchy, 1st Wednes. in Feb., May, Aug., and Nov.—Killough, Feb. 13, June 5, Aug. 15, Nov. 15,—Kilmore, Feb. 4, March 14, May 1, June 3, Aug. 5, Sep. 29, Nov. 5. Dec. 16.—Kircubbin, 1st Mon. in each month, and 28th of April, May, Aug. and Nov.—Loughbrickland, Nov. 12, and 3rd Tues. of remaining months,

Dublin.

Ballbriggan, 29th April, and September.—
Carrickmines, Dec. 6, April 14, June 24,
Oct. 14.—Donnybrook, Aug. 26.—Fields-
town, Whit Monday.—Garryistown, May
15, Aug. 15, Nov. 1.—Kilsallaghan, Ascen-
sion day, Sep. 8.—Lusk, Easter Monday,
May 4, June 24, July 13, Nov. 25.—Naull
March 10, April 26, May 21, Sep. 28, Oct. 2,
—Palmerstown, Aug. 21.—Rathfarnham,
July 10.—Rush, May 1, Sep. 29.—Saggard,
June 15, Oct. 10, Nov. 8.—Skerries, April
22, Aug. 10.—St. Margarets, July 30, and
31.—Swords, March 17, May 9.

Fish able

The following Table shows the month, in which the undermentioned Fish is IN or OUT of Season.

[illegible]

ISLE OF MAN INFORMATION.

Manx Legislature

H. B. Loch, Esq., C.B.... Lieut.-Governor
Sec. to his Excellency... **J. F. Clucas**

COUNCIL.

Hon & Rt. Rev. H. Powys, D.D., Lord Bishop
Hon. James Gell..... Attorney-General
Hon. W. L. Drinkwater, South. Deemster
Hon. J. C. Stephen, Northern Deemster
Ridgway Harrison..... Water-Bailiff
Hon. Mark H. Quayle, Clerk of the Rolls
Ven. Joseph C. Moore..... Archdeacon
Richard Jebb..... Vicar General
J. T. Clucas..... Clerk of Council

Constituted Authorities

HIGH BAILIFFS.

Samuel Harris..... Douglas
John M. Jeffcott..... Castletown
Frederick Tellet..... Ramsey
Robert J. Moore..... Peel
Registrar of Deeds.. **S. Harris**, Douglas
Registrar General of Births and Marriages.. **S. Harris**, Douglas
Deputy Registrars do., **R. Harrison**, Douglas; **J. M. Jeffcott**, Castletown; **Robert J. Moore**, Peel; **F. Tellet**, Ramsey.
Episcopal Registrar.... **Samuel Harris**.
Archdeacon's Official..... **T. C. Callow**
Archdeacon's Registrar.. **R. H. L. Brown**
Seneschal..... **L. Adamson**, Douglas
Regulator of Weights and Measures.. **F. L. Gelling**, Castletown
Agent for Woods and Forests.... **F. C. Skrimshire**, Douglas
Tithe Agent..... **R. Harrison**, Douglas
Southern Deemster's Clerk, **John Quayle**
Northern Deem. do.,..... **D. F. Wilson**
Clerk to the Vicar General.. **H. B. Watts**
Registrar of J. S. Companies.. **S. Harris**

Magistrates

The Members of the Council..... }
The High Bailiff of Castletown... } For the
The High Bailiff of Douglas..... } time
The High Bailiff of Ramsey..... } being.
The High Bailiff of Peel..... }
Mark H. Quayle, C.R...... Castletown
Wm. Watson Christian..... Ballacurry
Evan Gell..... Whitehouse
Richard Quirk..... Rheaby
Cesar Bacon..... Seafield
William Callister..... Thornhill
Ewan Cameron..... Glenfaba House
Clarence Horatio Cary..... Beach House
John Frissell Crellin..... Orrisdale
Edward Moore Gawne..... Kentraugh
Alexander Taubman Goldie.. Douglas
Richard Simpson..... Onchar
J. G. Bennett..... Williston
P. T. Cunningham..... Castletown
William Farrant..... Ballamoar
John Gell..... Kennaa
William Haslam..... Ballaglass
W. F. Moore..... Cronkbourne
J. S. Goldie Taubman..... Nunnery
Charles Ready..... Douglas
Hugh H. Lloyd..... Douglas

Edward C. Farrant .. Lezayre
William B. Christian Lezayre
Thomas Moore Malew
CLERKS—**Jas. Spittall**, Douglas; **Henry C. Gill**, Castletown; **R. J. Kelly**, Ramsey; **John Kelly**, Peel.

Members of Manx Bar

Frederick Tellet, H.B...... Ramsey
Frederick L. Gelling .. Castletown
James Quirk Douglas
William W. Christian Andreas
William Clague Peel
Mark H. Quayle, C.R...... Castletown
George Wm. Dumbell ... Douglas
Henry B. Watts..... Douglas
J. C. Stephen, Deemster..... Ramsey
Edward H. Frizelle..... Peel
Robert J. Kelly .. Ramsey
Robert J. Moore, H.B. .. Peel
Thomas C. Howard..... New Zealand
John M. Jeffcott, H.B..... Castletown
Laurence Craigie..... Douglas
Ridgway Harrison, W.B. .. Douglas
Samuel Harris, H.B...... Douglas
Edward Callow.... Manchester
Charles J. Stewart Lancashire
John Kelly..... Peel
Thomas C. Callow..... Douglas
James Gell..... Castletown
Daniel F. Wilson..... Ramsey
J. G. M'Hutchin..... Castletown
Samuel S. Rogers..... Australia
James Spittall..... Douglas
Alfred Walter Adams..... Douglas
Frederick Call..... Australia
A. N. Laughton..... Douglas
Thomas A. Corlett..... Scotland
Laurence W. Adamson..... Douglas
Henry C. Gill..... Castletown
J. C. Tobin Harrison..... Douglas
Richard Tuton..... Douglas
John Thomas Clucas..... Castletown
Richard Sherwood..... Douglas
Alured Dumbell..... Ramsey
Henry Evans Gelling..... Castletown
Henry T. Lamothe..... Ramsey
Claude Cannell, B.A...... Douglas
J. C. Lamothe..... Ramsey
W. E. S. Moore..... Peel
John Quayle..... Douglas
John Frederick Gill.... Castletown
C. W. Beckwith .. Douglas
J. J. Gell..... Ramsey
G. J. McDonald..... Peel

Notaries Public

R. Harrison, Water Bailiff, *ex officio*.
DOUGLAS.—**John Moore**, **Henry B. Watts**, **J. C. T. Harrison**, **James Spittall**, **T. C. Callow**, **A. N. Laughton**, **R. Tuton**, **Claude Cannell, B.A.**, **John Quayle**.
CASTLETOWN.—**Frederick L. Gelling**, **H. C. Gill**.
RAMSEY.—**Robt. J. Kelly**, **D. F. Wilson**, **J. C. Lamothe**, **J. J. Gell**.
PEEL.—**J. Kelly**.

Commissioners to take Affidavits.

English Court of Chancery & Irish Courts of Queen's Bench, and Common Pleas.—Robt. J. Kelly, Advocate, Ramsey.

English Courts of Queen's Bench, Exchequer, and Common Pleas, Thomas Cheslyn Callow, Douglas.

English Court of Chancery, Queen's Bench, Common Pleas, Exchequer, and Probate.—Jas. Gell, Advocate, Castletown; James Spittall, Douglas.

English Court of Probate—L. W. Adamson, Douglas, Alfred N. Laughton, Douglas.

Her Majesty's Court of Chancery..... L. W. Adamson, Douglas.

Coroners

Glenfaba Philip Clucas
Michael William Teare
Garff John Chrystall
Ayre John Stephen
Middle George Maley
Rushen W. Thompson

Sumners

Sumner-General John Quayle
Kirk Maughold John Bridson
— Lonan Jas. Cannon
— Onchan George Maley
— Braddan George Maley
— Marown T. Christian
— Santon Wm. Corlett
— Malew Wm. Corlett
— Arbory Richard Corrin
— Christ Rushen W. Thompson
— Patrick P. Clucas
— German P. Clucas
— Michael Edward Cannell
— Andreas Matthias Curphey
— Bride Richard Pass
Ballaugh John Stephen
Jurby T. Moughtin
Lezayre John Cain

Officers of Police

Head Constable, Isle of Man.... Capt. Geo. P. Goldie.

John Sayle, Inspector..... Douglas
James Martin, Sergeant .. Castletown
W. Kermode .. do..... Ramsey
Matthias Collister, do..... Peel
William Hollinrake .. Mounted Sergeant of Police.

Officers of Customs**PORT DOUGLAS.**

Collector R. S. D'Ousely
Collector's First Clerk N. W. Walker
Collector's 2nd Clerk }
and Assistant Exam- } G. A. M'Cammon
ining Officer }
Examining Officer R. J. Weaver
Locker and Weigher .. Robert Quine
Out-Door Officers Wm. Kirkbride,
John Kelly, G. Wainman, and J. Sayle.

CREEK OF PEEL.

Principal Coast Officer .. Leslie Lockhart
Out-Door Officers..... J. Cowley and
J. J. Corlett

PORT RAMSEY.

Collector T. Jackson
Examining Officer G. A. Adams
Out-Door Officers..... Thos. Corlett, S.
Farrington, and W. Looney.

PORT CASTLETOWN.

Collector R. Q. Crellin
Assist. Examining Officer.. J. Watterson
Out-Door Officers.. W. Archer, W. Bell
and T. W. Lawson

Customs Brokers

H. Johnson Market Place, Douglas
W. Berey North Quay, Douglas
John Clucas Castletown
R. Teare Ramsey

Vice Consuls

Danish W. F. Moore
Swedish and Norwegian .. H. B. Noble

Harbour Masters

Douglas..... { John Clague
 { Deputy, Robert Gelling
Ramsey Charles Teare
Castletown John Careen
Peel J. Gill
Port St. Mary Thomas Qualtrough

Commissioners of Harbours

R. Quirk, Receiver General
R. S. D'Ousely | James Corlett
James Gell | Robert J. Moore
R. J. T. Quayle | William Callister
R. J. Weaver | Robert Corrin
William F. Moore

Receiver of Droits of Admiralty

R. S. D'Ousely Douglas

Agents for Lloyd's

Southern District, William Berey, Douglas
*Also for the Underwriters of Glasgow
and Liverpool*
Northern District.. Hugh Brown, Ramsey

Douglas Town Commissioners.

J. Dearden, (Chairman), R. Quayle,
(Vice Chairman), J. R. Bowman, T. Teare,
W. A. Brearey, Claude Cannell, John
McGhie, R. Craine, and W. Cannell.
C. Craine, Clerk to Commissioners.
J. Robertson, Out-door Overseer.
D. Callister, Inspector of Cars.

Ramsey Town Commissioners.

R. Teare, J. J. Cleator, Thos. Moore,
R. O. Christian, J. C. Goldsmith, Daniel
Joughin, Thomas Looney.
— Woods, Clerk to Commissioners.

Bankers

Bank of Mona, Douglas—(Draw on Prescott, Grote, & Co., London)—J. S. Jackson, Manager
 Douglas and Isle of Man Bank—(Draw on Glynn, Mills, & Co., London)—Dumbell, Son, & Howard.
 Bank for Savings, Atholl-street, Douglas—J. Spittall, Secretary
 Isle of Man Banking Company (Limited) Atholl-street. (Draw on London and Westminster Bank, London.)—J. J. Karan, Manager.

Law Courts

COMMON LAW.—*Douglas*, Feb. 12, July 12, Castletown, May 7, Oct. 8.—*Ramsey*, Feb. 19, May 14, July 9, Oct. 15.
 CHANCERY AND EXCHEQUER.—On the 4th THURSDAY in each month; the months of Jan., August, and September excepted; besides which, Special Courts, are held as occasion may require.
 ADMIRALTY, OR WATER-BAILIFF'S.—Weekly during the fishing season.
 DISTRICT SUMMARY.—At Castle Douglas, Ramsey, and Peel, every fortnight.
 VICAR GENERAL.—At Douglas, Castletown, Peel, and Ramsey once monthly.
 CHAPLAIN.—Half-yearly, in Spring and Autumn.
 HIGH BAILIFFS'.—At Castletown, Douglas, Peel, and Ramsey, weekly.
 BAZON.—Held in April and October.
 PETTY SESSIONS.—Fortnightly.

Isle of Man Post-Office

*†Atholl Street, Douglas.. Miss Macadam
 W. Isdale, Chief Clerk.

SUB-POST-OFFICES & RECEIVING HOUSES.

Duke Street, Douglas G. A. Dean
 Pillar Letter Box, Osborne Terrace, Douglas
 Shore Road, Douglas..... E. G. Smith
 Crescent, Douglas Geo. M. Jones
 Wall Box Ballaughton, near Douglas...
 Ballasalla T. Tyson
 †CASTLETOWN John Kinvig
 Wall Box, the Green, Castletown..
 †Port St. Mary William Skillicorn
 Union Mills W. Dalrymple
 Crosby R. Kelly
 St. John's..... John Garrett
 †PEEL John Morrison
 Onchan J. Lewin
 †Laxey J. Kinley
 †RAMSEY John Hampton
 Wall Box, Sandy Road, Ramsey ..
 Kirk Andreas..... Fred. Radcliffe
 Sulby W. H. Ward
 †Ballaugh W. Teare
 Michael..... J. Cannan
 Jurby A. Joughin
 St. Mark's..... P. Mylrea
 Foxdale T. Buzzo
 Glenmay W. Quayle
 Maughold D. Kinrade
 Bride R. Pass
 †Colby Wall Letter Box
 Port Erin R. McComb
 †Ballabeg..... W. Curphey.
 *Government Insurance & Annuity Office
 † Post Office Savings Bank.

LIVERPOOL INFORMATION.**Liverpool Pilot Boat Stations.**

NOTICE.—Every Liverpool Pilot Boat on duty at night will display a Bright Light at the masthead.
 The Pilot Boat off Point Lynas, or on the western Station, having the turn of the tide, will display a Red and White light at the masthead by day; by night, in addition to the masthead Light, she will exhibit a flare-up Light every 15 minutes.
 The two western boats cruise off Point Lynas, and as far to the westward as the Little Mouse, and to the eastward until the Atholm Island bears S.S.W. With strong easterly winds and cross sea, the western boat may cruise under the lee of Carmel Head.
 The third western boat cruises from Point Lynas to the west end of Great Ormshead, bearing S.S.W. by compass, and board any vessels that may pass the first and second boats.
 The fourth western boat cruises to the westward of the eastern limit of third boat's station, until Talargoch Chimney bears west end of Bar Land bears S.S.W. by compass.

The fifth, or first Hoylake boat cruises within a radius of five miles from the Northwest Light Ship.

The sixth, or second Hoylake boat will board vessels after they pass the line of the Northwest Light Ship and Point of Air, when the first boat is not within a reasonable distance, but her *especial duty* is to receive Pilots from vessels outward bound.

Rates of Pilotage.**For all Vessels Trading Foreign.**

	INWARD.	PER FOOT.
From the length of the west end of the Great Ormshead bearing S. by W., or before Penman Bachan be shut in with the Great Ormshead, at the rate of ..	9	0
From the eastward of the Great Ormshead, as above.....	8	0
From the only house now on Great Hilbre Island, bearing S.S.W. by the compass, or shall be Piloted from the road of Hoylake only, or from the buoy of the Fairway in Formby Channel	4	0

OUTWARD.

Whether through the Rock or s d
Formby Channel 4 0

No Vessel trading to Foreign Parts, inward or outward bound, is to refuse a Pilot; but, if such Vessel has passed the Brazil Buoy in the Rock Channel, or the Middle Patch Buoy in Formby Channel, or if a Pilot boat falls in with a vessel in the narrows of the Channels in stormy weather, that she cannot board her without eminent danger, the Pilot shall then lead the way, and in either case be entitled to such Pilotage as shall be awarded by the Committee at their next meeting.

For Coasting Vessels, and those trading to and from Ireland, the Islands of Faro or Ferro, Jersey, Guernsey, Alderney, Sark, and Man.

INWARDS. PER FOOT.

From the length of the Great s d
Ormshead, as above at the rate of 4 6
From the eastward of the Great
Ormshead, as above 4 0
From the only house now on Great
Hilbre Island, &c., as above 2 0

OUTWARD.

Whether through the Rock or
Formby Channel 2 0

No coasting Vessel to pay for less than eight feet of water, nor any Vessel to pay for odd inches under half a foot. No coasting vessel, inward or outward bound, of the burden of one hundred tons of upwards (unless she be in ballast), is to refuse a Pilot, as the master or owner, &c., must pay the full Pilotage, if one is offered. No vessel to be deemed a coaster unless she has been six months in that trade.

EXTRA PAY. PER DAY.

For every day of attendance whilst s. d
in the River, except the day of
going to sea with such ships or
vessels as shall be outward bound
and the day of returning from sea
and the day of docking for such
as shall be inwards bound 5 0
And if the attendance of a Pilotboat
be required 42 0
Though the Pilot or boat be not em-
ployed a whole day, to be paid for a day.

CHARGES ON THE MERSEY—For taking a vessel from one dock to another, £1; from Liverpool to Garston, £2, and vice versa.

Pilots' Rules and Regulations.

Any person acting as Pilot without a license, to forfeit £20.

Pilots refusing to conduct or assist ships in distress, to forfeit £10 and license.

Masters of vessels forcibly taking Pilots beyond the limits of port, to forfeit not more than £20, nor less than £5.

Pilots misbehaving to have their license recalled, and if they act afterwards the same penalties as if they were not Pilots.

Vessels liable to pay Pilotage coming into port to display signal for Pilot, under a penalty of £5, and if refusing the first Pilot, or any Pilot that offers his services, is liable to a penalty of double Pilotage for every such offence.

Rewards for Pilots assisting ships in distress to be settled by the Committee.

Compensation to be made to Pilots for taking vessels out of port which have been forced back, to be fixed by the Committee.

When in stormy weather a vessel cannot be boarded with Pilots' small boats, the vessel shall be steered with the wind on the quarter, the yards braced by; then the large boat will steer under the ship's lee quarter and a pilot will jump on board.

Life Boats.

All masters and others, entering or quitting the port, and requiring the assistance of the Life boats are requested to hoist the Distress Signal, in order that they may be despatched to their assistance as soon as possible. Vessels aground on the Banks, and not hoisting the Distress Signal, will be supposed not to require the assistance of the Life Boats.

Life Boat Stations.

At Liverpool, on the North Landing Stage, two boats; the key kept at the Marine Surveyor's Office, Custom-house, and at the Life Boat Master's house, Pownall-street. Magazines, two boats, the key left at the Life Boat Master's house. Hoylake, one boat; the key kept at the Lower Hoylake Light-house. Point of Air, two boats; the key kept at the Master's house. Formby, one boat; the key kept at the Life Boat House by the keeper. Hilbre Island, one boat.

Bidston Hill, Signals.

SIGNALS OF DISTRESS.—For vessels in distress or on shore in the Rock Channel or about Hoyle—coming in; on the oblique pole to the southward of the lighthouse—for every ship, a ball with a flag half-mast; for every snow a cone, broad end up and a flag half-mast; for every brig or small vessel, a cone small end up and a flag half-mast. Going out, the same as above, but a broad pendant instead of a flag.

N.B.—For vessels in distress to the southward, when on shore to the main, the ball or cone to be put on the outside of the flag or pendant; but if on shore on Hoyle Bank, then the ball or cone to be put on the inside of the flag or pendant.

In Formby Channel.—The same signals to the northward of the Lighthouse.

Pilot Boats.

- | NO. | NAMES. | MASTERS AND SECOND MASTERS. |
|-----|--------------------------------|--|
| 1. | Queen (schooner) | —Peter Dickinson, 23, Lower Mersey View, North Shore; E. Callister, 37, Erskine Street, Liverpool. |
| 2. | Leader (schooner) | —Joseph Powell, 169, Islington; Samuel Jones, 6, Newstead Road, Smithdown Road. |
| 3. | The Duke (schooner) | —Thos. Parry, 33, Sackville street, Everton; Wm. Harris, 74, South Chester street. |
| 4. | Auspicious (cutter) | —J. Shepherd, 40, Wesley-street; M. N. Bridge, 6, Myrtle street, south. |
| 5. | Victoria and Albert (schooner) | —Isaac Williams, Middle Lane, Wallasey, Cheshire; John Daniels, 54, Chester-street, Toxteth Park. |
| 6. | Pioneer (schooner) | T. Parry, 18, Stafford-street; John Price, 10, Everton Valley. |
| 7. | Lancashire Witch (schooner) | —W. Rowlands, 28, Great Mersey-street; John Williams, 56, Raglan Terrace, Everton. |
| 8. | Pride of Liverpool (schooner) | —J. Christie, 19, Upper Warwick-street; William J. Mc. Cracken, 16, Everton Valley. |
| 9. | Guide (schooner) | —Thomas Davies, 3, Vernon Place, Birkenhead; John Pritchard, 63, St. George's Hill, Everton. |
| 10. | Criterion (schooner) | —J. Wilson, 294, Upper Parliament-street, H. Williams, 16, Percy-street. |
| 11. | Mersey (cutter) | —R. Williams, 22, Clarence-street, Everton; John Scott, 42, Sussex-street, Toxteth Park. |
| 12. | Perseverance (schooner) | —George Bark, 10, Juvenal-street; John Tunstall, 164, Grove-street. |

Superintendent of Pilots, Robert P. J. Simpson, 31, Church-street, Birkenhead.

The Pilotage Committee meet for the transaction of business every Monday at 12 o'clock, at the Committee Room, south end of Prince's Dock.

Mersey Docks and Harbour Board.**OFFICERS.**

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|--|--|
| Mr. John North, Solicitor.—Office, Dock Office. | Mr. John Evans, Receiver of Duties on Goods Inwards. |
| Mr. George Fosbery Lyster, Engineer of the Docks, &c.—Office, south side of Coburg Dock. | Mr. Wm. Laidlaw, Receiver of Duties on Goods Outwards. |
| Mr. John Harrison, Secretary. | Mr. George Jones, Receiver of Duties on Goods Coastwise. |
| Mr. G. J. Jefferson, Treasurer. | Mr. Richard Jones, Receiver of Duties at Runcorn. |
| Lieut. M. T. Parks, R.N., Marine Surveyor.—Office, Dock Office. | Mr. Thomas Hanlon, Superintendent of Albert Dock Warehouses. |
| Mr. Graham H. Hills, R.N., Assistant Marine Surveyor. | Mr. W. D. Turner, Superintendent of Stanley Dock Warehouses. |
| Mr. A. E. Parks, R.N., Water Bailiff—Office, George's Pier. | Mr. J. Ayre, Superintendent of Wapping Warehouses. |
| Mr. Robert H. Williams, Receiver of Duties on Tonnage. | Mr. W. H. Sloman, Superintendent of Birkenhead Warehouses. |
| Mr. Thomas Hodgson, Harbour Master.—Office, George's Dock Passage. | |
| Mr. H. T. Cox, North Assistant Harbour Master.—Office, Sandon Graving Docks, | |
| Mr. Wm. Foyle, South Assistant Harbour Master.—Office, south end of Wapping Dock. | |
| Captain Jas. Hookey, R.N., Birkenhead Assistant Harbour Master.—Office, Morpeth Dock Entrance. | |

Dock Masters.

- | | |
|--|---------------------|
| Canada | Mr. Josh Wood. |
| Huskisson..... | George Corfield. |
| Sandon | Thomas Barnes. |
| Wellington & Half-tide .. | Edward Carey. |
| Nelson & Bramley Moore .. | Jas. Sanders. |
| Salisbury, Collingwood, and Stanley | Edward Edwards. |
| Clarence Half-tide, Clarence, Trafalgar, and Victoria..... | Thomas Stirzeker. |
| Waterloo | (under alteration.) |
| Prince's..... | H. M. Liardet. |

- | | |
|---|--------------------|
| George's | Geo. A. Bond, |
| Canning and Half-tide .. | John Williams. |
| Albert and Salthouse Docks and Wapping Basin..... | George Wilson. |
| King's and Wapping | Joseph Curry. |
| Queen's and Half-tide .. | George Palmer. |
| Coburg | Shadrach Williams. |
| Brunswick..... | J. H. Hinrichson. |
| Toxteth and Harrington .. | Thomas King. |

BIRKENHEAD.

- | | |
|---|------------|
| Morpeth Basin and Morpeth and Egerton Docks | S. Stokes. |
|---|------------|

Birkenhead Low water Basin
and Great Float T. J. Shepherd.

The Dock Masters' Offices are at the entrances of the respective docks.

Dock and Basin Signals.

All vessels are allowed to enter the Docks when signals are not hoisted at the respective pier heads. All owners, masters, and consignees are, however, recommended to register their vessels as expeditiously as possible, in order the better to secure their right of turn to accommodation at the Dock quays.

DOCK SIGNALS.

CANADA—Flag on S. pier of the Canada Basin.

HUSKISSON—Flag on N. pier of Sandon Basin entrance.

SANDON—Flag on N. side of gateway.

WELLINGTON AND HALF-TIDE—Flag on S. pier of Sandon Basin entrance.

NELSON AND BRAMLEY MOORE—Flag on the N. pier of the Salisbury Dock entrance.

SALISBURY, COLLINGWOOD, AND STANLEY—Flag on S. pier of Salisbury Dock entrance.

CLARENCE AND HALF-TIDE—Flag on N. pier of Clarence Half-tide entrance.

TRAFALGAR—Flag on S. pier of Clarence Half-tide Dock entrance.

WATERLOO AND VICTORIA—Flag on N. pier of Prince's Basin entrance.

PRINCE'S NORTH ENTRANCE—Flag on S. pier of Prince's Basin entrance.

PRINCE'S SOUTH ENTRANCE—Flag on N. pier of George's Basin entrance.

GEORGE'S—Flag on S. pier of George's Basin entrance.

CANNING AND HALF-TIDE—Flag on N. pier of Canning half-tide entrance.

ALBERT AND SALTHOUSE—Flag on S. pier of Canning half-tide entrance.

KING'S—Flag on N. pier King's and Queen's Basin entrance.

WAPPING—Flag on N. end of the King's Parade.

QUEEN'S—Flag on S. pier of King's and Queen's Basin entrance.

COBURG—Flag on S. pier of Coburg entrance.

BRUNSWICK—Flag on S. side entrance

TOXTETH—Flag on N. side of entrance

HARRINGTON—Flag on S. side of en.

BASIN SIGNALS.

SANDON—Ball on the north side.

PRINCE'S—Ball on S. pier of entrance

GEORGE'S—Ball on S. pier of entrance.

Abstract of Dock Laws.

Goods causing obstruction on the Dock quay, may be removed by the Trustees at expense of owners.

Such a quantity of cargo or ballast to be kept on board each vessel as to enable it to be safely removed; penalty, £50.

Harbour and Dock Masters may remove vessels in dock, or from one dock to another, at owners expense; penalty for obstructing them, disobeying their orders, or using abusive or offensive language to them, £10.

Vessels on which dues, &c., are owing may be detained until such are paid.

Shipowners have a lien for freight and all other lawful claims on goods discharged into dock warehouses.

Manifest of all goods imported or exported to be delivered at the Dock Office within 14 days after the discharge inwards or clearance outwards; penalty, £20.

Collector, &c., not to receive entry of any vessel until the dock and light duties are paid; penalty, £20.

No ballast to be thrown into the docks; penalty, £50.

After ballast is discharged to be carted away as the trustees of the docks shall appoint; penalty, £5.

Vessels not to come into dock under sail; penalty, £5.

Persons wilfully and maliciously damaging docks, &c., adjudged guilty of felony.

Water-bailiff empowered to remove vessels lying in the river; penalty for obstructing him, £10.

Persons firing cannon, &c., within the port (except signals of distress) to forfeit £10 for every offence.

CUMBERLAND INFORMATION.

Members of Parliament, &c.

WHITEHAVEN.—G. A. C. Bentick, Esq., 48, Charles-st., Berkley-square, London.

COCKERMOUTH.—J. Steel, Esq., 13 Bury Street, London. Lord Nass, 79 Eccleston Square, Palmerston House, London.

EASTERN DIVISION.—Hon Chas. G. W. Howard, Naworth Castle; 56 Park-street Grosvenor square, London. W. Marshall, Esq., Patterdale Hall; 85, Eaton Square, London.

WESTERN DIVISION.—Hon. Percy Wyndham. H Lowther, Esq., 21 Milton Crescent, London.

CARLISLE.—E. Potter, Esq., Manchester Reform Club, London. Wm. Nicholson Hodgson, Esq., 37 Jermyn-street, St. James's, London.

Lord Lieutenant Earl of Lonsdale.
Clerk of the Peace.. T. H. Hodgson, Esq.
County Treasurer.. Mr. Dobson, Carlisle.
Gov. of Gaol.. Mr. T. H. Redin, Carlisle.

County Coroners.

Wm. Carrick, Esq., Wigton.
 W. Lumb, jun., Esq., Whitehaven.
 Dr. Bell, Cockermouth.
 J. P. Myres, Esq., Broughton, Furness.

Quarterly Sessions.

Easter, in the first week after 31 March
 Midsummer, first week after 24 June
 Michaelmas, first week after 11 October
 Christmas, first week after 28 Dec.

The Easter, Midsummer, Michaelmas, and Christmas Sessions for Cumberland are held at Carlisle.

Bankers.

WHITEHAVEN.—The Whitehaven Joint Stock Banking Company, Peter Cameron, Manager.—London Joint Stock Bank, 5, Princes's Street.

Bank of Whitehaven, G. W. Brown, Manager.—London and Westminster Bank, 41, Lothbury, London.

Cumberland Union Branch Bank, W. Houlgate, Agent.—Barclay, Bevan, & Co., 54, Lombard Street, London.

Savings' Bank—Open Saturdays, from 6 to 8 p.m.—J. F. Lewes, Sec.

WORKINGTON.—Cumberland Union Bank Branch, R. S. Tompson, Agent.—Barclay, Bevan, and Co., 54, Lombard-st.

Bank of Whitehaven Branch, Henry Bowes, Agent.—London and Westminster Bank, 41, Lothbury.

Carlisle City and District Bank, David Tweddle, Agent.—Glyn & Co., 67, Lombard Street, London.

MARYPORT.—Branch of the Cumberland Union Banking Company, Joseph Thompson, Agent.—Barclay, Bevan, & Co., 54 Lombard Street.

Carlisle City and District Bank, Joseph H. Wood, Agent.—Glyn and Co., Lombard Street.

COCKERMOUTH.—Branch of the Cumberland Union Banking Company. T. H. Tandy, Agent.—Barclay, Bevan, & Co., 54 Lombard Street.

Carlisle City and District Bank, J. H. Watson, Agent.—Glyn and Co., 67 Lombard Street.

WHITEHAVEN & WEST CUMBERLAND BENEFIT LAND AND BUILDING SOCIETY.—Public Office, Lowther Street; open on Saturdays from six to eight, p.m.—S. Armstrong, Secretary.

The Whitehaven and Furness Junction Railway.

Trains leave Bransty Station three times daily (Sunday excepted) for Bootle, Ulverston, Broughton, Fleetwood, Preston, Manchester, Liverpool, &c. This is the nearest route to Preston, Manchester, Liverpool, &c.—(See *West Cumberland Railway Guide*.)

The Whitehaven and Maryport Junction Railway.

Trains leave Bransty Station four times daily (Sunday excepted) for Workington, Maryport, Wigton, Carlisle, and Cockermouth; three times daily for Edinburgh, London, Birmingham, Liverpool, Manchester, Preston, Newcastle, York, and Darlington.—(See *West Cumberland Railway Guide*.)

The Whitehaven, Cleator, and Egremont Railway.

Trains leave Whitehaven three times daily (Sundays excepted) for Cleator Moor, Frizington, Woodend, and Egremont.—(See *West Cumberland Railway Guide*.)

Steamers and Traders.

LIVERPOOL.—The Whitehaven Steam Navigation Ownery's powerful and commodious first-class steamers sail regularly with passengers and goods—Fares: Cabin 7s., Deck, 4s. Passengers are conveyed, in connection with the Railway Companies, between Newcastle, Carlisle, Dalston, and Wigton, to Liverpool, at a through fare. Passengers by Railway arrive at Whitehaven by the last train before the steamer's sailing, and those from Liverpool being forwarded by first train after the vessel's arrival in Whitehaven.—Fares: Cabin and First-class, 10s.; Deck and Third-class, 4s. Agents—Carlisle, Edward Jobling; Liverpool, Fisher, Wilson, and & Co.; Whitehaven—J. and J. Hodgson.

BELFAST.—The Whitehaven Steam Navigation Ownery's steamers sail regularly with passengers and goods.—Fares: Cabin, 10s., Deck, 3s. Passengers are conveyed, in connection with the Railway Companies, between Carlisle, Dalston, and Wigton, to Belfast, at a through fare. Those from Carlisle, &c., arriving in Whitehaven by the last train before the steamer's sailing, and those from Belfast being forwarded by first train after the vessel's arrival in Whitehaven.—Fares: Cabin and First-class, 12s.; Deck and Third-class, 5s. Agents: Belfast, R. Henderson, and Son, Donegal Quay; Carlisle, Edward Jobling; Whitehaven, J. and J. Hodgson.

DUBLIN.—The North British Steam Packet Company's first-class fast sailing Steamers sail between Silloth and Dublin twice a week, calling off Whitehaven (weather permitting) to land and embark passengers. Fares from Whitehaven to Dublin, First cabin, 15s.; second cabin, 6s. Agents for Whitehaven, J. and J. Hodgson, 36 King Street.

DOUGLAS (Isle of Man).—The North British Steam Packet Company's first-class fast sailing Steamers sail between Silloth and Douglas twice a week during summer months, calling off Whitehaven

(weather permitting) to land and embark passengers. Fares from Whitehaven to Douglas, first cabin, 6s. 6d.; second cabin 3s. 6d. Agents for Whitehaven, J. and J. Hodgson, 36 King Street.

RAMSEY (Isle of Man).—The Isle of Man Company's Steam ship "Mona's Isle" sails between Ramsey and Whitehaven ONCE a week, with goods and passengers and goods to Douglas. Fares—Saloon 6s.; Fore cabin, 3s. Agents for Whitehaven—Frost and Nelson, Shipbrokers, 7½, West Strand.

LONDON.—The Whitehaven Steam Navigation in connection with the Belfast Screw Steam Company, sail a vessel ONCE a week. Agents:—Belfast, Robert Henderson & Son, London, Ogilby Moore and Co., Ingram Court, Frenchchurch-street; Whitehaven, J. & J. Hodgson.

DUNDRUM.—The 'Ansbro,' and 'Robert Burns,' Screw Steamers, sail regularly between Dundrum and Whitehaven. Agents—Charles Fisher & Co., 36, King Street, Whitehaven.

LIVERPOOL.—The North British Steam Packet Company's first-class fast-sailing Steamers sail between Silloth and Liverpool TWICE weekly calling off Whitehaven in the summer months. Fares: Carlisle and Liverpool first cabin 8s.; Second cabin, 4s. Silloth and Liverpool first cabin, 7s.; second cabin, 4s. Whitehaven and Liverpool first cabin 7s.; second cabin, 4s. Agents for Whitehaven—J. & J. Hodgson, 36 King street.

Carriers

Leave Whitehaven for Harrington, Workington, Cockermouth, Keswick, and Egremont, every Tuesday, Thursday, and Saturday; for Wigton every Wednesday; and for Gosforth every Tuesday, Thursday, and Saturday.

Rates for the Steam Tugs.

Vessels employed in the Coal or Coasting Trade shall pay every voyage on clearing for sea one half-penny per Ton Register. Vessels arriving from a foreign port or from a discharging port one penny per Ton Register.

Vessels engaged in the Coal or Coasting Trade pay an additional half-penny per ton when they require the use of the

Steam Tug Outwards, and the same Inwards.

No vessel towed out for less than 1s.

Foreign Vessels as above, one penny per ton.

That the limits for towing vessels into and out of the harbour for one halfpenny and one penny per ton respectively, be as follows, viz.: say a line drawn from St. Bee's Head to Mickleham Pit, on the Hill north of Parton, and two lines intersecting the above, from Redness Point and Tom Hurd Rock, bearing N.W. by N. and S.E. by E. by compass.

If the vessel first in turn be not afloat or not ready for the Tug Boat, then she is to take the first that is.

Vessels wanting the use of the Steam Tug are to hoist the Union Jack on the Main Top Gallant Masthead.

Harbour Boat Rates.

A Boat is stationed at the Old Quay Watch House, to attend on vessels entering the Port, and also to give assistance to those outward bound. Charges are as follows:—

Vessels of 120 tons and upwards	.. 4	0
Vessels from 100 to 120	 3	6
Vessels from 80 to 100	 3	0
Vessels from 60 to 80	 2	6
Vessels from 40 to 60	 2	0
Vessels from 20 to 40	 1	6
Vessels less than 20	 1	0

FOREIGN LADEN VESSELS.

Under 120 tons	 4	0
Above 120 tons	 6	0

The Harbour Boat to be paid as above by all vessels entering the port; but if not employed by those leaving it, no charge to be demanded.

Rates for the Gridiron.

Every vessel previous to going on must be entered at the Harbour Office, and payment made according to the established rates, for which she may remain on four tides, counting the tide going on and the tide coming off.

		s	d	s	d
Vessel not exceed. 50 tons	Entry	5	0	0	10
About 50 and not ex. 100		7	6	0	2
.. 100	150	10	0	3	4
.. 150	200	15	0	5	0
.. 200	250	20	0	6	8
.. 250	300	25	0	8	4

Post Office, Whitehaven.—WILLIAM B. GIBSON, POSTMASTER.

Arrivals.—*Week Days*—London and all parts, 9 a.m.; 8 30 p.m. *Sundays*—London and all parts, 10 35 a.m.

Despatches.—*Week Days*—Local parts, 9 30 a.m.; North Mail, 2 50 p.m.; London and all parts, 6 15 p.m. *Sundays*—North Mail, 7 50 a.m.; Local parts, 11 30 a.m.; London and all parts, 5 p.m.

The letter box is closed 15 minutes before each despatch. Letters bearing one additional stamp will be forwarded for the first ten minutes. The deliveries by letter carriers commence during the week days at 9 35 a.m., and 8 55 p.m.; and on Sundays at 12 45.

POST OFFICES IN CONNECTION WITH THE WHITEHAVEN POST OFFICE.
Those marked thus † are empowered to grant and pay Money Orders.

OFFICES.	ARRIVAL.	DESPATCH.	RECEIVER.
Sandwith	10 30 a.m.	4 55 p.m.	A. Leeson
† St. Bees	7 15 ..	8 58 a.m.	J. Mossop
Ditto	11 25 ..	4 10 p.m.	Ditto
Parton	10 30 ..	4 50 ..	E. Lightfoot
Distington	12 10 ..	3 20 ..	E. Lawrence
Hensingham	9 40 ..	5 26 ..	J. Sumpton
Cleator Lane End	10 1 ..	5 5 ..	C. McGinn
Cleator	10 51 ..	4 5 ..	J. Harkness
† Cleator Moor	11 30 ..	3 20 ..	Jno. Atkinson
Arlecdon	1 45 p.m.	2 0 ..	J. James
† Egremont	10 12 a.m.	4 54 ..	James Welsh
Beckermont	10 34 ..	4 32 ..	M. Gilliot
Calderbridge	10 45 ..	4 21 ..	W. Mossop
Gosforth	11 0 ..	4 6 ..	P. Mossop
† Holm Rook	11 22 ..	3 44 ..	J. Birkett
Eskdale	12 21 p.m.	9 30 a.m.	J. Porter
Wasdale	1 41 ..	5 10 p.m.	M. Pharoah
† Ravenglass	11 41 ..	3 25 ..	R. Askew
Waberthwaite	12 16 ..	2 50 ..	J. Woodhall
† Bootle	12 46 ..	2 20 ..	J. Parker

STORM-WARNING SIGNALS.



Gale probably from the Northward.



Gale probably from the Southward.



Dangerous winds may be expected from nearly opposite quarters successively.



Dangerous wind probably at first from the Northward.



Dangerous wind probably at first from the Southward.

Whenever such a signal is shown (in consequence of a telegram from London) it will be kept up, shown distinctly, till dusk of *that day only*, unless otherwise specially directed. These cautionary or warning signals advert to winds during some part of the next nights or two or three days; therefore due *vigilance* should prevail (untill the weather is again thoroughly settled), but without suspending *departures* or any operations *unnecessarily*.

It should be remembered that only the greater and more *general* disturbances of the atmosphere are to be made known by this method (Warning Signal), not merely local or sudden changes (however violent or dangerous) which are not felt at a certain distance, and do not therefore affect other localities.

MERSEY DOCKS AND HARBOUR.

Tabular Statement, showing the Area of Water, Quay Space, Width of Entrance, and Depth of Sill for each Dock, also the length of Graving Docks. &c.

The Old Dock contains an area of 3 acres 1890 yds., and 557 lineal yds. quay space
 Its Passage do 675 do., 90 do.

The level of the Old Dock Sill is the Datum to which the Depth of Sills refer, and is preserved on a Tide Gauge on the west side of the Centre Pier of the entrances to the Canning Half-tide Dock.

LIVERPOOL DOCKS.	Width of Entrance.		Sill under Old Dock Datum.		Coping at Hollow Quoins above Sill		Water Area.		Quay Space.	
	Ft	In	Ft	In	Ft	In	Acr.	Yd.	Mile	Yds.
North Carrier's Dock.... West Passage	40	0	6	0	27	0	2	3423		641
South ditto..... West Passage	40	0	6	0	27	0	1	4515		615
Canada Half-tide Dock.....	..	..	..	..	..	..	3	4380		468
West Entrance	60	0	7	9	28	0				
Northern West Lock Entrance.....	32	0	6	0	28	0				
Southern West Lock Entrance.....	20	0	6	0	28	0				
North Passage	20	0	3	0	27	0				
South Passage	60	0	7	9	28	0				
Canada Dock.....	..	..	..	..	..	..	17	4043		1272
South Passages..... East	50	0	6	6	29	0				
West	80	0	6	6	29	0				
Canada Lock.....	100	0	7	9	28	0	1	3479		48
Huskisson Dock.....	..	..	..	..	..	..	14	3451		1039
Huskisson Branch Dock.....	..	..	..	..	..	..	7	592		910
Huskisson East Lock.....	80	0	6	6	38	0	0	4682		342
Huskisson West Lock.....	45	0	6	0	26	0	0	3650		330
Sandon Dock..... West Entrance	70	0	6	6	30	11	10	100		867
Wellington Half-tide Dock, East Entr.	70	0	6	9	30	9	3	813		400
West Entrance	50	0	6	6	28	0				
Wellington Dock..... West Passage	70	0	6	6	31	0	7	4120		620
Bramley-Moore Dock.. North Passage	60	0	6	0	26	0	9	3106		935
South Passage	60	0	6	0	26	0				
Nelson Dock..... South Passage	60	0	6	6	26	0	7	4786		803
Stanley Dock..... West Passage	51	0	5	8	29	0	7	120		753
Collingwood Dock..... West Passage	60	0	6	9	26	0	5	244		553
Salisbury Dock.....	..	..	..	..	..	..	3	2146		406
West Entrances..... North	60	0	6	11	26	0				
South	50	0	6	11	26	0				
Clarence Graving }.... North Passage	45	0	4	9	26	0	1	1056		291
Dock Basin }.... South Passage	45	0	4	6	26	6				
Clarence Half tide Dock.... West Entr.	50	0	5	0	26	8	4	1794		638
Clarence Dock..... West Passage	47	0	3	2	26	0	6	273		914
Trafalgar Lock N. and S. Passages	45	0	6	7	23	10	0	2937		256
Trafalgar Dock..... South Passage	45	0	4	11	26	5	5	4546		764
Victoria Dock..... South Passage	50	0	4	11	26	0	5	3559		756
Waterloo Dock.....	60	0	8	0	22	6	5	3056		737
Waterloo Lock.. North Passage	32	0	6	5	31	0	0	2937		256
South Entrance	65	0	6	8	31	0				
Prince's Dock & Locks, North Entrance	60	0	5	11	26	0	11	3889		1613
South Entrance	44	11	5	11	28	2				
George's Dock & Passage.. North Entr.	41	11	4	6	24	6	5	2593		1001
South Passage	40	1	4	6	24	5				
Manchester Dock..... West Entrance	32	10	† Note		23	3	1	595		339
Manchester Lock..... West Entrance	33	8	3	9	24	3	0	315		57
Canning Dock..... West Passage	45	0	6	1	26	2	4	376		585
Canning Half-tide Basin.....	..	..	..	..	..	..	2	2688		429
Two West Entrances..... each	45	0	6	3	28	3				
Albert Dock..... North Passage	45	0	6	4	26	0	7	3542		885
East Passage	45	0	6	0	26	0				
Salthouse Dock..... North Passage	45	0	6	0	26	0	6	2019		784
Wapping Basin..... West Passage	40	0	6	0	25	0	1	3151		454
North and South Passages.... each	50	0	6	0	26	0				

† The Sill of the Manchester Dock is 3 inches above Old Dock Datum.

TABULAR STATEMENT, continued.

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LIVERPOOL DOCKS.		Width of Entrance.		Sill under Old Dock Datum.	Coping at Hollow Quoins above Sill.		Water Area.	Quay Space.	
		Ft.	In.	Ft.	In.	Ft.	In.	Acr.	Yd.
ing Dock.....	West Passage	50	0	6	0	26	0	5	499
	South Passage	50	0	6	0	26	0		815
s Dock....	South Passage	42	0	5	0	26	1	7	3896
to Queen's Dock		..	..	..	..	..	..	3	3542
West Entrances	North	70	0	6	9	31	0		445
	South	50	0	6	9	31	0		
's Dock	West Passage	50	0	6	0	26	0	10	1564
	South Passage	60	0	6	6	23	9		1214
g Dock.....	West Entrance	70	1	6	0	30	6	8	26
wick Dock	North Passage	60	0	6	6	27	0	12	3010
wick half-tide Dock,..	East Pass.	42	0	5	6	26	0	1	3358
	West Entrance	45	0	6	0	26	6		491
th Dock.....	West Entrance	40	0	5	0	26	0	1	469
ngton Dock.....	West Entrance	29	9	1	2	23	1	0	3740

LIVERPOOL BASINS.		Height of Piers above Old Dock Sill					
		Ft.	In.	Ft.	In.	Acr.	Yd.
da Basin		250	0	32	0	6	4528
on Basin		200	0	31	0	6	904
ombe Basin		52	0	24	10	0	1805
ge's Basin		147	0	25	0	3	1852
ge's Ferry Basin		70	0	23	8	0	1344
chester Basin		36	0	22	2	0	2568
th Ferry Basin		60	0	25	6	0	2927
urington Basin		40	0	25	3	0	3917
Total Water Area and Quay Space of the Liverpool Basins.....						19	485
do. do. Docks						285	3148
Total						254	3633

BIRKENHEAD DOCKS.		Width of Entrance.		Sill under Old Dock Datum.	Coping at Hollow Quoins above Sill.		Length at Bottom.	Total Length at Bottom.
		Ft.	In.	Ft.	In.	Ft.	In.	Lineal Yd.
sey Pool.....	Western Float	..	..	..	..	..	..	52 319 2 210
	Eastern Ditto	..	..	..	..	..	..	59 3786 1 1506
	Passage	100	0	7	6	26	6	
Basin near Canada Works, West		50	0	..	..	..	..	1 2554 543
ditto	East	50	0	..	..	..	..	1 84 390
Railway Company's Basin		..	..	..	..	..	..	0 606 113
on Dock.....	West Passage	70	0	7	0	25	0	3 4011 754
eth Dock	West Passage	70	0	5	3	25	0	11 522 1299
	East Entrance	50	0	5	0	25	0	

LIVERPOOL GRAVING DOCKS.		Width of Entrance.		Sill under Old Dock Datum.	Coping at Hollow Quoins above Sill.		Length at Bottom.	Total Length at Bottom.
		Ft.	In.	Ft.	In.	Ft.	In.	Lineal Yd.
ada Lock and Graving Dock		100	0	7	9	28	0	 588
skisson Lock and Graving Dock.....		80	0	6	6	38	0	 395
don Graving Docks, No. 1—East ..		60	0	3	6	26	0	565
	No. 2— ..	70	0	3	6	26	0	565
	No. 3— ..	60	0	3	6	26	0	565
	No. 4— ..	70	0	3	6	26	0	565
	No. 5— ..	45	0	3	6	26	0	565

GRAVING DOCKS, Continued.	Width of Entrance.		Sill under Old Dock Datum.		Coping at Hollow Quoins above Sill		Length at Bottom.	Total Length at Bottom.
	Ft.	In.	Ft.	In.	Ft.	In.	Lineal Yd.	Lineal Yd.
Sandon Graving Docks, No. 6—West Clarence Graving Docks—	45	0	3	6	26	0	565	3390
No. 1—Outer Gates	45	0	3	0	26	6	451	
No. 1—Inner Gates	45	0	0	6	18	0	289	
No. 2—Outer Gates	45	0	3	0	26	6	454	
No. 2—Inner Gates	32	10	0	6	18	0	286	1480
Canning Graving Docks No. 1....	35	9	†		23	3	436	
No. 2....	35	9	0	0½	23	3½	482	918
Queen's Graving Docks No. 1....	42	0	1	8½	27	7½	465	
No. 2....	70	1	3	6	27	5	467	932
Brunswick Graving Docks .. No. 1....	42	0	2	6	26	6	460	
No. 2....	42	0	2	6	26	6	462	922

† Sill 1 foot 8½ inches ABOVE Old Dock Datum.

LIVERPOOL CORPORATION DOCKS.	Width of Entrance.		Level of Sill.		Level of Coping above Sill.	Water Area.	
			Above Datum.	Below Datum.			
	Ft.	In.	Ft.	In.	Ft.	In.	Acres. Yd.
River Craft Dock, Lock, & Eagle Basin	..	..	..	..	..	..	1 3416
Outer Gates	30	0	0	3	25	4	
Inner Gates.....	30	0	1	3	25	10	
Duke of Bridgewater's Dock—							1 1336
Outer Gates.....	40	0	..	..	25	6	
Middle Gates	28	10	0	6	22	9	
Inner Gates....	40	0	..	..	25	0	

A Tide-Gauge Table for the Entrance of the Mersey,Adapted to shew the *Height of Water* above low-water level of ordinary Spring Tides, at any required period.

When it is High Water at or near either of the following times.	H. W.												L. W.
	hour.	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	
12 o'clock	30	29	27	25	22	19	16	13	10	8	5	3	2
11 or 1	29	28	27	25	22	19	16	13	10	8	6	4	3
10 or 2	27	26	25	24	21	19	16	13	11	9	7	6	5
9 or 3	26	25	24	23	21	18	16	13	11	9	8	7	6
8 or 6	25	24	23	22	20	18	16	14	12	10	9	8	7
7 or 5	24	23	22	21	20	18	16	14	12	11	10	9	8
6	23	22	21	20	19	18	16	14	13	12	11	10	9

Graving Dock Rates

FOR	£	s.	£	s.	£	s.
2 Tides, the tide in & next tide out	1	16	2	2	0	0
3 —, includ. going in & coming out	2	2	2	9	0	0
4 —	2	8	2	16	0	0
5 —	2	14	3	3	0	0
6 —	3	0	3	10	0	11
7 —	3	6	3	17	0	12
8 —	3	12	4	4	0	12
9 —	3	18				
10 —	4	4				
11 —	4	10				
12 —	4	16				
2 Neaps	12	0	16	0	2	
3 —	18	0	24	0	3	
4 —	24	0	32	0	4	
5 —	30	0	40	0	5	
6 —	36	0	48	0	6	
7 —	42	0	56	0	7	
8 —	48	0	64	0	8	

Latitude and Longitude of Liverpool

Lat. of the Observatory .. 53° 24' 47" N.
Longitude in Time 12m. 0' 11s. before
Greenwich Time.

MISCELLANEOUS INFORMATION.

Eclipses, 1866

In the course of this year there will be two Eclipses of the Sun, and two of the Moon—the Greenwich mean time of their occurrence will be as follows:—

First. An Annular Eclipse of the Sun on the 6th March, beging on the Earth generally at 7 17 in the morning, and ending at 16m past noon.—This Eclipse will be visible in the greatest part of Asia, Africa and the whole of Europe. At the undernamed places the phenomena will occur as follows:—

	BEGINNING	MIDDLE	ENDING	MAGNITUDE
Greenwich.....	8h 17m morn	9h 32m morn.	10h 52m morn	0.750
Liverpool	8h 19m ..	9h 32m ..	10h 49m	0.718
Douglas	8h 20m ..	9h 33m ..	10h 48m	0.701
Dublin.....	8h 17m ..	9h 28m ..	10h 34m	0.708
Edinburgh... ..	8h 24m ..	9h 36m ..	10h 51m	0.695

Second. A partial Eclipse of the Moon on the 20th March, the middle of which will occur at 8 49 in the morning. Invisible in these parts. the Moon being below our horizon.

Third. A total Eclipse of the Sun on the 29th August, the middle of which will take place at 1 37 in the afternoon. The Eclipse will be visible only in the Southern parts of the earth.

Fourth. A partial Eclipse of the Moon (visible here), on the night of the 13th October. The first contact with the Earth's dark shadow will occur at a point on the Moons disc, 34° from the North point of the Moon's limb towards the East at 10 57 at night, middle of the Eclipse at 26m past midnight, last contact with the shadow at 1 55 in the morning of the 14th October, at a point 69° West from the Northern point of the Moon's limb.

Chronological Notes

Lunar Cycle or Golden Number .. .	6	Septuagesima Sunday	February 17
Epact.....	25	Lent begins	March 6
Solar Cycle	28	Easter Day	April 21
Dominical Letter	f	Ascension Day	May 30
Roman Indiction	10	Trinity Sunday	June 16
Julian Period.....	6580	Advent Sunday	December 1

The Revolutions, Distances, &c., of the Planets

Names.	Periodical Revolution.					Mean distance ^e from Sun.		Diameter.	Time of Rotation upon their Axis.				Inclination of Axis to Ecliptic.	Hourly motion in their Orbits.
	Yrs	d	h	m	s	English miles.	Eng.miles		d	h	m	s	° / "	Miles.
Sun.....							887,076		25	7	48	0		
Mercury..	0	87	23	15	44	36,890,000	2,950		1	0	5	28		111,256
Venus ..	0	224	16	49	8	68,770,000	7,900		0	23	21	8		81,398
Earth....	1	0	5	48	48	95,298,260	7,912		0	23	56	4	23 28 0	75,222
Moon....	0	27	7	43	5	95,268,260	2,160		27	7	43	5	1 43 0	2,335
Mars	1	321	22	18	27	145,205,000	4,500		1	0	37	20	28 42 0	56,121
Jupiter ..	11	315	14	39	2	495,917,000	88,780		0	9	55	21	3 22 0	30,358
Saturn ..	29	164	7	21	50	909,026,000	77,230		0	10	16	1	30 0 0	22,351
Uranus ..	83	294	8	39	0	1,828,071,000	35,000							15,846

Population of the United Kingdom according to the Census of 1861.

	Popula. Enumerated.		Increase, 1861.		Decrea. 1861.	
	1851.	1861.	Persons.	Rate per cent.	Persons.	Rate per cent.
ENGLAND AND WALES	17,927,609	20,061,725	2,134,116	12	—	—
SCOTLAND	2,888,742	3,061,117	172,375	6	—	—
IRELAND	6,552,385	5,764,543	—	—	787,842	12
ISLANDS IN THE BRIT. SEAS	143,126	143,779	653	—	—	—
TOTAL UNITED KINGDOM ..	27,511,862	29,031,164	2,307,144	—	787,842	—

Net Increase 1,519,302, or 6 per cent.

Population of the Isle of Man.

1851.—Males, 24,915; Females, 27,472—Total, 52,387. 1861.—Males, 24,458; Females, 27,794—Total, 52,252. Total Decrease, 135.

Fair and Foul Weather Prognosticator

owing Table and the accompanying remarks, are the results of many years observation; and will show the observer what kind of weather will probably entrance of the Moon into any of her Quarters.

TIME OF CHANGE	IN SUMMER.	IN WINTER.
Between Midnight and 2 in the Morn..	Fair	Hard Frost, unless the wind be S. or W.
— 2 and 4 do {	Cold, with frequent Showers	Snow and stormy
— 4 and 6 ..	Rain	Rain.
— 6 and 8 .	Wind and Rain	Stormy.
— 8 and 10 {	Changeable	Cold rain, if the wind be W. Snow, if E.
— 10 and 12..	Frequent Showers	Cold and high winds.
12 o'clock at Noon	Very Rainy	Snow or rain.
— 2 to 2 P.M.	Changeable	Fair and mild.
Between 2 and 4 After.	Fair	Fair.
— 4 and 6	Fair, if the wind N. W. Rainy, if S. or S. W.	Fair and frosty, if N. or N. E. Rain or Snow, if S. or S. W.
— 6 and 8 {	Ditto	Ditto.
— 8 and 10	Fair	Fair and Frosty.
— 10 and 12		

1. The nearer the time of the Moon's Change, First Quarter, Full, and after to MIDNIGHT, the fairer will the weather be during the 7 days following. 2. The nearer to MIDDAY these phases happen, the more foul or wet the weather may be expected the next 7 days. The space for this calculation occupies from 10 in the forenoon to 10 in the afternoon. 3. The Phases happening from 4 to 10 in the afternoon, may be followed by fair weather, but this mostly depends upon the wind. 4. To prognosticate, where the WIND is concerned, a good VANE should be within sight. In remarks, if a storm arise from the East on or immediately proceeding the Spring Equinox, or from any point of the compass near a week after; either of these cases, the succeeding summer is dry, four times out of five; a storm arise from the SW, or WSW on or just before the Spring Equinox than the following is wet, five time in six.

Useful Stamp Tables

BONDS.	INLAND BILLS.	APPRENTICES' INDENTURES
Security for money	Not exceeding £5 .. 0s 1d	If no Premium £0 2 6
Exceeding £50 .. 1s 3d	£5 10 .. 0 2	Prem. under £30 .. 1 0 0
and not exceeding .. 100 .. 2 6	10 25 .. 0 3	If 30 50 .. 2 0 0
and not exceeding .. 150 .. 3 9	25 50 .. 0 6	50 100 .. 3 0 0
and not exceeding .. 200 .. 5 0	50 75 .. 0 9	100 200 .. 6 0 0
and not exceeding .. 250 .. 6 3	75 100 .. 1 0	200 300 .. 12 0 0
and not exceeding .. 300 .. 7 6	100 200 .. 2 0	300 400 .. 20 0 0
and not exceeding .. £100 above	200 300 .. 3 0	400 500 .. 25 0 0
any frac-	300 400 .. 4 0	500 600 .. 30 0 0
part of £100 .. 2 6	400 500 .. 5 0	600 800 .. 40 0 0
	500 750 .. 7 6	800 1000 .. 50 0 0
	750 1000 .. 10 0	1000 and upwards .. 60 0 0
	1000 1500 .. 15 0	
	1500 2000 .. 20 0	SEA INSURANCE POLICIES
	2000 3000 .. 30 0	Upon any voyage, for every
		£100 charged as follows:
	AGREEMENTS.	s. d.
	Of the value of £20 and	Not exc. 10s. per cent. 0 3
	upwards, containing only	10s. 20s. 0 6
	1080 words, 2s. 6d.; and	20s. 30s. 1 0
	for every further 1080 words	30s. 40s. 2 0
	2s. 6d.	40s. 50s. 3 0
	Letter of Power	50s. 4 0
	of Attorney £1 10 0	For every £100 insured
	Bills of Lading, each 0 0 6	for a term,
	Charter Party 0 5 0	Not exc. six months 2 6
		Exc. six months 4 0

Table of Wages and Expences

TO WHICH A WITNESS ATTENDING THE MANX COURTS, AS UNDER, IS ENTITLED.

PARISHES.	Patrick.	German.	Michael.	Ballaugh.	Jurby.	Andreas.	Bride.	Lezayre.	Maughold.	Lonan.	Ouchan.	Braddan.	Marown.	St. Ann.	Arbory.	Malew.	Rushen.
	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.
Castletown																	
Gentleman	3 6 5	3 7 0	8 9 10	6 10 6	10 6 12	3 8 9	8 9 7	0 5 3	3 6 2	4 3 6	5 3 7	0 3 6	3 6 2	4 5 3	4 5 3	4 5 3	4 5 3
Tradesman	2 11 3	6 4 1	4 8 5	3 5 3	5 10 5	3 5 3	4 8 4	1 3 6	2 11 2	4 1 9	2 11 2	4 1 9	2 11 2	4 1 9	2 11 2	4 1 9	2 11 2
Tradeswoman . . .	2 4 2	11 3 6	4 14 8	5 3 4	8 5 3	4 8 4	1 3 6	2 11 2	4 1 9	2 11 2	4 1 9	2 11 2	4 1 9	2 11 2	4 1 9	2 11 2	4 1 9
Labourer	1 10 2	2 2 2	6 2 10	3 2 3	2 3 2	3 2 3	2 3 2	3 2 3	2 3 2	3 2 3	2 3 2	3 2 3	2 3 2	3 2 3	2 3 2	3 2 3	2 3 2
Douglas																	
Gentleman	8 9 7	0 8 9	10 6 12	3 8 9	8 9 7	0 5 3	3 6 2	4 3 6	5 3 7	0 3 6	3 6 2	4 5 3	4 5 3	4 5 3	4 5 3	4 5 3	4 5 3
Tradesman	4 8 4	14 8 5	3 5 10	4 8 4	1 3 6	2 11 2	4 1 9	2 11 2	4 1 9	2 11 2	4 1 9	2 11 2	4 1 9	2 11 2	4 1 9	2 11 2	4 1 9
Tradeswoman . . .	4 13 6	4 14 8	5 3 4	8 5 3	4 8 4	1 3 6	2 11 2	4 1 9	2 11 2	4 1 9	2 11 2	4 1 9	2 11 2	4 1 9	2 11 2	4 1 9	2 11 2
Labourer	2 10 6	6 2 10	3 2 3	2 3 2	3 2 3	2 3 2	3 2 3	2 3 2	3 2 3	2 3 2	3 2 3	2 3 2	3 2 3	2 3 2	3 2 3	2 3 2	3 2 3
Ramsey.																	
Gentleman	10 6 8	9 7 0	5 3 7	0 5 3	3 6 2	4 3 6	5 3 7	0 3 6	3 6 2	4 5 3	4 5 3	4 5 3	4 5 3	4 5 3	4 5 3	4 5 3	4 5 3
Tradesman	5 3 4	8 4 1	3 6 4	13 6 4	13 6 4	13 6 4	13 6 4	13 6 4	13 6 4	13 6 4	13 6 4	13 6 4	13 6 4	13 6 4	13 6 4	13 6 4	13 6 4
Tradeswoman . . .	4 8 4	13 6 4	13 6 4	13 6 4	13 6 4	13 6 4	13 6 4	13 6 4	13 6 4	13 6 4	13 6 4	13 6 4	13 6 4	13 6 4	13 6 4	13 6 4	13 6 4
Labourer	3 2 2	10 2 6	2 2 2	6 2 2	2 2 2	6 2 2	2 2 2	6 2 2	2 2 2	6 2 2	2 2 2	6 2 2	2 2 2	6 2 2	2 2 2	6 2 2	2 2 2

A Tradesman attending to give evidence respecting matters connected with his trade, to be allowed at the discretion of the Court, any sum not exceeding 12s. 3d.; a professional Gentleman any sum not exceeding 24s. 6d.

General Marketing Table

	2d.	2½d.	3d.	3½d.	4d.	4½d.	5d.	5½d.	6d.	7d.	7½d.	8d.	8½d.	9d.	9½d.	10d.	10½d.	11d.	11½d.
N	s	d	s	d	s	d	s	d	s	d	s	d	s	d	s	d	s	d	s
20	4	0	5	0	6	0	7	0	8	0	9	0	10	0	11	0	12	0	13
40	8	0	10	0	12	0	14	0	16	0	18	0	20	0	22	0	24	0	26
60	12	0	15	0	18	0	21	0	24	0	27	0	30	0	33	0	36	0	39
80	16	0	20	0	24	0	28	0	32	0	36	0	40	0	44	0	48	0	52
100	20	0	25	0	30	0	36	0	42	0	48	0	54	0	60	0	66	0	72
120	24	0	30	0	36	0	42	0	48	0	54	0	60	0	66	0	72	0	78
140	28	0	35	0	42	0	48	0	54	0	60	0	66	0	72	0	78	0	84
160	32	0	40	0	48	0	54	0	60	0	66	0	72	0	78	0	84	0	90
180	36	0	45	0	54	0	60	0	66	0	72	0	78	0	84	0	90	0	96
200	40	0	50	0	60	0	66	0	72	0	78	0	84	0	90	0	96	0	102
220	44	0	55	0	66	0	72	0	78	0	84	0	90	0	96	0	102	0	108
240	48	0	60	0	72	0	78	0	84	0	90	0	96	0	102	0	108	0	114
260	52	0	65	0	78	0	84	0	90	0	96	0	102	0	108	0	114	0	120
280	56	0	70	0	84	0	90	0	96	0	102	0	108	0	114	0	120	0	126
300	60	0	75	0	90	0	96	0	102	0	108	0	114	0	120	0	126	0	132
320	64	0	80	0	96	0	102	0	108	0	114	0	120	0	126	0	132	0	138
340	68	0	85	0	102	0	108	0	114	0	120	0	126	0	132	0	138	0	144
360	72	0	90	0	108	0	114	0	120	0	126	0	132	0	138	0	144	0	150
380	76	0	95	0	114	0	120	0	126	0	132	0	138	0	144	0	150	0	156
400	80	0	100	0	120	0	126	0	132	0	138	0	144	0	150	0	156	0	162
420	84	0	105	0	126	0	132	0	138	0	144	0	150	0	156	0	162	0	168
440	88	0	110	0	132	0	138	0	144	0	150	0	156	0	162	0	168	0	174
460	92	0	115	0	138	0	144	0	150	0	156	0	162	0	168	0	174	0	180
480	96	0	120	0	144	0	150	0	156	0	162	0	168	0	174	0	180	0	186
500	100	0	125	0	150	0	156	0	162	0	168	0	174	0	180	0	186	0	192

Even numbers only are given in the above Table to make it more comprehensive.—For example, required the value of 17 yards of calico, at 8d. per yard. By referring to the Table, you will find 16 yards to be 10s. 8d., and by adding the price of the odd yards will give you the correct amount.

Table to calculate Wages, &c

Year	Per M.	P.W.	P.D.	Year	P. M.	P. W.	P. D.
£	£ s d	s d	d	£	£ s d	s d	d
1	0 1 8	0 4	0 3	15	1 5 0	0 5	9
2	0 3 4	0 9	1 1	16	1 6 8	0 6	10
3	0 5 0	1 3	2 2	17	1 8 4	0 6	11
4	0 6 8	1 6	3 3	18	1 10 0	0 6	12
5	0 8 4	1 11	4 4	19	1 11 8	0 7	13
6	0 10 0	2 3	5 5	20	1 13 4	0 7	14
7	0 11 8	2 8	6 6	30	2 10 0	0 11	6
8	0 13 4	3 3	7 7	40	3 6 8	0 15	4
9	0 15 0	3 8	8 8	50	4 3 4	0 17	2
10	0 16 8	4 3	9 9	60	5 0 0	0 3	0
11	0 18 4	4 8	10 10	70	5 16 8	0 16	10
12	1 0 0	4 13	11 11	80	6 13 4	0 10	8
13	1 1 8	5 3	12 12	90	7 10 0	0 14	6
14	1 3 4	5 8	13 13	100	8 6 8	0 18	4

If the Wages be Guineas instead of Pounds, for each Guinea add One Penny to each Month, or One Farthing to each Week.

RULE FOR CALCULATING INTEREST, at 5 per cent.—Multiply the Pounds by the Days, and divide the Product by 365. The Quotient gives the interest at 5 per cent. in Shillings.

Weights

BY WHICH GRAIN, ETC., ARE SOLD.

ISLE OF MAN.

WHEAT, per bushel of 64, or boll of 256
 BARLEY, per bushel of 50, or boll of 200
 OATS, per bushel of . . . 40, or boll of 240
 BEANS or PEAS, per bushel of 60, or boll of 240
 POTATOES, per stone of 14, or boll of 448

LIVERPOOL.

WHEAT, per bushel 70
 BARLEY . . . do 60
 OATS do 45
 BEANS, per 480 lbs. and 564
 INDIAN CORN 480
 FLOUR, per sack 280
 FLOUR, per barrel 196
 OATMEAL, per load 240
 POTATOES, per measure 90

MARINERS' GUIDE

TO THE

Principal Ports and Harbours

IN THE

BRISTOL AND ST. GEORGE'S
CHANNELS,

THE IRISH SEA,

AND THE NORTH CHANNEL;

CONTAINING A SERIES OF CLEAR AND CONCISE

SAILING DIRECTIONS

FOR THE

WEST COASTS OF ENGLAND, WALES, AND
SCOTLAND, THE ISLE OF MAN,

AND THE

EAST, SOUTH-EAST, NORTH-EAST, AND
NORTH-WEST COASTS OF IRELAND;

WITH

Tables of the Magnetic Bearings and Distances

OF DIFFERENT

HEADLANDS, HARBOURS, AND LIGHTS

ON THOSE COASTS.

^{**} The Bearings and Courses in these Directions are those by compass,
and the Distances are nautical miles, of 60 to a degree.

MARINERS' GUIDE.

ISLE OF MAN.

The **ISLE OF MAN** lies in a N.E. by E. and S.W. by W. direction, and is about 30 miles in length and 11 in breadth. The Northernmost Point of Ayre is in lat. 54 deg. 27 min. N., and long. 4 deg. 20 min. W. The

Calf Island,

At the S.W., is in lat. 54 deg. 3 min. N. and lon. 4 deg. 50 min. W. On this Island are two Lighthouses, 187 yards distant from each other, bearing N.E. $\frac{1}{2}$ E. and S.W. $\frac{1}{2}$ W. The *higher* Light bears from the dangerous sunken rocks called the *Chickens* N.E. $\frac{1}{2}$ E., distant about a mile and a quarter: when the Lights are in one they lead on the Chickens. These Lights are *DOUBLY* revolving, without color, making their revolution in 2 minutes, and becoming gradually fainter during that time, until, at a distance, they appear totally obscured. At their brightest period they may be seen seven leagues off, resembling a planet. Between the Chickens and Calf is a passage about a mile broad, through which the tide sets from the W. round the Calf Point *very strong* outside of the Eye Rock, and also through the passage between the Island and S.W. Point of Man. There has been erected in the Sound of the Calf, on the "Thusla Rock," a tall iron basket-topped Perch, painted red. In the Sound of the Calf the stream runs W. 2 hours before high water on the shore, and continues 6, i.e., 2 hours before it ebbs on shore. $2\frac{1}{2}$ miles to the east is

Port St. Mary,

where there is good anchorage behind the Pier, which has been lately very much improved, but a dangerous rock called Carrick, lies about $\frac{3}{4}$ of a mile S.S.E. $\frac{1}{2}$ E. from the Village. This harbour has about 9 or 10 feet water at neap tides, and 14, 15, 18, &c. at spring tides. In running for it, keep Scarlet Head to the S. of Castletown, a good sail's breadth open, to avoid the Carrick Rock. On entering, take the quay as close as circumstances will admit. A **LIGHT** is exhibited throughout the year, on the larboard hand on entering the harbour. Five miles E. from the Chickens and $2\frac{1}{2}$ from Port St. Mary, is Scarlet Head, the westernmost point of

Castletown Bay.

The bottom towards the entrance is generally rocky, and there are three shoals or rocks dry at low water, the largest of

which, Lheeahrio, is a quarter of a mile long and 500 feet wide, and is marked at the east end by a large Black **LARK** stationary light, to be kept on the larboard hand on entering, is the new pierhead, which lies outside the old pierhead, in a S.S. direction therefrom. The Buoy on the Eye Rock is placed in five fathom water, having Langness Point, by bearing S. $\frac{3}{4}$ E., and the lighthouse pierhead, N. $\frac{3}{4}$ E. On entering, be careful to leave the Buoy on the larboard hand, and in working into the harbour from the Westward, you must run the Buoy to the Southward of E.S. open Spanish Head to the North of the Stack of Scarlet until Eastward of the Buoy, or until the lighthouse on the Eye Rock head bears N. $\frac{1}{2}$ E., then steer for the harbour. The anchorage is sheltered by the Eye Rock N.W. round by N. to S.S.E., the rocks which are, Spanish Head just open Southward of the Stack of Scarlet, the Steeple of Castletown Chapel in the Eastern part of a Gap in the Moar, bearing N. by W., and King William's Head N.E. by N., where there are many rocks and thorns at low water, spring tides, and is a good anchorage.

Langness Point,

An isthmus running out from the land, 2 miles to the S.W., has a light on the point to identify its situation. There are **SUNKEN** rocks all about the point. The tide sets like a race upon the rocks from the Chickens, at the rate of (at spring tides) of 6 miles an hour, and runs from 2 to 5 or 6 miles from the land, increasing in strength to Maughold Head. To avoid the inlet between the Chickens and Langness Point, it is advisable for vessels on no account to come within 4 miles of the land. On the E. side

Derbyhaven,

Affording anchorage for large ships, and sheltered from all winds E. to S.E. The best **ANCHORAGE** is on the N. side of St. Michael's Island, 4 fathoms, the castle (or fort) on it bearing S.E. by S. Small vessels may run up. There is a **LIGHT** at the entrance of the harbour, which is lighted only during the herring fishing season. The current is a strong or rather eddy, along the E. side of the harbour, and runs 10 hours S., from 2 hours after the last of ebb on the shore. It is 3 miles to the E. of Derbyhaven, and Ann's Head, from which to

Douglas Head,

E. is about 2 miles, upon which a LIGHTHOUSE has been erected, the light from which is STATIONARY, and appears like a star of the first magnitude at the distance of 14 miles. The bearings of the light are as follows:—From CLAY HEAD, W. by S. $\frac{1}{2}$ S., 4 miles; from LANGNESS POINT, E. by N. $7\frac{1}{2}$ miles. The light will not be visible from Langness Point; but with an offing of 3 miles from that Point, the light will be seen bearing N. E. $\frac{1}{2}$ E., and the Calf Lights at the same time bearing N. W. by W. $\frac{1}{2}$ W. Vessels running for Douglas, between E. by N. $\frac{1}{2}$ N. to W. by S. $\frac{1}{2}$ S. will see the light at 5 miles' distance. Blowing fresh from the W. and bound for the bay, a vessel should keep pretty close to Douglas Head, or she will be thrown to the leeward of St. Mary's Rock, by the strong and variable gusts off the high land to the S. W., where she will be exposed and in bad anchorage. On this rock a TOWER has been erected, the appearance of which in the night is like a square-rigged sloop under sail. Anchor in the bay between St. Mary's and the S. shore, 3 or 4 cables E. of the pierhead, where there are two lights, white and red, exhibited throughout the year. No vessel should enter Douglas Bay from the westward until having sighted the red light from the Pierhead, so as to clear the Breakwater Works. To enter the harbour keep close to the Pierhead. Four miles E.N.E. from Douglas Head is

Clay Head,

Round which is Laxey Bay, where there is good anchorage in 6 fathoms depth. From Clay Head to Maughold Head the course to N. E. $\frac{1}{2}$ E. 7 miles, and round the latter to

Ramsey,

N.W. N $\frac{1}{2}$ Y. $2\frac{1}{2}$ miles. To the E.S.E. of the town is Port Lewague, and a short distance to the N.W. of it lies a little rock called the Carrick, which covers at $\frac{1}{2}$ flood. There is excellent anchorage and shelter from 1 to $1\frac{1}{2}$ miles opposite the town, as the bottom is good stiff clay; but there is generally a heavy sea and hard riding in it with winds from S. to E.N.E., to all of which it is open. The harbour, which is a dry one, will admit vessels drawing 17 or 18 feet water at spring tides, and 11 or 12 feet at neap tides. There is a lighthouse on the quay, a stationary light, of a red colour, is exhibited throughout the year. In the bay the stream runs nine hours N. and three hours S., beginning at 2 hours' flood. There are three banks off this bay that deserve notice. The BAHAMA BANK, or RIG, bears N.E. 2 leagues from Ramsey town, and is about 6 miles in length from S.S.E. to N.N.W., with only 6 feet depth of water at the S. end, differing in other parts from 9 to 12 feet, and is rather more than $\frac{1}{2}$ a mile

broad. The BAHAMA FLOATING LIGHT, exhibiting two BRIGHT FIXED LIGHTS, is moored a mile off the S. E. tail of the shoal, in eleven fathoms, low water, spring tides, and with the following compass bearings:—King William's Bank Buoy, E. by N. $\frac{1}{2}$ N. nine miles; Point of Ayre lighthouse, N. by W. $\frac{3}{4}$ W.; Maughold Head, W. by S.: Clay Head, S.W. by W. $\frac{1}{2}$ W. WHITEHOUSE BANK, so called from its composition, lies S.S.E. $1\frac{1}{2}$ miles from the extreme Point of Ayre, with a good passage between them; it bears N. N.E. from Maughold Head, and is $\frac{1}{2}$ a mile in length N. and S., and a $\frac{1}{2}$ in breadth E. and W., with 6 feet at low water spring tides. POINT OF AYRE BANK is a ridge extending $\frac{1}{2}$ a mile from the Point to the distance of 1 mile E., and thence circularly to the S. and E., always with a considerable ripple, nearly in a line with the BAHAMA BANK. KING WILLIAM'S BANK is 8 miles in length from S.E. to N.W., and $\frac{1}{2}$ a mile broad; the N.W. end is E. $6\frac{1}{2}$ miles from the Point of Ayre, and N.E. 11 miles from Maughold Head, from which the S.E. end bears E.N.E. $\frac{1}{2}$ E. $13\frac{1}{2}$ miles, and from the Point of Ayre E.S.E. 12 miles distant. The least depth of water on it is 18 feet. A Green Buoy, marked "wreck," is moored on the wreck of a vessel which lies about 4 miles N.E.'ward off Ramsey, in the fairway of vessels coasting along the E. side of the island. The Buoy is moored about 10 fathoms to the Eastward on outside of the wreck in 6 fathoms low water spring tides. The following are the bearings from the buoy:—Point of Ayre Lighthouse, N.; Lighthouse on Ramsey Pier, S.W. $\frac{1}{2}$ W.; Maughold Head, S. $\frac{1}{2}$ W. Another Green Buoy marked "wreck," is moored on the wreck of a second vessel in Ramsey Bay, about 4 miles N. Eastward of Maughold Head, in the way of vessels coasting along the E. side of the Island. The Buoy is moored about 10 fathoms to the Eastward on outside of the wreck in 6 $\frac{1}{2}$ fathoms. The following are the bearings from the buoy:—Ramsey Mill, N.W. by W.; Maughold Head, S.W. The

Point of Ayre Lighthouse

Bears N.N.E. $\frac{1}{2}$ E. from Maughold Head, distant 8 miles, and the lantern is 106 feet above the sea, from the shore of which it stands about $\frac{1}{2}$ mile inland. It is REVOLVING, showing alternately a BRIGHT and RED coloured light, becoming from a star-like appearance gradually stronger until the attainment of the utmost brilliancy every TWO MINUTES. The light of the common colour is to be seen 4 or 5 leagues off; but the RED one is not distinct at so great a distance. Maughold Head prevents the light being seen by a navigator S. of it, as does Rue Point when he is W. of it. N. by W. $\frac{1}{2}$ W. $1\frac{1}{2}$ miles from the Pt. of Ayre is STRUNAKILL

BANK, bearing from Jurby Point E. by N. 5 miles; it is $1\frac{1}{2}$ miles long E.S.E. and W. N.W., and nearly $\frac{1}{2}$ a mile broad. There are 3 fathoms on the shoalest end, but the sea breaks and the tide sets strong upon it; keeping WITHIN $1\frac{1}{2}$ miles of the land will clear the whole.—From the Point of Ayre to Jurby is 7 miles to the W. and hence to the Peel Pierhead Light, S.W. $\frac{1}{2}$ W. 11 miles; 4 miles from Jurby W. $\frac{1}{2}$ N. and about 3 miles from the land abreast, is a **BLIND ROCK**, and from

Peel Pierhead Light,

N.E. by E., 9 miles. This light (Red) is stationary, is exhibited throughout the night, and is visible at a distance of eight miles in clear weather. The harbour at Peel is a dry one. Between Jurby and Peel, off Ballabui, lies a shoal $1\frac{1}{2}$ miles from the land, and $3\frac{1}{2}$ miles N.E. $\frac{1}{2}$ E. from the light. A vessel may ride in the bay with the Castle bearing from S.S.W. to S.W. in 6 or 7 fathoms' depth of water. On entering the Harbour, keep the point of the Jetty close on board on the starboard hand and run in, keeping the light on the pierhead on the port hand. A white light is exhibited from the end of the breakwater. The Mull of Galloway light adds to the convenience of this Harbour, being visible from the Castle, and only distant N. by E. 26 miles. The Peel Light is about 300 yards S.S.W. from the N.E. point of the Castle. The streams of flood that come to the E. from along the S. coast, and along the N. coast of Ireland, meet about a mile W. of Contrary Head, so called from this circumstance, and there divide into two branches, one of which runs N.E. to the Point of Ayre, and on to Maughold Head, the other S.W. to the Calf; one proceeding round the Calf at 6, the other round the Point of Ayre at 4 miles an hour, meeting off Maughold Head. From Contrary Head to abreast the Calf Lights the course is S.W. 10 miles; and $4\frac{1}{2}$ miles from the W. end of that Isle is

Port Erin,

a sheltered little creek, surrounded by very high land, easy of access, and affording shelter against all E. winds. At the entrance, between the headlands, there is a depth of about 15 fathoms water; here the tide runs very strong at the rate of 6 miles an hour. Keep the Calf Lights well open when passing Langness Point.

TIDES.—On the full and change days, it is high water on the shore at Peel at 10h. 48m.; in the Calf Sound, 10h. 57m.; at Douglas, 10h. 48m.; at Ramsey, 10h.; and at the Point of Ayre, 10h. In the Isle of Man, spring tides rise 18 or 20 feet perpendicular; neap tides 9 or 10.

Magnetic Bearings & Distances,

FROM THE HEADLANDS OR HARBOURS IN THIS ISLAND, TO OTHER HEADLANDS OR HARBOURS IN THE CHANNEL.

FROM DOUGLAS HEAD TO

St. Bees Light E. by
Ravenglass E. by
Lancaster Channel S.E. $\frac{1}{2}$
Liverpool Floating Light, S. by E.
Chester Bar S. by
Great Ormshead S. $\frac{1}{2}$
Skerries Light S.W. by
Langness Point S.W. by

FROM THE POINT OF AYRE TO

Maughold Head S.S.W. $\frac{1}{2}$
St. Bees Light E.S.E. $\frac{1}{2}$
Whitehaven E.S.E. $\frac{1}{2}$
Maryport E. $\frac{1}{2}$
Ross Light, Kirkcudbright N.E. $\frac{1}{2}$
Burrow Head N.N.
Mull of Galloway ... N.W. by N. $\frac{1}{2}$
Copeland Light, Belfast.. N.W. $\frac{1}{2}$
Liverpool Floating Light S. $\frac{1}{2}$

FROM MAUGHOLD HEAD TO

Skerries Light S.W. $\frac{1}{2}$
Great Ormshead S. by
Liverpool Floating Light S. $\frac{1}{2}$
Lancaster Channel S.E. $\frac{1}{2}$
St Bees Head E. $\frac{1}{2}$
Ravenglass E. $\frac{1}{2}$
Whitehaven E. $\frac{1}{2}$

FROM THE CALF OF MAN TO

Langness E.S.E. $\frac{1}{2}$
Mull of Galloway N.N.
Copeland Light N. $\frac{1}{2}$
South Rock Light... N. by W. $\frac{1}{2}$
Strangford Lough N.N.W. $\frac{1}{2}$
Carlingford Lough W.N.W. $\frac{1}{2}$
Drogheda W. $\frac{1}{2}$
Howth Head W.S.W. $\frac{1}{2}$
Kish L'ship, Dublin Bay W.S.W. $\frac{1}{2}$
Holyhead S.S.W. $\frac{1}{2}$
Great Ormshead S. by
Liverpool Floating Light S.S.E. $\frac{1}{2}$
Skerries Light S. by W. $\frac{1}{2}$
Point Lynas S. $\frac{1}{2}$

FROM PEEL TO

Mull of Galloway Light... N. by
Copeland Light N.N.W. $\frac{1}{2}$
Strangford Lough N.W. $\frac{1}{2}$
Maidens Light N. by W. $\frac{1}{2}$

Free Harbours

No tolls are exigible on vessels entering any of the Harbours in the Isle of Man.

Abstract of the Bye-Laws regulating the Harbours.

1. Any vessel, through mismanagement, injuring the quays, &c., such injury to be repaired, under penalty of double the value of the damage.
2. No chain cables to be used in mooring vessels, under penalty of £2.
3. No ballast to be discharged without a port sail, under penalty of £2.
4. Vessels heaving ballast or stones into the harbours, penalty £2 per ton.
5. That no person heave stones, dung &c., into the harbours, under the penalty of £2; and if not removed when ordered a further penalty of £2.

6. Masters of vessels not obeying Harbour Masters in mooring vessels, penalty £2: all expenses incurred by the Harbour Master in mooring vessels to be paid by master or owners of said vessel. Any person obstructing Harbour Master in executing his duty, penalty £5.

7. No person to make a fire on the quays without permission, penalty £3.

8. No clog fenders to be used, under penalty of £1, unless hung lengthways.

9. Any person throwing off ends or cutting hawsers, besides paying the damage to the owners, to forfeit £5.

10. That all gunpowder be landed immediately after arrival, under penalty of £10 for every 24 hours it remains on board; and no fire or light to be kept on board while such gunpowder remains in the vessel, further penalty £20.

11. Any dock made for repairing vessels in harbour to be filled up in 24 hours after removal of the vessel, under penalty of £5 for every 24 hours it lies open.

12. No vessel to unload ballast at night under penalty of £10.

13. That no timber, iron, &c. (unless for repairing vessels) be left on the quays longer than two days, on penalty, for every day longer than the said two days, after notice given by the Pier Master, of £1.

14. That no vessel be allowed to take ballast from another, penalty £1, unless by leave of the Harbour Commissioners.

15. Ballast not to lie on the quay longer than 24 hours, under penalty of 5s. per day.

16. All vessels unloading merchandize to have preference of berth in turn.

17. Vessels taking in goods to have any unoccupied berth, but to give it up on the arrival of a loaded vessel.

18. & 19. One person at least to be on board every vessel when afloat, in harbour or bay, under penalty of £2.

20. & 21. No person to act as pilot without commission, under penalty of £10. No vessel compelled to take a pilot.

22. Proprietors of lime-kilns to screen their lights, if liable to be mistaken for harbour lights, under penalty of £5.

23. Persons firing on pier, &c., (except on days of public rejoicing,) penalty 10s.

24. Boats plying for passengers without licence, penalty £2; and owners to be accountable for breach of harbour laws by any of the crew.

25. No person to erect stalls on the quays to cure fish, or deface the quays, &c. under penalty of £2 for every offence.

26. No person to enforce higher rates for pilotage than as follows, which include attendance of boat and four men:

Vessels of 40 Tons	£0	5	0
Vessels above 40 and under 60	0	7	0
Vessels above 60 and under 100	0	13	0
Vessels 100 Tons and larger	1	0	0

27. Vessels must allow ropes or warps of other vessels to be made fast to them, under penalty of £2.

28. All vessels in harbour must keep in their jib and mizen booms, under penalty of £2.

29. No lumber to remain on the quays or steps, under penalty of £1.

30. No conveyance having wheels shod with iron, allowed on Douglas pier, under penalty of £2.

WEST COAST OF ENGLAND.

RIVER RIBBLE TO SOUTHERNESS LIGHT.

The River Ribble.—PORT OF PRESTON.—The entrance to the River Ribble and Port of Preston is indicated by a large buoy at sea called *Nelson*, which should be observed by vessels bound for the river. It is a large Black Buoy with a Cage-Ball at the top, stands 26 feet out of the water, and may be seen in clear weather 10 miles. *Nelson of Preston* is painted upon it. Having observed the *Nelson Buoy*, the entrance to the River may be made by the North Channel or the Gut. The entrance to the North Channel is northward, and to the Gut southward of *Nelson Buoy*. The North Channel is buoyed by 10 buoys, numbered 1 to 10, and marked with the letter N.; the Gut by 5 buoys with cages on the top. The buoys are placed in the deepest parts of the Channels. The Gut joins the North Channel at No. 8 buoy, nearly opposite *Lytham Lighthouse*. The outer buoys of

both Channels are placed in 3 fms. water, and from them the other buoys can be seen. From No. 10 buoy to the commencement of the stone embankments, about three miles east of the town of *Lytham*, the Channel is marked by perches and small buoys placed upon the north side, and from thence to *Preston* by perches placed on the stone embankments on both sides of the Channel. Between buoys four and six in the North Channel vessels drawing 14 feet of water may lie at anchor afloat at low water. A lighthouse has been erected S.E. of *Stanner Point*, N. side of entrance, showing an Intermittent light, $3\frac{1}{2}$ min. bright, $\frac{1}{2}$ min. dark. The light is visible to mariners all round from the *Blackpool* to the *Southport* shores, and is situate in lat. $53^{\circ} 44' 38''$ and lon. $3^{\circ} 1' 17''$, and is 81 feet 8 inches above the mean water of the sea. On the north shore of the *Ribble*, and 3 miles east of the lighthouse,

is the town of Lytham, before which there is a small tide light on the end of the new Pier which extends from the beach to the channel. Here also is a dock, where vessels can lie in safety. Vessels drawing 12 to 14 ft. can go up to Preston Quays at spring tides. The quays are connected by a branch with the Railways leading to Manchester, Bolton, Blackburn, bury, Accrington, and the various other manufacturing towns of Lancashire and Yorkshire, and the Wigan and Burnley coal fields. Mr. W. Allsup's two Steam Tug Boats ply upon the River for the purpose of towing vessels to and from Preston, and at present, when required, tow vessels at the following rates per reg. ton;—No. 1 buoy to Preston, and back 1s. 4d.; No. 1 buoy to Preston, or Preston to No. 1 buoy. 1s.; No. 1 buoy to Lytham, or Lytham to No. 1 buoy, 6d.; Lytham to Preston and back, 8d.; Lytham to Preston, or Preston to Lytham, 6d. Masters of vessels requiring a pilot or tug-boat, and not meeting with one outside the channels, should signal in sight of the lighthouse. A pilot will also, if required, go to any port to conduct vessels into the river on a letter being addressed to Captain Ashburn, Harbour Master, Lytham, Lancashire.—By applying to the Admiralty agent, J. D. Potter, 38, Poultry, London, a Chart of the Entrance to the Ribble, published in 1860, can be had for 1s. 6d.

Morecambe Bay.—In sailing towards this bay, from the southward, which is about 8 leagues from Formby Point, keep full 4 miles from the shore, on account of the flat shoal water, known by the name of "Shell Warf," this begins nearly abreast of the "Red Banks," and extends to the south side of Lune Deep. The western edge of these grounds is steep-to, and there are on some parts of the Shell Wharf not more than 6 and 9 feet at low water. The entrance to Morecambe Bay is known by the name of Lune Channel, and is $2\frac{1}{2}$ miles wide at the west end. On the southern side is the Point of Rossall, and on the northern side is the Island of Walney; on the former is a conspicuous beacon or landmark, and on the latter a lighthouse, which bear from each other nearly north and south, distant 8 miles. The Point of Rossall is low land, and the beacon, when seen at the distance of about five miles, has the appearance of a vessel under sail. Morecambe Bay is encumbered with numerous large sandbanks, many of which dry at low water, and some at half ebb. The general direction for the mariner, if bound to Lancaster, will be to attend particularly to his soundings, taking care to get into the deep water of the Lune Channel, and to remain there until he obtains a pilot. When in 24 and

25 fathoms, you will perceive the ends of the rock weeds floating, and the water of a darker blue than when you are over any of the banks. A Light Vessel is moored off the entrance of Morecambe Bay, in 12 fathoms at low water spring tides, with the following compass bearings:—St. Bee's Head Light, N. by E. $\frac{1}{2}$ E. distant 36 miles; Walney Light, E. by N. distant $14\frac{1}{2}$ miles; Foot of Wyre Light, E. by S. $\frac{1}{2}$ S., distant $16\frac{1}{2}$ miles; Blackpool Church, S. E. $\frac{1}{2}$ E., distant $17\frac{1}{2}$ miles; Calf of Man Light, N. W. by W., distant 49 miles; Liverpool N. W. Lightship, S. by W., distant 25 miles.

The River Wyre.—The following are the directions for entering the Port of Fleetwood.—On coming from sea, keep the westernmost part of Walney Island to the eastward of Blackcombe until Rossall Landmark bears S. E.; here you are entering the deep water of Lune, where you will have 28 fathoms at low water. The shoals to be avoided on approaching Wyre are, Shell Wharf, North Wharf, and King's Scar Ridge. A large red buoy is laid down nearly on the point of the Ridge, to which a good berth should be given; it also marks the southern side of the Lune deep. A black perch is placed on North Wharf, about three-quarters of a mile S. E. by S. from the King's Scar Buoy. On the north side of Lune deep a black buoy, with globe on the top, and marked "Danger Patch," is placed a few fathoms westward of a shoal patch bearing that name. Between these buoys is the Lune deep or channel, the course up which is E. $\frac{1}{2}$ N. Rossall Landmark is a large wooden structure (of a conical shape) built on the shore of Rossall point, and denotes the southern limit of Morecombe Bay. Walney Island, on which is a revolving light, is the northern limit. Shell Wharf extends to the westward of Rossall Landmark and North Wharf upwards of three miles. If in hazy weather you fall in with low land, and not knowing whether it is Walney or Rossall land, your lead, which should never be neglected, will at once inform you; for 4 or 5 miles off Walney, you will have 8 or 10 fathoms, but at the same distance off Rossall only 4 or 5 fathoms. After passing the Danger Patch and King's Scar buoys, you will observe the Fairway Buoy to Fleetwood channel. It is a vertically striped black and white buoy, and lies half-a-mile N. N. W. from the Screw Pile or Fleetwood Lighthouse. Enter the channel between the Fairway Buoy and the lighthouse, giving the lighthouse a good berth on the starboard hand and running up for the No. 2 black buoy on the Little Ford, leaving that buoy on the port hand. You will now have come up with the red buoy guarding the north end of the Big Ford; leave that on the starboard hand; then leaving all the

black buoys, which mark the eastern side of the channel, on the port hand, and the red buoys and perches (the latter having red globes on the top) on the starboard hand, round close to the Steep Breast, on the edge of which stands the Lower Shore Lighthouse, and where the tides run very strong: you then enter the Harbour. There are large red buoys for mooring ships to. Sail between the buoys and the shore, letting go your anchor when you reach the upper part of the Canshe Hole; but be careful not to foul the moorings of the buoys, as they run in various directions across the harbour. Strangers visiting this port should always hoist signal for a pilot, several of whom are constantly on the look-out. There are two pilot cutters (numbered 1 and 2) with pilots for any of the ports in the bay, and are generally cruising off the bay. The Screw Pile or Fleetwood Light is a Fixed Bright Light, seen 8 or 10 miles in clear weather. There are also two Fixed Shore Lights, lighted from half-flood to half-ebb. By day, a black ball hoisted on a pole at the Screw Pile Light and Lower Shore Lighthouses, denotes the same interval of tide. A bell, tolling three strokes per minute in foggy weather, is sounded from the Screw Pile Lighthouse, and may be heard at the distance of two miles. There is good anchorage off North Wharf, anywhere between the King's Scar Buoy and the Lighthouse, in such water as the state of the tides and a vessel may require. A green buoy is placed near a wreck on the Bernard Sand, about half-a-mile N.E. of the Screw Pile Lighthouse; but your vessel should never be that far to the eastward, as the flood tides run across there, and will set you ashore. There is now at low water spring tides, six feet of water from sea into the Harbour, by the buoyed channels, keeping the best of the deep. The powerful steam-tug "Wyre," belonging to the port, tows vessels in and out of the harbour at moderate rates.

The River Lune.—SUNDERLAND, GLASSON, and LANCASTER.—Sunderland Harbour is at the mouth of the River Lune, and is dry. Large vessels may go in after half-flood, and lie on clean ground below the houses, and with neap tides, ships of 12 feet water may ride afloat in the pool, off the westernmost houses in the village. It is not safe riding in the pool with spring tides, because of the rapidity of the stream, which runs there about $4\frac{1}{2}$ miles an hour when strongest. The channel leading into Sunderland is buoyed, and there is a Lighthouse on the south side, over against the point of Sunderland. Bernard's Wharf, the westernmost bank, begins to dry at half-ebb. At the easternmost buoy there is a patch of sand that dries with spring

tides only. To come up with the outer or westernmost buoy of the channel of Lune River, take half-flood, and stand no nearer the North Wharf Bank than 8 fathoms water; or keep Lancaster Church Steeple a small sail's breadth open to the southward of the Bluff End of Highfield or Lawson's Wood,—a long hill under the same high land, which terminates in a remarkable Bluff Point, a little to the northward of the Church Steeple. This mark will bring you to the outermost Buoy, clear of North Wharf and Bernard's Wharf; or, when this mark cannot be seen, keep the westernmost part of Walney Island to the eastward of Blackcombe, until the Landmark bears about S.E. In this situation you are entering the deep water of the Lune, where you will have 28 fathoms at low water, and the outermost Buoy bearing about east from you; and should you be forced in by strong gales, or night coming on with a flood-tide, that you cannot keep an offing, you may by observing these directions bring your vessel to an anchor to the southward of the buoy.—If in dark hazy weather you should fall in with low land, bearing E.N.E., &c., and not know whether it is Walney or Rossall land, your lead will at once inform you; for at the distance of 4 or 5 miles from Walney, in that direction you will have 8 or 10 fathoms water, but at that bearing and distance from Rossall, only 4 or 5 fms. —*To avoid the Shoals on the north side of the Bay:*—Near low water come no further in, with a vessel of considerable draft of water, than where Walney Lighthouse is open to the eastward of the highest part of Blackcombe, when the Landmark bears S.E., as you are here to the westward of the Stony Patches on the north side of the Lune, where you may safely stand off and on for a pilot.—*To avoid the Shoals on the south side of the Bay:*—Shell Wharf extends W. by N. to W. by S. from the Landmark, therefore you must take care about low water to keep the Landmark to the southward of E.S.E., and when you steer for the buoy at the proper time of the tide, and having fallen into the deep water of the Lune, by observing the foregoing directions, you must allow for North Scar and North Wharf, a high bank, which runs out two miles northward of the Landmark, and covers about half-flood. About high water, you may venture in the day time to stand over any part of the bay from Pile of Foudry to the outermost buoy in the Lune; but in the night or thick weather, keep further out to the westward, taking care to have the lead constantly going, and watch every opportunity to take the bearings of the marks before mentioned, until you obtain a pilot.—The *First*, or Outermost Buoy, lies in $6\frac{1}{2}$ fathoms at

low water, neap tides, pass on the south side of the Buoy, with Pile Castle bearing N.N.W. $\frac{1}{2}$ N.; Lighthouse on Walney, N.W. by N. $\frac{1}{2}$ N.; North end of North Wharf, W. by S.; Landmark on Rossall Point, S.W.; Foot of Wyre Lighthouse, S.W. by W.; Lancaster Church Steeple, a little open with Highfield, E. by N.; Second Buoy, E.S.E. If too early for the tide, or too late in the evening to proceed up the river, you have good anchorage one cable's length to the westward of the Second buoy, under Bernard's Wharf, where you will have 3 fathoms at low water, and little current; but you must not proceed up the river with a vessel of considerable water draft until after half-flood. The *Second Buoy* lies in 3 fathoms, with outermost buoy bearing W.N.W.; Third Buoy, E.S.E. The *Third Buoy* lies in 9 feet, with second Buoy bearing W.N.W.; Fourth Buoy, S.E. $\frac{1}{2}$ E. The *Fourth Buoy* lies in 5 feet, with Third Buoy bearing N.W. $\frac{1}{2}$ W.; Fifth Buoy E. The *Fifth*, or Innermost Buoy, lies in 5 feet, with Fourth Buoy bearing West; Lighthouse on Abbey Scar, E. $\frac{1}{2}$ S. Keep the Upper and Lower Lighthouses in a line, and guard against the flood-tide setting strong to the southward, up Cocker. Soon after you have passed the Lower Lighthouse, keep Basil Barn a little open to the southward of Overton Chapel, which will take you clear of Thornbush Fishery and Town's Skear, to Sunderland, where you may obtain a pilot. The deepest water is on the south side of all the Buoys, and the River Buoys are placed on the north side of the channel.—GLASSON is about 5 miles before you reach Lancaster. Upon the pier is a harbour light, shown at tide time. The tide flows at the dock gates the same time as at Liverpool; adding two inches to every foot of water at Liverpool, will give the height at Glasson. Every vessel going into the dock must clew up her sails, and (if the wind be any way to the northward) let go an anchor before coming into the Dock Gut, to prevent her anchor bills running through her bows and destroying the works. If the wind be from the westward, and a flowing tide, she may safely touch on the west side, and be veered alongside the pierhead, by a line from the westward; but on no pretence whatever is any vessel to attempt going in under ever so easy sail, as several serious losses have already been sustained thereby; and no steam-vessel is to make use of her paddle wheels either in going in or out of dock, but to let off steam before they go in. Masters of vessels offending in these particulars are liable to a penalty of £5, besides having to repair the damage.—From Glasson to LANCASTER the channel is irregular, variable, and shallow; the shal-

lowest part of it having no more than 12 or 14 feet water at high water with neap tides. Pilots, legally appointed to duct vessels to and from the quays at Lancaster, may be obtained at Snaresbrook near Sunderland.

Morecambe Harbour.—This harbour is situated at the terminus of the Midland, and London and North Western Railways. A new stone pier has recently been constructed, and superior accommodation provided for the transhipment of passengers and merchandise between the railway trains and steamboats. Dues levied on vessels in respect of tonnage and buoys are 2d. per ton on vessels from ports in the United Kingdom, and 1d. per ton on vessels from ports beyond when such dues have been paid in full times in one year by any vessel, then reduced to 1d. per ton on the vessel for the remainder of the year. There are no other dues or port charges on vessels.—The sailing direction from Fleetwood or Lancaster must be steered to until the Light at Foot of Wyre bears South one mile distant, then flood-tide, haul up N.E. by N., and, at low water, N.N., this course leads to the entrance of the Channel to Morecambe Harbour, which is defined by No. 1 Red buoy on Starboard, and No. 1 Black buoy on Port hand, moored as hereinafter described:—A NEW LIGHTSHIP has been substituted for the Screw Pile Lightship formerly on Clark's Wharf, and is now moored in Mid-channel, about the quarters of a mile Eastwards of No. 1 Black Buoy, in four fathoms low water of ordinary Spring Tides; the Compass bearings of this Light-ship are as follows: To Walney Light, N.W. $\frac{3}{4}$ W. distance 4½ miles; Wyre Light S.W. by S. distance 4½ miles; Morecombe Harbour Pier Light, E. $\frac{3}{4}$ N., distance 5½ miles. The ship is painted Red with "Morecombe" in large white letters on her sides, one Mast with Circular Beacon and exhibits a RED LIGHT from Sunset to Sunrise, visible all round the horizon in clear weather 5½ miles; when there is a flowing tide water in the Channel up to the Harbour a Black Ball will be hoisted on the Flagstaff aft by day and a White Light shown on the bluff of the Bows at night. In thick Foggy Weather or Snow, a bell will be struck three times every minute. N.B.—The Lightship is moored with single anchor, and in rough weather will ride with 100 fathoms of chain. Masters of vessels running in or out of the channel are therefore requested to give the ship sufficiently wide berth. Seven Buoys define the Channel leading to Morecombe Harbour, viz.:—No. 1 Red Buoy on the Western Point of Clark's Wharf Spit, the compass bearings from

e:—To Foot of Wyre Light, S. $\frac{1}{2}$ S.; to Walney Light, N.W. $\frac{1}{4}$ N. New Light Ship, N.E. $\frac{1}{2}$ E.; to Black Buoy, N.E. by N. $\frac{1}{4}$ N. *Black Buoy* on the Western Yeoman's Wharf Spit, the bearings from which are:—To Wyre Light, S.W. by S. $\frac{1}{4}$ S.; to Light, N.W. $\frac{1}{4}$ W.; to New Light by N. $\frac{1}{4}$ N.; to No. 1, Red Buoy, $\frac{1}{2}$ S. N.B.—These two Buoys are Mouth of the Channel; they are one Sea mile apart, and have a distance of about 9 feet between them at Spring Tides. From the ship to No. 2 Red Buoy on the side of Clark's Wharf, the compass bearing is E. $\frac{1}{2}$ N. No. 2, *Red Buoy* to Perch Buoy, N.E. by E. From the ship to No. 2 Black Buoy on the side of Yeoman's Wharf, the bearings are N.E. by E. $\frac{1}{4}$ E. *Black Buoy* to No. 3 Red Perch Buoy, N. No. 3 *Red Perch Buoy* is on a circular Cage on the top, is placed on the eastern Point of Low Scare, and is passed on either hand. Vessels entering the Harbour at low water, anchor below this Buoy, where is an excellent holding ground in a depth of not less than 5 fathoms at dead water of Spring Tides, and remain there until a Black Ball, by day, is exhibited at the end of the Pier, and at Half Flood, when there will be a depth of 8 feet in a clear course between No. 4 Buoys up to the harbour. Pass bearings from the Red Buoys are:—To No. 4 Red and No. 4 Black Buoys, E. $\frac{1}{2}$ S. No. 4 *Red Buoy* is on the end of Old Scare, and No. 4 *Black Buoy* is on the end of Stone Scare. The house on the Stone Pier exhibits a White Light from Sunset to Sunrise, and a Ball is hoisted when there is a depth of 10 feet of water between the No. 4 Black Buoys. The Pier Heads are lighted at night by four Gas Lamps, coloured Green to the West and Red to the North. Two Red Lamps about 10 feet up the Pier, when brought into use, lead between the No. 4 Red and Black Buoys.

Pile of Foudry.—Pile of Foudry is near the south end of Walney Island, where large merchant ships in good shelter near the west or east side of Roe Island, in from 3 to 4 fms water. Small vessels come aground in the bight, on the side of Pile of Foudry Island, about 100 fms length from high water mark, where the house bears S. by W. In the bight near Roe Island the streams meet; one from the north, the other from the south, and make it troublesome to keep the anchor clear. The current here runs about 3 miles an hour

when strongest. On the south end of Walney Island is a stone lighthouse, exhibiting a revolving light 70 feet above high water, flashing every minute, visible in clear weather 3 or 4 leagues; there is also a small fixed light of a red colour, $2\frac{1}{2}$ miles W. by S. of this light lays the Fairway buoy for Pile Harbour, marked "Helpsford" in white letters on black ground. On the north side of this channel is Walney Island, which is low land, and on the south side are several sandbanks or stony ledges; the most dangerous of these is the Stony Patch, which lies to the westward of all the others, distant from the lighthouse on Haw's Point about four miles; to clear it to the westward, bring the Old Castle on Pile Island just open to the eastward of the lighthouse. The lead should be kept constantly going, and if coming from the southward, bring Blackcombe Hill on with the north end of Walney Island, and keep them so until Walney Lighthouse comes E.N.E., and the ruin upon Foula Island touches Haw's Point. The Helpsford Sand is on the S.E. side of Walney, within a mile of the shore, to clear which, you must bring the dwelling-house near the lighthouse a sail's breadth open of the southernmost sandhills, or the lighthouse just clear of the eastern chimney of the same house, bearing N.E. by E.; then, as you advance, bring the ruin of the house on Foula, before mentioned, on with Haw's Point, and these marks will lead you in. Upon the bar is 15 feet water at 2 hours' flood, and the rise of tide is sometimes $29\frac{1}{2}$ feet. The strength of the flood tide is $2\frac{1}{2}$ knots an hour, and the ebb nearly the same. In leading to the anchorage with a flood tide, and the wind scant, you may stand along the southern part of Walney about a mile from the shore, and have regular soundings. In dark weather, should you fall in with land bearing E.N.E., and uncertain whether it is Walney Island or the land adjacent to Rossall Point, then you must be guided by your lead, for at the distance of 5 miles from the former are 7 and 8 fathoms, but at the same distance from Rossall there are only 4 or 5 fathoms; allowance must be made for the rise and fall of the tides, making high water full and change at 11 o'clock. In running for the Pile of Foudry anchorage at half-flood, give Haw's Point a berth of half a cable's length, and keep off Pile Castle Point a similar distance, then, should your vessel draw 10 feet water, anchor in the bight below the house on Pile Island, or near to Roe Island, in 5 fathoms, with the lighthouse open to the starboard of Pile Castle. The breadth of the anchorage above Roe Island is nearly 2 cables. Here the ground holds well; as the tide ebbs you become quite landlocked and may shorten your cable, to enable

you to swing clear of either side at low water in 3 fathoms.—Vessels bound from Pile to Barrow should leave Roe Island Pier Lighthouse on the starboard hand, when they will fall in with the Fairway Buoy for Barrow, painted black and white. A strong flashing light from the Iron Works lately erected at Hindpool, $1\frac{1}{2}$ miles north of Barrow, may be seen bearing from Walney Island Light N. $\frac{1}{2}$ W.; Hilp's Ford N. N. E. $\frac{1}{2}$ N.; Cockspeck Scar, E., and may be seen 15 miles seaward.

Ravenglass is a dry harbour, where three rivulets, the Esk, Mite, and Orte, unite about 12 miles to the southward of St. Bee's Head. There is a buoy placed a little within the mouth of the channel, in the middle, near the Fish Wear, which marks the entry. At this buoy, and in most parts of the channel, the depth is 3 fathoms at high water, with neap tides. The best part for vessels to lie aground on is, half a cable's length from the west end of the town of Ravenglass, on the south side of a perch which stands on the point of a sand there. At this anchorage, in the mouth of the river Esk, and also at the meeting of the other rivers, there are 3 fathoms at high water with spring tides, and 10 ft. with neaps. To sail into Ravenglass Harbour, take 4 hours of flood, keep above a mile from the coast to avoid Selker and Drig rocks (till Ravenglass town bears E. N. E.): steer in that course till you see the buoy bearing east, and then steer right for it, keeping within a ship's length off it on either hand; when you are just past the buoy, steer E. N. E., or keep Ravenglass a sail's breadth open to the north of your stern, till you are about half a mile from the east end of the sandy hillocks; hook the small bay, which begins there; keep near a cable's length from the point at the end of the small bay, and anchor half a cable's length from the west end of the town, or off the perch, in the meeting of the three rivers. When the buoy in the entrance bears E., it is also in a line with the south shoulder of Newton Knot Hill, which is a small hill half a mile south of Ravenglass. The tide flows here, full and change, at 11 o'clock; and off the Bar runs as follows: the last half-flood and the first half-ebb set northward, at the rate of 2 miles per hour, spring tides; and the last half-ebb and first half-flood southward at the same rate. There is a foot of water more on the Bar than shown in the Liverpool Tide Table in this Almanack.

St. Bee's Head.—To the northward of Ravenglass harbour, distant 13 miles, is St. Bee's Head. On its summit is a LIGHTHOUSE, the light from which is *stationary*, appearing like a bright star at the distance of 6 or 7 leagues in clear weather. From the entrance of Formby Channel to this Head, the course and distance are N. by E.

20 leagues. In sailing along from Wainwright Island to St. Bee's Head, keep 3 or 4 miles from the shore, and you will clear every danger. Vessels in moderate weather, may stop a tide where along the coast, for the stream seldom runs more than a mile an hour.

Whitehaven.—About 3 miles E. from St. Bee's Head is the town of Whitehaven: the harbour is dry, and divides into basins by strong quays, which run off the sea. Within the second basin is the best place for vessels drawing 10 feet water. Here you will find 15 feet water spring-tides, and 12 to 14 feet water neap-tides. The HARBOUR LIGHTS are upon the outer and inner Pierheads. The inner Light is *stationary*, of a RED colour, and is lighted while there are 9 ft. water between the Pierheads. The outer Light *revolves* and is lighted all night, and is seen at a distance of 3 or 4 leagues in clear weather. The light appears in its brightest state every 2 min., and gradually becomes luminous, till eclipsed. In the day a RED flag is hoisted on a pole at the top of the Lighthouse, while there are 9 feet water in the harbour, on entering which both lights on the starboard hand. A BLUE Light is shown from a light on the end of the north pier, which has been extended 352 yards.

Harrington Harbour is 4 miles N. Northward of Whitehaven. A Lighthouse was erected in 1848 by the late Sir John Curwen, Esq., with Argan burn, visible 10 miles, and is exhibited at night there are 8 feet of water in the harbour in the day a RED DRUM, at the inner end of the pier, during the same interval of tide.

Workington is 2 or 3 miles N. eastward of Port Harrington. A red flag is hoisted upon a pole on St. John's pier when there are 8 feet water in the harbour; and at night a light is exhibited from the pier-head, which answers a like purpose and can be seen in clear weather about 3 leagues from any point seaward. The channel into this port is along the south shore, its entrance bearing E. by S. St. John's pier nearly E. by S. by compass. It is formed by red buoys on the north side and black buoys and perches on the south side, the deepest water being a narrow way between. The outer perch has a white board upon it painted black, which must be kept upon it on the port side in entering. Steer between the perches and red buoys, giving St. John's pier-head a berth of about 50 feet on the starboard side. After passing St. John's pier a perch with a white board upon it is the leading mark for the channel by day; and by night, the southernmost of the blast furnaces, the north side kept right a-head, until the inner light which is on a wooden pier.

out S.E. $\frac{1}{2}$ S.; then steer S.E. $\frac{1}{2}$ E. entrance to the harbour, keeping it upon the wooden pier on the rd side, and passing a perch with black cask upon it by about 10 the larboard side, when the har- it will be in attendance.

Port, situate about 5 miles N.E. ington, is easy of access, free from rks, and has a capacious dock, in essels are kept constantly afloat, is its original tidal harbour and Depth of water in ordinary spring ft. 6 in., neap tides, 13 ft. 6 in.; ding 3 feet to the water shewn in s Liverpool, and the Manx tide near approximation for each tide obtained. A fixed bright light is d on the outer pierhead all night, ther on the inner stone pier whilst e 8 feet in the harbour; both lights he starboard side in entering, and le at sea from E.N.E. to W.S.W., er at a distance of 15 miles, and r 10 miles. A Red Ball near the phthouse denotes 8 feet in the day The Jetty on the south side is dis- ed by a Red light, and the north y a Green one. Steam tugs are times every tide, and when re- y vessels at night, two lights e shown one above the other; or a union jack at the main. There anchorage in stiff clay, about 1½ shore, the outer lighthouse bear-

Frith.—The entrance to Frith may be considered to com- abreast of Workington, on the , and at Abbey Head on the Scot- re, the distance between which is es. On the eastern side of the Solway, about ten miles north- om Maryport, is

Silloth.—This place is daily in- ; in importance, being connected ay with Carlisle, Newcastle, and gh, the rails of which are laid on rs. It contains a wet dock, with e gates 60 feet wide, and a jetty e dock entrance 1000 feet out- o low water mark. The dock is p with Hydraulic Machinery, by essels are discharged and loaded e greatest possible dispatch. The ll is 3 feet 6 inches above low ark, and by adding 5 feet to the ol tide table in this Almanack, the ver the sill will be given for high

A Yellow Light is shown in the ouse at the outer end of the jetty nset to sunrise; except during the e gates are open, when the Yellow s discontinued and a Green Light bited in its place. A Red Ball is l on a pole at the Lighthouse the time gates are open by day.

In Silloth Bay (between Lee Scar Light and the jetty) there is excellent anchorage in from 4 to 6 fathoms at low water, clay bottom. There is also good anchorage in Catherine Hole, a little above the fairway buoy. It is high water here, full and change, 11h. 35m.; spring tides rise 26 feet, and neaps 20 feet. The fairway course, from about a mile off Workington to the Lightship at the entrance of the channel, is N.E. $\frac{1}{4}$ N., and to avoid the tail of Robin Spit, care should be taken not to bring the vessel to the eastward of N.E. by E. This Light vessel is in the middle of the channel, in 3½ fathoms at low water; and exhibits a Fixed Red Light at 25 feet above the water, visible six miles. From it Maryport outer light bears S. by W. $\frac{1}{4}$ W., 4½ miles; Southern- ess light, N. $\frac{1}{4}$ E., 5½ miles; and Lee Scar light, E.N.E. 6 miles. It has a black ball at the mast head during the day, and in fogs a bell is tolled. Having passed the Light Ship, run up N.E. by N. $\frac{1}{4}$ N., keeping the West Furnace light at Work- ington a ship's length S. of the Lightship, which will lead up mid-channel to near the turn buoys B 2 black, and B 2 red. where the bright light on Lee Scar comes in one with the Cott Red light, bearing E. by N. $\frac{1}{4}$ N. alter your course to that direction which will carry you up the fairway to Lee Scar. On passing the lighthouse, keep a good cable's length to the northward of it. Silloth Dock is about half a mile above Lee Scar. When fol- lowing the preceeding instruction, it is necessary to bear in mind that, as far as Silloth Bay, the black nun buoys should be kept on the port, and the red can buoys on the starboard hand. The black and white striped buoys marked E, in the fairway off Beckfoot is passible on either side. The shoalest part of the channel, in which there are 2½ fathoms at low water, is a little below the turn buoys; thence up to Silloth the depths are from 3 to 5 fathoms. At Lee Scar there is a tide gauge indicating in large figures the depth of water in Dock Entrance Chan- nel. A bell is tolled in the lighthouse during a fog. A steam tug is in attend- ance to tow vessels in or out of Dock on reasonable terms. Branch pilots may be had (if required) off Maryport; charge, 1s. 9d. per foot to Silloth. The harbour expenses are (including buoy and light charges):—Coasting vessels, 6d.; vessels to or from foreign ports, 9d. per register ton.

Port Carlisle, a dry harbour, 10 or 11 miles up the Frith from Silloth Bay, is connected with Carlisle by railway, the rails of which run on the quays. It is high water here, full and change, at 12h. 10m.; springs rise 18 feet, and neaps 11 feet: the flood runs 3 hours. Vessels

running up from sea and bound to Port Carlisle should alter course for the North Channel at the Fairway Buoy, and haul across N.E. by E. to buoy marked No. 1, from which N. by E. $\frac{3}{4}$ E. leads up past buoy No. 2 to buoy No. 3; thence N.E. $\frac{3}{4}$ E. leads up to Perch Buoy in Powfoot Channel. Vessels in the anchorage at Silloth bound up, may, after half-flood, take the South Channel, after leaving the Bay N.E. $\frac{3}{4}$ N. will lead up past buoy No. 1, thence N.N.E. leads up past No. 2, and White Buoy into Powfoot Channel; afterwards follow the buoys up, which are all placed in the fairway. The harbour expenses, including light charges, are:—coasting vessels, 4d.; to or from foreign ports, 9d. per register ton. Pilots may be had off Maryport; charge, 3s. 6d. per foot. At Annan Foot there is a bright tide-light, and two perches on the western side of the entrance; the light is shown from half-flood to half-ebb. A bell is tolled at tide time during fogs. There is also a tide-light on the end of the jetty at Port Carlisle, three miles above Annan Foot, on the opposite or southern side of the channel; this light opens off Knockcross Point, on a S.E. by E. bearing. After passing Annan, soundings should be taken off the English side of the channel up to Port Carlisle.

Magnetic Bearings & Distance

FOR THE WEST COAST OF ENGLAND
WESTERLY VARIATION 25 TO 26 DEGREES.

BUOY NELSON, OFF PRESTON (Lat. 43 N., Long. 3 11 14 W.) MILES
To Beaumaris entrance... W. by S.
Dundalk Bar..... N.W. by W. $\frac{1}{2}$ W.
Douglas Head Light N.N.W. $\frac{3}{4}$ W.
Ross Light, Kirkcudbright.... N.
WYRE LIGHT, FLEETWOOD (Lat. 53 14 N., Long. 3 1 46 W.)
To Great Orms Head.. S.W. by W. $\frac{3}{4}$ W.
Dundalk Bar.... N.W. by W. $\frac{3}{4}$ W.
WYRE LIGHT, FLEETWOOD MILES
To Wicklow Head Light W. $\frac{1}{2}$ S.
Calf of Man L'ts. N.W. by W. $\frac{1}{2}$ W.
Walney Light N. by W. $\frac{1}{2}$ W.
WALNEY LIGHT (Lat. 54 2 56 N., Long. 3 10 32.)
To Wyre Light S. by E. $\frac{1}{4}$ E.
N.W. L'tship, L'pool. . S.W. by S.
Kish Lightship W. $\frac{1}{2}$ N.
Calf of Man N.W. by W. $\frac{3}{4}$ W.
ST. BEES' HEAD (Lat. 54 30 50 N., Long. 3 18 W.) MILES
To N.W. L'tship, L'pool S. by W. $\frac{1}{4}$ W.
Tuskar Rock Light S.W. by W. $\frac{1}{2}$ W.
Douglas Head Light .. W. by S.
WHITEHAVEN (Lat. 54 33 N., Long. 3 2 W.)
To Beaumaris entrance .. S.W. $\frac{3}{4}$ S.
Skerries Light .. S.W. $\frac{1}{2}$ W.
Bahama Lightship W. by S. $\frac{3}{4}$ S.

WEST COAST OF SCOTLAND.

SOUTHERNESS LIGHT TO THE MULL OF CANTYRE.

Southernness Light, at the west side of Solway Frith, is chiefly useful as a direction to the harbour of Dumfries. It shows a fixed bright light, from N.E. seaward to W., which can be seen at the distance of 11 miles in clear weather.

Little Ross Island—A Lighthouse has been erected upon this Island, which lies off the entrance of Kirkcudbright bay and harbour. It bears a fixed and flashing light, producing 12 bright flashes in a minute, visible from N. by E. to N.W. by W. Southerly, at the distance of 6 leagues.

Kirkcudbright is formed by the Points Balmae and Torrs to the E., and the Island of Little Ross to the W. There are two Towers on Little Ross bearing S.W. from each other, which being kept in one lead over the Bar in the best water to the First Perch on the S.E. shore; thence running N.E. about 300 yards, passing a Red Buoy on the point of the bank on the larboard hand; thence

N.N.W. passing the Perch on the point of St. Mary's Isle on the starboard hand; thence direct to the lower Fish-house, where is a Pool a vessel can ride afloat at spring ebbs. Abreast and above the upper Fish-house there is an excellent lying on soft mud, moored to rings on the rocks, and no stream of tide. On the bar of Kirkcudbright River there are about 7 feet water at half-flood. Vessels running for this place, and not having water over the Bar, will find good anchorage in the Ross Roads in from 2 to 3 fathoms at low water, in good clay ground. Should the wind be Southerly blowing hard, a vessel should bring up on the W. side of the beach just as the sound begins to open, the closer to the beach the better, as it is very steep-to and quite out of the sea. At half-tide she can trip and run up the lake to the Lake or Fish-house, or waiting 4 hours' flood may run up for the Perch off St. Mary's, and proceed to Fish-house or the town. The coast from Kirkcudbright to Belcarey Bay

Urr is a bold rocky shore, with each nor harbour.

rey Bay, about 8 miles to the ey Head, is formed by the High Aairs to the W., and Heston the E.; entrance $\frac{1}{2}$ a mile wide on Island is also high, and high middle: this is an excellent place little known. Vessels running uld keep close past the Aairs, close up till they come above almon weir opposite the large he bight, when they may go as ater will admit, as it is all clean nd quite landlocked from all The tide sets strong E. and W. ese places, till a vessel comes points mentioned.

n Bay lies to the westward of ight Bay, and has a spacious with several places where ves- stop in moderate weather, or wind blows off the shore. The nel at the north-west or upper e bay, leading to the town of intricate, and only fit for small o know the place. Vessels may ood anchorage in 7 or 8 fathoms a mile to the northward of ed, and half a mile from the ere the bottom is clean sand.

ston.—This is a safe and dry harbour in the north-west Wigton Bay, with a convenient nest which small vessels lie on ad soft bottom. The outer bay from W. winds, and good an- etween Criggleton Point and Point. There is a small ship a town with good supplies at . When desired a light is shown pier-head, which has been re- ended 250 feet, and where are , 18 to 20 feet, and 11 to 12, om the pier-head the Ross s S.E. by E. In taking the eep the perch off the break- he larboard hand. Port char- rton; harbour boat, 3s. to 6s.

horn.—To the southward of d and near Burrow Head is Island, between which and s Whitehorn harbour, in which awing 12 feet water cannot t above twice a year at the t is well sheltered from all he only danger is the Screen's cky ledge, marked by a perch, from the west point, upon tide sets very strong. Going harbour from the west, if Stein kept open of Kairnharrah Hill ar the rocks on the west side.

Glenluce Bay.—To the westward of Burrow Head is the bay of Luce, within which and near to the Mull of Galloway lie the Scar Rocks, always above water. There are no shoals near them; but off the Little Scar are two or three rocks, which the sea sometimes washes over. In moderate weather, with W. and S.W. winds, vessels may stop anywhere on the west side of the bay of Luce.

Mull of Galloway.—On the South- ern point of the Mull of Galloway, a Lighthouse has been erected, and bears, by compass, from the largest of the Scar Rocks, W. $\frac{1}{2}$ N., 6 miles; from Burrow Head, W. by N. $\frac{1}{4}$ N., 18 miles. The light is intermittent, $2\frac{1}{2}$ minutes bright, then eclipsed $\frac{1}{2}$ a minute; is visible sea- ward 23 miles from N. E. to N. W. $\frac{1}{4}$ W.; but the high lands of Dramore shut the light from the view of the mariner in coasting along the Port Patrick shores. After rounding the Mull, which is a rocky shore, you will soon reach

Cromack Point, about 4 miles from which is

Port Nessie Harbour, fit only for small craft; but a vessel drawing not more than 6 or 7 feet, may find shelter from N. or N. W. winds, by running aground near the pier head. Seven and a half miles further is

Port Patrick, a small and dry harbour open to the westward. Small vessels must go in at high water, and run aground on the N. side of the creek, or within the pier, so as to be out of the reach of the sea, in case the wind should blow from the W. or South-westward.

Point Corsewall is about 14 miles to the northward of Port Patrick, and is the north-west point of entrance to Loch Ryan; between are some rocks, but they lie close in shore, and are mostly above water. On the rocks off Laggan Point, called Ebbstone Rocks, which dry at low water, is a red beacon consisting of a pyramid of iron pillars, 40 feet high, with a cylindrical open cage on the top. From it Corsewall Lighthouse bears N.E. by E. $\frac{1}{4}$ N.; and Laggan Point, S.S.E. $\frac{1}{2}$ E. On Corsewall stands a Lighthouse, exhibiting a white and red light alternately; these lights revolve, and attain their greatest brilliancy every 2 minutes. They may be seen, like a star of the first magnitude, at the distance of 5 or 6 leagues, and are visible from N.E. by E. northerly, to S.W.

Loch Ryan is capacious, of easy access, well sheltered, with good holding

ground, and depth sufficient for large vessels. The only danger to be avoided is the Scar, a tongue of sand on the western side of the Loch, and about 3 miles up the harbour, which extends $1\frac{1}{2}$ miles south-eastward from Kirkholm Point. There is a large Red Nun Buoy on the S. end of the Scar, which distinctly shews its position. The best anchorage is about half a mile to the southward of Cairn Point in 6 or 7 fathoms. On this point is a tower, exhibiting a fixed light of the natural appearance, serving to lead to the anchorage. Opposite the Lighthouse Tower is a small Red buoy to mark the eastern edge of the Scar. Fourteen miles N.N.E. from Loch Ryan is the

Craig of Ailsa, a rock 940 feet high, with deep water all round it, serving as a beacon to guide ships to the entrance of the Clyde.

The **Frith of Clyde** makes a fine open entry to several rivers, having no danger more than a quarter of a mile from the shore, excepting the Brist Rock, which lies three-quarters of a mile W. $\frac{1}{2}$ S. from Turnberry Point; it dries at half-ebb, and is about half a mile from shore.

Ayr.—Ten miles from Turnberry Point is the Town of Ayre, with a lofty spire seen from a considerable distance. Here is a commodious harbour fit for vessels drawing 12 to 14 feet water. The bar, at low water, has from 4 to 6 feet water over it, and with spring-tides at high water there are from 13 to 15 feet, and with neap from 11 to 12 feet over it; with fresh southerly winds there will be a foot more, for S. and S.W. winds raise the tides in all the rivers of the Frith of Clyde, and N. and N.E. winds have a contrary effect. On the north side of the harbour is a lighthouse exhibiting two lights; the upper bright, having a star-like appearance, and the lower red. There is also tide-light red, shown when 8 feet of water is on the bar. The distance between the lights is 850 feet; and they bear from one another S.E. by E. $\frac{1}{4}$ E., and N.W. by W. $\frac{1}{4}$ W., and are leading lights for entering the harbour, and when kept in one lead over the bar in the deepest water. The upper or bright light may be seen 12 miles, the red 9 miles, and the tide light 4 miles off. Vessels drawing 7 feet water may make directly for the bar so soon as the tide lamp is lighted. A flag is hoisted in day-time at half-flood, and continues to be so until half-ebb. About a cable's length S.W. of the south pier lies St. Nicholas Rock, which dries with spring tides only: you will avoid it by keeping the two red buoys on the starboard hand coming into the harbour, the breakwater

being on the port hand. There is an iron steam tug for towing vessels in and out, and the bar and harbour are being further deepened by means of a powerful dredging machine.

Troon Harbour has an extensive pier and breakwater, with 4000 feet quayage room, and an average depth 12 feet at low water; at the outer end the rise and fall of the tide is from 8 to 10 feet. About 1 mile S.S.W. of Troon is the Lady Isle, a large patch of rock with a large and small Beacon on it. The Beacons are not leading marks, and there is plenty of water inside the Isle. At a distance of half a mile N.E. from the pier is a half-tide shoal, on which is a buoy. Here are exhibited two Lights, one, on the inner end of the Pier, intermittent, 40 seconds bright and 20 seconds red; the other on the Pier-head. They bear from each other N.E. $\frac{1}{4}$ N. $\frac{1}{2}$ S.W. $\frac{1}{4}$ S. 350 yards; and are visible, respectively, 9 and 6 miles. This harbour is perfectly safe, and may be run for in any weather by vessels of moderate draught of water, as there are no dangers but which are to be seen, and pilots are always at attendance. An extensive open wet dock or basin, 400 feet long by 300 wide, with 20 feet at low water tides, and capable of admitting the largest ships or steamboats adds to the importance of this port. A branch of the Glasgow and Ayr Railway comes down to the harbour, as does also the Railway of the Duke of Portland from Kilmarnock. There is also an extensive ship-yard, with one of the finest graving docks in the west of Scotland, capable of receiving ships of the largest size. The magnetic bearings and nautical distances are as follows:—From Troon pier head to Ayr Harbour, S. by W. 5 miles; Dure Point, S.W., 9 miles; Beacon on Lady Isle, W. by S. $2\frac{1}{2}$ miles.

Irvine.—Four miles and a half from Troon are the town and harbour of Irvine, and nearly midway is Lappock Rock upon which was erected, in 1843, a beacon about 40 feet above the level of the sea, bearing S.W. Southerly, distant about 12 miles from Irvine Bar. There are no less than 12 to 13 $\frac{1}{2}$ feet water on the bar at high water spring tides; ordinary tide 12 feet; and at low water 4 feet. There is a red warping buoy placed in the fairway of the river, about two cable's length from the bar perch, which perch must be kept on the starboard hand on going in. There are also pawls all the way up the river on both sides. Vessels running in should keep the middle of the river, and run right up till they come to the end of the stone quay, where they can either beach or anchor. There is a steam tug for vessels frequenting this harbour.

Ardrossan.—At about a mile to N.W. of Saltcoats are the spacious dock and harbour of Ardrossan, in 100 sail of coasters can lie with

The pier and breakwater comfortably shelter the harbour from southerly and westerly winds; and Horse Isle, and other rocks, protect it from the

The greatest depth at low water in the Inner Tidal Harbour is 10 feet, and in the Outer Harbour 18 feet. The entrance to the wet dock is 160 feet

and 40 feet wide; and at average low tide there is a depth of 18 feet over the

lock. The railway trains come alongside all the berths in the wet dock and harbour. There are a graving dock

and a slip attached to the wet dock. In place of the two previously existing

lighthouses, a new lighthouse, exhibiting a red light, has been erected at the

entrance of the Breakwater. This light illuminates an arc of from 15° to 20°

in the direction of the open channel leading into the harbour, and bears from the middle of this channel E. and by N.,

which bearing it is brightest. A vessel running for the harbour should steer the usual course from Pladda towards

Cumbray Light, and when about 14 miles from the former, and 7 miles from the

other light, the Ardrossan Light will be seen, in favourable states of the weather,

on the starboard, at the distance of about 10 miles, and bearing E. by N. In running

into the harbour the light should never be lost; but the vessel must be kept

in the illuminated space, in which there is nowhere less than 22 feet at low

water. A black buoy marks the north end of the channel by day, which is on

the west Grinan Rock, and there is a light on the Grinan Rock, both to be

seen on the Port hand in entering.

River Clyde is remarkable for the ease and safety with which it may be navigated. It is provided with numerous

sheltered harbours, and spacious roads of the sea, of easy access, and capable of containing the largest fleets. In

approaching it, there are neither rocks nor shoals, nor rapid tides to be feared.

There is a high mountainous rock in the mouth of it, conspicuous at more than 10 leagues' distance, and serves as a remarkable beacon to direct ships to it; there

are four Lighthouses to direct mariners far up, and to good shelter in the night; but there is hardly one opening to be

seen but what a stranger, without chart or pilot, might safely venture to run for the day time, and find good anchorage within it. On coming up the S. or St. George's Channel, and passing Ailsa Rock

which forms the harbour of Lamlash. If at night, the Lights will be seen on Pladda, a small low island off the S.E. of Arran

Isle. The distance between Ailsa Rock and Pladda Lights is about 11 miles, and from Pladda Lights to the Light on Cumbray Island 18½.

There are very large Furnaces of Iron Works between Troon and Ardrossan, which shew for a long

distance at night, and might mislead a stranger, unless aware of what they are.

It would, however, be advisable for strangers to keep between the Rock Ailsa and the Island of Arran, till daylight. When

coming in the North Channel, particularly during the winter months, with a N.W. gale, ships should never run to

leeward of Arran during the night, but as soon as they pass the Island of Sanda,

inside the Mull of Cantyre, they should haul by the wind, on the larboard tack,

with the ship under easy sail, standing 2 hours each way. By this you keep in

smooth water, and when daylight comes, can act according to circumstances.

Should you run to the leeward of Arran, the wind, which was N.W. will be found

at N.W. by N., and sometimes N.N.W., blowing heavy, with very heavy gusts.

Keeping to windward, should the gale increase or continue long, you have Loch Ryan under your command; its entrance

about 17 miles S. ½ W. from Ailsa; but once getting to leeward you can never regain

your ground. On approaching the Cumbray Islands, 3 entrances appear before

you: the middle one is the main ship channel. In clear weather you cannot mistake

the Cumbray Island, being distinguished by an old Light Tower on its highest part,

a little to the southward of the present Lighthouse, which is low down on the

hill side. There is a good ship channel to the eastward of the Cumbray Island,

but strangers should never attempt it without a pilot. The part of the Island of

Cumbray on which the Light stands is bold and steep close to. Opposite to it

lies the Island of Bute, the nearest point of which is Garroch Head, distant

about 3 miles. Entering between these two headlands, with the Cumbray

Light on your starboard hand, when in mid-channel your course to the Light on

the Point of Clough is N.E. ½ E., 12 or 13 miles. In proceeding on this course, a

little more than half-distance, you will see a REVOLVING LIGHT on your

larboard hand, situated on the Point of Toward, which forms the starboard side of

the entrance of Rothsay Bay. The Clough light stands on a bold shore. On the

opposite side is the town of Dunoon, off which lies a ledge of half-tide rocks, called

Gantocks. The position of these rocks is marked by a large stone obelisk, which

can be seen from a considerable distance. The river afterwards inclines a little to

the eastward, until you get opposite to Gourrock, in a small bay on your starboard side. Opposite the middle of this bay is good anchorage; and here it is advisable to anchor till a pilot comes on board. The mark, the centre of the bay with the Clough Light on with Kempuck,

Greenock, which is the chief port for large vessels on the Clyde, has three fine basins adjacent to each other. They are known as the west, the east, and the Victoria harbours. Between the piers, at the entrance of the west harbour, there are about 20 feet at high water, spring tides, and from 10 to 12 feet at low water; alongside the quays is a depth of from 17 to 19 feet. The east harbour contains about the same depth of water, but is more spacious; on the quay is a crane capable of raising 50 tons. The custom-house stands between these two basins. On the eastern side of the east basin is the Victoria harbour, opened in 1851. It has an area of 6 acres, is 563 feet long, and 458 feet wide, with a uniform depth of 26 feet at high water, and 14 feet at low water, spring tides. On the quay is a large crane of 70 tons lift; there is also 2 steam cranes of 15 tons lift, for loading coals. Connected with the east and west harbours are graving docks, the width of their respective entrances being 34 and 38 feet. There are two lines of Rails all round the Victoria and East Harbours, in connection with the Caledonian Railway. A large Coal Shoot has been erected at the East Harbour, from which a great quantity of Coals are shipped daily. A small light is placed on the quay, in front of the custom-house, as a guide to the shipping, and lights of a red colour are exhibited at the several entrances of the port. In the roadstead are warping buoys; but in order to avoid the shoal off the custom-house, care must be taken to anchor as close as possible *outside* the line of buoys. The best anchorage for small vessels is off Albert Quay, in 4 fathoms water. About a mile N.N.W. of the custom-house are two fixed red lights, visible at the distance of two leagues; when in one, bearing W.S.W. $\frac{3}{4}$ W., they lead to the anchorage below the "Tail of the Bank."—**COCKLE BANK** reaches from the east end of the town of Greenock to the *Old Castle of Newark* at Port Glasgow. A new harbour is now building to the N.W. of Mr. Scott's Building Yard, for the discharge of timber laden vessels, the depth of water at spring tides to be 27 feet, with a large space for storing deals.

Port Glasgow.—The channel from Greenock to Port Glasgow is narrow and intricate as far as *Garville Point*, and should not be attempted without a pilot;

about a $\frac{1}{2}$ of a mile N. from Garville is a buoy on the south edge of the *Bank*. Keep that buoy on the port and run about a cable's length from it. Near the E. side of Garville Point beacon, which pass on the starboard keeping not less than two ships' from it, nor more than half a cable avoid the Cockle Bank. Between last-mentioned beacon and *Inch G* first a buoy and then a beacon; keep on the starboard side, sailing at the tances before directed. There is a beacon near the quay of Port Glasgow which you must pass at 2 ships' length the starboard side, and enter the harbour about high water. At the quay the water for small craft only. At low it is dry, and with spring tides is capable of containing vessels that draw 10 feet water; the ground is soft and easily lie on, and a good place for graving bottoms is made here. A light is exhibited on the pier to direct the steamers; at the entrance of the harbour is a light of a red colour on the west quay. About four miles from Port Glasgow is

Dumbarton, a creek in the mouth of the river Leven. Vessels drawing more than 8 or 9 feet may go in at low water. If pilots cannot be had, the following directions may be useful. Weigh anchor and sail from Port Glasgow at flood; keep a cable's length from shore at the Old Castle of Newark; from there steer eastward between Audoch and Dumbarton Castle, about 2 miles, until you come abreast of Finlayston; then steer south-eastward for the western buoy Dumbarton Castle; there anchor until it is high water. Leave that buoy to port and the other on the starboard, stand in for the entry, keeping that buoy close until you have passed the Castle.

Between Port Glasgow and Bow Bay are three Lights; at Auchencrow the Garmoyle Floating Light, and the third about a mile above Dumbarton all to be left on the starboard hand going up the river.

Glasgow.—On the lower or western extremity of Broomielaw Quay, and on the east hand going up the river, a light, of a white like appearance, is placed for the direction of shipping.

Isle of Bute.—To the westward of the Isles of Cumbray is the Isle of Bute, the eastern side of which, directly opposite Great Cumbray, is Killichattan Bay, where vessels may anchor in from 11 to 16 fathoms. To the northward is the Bay of Rothsay, the ground good and clear and well sheltered: you may anchor in any part on the E. side of the Bay: but the most convenient place is 2 cables

of the pier-head, in order to be retract of the numerous steamers from the pierhead to all parts of

of Bute.—The channels between the Main and the Main are termed of Bute: their access is easy, sheltered, the bottom is extraordinary, and the depth sufficient for ships. They are distinguished names of the East and West Kyles.

of Arran lies to the south: its S. E. extremity lies the PLADDA, upon which a LIGHT is erected, 3 miles north-easterly is the ISLAND OF LAMLASH. It lies right in the front of the arms a good and well-sheltered: the N. side of it is shallow, cables' length from the shore, best parts to ride in are off in Holy Island, in 9 or 10 or about 2 cables' length E. E.N.E. from the pier at the Lamlash. A red buoy (called n's) is placed on a rock, with 14 water in the south entrance to. You can go either side; but the is best. At the north entrance mainland side is Hamilton's Rock, in thick weather, a good look will be kept, though it is scarce a from the shore and never quite. The lighthouse on Pladda exhibits bright fixed lights, and may be seen S.E. by E. northerly, to S.W. the upper at 17 and lower at 14 fathoms. At the northern extremity Island is

Ranza, the ground in which good, and water sufficient for ships, but the place being narrow it fits for small vessels only. On the side of the entrance there is a ledge, dry at low water, which extends one-third over to the opposite side. To avoid this ledge, keep in the middle of the channel. Anchor abreast of the Ballino, in 5 or 6 fathoms nearest the E. side of the Bay, cables' length north of the Old which stands quite at the bottom of the bay.

Fyne.—After passing Ardnamurchan Point, the entrance opens to the west, and is about 7 miles from the Point, forming an arm of the Loch, running in northwardly then eastward for a distance of 35 miles. The middle is too deep for vessels to anchor. The east side from Skate to Killfinan Bay is rocky, but extends far from shore, and they are mostly above water, so can be seen;

but deep water close to them. There is good anchorage in Kilbrennan Bay, and from there to the Spit of Otter Ferry, which is a shoal about two cables' length from shore, having a beacon on the North Point. On the west side of the Loch, about 6 miles from Skipness Point, is the little harbour of EAST TARBET well sheltered and good bottom, much frequented by steamers and small vessels; but the entrance narrow. From there, passing northward, you leave Barmore Island on the left, giving it a berth of a cable's length or so, to avoid some half-tide rocks off its N.E. end, and from there to Invermel Bay the coast is bold. Off the Church at Invermel there is a shoal about 2 cables' length from shore, with only 8 feet water on it. From thence to Ardrishaig Point the coast is clear, up to the Pier Head, on which there is a Lighthouse showing a fixed light. There is good anchorage on the north side of the Pierhead, and on the opposite side, north of Ilan Yone, in a line from the Pier, and about half a mile distant, there is a shoal near mid-channel, marked by a white buoy, and having only about 4 feet of water over it at low water. The shoal can be passed on either side: but the west side is the best. It is foul ground from Ilan Yone to Silver Craig. Abreast of the beacon on Otter Shoal, which you pass on the right, the channel is narrow, but clear, with strong tides. Sailing up Upper Loch Fyne the south side is clear to the head, and is the side used by sailing vessels. On the north side, passing the narrows at Otter about one mile, you open Gaerloch, a fine safe bay, much used by fishing vessels, having good anchorage in 3 fathoms water, but only narrow. Passing on you come to Minard Point, behind which there is good anchorage. Opposite Minard Castle, there is a shoal in the middle of the Lough, marked by a beacon on each end, the middle dries at low water. You can go on either side, but the west is the safest. Nearly abreast of Castle Lachlan is Paddy's Rock, keep the south side. Following the north shore, the whole coast round Furnace Point to Inverary is clear. South of the Pier of Inverary is a shoal called the Otter, to which a berth of 2 cables' length from the shore must be given. Anchor north of the Pier, and nearly opposite the large bridge, in a line with Inverary Castle, in 8 or 9 fathoms water. From Inverary to the head of the Loch is clear, and very deep water, so that it is safe sailing up at any time.

Campbeltown Harbour lies about 11 miles south westward of Point Cartladie; it is large, well sheltered, the ground good, and there is very little to be feared in sailing into it. On coming

from the S. or S.E., you will first see the Island of Devar and the *blind* sound to the southwest of it, through which is a view of the town. On Otter Buoy the north-east point of Devar Island, is a light-house, from which is exhibited a bright light every half minute: it is visible from N. $\frac{1}{4}$ W. to E. by S. by the N., and may be seen in clear weather about 15 miles. This light is a good light for clearing Paterson's Rock; if kept in sight, it will lead about 3 miles to the eastward of it. In standing in for Campbeltown at night, be careful to keep to the eastward until the light upon Devar Island is fairly open; then stand for it, keeping it on the port hand, and steering about one or two cables' length from the point of the Island, until you open the harbour; then haul up W. $\frac{1}{4}$ N., or W. by N., still keeping about the same distance from the shore. When abreast of the western end of Devar, a black buoy will be observed on Mulbeg Bank, about 60 fathoms from the Island; this must be passed on the port hand. Steering half a point more northerly, you will next pass on your starboard hand, a red buoy, placed nearly opposite a sandbank, which is always dry, except with spring tides. On this bank is a beacon, painted black. There is also another beacon, painted red, on Trench Flat. Hence the red light on the north pier will be seen, and soon after, on passing Trench Point, the green light shown from Dolintober Quay. Now steer W.N.W., or N. W. by W., and you may come to an anchor in any part of the loch—observing, however, to give the west shore a berth of two cables' length. In the Loch, inside the beacons, the deepest water is on the north side; a stranger should, however, keep the lead going, if working in, and put about the first shoal cast, as the bank is steep on both sides. The harbour has a depth of water of from 5 to 10 fathoms. Masters of vessels turning in with a west wind at night, must be careful not to shut the light on the Island when atanding south, but tack as soon as it becomes obscured by the high land of the Island, for in that case they are close to the South Bank, and the water shoalens at once; but by keeping the light E. by S. they will go clear. At night, however, it will be better to anchor at Black Rock, on the north side, about a quarter of a mile E.N.E. from the red buoy, or when Devar light bears about S.E. in 4 or 5 fathoms water, good holding ground, and well sheltered, being within Macrinian's Point, which forms the north entrance to the harbour.

Sanda Island.—About 9 miles south of the Island Devar is the Island of Sanda, a dangerous Island, being surrounded by ledges of Rocks. There are several ledges

of rocks about the east and west end extending about a cable's length from shore; and near Gluinmore, which is always above water, there are several rocks that dry at low water, also off the east end around Island Ilanagurach. In the sound, between Ilanagurach and Sanda, is the anchorage, a kind of harbour fit only for small vessels in summer time or in moderate weather. It is protected by the reefs in the sound—the reef to the west, on which there is a beacon pointing out the anchorage. Anchored when Fair Head is shut up on the end of Sanda in about 10 feet water, close to the houses, off an old quay. No vessel should attempt to pass between Sanda and Island Ilanagurach, the tide being strong and running very irregular. Round Gluinmore and Island Ilanagurach are reefs and sunken rocks with deep water. Off the ship rock of Sanda, in lat. $54^{\circ} 16' 30''$ N., and lon. $5^{\circ} 34' 55''$ W., a lighthouse exhibiting a fixed red light, has been erected. It is visible from N.W. $\frac{1}{4}$ W. to S.E. by E. $\frac{1}{4}$ E. by south-westerly, and may be seen at the distance of 5 leagues. It bears by compass from Pladda Light W. by S. $\frac{3}{4}$ W., 18 miles; from Ailsa Craig N.W. by W. $\frac{1}{4}$ W. 16 miles; from Corsewall Light, N. by W. $\frac{1}{4}$ W. 22 miles; from the Maiden's Rocks Lights, N.E. $\frac{1}{4}$ N., 21 miles; from N'most Point of Rathlin Island, S.E. by E. $\frac{1}{4}$ E., 21 miles; and from S'most Point of the Mull of the Cantyre, S.E. $\frac{3}{4}$ E., 6 miles. From Sanda Light, E. by S., distant $1\frac{1}{2}$ miles, is the Paterson's Rock Buoy, pointing out a dangerous rock, uncovered at low water. When the Mull Head of Cantyre is seen to the southward of Sanda, you are to the southward of this rock; when the Mull Head is to the northward of Sanda, you are to the northward of it. When Gluinmore Rock appears to the west end of Ilanagurach you are to the eastward; and when Gluinmore Rock appears to the east end of Ilanagurach, you will be to the westward of Paterson's Rock. A Beacon is now erecting on Patterson's Rock. In sailing east along the south end of Sanda keep the light in sight and you will pass south of the rock: the light is shut when you are in a line with the rock, and when the light is seen over the hill on east end you are within the rock.—Tides.—High water inshore 9, middle channel 10 30, a.m.

Tides.—The stream of flood within a mile of the Mull Head runs southward, and turns sooner than at a greater distance from the land, so that a vessel keeping near the west coast of Cantyre, will have the benefit of the stream 2 hours before one above a mile from the land.

Magnetic Bearings & Distances

FOR THE WEST COAST OF SCOTLAND.

WESTERLY VARIATION, 25 TO 26 DEGREES.

ROSS, OFF KIRKCUDBRIGHT, (Lat. 45° 46' N., Long. 4° 5' 1" W.) Miles

Maryport SE by E 20

St. Bees' Head Light .. S by E ½ E 21½

Rossall Landmark S ½ E 61½

Buoy Nelson, off Preston..... S 71

S.W. Lightship, Liverpool .. S ½ W 83

Beaumaris entrance SSW 85

Bahama Lightship. I. M. ... SW by S 26

MULL OF GALLOWAY (Lat. 54 38 9 N., Long. 4 51 20 W.)

Beggar Scar Rock... .. E ½ S 6

St. Bees' Head Light..... SE ½ E 43

Point of Ayre, I. M..... SE by S ½ S 21

Bardsey Island Light SSW ½ W 113

Smalls Light SW ½ S 180

Tuskar Rock Light..... SW 153

MULL OF CORSEWALL (Lat. 55 0 29 N., Long. 5 9 28 W.)

Larne Loch Light W ½ N 24

Fair Head NW ½ N 37

Mull of Cantyre NNW 30

Sanda Light N by W ½ W 26

Pladda Light NE by N ½ N 25

Ailsa Rock NE by N 14½

Cumbay Light NE ½ N 43

Ardrossan Harbour..... NE 40

TROON (Lat. 55 33 N., Long. 4 41 W.)

To Heads of Ayre SW ½ S 8

Corsewall Light..... SW ½ W 36

Copeland Light SW by W 58

Ailsa Rock SW ½ W 22½

Larne Loch Light WSW 56

Maidens Lights W by S ½ S 55

Pladda Light W 16

ARDROSSAN (Lat. 55 38 37 N., Long. 4 49 W.)

To Troon S by E 7½

Ayr Harbour..... S 11½

MULL OF CANTYRE TO THE NORTH END OF SCOTLAND.

The Mull of Cantyre is a high

rocky promontory, running to the south-

ward, and approaching within 11 miles

of the coast of Ireland. On its south-

western extremity is a lighthouse, which

exhibits a fixed bright light, visible 22

miles in clear weather, from N.N.E. ½ E.

to S. by W. ½ W. by W. Off Dunimore

Head, which is about 5 miles to the

northward of the lighthouse, is a rock,

lying about a cable's length from the

shore, which dries at half-ebb. A rocky

shoal, with 3 or 4 feet on it at low water,

lies further north, about a quarter of a

mile off Usid Point, at the Salt pans: on

this shoal the sea always swells, and

breaks in the calmest weather.

West Loch Tarbit, on the main of

Heads of Ayre S by W ½ W 13
 Loch Ryan SW ½ S 38
 Corsewall Light SW 40
 Ailsa Rock SW ½ W 26
 Copeland Light..... SW ½ W 61
 Pladda Light SW by W ½ W 17

CUMBRAY LIGHT, (Lat. 55 43 16 N., Long. 4 58 W.)

To Ardrossan S ½ E 6

Ayr Harbour S ½ E 12

Heads of Ayre S by W 18½

Turnberry Point SSW 23

Loch Ryan entrance SW by W 42

Corsewall Light SW ½ S 42

Ailsa Rock SW ½ S 29½

Copeland Light SW 64

PLADDA ISLAND LIGHT, (Lat. 55 26 N., Long. 5 7 6 W.)

To Cumbay Light, from 1 mile

North of Pladda Light NE 19

Irvine Harbour E by N 18

Troon do E 16

Ayr do E by S ½ S 16

Turnberry Point SE by S 11

Loch Ryan entrance SSW 24½

Ailsa Rock SW by S ½ S 11

Corsewall Light..... SW by S ½ S 25

Copeland Light SW 45

Belfast Lock entrance..... SW ½ W 43

Larne Loch Light SW by W ½ W 42

Maidens Lights SW by W ½ W 36

MULL OF CANTYRE, (Lat. 55 19 N., Long. 4 49 W.)

To Sanda Light SE by E ½ E 5

Ailsa Rock..... SE ½ E 24

Corsewall Light..... SSE 30

Calf of Man..... S ½ W 84

Maidens Lights..... SSW 24

Fair Head W ½ S 13

Inisterhul Light NW by W 49

Loch Ryan entrance SE by S ½ S 31

Larne Loch do SW by S ½ S 28

Rathlin Island, N. end.. W by N ½ N 13

Sound of Islay, E. end .. N by E ½ E 28

Cantyre; the bay of which is well shel-

tered, and the depth of water for a mile

up sufficient for the largest ships; but the

ground, being of soft mud, does not hold

well with hard gales, except there is a full

cable out. The common places of anchor-

age are, for large ships, off Ardfarik, in

the mouth of the loch: and for small ves-

sels, on the east side of Ilanagalligan. On

the S. side of Ilan Trayn are several rocks

above ½ a cable's length from the island,

or ½ from it, and ¾ from the starboard side

of the entry. There is also a sandbank

extending from the E. point of Corran,

nearly ½ over to the N. side of the loch; to

avoid which, keep nearest to the N. side,

or keep the easternmost extremity of Ilan

Trayn in a line with the W. end of the high-

est hill in Gia Island. About 3 miles up the

loch, off Duneturik, nearest to the N. shore is a small blind rock, having 5 feet water over it. Keep the middle of the Loch, and you will avoid it.

Loch Achastil is a fine harbour, and fit for ships of any size; the ground good, and only one rock, about midway, within it, covered only with spring tides. Ships may anchor in any part of this loch above Castle Swein. The danger to be avoided in sailing towards Achastil is a small rock on the N. side of the two Mackcarmack Islands, which dries with spring-tides only

Jura Island—To the westward is the Island of Jura; on the S.E. side of which is Loch Daguell, with good anchorage, well sheltered, and water enough for a merchant ship. This anchorage is very convenient for vessels bound to the southward. You will anchor near the middle of the bay, when Gia Island is just shut in by the N. point of the entry, and the northernmost Pap of Jura bears N.W. $\frac{1}{2}$ W. In running either in or out, stand not too near the sides, for on the N.N.E. and N.W. sides of the bay it shoals nearly 2 cables' length from shore.

Sound of Islay is the common track for shipping to and from the N. A Lighthouse has been erected on Rudha Mhail Point showing a Fixed Light, visible 15 miles. It shows RED from about NNE $\frac{1}{2}$ E.W'y. to about N. $\frac{1}{4}$ W.; MASKED W'y. from about N $\frac{1}{4}$ W to about NbyW $\frac{1}{2}$ W. and from about NbyW $\frac{1}{2}$ W round S'y and E'y to about NNE $\frac{1}{2}$ E it will show WHITE, excepting where intercepted by the land. When proceeding into, or through Islay Sound, this light kept in view clears the Black rock and other shoals at the south entrance. A Lighthouse is also erected on MacArthur's Head, on East side of Islay, and south entrance to the Sound, showing a Fixed Light, visible 17 miles. It shows WHITE up the Sound till it bears S. $\frac{1}{2}$ W; RED towards Jura from S $\frac{1}{2}$ W till it bears about W; and WHITE from about W. round by the S., or until obscured by the south side of Islay. A tide or a night is the longest any vessel should stop here except in Macdougall's Bay, where one cable may be made fast to a ring or rock on the shore. In entering Islay Sound from the southward, you are to bring Glashilan Island to bear N., or to keep within a cable's length or two from the Islay shore, and you will clear the Skerch-ray Rock, which lies on the starboard side, W. of the small Island of Frochilan.

Loch Tarbet is filled with small rocks, especially on its southern side, it is therefore hazardous to enter. The anchorage is $\frac{1}{4}$ of a mile above Guinmore, but the best and safest place is

near the mouth of the Loch in Glenaberig Bay. This is easy of access, and has 3 and 4 fathoms water. Keep a cable's length from the point in passing, and anchor the same distance eastward of it. About a mile eastward of this anchorage is a cluster of small rocks above water on the E. side of these a ship may ride safe in five fathoms water, keeping $\frac{1}{2}$ cable's length from them in going up.

Loch Indaal.—Having rounded the Mull of Kinho, which is the south-western part of Islay, you will open Loch Indaal. This may be said to be the only place in Islay where vessels in winter can ride in safety. Here small vessels drawing 9 or 10 feet of water may ride, and be well sheltered; larger ships, drawing 15 feet, must ride with the mouth of the loch open, and will therefore not be safe when the wind blows from the W. S.W. But the best anchorage is at the further end of the loch called Kilirn Bann when Bomore House bears S.S.E., lying somewhat nearer to the S. than to the side of the harbour, in 3 fathoms, sandy ground. Larger ships anchor more to the westward bringing Bomore House S.E. E. in 4 fathoms. At the entrance to the harbour are 2 spits of sand; one on the side, which never dries, extending from Atturach Point northwards; the other running from the opposite side southward, which dries gradually. These two spits of sand almost enclose the harbour. In the channel between their two points are 2 and 2 $\frac{1}{2}$ fathoms, low water, spring tides.

Rhins of Islay Light, on the northern side of the entrance to Loch Indaal upon the small Island of Oversa, bearing by compass from the Mull of Kinho, $\frac{1}{2}$ by W. $\frac{1}{2}$ W., distant 10 miles; and from the STATIONARY LIGHT of the Mull of Cantyre, N. by W. $\frac{1}{2}$ W., 33 miles. From the north eastern extremity of the Island of Rachlin, N. $\frac{1}{4}$ E., distant 25 miles. From the REVOLVING LIGHT of Innistrabul, distant 28 miles. From the Revolving Light, producing a bright flash once every minute, on the Rock of Skerryvore distant from Hynish Point, in Tyree, W. S.W. $\frac{1}{2}$ W., 10 $\frac{1}{2}$ miles, it bears S. $\frac{1}{2}$ W. distant 44 miles. From the Rocks Dunheertach, lying 11 miles S.W., from Icolmkill, it bears S.S.W., distant 4 miles; and from Tranvore Head, S.W. $\frac{1}{2}$ S., distant 6 $\frac{1}{2}$ miles. It will be known to Mariners as a STATIONARY and a FLASHING LIGHT. To a distant observer it appears like a star of the first magnitude producing a bright flash of light every seconds, without those intervals of total darkness which characterise other Revolving Lights upon the coast. In clear weather it will be visible at the distance of 6 leagues, and is open from N.N.E. to

(westerly); half a mile off Cull Point appears.

Oronsa and Colinsa Islands.—

Oronsa is much the smaller Island, and is only 4 miles to the northward of Ruishag Point, in Islay. Off its south-sides are several Rocks, one of which is W.S.W., from Gudimel, a small island on the S.E. part of Oronsa. This dries at half-ebb. There is a shoal about a $\frac{1}{2}$ mile to the southward of middle of the rock, on which are 6 rocks at low water. At the S.W. point of Oronsa is Ilana Roan; one mile S.W. of it are 2 or 3 rocks, which dry with ebb-tides only, and some shoals on which the sea always break. A leading line to go to the southward of these rocks is Ruvaal Point in Islay, on with the end of Beninore Hill in Jura. Sail nearer to Colinsa than till Ruvaal Point, bears on the middle of the hill. To the W. of Colinsa are several Rocks and Shoals, lying a mile out from Ardskinish Head, some are above, some below, and some dry only at low water; you will not see the whole of them by keeping about 1 mile from the shore, or one mile from the rocks you see above water. There is no anchorage on the W. side of Colinsa, and but indifferent on the E. side.

The Gulf of Coryvreckan, which is formed by the N. end of Jura, and the end of Scarba, is distinguished by a violent breaking sea with whirlpools, partly occasioned by an excessively rapid stream running over a steep rock, at the N. side of the Sound, near the W. Point of Scarba. On the Jura side of the Gulf the sea rages, and forms whirlpools, both with ebb and flood; but the waves do not rise so high on the Scarba side of the Gulf.

The Sound of Mull Lighthouse

is situated on a small rock called Runa, on the south shore of the Sound of Mull, Argyshire, about one mile northward from Tobermory. The Tower is about 50 yards within the high water mark of spring-tides, and is connected to the shore by a bridge of two spans. The Light is an azimuthal condensing light, and shows a **FIXED RED LIGHT** towards out to sea; a **FIXED GREEN LIGHT** towards the New Rocks, the Red Rocks, and the Stirks Rocks, in the Sound of Mull; a **FIXED WHITE LIGHT** towards into the sound of Mull. The Light is exhibited from a tower of masonry about 55 feet above high water of spring tides, and may be seen in clear weather at the distance of about twelve nautical miles.

Adnamurchan Point.—A Light-house, exhibiting a Fixed Light of the usual appearance, has been erected on this point; and bears by compass from

Caillach Head, N.E. $\frac{3}{4}$ E., distant 7 miles; from the Cairns of Coll, S.S.E., 8 miles; from Kana Head, S $\frac{1}{2}$ E., 30 miles; from Scour of Eigg, S.W. by S. $\frac{3}{4}$ W., 11 miles; from Bo Askadil Rock, W.S.W., 7 miles. It is visible 18 miles in clear weather.

Ushenish Lighthouse is situated on the most easterly head land on the eastern side of the Island of South Uist, one of the Hebrides, in the county of Inverness. The Light is a dioptric first-class **FIXED RED LIGHT**, and is exhibited from a tower of masonry erected on the headland. The Light is about 176 feet above high water of spring tides, and may be seen in clear weather at the distance of about 12 nautic miles.

Island Glass Light, situate on the eastern side of Glass, and on the western side of the channel between Skye and the Long Island. The Light is **STATIONARY**, appearing like a star of the first magnitude, at the distance of 5 or 6 leagues, from W. by S. to E.N.E. $\frac{1}{4}$ E. by the S.

Skergriatick Rock.—A Beacon, painted black, has been erected on this rock, situate in the Minsh. It consists of a Frame-work of Iron, surmounted by a cylindric cage, and rising to about 30 feet above high water spring tides. There are steps leading from the rock to the cage in which shipwrecked mariners may find a temporary shelter. This Beacon bears by compass from Skernamule beacon N.N.W., distant 3 miles; from Dunvegan Head, in Skye, N.E. $\frac{3}{4}$ E., 18 miles; from Island Glass Lighthouse, S.E. by S. $\frac{3}{4}$ S., 7 $\frac{1}{2}$ miles; from the Greater Galtimore (one of the Shiant Islands), S.W. $\frac{1}{4}$ S., 8 miles. There is foul ground nearly all the way from Skergriatick Rock to Fiaddahuan Island, from which the beacon lies 2 $\frac{1}{2}$ miles to the N. by E.

Loch Terriden.—In entering Loch Terriden avoid Runawagh Point, its southern entrance, a little way off which point is a rock under water, which dries at spring tides. Excepting this rock, there is no danger in sailing into or up this Loch; for Skerintram Rock, which lies on the North side, is always above water, with deep water all round. Here therefore the access is easy, the ground good and so well sheltered, that several hundreds of the largest Ships may ride with safety in all weathers. Its Entry is 2 $\frac{1}{2}$ miles wide, the Loch running in S. by E. $\frac{1}{2}$ E. to abreast of Loch Shieldag, then S.E. by E. to the furthest end. The best place for Anchorage is in Loch Shieldag, between the two narrows, on the S. side of the Basin, or any where above the second Narrow, which is what may properly be called Loch Terriden.

Loch Gerloch.—About 4 miles further N. is Loch Gerloch, a large and well

sheltered harbour, the ground in all parts clean, holding well, and capable of containing a fleet of the largest ships; its entrance is between Coupachar Point and Longa Island; distant from each other nearly two miles. There are no dangers either in or near it; and when it does not blow hard from the W. or S.W. ships may ride in any part, particularly on the E. side of Island Longa. In winter the best anchorages is between Flowerdale and the Island of Horisdale, in from 9 to 20 fathoms water. Small vessels may ride on the W. side of this Island, S. E. of a rock above water.

Loch Yew.—From Longa Island to Ru Rhea the bearing and distance are N. E. $\frac{1}{2}$ N., $3\frac{1}{2}$ leagues. Five miles to the eastward is Loch Yew, a place large and well sheltered, forming a bay of easy access, a moderate depth of water, and having good holding anchorage, where whole fleets may ride in the greatest safety at all times. The entrance to Loch Yew is a mile wide, and nearly off its western point lies the small Island of Fura, with 2 or 3 islets to the eastward of it; there is also a little rock off the northern point of Fura; keep therefore at a distance in passing it, and the channel in is free from danger. In the middle of the bay is Yew Island, at the northern point of which are some rocks above water. The best places to ride are on the E. side of the Island Yew, or on the E. side of the bay, off Tunag, and off Inveraspadales at the opposite side of the Loch.

Loch More or Great Loch Brim.—To the northward of Loch Beg, are several Islands, lying before Loch More, or Great Loch Brim. Loch More is a great and safe branch of the sea, capable of accommodating the largest fleets, and having no rocks or dangers within it, except a small ledge on the E. side of Ullapool extending above a cable's length from that shore, which is avoided by keeping $\frac{1}{2}$ from the Ullapool side. You may anchor in this bay in 14 or 15 fathoms water above a cable's length from the shore, or any where above Logie Point, in from 13 to 24 fathoms. Should you, in entering or sailing from this Loch, go between the larboard point, or Ru Handerrick, and the Carniskere Islands, remember to give the former a berth on account of a rock called Nuela, which lies nearly a cable's length from the shore, and dries about half ebb.

Loch Kylescough is nearly 7 miles E.S.E. $\frac{1}{2}$ E. from Ru Stoir, and $3\frac{1}{2}$ miles in the same direction from Ouldenay Island. This is a large and well sheltered branch of the sea, the approach to which is safe, and the anchorage good; but for some miles within the Loch the water is too

deep for ordinary vessels, being from 30 to 50 fathoms, unless you carry an anchor on shore. Above the Island Raniel where the contracted channel commence again to widen, ships may anchor anywhere, the stream in the narrowest part running not more than 1 mile an hour. The only rock necessary to notice, lies near the Island Caraway, off the larboard side of entrance; it bears W.S.W. from land and dries at low water; keep Runachusa Point in Ouldenay Island on with the extremity of Ru Stoir, and you will clear this rock to the Southward. At the N. side of the entrance to Loch Kylescough, Loch Shark, and N.E. of Shark lies Loch Calaway.

Loch Inshard.—One league to the eastward of Lusford is Loch Inshard, the last bay before you round Cape Wrath. In sailing in, great caution must be observed, as there is a rock lying right at the entrance, which appears at spring ebbs only. Within the Loch you will be well sheltered, your depth moderate, and your ground good. Sail up until you are landlocked, and anchor near the north-east side. To the north west of Loch Ardcar are some Islands, close to the main, called Ilanarone; and nearly N.N.E. of these 4 miles, is Balag Island, having a small rock above water, at both the N. and S. extremities. This Island lies about a mile from Ru Wochel. Near the latter is a rock above water, close to the land. From hence to Cape Wrath the coast is high and rocky. Off Cape Wrath are said to lie several rocks under water, called the Stags. Vessels in sailing round this headland should always give it a good berth, of $1\frac{1}{2}$ or two miles, and steering E'ward, they will reach the Pentland Firth.

Isle Oronsay Lighthouse is situated on a low point at the south-east end of the Island of Oronsay, Inverness-shire, in the Sound of Skye, also called Sound of Sleat. The Light is an azimuthal condensing Light, and shows a FIXED WHITE LIGHT, from a tower of masonry about 58 feet above high water of spring tides. The Light may be seen in clear weather about twelve nautic miles.

Kyleakin Lighthouse is situated on a point of rock which covers at high water spring tides, and projects from the west end of Eilan Dool, or Gillelan Island, in Ross-shire, at the western entrance of "The Narrows," leading to Loch Alsh. The tower is about fifty-three yards within the high water mark of spring tides, and is connected with the Island by a bridge of five spans. The Light is an azimuthal condensing Light, and shows a FIXED WHITE LIGHT in the fairway of the Sound of Loch Alsh, and a FIXED WHITE LIGHT in the fairway leading to the Sound of Applecross, and which White Light ex-

southwards to Pabba Island. From it shows a FIXED RED LIGHT, shining eastwards along the shore of to the south of the fairway of Loch. It also shows a FIXED RED LIGHT north-eastwards of the fairway of Sound of Applecross. To the of the fairway of Loch Alsh the is not shown. It is exhibited a tower of masonry about 53 feet high water of spring tides, and may in clear weather at the distance out eleven nautic miles.

na Lighthouse is situated on the ern end of the Island of Rona, in shire, between the west coast shire and the Island of Skye. The is a catadioptric second-class holo- FLASHING WHITE LIGHT, showing EVERY TWELVE SECONDS. It is ited from a tower of masonry erected peak at the north-east point of the d. It is elevated about 222 feet above water of spring tides, and may be in clear weather at the distance of twenty nautic miles.

Cape Wrath Lighthouse, erected the Cape, forming the north-western extremity of the main land of Scotland, in 58 deg. 37 min. N., and in lon. 5 deg. bears from Hoy Head in Orkney, W. distant 50 miles; from the Butt Lewis, E. by S. $\frac{1}{2}$ S., 41 miles; from rocks called the Stags off the Cape, S. by W. $\frac{1}{4}$ W., about 1 mile; from the en Rock called the Nun, S.S.W. $\frac{3}{4}$ W., ant 15 miles; and from the Islands of and Skerry, W.S.W., the former 35 $\frac{1}{2}$ the latter 38 miles distant. It is wn to mariners as a REVOLVING er, of the natural appearance, chang- with one tinged red, which attain most luminous effect every two mi- es, and become, to a distant observer, ly eclipsed for a short time. The is visible from S. $\frac{1}{2}$ E. to S.W. by W. the N., at the distance of 23 miles.

Dunnethead Light, on the North- extremity of the mainland of Scot- d, in lat. 58 deg. 40 min. N., bears by pass from the N. end of the Island of ma, in Pentland Frith, W.N.W., dis- 7 $\frac{1}{2}$ miles; from Hoy Head, leading to Sound, S.S.W., distant 13 miles; m the Stack and Skerry, S. by E. $\frac{3}{4}$ distant thirty-three miles; and from pe Wrath, in Sutherlandshire, S.E. by E., distant 54 miles. In reference to se bearings, the light will be visible to a mariner in a northerly direction from E. $\frac{1}{2}$ E. to W. by northward. The Light STATIONARY, and being elevated 346 et above the medium level of the sea, ill be seen like a star of the first mag- itude, at the distance of from 7 to 8 agues, and at lesser distances according to the weather.

Magnetic Bearings & Distances FOR THE NORTH AND EAST COASTS OF SCOTLAND.

CAPE WRATH (Lat. 58 37 30 N., Long. 5 W.) MILES.

To Ru Store SW by W 26 $\frac{1}{2}$
Loch Maddy entrance ... W by S 92
Glass Island Light ... W by S $\frac{1}{4}$ S 70
Chicken Head W $\frac{3}{4}$ S 47
Tolsta Head W $\frac{1}{4}$ N 39
To Nun Rock NNE $\frac{3}{4}$ E 15
Hoy Mouth, Stromness E $\frac{3}{4}$ S 61
Holburn Head SE by E $\frac{1}{4}$ E 51

DUNNET HEAD (Lat. 58 40 16 N., Long. 3 22 20 W.)

To Thurso Bar SW by W $\frac{1}{4}$ W 5
Holburn Head.... W by S 5
Hoy Head..... NNE 13
Swona, South end of E by S 10
Pentland Skerries ESE 14

SULE SKERRIE (Lat. 59 3 N., Long. 4 13 W.)

To Dunnet Head SSE 33
Strathy Head S by W 28
Sumburgh Head, Shetland..... E 100
Westra Frith..... E by S 40

HOY MOUTH, STROMNESS (Lat. 59 3 N., Long. 3 23 W.)

To Scrabster Roads..... SW $\frac{1}{2}$ S 17
Strathy Head W by S $\frac{1}{4}$ S 23
Lock Erobol W 45
Cape Wrath W $\frac{3}{4}$ N 59

DENNESNESS LIGHT, NORTH RONALDSHA (Lat. 59 23 N., Long. 2 23 W.) MILES

To Foul Island..... NE 45
Pappa Island, Shetland .. NE $\frac{1}{4}$ E 60
Sumburgh Light, Shetland E $\frac{3}{4}$ N 46
Fair Island E by S 28

START POINT IN SANDA ISLAND (Lat. 59 16 39 N., Long. 2 22 25 W.)

To Foul Island..... NE $\frac{1}{4}$ N 50
Fair Isle E 30
Noss Head ... SW $\frac{1}{2}$ W 50
Copinsha Island SW $\frac{1}{2}$ W 22

SUMBURGH HEAD, SHETLAND (Lat. 59 51 N., Long. 1 16 W.)

To Noss Island NE by E 20
Bucanness Light SW by S 140
Fair Isle SW by W 21
Start Point, Sanda I.. W by S $\frac{1}{4}$ S 48
Foul Island..... NW by N $\frac{1}{2}$ N 28

NOSS HEAD (Lat. 58 28 38 N., Long. 3 3 5 W.)

To Duncansby NE by N 10
Pentland Skerries Lights ... NE 12 $\frac{1}{2}$
Fair Isle ENE 78
Sumburgh Head.. NE by E $\frac{1}{2}$ E 96

TARBETNESS LIGHT (Lat 57 51 N., Long. 3 48 W.)

To Troup Head..... SE $\frac{1}{4}$ E 48
Cowsey Point SE by S $\frac{1}{4}$ S 18
Burgh Head S $\frac{3}{4}$ W 13
Mairn SW $\frac{1}{4}$ S 16

KINARD'S HEAD (Lat. 57 42 N., Long. 2 1 W.)

To Rattry Brigs SE by S $\frac{3}{4}$ S 8
Helmsdale NW by N 60
Noss Head..... N by W 61

Duncansby Head... .. N $\frac{1}{2}$ W 67	Arbroath N by W $\frac{1}{2}$ W
Copinsha Island N by E 77	Dumbar Harbour... .. SW $\frac{1}{2}$ S
BUCANNESS LIGHT (Lat. 57 28 15 N., Long. 1 46 11 W.)	St. Abb's Head ... S. by W. $\frac{1}{2}$ W
To Peterhead, S.H. NNE 2 $\frac{1}{2}$	Fifeness SW by W $\frac{3}{4}$ W
Rattray Brigs NNE 9	MAY ISLAND (Lat. 56 11 8 N., Long. 20 W.)
Sumburgh Head... .. NE by N 140	To Fifeness N
Bell Rock SW 66	Arbroath NE by N
St. Abb's Head SW $\frac{3}{4}$ S 95	Bell Rock NE
Girdleness Light... .. SW $\frac{1}{2}$ W. 25	St. Abb's Head S
THE GIRDLENESS (Lat. 57 8 15 N., Long. 2 3 2 W.)	Inchkeith W $\frac{1}{2}$ S
MILES.	INCHKEITH (Lat. 56 2 N., Long. 3 8 W.)
To Bucanness NE $\frac{1}{2}$ E 25	To Kirkaldy... .. N by E $\frac{1}{2}$ E
St. Abb's Head SSW 72	Elieness E by N $\frac{1}{2}$ E
Bell Rock SW $\frac{1}{4}$ S 42	Fidra Island... .. E by S $\frac{1}{2}$ E
Flambrough Head S $\frac{1}{2}$ W 193	Fisherow S $\frac{1}{2}$ E
MONTROSE (Lat. 56 42 N., Long. 2 27 W.)	Colm Island NNW
To St. Abb's Head... .. S by W $\frac{1}{2}$ W 48	Garvy Island.. .. W by N $\frac{1}{2}$ W
Bell Rock... .. SSW 11	May Island... .. E $\frac{1}{2}$ S
May Island SW by S 30	ST. ABB'S HEAD (Lat. 55 55 N., Long. 2 9 W.)
Flambrough Head S 174	To Buttonness N by E $\frac{1}{2}$ E
Longstone Light, Ferns... S $\frac{1}{2}$ W 70	Bell Rock Light... .. N by E $\frac{1}{2}$ E
BELL ROCK (Lat. 56 26 3 N., Long. 2 23 6 W.)	Aberdeen, Girdleness NNE
To Montrose entrance NNE 11	Bucanness Light NE $\frac{1}{2}$ N
Girdleness Lights... .. NE $\frac{1}{4}$ N 42	Bass Rock NW by N $\frac{1}{2}$ W
Bucanness Light NE 66	Elieness NW by N $\frac{1}{2}$ W
Flamborough Head... .. S $\frac{1}{4}$ E 158	May Island N by W $\frac{1}{2}$ W
Buttonness NW $\frac{1}{2}$ W 13	

EAST COAST OF IRELAND.

POINT CARNSORE TO LOCH CARLINGFORD.

Point Carnsore is the S.E. point or extremity of Ireland, and lies about 42 leagues from Cape Cornwall, bearing N. by E. $\frac{1}{2}$ E.; from the Small's Light N. by W. $\frac{1}{2}$ W., distant 37 miles. Nearly E. by S. from Carnsore Point, distant 6 miles, lies the **TUSKAR**, a very remarkable rock 20 feet above the level of the sea at high water, upon which stands a lighthouse similar to that on the Eddystone, elevated 81 feet from its base. The light revolves every two minutes, showing two faces bright, and one red. The red light is visible 10 miles, and the bright 15 miles. During foggy weather a bell is tolled every half minute. This rock bears from the Smalls Lighthouse N. $\frac{1}{2}$ W., distant 33 miles. Ships coming from the westward and bound for St. George's Channel, should endeavour to see this rock before they shape their course to the northward.

Blackwater Bank, is a narrow sandbank running nearly in the direction of the coast at the distance of from 3 to 4 miles. A buoy is placed at each extremity of this bank. Moored off the north end in 18 fathoms, at low water, spring tides is a Light Vessel, which exhibits a Fixed Light. The Light is shown from the mainmast, and in clear weather can be seen at a distance of 10 miles. The vessel

has three masts, and carries a Ball at main-mast-head; is painted black, with a White Band, having the word "*Black Water*," in white letters on her side, and lies about $1\frac{1}{2}$ miles E. $\frac{3}{4}$ S. of the buoy on the N. end of the Black Water Bank, with the following marks and compass bearings:—Arklow Light V. N.E. 13 miles; Cahore Point, N. by E. 5 miles; Tuskar Lighthouse, S.W. $\frac{3}{4}$ S. 5 miles. A gong is sounded in foul weather.

Wexford Harbour, is capacious and sufficiently sheltered, but is obstructed by a bar extending across over which there are at times but 7 feet of water. Buoys are laid in the deep water across the bar; but to enter the harbour a pilot is necessary.

Arklow Bank, is a narrow sandbank off Arklow Bay, about two leagues from the land, and nearly 11 miles long from N.E. by N. to S.W. by S. and from half three-quarter of a mile broad; the shallowest part is near the N. end where the least water is 4 feet; the S. end has from 6 feet to 3 fms. on it, and except at spring water, you will perceive its ripple; near to its East side are from 13 to 20 fathoms. To approach it no nearer than 30 fms. The marks for its southern end are Arklow

N.W. by N. distant 7 miles, and in with the northern declivity of the Great Sugar Loaf mountains; and the Great Sugar Loaf open to the eastward of the Macarraig Hills, and also of Mizen Head, bearing about N. by E. There is a buoy placed to mark the south end, striped black and white vertically with the words "Arklow Bank South, No. 4"

The marks for its northern end are of Carrig Mc Keilly just open to the eastward of Maughry Point, bearing N., and the Great Sugar Loaf open eastward of Wicklow Head, N. $\frac{1}{2}$ W. Wicklow Head bearing N. $\frac{1}{4}$ W. clears it. There is also a buoy placed to mark the north end, striped black and white horizontally, surmounted by a staff and globe with the words "Arklow Bank North, No. 3" on it. Two Can Buoys have been placed to mark the eastern edge, the northernmost of which is chequered red and white, with the words "Arklow Bank North, No. 2" on it. It is placed in 12 fathoms, with the following marks and compass bearings—Arklow Bank North Buoy, E. $\frac{1}{4}$ E.; highest part of Bray Head just open of the highest part of Wicklow Head, N. by E.; Mizen Tower on with the east of a small hill, N.W. by W. The southernmost is striped black and white horizontally, with the words "Arklow Bank South, No. 3" on it. It is moored in 10 fathoms, low water, with the following marks and compass bearings—Arklow Bank No. 2 Buoy, N.E. by N.; Arklow Bank South Buoy, S.W. $\frac{1}{2}$ S.; Arklow Bank Light Vessel, S.W. $\frac{1}{2}$ W.; A Light Vessel is moored in 22 fathoms, on the north end of the bank. The vessel has two masts, showing a Revolving Light on the main-mast, which attains its greatest brilliancy one every $\frac{1}{2}$ min visible 10 miles. There is a ball at main-mast-head, and has the words "Arklow Bank" painted on the hull. During foggy weather a gong is sounded.

Wicklow Head is a light house showing a bright fixed light visible 16 miles off.

Wicklow Harbour, fit for small craft only, there being only 9 feet in the entrance at low water, spring tides, and neap tides. To make its entrance deeper, a new channel has been opened; this is formed by 2 Piers about half a furlong to the westward of the Old Bar, and where the depth is 12 and 14 feet.

The **Wicklow Banks** are 2 narrow patches of sand, lying about 5 miles E. from Wicklow Head. The southern patch called the India Bank, is about one mile long, N.N.E. $\frac{1}{2}$ E. and S.S.W. $\frac{1}{2}$ W., and half of a mile broad. On its middle are 2 fathoms, on its S.W. end $3\frac{1}{2}$ fathoms; at its S.W. extremity is a black buoy having the words "India Grounds South" painted

in white letters on its broad end, and moored in five fathoms low water from which Wicklow Head light bears W. by S. 5 miles. A Light Vessel is moored 8 miles S. E. by E. $\frac{3}{4}$ E. from Wicklow Head, on the Mainmast of which a **FIXED RED LIGHT** is shown 39 feet above the level of the sea. The Light Vessel has two masts—a main mast with a Black Ball at its masthead, and a small mizen mast abaft. She is painted Black with a White Streak, has the words "Wicklow Swash" in white letters on her sides, and is moored in 13 fathoms at low water spring tides, with the following marks, compass bearings, and distances, viz:—Mizen Head, W. $\frac{3}{4}$ S., distant 12 miles; the two Lower Light-house Towers on Wicklow Head in one, N.W. by W. $\frac{3}{4}$ W., distant 8 miles; Six mile Point, N.N.W. $\frac{3}{4}$ W., distant $11\frac{1}{2}$ miles. Variation of the compass $24^{\circ} 15' W.$

The **South Ridge** lies at the N. end of the India Bank, it is $1\frac{1}{2}$ miles long and half a mile broad, with $3\frac{1}{4}$ to 5 fms. water on it. Its direction is N.N.E. $\frac{1}{4}$ E., and S.S.W. $\frac{1}{2}$ W., and its N.W. end is nearly $5\frac{1}{2}$ miles S.E. by E. from Six Mile Point.

The **Codling Bank**.—The south end of this bank lies N.E. by E., 3 miles from the South Ridge; it then runs N. by E. 3 miles, and turns suddenly to W. by N. for 2 miles, then curving round to the S.E. till it joins the south point. In the middle of the bank, which is 2 miles broad are from $3\frac{1}{4}$ to 5 fathoms. The Great Sugar Loaf open north of the Gap N.W. $\frac{3}{4}$ N., leads between the Codling, and the South Ridge. A Black Buoy is placed on each extremity of the Codling, and lying off the south-eastern end, in 8 fathoms, low water, spring tides is a Black Spiral Buoy, surmounted by a Staff and Globe, and marked "Codling Bank," with the following marks and compass bearings:—Carrickgollogan Hill, in one with Bray Point, N.W. $\frac{3}{4}$ N.; Great Sugar Loaf, N.W. $\frac{1}{4}$ W.; Wicklow Head, W. by S. $\frac{3}{4}$ S.

The **Bray Bank** lies N.N.E. $\frac{1}{2}$ E. and S.S.W. $\frac{1}{2}$ W.; is 2 miles long and $\frac{1}{2}$ a mile broad, with twelve feet on it. In the Channel, between the N.W. end of the Codling and the South end of the Bray, which is half a mile wide, there are 9 fms. gravelly ground. Carrickgollogan Hill, two degrees open north of Bray Head, N.W. $\frac{1}{4}$ N., clears the Codling to the northward. This mark will lead across the bay in 3 fathoms at low water. The south hummock of the Little Sugar Loaf in one with Windgate Hill, W.N.W. $\frac{1}{2}$ W. leads between the Bray and the Kish Banks in $3\frac{1}{4}$ fathoms.

The **Kish** is a long narrow sand, stretching N. by E. $\frac{1}{2}$ E.; and S. by W. $\frac{1}{2}$ W., about $6\frac{1}{2}$ miles, and is from $\frac{1}{2}$ to $\frac{3}{4}$ of a mile broad; on its southern extremity is

a black buoy. From it Dublin Lighthouse bears N. by W. $\frac{1}{2}$ W., $12\frac{1}{2}$ miles; Howth Head Light N. $11\frac{1}{2}$ miles; and Bray Head W.N.W. $\frac{1}{2}$ W., 6 miles. On the Kish are from 9 feet to 3 fathoms, the latter depth being near its northern end. Three-quarters of a mile from the northern extremity of the Kish, a Floating Light Vessel is moored, with the following mark and bearing:—Ireland's Eye a little open of Howth Head, and Dublin Lighthouse, N.W. $\frac{1}{2}$ W., distance $7\frac{1}{2}$ miles. This vessel exhibits a White Revolving Light, which attains its greatest brilliancy once in every minute. At 3 miles to the southward of the light-vessel are only $7\frac{1}{2}$ feet water; at this spot the Great Sugar Loaf Hill appears on the saddle of Bray Head, bearing W. $\frac{1}{2}$ S., and Ireland's eye just open, and shut with the Head of Howth, N. $\frac{1}{4}$ W.

Bennett's Bank.—The S. end of this bank lies about 1 mile East of the Kish Lighthouse and 5 miles S.E. from Howth Head Lighthouse; it is about $2\frac{1}{2}$ miles in length, and has from 6 to $4\frac{1}{2}$ fathoms on it; at half mile southward are 12 to 14 fathoms.

The **Burford Bank**, at the entrance to Dublin Bay, is narrow, and runs in a N.N.E. $\frac{1}{4}$ E. and S.S.W. $\frac{1}{4}$ W. direction being about $1\frac{1}{2}$ mile long, but not a $\frac{1}{4}$ of a mile broad. Nelson's Pillar kept open to the southward of the Pigeon-house on Dublin Quay, will lead clear of its southern extremity in $4\frac{1}{2}$ and 5 fathoms water. There is a shallow part of this bank over which there is not more than 12 feet at low water. This lies with Malpas Obelisk in one with signal station, and Sutton Tower just open of Sheep's Hole Point. On all other points of the bank are from 3 to 4 fathoms. The mark to clear to the eastward of it, is Ireland's eye open to the Nose of Howth. Upon each end of this bank is a buoy; that on the southern end is a conical buoy, coloured red, surmounted by a staff and globe, and that on the northern chequered black and white.

Sailing for Dublin Bay from the Southward.—From the Tuskar to Wicklow Head the bearing and distance are N.E. $\frac{1}{2}$ N. nearly $46\frac{1}{2}$ miles, but to pass to the eastward of the Arklow Bank the course is N.E., observing to make due allowance thereon for the set of the tide, whether flood or ebb. When Wicklow Head Lights bear N. by W. you will be clear of the Arklow Bank; then to sail within the Wicklow or India Banks bring the Great Sugar Loaf Hill well open of Wicklow Head, bearing N. by W. or Wicklow Lights in one; either of these will lead between the Arklow and India Banks, and when within 2 miles of the shore, a N. by E. $\frac{1}{2}$ E. course will carry

you past Moulditch Bank and Dalkey Island. In working up between the bank and the shore with a flood tide and northerly wind, do not stand further from the land than four miles; for the tide with little wind may drift you upon the banks while near the shore the stream commonly makes to the southward $1\frac{1}{2}$ hours before high water.

Stopping Places.—In moderate weather vessels may stop almost anywhere within the banks between Wicklow and Dublin, except off the Giant's Bed, where lies the Moulditch Bank; the best part, with westerly winds, is between Bray Bank and the main from $\frac{1}{2}$ to 1 miles from the shore. Here is very little stream of tide, and the violence of the sea is considerably broken by the banks.

In **Killiney Bay** vessels may anchor in 5 or 6 fathoms, sheltered from W.N.W. to N.N.E. winds

Dublin Bay.—There is good anchorage in the mouth of Dublin Bay when the wind does not blow hard from the E. and S.E.; with these winds a great sea sets in when it blows hard, so that vessels are obliged to run for some place of safety; with north-easterly winds, vessels run for Kingstown harbour, which lies on the S. side of Dublin Bay, and is enclosed by two large piers; on the head of the eastern of which is a lighthouse shewing a revolving light, presenting white and red faces alternately, and attaining their greatest brilliancy at intervals of thirty seconds. During foggy weather a bell is tolled. There is also a fixed red light on the west pier-head. The entrance to this harbour faces the N.E., and has 4 fathoms water; within, from 4 to $2\frac{1}{2}$ fathoms at low water. When going in, leave the revolving light on the port hand, and round it close to. **BAILEY LIGHT**, exhibited from the S. E. point of Howth Peninsula, is stationary, and is visible at a distance of fifteen miles. About a mile to W.S.W. of the Bailey lighthouse lies the Rosebeg Bank, which is easily distinguished in blowing weather by the sea breaking over it: and on which are from $2\frac{1}{2}$ to 3 fathoms water. The Revenue Barrack on with the Poolbeg Lighthouse, bearing N.W. by W. $\frac{3}{4}$ W., leads clear to the southward of it.

Dublin Harbour lies between two banks, the North and South Bull, and is sheltered on the south side by a wall on piles, carried eastward about 3 miles into the bay. At the end of the south wall is Poolbeg lighthouse showing a fixed light all night, and a lower light, from half-flood to half-ebb: a ball is hoisted during the same period in the day. A bar lies across the entrance, on which are 12 feet at low water. Between the bar and

lighthouse are 14 to 27 feet. A red buoy is moored on the bar, in 9 feet at low water: it lies a mile E.S.E. $\frac{1}{4}$ E. from the lighthouse. Pass about a cable's length to the southward of this buoy, observing the before-mentioned mark and you will carry 12 feet over the bar at low water. On the north side of the channel, and bearing E., 3-10th's of a mile from the lighthouse, is a white buoy, moored in 9 feet at low water, between which and the lighthouse are from 14 to 27 feet. The south bar buoy (black) lies S. $\frac{1}{4}$ W. 4-10th's of a mile from the lighthouse, on the northern extremity of the south bar patches, which commence about $\frac{1}{2}$ of a mile S.E. from the lighthouse, extending in that direction nearly $\frac{1}{2}$ a mile; then turning to the westward about the same distance, when they terminate where the black buoy is placed. On these patches are only from 4 to 5 feet low water. At 6-10th's of a mile within the lighthouse a white buoy is placed, which must be passed to the northward. The channel is regularly buoyed on the north side with black buoys, and on the south with red buoys from the Pigeon House to Ring's end. Between Poolbeg and the Pigeon House there are several places where vessels may anchor, in from 16 to 20 feet at low water, the channel having been greatly improved by means of powerful steam dredges. Ships in general, with suitable draughts of water sail over the bar to the north of the east buoy. This is called the East Channel, and the mark for it is the Church of Irishtown just open to the northward of the lighthouse. This mark will lead you about a cable's length to the southward of the east buoy in no less depth than 15 feet at half-flood. So soon as you are over the bar, the depth will increase to 18 and 20 feet. Keep about mid-channel between the Spit Buoy and the lighthouse, and when about $\frac{1}{2}$ a mile within the latter you may anchor in 15 or 16 feet at low water. This is called Poolbeg, and although a tolerably good place in summer, it is not so good in winter time; it is then best to go a mile further up, so as to take the ground about half-ebb, or to lie along the wall or along the quay above Ring's End. To sail in through the West Channel, you must pass to the southward of the South Bar Buoy; when the lighthouse bears N.E. $\frac{1}{4}$ N., and on with Baldoyle Chapel, or the ruins of Kilbarrack Church, steer for it in that direction, giving it a berth on your larboard hand, as you haul round to the westward. When coming from the southward, keep Sandy Cove Tower on with the eastern extreme of the pier at Kingstown, S. $\frac{1}{4}$ E., until you bring the lighthouse on the above bearing: this will lead you in the best water, and well to the westward of the south bar buoy. In the channel are

only 6 feet at low water, spring tides. The tide flows at the lighthouse, on full and change days, 11 hours 12 minutes, and rises 13 feet on springs. Vessels coming from the northward, bound for Dublin, must give the Hill of Howth a berth, to avoid the bank called Rosebeg. To avoid it on the east side, bring the eastern extreme of Howth open of the Bailey, or the Bailey Light N.E. $\frac{1}{4}$ N.; and on the south side, Poolbeg Lighthouse, N.W. by W. $\frac{1}{2}$ W.

Ireland's Eye is a small island $\frac{1}{2}$ miles to the north of Howth Head; on its eastern side is anchorage in 6 fathoms; on its north in 7; but the best is on the west side in about 4 fathoms, with the Stack open to the southward of the height, and from whence it is easy to run for the pier of Howth in case of necessity.

Howth Harbour, which is at present being deepened and improved, to the S. of Ireland's Eye half a mile. There are two piers, on the easternmost of which there is a lighthouse exhibiting a fixed red light to seaward 45 ft. high, on the west side of the entrance and towards the end of the west pier there is 7 feet of water at low water spring tides, (rise of tides 13 feet at springs) and alongside the eastern pier there is 4 to 5 ft. at low water spring tides. The centre of the Harbour, from three-quarter cable length inside the jetty is a Rock, that dries at low water, and should be avoided. Entering the Harbour from the eastward keep Howth Church, W. $\frac{1}{2}$ S., open S. of the lighthouse to clear the rocks off Ireland's Eye; and entering from the northward keep the Martello tower between the Pier heads S. $\frac{1}{2}$ W. Give the eastern pier a wide berth to avoid the loose stones under it that dry at low water. List of Tolls, Rates, License, Duties, and Charges authorized by the Lords Commissioners of Her Majesty's Treasury, to be levied and paid at the Harbour of Howth:—On Vessels freighted with Coal, Dressed Stone, Bricks, Grain, or General Merchandise, per Ton Register, not exceeding 6d. On Vessels freighted with Limestone, Sand, Manure, Undressed Building or Road Stone, per Ton Register, not exceeding 2d. On Vessels engaged in Fishing, if exceeding 5 Tons burthen, a charge of 1s. for each Cargo landed, or an annual licence of 10s. On Vessels engaged in Fishing, if under 5 Tons burthen, a charge of 6d. for each cargo landed, or an annual licence of 5s. On small Boats, plying for Hire, an annual licence of 2s. 6d. Vessels engaged in Trade if occupying a Berth at the Quays for a period exceeding Ten Days, to pay a charge of $\frac{1}{4}$ d. per Ton Register for each day exceeding such period.

Harbour of the Skerries—This Harbour may be easily known by Rockabill and St. Patrick's Islands; the former is a remarkable rock, always above water, and steep to all round, having from 9 to 18 fathoms close to it, and on the summit of which a Lighthouse is erected exhibiting a FLASHING light every 12 seconds, and can be seen 18 miles. The flash is white between N. $\frac{1}{4}$ W. and S.W. by S.; red between the same bearings round westward or towards the land. It lies 4 miles E. by S. of the Skerries, and about $2\frac{1}{2}$ miles from St. Patrick's Island. To sail in, after you have rounded St. Patrick's Island, steer N.W. by W. until all the town of Skerries appears open of the pier-head; you will then be clear of the Cross, and may round into the road, where you will have 4 or 5 fms. of water. Here the riding is safe, unless it come to blow hard from the E. or N.E.; but if you intend going up to the pier, stop about a cable's length from the pier-head, in 3 fathoms, until the tide serves.

Balbriggan Harbour is sheltered from the east by a Pier, on the S. side of the Bay, which runs northward. Within the Pier Head, at high spring-tides, are 12 feet water, and with neap-tides, 9 or 10. On the pier, S. side of entrance, is a white lighthouse, exhibiting a fixed light, visible at the distance of 10 miles, between W. S. W. and S.S.E. $\frac{1}{2}$ E.

Drogheda Bar lies $27\frac{1}{2}$ miles N. of Dublin, about 10 miles N. of Skerries, and 7 miles from Balbriggan, the river running due E. and W. Formerly the river from the Maiden Tower to the bar had a tendency to run N.E., but an annual outlay of nearly £6000 a-year in its improvements has contributed to give the entrance to the river an E. and W. direction, thereby enabling vessels to take the bar with much more safety than heretofore. The parallel walls at the mouth of the river having been extended within the last few years 1800 lineal yards seaward, and now nearly reaching the bar, has caused the water in the river adjacent to the bar to be comparatively smooth in the severest weather. These walls have also had the effect of deepening the channel, and directing its course in a more southerly direction, thereby making the bar much easier of access in bad weather. The continual dredging of the river has removed the banks and shoals which previously existed, leaving the navigable channel of a uniform depth, not less than from 18 ft. 6 in. to 19 ft. at high water of ordinary spring tides. The water on the bar at spring tides from 18 to 22 feet., with from 15 to 16 feet at neaps. There is an excellent tug-boat in attendance on vessels requiring her assistance, with a number of experienced licensed pilots always

looking out for vessels bound for this port. There are fifty sailing vessels, with five first-class paddle-steamers, having in the whole a registered tonnage of 7327 tons trading to this port, exclusive of other vessels which frequent this place with occasional cargoes. Four lighthouses are placed at the entrance of the river, and a number of stone towers built on the N. side, with wooden perches for landmarks on the S. side; the centre between them denoting the channel. The relative bearings of the E. and W. Lights will be occasionally changed, as the sandbanks alter their places. The present entrance of the river, keeping these two lights in one, is W. $\frac{1}{4}$ S., until you come abreast of the large Stone Pillar on the north side, then steer N.W. $\frac{1}{4}$ W. for the North Red Light. There has lately been placed at the East end of the North Wall a large Wooden Perch, with Cage and Barrel placed on the top of it, and must be kept about 100 feet on the starboard side in coming in. Ships drawing 10½ feet should have at least 4 hours' flood tide in bad weather before taking the bar.

Dundalk.—Sailing N. you will pass Clogher Head and reach Dunany Point, off which, about a mile E. of high water mark, lies a small rock, drying with low water spring tides. The first buoy is in 6 fathoms at low water, about 4 miles from Dunany, bearing from it N. by E., keeping Clogher Head well open, and bearing from Cooley Point W. by N., distant about 4 miles. The second and third buoys bears N.N.W. $\frac{1}{4}$ N. from the first buoy. The second buoy is in 3½ fathoms at low water; and the third is on the bar, on which there are, at low water springs, 3 and at low water neaps, 6 feet. The depth on the bar at high water springs, varies from 24 to 18 feet; and neaps, from 16 to 13 feet. These depths continue up to Soldier's Point, whence, to the quays, the depth is at high water springs 19 feet, and neaps 13 feet. A Lighthouse, on screw piles has been erected at the entrance of the Harbour Channel. The Light is a Fixed Light, varied by Flashes, giving a flash once in every 15 seconds; its focal point 33 feet over the level of the sea, at high water; and in clear weather it is visible at the distance of about 9 miles. To seaward the Light appears of the natural colour, Bright, between the bearings of W. by N. and N. $\frac{1}{4}$ W.; it is masked in the direction of the Dunany Reefs between the bearings of N. $\frac{1}{4}$ W. and N. by E. $\frac{1}{4}$ E.; it is coloured Red towards the west side of Dundalk Bay; and shows Bright towards the Harbour Channel, northerly. The Lighthouse is borne on screw piles of red colour, braced into an open framing below the dwelling, which is of octagonal form, and coloured

over this the Lighthouse has a conical top. It stands within the mouth of the Channel, in lat. $53^{\circ} 58' 40''$ N. lon. $6^{\circ} 18' W.$; and bears from the Rocks off Cooley Point N.W. $\frac{3}{4} W.$, $5\frac{1}{2}$ nautic miles; from Dundalk (rocky shoal), N. by W. $\frac{3}{4} W.$, distant 5 nautic miles; from Dunany Reefs, N. of Dunany Point, N. $\frac{1}{4} W.$, distant 4 nautic miles. A large bell has been placed on the roof of the lighthouse and strikes six times per minute in fine weather. All vessels entering the Harbour keep the Lighthouse on the starboard hand. Masters of vessels are cautioned to give the beacons and perches a berth. When vessels bound to the West come between Cooley Point and Rathcor Head, they are required to hoist a red flag for a pilot. Vessels wanting the use of a Steam Tug are requested to hoist by day a Ensign at the Fore-top-gallant mast-head, by night, Two Lights, one red and one white. Masters of vessels are cautioned to enter the Harbour without a pilot. After passing the Lighthouse, the first and second lights are white, the third light is green, the fourth light is red, these are all to be kept on the port hand; the fifth light, placed on the Rock off Dunany Point, is red, which is to be kept on the starboard hand; all the lights from thence to the Quays are white, and are to be kept on the starboard hand. On entering the channel in daylight the beacons and all perches with black signals on top are to be kept on the starboard hand, and all the red beacons and perches with red conical signals on top are kept on the starboard hand. The Commissioners for Improving the Port and Harbour of Dundalk are erecting a Guide Light from the North Bull towards the entrance, running in a direct line to and ending 100 feet to seaward of the Lighthouse; the end is marked by a red buoy, and the buoy bears from it N. by W. $\frac{1}{4} W.$, said buoy to be kept on the starboard hand. The Jetties have been constructed on the West side of the Channel, the river end of which are marked by perches with black ball signals on top; these perches have the first three lights on entering the Channel. Two Jetties are also in course of construction on the East side of the Channel, the river ends of which are marked by perches with red conical signals on top.—The Dundalk Harbour Commissioners have had built, at a cost of £1000, a new and powerful Iron Steam Tug-boat for the accommodation of vessels trading to this Port.

DUNANY AND IMOGENE ROCKS DUNDALK BAY.—A black conical buoy, surmounted by a staff and ball, has been placed in $3\frac{1}{4}$ fathoms, at low water, spring tides, to mark the position of the Imogene Rocks, which lie about a mile and three

quarters S.S.E. off Cooley Point, north side of entrance to Dundalk Bay, and with the following marks and compass bearings:—Dundalk High Chimney, open of Rathcor Point, N.W. $\frac{1}{4} W.$; Cooley Point, N.N.W. $\frac{1}{4} W.$; Carlingford Lighthouse, N.E. $\frac{1}{4} N.$ —A red conical buoy, surmounted by a staff and ball, has been placed in 4 fathoms, low water, spring tides, on the outside of the Dunany Reefs, which lie off Dunany Point, south side of entrance to Dundalk Bay, and with the following marks and compass bearings—Clogher Head, S. W. $\frac{3}{4} S.$; Dunany Church, W. $\frac{1}{4} S.$; Dundalk High Chimney, N. by W. $\frac{1}{4} W.$; Tipping Mountain on the West with a saddle in the distance, N. $\frac{1}{4} W.$

Loch Carlingford lies two leagues to the eastward of Dundalk Harbour entrance, and forms a large well sheltered bay, the ground good, and water sufficient for the largest ships; but there are several rocks and dangers which must be attended to. Its entrance is between Ballaggan and Cranfield Points, which bear from each other nearly E. by N. and W. by S., distant $1\frac{1}{2}$ miles. The following Iron Nun Buoys have been laid down at low water, spring tides:—Black Buoy on the Shoal N.E. of the lighthouse, in 7 feet water at low water, lighthouse S.W., distant about 40 fathoms; Blockhouse, W.N.W. Red Buoy off the tail of the Scar, Cranfield Bay, in 8 feet water, lighthouse S.W.; Greencastle N. Red Buoy on the south end of the Earls Rock and shoal, in 8 feet water, Greenore Point W. by S.; Greencastle E.; distant from Greenore Point $\frac{3}{4}$ mile. Red Buoy on the S.W. end of Ballyedmont Bank, in 9 feet water, Monument N.; Old Castle, Carlingford, W.S.W. Black Buoy on the eastern edge of Carlingford Bank, in 8 ft. water, Greenore, S.S.E.; Old Castle of Carlingford, S.W. by S. When inward bound, masters of vessels will keep the red buoys on the starboard hand and black on the port. The Helly Hunter, upon which a large Red Buoy has been placed, is a rocky shoal lying to the eastward of the entrance of the Loch, and stretching about 1 mile S.W. and N.E.; its western end dries with extraordinary low tides only, and on the other parts the least water is 6 feet. To avoid the Helly Hunter, as you sail to Carlingford from the E. or S., do not bring Mount Culy to the westward of W. $\frac{1}{4} N.$ until the Blockhouse comes on with the top of Foy Mountain, bearing N.W. $\frac{1}{4} N.$ Then steer for the N. end of Blockhouse or Haulbowline Island, giving the Point of Cranfield and the Island a berth of a Cable's length each from the high-water mark. Between the W. side of Blockhouse Island and Ballaggan Point are several rocks and shoals, and consequently this passage must not be attempted.

Carlingford Loch Light, situate on Greenore Point, on the larboard side in going up Carlingford Loch, revolves, is of the natural appearance, attains its greatest magnitude every 45 secs., and is visible at a distance of 9 miles.

To Sail into Loch Carlingford, take flood-tide; and with the Blockhouse bearing from N. by W. $\frac{1}{2}$ W. to N.W. $\frac{1}{2}$ N. sail in for the E. side of the Island, giving it a berth of a cable's length or two on the larboard. Steer thence for Greenore Point keeping between $\frac{1}{2}$ a cable and 2 cables' length from it; then run N. by W. up the middle of the channel; and abreast of Killeen Point or above it, nearest the E. side, drop your anchor, in from 2 to 6 fathoms water. Small vessels may lie on

the W. side, easy length eastward soft mud.

Carlingford a tower erected which lies upon from Cranfield Po of the entrance t is a fixed light, a The higher light night, and may b first magnitude, a The lower light. appearance. is e to half-ebb. In period, a ball is weather, a bell is

NORTH-EAST AND NORTH-WEST COASTS OF IRELAND

LOCH CARLINGFORD TO SLIGO

Annalong.—A small dry harbour, with excellent shelter for coasters after passing a narrow but easy entrance.

Newcastle.—A dry harbour, surrounded by a quay and sea-wall, affording good shelter for coasters, with an even bottom, and very easy access between the two pierheads.

Dundrum Harbour.—The entrance to Dundrum Harbour (a dry one) lies $2\frac{1}{2}$ miles eastward off Newcastle at the mountain foot. The Marquis of Downshire, has built a long two storied House, close to the western side of the entrance, the light colour of which is a useful guide for vessels endeavouring to make the harbour in thick weather. In the middle of the entrance channel a black buoy is laid down in 14 feet, low water spring tides. It may be picked up by keeping the old castle that stands above the town a sail's breadth in on the west point that forms the entrance. Steering north from this, you will arrive at a smaller buoy lying in the middle of the river; then by steering N.W. by W. you will come up with the first perch on the banks to the west, having on it a small barrel—give this a berth of half a cable's length on your larboard hand; after which by changing your course N. by E. you reach the second perch, having a triangle on it: allow this the same berth as the first. The third perch has a round black top. From the second perch, from which you have the town and pier open, steer N.N.W. up the river until abreast of the red-topped perch, to which give a berth of half a cable's length on

your starboard h the pier end.

St. John's in lat. $54^{\circ} 13' 10''$ W. is erected a to mitting light, R brightness during The light bears (Dundrum bay) E from the Calf of N.W. $\frac{1}{2}$ W., 33 mil ward from W. by light kept open v Island and of the the entrance of St

Killough, ha John's Point, ha off-shore winds, coasters a safe dry bottom. Killoug West side, and, b Pier on the East si lies the entrance entrance of the b the Water Rock, high water: to a able two-storied l and slate roof, (ca situated inside t inboard from the you have passed more to the East House over to the Two cables N.N. the Little Plate R from this is the except at spring el when there is wa there is also wate

on which is an Iron Perch, is a foul ground which runs off from the eastern side of the bay, under the Old Camp. There is also a spit of rough ground, called Crane's Point, extending a short distance from Coney Island; keeping Cotter's House midway between the two Pier-ends, when you are within two cables' length of them, hold this spit. The best anchorage in the bay is within the Water and Plate in from about five to seven fathoms shelter from all but southerly

glass Harbour, $2\frac{1}{2}$ miles E. of the Point, is easily known by the old Castles and a rising town on the side of the bay. You can anchor in the mouth of the bay, between Ringfad and Mick Points, in from 6 to 10 fathoms water, but if the wind blows on a small vessel may shelter inside under the middle castle in from 4 fathoms water, with a warp to the beach, or run aground on the beach. A temporary red light is shown from the shore of harbour, 2 cables' length from the entrance N. by W.

Strangford lies N.E. at the distance of 60 miles from the Hill of Howth, nearly E.N.E. $\frac{1}{2}$ E. 28 miles from Loch Lough. The stream at the entrance is very rapid, and when the tide is ebbing runs strong at S., S.E., or E., the sea is broken, which gives the bar the appearance of a ridge of rocks; but there are not less than four fathoms at low water on any part of the bar, and it is quite free from rocks. Few places afford such safety to bound vessels as this Loch, ships are at all times of tide abundance of water, not only on the bar, but also in the principal roadsteads, *Ballyhenry* on the east, after passing *Portaferry*, and *Portaferry* on the west side of the bar, after passing *Strangford*. A small obelisk, lately built on the outer end of Gun's Isle is a guide to vessels the southward, for making the head of the Iron Perch on Rock Point. This rock covers at half-flood. It is a mile outside Killard Point, and deep water on both sides, but it is to leave it on the port hand, and for the Northern Bar or entrance, give it a wide berth to the Garter, which marks the south end of the bar of Rock Angus, on account of the current, set of flood tide at this spot. On Rock Angus itself, stands a stone tower, left on the port hand. The starboard side or opposite side of the entrance is marked by the Perch on Pladdy Lug, which must not be approached nearer than 25 fathoms, on account of small lying rocks. Off the north entrance

and in a direct line with Kilclief Castle and Ballyculter Church spire (which when brought in one, are the marks for vessels from the N. and E.) is a black fairway Buoy, lately placed there by the Ballast Board. It should be rounded on the starboard hand, as there are several Pladdies between it and Ballyquintin Point. Having passed the Tower on Rock Angus $1\frac{1}{2}$ mile, come to anchor, if you are late for the tide, opposite a White Beacon on the south shore, called Cross Roads, where you can stop a tide until you can get to Ballyhenry or Audley's Road, 2 miles further, and just beyond Strangford and Portaferry towns. A short half a mile above Cross Roads the mid-channel is marked by a tall red and white Pillar on the W. side, and a short white Beacon on the E. side of the Lough. The "Hole" of Strangford is a perfectly sheltered anchorage between the town and Swan Island, and there are 2 Quays opposite the Customhouse, with berths alongside them, and a little Bay with an even beach and smooth water for vessels desirous of taking the ground. There is also at *PORTAFERRY* (opposite) a good Quay, with berths and a smooth beach along the shore, under the town. A Horse Ferry plies between the two towns. There is a Red Pillar Beacon on the outer end of Swan Island, which marks the entrance into the "Hole" of Strangford. On hoisting a signal, experienced pilots can be had.

South Rock Light is erected on the South Rock, about 2 leagues northward from the entrance to Loch Strangford. The light revolves, attaining its greatest lustre every $1\frac{1}{2}$ minutes, and is visible at a distance of 12 miles. A reef of rocks called the Ridge, extends $1\frac{1}{2}$ miles to the E. of the lighthouse, on the extremity of which is a red buoy, which bears about S. by E. from the North Rock Beacon. The North Rock, about a mile N. by W. of the lighthouse, is marked by a solid Beacon, like a small church spire, erected in 1856. The Butter Pladdy, about $1\frac{1}{2}$ miles S.W. of the lighthouse, is marked by a black buoy, to be left on their outer hand by vessels taking the "Sound of the Light"—a channel much frequented by coasters and now well marked, between the lighthouse and the North Rock Beacon. Sailing along the Downshire shore from the Copeland to the North and South Rock, the South Light should be kept outside of Burr Isle, or the Black-head of the Gabbans, in Isle Magee, a sail's breadth outside of Donaghadee shore, or the Copeland Light North, to clear Sculmartin Rock that lies N. $\frac{1}{2}$ E. $3\frac{1}{2}$ miles from Burr Isle, and S.E. 1 mile from the town of Ballywater. To the northward of Sculmartin, on which is an Iron Perch, lie Ballawater Rocks, which stretch out about $\frac{1}{2}$ a mile, commencing

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Belfast.—T

Lough is immediately land Light, and the Black Head; the former N. N. miles. At the entrance, about a Point, is a rocky stretching out $\frac{3}{4}$ is a red buoy. of the Briggs is sort of bight between and harbour of the same depth of to be found at C addition, a wood modulation of steam to the back of the feet will be found 2 miles further W ridge of rocks rather more than is a buoy to be kept the opposite side ing W by N $\frac{3}{4}$ N from 9 miles, is the where there is a tides, 10 feet water. As a guide to the at night, a red before and 2 hours this light to be built a street lamp in red light showing white light, and due north. Off W. is a bank running the shore, and extends at least water over a mile from the shore. Lough. and opposite wood is Holywood lighthouse built shows a pale red clear weather. and middle bank of the pool of G from abreast the starboard hand, thorns at low water channel up to straight, having water, spring tides red on the larboard starboard hand. There is also a good Bank, with three towards Belfast, on the port side is also a red light

to be left on the starboard side. Large ships usually anchor off the town of Carrickfergus, near the middle of the Lough. Many vessels frequent this anchorage, which is marked on all the Admiralty Charts of the Lough, and Masters of ships pronounce it excellent. Vessels drawing not more than 16 feet water may anchor higher up in the Folly Roads—between Carrick bank and abreast of White Abbey; smaller vessels in Whitehouse Roads. Large vessels drawing 18 feet water, intending to reach the quays, may anchor in Garmoyle. A large pilot cutter is constantly under weigh during the daytime, at night also (weather permitting) and generally boards vessels bound to Belfast abreast of Grey Point. The Briggs of Kilroot, now a perch on them, lie on the north side of the Lough, and stretch almost from Kilroot Point to White Head, and about a quarter of a mile from the shore to avoid which keep Black Head open with the White Head, and a vessel will be clear of all danger.—The Admiralty Chart of 1856, as surveyed and reported on by R. Hoskin, Master R.N., states:—Belfast Lough is an admirable refuge harbour. Above Grey Point ships may ride securely against all winds.

Loch Larn—A lighthouse is erected on Farra Point, on the larboard hand, going into this spacious Loch, opposite which are the Maiden or Hulin Rocks. Sailing into Larn from the S.E. pass Muck Island, Brown's Point and Bay; give Barr's Point a berth near half a mile, as a ridge of rocks runs off above a quarter of a mile; give Farras Point (on which is the lighthouse,) a berth of half a cable's length: run for Corran Point on Larn side, on which stand the ruins of an old castle, giving the Isle Magee side a large berth, as a long shoal runs out from it very near half-way across to the steam-packet's wooden wharf opposite the salt pans, and continue to near the Point of Blacknow, round which is Yellow Stone Roads, sheltered from all sea, and little tide. There is a long flat runs out from the N.W. side of the entrance which, when covered, is so deceitful to strangers, that they should open the mouth of the Loch well; keep no more than two cables' length from the lighthouse, run up past the wooded wharf, giving it a berth on the starboard hand. Anchor $\frac{3}{4}$ of a cable's length from Isle Magee shore. Small vessels from above the wharf should run up abreast of Corran Point in 2 fathoms keeping one third from Carran shore, and two thirds from the Island. Large vessels should come to further out, about one third from Corran side. There are no rocks in Larn Loch and should a vessel run too far, she will only go on soft sand or mud. A stranger going in, in the night, should take his soundings from Isle Magee shore; but going to the Yel-

low Stone Roads should take a pilot, Vessels may run in without anchors or cables—there are no rocks or shoals to interrupt them, coming from the southward, except Barr's Point before mentioned, and Hunter's Rock. Four miles of the mouth of Larn Loch, and 4 miles N. $\frac{1}{2}$ W. from Knee or Muck Island, the Sound of Muck appears open, and Corran Castle on with Larn Lighthouse.

Maiden, or Hulin Rocks Light Two lighthouses marked with broad red and white belts, are erected on the Maiden or Hulin Rocks. These rocks bear by compass from the Mull of Cantyre Light, S.S.W., distant 24 miles; from Sanda Island, S.S.W. $\frac{1}{2}$ W., 18 $\frac{1}{2}$ miles; from Ailsa W.S.W., 23 miles: from Copeland Island Light, N. $\frac{1}{2}$ E., 16 $\frac{1}{2}$ miles and from the eastern extremity of Rachlin Island, S. by E., distant 20 and a half miles. The lights are distant from each other 320 fathoms, and bear N.W. by W. and S.E. by E. The mariner in passing should give them a wide berth, there being a number of sunken rocks extending upwards of 3 miles N. and 1 $\frac{1}{2}$ miles S. of them.

Ballicastle Harbour.—Opposite Church Bay on the Irish Coast, is Ballicastle Harbour, formed at the mouth of a small rivulet near the town, affording shelter for small vessels drawing 7 feet water, for at high water there are 9 or 10 feet between the pier heads, with spring tides, and 8 feet with neaps. In summer ships may ride near the W. side of the bay in 9 or 10 fathoms water the glass-house bearing S.S.W., Sheep Island being shut in with Kinbane Head, and Clare House bearing on the top of the cliff near it; but it will not be prudent to lie long here. Should the wind blow from the N. or N.W., and a swell begin to set in, weigh anchor, and rounding Tor Point, make for Cushinden, Cushindaal, or Larn.

The **Skerries** lie W. by N. 5 miles from Bengore Head, and about a mile from the shore; on the south side of the largest of these islands, where it appears lowest, a vessel may anchor in 6 or 7 fathoms water, a little more than a cable's length from shore. In sailing into this anchorage be careful of the Stirks on the east side, and of the Kers on the west side: they lie a little to the southward of a cluster of rocks about half-a-mile westward of the Skerries, and dry at four hours' ebb.

Port Rush is much improved by a pier and quay; there are from 8 to 24 feet within the harbour, while off the mouth of the port a vessel may anchor in 6 to 8 fathoms, on a bottom of sand. On entering the harbour you must give the North Pier a berth of at least 15 yards, to clear the stones which have been placed to break off the swell, and which are covered at $\frac{3}{4}$ flood.

Loch Foyle is a capacious harbour

where the largest ships may ride in safety in all weathers; but the best place for large ships is on the N. side, 3 or 4 miles within the entrance, in from 5 to 8 fathoms water: but vessels of 11 or 12 feet draught will ride easiest between Quigley's Point and Ture, in from $2\frac{1}{2}$ to 3 fathoms. The danger to be avoided is the Tuns Bank, which lies on the S. side of the entrance, having a channel between it and the land, on the N. side $\frac{1}{2}$ of a mile wide. To sail into Loch Foyle, wait for flood tide, or a brisk leading wind to stem the ebb, which runs at the rate of $3\frac{1}{2}$ knots in the entrance: keep Glengad Head 2 or 3 ships' length open off Inishoan Head, until the mouth of Derry River at Kilmore Point is a little open of Magilligan's Point; then steer for the entrance, keeping $\frac{1}{2}$ of a mile from the N. shore, and you will pass between it and the Tuns Bank: when you are within Magilligan's Point, you may keep at a greater distance from shore, and run up to the anchorage. On Donagree Point, a little to the S. of Inishoan Head, are two lighthouses, bearing from each other E. and W., distant 153 yards. The lights are fixed, visible 13 miles, and when in one lead clear of the Tuns Bank.

Inistrahul Island, on the N. E. part of which a lighthouse stands, is 6 miles N. $\frac{1}{2}$ E. from Glenegad Head, and 4 miles from the nearest shore. The light makes a revolution every two minutes.

Loch Swilly.—The entrance of this Loch lies 7 miles W. by S. from Malin Head, and is about $3\frac{1}{2}$ miles wide, from shore to shore. Fannet Point is a low point at the W. side of the entrance; it is distinguished by a lighthouse which displays a steady light, which, when seen from sea, appears of a deep red colour but, from within the Loch, bright. This is a safe harbour for vessels of any size, but the best anchorages are off Burncranah House, 2 or 3 cables' length from shore, in from 4 to 8 fathoms, or between the Island Inch and Rathmullin, rather nearer to the latter, in from 5 to 8 fathoms.

Mulroy Harbour is known at a distance by Tory Island, Horn Head, and Rosgull Hill; it has water sufficient for the largest ships; but a part of the channel is narrow and difficult. Strangers should always take a pilot.

Sheephaven & Downing Bays.—Few vessels like to run for Sheephaven as many get on shore, yet some are compelled, not being aware of the excellent anchorage at Downing Bay, which lies on the E. side, at the bottom of Sheephaven. The bay is formed by points called Downing and Morlach. Close under Morlach Point is the anchorage, in from 4 to 6

fathoms. In running for it from Horn Head, the course will be S. E. by S., distant six miles, care being taken to give a berth to two half tide rocks about a cable's length N. N. W. from Downing; when sea breaks on them, which it generally does, they may be approached as most convenient; there are no other dangers.

Tory Island, the east end of which lies $7\frac{1}{4}$ miles N. W. from Horn Head, has no good anchorage on its S. side; in the summer season, with S. wind, a vessel may stop on the north side in from 20 fathoms, within half a mile of shore. On its N. W. end is a lighthouse exhibiting a steady bright light, visible from seaward 16 miles all round; when passing to the S. E. of the Island, shut in behind the heights between N. by N. and N. W. $\frac{1}{2}$ W.

Rathlin-O-Birne.—This island lies 2 miles S. W. $\frac{1}{2}$ W. from Malin More Head and is about $\frac{1}{2}$ a mile long and $\frac{1}{2}$ of a mile wide. A lighthouse has been erected on it, in N. lat. $54^{\circ} 40'$ and W. long. 6° , exhibiting a flashing light, at an interval of 20 seconds, visible at a distance of 12 miles, but red towards the mainland and sound, eastward of that island.

Donegal Harbour is on the E. side of the peninsula, called the Hassens, of the Green Islands, 2 miles below the Town of Donegal, where small vessels may ride in 2 or 3 fathoms water at about a cable's length from shore. To sail in, take half-flood, and keep about $\frac{1}{2}$ a mile from the shore on the larboard or N. side until you are near the Black Rock; then steer E. $\frac{1}{2}$ N. until you are a cable's length past it; you may then steer directly for the Green Islands, giving the north shore a berth of about two cable's length.

Sligo Bay is to the southward of the point of Raugly, and at the N. E. side the bay is the entrance to Sligo Harbour. S. by E. $\frac{1}{2}$ E. from Raugly point is Black Rock, covered at high water, on which is a fixed bright light, shewing from S. W. seaward to S. E. by S. and seen at a distance of 13 miles. To sail in, keep about 2 cables' length to the northward of the lighthouse, in order to avoid the shoal water on the N. side of the rock. The only place where a vessel will lie at all times of the tide, is Oyster Island Harbour, but the bottom is rocky, and does not hold well. On this Island are two fixed lights, bearing N. N. W. $\frac{1}{2}$ W. and S. S. E. $\frac{1}{2}$ E., 165 yards from each other. After passing the bar, the light in one clear the Bun Gar Bank, and lead to the entrance of the harbour, or up to the Metal Man Beacon.

SOUTH-EAST COAST OF IRELAND.

WATERFORD TO BALTIMORE.

Waterford Harbour.—From Great Saltee Island to Hook Point, on which Waterford Lighthouse is erected, the bearing and distance are, W.N.W. 13 miles; and from the Longship Lighthouse off the Land's end, N. $\frac{1}{2}$ E. 43 leagues. When coming from the S. or the E. for Waterford, bring Sleanaman Mount a remarkable mountain inland, to bear N. E. until you see Hook Lighthouse on the E. side of the entrance of Waterford Harbour, from which a bright and steady light is exhibited. Go not nearer Hook Point than about 2 cables' length, to avoid falling into irregular streams of tide that run near it. Having passed the Hook, and intending to proceed for the anchorage at Passage, take a flood tide or a leading wind, and steer for Credan Head, giving it a berth of at least $\frac{1}{2}$ a cable's length. From Credan Head steer N. E. by N. for Duncannon Fort, carefully avoiding the sand banks which extend from both shores. That on the starboard side begins at Bluff Head, extends more than half a mile from the shore, and terminates at Duncannon Fort. Between Bluff Head and Duncannon Fort is Ballistraw Bay. The sand on the other side, called Drumroe Bank, extends more than a mile from shore, and narrows the passage abreast Duncannon fort to about a quarter of a mile. Two lights in Duncannon Fort, one above the other, are exhibited to direct vessels to that point. On the flat, or what is known as "the bar," 14 feet of water can be had on the lowest spring tides. This shallow lies nearly midway between Credan Head and Duncannon, extends for about a mile in length, and is composed of hard sand; the course by compass over it is from N. N. E. $\frac{1}{2}$ E. to N. N. E. $\frac{1}{4}$ E. Another lighthouse, having a fixed bright light, is erected N. N. E. $\frac{1}{4}$ E. from Duncannon Fort lighthouse, distant half a mile. These two lights kept in a line, will lead in the best channel across the bar between the eastern and middle buoys. When above the lights keep near the eastern side, steering about N. $\frac{1}{2}$ W. for the church of Ballihak, until the perch, which is fixed in the upper end of Drumroe Bank, comes on with the town of Passage; you may then steer upward N. W. by N. in mid-channel. Abreast of this perch are 10 or 11 fathoms. The usual anchorage is about a mile above Passage Town, in 5 or 6 fathoms. Two or three miles above Passage is very good anchorage, and there the stream is much weaker than at Passage. In proceeding for this place, avoid a spit of sand called the Seedes Bank, which stretches off about W. S. W. from Buttermilk Castle, extending about half-way over to the op-

posite side; the least water on it is 9 feet. Avoid also a small rock which dries at low water, and has fourteen feet over it at high water, which lies about half a cables' length from shore, on the south side of Cheek Point. In proceeding about low water, keep in the middle between the two points, or rather nearest to Buttermilk Point; if the flood-tide be running, keep in the rough part of the stream, and you will clear the shoal. Vessels drawing 20 or 22 feet water may go up to Waterford, where there are 2 fathoms at low water, a ship's length from the quay. The safest channel to Waterford is on the north side of little Island: the channel on the other side is deeper, but it is narrower, and subject to eddy-tides, which make it dangerous. Pilots may always be had at the entrance of the harbour.

Dungarvan Bay.—A lighthouse has been erected on Ballinacourty Point, on the northern side of Dungarvan Bay, with the following marks and compass bearings:—Helvick Head, S. $\frac{1}{2}$ W., $1\frac{1}{2}$ miles; Carrickapane Rock, S. S. E., 9 cables' length; and Whitehouse Spit, W. by N., $3\frac{1}{2}$ cables' length. It shows a fixed bright light, visible between the bearings of W. and S. E. $\frac{3}{4}$ S.; green, bearing from W. to N. W. by W.; and red in the direction of Carrickapane Rock. Its white appearance can be seen at the distance of about 10 miles in clear weather.—The intermittent light on Mine Head, S. W. by W., 4 miles from Helvick Head, marks the approach from the westward to Dungarvan Bay, and can be seen further eastward than the range of Dungarvan light. A vessel in the entrance of Dungarvan Bay must keep clear of the red colour of the light to avoid Carrickapane Rock; and on the northern side of the bay keep to the southward of the green light to avoid Carricknagaddy, and the rocks which extend half a mile eastward of Ballinacourty Point.

Youghall Harbour lies about 13 miles W. S. W. from the entrance to Dungarvan. During high water, spring tides, ships drawing fully 17 feet may go in, and ride off the middle of the town. Across the mouth of the harbour is a bar, which extends above a mile south from the entrance, and has 6 to 9 feet on it at low water. Except when the wind blows from the south, south-east or south-west, there is always smooth water on this bar; 14 to 15 feet water are on it at high water, neap tides. When Cable Island bears W. S. W. you are on the outer edge of the bar. When sailing for Youghall Bay from the southward, keep Knockmoldown Mountain N. by E. To anchor when

waiting to go over the bar, the best places are on the S. side of the bar, the harbour mouth bearing N. N. E., in 3 or 4 fathoms; or on the north side of Cable Island, in 3 to 6 fathoms, about 2 cables' length from the shore. From a tower on the west side and within the entrance, is shown a fixed bright light, open to the harbour, and seaward to S. W. by S., and may be seen at a distance of 6 miles.

Cork Harbour.—From a tower on Roche Point, at the east side of the entrance, is shown a red light, revolving every minute, and visible at the distance of 8 miles. From it Cork Head bears S.W. by W. about 4 miles. A fixed white light is also exhibited, visible between the bearings of N.E. by E. and N.E. $\frac{1}{2}$ N., to pass eastward of the Daunt's Rock. From the Longship Lighthouse off the Land's End to the entrance of Cork Harbour is 46 leagues N. by W. $\frac{1}{2}$ W. Coming from the southward, and bound to this harbour, keep Knockmeldown Hill about N. E. by E., until you see the Old Head of Kinsale, a bluff point of land with a lighthouse on it. From this Head the entrance of Cork Harbour lies E. $\frac{3}{4}$ N, distant about 5 leagues. When off the harbour, Roche Tower with its lighthouse is remarkable. A little without the point, on E. side of entrance, lie the Stag Rocks. There is clean ground in a moderate depth without the harbour's mouth, where ships may, with a northerly wind, wait the flood or daylight. A red buoy is placed on the edge of the bank off Fort Camden; another red buoy about a mile further in, to the northward of the entrance to Cross Haven; a third, of the same colour, off the east side of Spike Island; and a red buoy on the eastern extremity of East Haulbowline Bank. Each of these buoys is numbered. There are also several black buoys on the side opposite, on the edge of the mud flat: they lie in 4 fathoms, and are likewise numbered. Having passed the narrows, which is about 450 fathoms over, the channel continues that width on a N. by E. and N.E. direction, between the red buoys on W. and black buoys on E. side, to the anchorage off Spike Island, on sandy ground; thence it leads upwards, narrowing round the beacons on the northern side of the Spit extending E.S.E. from Haulbowline Island, close in to Queenstown on the north shore. At the entrance of the passage to Queenstown is a white buoy; and at about 160 fathoms to the S.W. of this, in $2\frac{1}{2}$ fathoms, is the Lower Spit Buoy, red. The Upper Spit Buoy, red, lies in 9 feet, N.W. by W. $\frac{1}{2}$ a mile from the Lower Spit Buoy. Here the tide runs 2 or 3 knots; it is high water on the full and change at half-past 4, and the tide rises from 9 to 13 feet. Large ships going in at or near low water must be careful to avoid the Harbour

Rock, which lies Rocks, on the iron trunk buoys apart: one on the and white with b western edge, ch It has fifteen fe spring tides. At $\frac{1}{2}$ E. from the S. end of the thence N.W., and est part, the north average springs. lies with a rema ing, on the pre Cove, bearing W. projecting part c ward of Temple on it two iron cable's length a chequered red an the other on the black and white the shoals on within two cables shore; or bring white wall, which the fort upon Dog the west bastion c buoys placed in inside of Dog's N which is bounded buoys marking th side, and on the w buoys coloured v which extend as fa go to the westwar Turbot Bank, keep open to the westw the white wall abo without the harbo village which ap Great Island, over ing the point of D 21 degrees E. whic dangers on that sic shoals. keep the fl Dog's Nose, on, or the white wall. T Rock on the S. side on with Poor Head may be avoided by E. than to the W. Between the Harbo point are 5 to 6 fa Harbour Rock and 7 fathoms; and betw western shore are 5 water. About a r Haulbowline Island Sand, which begins side at half ebb, and age at Queenstown. of this bank a lighth on screw piles, in fixed Red light, visit to S.E. by E. $\frac{1}{2}$ E., and at a distance of vessels are caution

bank between the lighthouse and Haulbowline Island, and to give the lighthouse and detached beacon pillar sufficient berth in passing. In going from Dog's Nose for the anchorage off Queenstown, keep Dog's Nose Point S. by W. $\frac{1}{2}$ W.; or steer for the easternmost part of the fort on the N. shore, between the black and red buoys to avoid a flat which extends in some parts a mile from the E. shore, and also a rock that lies to the westward of Cork Beg, which appears at half-ebb, with a beacon on it. The best place for large ships to anchor is off the garrison, in from 8 to 5 fathoms. Merchant ships may ride off the town of Queenstown in smoother water and less tide, they may go also further up the harbour of Passage, and ride any where between the first houses and Ronan's Point. In proceeding from Queenstown to Passage, do not approach nearer than half a cable's length to the south side of Black Point; and give the W. side of it a berth of about a cable's length, to avoid a sand which extends from that shore, and dries at low water. You may go westward from Haulbowline Island, until you see Ronan's Point in the channel of Passage; then steer N'ward along the W. side of the channel, for the anchorage. Vessels drawing 16 feet may, with spring tides go up to Black Rock or to the town of Cork, and lie at the quays with 9 feet at low water, average tides. Between Passage and Horse Head is a spit of sand, of 6 feet water, extending above a cable's length eastward from the Clay Cliff: you will avoid the extremity of this spit by keeping Dunkettle House on with a grove of trees which stand on the top of a hill above the House. The point of this spit lies with Belveley Castle and Ronan's Point in one; and vessels which anchor

near it, should have the castle fairly without Ronan's Point, or wholly shut in with it. In a small creek called Cross Haven, within the entrance of Cork Harbour, and on the west side, opposite Dog's Nose, vessels may ride in 10 or 12 feet.

Kinsale Harbour.—A new lighthouse has been erected on the Rocky Point at the S. end of the Old Head, distant half a mile S.S.W. $\frac{1}{4}$ W. from the old lighthouse, bearing from Bulman's Rock S.W. $\frac{1}{4}$ W. $4\frac{1}{4}$ miles. This light is a fixed bright light, similar to that heretofore shown from the old lighthouse, and is visible from N.E. $\frac{1}{2}$ N. seaward to W. by N., and at the distance of 21 miles. In sailing towards the harbour from the southward, keep Knockmeldown Hill N. E. by E. until you see the Old Head of Kinsale: after making that, which is about $3\frac{1}{2}$ miles S.W. by S. from the entrance of the harbour, run in until the old lighthouse on it bears W.N.W. about 3 miles; then run in N.W. by W. until the old lighthouse bears S.W. by S.; and then steer N.E. by N. until you are abreast of the lower cove, where you may anchor in 6 fathoms. The only danger near Kinsale Harbour is Bulman Rock, which lies about a cable's length S.S.W. $\frac{1}{4}$ W. from Hangman's Point on the E. side of the entrance, and has 4 feet on it at low water. This rock is buoyed, and may be passed on either side, but the channel on its W. side is the safest for ships coming in or going out.

Baltimore Harbour lies about $5\frac{1}{2}$ miles to the north eastward of Cape Clear, and is very convenient for ships bound either eastward or westward. Small vessels may ride 2 or 3 cable-lengths N.N.W. of Baltimore Town, in 10 or 11 feet at low water, sheltered from all winds.

BRISTOL CHANNEL.

LIGHT VESSELS AND BUOYS.

Light Vessels are moored, and Buoys laid in this Channel as follows:—

Light Vessels.

A LIGHT VESSEL, exhibiting a bright light, which revolves every minute, and is visible 10 miles, lies near the English and Welsh Grounds, on the south side of the Bristol Channel, and in lat. 51 deg. 26 min. N., and long. 2 deg. 58 min. W. This vessel is painted red, carries a ball during the day, has the words *English and Welsh Grounds* upon her sides, and is moored on the northern edge of the sand in 6 fathoms low water, spring tides, about 10 miles from King Road, with the high land at Minehead on with Flat-holm Light Tower, W. by S.; the Usk

Light Tower, N. by E. $\frac{1}{2}$ E.; a remarkable Peak on the distant Land (See-mee or See-me-not), on with St. Thomas' Head, S. $\frac{1}{2}$ W. A gong is sounded in foggy weather.

Off the West end of the Skerweather Sand there is a LIGHT SHIP placed to prevent the stranger from passing into the dangers of Swansea Bay. It exhibits a Red Revolving Light, shewing a flash every 20 seconds, at an elevation of 38 feet above the level of the sea. It is intended to show half a globe above the usual globe. Calculations for bearings and distances can be ascertained sufficiently accurate, by judging that of the West Skerweather Buoy.—This light is regarded as being very obscure, and this is accounted for by the lowness of

the north shore, which conveys a mist over the Swansea Bay. It is, however, very serviceable, and is relied on when entering the Bay.

A LIGHT VESSEL, bearing a bright light, which revolves every minute, and is visible 10 miles, lies off the western end of the Helwick Shoals, and in lat. 51 deg. 31 min. N., and long. 4 deg. 24 min. W. This vessel is painted red, shows a ball in the daytime, has the word *Helwicks* upon her sides, and is moored in 17 fathoms, low water, with Oxwich Point, E. by S. $\frac{3}{4}$ S.; Worm's Head, N. E. by E. $\frac{3}{4}$ E.; Caldylighthouse, N.N.W. $\frac{3}{4}$ W.; Lundy Island, S.W. $\frac{3}{4}$ W., 22 miles. During foggy weather a gong is sounded.

Near the western end of the One Fathom Bank lies a LIGHT VESSEL, exhibiting a quick revolving bright light, at an elevation of 38 feet above the water, and for the purpose of distinction a fixed red light will also be shown from a pedestal abaft at an elevation of 14 feet. It is moored in 4½ fathoms, with Barry Church (with Belfry) twice its apparent breadth on the West end of Barry Island, N. by W.; Lavernock Point, N.E. $\frac{3}{4}$ E. Flatholm Lighthouse, E. $\frac{1}{2}$ N., 4½ miles; Steepholm Flagstaff, E. S. E., 4½ miles; Brean Down, S.E. by E. $\frac{1}{2}$ E.

CARDIGAN BAY LIGHT VESSEL lies in 26 fathoms, low water, spring tides, one Red revolving light, shewing a flash every 30 seconds, 25 feet above the level of the sea, South Bishop Lighthouse, S.W. by W., 36½ miles; Strumble Head, S.W. $\frac{1}{4}$ S., 21½ miles; Kenmaes Head, S. $\frac{1}{4}$ W., 16½ miles; Causeway Buoy, E. by N. $\frac{3}{4}$ N., 25 miles; Bardsey Lighthouse, N. E. by N., 23 miles.

Buoys.

MORTE STONE, Black, Staff and Globe, lies in 9 fathoms low water, spring tides, 1½ cable's length to the N.W. of the Ledge; Bull Point, E. $\frac{1}{4}$ S., 1½ miles; Morte Point, S.E. $\frac{1}{4}$ S., $\frac{1}{4}$ mile; Baggy Point S.W. by S., 2 7-10 miles, Hartland Point, W. by S. $\frac{3}{4}$ S., 14 4-10 miles; Lundy Lighthouse, W. by N. $\frac{3}{4}$ N. 16 miles. This Buoy warns mariners of a dangerous and rocky locality over which the tide sweeps at a terrific rate.

SAND RIDGE, Black, lies in 4 fathoms low water spring tides, with the Valley of Rocks Hotel, midway between Linton church and a conspicuous house on a hill westward, bearing S.W.; Hurtstone, apparently a cable's length outside the Foreland, S. E. by E. $\frac{1}{4}$ E.; Rillage bearing W. by N. $\frac{1}{4}$ N., 10 miles.

GORE, Black, lies in 18 feet, Burnham High Light its length open northward of Low Light, bearing E. by S. $\frac{3}{4}$ S.; Flatholms Island, its apparent length open west of Steepholms; the Lighthouse, N.

E. by N., 9 miles; Sand Point appearing open of Brean Down Point, N. E. by E. $\frac{1}{2}$ E.

WEST CULVER, Red and White striped, with Beacon, lies in 4 fathoms, with Swallow Cliff, a little open of the South of Steepholme Island, E. $\frac{1}{4}$ N.; Willet's Tower, well open to the Westward of West Quantocks Wood, S.S.W. $\frac{1}{4}$ W. Westerly; East Culver Buoy, E. $\frac{1}{2}$ S., 5 miles.

EAST CULVER, Red, lies in 6½ fathoms, with Penarth Head, on with Lavernock Point, N.N.E. $\frac{1}{4}$ E.; Black Nose Point, just open Southward of Steepholm Island, E. by N. $\frac{1}{4}$ N.; Flatholm Lighthouse, N. E. $\frac{1}{4}$ E.; Burnham Church Tower, S.E. by S.

HONEYCOMB, Black, lies in 5 fathoms, about 35 fathoms N.W. of the Rock, with Weston-super-mare Church on with W. end of Piggot's Summer House, S.E. $\frac{3}{4}$ E.; Kewstock Church about a ship's length open N. of Breanbeck Island, E. by S. $\frac{1}{4}$ S.; Brean Down Point, S. W.; Swallow Cliff Point, N.E. by E. $\frac{1}{2}$ E.; Flatholm Lighthouse, N.W. $\frac{1}{4}$ W., 4 miles.

NEW PATCH, Black, lies in 9 feet, with the high land of Minehead just open Southward of the South end of Flatholm Island, W. $\frac{3}{4}$ S.; Flatholm Light, W. $\frac{1}{4}$ S. S'ly., $\frac{1}{2}$ mile; Grounds Light E. by N N'ly. 6 5-10 miles; Cardiff Church Tower, and the two Glass House Chimnies at Cardiff, apparently at equal distances, the Church Tower being the Eastern object, N. $\frac{1}{4}$ E.; Hayes' Windmill over the East end of Sully Island, N.W. $\frac{1}{4}$ W.; Penarth Church, N. $\frac{1}{4}$ W.

WOLVES, Red and White chequered, lies in 5 fathoms, half a cable's length westward of the rocks, with Hayes' Windmill on with the West end of Sully Island, N.W.; Breaksea Buoy bears W. N.W. W'ly., 10 miles; Penarth Head, N. by E. $\frac{1}{2}$ E.; Flatholm Lighthouse, S.E. $\frac{1}{4}$ S. The Wolves are a dangerous cluster of rocks: the tides both ebb and flow, set directly on them, therefore great caution is requisite,

SOUTH WEST PATCH, Red, with Beacon, lies in 4 fathoms, with Worle Mill in a line with the western side of Middlehope Beach, S. $\frac{1}{4}$ E.; Monkstone Beacon W. $\frac{1}{4}$ S., 4 miles; Flatholm Lighthouse, W. by S. $\frac{3}{4}$ S.; Usk Lighthouse, N.N.E. $\frac{1}{2}$ E. N'ly.; Grounds Light Vessel, S.E. by E. $\frac{3}{4}$ E. The Buoy, formerly called the Spit, protects one of the quickest sands in the Channel, and, like many other dangers, the tides set directly on them. The old passage between this sand and the Welsh Hook is now filled up, and rendered unnavigable.

WELSH HOOK, Black, lies in 5 fathoms, low water spring tides, with Aust Head a ship's length open southward of Denny Island, E. by N. $\frac{1}{2}$ N.; Usk Lighthouse, N.N.W., 6 miles; See-me

- and See-me-not on with Clevedon Old Church, S.S.W. $\frac{1}{4}$ W.; Grounds Light-Vessel, W.S'y., $3\frac{1}{2}$ miles.
- RANNEY FLOATING BEACON**, placed on the S.S.W. part of Ranie Spit, lies in $3\frac{1}{2}$ fathoms low water spring tides. Sailors' Home at Cardiff, just open off Penarth Head, N. by E. $\frac{1}{2}$ E.; the Western part of Brean Down on with Flatholms Island at low water; the Lighthouse, S. by E.; Ball Point, W. $\frac{1}{4}$ N.; the highest part of Sully Island, W. $\frac{1}{4}$ S.
- WEST CARDIFF**, Black with Beacon, lies in $4\frac{1}{2}$ fathoms with the Monkstone Beacon in line with Clevedon New Church, E. by S. $\frac{1}{4}$ S.; Ground light, E. $\frac{3}{4}$ S., $6\frac{1}{2}$ miles; Cardiff Hook buoy, S.W. $\frac{1}{4}$ W., 27-10 miles; Usk Lighthouse, N.E. by E. $\frac{1}{4}$ E., $9\frac{1}{2}$ miles; the Eastern side of Steepholm, just open West of Flat-holm, at high water, the Lighthouse S.E'y.; Sully Island open a ship's length Southward of Ball Point W. $\frac{1}{4}$ S.; Penarth Church, N.
- EAST CARDIFF**, Red lies in 6 fathoms, lowwater spring tides; Hook Buoy S.W. by W. $\frac{1}{2}$ W., 1 mile; Monkstone Beacon on with S.E. end of Steepholm, S.S.W. $\frac{1}{4}$ W.; Penarth Church, W. $\frac{1}{4}$ S.; Usk Lighthouse, E.N.E.
- CARDIFF HOOK**, Black, and White chequered, lies in 2 fathoms, with Cardiff Church Tower its apparent length open Eastward of a conspicuous clump of Trees, N.N.W. $\frac{1}{4}$ W.; Grounds Light, S.E. by E. $\frac{1}{4}$ E., $5\frac{1}{2}$ miles; Peterstone Church Tower apparently midway between the Spire of Newport New Church and the Tower of the Old Church, N.E. $\frac{1}{4}$ E.; the Usk Light Tower, N.E. by E. $\frac{3}{4}$ E.
- NORTH WEST SPIT**, Black and White, Vertical Stripes, lies in 2 fathoms low water spring tides; Cardiff Hook, N.E. $\frac{1}{4}$ E., $2\frac{1}{2}$ miles; West Cardiff Buoy 2 cables distant, S.S.E. Easterly; the eastern part of Steepholms on with the western high water mark of flatholms, S. $\frac{1}{4}$ E.; Penarth Church, N. $\frac{1}{4}$ E.
- BREAKSEA**, Black and white striped horizontally, with Beacon, lies in 5 fathoms, about one cable's length from low water mark, and $\frac{1}{2}$ a cables length without the rocks, with the Nash Low Light Tower apparently midway between the High Light Tower and the White Beacon upon St. Donant's Cliff, N.W. $\frac{1}{4}$ W.; One fathom Bank Buoy, S.E. $7\frac{1}{2}$ miles; Evans' Farm House, apparently midway between a large Yellow Dwelling House and Limpert House, the latter being the Eastern object, N.N.E. $\frac{1}{4}$ E.; Brereton Windmill, N.N.W., $\frac{1}{2}$ W.
- COCKBURN SHOAL**, Black, lies in 4 fathoms, about 20 fathoms S.E. from the shoal with the Avon Lighthouse one-third between Penpole House and Miles' House, S. E.; high water mark of Black Nose Point on with Portishead Point, W. $\frac{1}{4}$ S.
- WEST USK**, Black, dries at low water; a farm house at St. Brides in line with a bluff tree on the western land, N.W. by W. $\frac{1}{2}$ W.; Usk Lighthouse, N. by W. $\frac{1}{4}$ W.; Windbound Point, N. by E. $\frac{1}{4}$ E.
- EAST USK**, Black, dries at low water; a clump of tiles on Stone Hill just open westward of Windbound Point, N.N.W. $\frac{1}{4}$ W.; West Usk Bnoy in line with Peterstone Church W. $\frac{1}{4}$ N.
- EAST NASH**, Black and White chequered, lies in $4\frac{1}{2}$ fathom with Groes' House, (yellow) twice its apparent width open Westward of the Tower upon Dunraven Promontory, N.; the North side of the Nash High Light Tower on with the South side of the Low Light Tower, S. E. by E. $\frac{1}{4}$ E.; Nash Swatchway Buoy, N. W. $\frac{1}{4}$ W., $4\frac{1}{2}$ miles; Tusker Beacon, N.N.W. $\frac{1}{4}$ W. $4\frac{1}{2}$ miles: the fair channel course from the Mumbles to this buoy inside the sands, with the Mumbles Light Tower N. N. W. $\frac{3}{4}$ W., and the Nash Low Light Tower S. S. E. $\frac{3}{4}$ E.
- NASH SWATCHWAY**, Black, lies in $2\frac{1}{2}$ fathoms, with Sker House on with Rhwychwyn Point, N. $\frac{1}{4}$ E.; Newton Down Windmill, its apparent length open northward to Newton Nottage Church Tower, N.N.E. $\frac{3}{4}$ E.; the Nash High Light Tower, its apparent length open northward of the Low Light Tower, S.E. $\frac{1}{4}$ E.; Tuskar Beacon, N.E. $\frac{1}{4}$ N.; East Nash Buoy, S.E. $\frac{1}{4}$ E., $4\frac{1}{2}$ miles; West Nash Buoy, N.W. by W. N'y., $2\frac{1}{2}$ miles.
- WEST NASH**, Black and White chequered with Beacon, lies in 6 fathoms, with Newton Down Windmill on with the centre of the Breakwater at Porth Cawl, N. E. by E. $\frac{1}{4}$ E.; Nash High Light Tower, S.E. $\frac{1}{4}$ E., $7\frac{1}{2}$ miles; the Nash Low Light Tower, S.E. $\frac{1}{4}$ E.; East Skerweather Buoy, N. by E., 26.10th miles; West Skerweather, N.W. $\frac{1}{4}$ N., $6\frac{1}{2}$ miles; Mumbles Light Tower, NNW; Nash Swatchway Buoy, right between the Lighthouses, S.E. by E. S'y., 2 miles; Tuskar Beacon, E. by S., 3 miles.
- EAST SKERWEATHER**, Red and White striped, lies in 6 fathoms, with a conspicuous Shaft on the summit of the highest Hill, open eastward of Constantinople Cottages, the apparent length of them, N.N.E. $\frac{1}{4}$ E.; Margam Trees, on with the west end of a long stone wall terminating near the Beach E. $\frac{1}{4}$ N.; the Windmill inland of Cwm Mawr on with Dunraven Point, S.E. $\frac{1}{4}$ E.; Kemfig Church $2\frac{1}{2}$ points open westward of the Scar House, N.E. by E. $\frac{1}{4}$ E.; Nash Low Light Tower, S.E. $\frac{1}{4}$ S., 9 miles; Mumbles Light Tower, N.N.W. $\frac{1}{4}$ W.; West Nash Buoy, S. by W., 24-10 miles; West Skerweather Buoy, N.W. by W. $\frac{1}{2}$ W., 5 miles; Mixon

Buoy, N.N.W. $\frac{1}{2}$ W., 9 miles; Tuskar Beacon, S.E. $\frac{1}{4}$ E., 4 miles.

WEST SKERWEATHER, Red, with a Beacon, lies in $4\frac{1}{2}$ fathoms, with Constantinople Cottages on with the mouth of Aberafon Harbour, E.N.E. Northerly; Margam Trees open southward of Sker House three times their apparent width E. by S.; Nash High Light Tower, S.E., Easterly, 14 miles; Mumbles Light Tower, N., Easterly, 6 miles; East Skerweather Buoy, S.E. by E. $\frac{1}{2}$ E., 5 miles.

HUGO, Black, lies about a cable's length from the dry sand on the N.E. side of the Bank, in 3 fathoms low water with a large square House on with the South end of the large Store House at Porth Cawl, S.E. $\frac{1}{4}$ E.; Kemfig Church its apparent breadth open South of a White Cottage (the Northernmost in the Village), E. $\frac{1}{2}$ N.; Nash Low Light Tower, S.E. by S.; Mumbles Light, N.N.W. $\frac{3}{4}$ W.; Constantinople Cottages N.E. $\frac{1}{2}$ N.; East Skerweather Buoy, S. by E.

INNER GREEN GROUNDS, Red Nun, lies in $3\frac{1}{2}$ fathoms, about one and a half cable's length from 5 feet on the S.E. end of the Shoal, with Kilvey Old Mill, $\frac{1}{2}$ distant from the Inn (a large brick house), towards Tennant's Look-out House, N.N.E. $\frac{1}{4}$ E.; Swansea East Pier Head, N. by E. $\frac{3}{4}$ E., 2 3-10 miles; Mumbles Lighthouse, W. $\frac{1}{2}$ N.; Woodland Castle, N.W. N'rly.

OUTER GREEN GROUNDS, Black and White chequered, lies in $2\frac{1}{2}$ fathoms, with the Tut between the two Houses on the Mumbles Point, W. $\frac{1}{2}$ N.; Woodland Castle, N.N.W. $\frac{3}{4}$ W.; Swansea Pier and Lighthouse, N.E. by N.; Kilvey Old Mill, N.E. $\frac{1}{4}$ N.; Green Grounds Buoy, E.

MIXON, Black, with Bell, lies in 10 fathoms, with Porth Einion Point on with Oxwich Point, W. by N. $\frac{1}{2}$ N.; Kilvey Old Mill Tower on with Swansea East Pier Head, N.E. $\frac{1}{2}$ E.; Mumbles Light Tower, N.E. $\frac{1}{2}$ N.; West Skerweather Buoy, S $\frac{1}{2}$ E., $5\frac{1}{2}$ miles.

WEST HELWICK, Black, with Beacon, lies in 6 fathoms, and is surrounded by 11, 14, and 15 fathoms. Worms Head, bears N.E. by E. $\frac{1}{4}$ E.; Helwick Light Vessel, W. by N. $\frac{1}{4}$ N.; West Scar, S.E. $\frac{1}{4}$ S.

HELWICK SWATCHWAY, Black and White striped, lies in $4\frac{1}{2}$ fathoms, with Burry Holmes appearing in the centre of Worms Sound, N.N.E. N'ly; Oxwich Point on with Porth Einion Point, E. by S. $\frac{1}{4}$ S., Easterly; East Helwick Buoy, E. by S. $\frac{3}{4}$ S., $3\frac{1}{2}$ miles; Worms Head, N., 2 4-10 miles; West Helwick Buoy, W. by N. $\frac{3}{4}$ N., $2\frac{1}{2}$ miles.

EAST HELWICK Black, lies in $2\frac{1}{2}$ fathoms, with Rhossily Point open westward of Tears Point the supposed breadth of a ship, N. W. $\frac{3}{4}$ N.; a White Building upon the high land, apparently mid-

way between two White Cottages low that building, N.N.E. $\frac{1}{2}$ E.; Oxwich Swatchway Buoy, W. by N. $\frac{3}{4}$ N. miles; West Skerweather Buoy, S.E. S'ly., $12\frac{1}{4}$ miles; Mixon Buoy, E. S. $\frac{1}{4}$ S., $9\frac{1}{4}$ miles; Worms Head, N. $\frac{1}{4}$ N., 5 miles. —

TUSKER AND MONKSTONE.—A mast with a large red ball attached is erected upon each of these rocks. From the Tusker Beacon, Porth Cawl Point, N. $\frac{1}{2}$ W., is $1\frac{1}{2}$ miles; Mumbles Light House, N. W. by N. 13 miles; Nash Light Tower, S. S. E. $\frac{1}{2}$ E., $5\frac{1}{2}$ miles; East Skerweather Buoy, N. W. $\frac{1}{2}$ W., 4 miles; East Nash Buoy, S.S.E. $\frac{1}{2}$ E., 5 miles; West Nash Buoy, W. $\frac{1}{2}$ W., 5 miles.

BEACON ON THE WOLF ROCK

This Beacon consists of an artificial cone bearing a mast having a large ball upon its summit at an elevation of 36 feet above the level of the sea at high water; mariners are to observe that spring tides rise at this station 19 feet, and that low water of those tides, the rock is uncovered to the height of 15 feet. Michael's Mount open of Lornon Head leads $2\frac{1}{2}$ miles to the Eastward of Longships Lighthouse touching Cornwall leads $1\frac{1}{2}$ miles Westward of The Bearings and Distances of the undermentioned objects from this Beacon, as follows, viz.:—Longships Lighthouse, N.E. $\frac{1}{4}$ N., $7\frac{1}{2}$ miles; Scilly Lighthouse, W. by N. $\frac{1}{2}$ N., 21 miles; Rundlestone Rock, which covers at half-flood, E. $\frac{1}{2}$ N. $\frac{1}{2}$ N., 7 miles; Seven Stones Light vessel, N.N.W. $\frac{1}{4}$ W., Westerly, $12\frac{1}{2}$ miles; Lizard Lighthouses, E. S. E., 23 miles.

Directions for Sailing the Bristol Channel.

The introduction of Railway communication between Kingroad and the City of Bristol, together with the contemplated formation of Channel Docks at the mouth of the River Avon, induces us to submit the following illustrations of the dangers of the Bristol Channel, which by way of preface, we may quote the remark of an eminent nautical man, "that the Bristol Channel is a harbour of refuge in itself the dangers are many, but their avoidance is easy when judiciously encountered hence the object of this paper. It will be needful to state that the lights and buoys are fully described in another column. We will place a stranger in the Chops of the Channel about 45 miles Northward of the Scilly Islands. The first place he must make is Lundy Island, which can be obtained by steering east. Should it be thick weather he will be cautioned of nearing it by the sound of a gun placed on the west-side which reports every 1

on making the Island, either south, difficulty is met with by the tide. The proper passage is the Island and Hartland Point. The tide sets W.S.W.; flood, E.N.E. and up the course to avoid the Mort Bay, which consists of ap, Rockham, Morte Stone, and shore when the wind is from is to steer on an ebb-tide and on the flood East until Morte S.S.W. This brings the vessel to point, and a good berth off; experienced always think it keep the south side in sight, it high land up as far as the fore-perceivable in thick weather, good for a departure. The next E. by S. $\frac{1}{2}$ S. which will clear is which are close to the shore, rise the following:—Copperas ndrige, and Foreland Ledge. ture from the Foreland ship se E. by S., this will leave the of the Culver sands a peice on ard hand, make the One Fathom y which is black, and bring the Flatholmes; but if Bridge- the destination, when at the alter the course to S.E. by E. $\frac{1}{2}$ E. Culvers are left on the port hand abriel and Kelve Patch will be n the starboard, continue this til you see Burnham Lights, on em keep the high light a sail's pen of the low one, until the Light is open eastward of the ms, then draw both Lights in will clear the Sturt and Lark ing the Gore a berth northward the ship safely in Bridgewater e may remark, the course S. will take you to the projected it Brean down. Should King- our object you must (after steer- S. as stated before) haul up to ich will bring you direct to the p on the English and Welsh This course will take you clear N. elbow of the English Grounds ou between that and a sand as any in the Channel known as . Patch. When abreast this Light steer East, which will ep water and leave Clevedon the starboard hand and the d on the port, on which a black placed in 5 fathoms, (en passant refer to a fine roadstead, when cannot be reached, called bay, it affords fine anchorage e Light Ship bears W. by N.) ime you will shorten sail for to anchor in Kingroad keeping e course until you are opposite , which is a low bluff point: then by S. to avoid the Horse Shew, midway between Portshead and burn Rock. Taking the ship south

ward of both dangers, we now approach Kingroad, which affords the best holding ground, and can show accommodation for large vessels rarely equalled. The best berths are generally found when the Avon Light bears S.S.E., this will give 7 fathoms low water; the roadstead is on its own merits considered safe from every wind that blows, blue clay bottom, and the only wind that can influence it is N. W., when if a vessel forsakes her anchors a soft bed of mud will receive her on the east bank. Many ship have resorted to this under loss of anchors and chains. To enter the Avon steer E. by S. until you get the red light of the tower, open then port, this will take you over the Swatch, but must not be attempted by large vessels before half flood, We will now turn our attention to the down Channel Voyage, and until we get the English and Welsh Grounds Light Ship it will serve to "box the compass," on arrival there, and, bound to Newport Roads, it is necessary to bring up at anchor at the back or westward part of the S.W. Patch to wait the coming flood, getting the Light Ship to bear S.E. by E. you will then obtain 5 fathoms of water, which will increase as you near it, in fact 5 fathoms can be relied on after the western side of this sand, but shallows as you approach the eastward. On the flood steer N.N.E. which will find the Usk light then make the Red light bear N. by W. $\frac{1}{2}$ W., then steer North and you will get into Sea Reach. We are once more at the English and Welsh Grounds Light-ship, bound for Penarth Roads, then ship a course W. by N. $\frac{1}{2}$ N. you will make Monk-stone on your starboard hand, alter it, N.W. which will make the buoy on the West Cardiff Grounds. There is an eastern passage which it is not prudent to attempt at all times, and has got into disuse seeing that the western one can be obtained in the same time without the danger. It is now our object to get a good anchorage in Penarth Roads which can be secured by getting the Steep Holmes open West of the Flat Holmes. This roadstead cannot be relied upon, it has a very uneven bottom, and very little shelter, and it very frequently occurs that vessels bound out from Cardiff on meeting with an adverse wind rather than anchor there run for Kingroad, or under some circumstances anchor under the Flat Holmes, where good anchorage can be found. The ship is now bound out from Penarth Roads, the first danger is the Ranney Spit and Lavernock Point, over which the tide runs rapidly, to avoid which steer S.S.W. which will leave these dangers on the starboard hand, continue this course until the Flat Holmes Light bears S. by E. The ship is now making her passage North of the Flat Holmes, and will next encounter a cluster of rocks

called the Wolves, which will be escaped by steering W. by N., the tide sets on these rocks at a tremendous rate direct from Monkstone. This same course will take you off the Nash Point, and clear of a rock known as the Old Chapel, on which small vessels have met with mishaps, (it is close in on the North shore) and also take you southward of a dangerous point known as Breaksea Point, which is 11 miles from the Flat Holmes, and give the One Fathom Bank a berth southward, to continue this course you will clear the Nash Sands, Scarweather, and all other dangers, on the North side of the Channel. If Swansea is the Port and you want to go inside the Nash Sands, then haul up N. W. by N., which must make the Nash Lights. On effecting an entrance steer N.W. by N. $\frac{1}{2}$ N. this course will clear the Tuskar on the starboard hand, and the E. buoy off the Scarweather on the port, leaving Hugo Bank on the port side, and Kenfig Patches on the Starboard, follow this course until you get the Mumble Light to bear W. by N., this will leave the Green Grounds on the starboard hand, and will find good anchorage. It is our intention to proceed further down the Channel, and if a direct course for Lundy Island is required steer W.S.W. but we want to visit the North Shore, when under weigh for either, we must notice the Mixon which

bears from the M consequently we get the light to steer W. by N. w peice to the South Helwick Sand, to sand steer W.N.W length, and is div swatch way, th through which is through Worms S passage inside, th but deep water ex trance is obtain Head in one with western part of th Rhossily, which i for the safety of t ern extremity of t tion, named the V very prominent b own; a large cav a roar when the bears from the H by E. $\frac{3}{4}$ E. to con after making the N. which will find offing the Channe if bound from L for Lundy steer make the Forelan and this will take until you get Lun

WEST COASTS OF ENGLA WALES.

SMALLS LIGHT TO THE PORT OF I

Smalls Light is placed on Smalls Rocks, lying off St. David's Head in Pembrokeshire, and bearing from St. Ann's Point, N.W. by W., distant 18 miles. This light is stationary, appearing like a star of the first magnitude, at the distance of 13 miles. To avoid these rocks, keep above a mile from the highest on all sides, and do not attempt to pass inside of them without a good chart and ample directions, or a pilot; with these there is excellent anchorage to be found in St. Bride's Bay in 8 or 9 fathoms.

South Bishop Light.—The Bishop and Clerks are a number of dangerous rocks, with great overfalls, lying north-west of Ramsey Island, at the distance of $2\frac{1}{2}$ miles. On the southernmost, called the South Bishop, is a lighthouse, exhibiting a revolving light, visible in all directions, and appearing with great brilliancy at intervals of 20 seconds, whereby it will be readily distinguished from the Smalls and other lights in its vicinity; it can be seen at the distance

of 18 miles. This guide the marin know his exact s near this danger of Wales. The passed to the wes northward of it westward of sout 4 miles from it, p tide, in moderate have the tide nea runs rapidly thr lands; at spring and causes sever sages between t attempted by stra

From St. Da ble Head the cour tant $10\frac{1}{2}$ miles; distance of $5\frac{1}{2}$ m Abercastle Island. In sailing from St digan Bay you mu berth, for several scattered about, so

from shore; they are called the *Red Buoy*, and are 2 miles eastward of *St. Head*.

Cardigan Bay.—Three miles to the east of *Strumble Head* you open *Fishy Bay*, having good anchorage with a bar, except from the N. to the E., and holding well. The best anchorage will be to the southward of the *Rock*, which is always above water. In 5 fathoms, the rock bearing N. by E. distance $\frac{1}{2}$ to $\frac{3}{4}$ a mile. This bay is desirable for vessels seeking shelter from S. and W. than *Studwall's* which is $5\frac{1}{2}$ miles to the leeward, well sheltered from these gales, and *Studwall's Road* is not, and the bay is more ready outlet to the S. or N. place in the neighbourhood.

Port Bay opens when you are 6 miles distant from *Strumble Head*.—The channel to *Newport* lie about 13 miles length from the shore, directly to the village of *Newport*. On the bar, 13 feet water with spring tides, and 8 at neaps. When a vessel is on the bar, she will be sheltered from the wind.

Cardigan Bay.—The Buoy on the *Cardigan Bay* has been moved, and now lies near the extremity of the *Causeway Reef*, in 5 fathoms at low water springs, with the following compass bearings; *Slandebrog* line with the east side of *West St. Studwall*, N. by E.; *Penkilan* N. by W.; *Bardsey Lighthouse*, W. A LIGHT VESSEL in this bay. See page 102.

Cardigan Harbour is adapted for vessels drawing about 15 feet. In the evening, over the bar, which is liable to draw 14 feet water with spring tides, and 9 with neap; but in *Cardigan* a ship may stop, in moderate weather, almost any part without the bar, at two cables' length from the shore, in 10 fathoms water.

Aberystwith Harbour is fit for vessels which draw 15 feet. There are marks to lead you over the bar, one of which is moored on wheels, as the bar is low. When any vessel is seen off the bar in the evening, there are lights put on the marks, which must be brought to direct you over the bar.

Aberdovey is about 3 leagues to the westward and eastward of *Aberystwith*, 10 miles to the south of the *Diamond* on *Beach Head*. This harbour has a shifting bar about a cable's length, and about half that in and out. The *Trinity Board* have placed a large Buoy at the entrance, outside, and one inside the bar. A good look-out should be kept for a small Buoy between the Black and Red Buoys, which mark the angle of the passage if any. The Buoys are all placed in the fairway.

Vessels may come to anchor half a mile above the *Red Buoy*, and which is about the same distance below the town, where from 12 to 15 sail, drawing from 12 to 15 feet water may ride in safety and in good holding ground.

Barmouth Bay may be known at a distance by the highest mountain on that coast; it has two tops—the southmost is highest; and when seen from the westward, is in a line with the N. side of the entrance of *Barmouth*. From the N. side of the Bay, and about 1 mile from the main, shoal called the *Causeway*, extends W. by S. 3 leagues: at low water there is not more than 2 or 3 feet water all along the edge of it, where at a cable's length the compass is so affected by magnetism, as to vary 90 degrees, and, as you approach nearer, quite reverse the points.

Studwall's Road affords excellent anchorage for the largest ships, sheltered from all winds except from E. to S. E. by E. It is easily known by two Islands that lie off the point, and there is no danger except a small rock about $\frac{1}{4}$ of a mile eastward of the Islands, between which there is a good passage, as well as between the westernmost and the main, at a cable and a half's length from them.

Bardsey Island is separated from the mainland by a channel more than a mile and a half wide, having from 15 to 25 fathoms in it. On the S.W. part of this Island is a Lighthouse exhibiting a bright fixed light, visible seaward from E. $\frac{3}{4}$ S. to N.E. $\frac{1}{4}$ E., and at a distance of 17 miles; but masked between the bearings of N. 50 deg. E. to S. 70 deg. E. If in a gale of wind from the W.N.W. vessels should be unable to weather *Bardsey Island*, this light will point out a secure asylum in *Studwall's Road*, enabling them to preserve a proper position until daylight, when they can proceed to the anchorage therein. Vessels bound to *Studwall's Road*, or lying-to for daylight, must not bring the light to bear to the westward of W.N.W.; and if they lose sight of the light when it bears from them nearly in that direction, they will be too far to the northward, and in danger of getting embayed in *Hell's Mouth*.

Carnarvon.—From *Brauchypool Head* the shore lies nearly E. N. E. to *Carnarvon Bar*, and from thence nearly N. by W. $\frac{1}{2}$ W. to *Holyhead Island*, forming *Carnarvon Bay*. Vessels going in are to leave the outer or *Black Buoy* on the port hand, the *Red Buoys* on the starboard hand, and the *Perch beacon* on the port hand. The black and white chequer buoy is placed in mid-channel. Nun buoys painted green, denoting sunken rocks, are placed off *Llanddwyn Point*. This Point may be distinguished in the daytime by two white towers (a large and a small one), and during the night by

a fixed red light, visible in clear weather about five miles to seaward, between the bearings (from Llanddwyn by compass) of N.W. by N., and S.W. by W.; and which is intended solely as a leading light for the entrance to the Menia Straits. The bar should not be attempted until daylight, nor by vessels drawing more than 10 feet before half flood. During gales from W. to N., vessels may find shelter on the S.E. side of Llanddwyn Point. The proper anchorage is about a quarter of a mile from the shore, with the small tower a little open to the northward of the large tower. In running in give a good berth to the sunken rocks (the green buoys indicating which are placed to seaward), but it is much preferable for strangers to heave to outside sufficiently to windward and make signals for Pilot, four of whom are stationed at Llanddwyn, with a lifeboat, and Marryat's code of signals. Vessels wishing to communicate will be answered from the large tower.

South Stack Light.—Off the N.W. point of Holyhead Island is the South Stack Rock, upon which is a lighthouse, bearing a brilliant light, which revolves every 2 minutes, whereby it will be readily distinguishable from the light on the Skerries, which is a stationary light, and bears from the light on the South Stack N.E. $\frac{1}{2}$ E., distant 8 miles, and may be seen through a great part of Carnarvon Bay. During foggy weather, a smaller bright light, revolving in $1\frac{1}{2}$ minutes, is occasionally shown, about 40 feet above the sea, and 30 yards north of the main lighthouse. Any vessel making either of these two great lights, can find no difficulty in navigating round the head, or into the harbour of Holyhead, if the wind permits; and no directions that could be given would serve equal to that of having the two lights in sight, as will be the case in the situation above mentioned.

Holyhead Refuge Harbour is chiefly formed by an immense breakwater the heel resting on Soldier's Point, from whence it projects N.E. by E. nearly one and a half cables' length, then E.S.E. about five cables' length, and then E.N.E. to its end, which is marked by a red light, visible at a distance of 8 or 9 miles. The end of the breakwater is N.N.E., one mile from the Old Harbour Light.—To sail into Holyhead Refuge Harbour, give the end of the breakwater a good berth, as a strong tide sets to the westward nine hours out of the twelve, and strikes hard upon it. Having rounded the breakwater, steer to the W.S.W., between it and the outer Platters, leaving all the chequered buoys on the port hand, and anchor well in, close to the beach. There are passages between the Platters and Salt Island: but these should never be attempted by strangers. Vessels should have both anchors ready for letting go,

with 50 or 60 fathoms of chain ready according to the weather, and should be careful to anchor well up, or they have to shift berth. Vessels disabled without ground-tackle, may be laid beaching slope at the head of the harbour which has been prepared for the purpose.

Old Harbour of Holyhead A wooden pier extends from the Old Harbour Lighthouse in a direction E. by N. at its eastern end is a bright light of sixth order, supported on iron pillars superseding that formerly exhibited in the stone lighthouse. All vessels bearing up for Holyhead Harbour should be prepared with both bower and starboard anchor ready to let go, and the end of a cable warp for a boat to take to one of the dolphins, moored along the passage for that purpose. The course round the head up the harbour, is W. by N., then W. by S. therefore, with the wind at N., and blowing westward of that point, a press of sail should be carried, especially after entering the jetty close on board, and never start tack nor sheet till the vessel is inside the lighthouse and the proper moorings, than act as circumstances may require. Rise of water at spring tides 17 feet; depth of water at the entrance at low water, spring tides, about 12 feet. Holyhead Harbour being a tide harbour, and frequently with many anchors drawn in the way, vessels drawing 12 feet should not run in until about two hours' flood, and those of a heavy draught should, if possible, keep off until four hours' flood, in tempestuous weather no vessel should run for the harbour at night time. There is no occasion to use this as a harbour of refuge, shelter now the new harbour is established. All vessels anchoring outside must keep a light up during the night.

Holyhead Harbour Light is situated on the starboard hand in entering the harbour, are stationary. The light is a fixed white light formerly shown from the Light Tower on the old Pier Head. The Old Harbour is discontinued, and a fixed white light, at an elevation of 40 feet above high water, shown from the structure above named on the end of the wooden pier which now forms the entrance to the harbour. The small light is still exhibited from the Light Tower on the Old Pier Head of the Harbour, between the bearings of S. by W. and S.W. The former bearing of the end of the breakwater, and the light is all danger, on the east side of the pier. A red light is shown from the mast 84 feet from the eastern extremity of the breakwater off the New Harbour at an elevation of forty feet above the level of high water. A gong is sounded in foul weather. At night vessels should steer in for the New Harbour until they see a small red light in the Old Harbour, and in entering or leaving

harbour they should not approach the breakwater light nearer than $\frac{1}{2}$ of a cable. **FOG SIGNAL STATION.**—On the North Stack Point is a fog-gun of Largs size, battery, attendants' residence, magazine and flagstaff, all painted white. For the greater security of vessels navigating in the vicinity of Holyhead, and of Her Majesty's packets in particular, the fog gun is fired during foggy weather once every half hour; except from 10.45 a.m. and the same time p.m., when for three hours, or till the arrival of the day and night mail packets, it is fired every quarter hour, Greenwich time being observed.

The Skerries is a cluster of islets and rocks 13.5ths mile to the northward of Carmel Point, occupying a space of about half a mile. Upon the centre and greatest islet of the group is a lighthouse 117 feet high, showing a fixed bright light 117 feet above the level of high water, visible 16 miles. The position of this lighthouse is lat. $53^{\circ} 25' 18''$ N and long. $4^{\circ} 24' 24''$ W. A short distance all round the islands is deep water, except on the northern side of the group, where is a dangerous rock of $2\frac{1}{2}$ fathoms, called the African, lying with the lighthouse in one with Pengarn Hill bearing S.S.E. Upon this rock there is a great overfall when the tide is running either way. Between the Skerries islets and Carmel Point is a dangerous ledge of rocks, drying with spring tides only, called the East Platters. Close to all round are 8 to 16 fathoms, and there is a strong rippling when the sea is heavy. You may sail between the rocks and the Skerries by bringing the South Stack Bridge over the North Stack, and between them and Carmel Point by bringing the South Stack and North Stack in one. The Beacon on the West Mouse Rock in one with the Middle Mouse, also bears it on the south side.

Point Lynas lies S.E. by E. $\frac{1}{4}$ E. of the eastern point of Almwch Bay, distant 1 mile, and is situate in lat. $53^{\circ} 25' N.$, and long. $4^{\circ} 17' W.$ It is a bold conspicuous point of land both from the eastward and westward. A lighthouse is situated on the high pitch of the point, and is a castellated building, with a white cement. It exhibits a flashing light, which becomes instantaneously obscured at intervals of 10 seconds, and remains obscured 2 seconds only, so that is readily distinguishable from the Skerries and other lights in the vicinity. From Lynas lighthouse to Great Orms Head, S.E., 16 miles; N.W. Lightship, Liverpool, E.S.E., 41 miles; Calf of Man, N. $\frac{1}{4}$ W. 42 miles; Holy Nelson, of Preston, E., 41 miles; Bee's Head, N.E., 70 miles.

Port of Amlwch, Anglesea.—In the day time, when the Breakwater balks down, a Ball is fixed on a pole at the easternmost point of the harbour. When

too many vessels lie at the entrance of the harbour, a Red Light will be shown, and when the entrance is clear a White Light.

To Sail into Beaumaris Harbour, THROUGH THE SOUND IN LOW WATER.—Steer in for Table Land, till the W. end of Puffin Island comes open with the E. end of Penmaenmawr Hill. These marks will clear the Dinmora Bank on your starboard hand. You then have the sound fairly open; but to avoid the rocks off Trwyndu Point, keep more to the Perch on your left; and when Beaumaris comes open off Trwyndu Point, haul up for the red buoy off Penman, keeping it on your starboard hand, and off the red buoy of the Causeway on your left. Anchor in 4 fathoms off Penman red buoy, clean and good holding ground, well sheltered from a north-westerly wind; but if one hour's flood, you will carry 15 feet over the flats off Penryn Point. Steer for the black buoy on the Spit of the Levan Sand, abreast of Friar's House, where anchor in 5 fathoms low water spring tides, or at half flood steer for the town, keeping the red buoy on Watch House Point on your starboard hand, in 6 and 7 fathoms. Keep that depth of water until the Church at Beaumaris bears N. N. E. by compass when you may anchor in 9 fathoms at that time of tide. Thence you will see Bangor Pool, which is above Ferry Point. But if any of the buoys should be missing as you steer up, keep the Church Tower and Lodge Hill in one.—Opposite the Friar's House, in mid-channel, is a sandbank, marked by a red and white chequered buoy: in sailing up to Beaumaris, keep this buoy on the starboard hand.

To Sail out of Beaumaris Harbour, FROM THE ANCHORAGE OFF THE TOWN.—Weigh at high water, and drop down to Friar's Road. Give the black buoy off the Spit a berth on your starboard hand, and the red buoy off Penman on your port. At half ebb take the eastern passage, keeping off the red buoy of the Causeway on your port hand. From the latter steer for the east end of Puffin Island, on your port hand, keeping off it half a cable's length, and the black buoy off the Dutchman's Spit the same distance on your starboard hand.

Menai Lighthouse is erected at the north-eastern entrance of the Menai Straits. The light is STATIONARY and of a RED colour, visible from N.W. $\frac{1}{4}$ W. seaward, to S.W. $\frac{1}{4}$ W. excepting that by the intervention of Puffin Island the light will be eclipsed to vessels upon the bearings from it of E. by N. $\frac{1}{4}$ N., to E. $\frac{1}{4}$ S. A ledge of rocks extending under water from the base of the lighthouse nearly 53 yards, it is advisable not to approach the building within that distance.

Conway Harbour.—There are two channels leading into this harbour—the west and north. For the west channel,

steer from the N.W. black buoy to the second black buoy, leaving them on your port hand; keep the red buoy off Penmaenbach, the chequered red and white buoy, the two red buoys, and the perch, on your starboard hand; haul up, and steer for the quay, keeping close to Deganwy Point on the port hand. The entrance to the north channel is marked with a black perched buoy; the second, third, and fourth are all black, and moored in the best of the channel. Vessels drawing from 10 to 12 feet may lash alongside the quay, on mud and sand, dry at low water.

To Sail from Point Lynas to the Great Ormshead.—The course from Point Lynas to the Great Ormshead is S.E. per compass; from whence keep the Ormshead as the line is drawn on the chart, till Rhyland Castle and St. Asaph Church are in one; then haul in till the south mark on Helbre and Bidstone Light-house come in one. Steer forward on that line, which is the deepest water along the shore. It will also clear the Middle Patch on the left, which is dry at low water, spring tides. Buoys are placed here; red on the starboard, and black on the port hand coming in. Give the Point of Ayr Lighthouse a berth of a mile on the starboard hand; and when it bears W. haul up S.S.E. for mid-channel. At that time the rippling of the tide on the edge of the Salisbury Bank will be very perceptible, as well as on the Welsh side. Continue that course, in mid-channel, till the Grange Mill bears N.E. by E. by compass, then haul quick for Dawpool, and keep that bearing till Burton Mill comes over the town of Parkgate. That course clears the south end of Salisbury Bank, and the Bagilt Flats on your right. As you advance keep the lead going, and borrow on the Haswell Church side of the shore. It will carry you clear to Bear-house Pool, where anchor till you obtain a pilot. The leading mark for passing at high water across the Salisbury Bank to Hoylelake is Helbre Eye on with the Grange Mill.

Chester Bar is a narrow sandbank between 3 and 4 miles in length, stretching rather circularly from S.E. to N.W.; its south end is near to Nant House, and is called the Middle Patch, sometimes drying, the middle of it is called Earwick, and dry at low water; but much the greater part of it never dries, having from 3 to 6 feet water over it at all times. To clear the Earwick to the eastward, bring Nant House and the barn above it in one. To sail over Chester Bar in a ship drawing 12 feet, take half-flood; and when Craig Disart Hill bears S.S.E., which with Middle Hill and Comb Hill form an equilateral triangle, keep the two Ormsheads shut below, and a little open

above; by this you will avoid all danger on the southward. To avoid the bar and shallows on the north side, open Ormsheads below near a ship's length but not more. If a vessel comes to Chester Bar before half-flood, and apprehensive of not having sufficient water to cross it, she may sail between the Middle Patch and the Earwick, leaving the Ormsheads a little open below, and when Craig Disart Hill and Middle Hill are in a line, steer N.E. by E. you deepen your water to 4 or 5 fathoms and sail along Hoyle Sand for the Point of Air; giving that point a berth of a mile. To avoid that part of Hoyle Lake which is opposite to Air, keep Bidstone Windmill to the south of Helbre Sumner house; this will carry you through Swashway toward Hoyle Lake. But mark which leads clear of the north end of the Hoyle Sand, and directly to Hoyle Lake, is the Point of Air Light-house open to the northward of Helbre Island.

The River Dee.—Vessels may sail a tide about a mile to the eastward of the Point of Air, upon which a lighthouse is erected. The tide runs, when strong, 3½ miles an hour; and when the tide and wind are contrary to each other, makes a rough sea here. At this place, which is called Wild Road, you can anchor in 6 or 6 fathoms; or you may proceed higher up to the anchorage off Linacre Creek, where, in 6 or 7 fathoms, you will be much better sheltered than in Wild Road from north-westerly winds, and ride on ground that holds well. To sail from Wild Road to Dawpool, a distance of nearly 6 miles, bring the southernmost house of Dawpool, which stands below a cliff, exactly in a line with the barn above, having a white end, standing on the top of the cliff, but the barn must not be brought on either side of the house, anchor about 2 cables' length from high water mark in 3½ or 4 fathoms at low water. But the stream runs 5 miles an hour when strongest. At Parkgate, which is more than 4 miles up the river, vessels must lie aground on the beach; for though there are 2½ fathoms in the channel of the town, and 3 fathoms above it, yet the stream is so strong, and the ground is indifferent, that a vessel would drag its anchor. Take the ground about 2 hours before high water, below the houses at Parkgate. Vessels in making their passage to Parkgate must use the utmost caution to avoid the Salisbury Bank, a dangerous shoal, and lying in the direction of the river. The channel now at Parkgate is opened into a swashway by Bagilt and Flint; Four red buoys are placed on the edge of the Mostyn and Bagilt Banks, and two black ones on the Salisbury Bank, the former of these are to be left on the starboard side, the latter

the port. A black buoy lies on the bottom SEEN ROCKS in the channel between the Salisbury Bank and the Wharf. There are three small islands or rocks, called the Helbre Is-

lands, lying to the southward of the Hoyle Sands: on the northernmost, which is called Great Helbre, are two wooden beacons or marks, distant from each other 633 yards.

BAY AND HARBOUR OF LIVERPOOL.

the vicinity, and to the northward westward of the Rivers Dee and Mersey, lie the banks which form the principal channels to Liverpool, viz., the Great Burbo Bank, the Burbo Sands and Flats, the Jordan Bank, Taylor's Bank, Formby Flats, &c. The principal channels are the Horse and Rock Channels, the Victoria Channel, the Queen's Channel, the Old Formby Channel, and the Crosby Main Channel.

The principal lights and sea-marks of Liverpool Bay are as follow:—

GREAT ORMSHEAD.—A first order Diaphanous Fixed Light is exhibited from a Lighthouse, situate on the Northern point of the Great Ormshead, at an elevation of about 325 feet above mean sea level. It appears as a fixed Light when seen from any direction between the bearings NW by W and N. round by the North to East, and as a RED Light from East to E. $\frac{1}{2}$ S. By the arrangement the light will be found to mask suddenly when standing into Formby Bay, if brought to bear to the eastward of S.E. by E. $\frac{1}{2}$ E., warning of approach to shoal water; when to the eastward of Ormshead, the change of colour from bright to Red arises upon the line of bearing of the N.W. Light and the Fairway Bell Beacon, off the point to the Queen's Channel, in Liverpool Bay, and the Red Light will finally appear if brought to bear to the northward of W. $\frac{1}{2}$ N., warning of the approach to the northern edge of West and East Flats; if the Red Light be kept in sight, the banks cannot be approached nearer than one mile.

The NORTH-WEST LIGHT SHIP lies in a position indicated by the transition of the Ormshead Light from Bright to Red, by masking or unmasking of the Fairway Holylake Light on a bearing of S. by E. $\frac{1}{2}$ E. nearly. She lies off the West extreme of Three and Four Fathom Tongue, in $6\frac{1}{2}$ fathoms at low water, and will exhibit a powerful bright revolving Light, appearing once in every minute, with the following bearings. Ormshead Light West, 20 miles: Queen's Channel Bell Beacon East, $3\frac{1}{2}$ miles; Formby Light Ship, E. $\frac{1}{2}$ S., 6 miles; W. Buoy of East Hoyle, S.S.E. $4\frac{1}{2}$ miles; Helbre Swash Fairway Buoy, S. E., $4\frac{1}{2}$ miles.

A BELL BEACON, in the form of a square Pyramid, the body of open lattice work, painted RED, and marked in white letters "HORSE CHANNEL, S. E. $\frac{1}{2}$ S."

is moored in the fair-way to the Horse Channel. This Beacon occupies the position formerly held by the N. W. Lightship; the marks for its station are, the Beacon on the Eye, and Helbre Beach Mark in one S. $\frac{1}{2}$ E. (nearly). Bidston Lighthouse open Eastward of Leasowe Lighthouse S.E. $\frac{1}{4}$ S.

The FORMBY LIGHT VESSEL, at the elbow of the Crosby and Queen's Channels, moored in 25 feet at low water, shows one Red light visible 8 miles; a red ball is exhibited on foremast head during the day. Her hull is painted red. In foggy weather a bell is tolled. Crosby Lightship, S. E. $\frac{1}{2}$ S., $2\frac{1}{2}$ miles; N. W. Mark, E. by N. $\frac{1}{4}$ N., $3\frac{1}{2}$ miles; Buoy Q. Fy. (bell beacon), N.W. by W. $\frac{1}{2}$ W., $2\frac{3}{4}$ miles.

The CROSBY LIGHTHOUSE, situated to the north-eastward of Crosby Point, shows a fixed Bright light, elevated 96 ft. above the level of the sea at half-tide, and visible between the bearings of S.S. E. $\frac{1}{4}$ E. and E., which limits indicate respectively when a ship is westward of Formby Spit, or to the southward of Crosby Lightship.

About a mile and a quarter to the north-eastward of Crosby Lighthouse is the FORMBY OLD LIGHTHOUSE, the light from which has been discontinued. Near the latter, on the strand, is a beacon, which formerly formed a leading mark for Victoria Channel; further to the northward is the Life Boat House; and near it just round Formby Point, is the North-west Mark. This mark in one with another on Mad Wharf, bearing S. E. by E. $\frac{1}{4}$ E., is the leading direction for entering the Old Formby Channel.

The CROSBY LIGHT VESSEL, at the north-east elbow of the Great Burbo Bank, moored in 44 feet at low water, shows a single bright light, visible 8 miles and carries a red ball at the foremast-head in the daytime. Her hull is painted red. From hence the fairway course up the Mersey is S. by E. $\frac{1}{2}$ E. In sailing through Crosby Channel during ebb-tide, to avoid the indraught through the gullies in Great Burbo Bank, vessels should be kept well to the eastward of a line drawn between the Rock Lighthouse and Crosby Lightship.

On the south side of Liverpool Bay, on the peninsula separating the Mersey from the Dec, are many objects used as sea-marks, several of which will have been seen before arriving at the North-west Light Vessel. Off the west end of the peninsula are the islets, called the Great

and Little Helbre, upon which are placed two beacons. On the main land, within two miles S.E. by S. of the Helbre Islets, are the village and church of Kirby, to the east of which is Grange Hill, surmounted by a beacon, in the form of a pillar, at 173 feet above half-flood. Within two miles S. S. E. from Kirby, is Irby Hill, with its mill and wood.

About a mile and a quarter north of Kirby, near the shore, is the Hoylake Hotel, and within half a mile E.N.E. from this are the new HOYLAKES LIGHT-HOUSES. The new Upper and Lower Hoylake Light-houses stand 400 yards apart, and bear from each other S.W. by S. Southerly, and N.E. by N. Northerly; when in one they lead midway between the Dove Spit Buoy (R 1, Red Can) and the *Spencer's Spit Bell Beacon* marking the elbow of the Horse and Rock Channels. Upper Hoylake masks, if standing to the westward, and unmasks, if standing to the eastward, when bearing from it N. by W. $\frac{3}{4}$ W. on a line which strikes the N.W. Light ship, and passes just to the eastward of the N.W. Buoy of East Hoyle, H 1, Red Can with Perch. Lower Hoylake Light masks, if standing to the westward, and unmasks, if standing to the eastward, when bearing from it N. $\frac{1}{4}$ W. on a line indicating the Fairway course in the Horse Channel, between East Hoyle and the Six and Four Feet Flats. N.B.—The brilliancy of the New Lights is such that, in clear weather, a gleam of light is faintly perceptible even to the westward of the lines of masking. When coming from the westward the faint appearance may, at such times, be useful in giving warning of the approaching unmasking, but cannot be mistaken for the unmasking which takes place suddenly, and at once opens a brilliant light. At a mile to the eastward of the lower light are the Dove Beacons, erected as a mark for the eastern passage into Hoylake, the interior channel of communication between Helbre Swash, and the Horse Channel, which is now nearly choked up, and is frequented only by fishing boats.

The Old Bell Beacon lies at the entrance of the Rock Channel. It bears a self-acting bell, and is marked, "R. 1, Spencer's Spit."

The next conspicuous object is the LEASOWE LIGHTHOUSE, which is white; its light brilliant and fixed, 110 feet above the level of half-tide, is seen 5 leagues off, and is so masked as to give a defined

light in the Rock Channel, within certain limits, and suddenly disappears, bearing S.W. $\frac{1}{4}$ S. to vessels inward bound, off West Warf Buoy, R 3, Red, suddenly appears when outward-bound. This is succeeded inland by the BURN Lighthouse, upon the summit of Burn Hill, with its church and mill. The lighthouse is of stone, but appears of a dark colour, and shows a brilliant light at 224 feet above the level of high tide. Its light can be seen 23 miles off. This light so masked as to give a defined light in the Rock Channel, within certain limits, and to vessels outward bound it suddenly disappears, bearing of S. by W. $\frac{1}{4}$ W. when abreast East Warf, Buoy, R. 4, Red, and suddenly appears when outward bound. The lights of Leasowe and Bidston are called Sea Lights. At three-quarters of a mile eastward from the Leasowe Light is Mock-beggar Hall, and $2\frac{1}{4}$ miles east is the Black Rock, Light standing upon the reef, so called, the entrance, of the Mersey.

THE BLACK ROCK LIGHTHOUSE is on the rocks off New Brighton, on the west side of the entrance of the Mersey, and is a handsome round building of Anglesea limestone. It is submerged by water at nearly half-tide. The height of the building, from the lantern base, is 75 feet, and the whole above the level of the sea is 88 feet. The light revolves, exhibiting alternately the same light room, two bright lights, and one of a red colour, each at intervals of a minute, the whole revolution completed in 3 minutes. Having attained their brightest state, they gradually become less luminous, and are extinguished. The light in clear weather can be seen about 5 leagues off. A bright fixed light from a lower chamber is also shown in the Rock Channel and up the River. 11 feet water remain in the Gut. A black ball denotes the same by day. Bells toll in succession during bad weather; and a blue flag summons the Magazine life-boat when distressed.

Garston Dock.—This Dock is 4 miles south of the Liverpool Dock, and on the same side of the river, from the Liverpool dock rates, entering it being only liable for tonnage and light dues. The channel to Liverpool is buoyed with red and white buoys.

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[ENTERED AT STATIONERS' HALL.]

QUIGGIN'S
ISLE OF MAN
ALMANACK,

FOR THE YEAR OF OUR LORD

1868,

Being Bissextile or Leap-Year,

AND THE 31st-32nd OF THE REIGN OF HER PRESENT MAJESTY

WITH CORRECT

TIDE TABLES,

FOR

LIVERPOOL, BRISTOL, GREENOCK,
LONDON, CORK, SUNDERLAND, SHIELDS, HULL,
BRIDPORT, SOUTHAMPTON, AND PORTSMOUTH,

AND

MARINERS' COMPANION;

CONTAINING ALSO EVERY CALCULATION NECESSARY FOR

WORKING A LUNAR DISTANCE.

CALCULATED TO MEAN TIME, IN LATITUDE $54^{\circ} 10'$ N. AND LONGITUDE
 $4^{\circ} 30'$ W.

☞ The Liverpool Tides are calculated for Greenwich mean time.

FORTY-THIRD ANNUAL IMPRESSION.

DOUGLAS, ISLE OF MAN:
PRINTED AND PUBLISHED BY MATTHEW GLOVER,
52, NORTH QUAY.

PHASES OF THE MOON. { **FIRST QUARTER,** 3rd day, at 4h. 3m. morning.
FULL MOON. 9th day, at 10h. 53m. night.
LAST QUARTER, 16th day, at 5h. 4m. evening.
NEW MOON, 24th day, at 7h. 18m. night.

M D.	Day brek.	Twil. ends.	☉'s semi.	♂ Mercury. rises. sout.	♀ Venus. sets. sout.	♂ Mars. sets. sout.	♂ Jupiter. sets. sout.	♂ Saturn. rises. sout.	M
1	6m 7	6 a 0	16 18	7m 32 11m 6	5 a 46 1 a 47	3 a 39 0 a 5	8 a 49 3 a 46	5 m 6 9m 18	1
8	6 6 6	7 16 18	7 56 11 26	6 10 1 55	rises. 0 a 0	8 29 3 24	4 42 8 53	8	8
15	6 3 6	16 16 18	8 13 11 47	6 34 2 2	8m 13 11m 56	8 10 3 2	4 18 8 29	13	13
22	5 58 6	27 16 17	sets 0 a 9	7 0 2 8	8 1 11 3	7 51 2 40	3 54 8 0	22	22
29	5 49 6	39 16 16	4 a 43 0 31	7 24 2 13	7 49 11 47	4 33 2 18	3 29 7 38	29	29

M D	W D	Remarkable Days	HIGH WATER.—LIVERPOOL.				Equation of Time.
			MORNING.		EVENING.		
			Time.	Height.	Time.	Height.	
1	W	New Year's Day	2 47	14 1	3 7	14 6	3 ³⁷
2	Th	H souths 11 a 59	3 27	13 4	3 49	13 9	4 ⁵
3	F	Neptune souths 6 a 1	4 11	12 9	4 40	13 1	4 ³³
4	S	R. Ascham died, 1568	5 14	12 4	5 39	13 2	5 ⁰
5	☾	2 Sun. aft. Christmas	6 23	12 7	6 59	13 4	5 ²⁸
6	M	Pro. [Isa. xli; Matthew iv. Les. [—xlii; Romans iv.	7 36	13 6	8 9	14 5	5 ⁵⁴
7	Tu	[Epiphany. 6th	8 39	15 0	9 9	15 10	6 ²¹
8	W	Lucian, P. & M.	9 38	16 6	10 5	17 2	6 ⁴⁶
9	Th	Fontenelle died, 1801	10 29	18 2	10 55	18 3	7 ¹²
10	F	Royal Ex. built, 1838	11 20	18 8	11 44	19 0	7 ³⁶
11	S	Hilary Term begins	—	—	0 9	20 1	8 ⁰
12	☾	1 Sun. aft. Epiphany	0 33	19 1	0 58	20 1	8 ²⁴
13	M	Pro. [Isa. xlii; Matt. x. Les. [—xlii; Rom. x.	1 22	18 6	1 46	19 4	8 ⁴⁷
14	Tu	Oxford term begins	2 10	17 6	2 36	18 0	9 ⁹
15	W	H souths 11 a 6	3 0	16 2	3 23	16 6	9 ³¹
16	Th	B. of Corunna, 1809	3 46	14 7	4 10	14 9	9 ⁵²
17	F	Battle of Falkirk, 1756	4 37	13 2	5 6	13 4	10 ¹²
18	S	Prisca, V. & M.	5 41	12 3	6 16	12 5	10 ³²
19	☾	2 Sun. aft. Epiphany	6 52	12 1	7 30	12 5	10 ⁵¹
20	M	Proper [Isa. li; Matt. xvii. Lessons. [—lii; 1 Cor. i.	8 5	12 7	8 47	12 11	11 ⁹
21	Tu	Agnes, V. & M.	9 6	13 6	9 31	13 8	11 ²⁷
22	W	Vincent, Martyr.	9 55	14 7	10 18	14 6	11 ⁴⁴
23	Th	Wm. Pitt died, 1806	10 39	15 5	10 59	15 2	12 ⁰
24	F	R. Boyle died, 1627	11 15	16 2	11 32	15 9	12 ¹⁵
25	S	Conver. of St. Paul	11 49	16 9	—	—	12 ²⁹
26	☾	3 Sun. aft. Epiphany	0 5	16 3	0 21	17 3	12 ⁴³
27	M	Proper [Isa. lv; Matt. xxiii. Lessons. [—lvi; 1 Cor. vii.	0 37	16 8	0 54	17 5	12 ⁵⁶
28	Tu	H souths 10 a 13	1 9	16 5	1 25	17 1	13 ⁸
29	W	Neptune south 4 a 16	1 42	16 1	2 1	16 7	13 ¹⁹
30	Th	King Charles II bhd.	2 20	15 7	2 38	15 9	13 ²⁹
31	F	Hilary Term ends	2 57	14 10	3 17	15 0	13 ³⁹



Bristol tides				SUN.						MOON.						M	D.	ASPE CT AND WEATHER
morn.	even.	height		rises.	sets.	rt. ascen.	declin.	S.		sets.	souths.	declin.						
1. M.	H. M.	F. I'		H. M.	H. M.	H. M.	° ' "	° ' "		H. M.	H. M.	° ' "						
0 43	11 1	26 3	8 23	3 44	18 45	20 23	2 42			10a49	4a57	3s52	7 1					The year
1 19	11 38	24 9	8 23	3 45	18 49	44 22	57 41			11 59	5 42	0 N 6	8 2					♂ ♂ ☉, 6 m.
—	0 3	23 5	8 23	3 46	18 54	9 22	52 13			morn	6 28	4 30	9 3					☉ in Perigee
0 33	0 53	22 6	8 22	3 47	18 58	33 22	46 18			1 11	7 17	8 40	10 4					will probably
1 34	2 14	23 4	8 22	3 49	19 2	57 22	39 55			2 24	8 8	12 30	11 5					be ushered in
3 0	3 39	25 10	8 21	3 50	19 7	20 22	33 6			3 40	9 4	15 42	12 6					♀ gr. Hl. L S
4 12	4 43	28 5	8 21	3 51	19 11	43 22	25 50			4 56	10 3	17 55	13 7					♂ in Aphelion
5 14	5 43	30 10	8 20	3 53	19 16	5 22	18 6			6 8	11 5	18 52	14 8					with wet
6 10	6 39	32 2	8 19	3 54	19 20	27 22	9 58			rises. morn	—	—	F 9					♂ ♂ ☉, 10 m.
7 6	7 33	34 0	8 19	3 56	19 24	48 22	1 23			5a15	0 8	18 19	16 10					weather.
8 0	8 24	35 3	8 18	3 57	19 29	9 21	52 22			6 36	1 11	16 20	17 11					Expect
8 48	9 11	35 4	8 17	3 59	19 33	29 21	42 56			7 57	2 10	13 8	18 12					fair and
9 32	9 54	34 1	8 17	4 1	19 37	49 21	33 4			9 17	3 7	9 7	19 13					frosty
10 18	10 38	32 4	8 16	4 2	19 42	7 21	22 48			10 25	4 0	4 38	20 14					weather,
10 58	11 17	29 7	8 15	4 4	19 46	26 21	12 7			11 50	4 50	0 3	21 15					now
11 38	—	26 5	8 14	4 6	19 50	43 21	1 1			morn	5 38	4s23	22 16					♂ ♂ ♂, 9 a 25
0 2	0 26	23 8	8 13	4 8	19 55	0 20	49 31			1 1	6 26	8 26	23 17					succeeded
0 57	1 27	21 11	8 12	4 10	19 59	16 20	37 37			2 10	7 12	11 59	24 18					♂ ♂ ☉, 3 a 25
2 5	2 51	21 10	8 10	4 11	20 3	32 20	25 20			3 17	7 59	14 53	25 19					by
3 33	4 19	23 4	8 9	4 13	20 7	47 20	12 40			4 21	8 46	17 3	26 20					more
4 40	5 54	24 10	8 8	4 15	20 12	1 19	59 37			5 20	9 34	18 23	27 21					rain
5 31	5 55	26 4	8 7	4 17	20 16	14 19	46 12			6 10	10 21	18 51	28 22					or
6 19	6 41	27 0	8 5	4 19	20 20	27 19	32 24			6 54	11 9	18 26	29 23					♂ sup ♂ ☉, 1 m
6 59	7 18	28 3	8 4	4 21	20 24	39 19	18 15			sets. 11	56	17 9	N 24					snow. 150
7 37	7 54	29 4	8 3	4 23	20 28	50 19	3 45			5a24	0a42	15 5	1 25					Changeable
8 12	8 28	30 3	8 2	4 25	20 33	0 18	48 53			6 27	1 27	12 20	2 26					♀ ♂ ☉, 2 a 11
8 44	8 59	30 7	8 0	4 27	20 37	9 18	33 42			7 32	2 12	9 1	3 27					Inclined
9 13	9 28	30 3	7 59	4 29	20 41	18 18	18 10			8 39	2 56	5 17	4 28					to wet if
9 46	10 4	29 7	7 57	4 31	20 45	26 18	2 18			9 47	3 40	1 16	5 29					♀ ♂ ☉, 9 a 4
10 19	10 35	28 9	7 55	4 33	20 49	33 17	46 7			10 56	4 25	2N53	6 30					wind
10 52	11 12	27 4	7 54	4 35	20 53	39 17	29 37			morn	5 11	6 59	7 31					southerly.

LUNAR DISTANCES FROM THE SUN.

Mean Astronomical Time at Greenwich.

M. D.	NOON.	3 HOURS.	6 HOURS.	9 HOURS.	MIDN.	15 HOUR.	18 HOUR.	21 HOUR.
	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "
1w	70 51 56	72 16 13	73 40 45	75 5 33	76 30 36	77 55 56	79 21 32	80 47 26
2	82 13 37	83 40 7	85 6 56	86 34 4	88 1 33	89 29 21	90 57 31	92 26 2
3	93 54 55	95 24 10	96 53 48	98 23 49	99 54 14	101 25 3	102 56 16	104 27 54
4	105 59 57	107 32 25	109 5 20	110 38 40	112 12 26	113 46 38	115 21 18	116 56 24
5	118 31 56	120 7 56	121 44 22	123 21 15	124 58 34	126 36 20	128 14 33	129 53 11
6	...	...	...	...	...	...	...	...
7	130 29 55	128 50 5	127 10 39	125 31 38	123 53 3	122 14 54	120 37 10	118 59 53
8	117 23 1	115 46 36	114 10 38	112 35 5	110 59 58	109 25 18	107 51 3	106 17 13
9	104 43 49	103 10 51	101 38 17	100 6 8	98 34 22	97 3 1	95 32 4	94 1 29
10	92 31 18	91 1 28	89 32 1	88 2 55	86 34 9	85 5 45	83 37 40	82 9 55
11	80 42 29	79 15 22	77 48 33	76 22 1	74 55 47	73 29 49	72 4 7	70 38 41
12	69 13 30	67 48 34	66 23 52	64 59 23	63 35 7	62 11 5	60 47 14	59 23 35
13	58 0 7	56 36 51	55 13 44	53 50 48	52 28 1	51 5 23	49 42 54	48 20 34
14	46 58 21	45 36 16	44 14 18	42 52 27	41 30 43	40 9 4	38 47 32	37 26 6
15	36 4 45	34 43 29	33 22 18	32 1 12	30 40 11	29 19 14	27 58 22	26 37 35
16	...	...	...	...	...	...	...	...
17	29 18 41	30 41 9	32 3 45	33 26 30	34 49 24	36 12 26	37 35 37	38 58 57
18	40 22 27	41 46 7	43 9 56	44 33 55	45 58 5	47 22 25	48 46 56	50 11 38
19	51 36 32	53 1 38	54 26 56	55 52 27	57 18 11	58 44 8	60 10 18	61 36 43
20	63 3 22	64 30 17	65 57 26	67 21 51	68 52 32	70 20 29	71 48 44	73 17 15
21	74 46 5	76 15 12	77 44 38	79 14 23	80 44 27	82 14 50	83 45 34	85 16 38

Explanations

The LIVERPOOL TIDES on the left-hand Calendar pages are calculated for Greenwich mean time; with the height above the level of the Old Dock Sill, now represented by the marks on the east side of the Canning Dock, and include the diurnal inequality in the height of each Tide.

FEBRUARY 28 Days.

1868

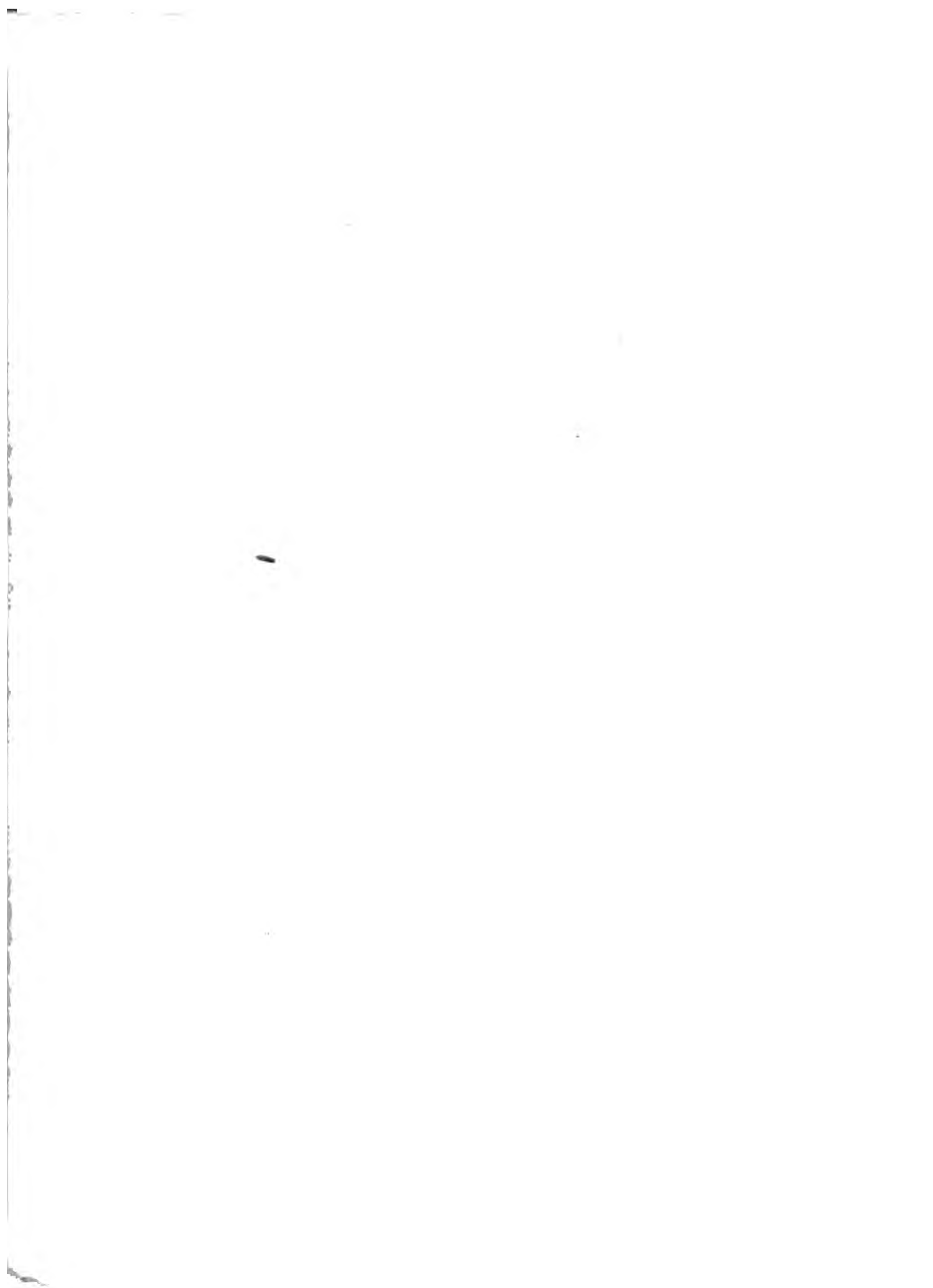
PHASES
OF THE
MOON.

FIRST QUARTER, 1st day, at 6h. 16m. evening.
FULL MOON, 8th day, at 9h. 35m. morning.
LAST QUARTER, 15th day, at 9h. 17m. morning.
NEW MOON, 23rd day, at 2h. 20m. afternoon.

M D.	Day brek.	Twil. ends.	☉'s semi.	♂ Mercury sets sout.	♀ Venus. sets sout.	♂ Mars. rises. sout.	♂ Jupiter. sets. sout.	♂ Saturn. rises. sout.	M D.
1	5m 46	6a 43	16 16	5a 50 a 41	7a 34 2a 15	7m 43 11m 45	7a 25 2a 9	3m 18 7m 27	1
8	5 35	6 55	16 15	5 55 1 1	7 59 2 19	7 28 11 40	7 7 1 47	2 53 7 2 8	8
15	5 22	7 8	16 13	6 42 1 16	8 23 2 22	7 12 11 34	6 49 1 25	2 27 6 36 15	15
22	5 8	7 21	16 12	7 12 1 18	8 46 2 25	6 55 11 29	6 31 1 4	2 16 9 32	22
29	4 54	7 32	16 10	7 2 0 57 9	9 2 28	6 37 11 23	6 14 0 43	1 35 5 43 29	29

M W D D		Remarkable Days	HIGH WATER.—LIVERPOOL.				Equation of Time. / "
			MORNING. Time. Height.		EVENING. Time. Height.		
1	S	St. Bridget.	3 40	14 1	4 3	14 0	13 48
2	E	4 Sun. aft. Epiphany	4 28	13 2	4 58	13 0	13 56
3	M	Pro. [Isaiah lvii; Mark ii. Les. [— lviii; 1 Cor. xiv.	5 35	12 7	6 14	13 1	14 3
4	Tu	Aldebaransouths 7 a 32	6 52	12 11	7 34	13 4	14 9
5	W	Agatha, Sicil. Ves.	8 14	14 2	8 50	14 8	14 14
6	Th	Pleiades souths 6 a 35	9 22	16 0	9 51	16 5	14 19
7	F	Day long, 9h. 11m.	10 17	17 11	10 45	17 11	14 22
8	S	Mary Q. of Scots beh.	11 10	19 4	11 33	18 9	14 25
9	E	Septuagesima Sun.	11 55	20 4	—	—	14 27
10	M	Pro. [Genises i; Mark ix. Les. [— ii; 2 Cor. v.	0 17	19 5	0 41	20 7	14 28
11	Tu	Washington born	1 4	19 3	1 26	20 1	14 29
12	W	Rigel souths 7 a 40	1 49	18 4	2 10	18 9	14 29
13	Th	Revolution, 1688	2 31	17 0	2 53	17 1	14 28
14	F	Valentine, Bishop	3 14	15 6	3 34	15 3	14 26
15	S	Atterbury died, 1732	3 57	13 10	4 20	13 3	14 24
16	E	Sexagesima Sunday	4 49	12 3	5 23	11 9	14 20
17	M	Proper [Gen. iii; Mark xvi. Lessons. [— vi; 2 Cor. xii.	6 0	11 5	6 38	11 1	14 16
18	Tu	Luther died, 1546	7 20	11 6	7 59	11 5	14 12
19	W	Galileo born, 1564	8 37	12 5	9 9	12 5	14 7
20	Th	Procyon souths 9 a 33	9 34	13 9	9 55	13 7	14 1
21	F	Trinidad taken, 1797	10 17	15 0	10 39	14 9	13 54
22	S	Cam. term divides M.	10 58	16 1	11 13	15 8	13 47
23	F	Shrove Sunday	11 29	17 0	11 44	16 6	13 39
24	M	Pro. [Genesis ix to v. 20; Luke vi Les. [— xii Gal. vi.	11 59	17 8	—	—	13 31
25	Tu	Shrove Tuesday	0 14	17 2	0 31	17 4	13 22
26	W	Ash Wednesday	0 46	17 5	1 3	18 1	13 15
27	Th	Hare hunting ends	1 20	17 4	1 36	17 9	13 8
28	F	Elliott's Engagement	1 55	16 10	2 13	16 11	12 51
29	S	off Ramsey, 1760.	2 33	16 1	2 51	15 10	12 40

To reduce the Liverpool Tides for the Isle of Man generally, subtract twelve minutes; for the rise or fall of the water from tide to tide, subtract one sixth for the approximate rise or fall in Douglas.



ristol tides					SUN.										MOON.										ASPECTS AND WEATHER.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																						
ra.	even.	height			rises.	sets.	rt.	ascen.	declin.	S.				sets.	souths	declin.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															

LUNAR DISTANCES FROM THE SUN.

Mean Astronomical Time at Greenwich.

Near Astronomical Time at Greenwich.																									
NOON.		3 HOURS.				6 HOURS.				9 HOURS.				MIDN.		15 HOUR.				18 HOUR.				21 HOUR.	
°	'	°	'	°	'	°	'	°	'	°	'	°	'	°	'	°	'	°	'	°	'	°	'		
86	48	2	88	19	48	89	51	56	91	24	25	92	57	16	94	30	30	96	4	6	97	38	5		
99	12	27	100	47	13	102	22	22	103	57	55	105	33	52	107	10	12	108	46	57	110	24	6		
112	1	39	113	39	37	115	17	58	116	56	43	118	35	52	120	15	25	121	55	21	123	35	41		
125	16	23	126	57	28	128	38	56	130	20	45	132	2	55	133	45	26	135	28	17	137	11	27		
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..		
137	30	26	135	52	16	134	14	33	132	37	17	131	0	28	129	24	6	127	48	11	126	12	43		
124	37	43	123	3	9	121	29	3	119	55	23	118	22	10	116	49	24	115	17	4	113	45	9		
112	13	40	110	42	37	109	11	58	107	41	43	106	11	53	104	42	27	103	13	23	101	44	43		
100	16	24	98	48	37	97	20	52	95	53	37	94	26	43	93	0	8	91	32	52	90	7	55		
88	42	16	87	16	54	85	51	49	84	27	0	83	2	28	81	38	10	80	14	6	78	50	17		
77	26	41	76	3	17	74	40	6	73	17	6	71	54	18	70	31	40	69	9	11	67	46	52		
66	24	42	65	2	40	63	40	46	62	18	59	60	57	18	59	35	44	58	14	15	56	52	51		
55	31	32	54	10	17	52	49	5	51	27	57	50	6	51	48	45	47	47	24	45	46	3	45		
44	42	45	43	21	46	42	0	47	40	39	48	39	18	48	37	57	47	36	36	44	35	15	40		
33	54	33	32	33	24	31	12	13	29	50	58	28	29	40	27	8	18	25	46	52	24	25	22		
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..		
21	25	32	22	51	16	24	17	8	25	43	11	27	9	24	28	35	46	30	2	20	31	29	3		
32	55	58	34	23	2	35	50	18	37	17	45	38	45	23	40	13	12	41	41	13	43	9	25		
44	37	49	46	6	26	47	35	14	49	4	15	50	33	28	52	2	55	53	32	34	55	2	26		
56	32	32	58	2	51	59	33	24	61	4	11	62	35	13	64	6	28	65	37	59	67	9	44		
68	41	44	70	14	0	71	46	31	73	19	18	74	52	20	76	25	39	77	59	15	79	33	6		

The EQUATION of TIME is given to the nearest second for Greenwich mean noon; as the difference between the equation of time for mean noon and apparent noon does not in any instance amount to the fifth part of a second, the given minutes and seconds may be used for reducing mean time into apparent time, or the contrary. When the column is headed "Clock before Sun," the Equation to be subtracted from mean time to reduce it to apparent; or, in the case of celestial observation, the result being apparent time, the equation must be added to reduce it to mean time. And when "after Sun," the equation must be added to mean time, to reduce it to apparent time, or subtracted from apparent time.

MARCH 31 Days.

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PHASES OF THE MOON. { FIRST QUARTER, 2nd day, at 8h. 49m. morning.
FULL MOON, 8th day, at 9h. 22m. evening.
LAST QUARTER, 16th day, at 3h. 28m. morning.
NEW MOON, 24th day, at 6h. 59m. morning.
FIRST QUARTER 31st day, at 0h. 26m. afternoon.

M D.	Day	Twil. ends.	☉'s semi.	♂ Mercury sets. sout.	♀ Venus. sets sout.	♂ Mars. rises. sout.	♃ Jupiter. sets. sout.	♄ Saturn. rises. sout.
1	4m54	7a55	10 10	6a56 0a52	9a13 2a29	6m35 11m22	6a12 0a40	1m31 5m38
8	4 34	7 50	16 8	6 10 5	9 36 2 32	6 17 11 15	5 54 0 18	1 45 11
15	4 16	8 4	16 6	risers. 11m16	10 0 2 35	5 58 11 8	risers. 11m57	0 37 4
22	3 56	8 19	16 4	5m21 10 44	10 25 2 39	5 39 11 1	5m53 11 36	0 9 4
29	3 34	8 36	16 3	5 8 10 28	10 47 2 43	5 20 10 54	5 28 11 14	11a36 3 4

M W D D		Remarkable Days	HIGH WATER.—LIVERPOOL.			
			MORNING.		EVENING.	
			Time.	Height	Time.	Height.
1	D	1 Sunday in Lent	3 10	15 1	3 33	14 7
2	M	<i>Pro.</i> [Genesis xix to v. 30; Lu. xii. <i>Les.</i> [— xxii; Ephes vi.	3 58	13 10	4 27	13 2
3	Tu	Waller born, 1605	5 1	12 10	5 44	12 4
4	W	Regulus sou. 11 a 11	6 30	12 8	7 13	12 8
5	Th	Dr. Arne died, 1778	7 56	13 11	8 36	14 1
6	F	Procyon souths 8 a 34	9 9	15 10	9 38	15 11
7	S	Perpetua, Martyr	10 7	17 9	10 32	17 7
8	D	2 Sunday in Lent	10 55	19 4	11 16	18 9
9	M	<i>Proper</i> [Genesis xxvii; Luke xix. <i>Lessons.</i> [— xxxiv; Coloss. iii.	11 40	20 3	11 59	19 5
10	Tu	Ben West died, 1820	— —	— —	0 20	20 7
11	W	Sirius souths 7 a 20	0 41	19 5	1 2	20 1
12	Th	Treaty of Vienna	1 23	18 8	1 44	18 10
13	F	H discovered, 1781	2 4	17 5	2 23	17 2
14	S	Admiral Byng shot.	2 41	15 11	3 1	15 3
15	D	3 Sunday in Lent	3 21	14 4	3 44	13 3
16	M	<i>Pro</i> [Genesis xxxix; John ii. <i>Les.</i> [— xlii; 1 Thess. i.	4 7	12 9	4 35	11 6
17	Tu	St. Patrick	5 11	11 4	5 50	10 5
18	W	Princess Louisa born.	6 32	11 1	7 14	10 7
19	Th	Lucknow taken, 1858	7 53	11 10	8 28	11 7
20	F	Newton died, 1727.	8 58	13 1	9 26	13 1
21	S	B. of Alexandria, 801	9 49	14 8	10 9	14 6
22	D	4 Sunday in Lent	10 28	16 1	10 44	15 10
23	M	<i>Pro.</i> [Genesis xliii; John ix. <i>Les.</i> [— xlv; 1 Tim vi]	10 59	17 1	11 15	16 9
24	Tu	Q. Elizabeth d., 1603	11 31	17 11	11 47	17 7
25	W	Annuncia. Lady Day	— —	— —	0 3	18 6
26	Th	D. of Cambridge 1819	0 18	18 0	0 35	18 7
27	F	Peace of Amiens, 1802	0 54	18 1	1 13	18 4
28	S	Pleiades set 11 a 50	1 31	17 8	1 50	17 5
29	D	5 Sunday in Lent	2 10	16 9	2 31	16 2
30	M	<i>Proper</i> [Exodus iii; John xvi. <i>Lessons.</i> [— v; Phil.]	2 53	15 10	3 17	14 3
31	Tu	Treaty of Paris, 1856	3 42	14 3	4 11	13 2

Bristol tides				SUN.				MOON.				ASPECTS AND WEATHER.	
M	morn.	even.	height	rises	sets.	rt. ascen.	declin. S.	sets.	souths	declin.	M		
D.	H. M.	H. M.	F. I.	H. M. H. M.	H. M. S.	H. M. S.	° ' "	H. M. H. M.	H. M. ° ' "	° ' "	D.		
1	11 5	11 27	26 11	6 51 5 35	22 50 44	7 21 31	0m 22	5a 39	16n 2	7 1	1	☿ gr. hel. 1. N.	
2	11 53	—	24 4	6 49 5 37	22 54 28	6 58 37	1 32	6 34	17 58	8 2	2	Rainy	
3	0 22	0 59	22 4	6 47 5 39	22 58 12	6 35 36	2 38	7 32	18 46	9 3	3	and	
4	1 41	2 29	22 11	6 45 5 41	23 1 55	6 12 31	3 38	8 31	18 17	10 4	4	☿ ☽ (, 3 m 13	
5	3 22	4 8	26 1	6 42 5 43	23 5 38	5 49 20	4 33	9 31	16 28	11 5	5	☿ ☽ ☿, 5 m 19	
6	4 43	5 10	29 4	6 40 5 45	23 9 20	5 26 5	5 20	10 30	13 26	12 6	6	wet	
7	5 44	6 12	30 11	6 37 5 47	23 13 2	5 2 45	5 58	11 26	9 28	13 7	7	weather.	
8	6 38	7 1	33 7	6 34 5 49	23 16 43	4 39 22	6 26	morn	—	F 8	8	☿ ☽ ☽ 10 m 11	
9	7 27	7 48	35 5	6 32 5 51	23 20 24	4 15 55	rises.	0 21	4 54	15 9	9	Now	
10	8 11	8 32	36 0	6 30 5 53	23 24 5	3 52 25	8a 17	1 14	0 7	16 10	10	☿ ☽ ☽, 4 a 9	
11	8 52	9 11	35 6	6 27 5 55	23 27 46	3 28 52	9 34	2 6	4s 32	17 11	11	more	
12	9 30	9 49	33 8	6 25 5 57	23 31 26	3 5 16	10 47	2 56	8 49	18 12	12	fair	
13	10 7	10 21	31 2	6 22 5 58	23 35 5	2 41 39	11 55	3 45	12 28	19 13	13	and	
14	10 38	10 55	28 3	6 20 6 0	23 38 45	2 18 0	morn	4 34	15 22	20 14	14	☿ ☽ (, 11 m 4	
15	11 15	11 34	24 8	6 17 6 2	23 42 24	1 54 19	0 58	5 23	17 25	21 15	15	tending	
16	11 58	—	21 5	6 15 6 4	23 46 4	1 30 37	1 56	6 12	18 33	22 16	16	stationary	
17	0 29	1 4	19 1	6 12 6 6	23 49 13	1 6 54	2 48	7 0	18 47	23 17	17	☿ ☽ ☽, 4 m 12	
18	1 42	2 30	19 3	6 10 6 8	23 53 22	0 43 12	3 33	7 47	18 8	24 18	18	to	
19	3 17	3 59	21 7	6 7 6 10	23 57 0	0 19 29	4 10	8 34	16 38	25 19	19	" much	
20	4 31	5 0	24 3	6 5 6 12	0 0 39	0 4 13	4 41	9 20	14 22	26 20	20	☽ ent. ☿ 7a 43	
21	5 24	5 45	26 9	6 2 6 14	0 4 17	0 27 55	5 9	10 5	11 26	27 21	21	dust "	
22	6 6	6 25	27 11	6 0 6 15	0 7 56	0 51 35	5 33	10 50	7 56	28 22	22	☽ ☽ (, 4 a 58	
23	6 42	7 0	29 10	5 58 6 17	0 11 34	1 15 14	5 55	11 35	4 2	29 23	23	☽ ☽ (, 10 m 29	
24	7 17	7 36	31 6	5 56 6 19	0 15 12	1 38 50	sets.	0a 20	0n 9	N 24	24	Expect	
25	7 53	8 9	32 8	5 52 6 21	0 18 50	2 2 25	7a 49	1 6	4 23	1 25	25	wind	
26	8 26	8 44	33 0	5 50 6 23	0 22 29	2 25 57	9 0	1 54	8 30	2 26	26	☿ in Perihel.	
27	9 2	9 18	32 10	5 47 6 25	0 26 7	2 49 26	10 13	2 44	12 14	3 27	27	and rain	
28	9 36	9 54	31 8	5 45 6 27	0 29 45	3 12 51	11 25	3 36	15 21	4 28	28	at the	
29	10 12	10 31	30 0	5 42 6 29	0 33 23	3 36 12	morn	4 30	17 36	5 29	29	☿ ☽ ☽, 7 m 52	
30	10 51	11 13	27 7	5 40 6 30	0 37 1	3 59 30	0 37	5 26	18 46	6 30	30	end.	
31	11 38	—	24 10	5 37 6 32	0 40 40	4 22 43	1 38	6 24	18 42	7 31	31	☿ ☽ (, 9 m 20	

LUNAR DISTANCES FROM THE SUN.

Mean Astronomical Time at Greenwich.

M.	NOON.	3 HOURS.	6 HOURS.	9 HOURS.	MIDN.	15 HOUR.	18 HOUR.	21 HOUR.
D.	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "
1w	81 7 14	82 41 39	84 16 20	85 51 19	87 26 35	89 2 9	90 38 0	92 14 8
2	93 50 34	95 27 17	97 4 18	98 41 37	100 19 14	101 57 8	103 35 20	105 13 49
3	106 52 35	108 31 39	110 11 0	111 50 38	113 30 33	115 10 44	116 51 11	118 31 54
4	120 12 52	121 54 6	123 35 34	125 17 17	126 59 12	128 41 22	130 23 44	132 6 17
12e	132 15 1	130 43 8	129 11 40	127 40 35	126 9 55	124 39 38	123 9 44	121 40 13
13	120 11 4	118 42 18	117 13 54	115 45 51	114 18 10	112 50 49	111 23 48	109 57 7
14	108 30 45	107 4 42	105 38 57	104 13 29	102 48 19	101 23 26	99 58 49	98 34 27
15	97 10 20	95 46 27	94 22 48	92 59 23	91 36 10	90 13 8	88 50 19	87 27 40
16	86 5 11	84 42 52	83 20 42	81 58 40	80 36 46	79 14 59	77 53 19	76 31 45
17	75 10 16	73 48 52	72 27 33	71 6 17	69 45 4	68 23 54	67 2 45	65 41 38
18	64 20 32	62 59 27	61 38 21	60 17 15	58 56 7	57 34 58	56 13 47	54 52 33
19	53 31 16	52 9 56	50 48 31	49 27 3	48 5 29	46 43 50	45 22 6	44 0 16
20	42 38 20	41 16 17	39 54 7	38 31 50	37 9 26	35 46 54	34 24 14	33 1 26
21	31 38 30	30 15 26	28 52 13	27 28 52	26 5 23	24 41 46	23 18 1	21 54 8
26w	26 40 40	28 11 34	29 42 42	31 14 3	32 45 38	34 17 26	35 49 26	37 21 38
27	38 54 2	40 26 38	41 59 27	43 32 26	45 5 37	46 38 59	48 12 33	49 46 18
28	51 20 13	52 54 20	54 28 37	56 3 5	57 37 43	59 12 32	60 47 32	62 22 42
29	63 58 2	65 33 32	67 9 13	68 45 4	70 21 5	71 57 16	73 33 37	75 10 8
30	76 46 49	78 23 40	80 0 40	81 37 50	83 15 9	84 52 38	86 30 17	88 8 4
31	89 46 1	91 24 7	93 2 21	94 40 45	96 19 17	97 57 57	99 36 46	101 15 42

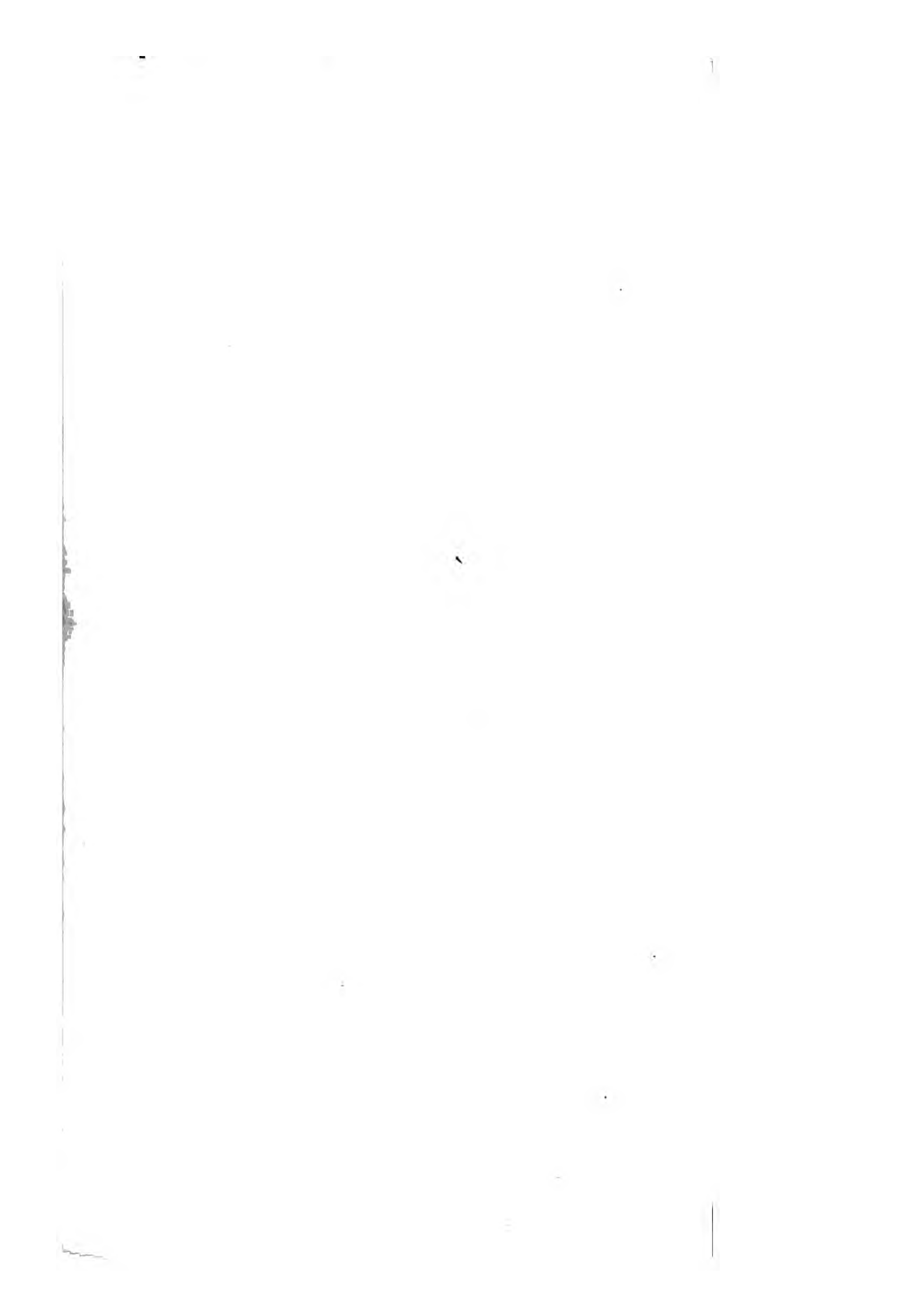
to reduce it to mean time.

IN THE TIDE TABLE FOR BRISTOL, on the right-hand pages, the heights are given of those Tides which happen nearest to noon in each day at the Cumberland Gates, without taking into account the diurnal inequality of the height.

PHASES OF THE MOON.	FULL MOON,	7th day, at 7h. 17m. morning.
	LAST QUARTER,	14th day, at 10h. 34m. night.
	NEW MOON,	22nd day, at 8h. 20m. evening.
	FIRST QUARTER,	29th day, at 6h. 18m. evening.

M D.	Day brek.	Twil. ends.	☉'s semi.	♂ Mercury rises. sout.	♀ Venus. sets. sout.	♂ Mars. rises. sout.	♂ Jupiter. rises. sout.	♂ Saturn. rises. sout.	M D.
1	3m26	8a43	16 2	5 m3 10m25	10a57 2a45	5m11 10m51	5m17 11m5	11a24 3m37	1
8	3 49	2 16	0	4 51 10 24	11 19 2 50	4 51 10 43	4 52 10 44	10 55 3 8	8
15	2 209	23 15	58	4 39 10 30	11 38 2 55	4 32 10 36	4 27 10 22	10 26 2 39	15
22	2 129	45 15	56	4 27 10 41	11 54 3 1	4 12 10 28	4 12 10 0	9 56 2 10	22
29	1 42	10 12	15 54	4 15 10 56	0 m 4 3 5	3 53 10 20	3 37 9 35	9 26 1 41	29

M D	W D	Remarkable Days	HIGH WATER.—LIVERPOOL.				Equation of Time.
			MORNING.		EVENING.		
			Time.	Height.	Time.	Height.	
1	W	Day incr. 5h. 45m.	4 48	13 2	5 32	12 3	3 ² 49
2	Th	Bat. of Cophn., 1801	6 17	12 11	7 2	12 8	3 ³ 31
3	F	Richard, Bishop	7 46	14 2	8 20	14 0	3 ³ 13
4	S	Ambrose, Bishop	8 54	15 11	9 20	15 10	2 ⁴ 55
5	D	Palm Sunday	9 48	17 8	10 14	17 4	2 ⁵ 37
6	M	Proper Lessons. [Exodus ix; Mat. xxvi. — x; Heb. v to v 11.	10 34	18 11	10 55	18 4	2 ⁶ 20
7	Tu	Lalande died, 1811	11 18	19 7	11 37	18 10	2 ⁶ 2
8	W	Regulus souths 8 a 52	11 55	19 9	—	—	1 ⁴ 45
9	Th	Bacon died, 1626	0 14	18 10	0 35	19 3	1 ¹ 29
10	F	Good Friday	0 55	18 4	1 14	18 3	1 ¹ 12
11	S	W.&M. crowned 1689	1 33	17 3	1 52	16 8	0 ⁵ 56
12	D	Easter Sunday	2 10	16 0	2 29	14 11	0 40
13	M	Proper Lessons. [Exodus xii; Rom. vi. — xiv; Acts ii to v 22.	2 49	14 5	3 10	13 3	0 24
14	Tu	Easter Tuesday	3 33	12 11	3 57	11 7	0 9
15	W	Easter Term begins	4 28	11 9	5 3	10 6	0 6
16	Th	B. of Culloden, 1746	5 44	11 2	6 23	10 6	0 20
17	F	Cam. Term begins	7 2	11 9	7 40	11 4	0 ³ 34
18	S	Judge Jeffries d. 1689	8 13	12 11	8 43	12 8	0 ⁴ 48
19	D	1st Sun. after Easter	9 8	14 4	9 30	14 4	1 1
20	M	Proper Lessons. [Numbers xvi; Acts xvi. — xxii; 1 Peter iii	9 51	15 10	10 10	15 9	1 ¹ 14
21	Tu	Regulus souths 8 a 0	10 25	17 0	10 42	16 10	1 ¹ 26
22	W	Pleiades sets 10 a 11	10 59	17 11	11 17	17 9	1 ¹ 38
23	Th	St. George	11 34	18 6	11 53	18 3	1 ¹ 50
24	F	Spica souths 11 m 5	—	—	0 10	18 8	2 ¹ 1
25	S	St. Mark, Evangelist	0 28	18 5	0 49	18 5	2 ¹ 11
26	D	2 Sunday aft Easter	1 9	18 1	1 30	17 6	2 ² 21
27	M	Pro. [Num. xxiii, xxiv; Acts xxiii Less. — xxv; 1 John ii.	1 53	17 2	2 17	16 4	2 ² 31
28	Tu	Mutiny of Bounty	2 42	16 1	3 7	14 11	2 ² 40
29	W	Pleiades set 9 a 46	3 37	14 9	4 8	13 4	2 ² 49
30	Th	Jas. Montgomery died	4 44	13 9	5 25	12 7	2 ² 57



Bristol tides										SUN.					MOON.					ASPECTS AND WEATHER.	
M	morn.		even.		height	rises.	sets.	rt. ascen.		declin. N.		sets.	souths	declin.	M						
D.	H. M.	H. M.	H. M.	F.	I.	H. M.	H. M.	H. M.	S.	°	'	H. M.	H. M.	°	'	D.					
1	0 9	0 48	22	7		5 35	6 34	0 44	18	4 45	51	2m29	7a22	17N22	8	1	Expect				
2	1 28	2 18	23	1		5 32	6 36	0 47	57	5 8	54	3 15	8 19	14 51	9	2	wet				
3	3 11	3 52	26	2		5 30	6 38	0 51	35	5 31	51	3 53	9 14	11 20	10	3	and				
4	4 28	4 55	29	4		5 27	6 40	0 55	14	5 54	43	4 24	10 8	7 5	11	4	☿ in Aphelion				
5	5 24	5 53	31	11		5 25	6 42	0 58	53	6 17	28	4 52	11 1	2 26	12	5	changeable				
6	6 15	6 39	32	0		5 22	6 44	1 2	32	6 40	6	5 18	11 52	2 18	13	6	weather.				
7	7 4	7 25	34	4		5 20	6 46	1 6	11	7 2	38	rises.	morn	—	F	7	Now				
8	7 45	8 53	34	10		5 18	6 47	1 9	51	7 25	3	8a24	0 43	6 50	15	8	☿ ☿ 2, 3 a 19				
9	8 26	8 45	34	2		5 15	6 49	1 13	30	7 47	20	9 39	1 33	10 52	16	9	showery.				
10	9 3	9 20	32	9		5 13	6 51	1 17	10	8 9	29	10 46	2 23	14 13	17	10	☿ ☿ 6, 7 a 7				
11	9 37	9 53	30	6		5 10	6 53	1 20	51	8 31	30	11 46	3 13	16 44	18	11	still				
12	10 9	10 25	28	0		5 8	6 55	1 24	31	8 53	23	morn	4 3	18 19	19	12	with				
13	10 44	11 3	25	1		5 5	6 57	1 28	12	9 15	7	0 40	4 52	18 58	20	13	☿ ☿ 2, 2 a 59				
14	11 24	11 51	22	1		5 3	6 59	1 31	54	9 36	42	1 27	5 40	18 40	21	14	mild				
15	—	0 21	19	8		5 17	0	1 35	35	9 58	7	2 8	6 28	17 29	22	15	and				
16	0 57	1 33	19	3		4 58	7 2	1 39	18	10 19	23	2 43	7 14	15 31	23	16	warm				
17	2 18	3 1	20	11		4 56	7 4	1 43	0	10 40	28	3 12	7 59	12 49	24	17	☿ ☿ ☿, 9 a 39				
18	3 44	4 16	23	8		4 54	7 6	1 46	43	11 1	23	3 36	8 44	9 32	25	18	intervals				
19	4 42	5 5	26	5		4 52	7 8	1 50	26	11 22	8	3 59	9 29	5 45	26	19	will				
20	5 27	5 48	28	9		4 49	7 10	1 54	10	11 42	41	4 21	10 14	1 38	27	20	☿ ☿ 6m 36				
21	6 5	6 24	29	10		4 47	7 12	1 57	54	12 3	2	4 42	11 0	2 40	28	21	continue				
22	6 44	7 3	31	6		4 45	7 13	2 1	39	12 23	12	sets.	11 47	6 57	N	22	to				
23	7 22	7 43	32	9		4 42	7 15	2 5	24	12 43	10	7a59	0a37	10 58	1	23	the				
24	8 1	8 19	33	3		4 40	7 17	2 9	9	13 2	55	9 17	1 30	14 27	2	24	☿ gr. hel. 1. S.				
25	8 39	8 58	33	1		4 38	7 19	2 12	55	13 22	27	10 28	2 24	17 7	3	25	end of				
26	9 16	9 37	32	0		4 36	7 21	2 16	42	13 41	46	11 31	3 21	18 42	4	26	☿ ☿ 6, 7m 28				
27	10 0	10 21	30	5		4 34	7 23	2 20	29	14 0	51	morn	4 19	19 3	5	27	☿ ☿ 6, 3 a 53				
28	10 42	11 8	28	2		4 31	7 25	2 24	16	14 19	43	0 27	5 17	18 6	6	28	the month.				
29	11 35	—	25	5		4 29	7 26	2 28	4	14 38	21	1 15	6 14	15 56	7	29	☿ in Perigee				
30	0 6	0 41	23	5		4 27	7 28	2 31	53	14 56	43	1 55	7 9	12 45	8	30					

LUNAR DISTANCES FROM THE SUN.

Mean Astronomical Time at Greenwich.

M.	NOON.		3 HOURS.		6 HOURS.		9 HOURS.		MIDN.		15 HOUR.		18 HOUR.		21 HOUR.	
D.	°	'	°	'	°	'	°	'	°	'	°	'	°	'	°	'
1w	102	54 47	104	33 59	106	13 18	107	52 44	109	32 18	111	11 57	112	51 43	114	31 35
2	116	11 32	117	51 34	119	31 41	121	11 52	122	52 7	124	32 26	126	12 47	127	53 10
3	139	51 50	138	23 22	136	55 12	135	27 20	133	59 46	132	32 30	131	5 31	129	38 49
4	128	12 25	126	46 17	125	20 26	123	54 52	122	29 33	121	4 29	119	39 41	118	15 7
5	116	50 48	115	26 42	114	2 50	112	39 10	111	15 43	109	52 28	108	29 24	107	6 31
6	105	43 49	104	21 16	102	58 52	101	36 37	100	14 30	98	52 31	97	30 39	96	8 53
7	94	47 13	93	25 38	92	4 8	90	42 42	89	21 20	88	0 0	86	38 43	85	17 27
8	83	56 13	82	34 59	81	13 45	79	52 31	78	31 15	77	9 58	75	48 38	74	27 15
9	73	5 49	71	44 19	70	22 45	69	1 5	67	39 20	66	17 29	64	55 31	63	33 27
10	62	11 14	60	48 54	59	26 25	58	3 48	56	41 1	55	18 4	53	54 57	52	31 40
11	51	8 12	49	44 32	48	20 41	46	56 39	45	32 25	44	7 58	42	43 19	41	18 27
12	39	53 23	38	28 7	37	2 37	35	36 55	34	11 1	32	44 55	31	18 37	29	52 7
13	21	30 3	23	4 14	24	38 50	26	13 48	27	49 6	29	24 43	31	0 35	32	36 42
14	34	13 3	35	49 37	37	26 22	39	3 18	40	40 24	42	17 39	43	55 3	45	32 35
15	47	10 15	48	48 1	50	25 54	52	3 53	53	41 57	55	20 6	56	58 20	58	36 38
16	60	14 59	61	53 25	63	31 53	65	10 23	66	48 57	68	27 32	70	6 9	71	44 47
17	73	23 27	75	2 8	76	40 49	78	19 31	79	58 13	81	36 54	83	15 36	84	54 16
18	86	32 56	88	11 35	89	50 13	91	28 50	93	7 24	94	45 57	96	24 28	98	2 56
19	99	41 22	101	19 45	102	58 5	104	36 22	106	14 35	107	52 45	109	30 51	111	8 52

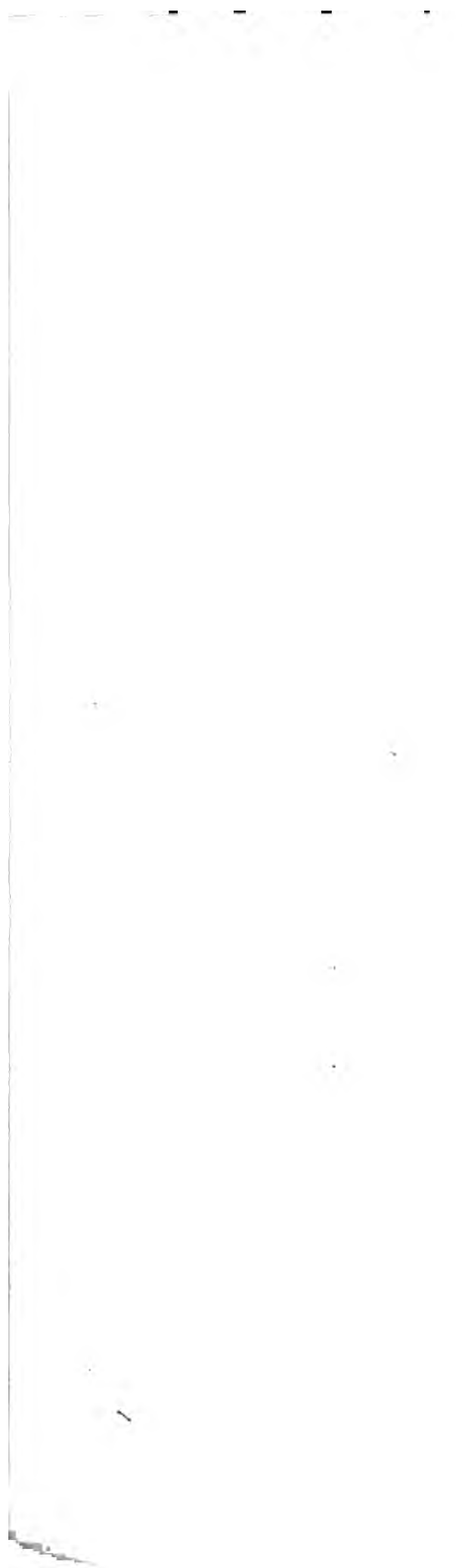
THE SUN'S RIGHT ASCENSION is given in time to the nearest second for Greenwich mean noon, and with the table of the right ascension of the principal fixed stars, given in page 29, is useful to find the time by the meridian distance of those stars.

THE SUN'S DECLINATION is also given for Greenwich mean noon, and may be reduced to any other place by applying the proportional part of the daily difference.

PHASES OF THE MOON. { FULL MOON, 6th day, at 6h. 37m. evening.
LAST QUARTER, 14th day, at 5h. 15m. evening.
NEW MOON, 22nd day, at 6h. 36m. morning.
FIRST QUARTER, 28th day, at 11h. 42m. night.

M D.	Day brek.	Twil. ends	☉'s semi.	☿ Mercury rises sout.	♀ Venus. sets sout.	♂ Mars. rises. sout.	♃ Jupiter. rises. sout.	♄ Saturn. rises. sout.
1	0m31	10a28	15 54	4m12 11m2	0m 8 3 a 6	3m47 10m18	3m30 9m32	9a18 1m33
8	0 25	11 16	15 52	4 6 11 26	0 11 3 9	3 27 10 10	3 49 10	8 47 1 3 8
15	noreal night.	noreal night.	15 51	sets 11 57	0 9 3 11	3 8 10 2	2 39 9 48	8 17 0 34 15
22	noreal night.	noreal night.	15 50	9 a 7 0 a 32	0 1 3 10	2 49 9 55	2 13 8 25	sets. 0 4 32
29	noreal night.	noreal night.	15 49	9 58 1 6	11a46 3 6	2 30 9 47	1 48 8 2	3m48 11a30 29

M D	W D	Remarkable Days	HIGH WATER.—LIVERPOOL.				Equation of Time.
			MORNING.		EVENING.		
			Time.	Height.	Time.	Height.	
1	F	St. Philip & St James	6 6	13 7	6 48	12 11	3 4
2	S	Camden born, 1551	7 26	14 6	8 3	14 1	3 11
3	D	3 Sun. after Easter	8 33	15 10	9 2	15 5	3 18
4	M	Proper [Deut. iv; Matthew i. Lessons. — v; Rom. ii.	9 27	17 0	9 52	16 8	3 2
5	Tu	Napoleon I died, 1821	10 14	18 1	10 35	17 6	3 29
6	W	St. John Port Lat	10 56	18 5	11 15	17 11	3 34
7	Th	Altair rises 6 a 41	11 33	18 6	11 51	18 0	3 39
8	F	Easter Term ends	— —	— —	0 8	17 11	3 42
9	S	Procyon sets 10 a 55	0 27	17 9	0 47	17 2	3 45
10	D	4 Sun. after Easter	1 6	16 11	1 26	16 0	3 48
11	M	Pro. [Deut. vi; Matt. viii. Les. — ix; Rom. ix.	1 45	15 10	2 4	14 9	3 50
12	Tu	Lord Stafford bhd. 1641	2 23	14 9	2 45	13 4	3 51
13	W	Old May Day	3 7	13 7	3 30	12 2	3 52
14	Th	Fahrenheit born, 1686	3 54	12 6	4 22	11 3	3 52
15	F	Cuvier died, 1832	4 55	11 10	5 32	10 11	3 52
16	S	D. O'Connel d., 1847	6 9	11 11	6 42	11 5	3 51
17	D	Rogation Sunday	7 14	12 9	7 47	12 6	3 50
18	M	Proper [Deut. viii; Matt. xv. Lessons. — ix; Rom. xvi.	8 15	13 11	8 42	13 10	3 48
19	Tu	Dunstan, Archbishop	9 5	15 3	9 26	15 4	3 45
20	W	Columbus died, 1506	9 49	16 6	10 11	16 7	3 42
21	Th	Ascension Day	10 31	17 7	10 50	17 8	3 38
22	F	Trinity Term begins	11 8	18 3	11 28	18 4	3 33
23	S	Q. Victoria b. 1819	11 50	18 7	— —	— —	3 29
24	D	Sun. aft. Aseen. Day	0 10	18 9	0 31	18 5	3 23
25	M	Pro. [Deut. xii; Matt. xxii. Les. — xlii; 1 Cor. vii.	0 56	18 5	1 20	17 8	3 17
26	Tu	Arcturus souths 9 a 50	1 44	17 9	2 9	16 6	3 11
27	W	Venerable Bede	2 36	16 8	3 2	15 3	3 4
28	Th	Wm. Pitt born, 1759	3 31	15 7	4 2	13 11	2 57
29	F	Oxford Term ends	4 37	14 6	5 14	13 2	2 49
30	S	[Deut. xvi to v. 18; Acts x, 34 Isaiah xi; Acts xix to v. 21.	5 50	14 2	6 22	13 1	2 41
31	D	Whit Sunday	6 36	14 7	7 30	13 11	2 33



Bristol tides					SUN.					MOON.					ASPECTS AND WEATHER.	
M	morn.	even.	height		rises.	sets.	rt. ascen.	declin.	N	sets.	south.	declin.				
D.	H. M.	H. M.	F. I.		H. M.	H. M.	H. M. S.	° / "		H. M.	H. M.	° / "				
1	1 17	2 23	10		4 25	7 30	2 35	42	15 14 51	2 m 29	8 a 2	8 n 46	9	1	This month will	
2	2 50	3 34	26	5	4 23	7 31	2 39	31	15 32 44	2 58	8 54	4 19	10	2		
3	4 6	4 36	28	9	4 21	7 33	2 43	21	15 50 22	3 22	9 44	0 s 21	11	3	probably	
4	5 3	5 29	30	9	4 19	7 35	2 47	12	16 7 43	3 47	10 34	4 57	12	4	commence	
5	5 54	6 17	31	6	4 17	7 37	2 51	3	16 24 49	4 10	11 24	9 12	13	5	with	
6	6 41	7 1	32	5	4 15	7 39	2 54	54	16 41 38	rises.	morn	—	F	6	changeable	
7	7 22	7 42	32	8	4 13	7 41	2 58	47	16 58 10	8 a 27	0 13	12 54	15	7	♀ gr. elon. E.	
8	7 59	8 17	32	2	4 11	7 43	3 2	39	17 14 26	9 33	1 3	15 51	16	8	♂ ♀, 0 m 58	
9	8 36	8 54	31	2	4 9	7 45	3 6	33	17 30 24	10 32	1 53	17 54	17	9	weather.	
10	9 12	9 30	29	6	4 7	7 47	3 10	27	17 46 5	11 23	2 43	19 0	18	10	Now	
11	9 47	10 3	27	8	4 5	7 49	3 14	21	18 1 28	morn	3 33	19 7	19	11	fair	
12	10 22	10 41	25	7	4 4	7 50	3 18	17	18 16 33	0 6	4 21	18 18	20	12	and	
13	11 1	11 21	23	4	4 2	7 52	3 22	12	18 31 20	0 43	5 8	16 39	21	13	♂ in Q. 10 a 39	
14	11 45	—	21	6	4 0	7 54	3 26	9	18 45 48	1 13	5 53	14 14	22	14	warm	
15	0 14	0 47	20	3	3 59	7 55	3 30	6	18 59 57	1 38	6 38	11 11	23	15	♂ in sup. ♂ ☉	
16	1 20	1 56	20	11	3 57	7 57	3 34	3	19 13 47	2 2	7 22	7 37	24	16	with	
17	2 35	3 15	23	2	3 55	7 58	3 38	1	19 27 18	2 24	8 6	3 38	25	17	light	
18	3 47	4 16	25	8	3 54	8 0	3 42	0	19 40 29	2 45	8 51	0 n 37	26	18	♂ ♂ (, 2 m 6	
19	4 40	5 2	28	1	3 52	8 1	3 45	59	19 53 20	3 7	9 38	4 57	27	19	♂ ♂ (, 7 a 39	
20	5 26	5 50	28	7	3 51	8 3	3 49	59	20 5 50	3 31	10 27	9 11	28	20	showers	
21	6 12	6 34	31	1	3 49	8 4	3 53	59	20 18 0	3 54	11 18	13 1	29	21	at	
22	6 54	7 16	32	6	3 48	8 6	3 58	0	20 29 49	sets.	0 a 13	16 11	N 22		♂ ♂ (, 9 a 36	
23	7 40	8 1	33	5	3 47	8 8	4 2	20	41 18	9 a 20	1 11	18 20	1	23	♂ ♂ ☉, 7 m 33	
24	8 22	8 46	33	4	3 46	8 9	4 6	3	20 52 25	10 21	2 10	19 15	2	24	(in Perigee	
25	9 8	9 30	32	6	3 44	8 11	4 10	6	21 3 10	11 14	3 10	18 46	3	25	♀ ♂ (, 2 a 21	
26	9 53	10 16	31	1	3 43	8 12	4 14	9	21 13 34	11 59	4 9	16 59	4	26	intervals.	
27	10 38	11 3	29	1	3 42	8 14	4 18	12	21 23 36	morn	5 6	14 3	5	27	Now	
28	11 30	—	26	8	3 40	8 15	4 22	16	21 33 15	0 36	6 0	10 15	6	28	♂ gr. hel. la. N	
29	0 1	0 33	24	10	3 39	8 16	4 26	20	21 42 32	1 6	6 52	5 54	7	29	more	
30	1 3	1 32	24	5	3 38	8 18	4 30	25	21 51 27	1 28	7 42	1 18	8	30	fair	
31	2 14	2 56	25	9	3 37	8 19	4 34	30	21 59 58	1 50	8 30	3 s 18	9	31	and warm.	

LUNAR DISTANCES FROM THE SUN.
Mean Astronomical Time at Greenwich.

M.	Noon.	3 Hours.	6 Hours.	9 Hours.	Midn.	15 Hour.	18 Hour.	21 Hour.
D.	° / "	° / "	° / "	° / "	° / "	° / "	° / "	° / "
1w	112 46 50	114 24 42	116 2 30	117 40 12	119 17 48	120 55 19	122 32 44	124 10 2
2	125 47 14	127 24 18	129 1 14	130 38 2	132 14 42	133 51 13	135 27 35	137 3 47
10g	136 4 7	134 40 34	133 17 11	131 53 58	130 30 54	129 7 59	127 45 13	126 22 36
11	125 0 7	123 37 46	122 15 33	120 53 26	119 31 27	118 9 33	116 47 46	115 26 4
12	114 4 27	112 42 55	111 21 26	110 0 3	108 38 39	107 17 19	105 56 1	104 34 45
13	103 13 30	101 52 14	100 30 59	99 9 43	97 48 25	96 27 6	95 5 44	93 44 18
14	92 22 50	91 1 17	89 39 39	88 17 56	86 56 7	85 34 11	84 12 8	82 49 58
15	81 27 40	80 5 13	78 42 36	77 19 50	75 56 53	74 33 45	73 10 26	71 46 55
16	70 23 12	68 59 15	67 35 6	66 10 42	64 46 4	63 21 11	61 56 3	60 30 39
17	59 5 0	57 39 4	56 12 51	54 46 22	53 19 36	51 52 31	50 25 9	48 57 30
18	47 29 32	46 1 16	44 32 43	43 3 51	41 34 41	40 5 13	38 35 27	37 5 24
19	35 35 4	34 4 28	32 33 35	31 2 28	29 31 7	27 59 33	26 27 48	24 55 54
24w	30 11 25	31 51 37	33 32 0	35 12 32	36 53 11	38 33 55	40 14 45	41 55 37
25	43 36 32	45 17 28	46 58 23	48 39 19	50 20 13	52 1 4	53 41 53	55 22 38
26	57 3 18	58 43 54	60 24 24	62 4 48	63 45 6	65 25 16	67 5 19	68 45 14
27	70 25 1	72 4 40	73 44 9	75 23 29	77 2 39	78 41 40	80 20 30	81 59 10
28	83 37 40	85 15 59	86 54 6	88 32 3	90 9 49	91 47 23	93 24 46	95 1 57
29	96 38 56	98 15 44	99 52 20	101 28 44	103 4 56	104 40 56	106 16 43	107 52 19
30	109 27 42	111 2 54	112 37 53	114 12 39	115 47 13	117 21 35	118 55 44	120 29 41
31	122 3 25	123 36 57	125 10 15	126 43 21	128 16 14	129 48 54	131 21 21	132 53 35

THE SUN'S RISING AND SETTING, and the MOON'S RISING, SOUTHING, AND SETTING are given, for Latitude 54° 10' N., and Longitude 4° 30' W.

THE MOON'S DECLINATION is given to the nearest minute for her transit over the meridian of Greenwich.

PHASES OF THE MOON. { FULL MOON, 5th day, at 6h. 55m. morning.
LAST QUARTER, 13th day, at 10h. 14m. morning.
NEW MOON, 20th day, at 2h. 45m. afternoon.
FIRST QUARTER, 27th day, at 5h. 51m. morning.

M D.	Day brek.	Twil. ends.	☉'s semi.	♂ Mercury sets. sout.	♀ Venus. sets. sout.	♂ Mars. rises. sout.	♂ Jupiter. rises. sout.	♂ Saturn. sets. sout.	M D.
1	no real ni. this mon.	no real ni. this mon.	15 48	10a11 1a18	11a39 3a3	2m22 9m44	1m37 7m52	3m35 11a17	1
8			15 47	10 24 1 39	11 16 2 52	2 49 36	1 11 7 29	3 6 10 48	8
15			15 47	10 17 1 48	10 49 2 37	1 46 9 29	0 46 7 5	2 37 10 18	15
22			15 46	9 58 1 45	10 16 2 15	1 29 9 22	0 20 6 41	2 8 9 49	22
29			15 46	9 21 1 27	9 37 1 45	1 13 9 15	11a50 6 17	1 39 9 20	29

M D.	W D.	Remarkable Days	HIGH WATER.—LIVERPOOL.				Equation of Time.	
			MORNING.		EVENING.			
			Time.	Height.	Time.	Height.		
1	M	Whit Monday	8 3	15 3	8 33	14 10	2 24	
2	Tu	Whit Tuesday	9 2	16 0	9 28	15 9	2 15	
3	W	W. Harvey died, 1657	9 53	16 7	10 15	16 8	2 5	
4	Th	Br. Inst. founded 1805	10 36	16 9	10 55	16 10	1 55	
5	F	Boniface, Bishop	11 16	16 11	11 34	17 0	1 45	
6	S	J. Bentham d. 1832	11 51	16 8	—	—	1 34	
7	D	Trinity Sunday.	0 11	16 11	0 29	16 3	1 23	
8	M	Proper [Genesis i; Matt. iii. Lessons. [— xviii; 1 John v.	0 47	16 7	1 5	15 7	1 12	
9	Tu	Lyra souths 1 m 25	1 23	16 0	1 42	14 9	1 1	
10	W	Arcturus souths 8 a 52	2 2	15 2	2 22	13 10	0 49	
11	Th	Corpus Christi.	2 40	14 4	3 0	13 1	0 37	
12	F	Trinity Term ends	3 23	13 8	3 46	12 4	0 25	
13	S	Regulus sets 11 a 48	4 12	12 10	4 39	12 0	0 12	
14	D	1 Sun. after Trinity	5 11	12 6	5 45	11 9	0 0	
15	M	Pro. [Joshua x; Mark xiv. Les. [— xxiii; 2 Cor. xi.	6 19	12 7	6 49	12 4	0 13	
16	Tu	J. Wesley born, 1703	7 21	13 5	7 52	13 6	0 26	
17	W	St. Alban, Martyr	8 20	14 6	8 48	14 9	0 39	
18	Th	B. of Waterloo, 1815	9 12	15 8	9 37	16 2	0 52	
19	F	Mag. Char. sig. 1215	10 4	16 10	10 29	17 3	1 5	
20	S	Queen's Accession	10 52	17 8	11 15	18 2	1 18	
21	D	2 Sun. after Trinity	11 36	18 3	11 59	18 10	1 31	
22	M	Proper [Judges iv; Luke x. Lessons. [— v; Gal. v.	—	—	0 21	18 5	1 44	
23	Tu	J. Hampden d., 1643	0 45	19 0	1 10	18 1	1 57	
24	W	Midsummer Day	1 35	18 7	2 2	16 11	2 10	
25	Th	Antares souths 10 a 4	2 20	17 8	2 57	16 1	2 23	
26	F	George IV. d. 1830	3 23	16 7	3 49	14 10	2 35	
27	S	Dr. Dodd, exec. 1774	4 18	15 4	4 48	13 8	2 48	
28	D	3 Sunday aft Trinity	5 20	14 5	5 53	13 1	3 0	
29	M	Pro. [1 sam. ii; Luke ii. Les. [— iii; Ephes. v.	6 26	13 11	6 59	13 3	3 12	
30	Tu	Regulus sets 10 a 43	7 30	14 1	8 2	13 10	3 24	



Bristol tides				SUN.				MOON.				M	D.	ASPECTS AND WEATHER
morn. H. M.	even. H. M.	height F. I.		rises. H. M.	sets. H. M.	rt. ascen. H. M. S.	declin. N. ° ' "	rises. H. M.	souths H. M.	declin. ° ' "	alt. ° ' "			
1	3 34	4 7	27 6	3 36	8 20	4 38 35	22 8 7	2m13	9a19	7 s 40	10	1		Fair
2	4 36	5 3	28 9	3 35	8 21	4 42 41	22 15 52	2 38	10 7	11 34	11	2		and
3	5 30	5 54	29 8	3 34	8 22	4 46 47	22 23 15	3 5	10 57	14 49	12	3		warm
4	6 18	6 39	30 1	3 33	8 23	4 50 54	22 30 13	3 34	11 46	17 15	13	4		☿ ☿ (, 4 m 36
5	7 2	7 22	30 3	3 33	8 24	4 55 0	22 36 48	rises.	morn	—	F	5		changing
6	7 41	8 2	30 2	3 32	8 25	4 59 8	22 43 0	9a17	0 36	18 46	51	6		about this
7	8 20	8 37	29 8	3 32	8 26	5 3 15	22 48 47	10 4	1 26	19 19	16	7		time to
8	8 54	9 10	28 10	3 31	8 27	5 7 23	22 54 11	10 43	2 14	18 54	17	8		frequent
9	9 27	9 46	27 8	3 31	8 28	5 11 31	22 59 10	11 16	3 2	17 36	18	9		☿ ☿ ☿, 1 m 4
10	10 3	10 19	26 6	3 30	8 29	5 15 39	23 3 45	11 44	3 48	15 29	19	10		♀ gr. br. 9th
11	10 35	10 55	25 2	3 30	8 30	5 19 48	23 7 56	morn	4 33	12 41	20	11		showers
12	11 15	11 39	23 7	3 29	8 30	5 23 57	23 11 43	0 8	5 17	9 20	21	12		and
13	—	0 2	22 4	3 29	8 31	5 28 6	23 15 5	0 30	6 1	5 33	22	13		changeable
14	0 29	0 59	21 9	3 28	8 31	5 32 15	23 18 2	0 51	6 44	1 27	23	14		☿ ☿ (, 7 a 20
15	1 30	2 3	22 5	3 28	8 32	5 36 24	23 20 35	1 11	7 29	2 49	24	15		weather,
16	2 43	3 21	24 9	3 28	8 32	5 40 33	23 22 43	1 33	8 16	7 5	25	16		inclined
17	3 53	4 22	26 11	3 28	8 32	5 44 43	23 24 27	1 58	9 5	11 8	26	17		☿ gr. elong. E
18	4 47	5 13	28 10	3 28	8 33	5 48 53	23 25 45	2 27	9 58	14 41	27	18		to
19	5 42	6 10	30 10	3 28	8 33	5 53 2	23 26 39	3 2	10 55	17 26	28	19		wet
20	6 35	7 1	31 8	3 28	8 33	5 57 12	23 27 9	sets.	11 54	19 2	N 20	20		if
21	7 24	7 49	32 0	3 28	8 34	6 1 12	23 27 13	9a7	0 56	19 15	1	21		☉ enters ☿
22	8 12	8 36	33 7	3 29	8 34	6 5 31	23 26 53	9 53	1 57	18 1	2	22		[Sum. com.
23	9 0	9 24	33 5	3 29	8 34	6 9 41	23 26 7	10 33	2 57	15 28	3	23		the
24	9 48	10 13	32 0	3 29	8 34	6 13 50	23 24 58	11 8	3 54	11 52	4	24		♀ stationary
25	10 36	10 58	30 10	3 29	8 34	6 17 59	23 23 23	11 38	4 48	7 35	5	25		wind
26	11 20	11 46	28 5	3 30	8 34	6 22 8	23 21 24	morn	5 39	2 59	6	26		be
27	—	0 12	26 2	3 30	8 34	6 26 17	23 19 0	0 2	6 29	1s44	7	27		south
28	0 39	1 7	24 4	3 31	8 34	6 30 26	23 16 11	0 22	7 17	6 13	8	28		or
29	1 36	2 15	24 1	3 32	8 34	6 34 35	23 12 58	0 45	8 5	10 16	9	29		south-west
30	2 54	3 33	25 3	3 33	8 34	6 38 43	23 9 21	1 10	8 54	13 44	10	30		♀ stationary

LUNAR DISTANCES FROM THE SUN.

Mean Astronomical Time at Greenwich.

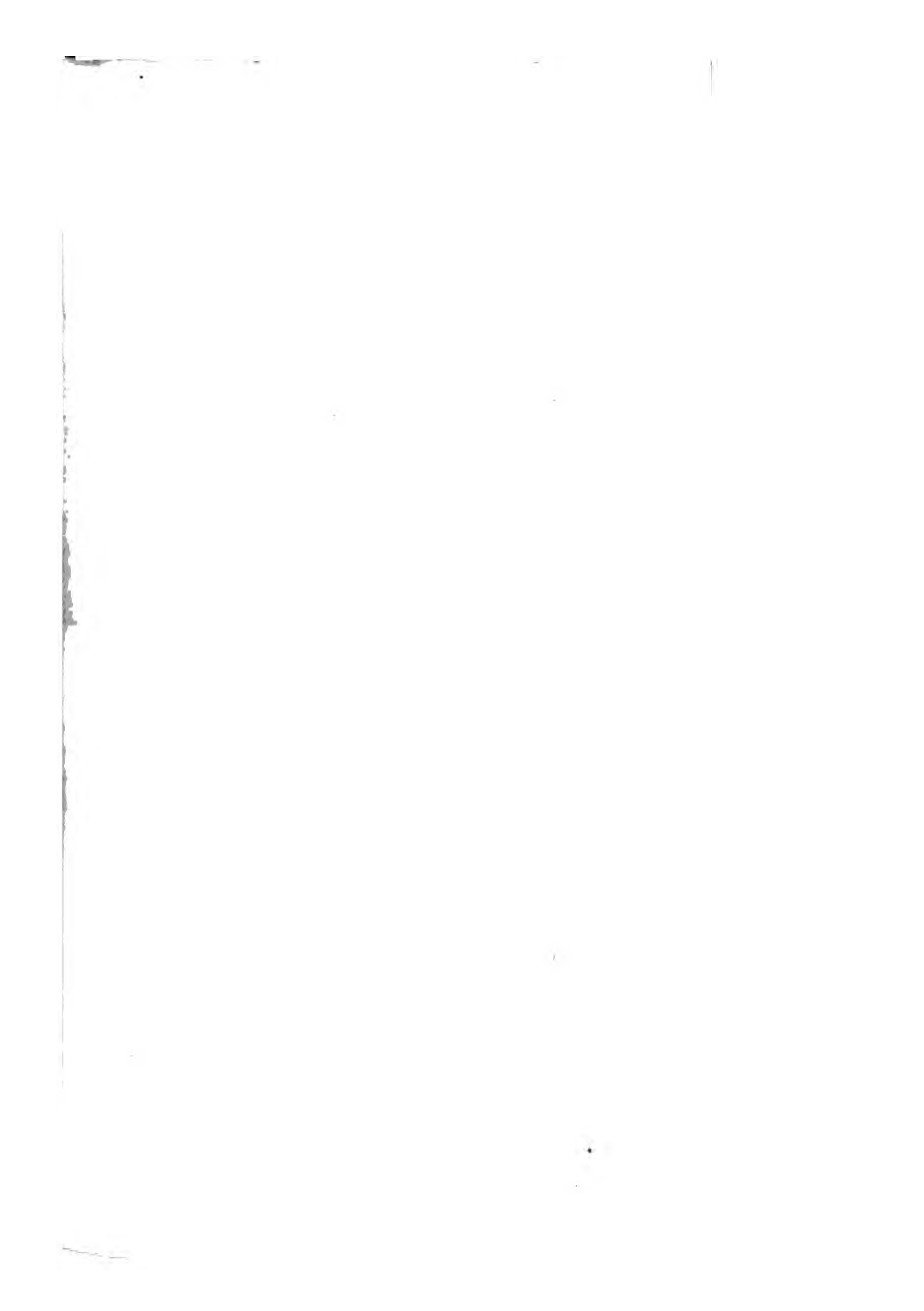
M.	NOON.	3 HOURS.	6 HOURS.	9 HOURS.	MIDN.	15 HOUR.	18 HOUR.	21 HOUR.
D.	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "
9 ^h	132 50 1	131 28 45	130 7 31	128 46 18	127 25 6	126 3 56	124 42 46	123 21 36
10	122 0 26	120 39 15	119 18 4	117 56 50	116 35 35	115 14 18	113 52 57	112 31 33
11	111 10 5	109 48 33	108 26 56	107 5 13	105 43 24	104 21 28	102 59 26	101 37 16
12	100 14 58	98 52 31	97 29 54	96 7 8	94 44 12	93 21 4	91 57 45	90 34 13
13	89 10 29	87 46 32	86 22 21	84 57 56	83 33 16	82 8 20	80 43 9	79 17 41
14	77 51 56	76 25 53	74 59 33	73 32 54	72 5 56	70 38 38	69 11 1	67 43 4
15	66 14 46	64 46 7	63 17 6	61 47 44	60 18 0	58 47 53	57 17 24	55 46 33
16	54 15 18	52 43 40	51 11 39	49 39 14	48 6 27	46 33 16	44 59 42	43 25 44
17	41 51 25	40 16 42	38 41 37	37 6 11	35 30 24	33 54 16	32 17 48	30 41 2
18	...	...	...	...	...	...	...	...
19	...	...	...	...	...	...	...	...
20	...	...	...	...	...	...	...	...
21	...	...	...	...	...	...	...	...
22 ^w	26 23 39	28 7 1	29 50 28	31 33 59	33 17 30	35 1 0	36 44 28	38 27 51
23	40 11 9	41 54 20	43 37 23	45 20 17	47 3 2	48 45 35	50 27 57	52 10 7
24	53 52 4	55 33 46	57 15 14	58 56 28	60 37 26	62 18 8	63 58 33	65 38 42
25	67 18 34	68 58 9	70 37 26	72 16 25	73 55 6	75 33 28	77 11 33	78 49 19
26	80 26 46	82 3 55	83 40 45	85 17 16	86 53 29	88 29 23	90 4 59	91 40 17
27	93 15 16	94 49 57	96 24 20	97 58 25	99 32 12	101 5 42	102 38 54	104 11 49
28	105 44 27	107 16 48	108 48 55	110 20 41	111 52 12	113 23 28	114 54 28	116 25 12
29	117 55 41	119 25 55	120 55 54	122 25 38	123 55 8	125 24 23	126 53 24	128 22 11
30	129 50 45	131 19 4	132 47 11	134 15 4	135 42 44	137 10 11	138 37 25	140 4 26

THE MOON'S SEMI-DIAMETER is given to the nearest second for Greenwich mean noon and midnight on page 26, and the HORIZONTAL PARALLAX on page 27. THE LUNAR DISTANCES FROM THE SUN are given with a view to assist those who may not have an opportunity of using the Nautical Almanack, and are given for every three hours of Greenwich astronomical mean time. As the rest of the Almanack is adapted to CIVIL time, this distinction must be kept in mind; the *Civil*

PHASES OF THE MOON.	FULL MOON,	4th day, at	8h. 39m. evening.
	LAST QUARTER,	13th day, at	0h. 40m. morning.
	NEW MOON,	19th day, at	9h. 56m. evening.
	FIRST QUARTER,	26th day, at	1h. 52m. afternoon.

M D.	Day brek.	Twil end.	☉'s semi.	☿ Mercury sets. sout.	♀ Venus sets. sout.	♂ Mars. rises. sout.	♃ Jupiter. rises. sout.	♄ Saturn. sets. sout.
1	8	15 46	9 a 9 1 a 19	9 a 24 1 a 35	1 m 8 9 m 12	11 a 42 6 m 10	1 m 30 9 a 13	
8	15	15 46	3 24 0 41	8 30 0 55	0 54 9 5	11 16 5 45	1 28 43	
15	22	15 46	rises. 11 m 55	rises. 0 10 0	40 8 58	10 49 5 19	0 34 8 14	
22	29	15 47	3 m 26 11 14	3 m 50 11 m 24	0 27 8 51	10 22 4 53	0 57 46	
29		15 48	2 50 10 50	3 10 10 43	0 15 8 44	9 55 4 26	11 a 35 7 18	

M D	W D	Remarkable Days	HIGH WATER.—LIVERPOOL.				Equal of Time
			MORNING.		EVENING.		
			Time.	Height.	Time.	Height.	
1	W	Bat. of Boyne, 1690	8 34	14 6	9 3	14 7	3
2	Th	Visit. B. V. M.	9 29	15 1	9 54	15 4	3
3	F	Dog Days begin	10 17	15 6	10 39	15 11	3
4	S	Trans. St. Martin	11 0	15 8	11 18	16 4	4
5	D	4 Sun. after Trinity	11 35	15 10	11 52	16 7	4
6	M	Pro. [1 Samuel xii; Luke xvii. Less. [— xiii; Coloss. i.	—	—	0 11	15 10	4
7	Tu	Antares souths 9 a 15	0 30	16 7	0 47	15 8	4
8	W	Adam Smith d., 1790	1 4	16 5	1 22	15 4	4
9	Th	Sheridan died, 1816	1 39	16 0	1 58	14 10	4
10	F	Columbus born, 1447	2 18	15 5	2 35	14 3	5
11	S	Oxford Term ends	2 55	14 9	3 15	13 8	5
12	D	5 Sun. after Trinity	3 35	14 1	3 59	12 11	5
13	M	[1 Samuel xv; Luke xxiv. — xvii; 1 Thess. iv.	4 23	13 3	4 52	12 5	5
14	Tu	Bastile destroyed, 1789	5 26	12 10	6 0	12 4	5
15	W	Swithin, Bishop,	6 32	12 11	7 4	13 0	5
16	Th	Sir J. Reynolds b. 1723	7 35	13 8	8 8	14 2	5
17	F	Dr. Watts b. 1674	8 41	14 10	9 11	15 6	5
18	S	Earl Grey died, 1845	9 39	16 2	10 7	17 2	5
19	D	6 Sun. after Trinity	10 33	17 4	10 55	18 5	6
20	M	Proper [2 Samuel vii; John vii. Lessons. [— xix; 1 Tim. iv.	11 22	18 3	11 47	19 5	6
21	Tu	Ld. Russel behd. 1683	—	—	0 11	18 9	6
22	W	St. Mary Magdalen	0 35	19 10	0 58	18 8	6
23	Th	R. Burns died, 1796	1 22	19 7	1 46	17 10	6
24	F	Gibraltar taken, 1804	2 12	18 8	2 37	16 11	6
25	S	St. James, Apostle.	3 2	17 4	3 25	15 7	6
26	D	7 Sun. after Trinity	3 51	15 10	4 16	14 1	6
27	M	Proper [2 Samuel xxi; John xiv. Lessons. [— xxiv; Titus i	4 43	14 3	5 14	12 11	6
28	Tu	Wilberforce died 1833	5 49	12 11	6 24	12 4	6
29	W	Pleiades rises 10 a 33	6 57	12 8	7 34	12 9	6
30	Th	Cook's First V. 1768	8 9	12 11	8 41	13 6	6
31	F	Ign. Loyola d. 1556	9 10	13 8	9 36	14 6	6



Bristol tides					SUN.					MOON.					ASPECTS AND WEATHER.	
morn.	even.	height			rises.	sets.	rt. asc.	declin. N.		sets.	souths	declin.				
H. M.	H. M.	F. I.			H. M.	H. M.	H. M. S.	° ' "		H. M.	H. M.	° ' "				
1 4 7	4 37	26 5	3 33 8	33 6 42	51 23	5 19				1m37	9a42	16s28	11	1	{ ☿ in Aphel.	
2 5 4	5 30	27 5	3 34 8	33 6 46	59 23	0 53				2 9 10	31 18	19 12	2	2	{ ☉ in Apog	
3 5 56	6 20	28 0	3 35 8	32 6 51	7 22	56 3				2 47 11	21 19	15 13	3	3	Expect	
4 6 44	7 4	28 4	3 36 8	32 6 55	14 22	50 49				rises. morn	—	—	4	4	changeable	
5 7 23	7 41	28 10	3 37 8	31 6 59	21 22	45 11				8a43	0 10	19 13	5	5	☿ ☉, 4 a 12	
6 8 2	8 21	29 0	3 38 8	31 7 3	27 22	39 10				9 22 0	58 18	15 16	6	6	weather.	
7 8 37	8 54	28 11	3 39 8	30 7 7	33 22	32 45				9 52 1	44 16	27 17	7	7	Probably	
8 9 10	9 25	28 7	3 40 8	29 7 11	39 22	25 56				10 15 2	30 13	54 18	8	8	{ in Apogee	
9 9 43	10 1	27 11	3 41 8	29 7 15	45 22	18 44				10 35 3	14 10	46 19	9	9	inclined	
10 10 15	10 33	27 3	3 42 8	28 7 19	50 22	11 9				10 54 3	57 7	9 20	10	10	to wet.	
11 10 50	11 7	26 2	3 43 8	27 7 23	54 22	3 12				11 14 4	40 3	13 21	11	11	Change	
12 11 28	11 50	24 6	3 44 8	26 7 27	58 21	54 51				11 35 5	24 0	56 22	12	12	to	
13 — —	0 14	23 2	3 45 8	25 7 32	2 21	46 8				11 58 6	9 5	8 23	13	13	☿ ☉, 8 m 33	
14 0 44	1 13	22 6	3 47 8	24 7 36	5 21	37 3				morn 6	55 9	13 24	14	14	fair	
15 1 42	2 20	23 4	3 48 8	22 7 40	8 21	27 35				0 25 7	45 12	57 25	15	15	☿ infer. ☉	
16 2 58	3 39	25 7	3 49 8	21 7 44	10 21	17 46				0 58 8	39 16	5 26	16	16	and	
17 4 15	4 45	28 1	3 50 8	20 7 48	12 21	7 34				1 38 9	36 18	18 27	17	17	☿ ☉ ☉, 4 a 53	
18 5 15	5 45	30 4	3 52 8	19 7 52	14 20	57 2				2 26 10	36 19	18 28	18	18	warm.	
19 6 14	6 39	31 7	3 54 8	18 7 56	14 20	46 8				sets. 11	38 18	50 19	19	19	Still	
20 7 8	7 36	33 5	3 55 8	16 8 0	15 20	34 53				8a30	0a40	16 55	20	20	{ in Perigee	
21 8 2	8 26	34 7	3 57 8	15 8 4	14 20	23 17				9 5 1	40 13	43 21	21	21	☿ gr. H. L. S.	
22 8 48	9 11	34 9	3 58 8	13 8 8	13 20	11 21				9 36 2	38 9	35 3	22	22	fair	
23 9 32	9 56	33 10	4 0 8	12 8 12	12 19	59 5				10 3 3	32 4	55 4	23	23	unless	
24 10 19	10 40	32 3	4 1 8	10 8 16	10 19	46 28				10 28 4	24 0	5 5	24	24	☿ stationary	
25 11 0	11 32	29 10	4 3 8	9 8 20	7 19	33 32				10 57 5	14 4	35 6	25	25	the wind	
26 11 44	—	26 10	4 4 8	7 8 24	4 19	20 16				11 16 6	3 8	54 7	26	26	☿ in Aphelion	
27 0 7	0 33	23 11	4 6 8	6 8 28	0 19	6 41				11 43 6	51 12	36 8	27	27	☿ ☉ ☉, 10m36	
28 1 3	1 35	22 4	4 7 8	4 8 31	55 18	52 48				morn 7	40 15	36 9	28	28	☿ ☉ ☉, 11m18	
29 2 11	2 57	22 7	4 9 8	2 8 35	50 18	38 35				0 13 8	29 17	45 10	29	29	be	
30 3 39	4 14	24 1	4 10 8	1 8 39	44 18	24 5				0 48 9	18 18	59 11	30	30	south or	
31 4 44	5 11	25 6	4 12 7	59 8 43	38 18	9 16				1 28 10	6 19	17 12	31	31	south-west	

LUNAR DISTANCES FROM THE SUN.

Mean Astronomical Time at Greenwich.

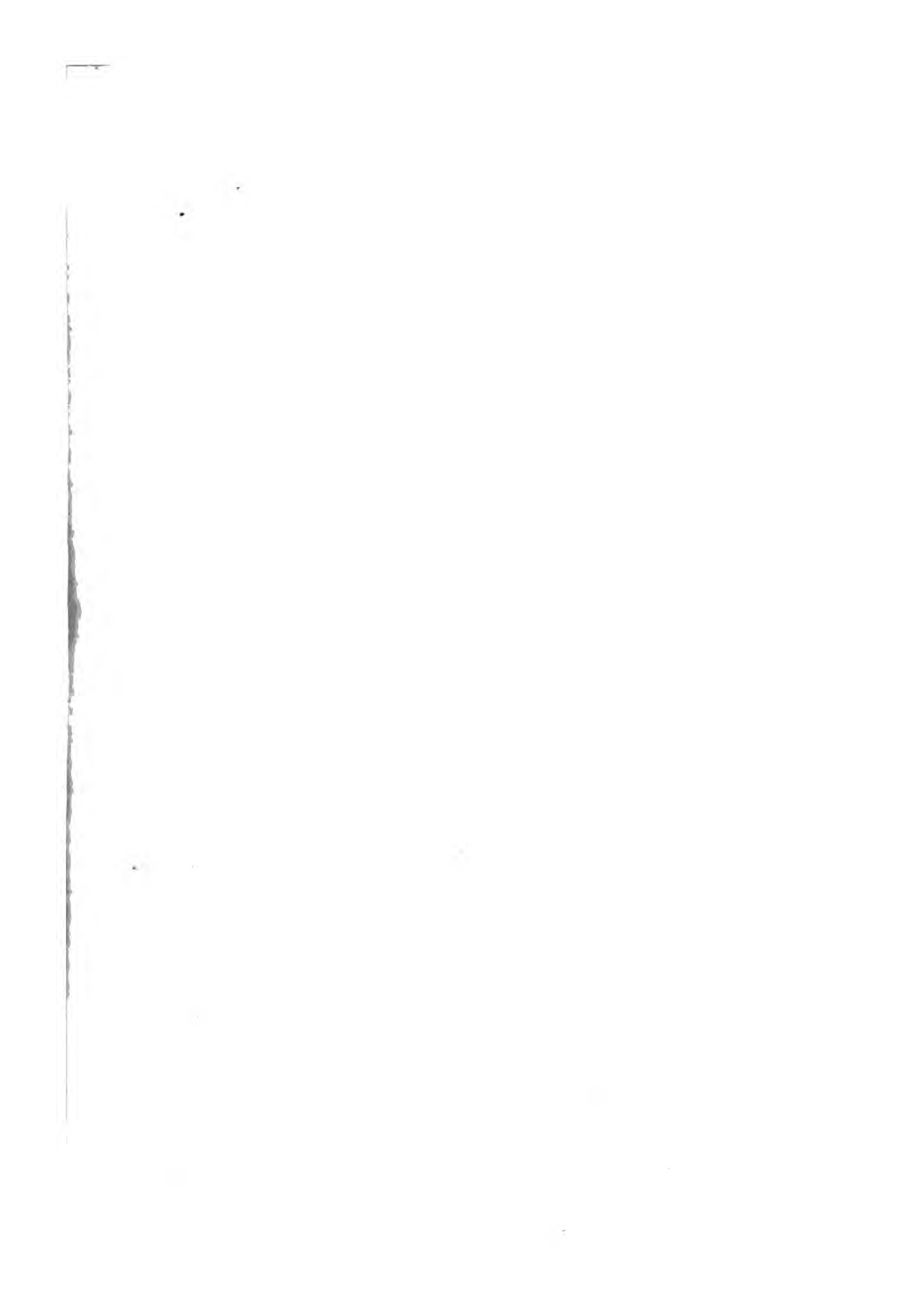
M.	NOON.	3 HOURS.	6 HOURS.	9 HOURS.	MIDN.	15 HOUR.	18 HOUR.	21 HOUR.
D.	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "
8 E	140 16 36	138 55 21	137 34 5	136 12 46	134 51 23	133 29 58	132 8 28	130 46 55
9	129 25 17	128 3 34	126 41 47	125 19 53	123 57 54	122 35 49	121 13 36	119 51 16
10	118 28 49	117 6 13	115 43 29	114 20 35	112 57 32	111 34 18	110 10 54	108 47 18
11	107 23 31	105 59 32	104 35 19	103 10 54	101 46 14	100 21 21	98 56 12	97 30 48
12	96 5 7	94 39 10	93 12 57	91 46 25	90 19 35	88 52 27	87 25 0	85 57 13
13	84 29 6	83 0 38	81 31 49	80 2 39	78 33 6	77 3 11	75 32 54	74 2 13
14	72 31 8	70 59 39	69 27 46	67 55 28	66 22 46	64 49 38	63 16 4	61 42 5
15	60 7 40	58 32 49	56 57 32	55 21 49	53 45 40	52 9 4	50 32 2	48 54 35
16	47 16 41	45 38 22	43 59 38	42 20 28	40 40 54	39 0 55	37 20 33	35 39 48
17	33 58 40	32 17 10	30 35 19	28 53 9	27 10 39	25 27 52	23 44 49	22 1 32
18	20 11 11	18 30 11	16 48 11	15 6 11	13 24 11	11 42 11	10 0 11	8 18 11
19	7 23 11	5 42 11	3 60 11	1 18 11	0 36 11	0 54 11	0 72 11	0 90 11
20	22 29 11	24 14 42	26 0 8	27 45 26	29 30 36	31 15 34	33 0 20	34 44 54
21 W	36 29 12	38 13 16	39 57 2	41 40 32	43 23 43	45 6 35	46 49 8	48 31 20
22	50 13 12	51 54 42	53 35 51	55 16 37	56 57 1	58 37 2	60 16 40	61 55 54
23	63 34 45	65 13 12	66 51 15	68 28 54	70 6 10	71 43 1	73 19 29	74 55 33
24	76 31 13	78 6 30	79 41 24	81 15 54	82 50 1	84 23 46	85 57 8	87 30 8
25	89 2 45	90 35 2	92 6 57	93 38 31	95 9 44	96 40 37	98 11 10	99 41 24
26	101 11 19	102 40 55	104 10 12	105 39 12	107 7 55	108 36 20	110 4 28	111 32 20
27	112 59 57	114 27 18	115 54 23	117 21 15	118 47 52	120 14 15	121 40 24	123 6 21
28	124 32 5	125 57 37	127 22 57	128 48 6	130 13 4	131 37 50	133 2 27	134 26 53

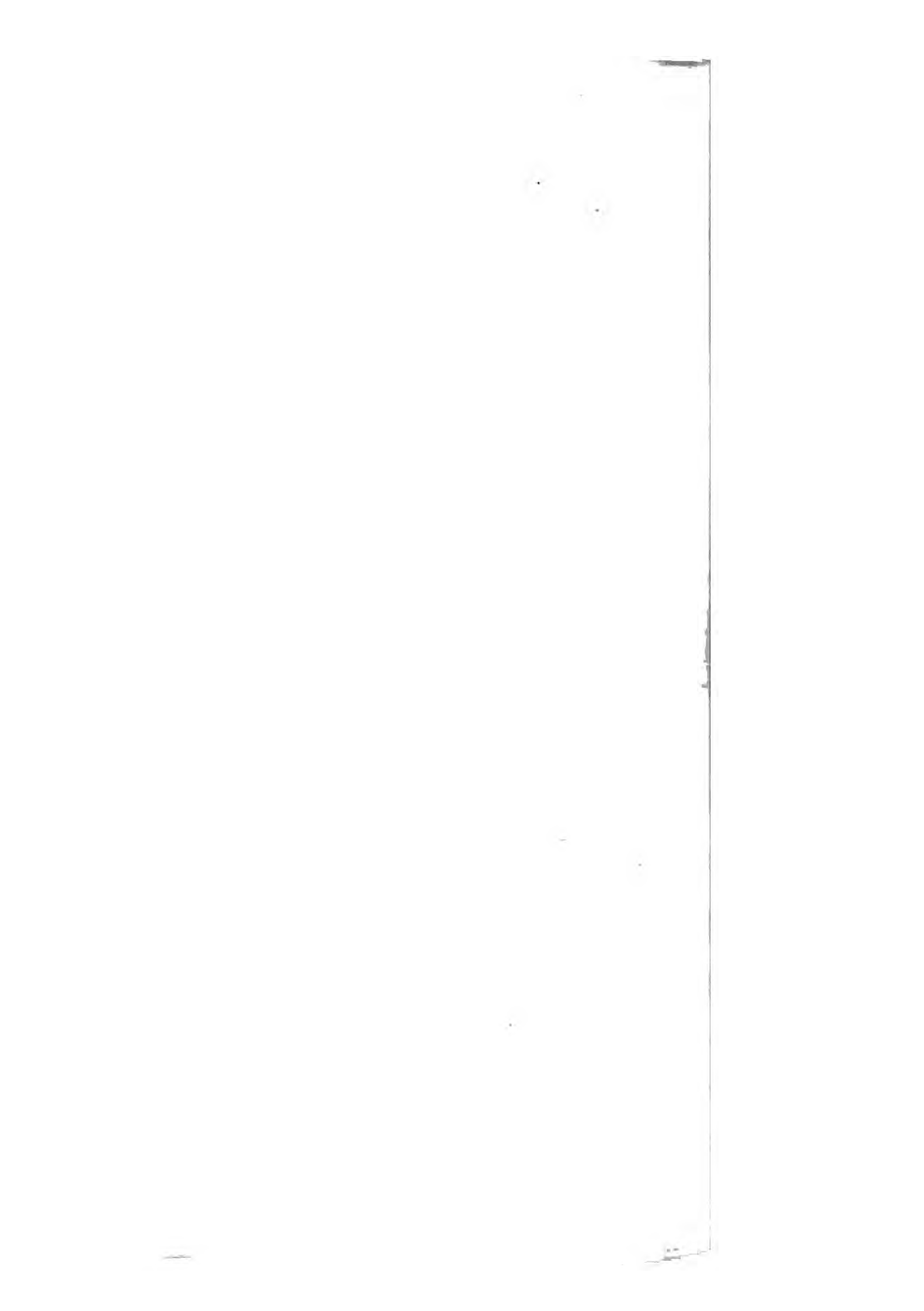
day commences at Midnight, and the Astronomical day at the following Noon, being twelve hours later; thus the hours named 15, 18, and 21, on the 1st January, are according to Civil reckoning, 3, 6, and 9 in the morning of the 2nd of January, and

PHASES OF THE MOON.	FULL MOON	3rd day, at 11h. 52m. morning.
	LAST QUARTER,	11th day, at 0h. 28m. afternoon.
	NEW MOON,	18th day, at 5h. 11m. morning.
	FIRST QUARTER,	25th day, at 0h. 47m. morning.

M D.	Day brek.	Twil. ends.	☉'s semi.	♂ Mercury rises. sout.	♀ Venus. rises. sout.	♂ Mars. rises. sout.	♂ Jupiter. rises. sout.	♂ Saturn. sets. sout.
1	no	night	15 48	2m 42 10m 16	2m 54 10m 28	0m 11 8m 41	9 a 48 4m 14	11a 22 7 a
8	1m 17	10a 49	15 49	2 44 10 51	2 22 9 58	0 18 34	9 18 3 47	10 54 6
15	1 52	10 15	15 50	3 14 11 13	1 57 9 35	11a 51 8 26	8 49 3 19	10 27 6
22	2 18	9 45	15 51	sets. 11 41	1 39 9 19	11 43 8 19	8 20 2 50	10 0 5
29	2 41	9 17	15 53	7 a 7 0 a 7	1 26 9 8	11 35 8 11	7 52 2 21	9 33 5

M D.	W D.	Remarkable Days	HIGH WATER.—LIVERPOOL.			
			MORNING.		EVENING.	
			Time.	Height.	Time.	Height.
1	S	Lammas Day	10 1	14 4	10 24	15 4
2	D	8 Sun. after Trinity	10 43	14 11	11 1	15 11
3	M	Proper [1 Kings xiii; Job xxi. Lessons. [— xvii; Heb. v.	11 19	15 5	11 38	16 7
4	Tu	Neptune souths 4 m 14	11 53	16 0	—	—
5	W	Altair souths 10 a 45	0 8	17 1	0 24	16 4
6	Th	Transfiguration	0 41	17 2	0 58	16 3
7	F	Name of Jesus	1 15	17 0	1 30	16 1
8	S	Lyra souths 9 a 22	1 47	16 6	2 6	15 6
9	D	9 Sun. after Trinity	2 25	15 10	2 44	14 10
10	M	Proper [1 Kings xviii; Acts vii. Lessons. [— xix; 1 Heb. xii.	3 2	15 0	3 23	14 1
11	Tu	Andromeda sou 2m 41	3 44	14 0	4 10	13 2
12	W	Lyra souths 9 a 6	4 36	13 1	5 9	12 7
13	Th	Old Lammas Day	5 45	12 5	6 24	12 6
14	F	Printing inventd. 1437	7 5	12 11	7 43	13 8
15	S	Napoleon I. b., 1769	8 18	14 0	8 51	15 4
16	D	10 Sun. after Trinity	9 23	16 3	9 52	17 3
17	M	Proper [1 Kings xxi; Acts xiv. Lessons. [— xxii; 1 Peter i.	10 19	17 3	10 43	18 10
18	Tu	Pleiades rises 9 a 13	11 8	18 6	11 33	20 0
19	W	Neptune souths 3 m 14	11 54	19 1	—	—
20	Th	R. Bloomfield d. 1823	0 17	20 2	0 39	18 11
21	F	Cnt. Rumford d., 1814	1 2	19 11	1 26	18 5
22	S	B. of Bosworth, 1485	1 48	19 1	2 11	17 5
23	F	11 Sun. after Trinity	2 35	17 9	2 57	16 1
24	M	Proper [2 Kings v; Acts xxi. Lessons. [— ix; 2 Peter iii.	3 19	15 10	3 40	14 5
25	Tu	Ju. Cæsar land B.C., 55	4 5	13 10	4 32	12 10
26	W	Late P. Consort b. 1819	5 4	12 3	5 41	11 10
27	Th	Thomson died, 1748	6 22	11 4	7 0	11 9
28	F	St. Augustine, Bishop	7 41	11 7	8 18	12 7
29	S	St. John Baptist behd	8 48	12 5	9 16	13 9
30	D	12 Sun. after Trinity	9 40	13 6	10 3	15 0
31	M	[2 Kings xi; Acts xxviii. — xviii; Jude.	10 25	14 8	10 41	16 0





Bristol tides				SUN.					MOON.					ASPECTS AND WEATHER	
morn. H. M.		even. H. M.	height F. I.	rises. H. M.	sets. H. M.	rt. ascen. H. M. S.	declin. ° ' "	N. ° ' "	sets. H. M.	souths H. M.	declin. ° ' "	S. ° ' "	D.		
1	5 37	6 2	26 9	4 13	7 57	8 47	31	17 54	9	2m15	10a54	18s39	13	1	The month
2	6 24	6 44	27 5	4 15	7 55	8 51	23	17 38	45	3 10	11 42	17 8	14	2	will
3	7 5	7 25	28 3	4 17	7 53	8 55	15	17 23	4	rises.	morn	—	—	3	stat., 0m36
4	7 42	7 59	29 4	4 19	7 51	8 59	6	17 7	6	8a18	0 28	14 51	16	4	probably
5	8 15	8 31	29 10	4 21	7 49	9 2	57	16 50	51	8 42	1 12	11 55	17	5	commence
6	8 47	9 3	30 1	4 22	7 47	9 6	47	16 34	20	9 2	1 56	8 27	18	6	with
7	9 17	9 33	29 10	4 24	7 45	9 10	36	16 17	32	9 23	2 39	4 37	19	7	stat., 6m23
8	9 50	10 8	29 1	4 26	7 43	9 14	25	16 0	29	9 43	3 22	0 34	20	8	stat., 4 a 24
9	10 23	10 38	28 1	4 28	7 41	9 18	13	15 43	11	10 4	4 5	3n35	21	9	in 8, 9m56
10	10 57	11 15	26 6	4 30	7 39	9 22	1	15 25	37	10 28	4 50	7 39	22	10	showery
11	11 38	12 0	24 8	4 32	7 37	9 25	48	15 7	48	10 56	5 38	11 27	23	11	and
12	—	0 28	22 10	4 34	7 35	9 29	35	14 49	44	11 31	6 28	14 47	24	12	changeable
13	0 59	1 35	22 4	4 35	7 33	9 33	21	14 31	27	morn	7 21	17 22	25	13	weather
14	2 25	3 8	24 2	4 37	7 31	9 37	6	14 12	55	0 13	8 19	18 56	26	14	stat., 0 a 4
15	3 49	4 25	27 3	4 39	7 29	9 40	51	13 54	10	1 4	9 18	19 13	27	15	stat., 3 a 54
16	4 58	5 28	30 3	4 41	7 27	9 44	36	13 35	11	2 9	10 20	18 5	28	16	which
17	5 58	6 25	31 8	4 42	7 24	9 48	20	13 16	0	3 29	11 21	15 33	29	17	eclip. inv
18	6 54	7 21	33 11	4 44	7 22	9 52	3	12 56	36	sets.	0a20	11 50	N	18	gr. hel. l.s.
19	7 44	8 8	35 4	4 46	7 20	9 55	46	12 36	59	8a 3	1 17	7 18	1	19	may
20	8 30	8 52	34 4	4 48	7 17	9 59	29	12 17	10	8 27	2 12	2 22	2	20	continue
21	9 14	9 34	33 6	4 50	7 15	10 3	11	11 57	10	8 52	3 5	2s34	3	21	at grtst. br
22	9 55	10 16	32 11	4 51	7 13	10 6	53	11 36	59	9 18	3 56	7 12	4	22	more
23	10 35	10 54	30 6	4 53	7 10	10 10	34	11 16	36	9 45	4 46	11 16	5	23	or less
24	11 11	11 33	27 1	4 55	7 8	10 14	14	10 56	3	10 15	5 36	14 36	6	24	wet.
25	11 56	—	23 8	4 57	7 6	10 17	55	10 35	19	10 48	6 25	17 6	7	25	Now
26	0 23	0 55	21 0	4 59	7 3	10 21	34	10 14	25	11 27	7 14	18 40	8	26	more
27	1 33	2 15	20 5	5 0	7 1	10 25	14	9 53	22	morn	8 3	19 16	9	27	fair
28	3 5	3 49	22 1	5 2	6 59	10 28	53	9 32	9	0 13	8 51	18 56	10	28	super. 6 C
29	4 21	4 50	24 0	5 4	6 56	10 32	32	9 10	47	1 5	9 39	17 43	11	29	and
30	5 15	5 39	26 0	5 6	6 54	10 36	10	8 49	17	2 2	10 25	15 40	12	30	warm.
31	6 4	6 22	27 1	5 8	6 51	10 39	48	8 27	38	3 4	11 10	12 56	13	31	in Apogee

LUNAR DISTANCES FROM THE SUN.

Mean Astronomical Time at Greenwich.

M.	NOON.			3 HOURS.			6 HOURS.			9 HOURS.			MIDN.			15 HOUR.			18 HOUR.			21 HOUR.		
D.	°	'	"	°	'	"	°	'	"	°	'	"	°	'	"	°	'	"	°	'	"	°	'	"
7	136	16	50	134	53	38	133	30	18	132	6	50	130	43	13	129	19	27	127	55	31	126	31	26
8	125	7	10	123	42	44	122	18	6	120	53	17	119	28	16	118	3	2	116	37	36	115	11	56
9	113	46	2	112	19	54	110	53	31	109	26	54	108	0	0	106	32	51	105	5	25	103	37	42
10	102	9	41	100	41	23	99	12	46	97	43	50	96	14	35	94	45	1	93	15	6	91	44	50
11	90	14	14	88	43	16	87	11	56	85	40	15	84	8	10	82	35	43	81	2	52	79	29	38
12	77	56	0	76	21	57	74	47	31	73	12	40	71	37	24	70	1	43	68	25	36	66	49	5
13	65	12	8	63	34	46	61	56	58	60	18	45	58	40	7	57	1	4	55	21	35	53	41	42
14	52	1	24	50	20	42	48	39	36	46	58	6	45	16	12	43	33	56	41	51	18	40	8	18
15	38	24	56	36	41	15	34	57	13	33	12	52	31	28	14	29	43	17	27	58	4	26	12	36
16	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
17	32	10	28	33	53	30	35	36	10	37	18	27	39	0	21	40	41	50	42	22	55	44	3	36
18	45	43	51	47	23	41	49	3	5	50	42	3	52	20	35	53	58	41	55	36	19	57	13	32
19	58	50	18	60	26	37	62	2	29	63	37	56	65	12	56	66	47	30	68	21	38	69	55	21
20	71	28	38	73	1	30	74	33	57	76	5	59	77	37	38	79	8	52	80	33	43	82	10	11
21	83	40	17	85	10	0	86	39	22	88	8	22	89	37	2	91	5	21	92	33	20	94	1	0
22	95	28	22	96	55	25	98	22	10	99	48	39	101	14	50	102	40	45	104	6	25	105	31	49
23	106	56	59	108	21	55	109	46	37	111	11	6	112	35	22	113	59	27	115	23	20	116	47	2
24	118	10	33	119	33	55	120	57	7	122	20	9	123	43	3	125	5	50	126	28	28	127	50	59
25	129	13	24	130	35	42	131	57	54	133	20	1	134	42	3	136	4	0	137	25	52	138	47	41

many other part of the Almanack would be set down as such. The letters E. and W. inserted in the first column refer to the position of the Sun; E. East, W. West

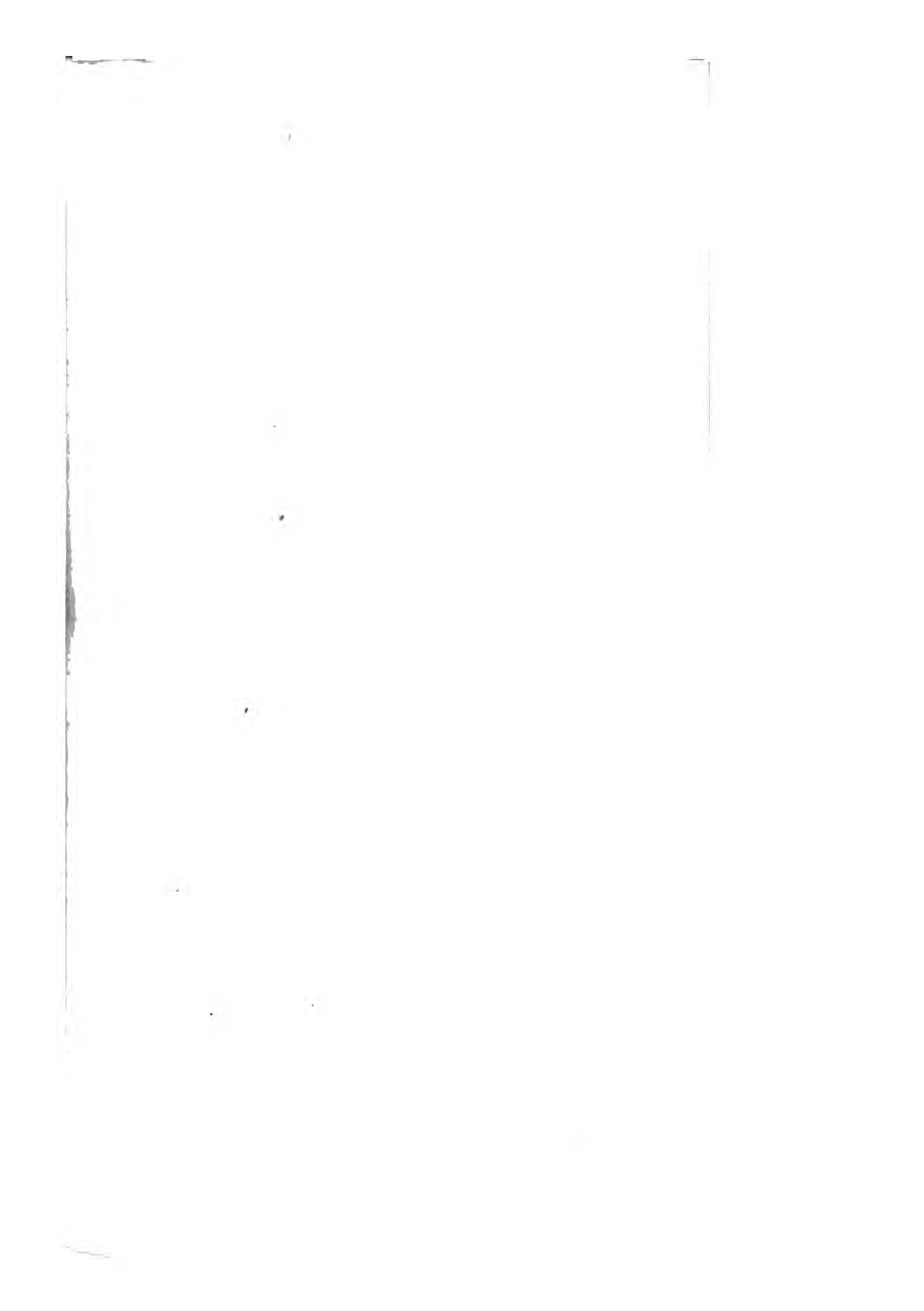
The Planets

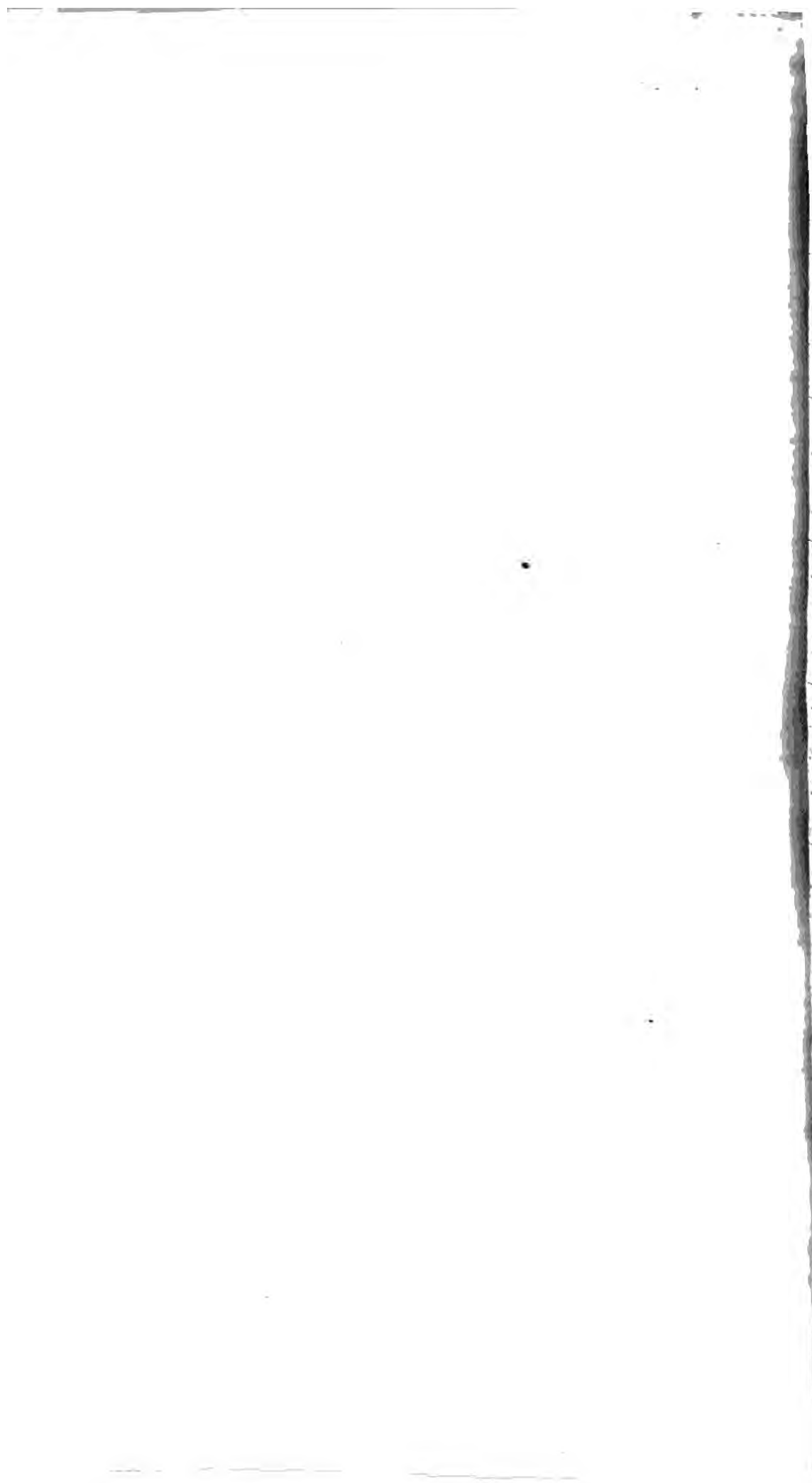
MERCURY [☿] will be visible in the mornings about the 4th April, 3rd August,

PHASES OF THE MOON. { FULL MOON, 2nd day, at 3h. 57m. morning.
LAST QUARTER, 9th day, at 10h. 4m. morning.
NEW MOON, 16th day, at 1h. 19m. afternoon.
FIRST QUARTER, 23rd day, at 3h. 22m. afternoon.

M D.	Day	Twil.	☉'s ends. semi.	♂ Mercury sets. sout.	♀ Venus. rises. sout.	♂ Mars. rises. sout.	♂ Jupiter. rises. sout.	♂ Saturn. sets. sout.
1	2m52	9 a	6 15 54	7 a 40 a 16	1m22 9 m 5	11a34 8 m 7	7 a 40 2 m 8	9 a 22 5 a
8	3 10 8	4 15 55	6 51 0	34 1 19	8 59 11	28 7 58	7 11 1 38	8 55 4
15	3 27 8	2 15 57	6 36 0	48 1 19	8 57 11	23 7 49	6 43 1 7	8 29 4
22	3 45 8	0 15 59	6 19 1	0 1 25	8 56 11	17 7 40	6 24 0 37	8 23 3
29	3 58 7	40 16 1	6 21 10	1 33 8	56 11	12 7 29	5 46 9 6	7 36 3

M D.	W D.	Remarkable Days	HIGH WATER.—LIVERPOOL.			
			MORNING.		EVENING.	
			Time.	Height.	Time.	Height.
1	Tu	Giles, Abbot	10 56	15 7	11 13	16 10
2	W	London burnt, 1666	11 29	16 4	11 43	17 6
3	Th	Cromwell died 1658	11 58	16 10	—	—
4	F	John Home d. 1808	0 14	17 10	0 31	17 1
5	S	1st Amer. Con. 1774	0 46	17 9	1 4	17 0
6	D	13 Sun. after Trinity	1 20	17 5	1 37	16 7
7	M	Proper [2 Kings xix; Matt. vii. Lessons. [— xxiii; Rom. vii.	1 53	16 8	2 10	15 10
8	Tu	Nativity B. V. Mary	2 31	15 8	2 50	14 11
9	W	Wm. the Conq. died	3 12	14 5	3 35	13 9
10	Th	Tea first import. 1391	4 2	13 1	4 35	12 9
11	F	Mahomed born, 569	5 15	12 2	5 58	12 5
12	S	Sir W. Dugdale b. 1605	6 40	12 4	7 24	13 6
13	D	14 Sun. after Trinity	8 4	13 8	8 40	15 4
14	M	Proper [Jeremiah v; Matt. xiv. Lessons. [— xxii; Rom. xiv.	9 11	15 6	9 38	17 5
15	Tu	Neptune souths 1m 26	10 6	17 4	10 29	19 2
16	W	James II died, 1701	10 51	18 10	11 14	20 4
17	Th	Yr. 5629, Jewish era, c.	11 35	19 6	11 57	20 9
18	F	George I & II landed	—	—	0 18	19 8
19	S	Battle Poitiers, 1356	0 39	20 5	1 0	18 6
20	D	15 Sun. aft. Trinity.	1 21	19 4	1 42	17 10
21	M	Proper [Jere. xxxv; Matt. xxi Lessons. [— xxxvi; 1 Cor. v.	2 3	17 7	2 23	16 3
22	Tu	St. Matt., Apost. 21st	2 44	15 7	3 6	14 7
23	W	H souths 7 m 4	3 30	13 7	3 57	12 10
24	Th	Charles II dethroned	4 28	11 8	5 1	11 7
25	F	Porson died, 1808	5 40	10 7	6 24	11 10
26	S	St. Cyprian	7 6	10 9	7 45	12 0
27	D	16 Sun. after Trinity	8 18	11 9	8 45	13 4
28	M	Proper [Ezekiel ii; Matt. xxviii. Lessons. [— xiii; 1 Cor. xii.	9 10	13 1	9 32	14 9
29	Tu	St. Michael	9 52	14 6	10 12	16 1
30	W	St. Jerome	10 30	15 8	10 45	17 0





Bristol tides				SUN.				MOON.				M	D.	ASPECTS. AND WEATHER.
morn.	even.	height		rises.	sets.	rt. ascen.	declin. N.	sets.	souths	declin.				
H. M.	H. M.	F. I.		H. M.	H. M.	H. M. S.	° ' "	H. M.	H. M.	° ' "	° ' "			
6 39	6 59	28 7	5 10 6 49	10 43 26	8 5 51	4m7	11a54	9s37	14 1					Cold
7 16	7 32	30 0	5 11 6 46	10 47 3	7 43 56	rises.	morn	—	F 2					with
7 49	8 5 30	10	5 13 6 44	10 50 40	7 21 53	7a29	0 38	5 53	16 3					frequent
8 21	8 35	31 4	5 15 6 42	10 54 17	6 59 44	7 48	1 21	1 51	17 4					☾ ☽ ☾, 7 a 5
8 52	9 7 31	4	5 17 6 39	10 57 54	6 37 27	8 9	2 4	2 18	18 5					showers
9 23	9 37	30 9	5 19 6 37	11 1 30	6 15 4	8 32	2 49	6 25	19 6					may
9 53	10 11 29	6	5 21 6 35	11 5 7	5 52 34	8 59	3 35	10 18	20 7					be
10 26	10 46	27 10	5 22 6 32	11 8 43	5 29 59	9 30	4 23	13 46	21 8					expected.
11 6	11 29	25 5	5 24 6 30	11 12 19	5 7 18	10 7	5 14	16 35	22 9					☽ ☽ ☽, 2 a 18
11 58	—	23 1	5 26 6 27	11 15 54	4 44 31	10 54	6 8	18 30	23 10					Now
0 32	1 10	21 11	5 27 6 25	11 19 30	4 21 40	11 53	7 5	19 18	24 11					more
1 53	2 46	23 6	5 29 6 22	11 23 6	3 58 44	morn	8 4	18 42	25 12					☽ ☽ ☾, 3 m 46
3 34	4 14	26 10	5 31 6 20	11 26 42	3 35 43	1 3	9 3	16 59	26 13					☽ ☽ ☾, 6 m 37
4 46	5 14	30 5	5 32 6 17	11 30 17	3 12 39	2 21	10 2	13 52	27 14					fair
5 45	6 20	31 11	5 34 6 15	11 33 53	2 49 31	3 45	11 0	9 45	28 15					and
6 35	7 0 34	5	5 36 6 12	11 37 28	2 26 19	sets.	11 55	4 58	N 16					fine
7 24	7 48	36 1	5 38 6 10	11 41 4	2 3 5	6a53	0a50	0 5	1 17					☽ ☽ ☾, 1 a 54
8 9	8 29	36 3	5 39 6 7	11 44 39	1 39 48	7 17	1 43	5 2	2 18					weather
8 49	9 8 35	4	5 41 6 5	11 48 15	1 16 29	7 43	2 35	9 32	3 19					for the
9 27	9 47	33 3	5 43 6 2	11 51 50	0 53 8	8 13	3 26	13 20	4 20					season.
10 4	10 22	30 6	5 45 6 0	11 55 26	0 29 46	8 47	4 17	16 17	5 21					☽ ☽ ☾, 5 m 37
10 40	11 1 27	1	5 47 5 57	11 59 1	0 6 22	9 24	5 8	18 16	6 22					☉ enters ☐
11 24	11 51	23 5	5 49 5 55	12 2 37	0 17 2	10 7	5 58	19 15	7 23					Autm.com.
—	0 19	20 5	5 51 5 52	12 6 13	0 40 27	10 56	6 47	19 15	8 24					showery
0 53	1 34	19 3	5 53 5 50	12 9 49	1 3 52	11 52	7 35	18 19	9 25					and
2 24	3 11	20 9	5 55 5 47	12 13 25	1 27 17	morn	8 21	16 33	10 26					☽ gr. elon. W.
3 49	4 19	23 3	5 56 5 45	12 17 2	1 50 41	0 54	9 7	14 1	11 27					changeable
4 41	5 7 25	7	5 58 5 42	12 20 38	2 14 5	1 58	9 51	10 52	12 28					about
5 28	5 51	27 10	6 0 5 40	12 24 15	2 37 27	3 3	10 35	7 14	13 29					☽ gr. hel. la. N
6 11	6 28	28 10	6 2 5 37	12 27 52	3 0 47	4 8	11 18	3 14	14 30					the end.

LUNAR DISTANCES FROM THE SUN.
Mean Astronomical Time at Greenwich.

M.	NOON.	3 HOURS.	6 HOURS.	9 HOURS.	MIDN.	15 HOUR.	18 HOUR.	21 HOUR.
D.	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "
6e	131 9 4	129 42 5	128 14 54	126 47 31	125 19 54	123 52 4	122 24 1	120 55 44
7	119 27 12	117 58 26	116 29 26	115 0 10	113 30 39	112 0 52	110 30 49	109 0 29
8	107 29 53	105 59 0	104 27 50	102 56 22	101 24 36	99 52 31	98 20 9	96 47 27
9	95 14 27	93 41 7	92 7 28	90 33 29	88 59 11	87 24 31	85 49 32	84 14 12
10	82 38 32	81 2 30	79 26 8	77 49 25	76 12 21	74 34 56	72 57 10	71 19 3
11	69 40 35	68 1 46	66 22 37	64 43 7	63 3 17	61 23 7	59 42 37	58 1 47
12	56 20 39	54 39 12	52 57 27	51 15 24	49 33 4	47 50 27	46 7 34	44 24 26
13	42 41 4	40 57 27	39 13 38	37 20 37	35 45 25	34 1 3	32 16 32	30 31 54
14	29 0 45	28 40 33	27 20 1	25 59 8	24 37 52	23 16 13	21 54 10	20 31 44
15w	17 0 8 53	16 45 37	15 21 56	14 57 50	13 33 18	12 8 21	10 42 58	9 17 10
16	52 50 57	51 24 18	50 57 13	49 29 44	48 1 49	46 33 30	44 4 46	42 35 38
17	65 6 7	64 36 11	63 5 52	61 35 11	60 4 7	58 32 41	56 0 53	54 28 44
18	76 56 15	75 23 25	74 50 16	73 16 47	71 43 0	69 8 55	67 34 32	65 59 53
19	88 24 56	87 49 44	86 14 17	84 38 35	83 2 38	81 26 28	79 50 5	78 13 29
20	99 36 42	100 59 43	102 22 33	103 45 13	105 7 43	106 30 5	107 52 18	109 14 23
21	110 36 20	111 58 11	113 19 55	114 41 33	116 3 6	117 24 35	118 45 59	120 7 19
22	121 28 36	122 49 50	124 11 2	125 32 12	126 53 20	128 14 27	129 35 34	130 56 40

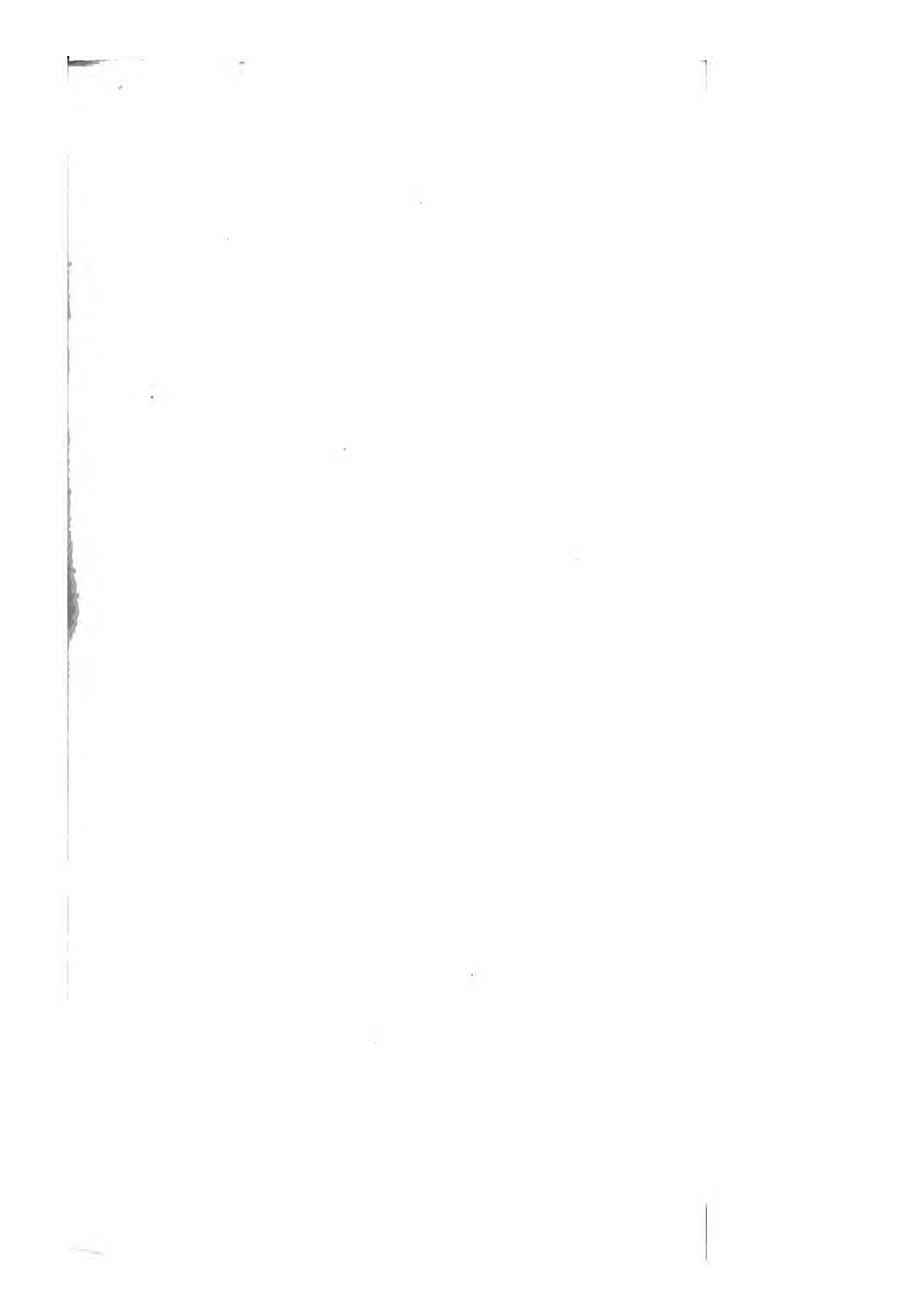
and 21st November; and in the evenings about the 21st February, 17th June, and 13th October. The most favourable time for seeing this beautiful planet will be at its eastern elongation in February, being then in the best position for observation in the evening sky.

Venus [♀] will be an evening star to the 16th July, then a morning star to the end of the year. Its greatest brilliancy as an evening star will appear on the 9th June, when this splendid planet will be very conspicuous early in the evening; its greatest brilliancy as a morning star will be on the 21st August, when it will be an object of attention to the early risers at that busy season.

PHASES OF THE MOON.	{	FULL MOON,	1st day, at 7h. 58m. evening.
		LAST QUARTER,	9th day, at 6h. 13m. morning.
		NEW MOON,	15th day, at 1h. 1m. night.
		FIRST QUARTER,	23rd day, at 9h. 42m. morning.
		FULL MOON	31st day, at 11h. 5m. morning.

M D.	Day brek.	Twil. end.	☉'s semi.	☿ Mercury sets. sout.	♀ Venus. rises. sout.	♂ Mars. rises. sout.	♃ Jupiter. sets. sout.	♄ Saturn. sets. sout.	M D.
1	4 m 3	7 a 36	16 1	5 a 57 1 a 11	1 m 37 8 m 56	11 a 11 7 m 26	6 m 7 11 a 52	7 a 29 3 a 18	1
8	4 18	7 19	16 3	5 39 1 17	1 50 8 57	11 6 7 15	5 34 11 22	7 32 53 8	
15	4 30	7 0	16 5	5 22 1 17	2 48 59	11 0 7 4	5 21 10 51	6 37 2 28	15
22	4 44	6 46	16 7	5 31 8 2	20 9 1	10 54 6 51	4 30 10 20	6 11 2 3	22
29	4 56	6 31	16 9	4 40 0 37	2 38 9 4	10 48 6 38	3 58 9 50	5 46 1 39	29

M W D D		Remarkable Days	HIGH WATER.—LIVERPOOL.				Equation of Time.
			MORNING.		EVENING.		
			Time.	Height.	Time.	Height.	
1	Th	Cambridge T. begins	10 59	16 0	11 15	17 8	10 29
2	F	F. Arago died, 1853	11 31	17 4	11 46	18 2	10 48
3	S	R. Barclay died, 1690	—	—	0 1	17 8	11 7
4	D	17 Sun. after Trinity	0 17	18 3	0 35	17 9	11 25
5	M	Proper [Ezekiel xiv; Mark vii. Lessons. [— xviii; 2 Cor. iii.	0 52	17 11	1 9	17 4	11 43
6	Tu	Faith, V. M.	1 29	17 1	1 48	16 6	12 0
7	W	H souths 6 m 11	2 8	15 11	2 29	15 5	12 17
8	Th	Dr. Kippis died, 1795	2 51	14 7	3 17	14 2	12 34
9	F	St. Denys, Bishop	3 45	13 2	4 16	13 1	12 50
10	S	Oxford Term begins	4 55	12 1	5 40	12 8	13 5
11	D	18 Sun. after Trinity	6 26	12 3	7 11	13 9	13 21
12	M	Proper [Ezekiel xx; Mark xiv. Lessons. [— xxiv; 2 Cor. x.	7 50	13 8	8 23	15 7	13 35
13	Tu	Translation K. Edwd.	8 52	15 6	9 20	17 5	13 49
14	W	Wm. Penn born, 1644	9 46	17 3	10 9	19 0	14 3
15	Th	Virgil born, B.C. 70	10 31	18 6	10 52	19 11	14 16
16	F	Battle of Leipsic, 1813	11 12	19 2	11 32	20 3	14 28
17	S	Ethelreda V. Q.	11 55	19 4	—	—	14 40
18	D	19 Sun. after Trinity	0 14	19 9	0 34	18 10	14 51
19	M	Proper [Daniel iii; Luke iv. Lessons. [— vi; Gal. iv.	0 55	18 8	1 14	17 9	15 2
20	Tu	Neptune souths 11 a 1	1 34	17 1	1 53	16 3	15 12
21	W	Bat. of Trafalgar, 1805	2 15	15 1	2 37	14 8	15 21
22	Th	Dr. Arnold died, 1802	3 0	13 5	3 23	13 1	15 30
23	F	R. Exchange fd. 1667	3 47	11 8	4 18	11 10	15 38
24	S	Chaucer died, 1400	4 56	10 7	5 36	11 4	15 46
25	D	20 Sun. after Trinity	6 16	10 6	6 56	11 10	15 52
26	M	Pro. [Joel ii; Luke ii. Less. [Micah vi; Ephes. v.	7 31	11 5	8 5	13 0	15 58
27	Tu	Servetus burnt, 1553	8 33	12 5	8 58	14 5	16 4
28	W	St Sim. & St. Jude,	9 17	14 4	9 36	15 8	16 8
29	Th	Bristol Riots, 1831	9 56	15 7	10 11	16 9	16 12
30	F	St. Marcellus	10 29	16 7	10 45	17 6	16 15
31	S	All Hallow Eve	11 1	17 5	11 18	18 1	16 17



Bristol tides

SUN.

MOON.

ASPECTS

MOON.												M		ASPECTS.											
even.			height	rises.			sets.			rt. ascen.			declin.	S.	rises.			souths	declin.	S.	AND WEATHER.				
Day.	H.	M.	F.	I.	H.	M.	H.	M.	H.	M.	S.	°	'	"	°	'	H.	M.	H.	M.	°	'	"	D.	
41	7	2	30	5	6	45	34	12	31	30		3	24	5	5a54	morn	—	—	F	1				1	2 6 (, 7 a 4
20	7	36	31	8	6	65	31	12	35	7		3	47	22	6 15	0 2	0 N57		16	2				2	2 8 (, 3 m 3
52	8	8	32	3	6	85	29	12	38	45		4	10	35	6 37	0 47	5 10		17	3				3	Fair
25	8	41	32	4	6	105	26	12	42	24		4	33	46	7 2	1 33	9 13		18	4				4	and
57	9	15	31	7	6	115	24	12	46	2		4	56	53	7 30	2 21	12 53		19	5				5	mild
32	9	50	30	4	6	135	21	12	49	42		5	19	57	8 5	3 11	15 57		20	6				6	for
8	10	26	28	7	6	155	19	12	53	21		5	42	57	8 47	4 4	18 10		21	7				7	the
48	11	13	26	0	6	175	17	12	57	1		6	5	52	9 40	4 59	19 21		22	8				8	season.
40	—	—	23	6	6	195	14	13	0	41		6	28	43	10 45	5 55	19 18		23	9				9	2 6 (, 9 m 1
13	0	53	22	0	6	215	12	13	4	22		6	51	28	morn	6 53	17 59		24	10				10	2 8 (, 10 a 39
38	2	32	23	6	6	235	9	13	8	4		7	14	9	0 1	7 50	15 26		25	11				11	Now
20	3	56	27	2	6	255	7	13	11	46		7	36	43	1 21	8 46	11 48		26	12				12	2 6 (, 2 a 22
26	4	56	30	5	6	265	4	13	15	28		7	59	11	2 43	9 41	7 22		27	13				13	(in Perigee
24	5	50	33	1	6	285	2	13	19	11		8	21	33	4 4	10 35	2 27		28	14				14	expect
14	6	38	34	0	6	295	0	13	22	55		8	43	47	sets. 11 28	2s35	N	15						15	high
0	7	22	35	4	6	324	57	13	26	39		9	5	54	5a42	0a20	7 24		16					16	winds.
46	8	5	35	5	6	344	55	13	30	23		9	27	54	6 8	1 12	11 40		2	17				17	2 6 (, 2 a 55
24	8	44	34	5	6	364	53	13	34	9		9	49	45	6 39	2 5	15 9		3	18				18	Fair
1	9	19	32	6	6	384	51	13	37	55		10	11	27	7 16	2 57	17 40		4	19				19	and
36	9	55	29	10	6	404	49	13	41	41		10	33	1	7 59	3 48	19 9		5	20				20	frosty,
13	10	34	26	10	6	424	46	13	45	28		10	54	25	8 48	4 39	19 35		6	21				21	changing
53	11	14	23	8	6	444	44	13	49	16		11	15	39	9 42	5 28	19 0		7	22				22	to
40	—	—	20	11	6	464	42	13	53	5		11	36	43	10 41	6 16	17 32		8	23				23	stationary
13	0	49	19	4	6	484	40	13	56	54		11	57	36	11 44	7 2	15 15		9	24				24	(in Apogee
26	2	14	20	1	6	504	38	14	0	44		12	18	18	morn	7 47	12 19		10	25				25	stationary
56	3	36	22	7	6	524	36	14	4	34		12	38	49	0 48	8 31	8 50		11	26				26	wet
6	4	32	25	2	6	544	33	14	8	26		12	59	8	1 54	9 14	4 55		12	27				27	and
52	5	12	27	5	6	564	31	14	12	18		13	19	14	3 1	9 58	0 44		13	28				28	2 6 (, 8 a 13
34	5	51	29	4	6	584	29	14	16	10		13	39	8	4 9	10 42	3n34		14	29				29	showery.
11	6	30	30	2	7	04	27	14	20	4		13	58	49	5 19	11 28	7 47		15	30				30	Fair and
47	7	6	31	6	7	24	25	14	23	58		14	18	16	6 31	morn	—		F	31				31	frosty.

LUNAR DISTANCES FROM THE SUN.

Mean Astronomical Time at Greenwich.

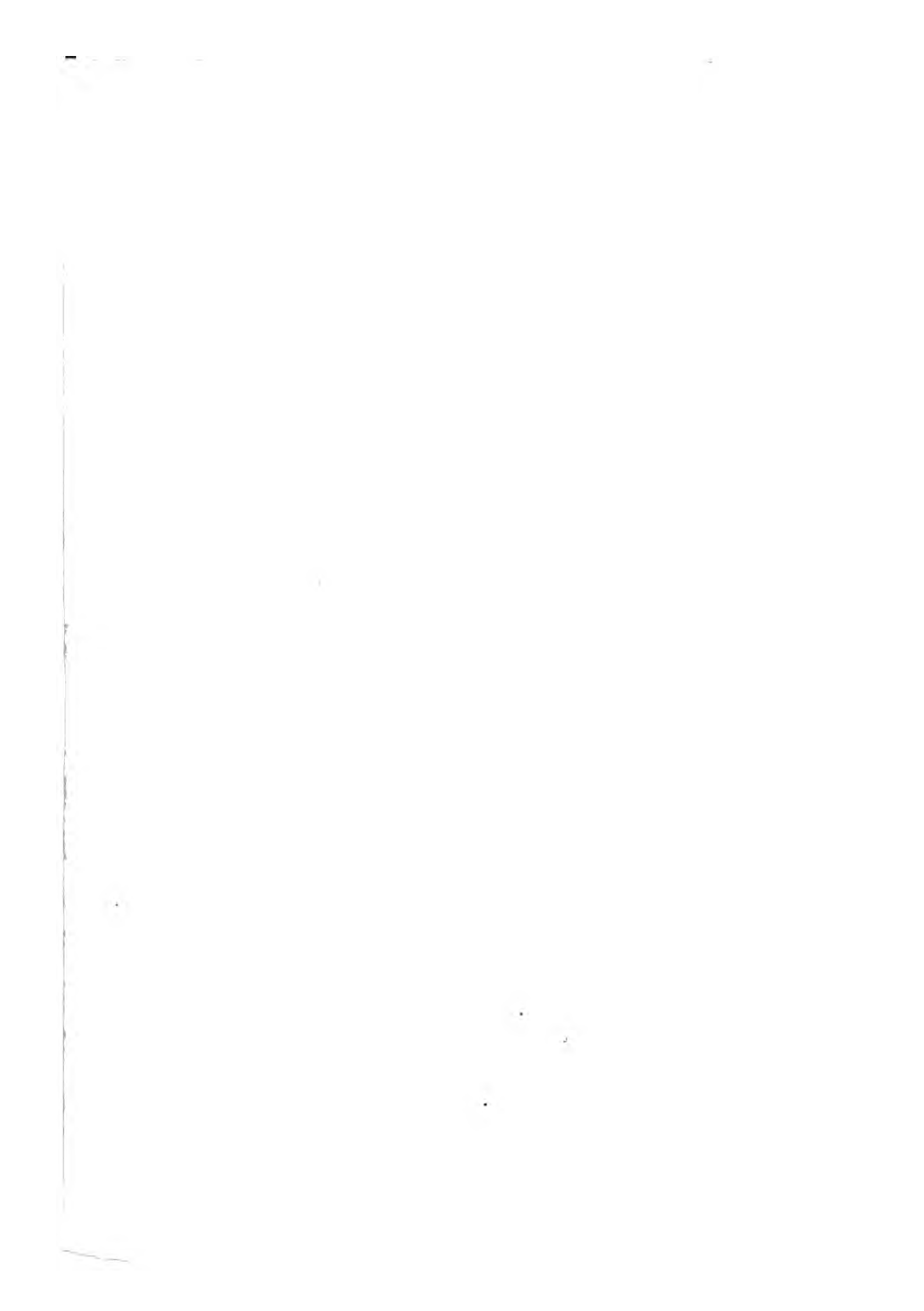
Noon.	3 Hours.	6 Hours.	9 Hours.	Midn.	15 Hour.	18 Hour.	21 Hour
° / "	° / "	° / "	° / "	° / "	° / "	° / "	° / "
136 45 36	135 15 31	133 45 13	132 14 41	130 43 57	129 13 0	127 41 51	126 10 28
124 38 53	123 7 41	121 35 3	120 2 48	118 30 20	116 57 39	115 24 45	113 51 37
112 18 16	110 44 41	109 10 53	107 36 51	106 2 35	104 28 5	102 53 22	101 18 24
99 43 13	98 7 47	96 32 8	94 56 14	93 20 6	91 43 44	90 7 9	88 30 19
86 53 15	85 15 57	83 38 25	82 0 39	80 22 39	78 44 26	77 6 0	75 27 20
73 48 27	72 9 21	70 30 3	68 50 33	67 10 50	65 30 56	63 50 50	62 10 34
60 30 7	58 49 30	57 8 43	55 27 48	53 46 44	52 5 32	50 24 13	48 42 48
47 1 17	45 19 41	43 38 1	41 56 18	40 14 33	38 32 47	36 51 0	35 9 15
33 27 33	31 45 55	30 4 23	28 22 58	26 41 43	25 0 41	23 19 54	21 39 27
20 54 3	22 28 23	24 2 37	25 36 43	27 10 37	28 44 16	30 17 41	31 50 49
33 23 39	34 56 11	36 28 24	38 0 17	39 31 51	41 3 4	42 33 56	44 4 28
45 34 40	47 4 30	48 34 0	50 3 9	51 31 58	53 0 26	54 28 33	55 56 21
57 23 50	58 50 59	60 17 49	61 44 20	63 10 33	64 36 28	66 2 5	67 27 25
68 52 29	70 17 16	71 41 47	73 6 4	74 30 6	75 53 53	77 17 27	78 40 47
80 3 55	81 26 51	82 49 36	84 12 9	85 34 32	86 56 46	88 18 50	89 40 46
91 2 34	92 24 14	93 45 47	95 7 14	96 28 36	97 49 52	99 11 4	100 32 12
101 53 16	103 14 18	104 35 17	105 56 15	107 17 12	108 38 8	109 59 4	111 20 1
112 40 58	114 1 58	115 22 59	116 44 3	118 5 9	119 26 20	120 47 34	122 8 53
123 30 16	124 51 45	126 13 19	127 34 59	128 56 46	130 18 39	131 40 40	133 2 47

MARS [♂] will be a morning star from the 2nd January, to the end of the year

PHASES OF THE MOON. { LAST QUARTER, 7th day, at 1h. 46m. afternoon.
NEW MOON, 14th day, at 10h. 55m. morning.
FIRST QUARTER, 22nd day, at 6h. 46m. morning.
FULL MOON, 30th day, at 1h. 0m. morning.

M	Day	Pwi.	☉'s	♂ Mercury	♀ Venus.	♂ Mars.	♂ Jupiter.	♂ Saturn.
D.	brek.	ends.	semi.	sets. sout.	rises. sout.	rises. sout.	sets. sout.	sets. sout.
1	5 m 2	6 a 24	16 10	4 a 30 0 a 16	2 m 46 9 m 5	10 a 45 6 m 32	3 m 45 9 a 37	5 a 35 1 a 23
8	5 13 6	13 16	12 16	rises. 11 m 17	3 5 9 8	10 36 6 18	3 14 9 7	5 10 1 4
15	5 24 6	5 16 13	5 m 40	10 39 3	25 9 11	10 26 6 3	2 44 8 38	4 45 0 46
22	5 34 5	58 16 14	5 36 10 30	3 46 9 14	10 15 5 47	2 15 3 10	rises. 0 16	
29	5 44 5	53 16 16	6 1 10 36	4 7 9 19	10 2 5 30	1 47 7 42	7 m 50 11 m 5	

M W D D		Remarkable Days	HIGH WATER.—LIVERPOOL.				Eq. of Th.
			MORNING.		EVENING.		
			Time.	Height.	Time.	Height.	
1	D	21 Sun. after Trinity [Hab. ii; Heb. ii. v. 33. & xii to v. 7 Prov. i; Rev. xix, to v. 17]	11 34	18 0	11 50	18 4	16
2	M		— —	— —	0 9	18 4	16
3	Tu	H souths 4 m 25	0 29	18 1	0 48	17 11	16
4	W	Wm. III landed, 1688	1 8	17 4	1 29	17 0	16
5	Th	Gunpowder Plot	1 52	16 1	2 15	16 0	16
6	F	Battle of Inkerman	2 40	14 10	3 5	14 11	16
7	S	Neptune s. 9 a 49	3 35	13 5	4 7	13 8	16
8	D	22 Sun. after Trinity Pro. [Proverbs ii; Luke vii. Les. [— iii; 1 Thess. iv.	4 46	12 6	5 29	13 4	16
9	M		6 12	12 7	6 52	14 1	16
10	Tu	Luther born, 1483	7 29	13 9	8 6	15 7	15
11	W	St. Martin, Bishop	8 33	15 3	9 0	17 0	15
12	Th	Baxter born, 1615	9 27	16 8	9 51	18 2	15
13	F	Britius, Bishop	10 13	17 6	10 34	18 9	15
14	S	Leibnitz died, 1716	10 54	18 3	11 12	18 10	15
15	D	23 Sun. after Trinity Proper [Prov. xi; John vii. Lessons. [— xii; 1 Tim. iv.	11 31	18 5	11 53	18 6	15
16	M		— —	— —	0 12	18 2	14
17	Tu	Hugh, Bishop	0 32	17 11	0 51	17 5	14
18	W	H souths 3 m 25	1 11	16 6	1 31	16 4	14
19	Th	Neptune souths 9 a 1	1 51	15 1	2 10	15 1	14
20	F	Edmund, King.	2 31	13 7	2 52	13 10	14
21	S	Princess of Prussia b.	3 14	12 4	3 37	12 8	13
22	D	24 Sun. after Trinity Proper [Prov. xiii; John xiv. Lessons. [— xiv; Titus i.	4 6	11 3	4 40	11 10	13
23	M		5 17	10 9	5 55	11 9	13
24	Tu	Pleiades south 9 a 25	6 28	11 2	7 1	12 6	12
25	W	Michaelmas Term ends	7 33	12 8	8 3	13 7	12
26	Th	Aldebaran sou. 10 a 5	8 30	13 6	8 56	14 10	12
27	F	Regulus rises 8 a 17	9 15	14 11	9 35	16 0	12
28	S	Wolsey died, 1530	9 56	16 1	10 15	16 11	11
29	D	Advent Sunday Proper [Isaiah i; John xxi. Lessons. [— ii; Heb. v.	10 34	17 0	10 55	17 7	11
30	M		11 13	17 10	11 30	18 1	10



Bristol tides				SUN.				MOON.				ASPECTS AND WEATHER.	
M	morn.	even	height.	rises.	sets.	rt' ascen.	declin.	S.	rises.	souths	declin.	M	D.
D.	H. M.	H. M.	F. I.	H. M.	H. M.	H. M.	M. S.	° / "	H. M.	H. M.	° / "	° / "	
1	7 24	7 41	32 7	7 44	23 14	27 54	14 37	30	5a33	0m16	11 44	17	1
2	8 0	8 19	32 8	7 64	21 14	31 50	14 56	29	6 7	1 6 15	8 18	18	2
3	8 37	8 56	32 3	7 84	19 14	35 46	15 15	14	6 48	1 59 17	45 19	19	3
4	9 15	9 36	30 9	7 104	17 14	39 44	15 33	44	7 38	2 55 19	19 20	20	4
5	9 55	10 16	29 3	7 124	15 14	43 42	15 51	59	8 38	3 51 19	41 21	21	5
6	10 37	11 4	26 11	7 144	13 14	47 42	16 9	57	9 48	4 48 18	45 22	22	6
7	11 32	—	24 5	7 164	12 14	51 42	16 27	40	11 4	5 45 16	36 23	23	7
8	0 5	0 43	23 0	7 174	10 14	55 43	16 45	6	morn	6 40 13	21 24	24	8
9	1 22	2 10	24 1	7 194	8 14	59 45	17 2	15	0 23	7 34 9	15 25	25	9
10	2 55	3 38	27 2	7 214	6 15	3 47	17 19	7	1 44	8 26 4	35 26	26	10
11	4 7	4 35	29 9	7 234	4 15	7 51	17 35	40	3 4	9 17 0	21 27	27	11
12	5 3	5 29	31 9	7 254	2 15	11 56	17 51	56	4 23	10 9 5	14 28	28	12
13	5 54	6 16	32 5	7 274	0 15	16 1	18 7	53	5 42	11 0 9	46 29	29	13
14	6 40	6 59	33 2	7 293	59 15	20 7	18 23	31	sets.	11 52 13	40 N	30	14
15	7 20	7 41	33 4	7 313	58 15	24 14	18 38	50	5a9	0a14	16 44	1	15
16	8 3	8 22	32 8	7 333	56 15	28 22	18 53	48	5 50	1 37 18	46 2	16	16
17	8 40	8 58	31 4	7 353	55 15	32 31	19 8	27	6 36	2 29 19	44 3	17	17
18	9 16	9 35	29 4	7 373	53 15	36 40	19 22	45	7 28	3 19 19	37 4	18	18
19	9 50	10 8	27 4	7 393	52 15	40 51	19 36	42	8 26	4 8 18	31 5	19	19
20	10 27	10 45	25 0	7 413	50 15	45 2	19 50	17	9 28	4 56 16	33 6	20	20
21	11 5	11 30	22 6	7 433	49 15	49 14	20 3	31	10 32	5 41 13	51 7	21	21
22	11 59	—	20 7	7 443	48 15	53 26	20 16	22	11 37	6 25 10	34 8	22	22
23	0 32	1 6	20 1	7 463	47 15	57 40	20 28	52	morn	7 8 6	50 9	23	23
24	1 41	2 21	21 4	7 483	46 16	1 54	20 40	58	0 43	7 51 2	45 10	24	24
25	3 0	3 34	23 10	7 493	45 16	6 9	20 52	41	1 50	8 35 1	32 11	25	25
26	4 3	4 30	26 1	7 513	44 16	10 25	21 4	0	2 59	9 20 5	50 12	26	26
27	4 50	5 11	28 3	7 533	43 16	14 41	21 14	56	4 10	10 7 10	0 13	27	27
28	5 34	5 55	29 11	7 543	42 16	18 58	21 25	28	5 23	10 57 13	46 14	28	28
29	6 17	6 40	30 8	7 563	41 16	23 16	21 35	35	6 36	11 49 16	51 15	29	29
30	7 0	7 19	31 11	7 573	40 16	27 34	21 45	18	7 48	morn	—	30	30

LUNAR DISTANCES FROM THE SUN.

Mean Astronomical Time at Greenwich.

M.	NOON.	3 HOURS.	6 HOURS.	9 HOURS.	MIDN.	15 HOUR.	18 HOUR.	21 HOUR
D.	° / "	° / "	° / "	° / "	° / "	° / "	° / "	° / "
48	129 38 13	128 2 59	126 27 35	124 52 3	123 16 22	121 40 33	120 4 36	118 28 30
5	116 52 17	115 15 56	113 39 29	112 2 54	110 26 12	108 49 23	107 12 29	105 35 27
6	103 58 20	102 21 6	100 43 47	99 6 21	97 28 51	95 51 15	94 13 34	92 35 48
7	90 57 57	89 20 2	87 42 2	86 3 57	84 25 49	82 47 37	81 9 21	79 31 2
8	77 52 39	76 14 14	74 35 46	72 57 15	71 18 42	69 40 7	68 1 31	66 22 53
9	64 44 14	63 5 35	61 26 55	59 48 16	58 9 38	56 31 0	54 52 24	53 13 50
10	51 35 19	49 56 51	48 18 26	46 40 6	45 1 50	43 23 41	41 45 37	40 7 41
11	38 29 53	36 52 14	35 14 46	33 37 28	32 0 23	30 23 32	28 46 57	27 10 39
12	25 35 21	27 3 11	28 30 52	29 58 25	31 25 47	32 52 57	34 19 54	35 46 39
13	37 13 11	38 39 28	40 5 32	41 31 21	42 56 57	44 22 18	45 47 26	47 12 19
14	48 36 58	50 1 24	51 25 36	52 49 36	54 13 22	55 36 56	57 0 17	58 23 26
15	59 46 24	61 9 11	62 31 47	63 54 13	65 16 29	66 38 36	68 0 34	69 22 23
16	70 44 5	72 5 39	73 27 6	74 48 28	76 9 43	77 30 53	78 51 59	80 13 0
17	81 33 59	82 54 54	84 15 47	85 36 38	86 57 28	88 18 17	89 39 7	90 59 57
18	92 20 48	93 41 41	95 2 37	96 23 35	97 44 37	99 5 43	100 26 54	101 48 10
19	103 9 32	104 31 0	105 52 36	107 14 19	108 36 10	109 58 9	111 20 18	112 42 36
20	114 5 5	115 27 44	116 50 34	118 13 36	119 36 49	121 0 15	122 23 54	123 47 46
21	125 11 52	126 36 11	128 0 45	129 25 33	130 50 36	132 15 54	133 41 27	135 7 15

JUPITER [♃] will be an evening star to the 10th March; a morning star to the 2nd October; then an evening star to the end of December.

SATURN [♄] will be a morning star to the 23rd May, an evening star to the 30th November; then a morning star to the end of the year.

PHASES OF THE MOON.	LAST QUARTER,	6th day, at 9h. 34m. night.
	NEW MOON,	14th day, at 1h. 33m. morning.
	FIRST QUARTER,	22nd day, at 4h. 28m. morning.
	FULL MOON,	29th day, at 1h. 48m. morning.

M	Day	Twi.	☉'s	♂ Mercury		♀ Venus.		♂ Mars.		♂ Jupiter.		♂ Saturn.		M
D.	brek.	ends.	semi.	rises.	sout.	rises.	sout.	rises.	sout.	sets.	sout.	rises.	sout.	D.
1	5m48	5a50	16 16	6m10	10 m39	4m13	3m19	9a58	5m24	1m40	7m34	7m43	11m45	8
8	5 53	5 50	16 17	6 46	10 53	4 35	9 25	9 43	5 5	1 14	7 7	7 20	11 21	15
15	6 1	5 51	16 17	7 23	11 10	4 58	9 31	9 25	4 45	0 48	6 41	6 56	10 57	22
22	6 4	5 53	16 18	7 56	11 29	5 20	9 38	9 44	23	0 23	6 15	6 32	10 33	29
29	6 6	5 58	16 18	8 24	11 50	5 42	9 46	9 40	3 59	11a59	5 50	6 8	10 9	

M D	W D	Remarkable Days	HIGH WATER.—LIVERPOOL.								Equation of Time.
			MORNING.				EVENING.				
			Time.		Height.		Time.		Height.		
1	Tu	Neptune souths 8 a 12	11	51	18	4	—	—	—	—	10 ³⁵
2	W	Mariner's compass inv.	0	13	18	2	0	34	18	4	10 ¹²
3	Th	James II abdica., 1688	0	56	17	8	1	20	17	11	9 ⁴⁸
4	F	H souths 2 m 20	1	43	16	8	2	8	17	0	9 ²²
5	S	Bible Translated 1611	2	35	15	7	3	2	15	11	8 ⁵⁹
6	D	2 Sunday in Advent	3	29	14	4	3	59	14	10	8 ³³
7	M	Proper [Isai. v; Acts vii to v. xxx. Lessons. — xxiv; Hebrews xi.	4	32	13	9	5	7	14	2	8 ⁷
8	Tu	Conception V. Mary	5	45	12	11	6	22	14	2	7 ⁴¹
9	W	Neptune souths 7 a 41	6	58	13	5	7	34	14	11	7 ¹⁴
10	Th	Pleiades south 10 a 20	8	8	14	6	8	37	15	9	6 ⁴⁶
11	F	Chas. XII died, 1718	9	14	15	7	9	28	16	6	6 ¹⁸
12	S	Cromwell Protec. 1653	9	53	16	5	10	16	16	11	5 ⁵⁰
13	D	3 Sunday in Advent	10	39	16	11	11	0	17	1	5 ²¹
14	M	Pro. [Isaiah xxv; Acts xlii. Les. — xxvi; 1 Peter i.	11	20	17	4	11	39	17	2	4 ⁵³
15	Tu	H souths 1 m 35	11	57	17	6	—	—	—	—	4 ²³
16	W	Ember Week.	0	14	16	11	0	33	17	1	3 ⁵⁴
17	Th	Oxford T. ends	0	53	16	2	1	11	16	6	3 ²⁴
18	F	Thos. Guy died, 1724	1	30	15	4	1	49	15	9	2 ⁵⁵
19	S	Neptune souths 7 a 1	2	10	14	4	2	30	14	10	2 ²⁵
20	D	4 Sunday in Advent	2	50	13	6	3	9	14	0	1 ⁵⁵
21	M	[Isaiah xxx; Acts xx. — xxxii; 2 Peter iii.	3	28	12	7	3	53	13	1	1 ²⁵
22	Tu	St. Thomas. 21st	4	18	11	10	4	46	12	5	0 ⁵⁵
23	W	Rigel souths 10 a 57	5	19	11	5	5	54	12	2	0 ²⁵
24	Th	Pleiades south 9 a 24	6	26	11	8	6	59	12	8	0 ⁵
25	F	Christmas Day	7	31	12	7	8	2	13	7	0 ³⁵
26	S	St. Stephens	8	33	14	0	8	59	14	10	1 ⁴
27	D	1st Sun. after Christ.	9	23	15	3	9	47	16	0	1 ³⁴
28	M	[Ecclesiastes v; Rev. i. — vi; — xxii.	10	8	16	7	10	30	16	11	2 ³
29	Tu	Aldebaran sou. 9 a 54	10	53	17	8	11	17	17	9	2 ³²
30	W	Rigel souths 10 a 29	11	40	18	7	—	—	—	—	3 ¹
31	Th	Silvester, Bishop	0	1	18	3	0	24	19	1	3 ³⁰



Bristol tides				SUN.				MOON.				ASPECTS AND WEATHER.		
morn.	even.	height		rises.	sets.	rt. ascen.	declin. S.	rises.	souths.	declin.				
H. M.	H. M.	F. I.		H. M.	H. M.	H. M. S.	° ' "	H. M.	H. M.	° ' "	h. m.	D.		
7 42	8 43	2 8		7 59	3 39	16 31	53	21 54	35	5a29	0m45	18 58	17 1	Now
8 24	8 45	32 9		8 13	3 38	16 36	13	22 3	27	6 32	1 43	19 52	18 2	☿ (, 7 a 35
9 7	9 28	31 11		8 23	3 37	16 40	34	22 11	54	7 40	2 42	19 25	19 3	expect
9 51	10 14	30 6		8 43	3 37	16 44	54	22 19	55	8 52	3 40	17 38	20 4	☿ in Perigee
10 37	11 0	28 8		8 53	3 36	16 49	16	22 27	30	10 8	4 37	14 40	21 5	☿ (, 8 a 41
11 26	11 55	26 5		8 7	3 36	16 53	38	22 34	39	11 28	5 31	10 47	22 6	hard
—	0 25	24 7		8 8	3 35	16 58	1	22 41	21	morn	6 23	6 17	23 7	♀ gr. H.I.N.
0 58	1 33	24 3		8 9	3 35	17 2	24	22 47	37	0 49	7 14	1 28	24 8	frost
2 17	3 0	25 10		8 11	3 35	17 6	47	22 53	26	2 8	8 4	3s24	25 9	unless
3 40	4 11	27 9		8 12	3 35	17 11	11	22 58	47	3 26	8 53	8 1	26 10	the
4 49	5 4	29 3		8 13	3 34	17 15	36	23 3	41	4 42	9 44	12 9	27 11	☿ (, 1 m 39
5 31	5 51	30 0		8 14	3 34	17 20	1	23 8	8	5 55	10 35	15 33	28 12	wind be S.W.
6 21	6 45	30 5		8 15	3 34	17 24	26	23 12	8	7 4	11 26	18 4	29 13	☿ (, 0 m 39
7 7	7 28	30 10		8 16	3 34	17 28	51	23 15	39	sets.	0a18	19 32	N 14	still
7 48	8 5	30 11		8 17	3 34	17 33	17	23 18	43	5a15	1 10	19 56	1 15	inclined
8 23	8 42	30 4		8 18	3 34	17 37	43	23 21	19	6 14	2 0	19 16	2 16	to
8 59	9 16	29 4		8 19	3 35	17 42	9	23 23	27	7 14	2 49	17 40	3 17	frost,
9 33	9 53	28 0		8 19	3 35	17 46	35	23 25	6	8 16	3 35	15 16	4 18	changing
10 10	10 26	26 9		8 20	3 35	17 51	2	23 26	18	9 20	4 20	12 13	5 19	☿ in Apogee
10 43	10 59	25 1		8 21	3 36	17 55	28	23 27	1	10 16	5 3	8 39	6 20	to
11 21	11 41	23 4		8 21	3 36	18 59	55	23 27	16	11 33	5 46	4 44	7 21	☉ enters Cap.
—	0 7	21 10		8 22	3 36	18 4	21	23 27	2	morn	6 28	0s34	8 22	[Win. com.
0 36	1 6	21 1		8 22	3 37	18 8	48	23 26	20	0 41	7 11	3s41	9 23	rain
1 36	2 15	21 10		8 22	3 37	18 13	14	23 25	10	1 50	7 56	7 54	10 24	or
2 54	3 32	24 2		8 22	3 38	18 17	41	23 23	32	3 0	8 44	11 52	11 25	snow.
4 6	4 33	26 6		8 23	3 39	18 22	7	23 21	25	4 11	9 35	15 20	12 26	about
4 58	5 23	28 7		8 23	3 40	18 26	33	23 18	50	5 23	10 30	18 2	13 27	☿ ☐, 0 m 38
5 46	6 11	30 6		8 23	3 41	18 30	59	23 15	48	6 37	11 27	19 37	14 28	this
6 37	7 3	31 3		8 23	3 42	18 35	25	23 12	17	rises.	morn	—	F 29	time
7 28	7 51	32 10		8 23	3 43	18 39	50	23 8	18	5a18	0 27	19 52	16 30	☿ (, 2 m 47
8 15	8 39	33 8		8 23	3 44	18 44	15	23 3	51	6 34	1 28	18 40	17 31	☉ in Perigee

LUNAR DISTANCES FROM THE SUN.

Mean Astronomical Time at Greenwich.

M.	NOON.		3 HOURS.		6 HOURS.		9 HOURS.		MIDN.		15 HOUR.		18 HOUR.		21 HOUR.	
	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "
31	134 42 51	133 3 56	131 24 58	129 45 57	128 6 55	126 27 51	124 48 47	123 9 43								
30	121 30 39	119 51 36	118 12 35	116 33 35	114 54 37	113 15 43	111 36 51	109 58 2								
29	108 19 17	106 40 36	105 1 59	103 23 27	101 44 59	100 6 36	98 28 19	96 50 7								
28	95 12 0	93 33 59	91 56 5	90 18 16	88 40 34	87 2 58	85 25 29	83 48 7								
27	82 10 51	80 33 43	78 56 42	77 19 48	75 43 1	74 6 22	72 29 51	70 53 27								
26	69 17 11	67 41 3	66 5 4	64 29 12	62 53 29	61 17 55	59 42 29	58 7 13								
25	56 32 5	54 57 6	53 22 17	51 47 38	50 13 8	48 38 48	47 4 39	45 30 40								
24	43 56 53	42 23 16	40 49 51	39 16 38	37 43 37	36 10 49	34 38 14	33 5 53								
23	31 33 47	30 1 56	28 30 22	26 59 5	25 28 6	23 57 27	22 27 11	20 57 20								
22	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..								
21	28 10 3	29 33 26	30 56 42	32 19 50	33 42 50	35 5 43	36 28 28	37 51 5								
20	39 13 33	40 35 54	41 58 7	43 20 13	44 42 11	46 4 2	47 25 45	48 47 23								
19	50 8 53	51 30 18	52 51 37	54 12 51	55 34 0	56 55 4	58 16 5	59 37 2								
18	60 57 55	62 18 46	63 39 35	65 0 22	66 21 8	67 41 53	69 2 38	70 23 23								
17	71 44 9	73 4 57	74 25 47	75 46 39	77 7 35	78 28 34	79 49 38	81 10 47								
16	82 32 1	83 53 21	85 14 48	86 36 23	87 58 5	89 19 56	90 41 56	92 4 6								
15	93 26 26	94 48 56	96 11 39	97 34 34	98 57 41	100 21 1	101 44 36	103 8 24								
14	104 32 28	105 56 47	107 21 22	108 46 14	110 11 23	111 36 50	113 2 34	114 28 37								
13	115 54 59	117 21 41	118 48 42	120 16 4	121 43 46	123 11 50	124 40 14	126 9 1								
12	127 38 8	129 7 39	130 37 31	132 7 46	133 38 24	135 9 24	136 40 47	138 12 32								

URANUS [♅] will be in opposition on the first of January and will be in the best position for observers about that time.

NEPTUNE will be best observed with a good telescope about its opposition in the beginning of October; it will appear in the constellation Pisces as a very small star.

M D.	JANUARY.		FEBRUARY.		MARCH.		APRIL.		MAY.		JUNE.	
	Noon.	Midn.	Noon.	Midn.	Noon.	Midn.	Noon.	Midn.	Noon.	Midn.	Noon.	Midn.
1	15 4	15 10	15 39	15 46	15 50	15 56	16 13	16 15	16 7	16 5	15 39	15 43
2	15 15	15 22	15 52	16 0	16 1	16 6	16 16	16 17	16 3	16 1	15 31	15 35
3	15 28	15 36	16 7	16 14	16 12	16 16	16 18	16 18	15 58	15 55	15 22	15 25
4	15 43	15 51	16 21	16 27	16 21	16 25	16 17	16 15	15 52	15 48	15 14	15 17
5	15 59	16 7	16 32	16 37	16 28	16 30	16 13	16 10	15 44	15 40	15 7	15 10
6	16 15	16 22	16 40	16 43	16 32	16 32	16 7	16 2	15 35	15 30	15 0	15 3
7	16 29	16 35	16 44	16 43	16 32	16 30	15 58	15 52	15 26	15 21	14 54	14 57
8	16 40	16 44	16 42	16 39	16 27	16 23	15 47	15 41	15 16	15 12	14 50	14 53
9	16 46	16 47	16 34	16 29	16 19	16 13	15 35	15 29	15 7	15 3	14 47	14 50
10	16 46	16 45	16 23	16 16	16 7	16 0	15 23	15 17	14 59	14 56	14 47	14 50
11	16 42	16 37	16 8	16 1	15 53	15 46	15 12	15 7	14 53	14 51	14 49	14 52
12	16 32	16 25	15 53	15 45	15 39	15 32	15 2	14 58	14 50	14 49	14 53	14 56
13	16 18	16 11	15 37	15 29	15 25	15 18	14 55	14 52	14 48	14 49	15 1	15 4
14	16 3	15 55	15 22	15 16	15 12	15 7	14 50	14 49	14 50	14 51	15 11	15 14
15	15 47	15 40	15 10	15 4	15 2	14 57	14 48	14 48	14 54	14 57	15 23	15 26
16	15 32	15 26	15 0	14 55	14 54	14 51	14 49	14 51	15 1	15 5	15 37	15 40
17	15 19	15 13	14 52	14 49	14 49	14 47	14 53	14 56	15 10	15 16	15 51	15 54
18	15 8	15 3	14 47	14 46	14 47	14 46	14 59	15 3	15 21	15 28	16 5	16 8
19	14 59	14 55	14 45	14 44	14 47	14 48	15 7	15 11	15 34	15 40	16 18	16 21
20	14 52	14 49	14 44	14 45	14 50	14 52	15 16	15 21	15 46	15 52	16 27	16 30
21	14 47	14 46	14 46	14 47	14 54	14 57	15 26	15 31	15 58	16 4	16 33	16 36
22	14 44	14 44	14 49	14 51	15 1	15 4	15 36	15 41	16 8	16 12	16 34	16 37
23	14 43	14 43	14 53	14 56	15 8	15 12	15 46	15 50	16 16	16 18	16 31	16 34
24	14 43	14 44	14 59	15 2	15 16	15 20	15 54	15 58	16 20	16 21	16 24	16 27
25	14 45	14 46	15 5	15 9	15 24	15 28	16 1	16 4	16 21	16 21	16 15	16 18
26	14 48	14 50	15 13	15 17	15 32	15 36	16 6	16 8	16 20	16 18	16 4	16 7
27	14 52	14 55	15 21	15 25	15 40	15 44	16 9	16 10	16 15	16 13	15 52	15 55
28	14 58	15 2	15 30	15 35	15 48	15 51	16 11	16 11	16 10	16 6	15 41	15 44
29	15 6	15 10	15 40	15 45	15 55	15 58	16 11	16 10	16 3	15 59	15 31	15 34
30	15 15	15 21	..	..	16 2	16 5	16 10	16 8	15 55	15 51	15 21	15 24
31	15 26	15 32	..	..	16 8	16 10	..	..	15 47	15 43	..	..

M D.	JULY.		AUGUST.		SEPT.		OCTOBER.		NOVEMBER.		DECEMBER.	
	Noon.	Midn.	Noon.	Midn.	Noon.	Midn.	Noon.	Midn.	Noon.	Midn.	Noon.	Midn.
1	15 12	15 8	14 48	14 47	14 46	14 47	15 0	15 3	15 34	15 38	16 5	16 8
2	15 5	15 1	14 45	14 45	14 49	14 50	15 6	15 10	15 42	15 46	16 10	16 13
3	14 58	14 56	14 44	14 44	14 53	14 55	15 13	15 17	15 49	15 52	16 13	16 16
4	14 53	14 51	14 44	14 45	14 58	15 1	15 21	15 25	15 56	15 58	16 14	16 17
5	14 49	14 47	14 45	14 47	15 5	15 8	15 29	15 33	16 1	16 3	16 12	16 15
6	14 46	14 45	14 49	14 51	15 13	15 17	15 38	15 42	16 5	16 7	16 10	16 13
7	14 45	14 45	14 54	14 57	15 22	15 27	15 47	15 51	16 9	16 10	16 6	16 9
8	14 45	14 46	15 0	15 5	15 33	15 39	15 56	16 0	16 11	16 12	16 1	16 4
9	1 48	14 50	15 9	15 14	15 45	15 51	16 5	16 9	16 12	16 12	15 55	15 58
10	1 53	14 56	15 20	15 26	15 57	16 3	16 13	16 16	16 11	16 10	15 49	15 52
11	15 0	15 4	15 33	15 40	16 10	16 16	16 20	16 22	16 9	16 6	15 41	15 44
12	15 9	15 15	15 47	15 55	16 21	16 26	16 24	16 25	16 4	16 0	15 34	15 37
13	15 1	15 28	16 2	16 10	16 31	16 34	16 26	16 25	15 56	15 52	15 25	15 28
14	15 35	15 43	16 17	16 23	16 37	16 38	16 24	16 21	15 47	15 42	15 17	15 20
15	15 51	15 58	16 29	16 35	16 38	16 37	16 18	16 14	15 37	15 32	15 8	15 11
16	16 6	16 14	16 39	16 42	16 35	16 32	16 9	16 4	15 26	15 21	15 1	15 4
17	16 21	16 27	16 44	15 45	16 27	16 22	15 58	15 51	15 15	15 10	14 45	14 48
18	16 32	16 37	16 44	16 42	16 15	16 9	15 45	15 38	15 6	15 1	14 50	14 53
19	16 40	16 42	16 38	16 33	16 1	15 54	15 31	15 25	14 58	14 55	14 47	14 50
20	16 43	16 42	16 28	16 21	15 46	15 39	15 18	15 13	14 52	14 50	14 47	14 50
21	16 41	16 37	16 14	16 7	15 31	15 24	15 7	15 2	14 49	14 48	14 50	14 53
22	16 33	16 28	15 59	15 51	15 18	15 12	14 58	14 55	14 48	14 49	14 56	15 0
23	16 22	16 16	15 44	15 36	15 6	15 1	14 52	14 50	14 51	14 53	15 4	15 7
24	16 9	16 2	15 29	15 22	14 57	14 54	14 48	14 48	14 56	15 0	15 15	15 18
25	15 55	15 48	15 16	15 10	14 51	14 49	14 48	14 48	15 4	15 9	15 28	15 31
26	15 41	15 34	15 5	15 1	14 47	14 46	14 50	14 52	15 14	15 19	15 42	15 45
27	15 28	15 22	14 57	14 53	14 46	14 46	14 54	14 57	15 25	15 30	15 56	16 0
28	15 16	15 11	14 50	14 48	14 47	14 48	15 0	15 4	15 36	15 42	16 8	16 11
29	15 7	15 3	14 47	14 45	14 50	14 52	15 8	15 12	15 47	15 52	16 19	16 22
30	14 59	14 56	14 45	14 44	14 54	14 57	15 16	15 21	15 57	16 1	16 26	16 29
31	14 53	14 50	14 44	14 45	..	..	15 25	15 30	..	..	16 29	16 32

MOON'S HORIZONTAL PARALLAX.

27

JANUARY.		FEBRUARY		MARCH.		APRIL.		MAY.		JUNE.		M
noon.	Midn.	Noon.	Midn.	Noon.	Midn.	Noon.	Midn.	Noon.	Midn.	Noon.	Midn.	D.
14 55 33		57 20 57 45		58 2 58 23		59 23 59 31		59 3 58 57		57 19 57 4		1
54 56 17		58 11 58 37		58 42 59 1		59 36 59 40		58 49 58 41		56 49 56 34		2
42 57 8		59 3 59 29		59 20 59 38		59 42 59 42		58 31 58 19		56 19 56 5		3
36 58 5		59 53 60 16		59 54 60 8		59 39 59 34		58 7 57 53		55 50 55 36		4
35 59 4		60 35 60 52		60 20 60 28		59 26 59 15		57 38 57 22		55 23 55 10		5
32 59 59		61 5 61 13		60 34 60 36		59 1 58 46		57 6 56 49		54 58 54 46		6
24 60 46		61 17 61 16		60 33 60 27		58 29 58 9		56 31 56 14		54 36 54 28		7
4 61 17		61 10 60 59		60 17 60 3		57 49 57 27		55 56 55 40		54 20 54 15		8
26 61 30		60 44 60 24		59 46 59 26		57 5 56 43		55 24 55 9		54 11 54 9		9
23 61 21		60 1 59 36		59 3 58 39		56 21 56 0		51 55 54 43		54 9 54 12		10
10 60 54		59 8 58 40		58 13 57 46		55 40 55 22		54 33 54 25		54 16 54 24		11
33 60 10		58 10 57 41		57 20 56 53		55 5 54 51		54 19 54 16		54 33 54 46		12
46 59 17		57 12 56 45		56 28 56 4		54 39 54 29		54 14 54 16		55 0 55 17		13
48 58 19		56 19 55 55		55 42 55 22		54 21 54 17		54 20 54 26		55 37 55 58		14
51 57 23		55 33 55 13		55 4 54 48		54 14 54 15		54 35 54 47		56 21 56 46		15
56 56 31		54 56 54 41		54 35 54 25		54 18 54 23		55 1 55 17		57 12 57 38		16
7 55 46		54 28 54 18		54 17 54 11		54 31 54 41		55 35 55 55		58 5 58 32		17
26 55 9		54 10 54 5		54 8 54 8		54 53 55 7		56 16 56 38		58 57 59 21		18
53 54 40		54 1 54 0		54 10 54 14		55 22 55 39		57 1 57 25		59 43 60 2		19
28 54 19		54 0 54 2		54 20 54 27		55 57 56 15		57 48 58 10		60 18 60 30		20
11 54 4		54 6 54 11		54 37 54 48		56 34 56 53		58 31 58 50		60 38 60 42		21
0 53 57		54 17 54 25		55 0 55 13		57 11 57 29		59 8 59 23		60 42 60 39		22
56 53 55		54 34 54 43		55 26 55 41		57 46 58 2		59 35 59 44		60 31 60 20		23
57 53 59		54 54 55 5		55 55 56 10		58 16 58 29		59 51 59 54		60 6 59 50		24
3 54 7		55 17 55 30		56 25 56 40		58 41 58 50		59 55 59 53		59 32 59 12		25
14 54 21		55 44 55 59		56 55 57 10		58 59 59 5		59 49 59 42		58 52 58 31		26
30 54 40		56 14 56 30		57 24 57 38		59 10 59 14		59 34 59 24		58 10 57 49		27
51 55 4		56 47 57 5		57 52 58 6		59 16 59 17		59 12 59 0		57 28 57 9		28
19 55 35		57 24 57 43		58 19 58 31		59 17 59 15		58 47 58 33		56 50 56 31		29
53 56 13				58 43 58 54		59 12 59 8		58 19 58 4		56 14 55 58		30
34 56 57				59 5 59 15		.. ..		57 49 57 34		.. ..		31
JULY.		AUGUST.		SEPT.		OCTOBER.		NOVEMBER.		DECEMBER.		M
noon.	Midn.	Noon.	Midn.	Noon.	Midn.	Noon.	Midn.	Noon.	Midn.	Noon.	Midn.	D.
5 43 55 28		54 15 54 9		54 5 54 10		54 57 55 8		57 1 57 17		58 54 59 6		1
5 15 55 3		54 4 54 1		54 16 54 23		55 20 55 33		57 31 57 45		59 15 59 21		2
4 52 54 41		53 59 53 58		54 31 54 40		55 47 56 0		57 58 58 10		59 26 59 28		3
54 32 54 24		53 59 54 1		54 50 55 2		56 15 56 30		58 21 58 31		59 28 59 26		4
54 17 54 11		54 4 54 9		55 15 55 29		56 45 57 0		58 41 58 49		59 23 59 19		5
54 6 54 3		54 16 54 24		55 44 56 0		57 16 57 32		58 57 59 4		59 13 59 6		6
54 2 54 2		54 34 54 45		56 18 56 37		57 48 58 5		59 10 59 14		58 58 58 49		7
54 4 54 7		54 59 55 14		56 57 57 19		58 22 58 38		59 18 59 20		58 40 58 30		8
54 13 54 20		55 31 55 50		57 41 58 4		58 54 59 9		59 21 59 21		59 19 58 48		9
54 30 54 42		56 11 56 34		58 27 58 50		59 24 59 37		59 19 59 15		57 55 57 43		10
54 57 55 13		56 58 57 24		59 13 59 35		59 49 59 58		59 9 59 1		57 29 57 15		11
55 32 55 53		57 50 58 18		59 55 60 14		60 6 60 10		58 50 58 38		57 1 56 46		12
56 16 56 41		58 45 59 12		60 30 60 43		60 12 60 10		58 24 58 9		56 30 56 15		13
57 7 57 35		59 38 60 3		60 52 60 57		60 5 59 56		57 51 57 33		55 26 55 41		14
58 3 58 32		60 25 60 45		60 57 60 54		59 44 59 29		57 14 56 54		55 29 55 14		15
59 0 59 27		61 0 61 12		60 45 60 33		59 11 58 51		56 33 56 14		55 1 54 48		16
59 53 60 16		61 19 61 21		60 16 59 57		58 29 58 5		55 54 55 36		54 37 54 28		17
60 36 60 52		61 17 61 6		59 34 59 9		57 41 57 16		55 18 55 3		54 20 54 14		18
61 4 61 12		60 57 60 40		58 42 58 14		56 52 56 28		54 49 54 37		54 11 54 10		19
61 15 61 13		60 19 59 56		57 46 57 19		56 5 55 44		54 28 54 21		54 11 54 15		20
61 6 60 54		59 30 59 2		56 52 56 26		55 24 55 7		54 16 54 14		54 21 54 30		21
60 39 60 21		58 34 58 6		56 2 55 40		54 51 54 38		54 15 54 19		54 42 54 56		22
59 59 59 36		57 37 57 10		55 20 55 3		54 28 54 20		54 25 54 33		55 13 55 32		23
59 11 58 45		56 44 56 19		54 47 54 34		54 15 54 13		54 44 54 57		55 53 56 15		24
58 19 57 52		55 56 55 35		54 24 54 16		54 13 54 15		55 12 55 29		56 40 57 5		25
57 27 57 3		55 16 54 59		54 10 54 7		54 20 54 27		55 48 56 7		57 31 57 56		26
56 39 56 18		54 45 54 33		54 6 54 7		54 36 54 46		56 28 56 49		58 22 58 46		27
55 57 55 39		54 23 54 14		54 10 54 14		54 58 55 12		57 10 57 30		59 8 59 28		28
55 22 55 7		54 8 54 4		54 20 54 27		55 26 55 42		57 50 58 9		59 46 60 1		29
54 53 54 41		54 1 54 0		54 36 54 46		55 57 56 14		58 26 58 41		60 12 60 19		30
54 31 54 22		54 0 54 2		.. ..		56 30 56 46		.. ..		60 23 60 23		31

Mean Refraction.

Dip of
The Horizon.

App. Alt.	Refr.	App. Alt.	Refr.	App. Alt.	Refr.	App. Alt.	Refr.	App. Alt.	Refr.	App. Alt.	Refr.	Height of the Eye.	Dip of the Horizon.	Height of the Eye.	Dip of the Horizon.		
°	'	°	'	°	'	°	'	°	'	°	'	ft.	"	ft.	"		
0	0	33	0	5	0	9	54	10	0	5	15	20	0	2	35	34	0
0	5	32	10	5	5	9	46	10	10	5	10	20	10	2	34	34	30
0	10	31	22	5	10	9	38	10	20	5	5	20	20	2	32	35	0
0	15	30	35	5	15	9	30	10	30	5	0	20	30	2	31	35	30
0	20	29	50	5	20	9	23	10	40	4	56	20	40	2	29	36	0
0	25	29	6	5	25	9	15	10	50	4	51	20	50	2	28	36	30
0	30	28	23	5	30	9	8	11	0	4	47	21	0	2	27	37	0
0	35	27	41	5	35	9	1	11	10	4	43	21	10	2	26	37	30
0	40	27	0	5	40	8	54	11	20	4	39	21	20	2	25	38	0
0	45	26	20	5	45	8	47	11	30	4	34	21	30	2	24	38	30
0	50	25	42	5	50	8	41	11	40	4	31	21	40	2	23	39	0
0	55	25	5	5	55	8	34	11	50	4	27	21	50	2	21	39	30
1	0	24	29	6	0	8	28	12	0	4	23	22	0	2	20	40	0
1	5	23	54	6	5	8	21	12	10	4	20	22	10	2	19	41	0
1	10	23	20	6	10	8	15	12	20	4	16	22	20	2	18	42	0
1	15	22	47	6	15	8	9	12	30	4	13	22	30	2	17	43	0
1	20	22	15	6	20	8	3	12	40	4	9	22	40	2	16	44	0
1	25	21	44	6	25	7	57	12	50	4	6	22	50	2	15	45	0
1	30	21	15	6	30	7	51	13	0	4	3	23	0	2	14	46	0
1	35	20	46	6	35	7	45	13	10	4	0	23	10	2	13	47	0
1	40	20	18	6	40	7	40	13	20	3	57	23	20	2	12	48	0
1	45	19	51	6	45	7	35	13	30	3	54	23	30	2	11	49	0
1	50	19	25	6	50	7	30	13	40	3	51	23	40	2	10	50	0
1	55	19	0	6	55	7	25	13	50	3	48	23	50	2	9	51	0
2	0	18	35	7	0	7	20	14	0	3	45	24	0	2	8	52	0
2	5	18	11	7	5	7	15	14	10	3	43	24	10	2	7	53	0
2	10	17	48	7	10	7	11	14	20	3	40	24	20	2	6	54	0
2	15	17	26	7	15	7	6	14	30	3	38	24	30	2	5	55	0
2	20	17	4	7	20	7	2	14	40	3	35	24	40	2	4	56	0
2	25	16	44	7	25	6	57	14	50	3	33	24	50	2	3	57	0
2	30	16	24	7	30	6	53	15	0	3	30	25	0	2	2	58	0
2	35	16	4	7	35	6	49	15	10	3	28	25	10	2	1	59	0
2	40	15	45	7	40	6	45	15	20	3	26	25	20	2	0	60	0
2	45	15	27	7	45	6	41	15	30	3	24	25	30	1	59	61	0
2	50	15	9	7	50	6	37	15	40	3	21	25	40	1	58	62	0
2	55	14	52	7	55	6	33	15	50	3	19	25	50	1	57	63	0
3	0	14	36	8	0	6	29	16	0	3	17	26	0	1	56	64	0
3	5	14	20	8	5	6	25	16	10	3	15	26	10	1	55	65	0
3	10	14	4	8	10	6	22	16	20	3	12	26	20	1	55	66	0
3	15	13	49	8	15	6	18	16	30	3	10	26	30	1	54	67	0
3	20	13	34	8	20	6	15	16	40	3	8	26	40	1	53	68	0
3	25	13	20	8	25	6	11	16	50	3	6	26	50	1	52	69	0
3	30	13	6	8	30	6	8	17	0	3	4	27	0	1	51	70	0
3	35	12	53	8	35	6	5	17	10	3	3	27	15	1	50	71	0
3	40	12	40	8	40	6	1	17	20	3	1	27	30	1	49	72	0
3	45	12	27	8	45	5	58	17	30	2	59	27	45	1	48	73	0
3	50	12	15	8	50	5	55	17	40	2	57	28	0	1	47	74	0
3	55	12	3	8	55	5	52	17	50	2	55	28	15	1	46	75	0
4	0	11	51	9	0	5	48	18	0	2	54	28	30	1	45	76	0
4	5	11	40	9	5	5	45	18	10	2	52	28	45	1	44	77	0
4	10	11	29	9	10	5	42	18	20	2	51	29	0	1	42	78	0
4	15	11	18	9	15	5	39	18	30	2	49	29	30	1	40	79	0
4	20	11	8	9	20	5	36	18	40	2	47	30	0	1	39	80	0
4	25	10	58	9	25	5	34	18	50	2	46	30	30	1	37	81	0
4	30	10	48	9	30	5	31	19	0	2	44	31	0	1	35	82	0
4	35	10	39	9	35	5	28	19	10	2	43	31	30	1	33	83	0
4	40	10	29	9	40	5	25	19	20	2	41	32	0	1	31	84	0
4	45	10	20	9	45	5	23	19	30	2	40	32	30	1	30	86	0
4	50	10	11	9	50	5	20	19	40	2	38	33	0	1	28	88	0
4	55	10	2	9	55	5	18	19	50	2	37	33	30	1	26	90	0

Dip at Different Distances.

Miles.	Height of the Eye in Feet.				
	5	10	15	20	25
1	11	23	34	45	57
1 1/4	6	12	17	23	28
1 1/2	4	8	12	15	19
2	3	6	9	12	15
2 1/4	3	5	7	10	12
2 1/2	3	4	6	8	10
3	2	4	5	7	8
3 1/4	2	3	4	5	6
4	2	3	4	5	5
5	2	3	4	4	5
6	2	3	4	4	5

Table Of Corrections To be applied to the Rising and Setting of the Sun, Moon, and Planets, when viewed from elevations above the sea level—Subtract from Rising, add to Setting.

ft.	s.	ft.	m.s.	ft.	m.s.
5	16	50	0	51	120
10	23	60	0	56	140
15	28	70	1	1	160
20	30	80	1	5	180
30	38	90	1	8	200
40	46	100	1	10	300

Dip at Different
Distances.

Miles.	Height of the Eye in Feet.	5	10	15	20	25	30
1	5	11	23	34	45	57	68
1	6	12	24	35	46	58	69
1	7	13	25	36	47	59	70
1	8	14	26	37	48	60	71
1	9	15	27	38	49	61	72
1	10	16	28	39	50	62	73
1	11	17	29	40	51	63	74
1	12	18	30	41	52	64	75
1	13	19	31	42	53	65	76
1	14	20	32	43	54	66	77
1	15	21	33	44	55	67	78
1	16	22	34	45	56	68	79
1	17	23	35	46	57	69	80
1	18	24	36	47	58	70	81
1	19	25	37	48	59	71	82
1	20	26	38	49	60	72	83
1	21	27	39	50	61	73	84
1	22	28	40	51	62	74	85
1	23	29	41	52	63	75	86
1	24	30	42	53	64	76	87
1	25	31	43	54	65	77	88
1	26	32	44	55	66	78	89
1	27	33	45	56	67	79	90
1	28	34	46	57	68	80	91
1	29	35	47	58	69	81	92
1	30	36	48	59	70	82	93
1	31	37	49	60	71	83	94
1	32	38	50	61	72	84	95
1	33	39	51	62	73	85	96
1	34	40	52	63	74	86	97
1	35	41	53	64	75	87	98
1	36	42	54	65	76	88	99
1	37	43	55	66	77	89	100

**Table
Of Corrections**
To be applied to the
Rising and Setting of
the Sun, Moon, and
Planets, when view-
ed from elevations
above the sea level—
Subtract from Rising,
add to Setting.

ft.	s.	ft.	m.s.	ft.	m.s.
5	16	50	0	51	120
10	23	60	0	56	140
15	28	70	1	1	160
20	30	80	1	5	180
30	38	90	1	8	200
40	46	100	1	10	300

**Right Ascensions, and Declinations, and Semi-diurnal Arcs,
FOR LATITUDE 54° 10',
Of the Principal Fixed Stars**

NAMES.	Magni- tude.	Right Ascension.			Annual Variations "	Declination.			Annual Variations "	Semi-diurnal Arcs.		
		H.	M.	S.		°	'	"		H.	M.	S.
Andromedæ	2	0	1	34	+ 3'08	N	28	21 42	+19'90	9	19	
Pegasi (Algenib)	3.2	0	6	26	+ 3'08		14	26 58	+20'03	7	27	
Cassiopeæ	Var.	0	33	2	+ 3'36		55	48 47	+19'81	sets not		
Ceti	2	0	36	58	+ 3'01	S	18	42 42	+19'82	4	12	
Ursæ Minor. (Polaris)	2	1	10	37	+19'77	N	88	36 20	+19'12	sets not		
Eridani (Achernar) ..	1	1	32	47	+ 2'23	S	57	54 28	+18'42	rises not		
Arietes.	2	1	59	44	+ 3'36	N	22	50 12	+17'23	8	27	
Ceti	2.3	2	55	23	+ 3'13		3	34 11	+14'35	6	23	
Persei	2	3	14	55	+ 4'25		49	23 18	+13'18	sets not		
Tauri	3	3	39	38	+ 3'55		23	41 40	+11'48	8	34	
Tauri (Aldebaran) ..	1	4	28	21	+ 3'43		16	14 29	+ 7'63	7	39	
Anrigæ (Capella)	1	5	6	56	+ 4'42		45	51 36	+ 4'17	sets not		
Orionis (Rigel)	1	5	8	12	+ 2'88	S	8	21 24	+ 4'48	5	17	
Tauri	2	5	17	57	+ 3'79	N	28	29 33	+ 3'46	9	21	
Orionis	2	5	25	16	+ 3'06	S	0	23 59	+ 2'99	6	1	
Leporis	3	5	26	54	+ 2'65		17	55 8	+ 2'89	4	10	
Orionis	2	5	29	31	+ 3'04		1	17 20	+ 2'65	5	57	
Columbæ	2	5	34	52	+ 2'18		34	8 44	+ 2'19	sets not		
Orionis	Var.	5	48	1	+ 3'25	N	7	22 46	+ 1'05	6	45	
Argus (Canopus)	1	6	21	1	+ 1'33	S	52	37 28	- 1'83	rises not		
Canis Majoris (Sirius)	1	6	39	20	+ 2'64		16	32 15	- 4'65	4	27	
Geminorum (Castor)	2.1	7	26	10	+ 3'84	N	32	10 30	- 7'44	10	13	
Canis Minoris (Proc.)	1	7	32	23	+ 3'14		5	33 40	- 8'90	6	35	
Geminorum (Pollux)	1.2	7	37	14	+ 3'68		28	20 32	- 8'31	9	20	
Hydræ	2	9	21	6	+ 2'95	S	8	5 17	-15'39	6	49	
Leonis (Regulus)	1.2	10	1	20	+ 3'20	N	12	36 40	-17'41	7	17	
Ursæ Majoris	2	10	55	34	+ 3'77		62	27 46	-19'35	sets not		
Leonis	2.3	11	7	5	+ 3'20		21	14 47	-19'67	8	16	
Leonis	2	11	42	19	+ 3'06		15	18 35	-20'09	7	34	
Ursæ Majoris	2.3	11	46	52	+ 3'19		54	25 43	-20'02	sets not		
Crucis	1	12	19	16	+ 3'26	S	62	21 58	-19'93	rises not		
Corvi	2.3	12	27	27	+ 3'13		22	40 0	-19'98	3	44	
Virginis (Spica)	2	13	18	14	+ 3'15		10	28 17	-18'94	5	5	
Centauri	1	13	54	32	+ 4'16		59	44 4	-17'67	rises not		
Bootis (Arcturus)	1	14	9	38	+ 2'73	N	19	52 15	-18'91	8	5	
Centauri	1	14	30	40	+ 4'03	S	60	17 9	-15'03	rises not		
Bootis	2.3	14	39	13	+ 2'62	N	27	37 55	-15'40	9	13	
Libræ	2.3	14	43	35	+ 3'30	S	15	29 29	-15'22	4	34	
Ursæ Minoris	2	14	51	7	- 0'25	N	74	41 41	-14'76	sets not		
Libræ	2	15	9	54	+ 3'22	S	8	53 38	-13'57	5	14	
Coronæ Borealis	2	15	29	6	+ 2'54	N	27	9 38	-12'35	9	8	
Serpentis	2.3	15	37	46	+ 2'95		6	50 34	-11'61	6	42	
Scorpii (Antares)	1.2	16	21	19	+ 3'67	S	26	8 11	- 8'40	3	15	
Trianguli Australis ..	2	16	34	43	+ 6'28		68	46 49	- 7'37	rises not		
Herculis	Var.	17	8	38	+ 2'73	N	14	32 35	- 4'41	7	29	
Draconis	3.2	17	27	27	+ 1'35		52	24 0	- 2'84	sets not		
Lyræ (Vega)	1	18	32	28	+ 2'03		38	39 45	+ 3'11	sets not		
Lyræ	Var.	18	45	12	+ 2'21		33	12 39	+ 3'90	10	31	
Aquilæ	3	19	39	59	+ 2'85		10	17 37	+ 8'47	7	2	
Aquilæ (Altair)	1.2	19	44	20	+ 2'93		8	31 19	+ 9'20	6	51	
Aquilæ	4	19	48	50	+ 2'95		6	4 45	+ 8'69	6	37	
Pavonis	2	20	15	12	+ 4'80	S	57	9 16	+11'12	rises not		
Cygni	2.1	20	36	56	+ 2'04	N	44	48 36	+12'68	sets not		
Cephei	3	21	15	26	+ 1'44		62	1 36	+15'10	sets not		
Aquarii	3	21	24	36	+ 3'16	S	6	9 1	+15'62	5	29	
Cephei	3	21	26	57	+ 0'80	N	69	58 53	+15'70	sets not		
Aquarii	3	21	59	0	+ 3'08	S	0	57 36	+17'31	5	58	
Gruis	2	21	59	54	+ 3'81		47	35 54	+17'18	rises not		
Piscium Australis	1.2	22	50	21	+ 3'33		30	19 16	+18'96	2	29	
Pegasi (Markab)	2	22	58	11	+ 2'98	N	14	29 44	+19'30	7	27	

General Tide Table,

By which the times of High Water may be CORRECTLY FOUND ON ANY Day.

N.B.—Add to the time of High Water in the Liverpool Tide Table in this Almanack the Hours and Minutes in the Column opposite the Place required.

ENGLAND		H.M.			H.M.
Alderney Pier..	..	7 35	Bursey Harbour..	..	6 50
Alne River ..	..	3 35	Cardiff ..	..	6 50
Barnstaple Bar..	..	6 20	Cardigan Bar ..	..	7 50
Berwick ..	..	3 8	Caermarthen Bar ..	..	7 0
Blakeney ..	..	7 40	Carnarvon Bar ..	..	9 50
Blythe ..	..	3 35	Denbigh ..	..	3 5
Boston..	..	8 5	Fisgard Bay ..	..	7 20
Bridgewater ..	..	7 35	Milford Haven..	..	6 35
Bridlington..	..	5 20	Newport ..	..	7 35
Carlisle ..	..	0 50	Pembroke ..	..	6 54
Chatham ..	..	1 44	Skerries ..	..	10 35
Christchurch ..	..	9 40	Smalls and Swansea..	..	6 40
Dartmouth..	..	6 55	Strumble Head ..	..	7 5
Exmouth Bar ..	..	7 15	IRELAND.		
Falmouth ..	..	6 20	Arklow ..	..	10 5
Flamboro' Head ..	..	5 20	Baltimore ..	..	4 35
Flatholm ..	..	7 18	Bantry Bay ..	..	4 36
Fowey ..	..	6 20	Broadhaven ..	..	6 50
Gravesend ..	..	2 20	Crookhaven ..	..	4 20
Guernsey (Eng.Chan)	..	7 20	Donaghadee ..	..	10 5
Hartlepool ..	..	4 35	Donegal Bar ..	..	5 55
Humber River ..	..	6 20	Downing Bay ..	..	6 10
Ilfracombe ..	..	6 20	Dungarvon..	..	5 20
Ipswich ..	..	0 50	Foyn's Island ..	..	4 50
Jersey (En. Ch.) ..	..	7 0	Galway Bay ..	..	5 20
Land's End ..	..	5 20	Kinsale..	..	5 20
Longships ..	..	5 20	Limerick ..	..	6 50
Lyme Regis ..	..	7 20	Lough Swilly ..	..	8 20
Needles Point ..	..	10 35	Londonderry ..	..	6 50
Newcastle ..	..	4 50	Malbay ..	..	4 50
Penzance ..	..	5 20	Newry ..	..	0 50
Plymouth Dock..	..	6 20	Port Rush ..	..	6 35
Poole ..	..	9 50	Saltees..	..	6 30
Ramsgate ..	..	0 36	Shannon ..	..	4 35
Robin Hood's Bay ..	..	4 35	Skerries ..	..	5 35
Scarborough ..	..	5 15	Sligo Bay ..	..	5 35
Scilly Islands ..	..	5 0	Tory Island..	..	6 50
Sheerness ..	..	1 29	Tralee Bay..	..	4 35
Spithead ..	..	10 20	Valentia Harbour ..	..	4 20
St. Ives ..	..	5 20	Waterford ..	..	6 40
Tees River ..	..	4 20	Wexford ..	..	8 20
Torbay..	..	6 50	Wicklow ..	..	9 50
Tynemout Bar ..	..	3 40	Youghal ..	..	5 50
Weymouth..	..	7 20	SCOTLAND.		
Whitby ..	..	4 35	Aberdeen ..	..	2 2
Wisbeach ..	..	8 20	Banff ..	..	0 20
Yarmouth Roads ..	..	9 30	Buchanness ..	..	0 50
Yarmouth, Isle of Wight	..	10 20	Burnt Island ..	..	3 20
WALES.			Cromarty ..	..	0 35
Aberdovey ..	..	8 20	Dee (River) ..	..	1 35
Aberystwith ..	..	8 20	Dunbar ..	..	2 50
Barmouth ..	..	8 45	Dundee ..	..	3 5
Bardsey Island ..	..	9 5			

Eyemouth ..	..	1 1
Leith Pier ..	..	1 1
Montrose ..	..	1 1
Tay Bar ..	..	1 1
Wick ..	..	1 1

SHETLANDS.

Balta ..	..	1 1
Brassa Sound ..	..	1 1
Lerwick Harbour ..	..	1 1
Westra ..	..	1 1

ORKNEYS.

Cairston ..	..	1 1
Fair Isle ..	..	1 1
Pomona ..	..	1 1
Ronaldsha ..	..	1 1

FOREIGN PORTS.

Amsterdam ..	..	1 1
Antwerp ..	..	1 1
Bahia, Brazil ..	..	1 1
Bilboa, Spain ..	..	1 1
Biscay, Spain ..	..	1 1
Bonny River, Africa ..	..	1 1
Bordeaux ..	..	1 1
Bremen, Germany ..	..	1 1
Brest, France ..	..	1 1
Cadiz, Spain ..	..	1 1
Calabar, Africa ..	..	1 1
Calcutta ..	..	1 1
Carthage, S. Amer ..	..	1 1
Charleston Bar, U.S. ..	..	1 1
Charante, France ..	..	1 1
Cape Coast, Africa ..	..	1 1
Cape Good Hope ..	..	1 1
Fort St. John, N.A. ..	..	1 1
Funchal, Madeira ..	..	1 1
Hamburg ..	..	1 1
Rio Janeiro, Brazil ..	..	1 1
St. John's, N. Found. ..	..	1 1
Lisbon ..	..	1 1
L'Orient, France ..	..	1 1
New York F. River ..	..	1 1
Oporto, Portugal ..	..	1 1
Panama, S. A. ..	..	1 1
Pernambuco, S. A. ..	..	1 1
Philadelphia, U.S. ..	..	1 1
Quebec, Canada ..	..	1 1
Rotterdam ..	..	1 1
Santa Cruz, S.A. ..	..	1 1
Whampoa, China ..	..	1 1

The Tides at the following places are nearly the same as the Tide-Table—

Ardglass,	Chester	Dublin	Hastings	Mull of Galloway	St. Helen
Aran Island	Conway	Dumfries	Kingstown	Newhaven	Stranorlar
Bangor	Cowes	Dundalk	Killough	Pargate	Stromness
Balbriggan	Copeland Island	Dundrum	Kirkcudbright	Preston	Troon
Belfast	Deal	Folkstone	Lancaster	Pentland Frith	Warren's Point
Beaumaris	Dover	Glasgow	Liverpool	Ramsgate	Ulverston
Carlisle	Downs	Harwich	Maryport	Rothsay	Whitehaven
Garrickfergus	Drogheda		Margate	Rosness	

TIDE TABLES—JANUARY, 1868.

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[illegible]

GREENOCK

LONDON

CORK

Sunderland & Shields

Hull & Bridport

Southampton & Portsmouth

M	D	Height.		Morn	Even		Height.	Morn	Even		Height.	Morn	Even		Height.	Morn	Even		Height.	Morn	Even		Height.			
		H.	M.		H.	M.			H.	M.			H.	M.			H.	M.			H.	M.				
1	1	4	18	6	36	7	0	10	38	10	1	8	8	57	10	35	7	11	36	17	3	55	4	17		
2	2	5	4	7	24	8	16	11	26	10	54	9	9	28	11	0	0	5	17	2	4	43	5	11		
3	3	6	10	8	20	8	58	16	34	0	44	9	4	10	7	0	1	12	16	8	5	47	6	26		
4	4	7	20	8	37	10	16	16	53	11	38	16	3	11	23	1	49	2	25	16	7	3	7	44		
5	5	8	45	9	22	11	38	16	0	9	44	9	2	10	7	0	3	2	30	18	8	23	9	1	17	
6	6	9	53	10	23	0	14	17	2	28	3	12	11	1	23	0	4	15	4	47	19	9	33	10	3	
7	7	10	50	11	18	0	14	18	3	41	4	8	11	2	10	2	5	16	5	41	20	10	29	11	8	
8	8	11	47	10	0	46	1	14	4	37	5	5	12	3	3	6	9	6	34	21	2	11	24	11	48	
9	9	0	13	0	52	10	3	19	5	30	6	5	12	3	49	4	6	58	7	23	21	0	12	19	6	
10	10	1	5	1	28	10	4	4	6	15	6	37	12	6	6	4	7	43	8	7	22	0	1	19	11	
11	11	1	51	2	13	10	4	4	7	0	7	23	12	6	49	7	12	8	29	8	50	2	1	23	14	19
12	12	2	33	2	54	9	11	10	10	7	45	8	7	6	9	12	9	32	21	6	2	6	2	26	19	7
13	13	3	14	3	35	9	7	1	9	28	8	52	11	7	33	7	56	12	11	1	1	3	28	3	49	
14	14	3	51	4	12	9	1	18	9	10	9	33	10	9	8	22	8	47	11	10	9	4	13	4	35	
15	15	4	34	4	57	8	7	17	7	56	10	19	9	11	9	19	9	54	11	2	17	8	5	3	5	36
16	16	5	24	5	58	8	2	16	7	10	47	11	21	9	10	31	11	9	10	8	16	2	6	12	6	49
17	17	6	31	6	6	8	8	0	8	45	9	23	15	10	31	11	9	10	8	16	2	6	12	6	49	
18	18	7	45	7	8	27	8	1	10	2	10	43	15	11	49	1	0	1	35	15	4	7	30	8	16	
19	19	8	9	8	9	40	8	5	11	23	15	11	15	1	26	1	0	2	50	15	3	8	47	9	20	
20	20	10	5	10	26	8	0	0	0	30	1	8	9	0	11	49	1	0	3	16	7	9	46	10	8	
21	21	10	48	11	13	8	11	16	0	57	3	45	4	1	1	26	1	31	4	59	17	7	9	46	10	8
22	22	11	33	11	50	9	1	17	4	31	4	52	10	10	2	14	2	35	12	6	18	6	10	29	10	51
23	23	0	7	0	7	9	4	18	0	5	8	5	24	11	3	28	3	45	13	4	19	7	11	44	12	0
24	24	0	24	0	43	9	7	18	6	5	5	5	55	11	4	0	4	17	13	8	20	1	0	16	18	7
25	25	1	0	1	19	9	8	18	11	6	6	11	6	9	4	30	4	47	13	11	6	8	0	33	0	51
26	26	1	35	1	52	9	9	19	1	7	7	2	11	10	5	2	5	19	14	0	8	10	1	5	1	21
27	27	2	7	2	22	9	8	20	1	18	7	33	11	9	6	5	36	5	52	13	7	7	1	87	1	53
28	28	2	39	2	56	9	6	21	6	7	51	8	9	11	7	6	10	6	29	13	9	2	2	12	2	29
29	29	3	15	3	3	32	9	3	8	8	8	49	11	2	7	6	51	7	11	13	5	3	2	48	3	7

Low Water Level of Ordinary Spring Tides.													
Morn	H.	M.	Even	H.	M.	Ft.	In.	Morn	H.	M.	Even	Hull Height.	
11	7	11	36	17	11			0	35	1	12	16	8
								1	49	2	25	16	11
								3	2	3	40	18	0
								4	15	4	47	19	4
								5	16	5	41	20	8
								6	9	6	34	21	2
								6	58	7	23	21	9
								7	43	8	7	22	4
								8	29	8	50	22	2
								9	12	9	32	21	6
								9	53	10	16	20	4
								10	36	10	59	19	1
								11	25	11	53	17	9

TIDE TABLES—MARCH, 1868.

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GREENOCK.				LONDON.				CORK.				Sunderland & Shields.				Hall & Bridport.				Southampton & Portsmouth.			
M	D	Height.		M	D	Height.		M	D	Height.		M	D	Height.		M	D	Height.		M	D	Height.	
		Even.	Morn.			Even.	Morn.			Even.	Morn.			Even.	Morn.			Even.	Morn.			Even.	Morn.
1	1	4 10	3 49	1	1	6 29	6 9	1	1	9 30	9 8	1	1	7 57	7 32	1	1	0 18	0 35	1	1	3 49	3 26
2	2	5 3	4 34	2	2	7 19	6 53	2	2	10 25	9 55	2	2	8 56	8 24	2	2	0 17	0 34	2	2	4 42	4 13
3	3	6 16	5 34	3	3	8 24	7 49	3	3	11 40	10 57	3	3	10 16	9 32	3	3	0 16	0 33	3	3	5 56	5 14
4	4	7 8	6 16	4	4	9 52	9 7	4	4	0 25	10 57	4	4	11 42	10 59	4	4	0 15	0 32	4	4	7 23	6 41
5	5	8 7	7 39	5	5	10 16	10 36	5	5	1 48	1 3	5	5	0 23	1 0	5	5	0 14	0 31	5	5	8 46	7 20
6	6	9 10	8 10	6	6	11 11	11 36	6	6	3 0	2 27	6	6	1 30	1 57	6	6	0 13	0 30	6	6	9 50	8 20
7	7	10 10	9 4	7	7	0 18	0 32	7	7	3 58	3 29	7	7	2 24	2 49	7	7	0 12	0 29	7	7	10 45	9 10
8	8	11 53	11 31	8	8	1 54	1 28	8	8	4 49	4 24	8	8	3 12	3 33	8	8	0 11	0 28	8	8	11 30	10 19
9	9	0 20	0 44	9	9	2 39	2 17	9	9	5 36	5 10	9	9	4 0	4 16	9	9	0 10	0 27	9	9	0 17	0 36
10	10	1 8	1 28	10	10	3 22	3 2	10	10	6 18	6 57	10	10	5 15	5 33	10	10	0 9	0 26	10	10	1 11	1 56
11	11	2 29	2 50	11	11	4 4	4 3	11	11	7 39	7 19	11	11	6 11	6 21	11	11	0 8	0 25	11	11	2 19	2 58
12	12	3 9	3 24	12	12	5 23	5 4	12	12	8 30	8 20	12	12	7 1	7 11	12	12	0 7	0 24	12	12	3 17	3 56
13	13	4 21	4 0	13	13	6 17	6 20	13	13	9 42	9 20	13	13	8 12	8 22	13	13	0 6	0 23	13	13	4 0	4 37
14	14	5 7	5 41	14	14	7 11	7 5	14	14	10 46	10 3	14	14	9 10	9 20	14	14	0 5	0 22	14	14	5 16	5 53
15	15	6 22	6 41	15	15	8 3	8 20	15	15	11 43	11 11	15	15	10 1	10 11	15	15	0 4	0 21	15	15	6 37	7 14
16	16	7 40	7 1	16	16	9 17	9 13	16	16	12 48	12 4	16	16	11 11	11 21	16	16	0 3	0 20	16	16	7 54	8 31
17	17	8 56	8 21	17	17	10 16	10 5	17	17	1 43	1 18	17	17	12 10	12 18	17	17	0 2	0 19	17	17	9 10	9 47
18	18	9 56	9 28	18	18	11 19	11 11	18	18	2 48	2 16	18	18	1 20	1 29	18	18	0 1	0 18	18	18	10 17	10 54
19	19	10 40	10 20	19	19	12 18	12 10	19	19	3 38	3 16	19	19	2 12	2 21	19	19	0 0	0 17	19	19	11 17	11 54
20	20	11 17	11 35	20	20	1 30	1 11	20	20	4 20	4 35	20	20	3 1	3 10	20	20	0 0	0 16	20	20	12 17	12 54
21	21	0 12	0 32	21	21	2 37	2 22	21	21	5 29	5 10	21	21	4 11	4 20	21	21	0 0	0 15	21	21	1 10	1 47
22	22	1 17	1 51	22	22	3 11	3 26	22	22	6 32	6 15	22	22	5 14	5 23	22	22	0 0	0 14	22	22	2 19	2 56
23	23	2 53	2 41	23	23	4 16	4 34	23	23	7 47	7 27	23	23	6 19	6 28	23	23	0 0	0 13	23	23	3 28	4 05
24	24	3 35	3 53	24	24	5 19	5 40	24	24	8 50	8 30	24	24	7 12	7 21	24	24	0 0	0 12	24	24	4 10	4 47
25	25	4 11	4 32	25	25	6 11	6 34	25	25	9 52	9 32	25	25	8 14	8 23	25	25	0 0	0 11	25	25	5 0	5 37
26	26	5 1	5 23	26	26	7 1	7 26	26	26	10 43	10 23	26	26	9 17	9 26	26	26	0 0	0 10	26	26	6 0	6 37
27	27	6 1	6 41	27	27	8 1	8 28	27	27	11 43	11 23	27	27	10 1	10 10	27	27	0 0	0 9	27	27	7 0	7 37
28	28	7 1	7 41	28	28	9 1	9 29	28	28	12 43	12 23	28	28	11 1	11 10	28	28	0 0	0 8	28	28	8 0	8 37
29	29	8 1	8 53	29	29	10 1	10 30	29	29	1 43	1 23	29	29	12 1	12 10	29	29	0 0	0 7	29	29	9 0	9 37
30	30	9 1	9 33	30	30	11 1	11 31	30	30	2 43	2 23	30	30	1 1	1 10	30	30	0 0	0 6	30	30	10 0	10 37
31	31	10 1	10 47	31	31	12 1	12 37	31	31	3 43	3 23	31	31	2 1	2 10	31	31	0 0	0 5	31	31	11 0	11 37

TIDE TABLE—APRIL, 1868.

GREENOCK			LONDON			CORK			Sunderland & Shields			Hull and Bridport.			Southampton & Portsmouth		
M	D	Height.	M	D	Height.	M	D	Height.	M	D	Height.	M	D	Height.	M	D	Height.
1	2	8 5	1	2	8 5	1	2	8 5	1	2	8 5	1	2	8 5	1	2	8 5
3	3	8 6	3	3	8 6	3	3	8 6	3	3	8 6	3	3	8 6	3	3	8 6
4	4	8 10	4	4	8 10	4	4	8 10	4	4	8 10	4	4	8 10	4	4	8 10
5	5	9 4	5	5	9 4	5	5	9 4	5	5	9 4	5	5	9 4	5	5	9 4
6	6	9 9	6	6	9 9	6	6	9 9	6	6	9 9	6	6	9 9	6	6	9 9
7	7	10 1	7	7	10 1	7	7	10 1	7	7	10 1	7	7	10 1	7	7	10 1
8	8	10 2	8	8	10 2	8	8	10 2	8	8	10 2	8	8	10 2	8	8	10 2
9	9	10 10	9	9	10 10	9	9	10 10	9	9	10 10	9	9	10 10	9	9	10 10
10	10	11 1	10	10	11 1	10	10	11 1	10	10	11 1	10	10	11 1	10	10	11 1
11	11	11 11	11	11	11 11	11	11	11 11	11	11	11 11	11	11	11 11	11	11	11 11
12	12	12 1	12	12	12 1	12	12	12 1	12	12	12 1	12	12	12 1	12	12	12 1
13	13	13 1	13	13	13 1	13	13	13 1	13	13	13 1	13	13	13 1	13	13	13 1
14	14	14 1	14	14	14 1	14	14	14 1	14	14	14 1	14	14	14 1	14	14	14 1
15	15	15 1	15	15	15 1	15	15	15 1	15	15	15 1	15	15	15 1	15	15	15 1
16	16	16 1	16	16	16 1	16	16	16 1	16	16	16 1	16	16	16 1	16	16	16 1
17	17	17 1	17	17	17 1	17	17	17 1	17	17	17 1	17	17	17 1	17	17	17 1
18	18	18 1	18	18	18 1	18	18	18 1	18	18	18 1	18	18	18 1	18	18	18 1
19	19	19 1	19	19	19 1	19	19	19 1	19	19	19 1	19	19	19 1	19	19	19 1
20	20	20 1	20	20	20 1	20	20	20 1	20	20	20 1	20	20	20 1	20	20	20 1
21	21	21 1	21	21	21 1	21	21	21 1	21	21	21 1	21	21	21 1	21	21	21 1
22	22	22 1	22	22	22 1	22	22	22 1	22	22	22 1	22	22	22 1	22	22	22 1
23	23	23 1	23	23	23 1	23	23	23 1	23	23	23 1	23	23	23 1	23	23	23 1
24	24	24 1	24	24	24 1	24	24	24 1	24	24	24 1	24	24	24 1	24	24	24 1
25	25	25 1	25	25	25 1	25	25	25 1	25	25	25 1	25	25	25 1	25	25	25 1
26	26	26 1	26	26	26 1	26	26	26 1	26	26	26 1	26	26	26 1	26	26	26 1
27	27	27 1	27	27	27 1	27	27	27 1	27	27	27 1	27	27	27 1	27	27	27 1
28	28	28 1	28	28	28 1	28	28	28 1	28	28	28 1	28	28	28 1	28	28	28 1
29	29	29 1	29	29	29 1	29	29	29 1	29	29	29 1	29	29	29 1	29	29	29 1
30	30	30 1	30	30	30 1	30	30	30 1	30	30	30 1	30	30	30 1	30	30	30 1

TIDE TABLES—MAY, 1868.

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GREENOCK				LONDON				CORK				Sunderland & Shields				Hull & Bridport				Southampton & Portsmouth					
M	D	Morn	Even	Height.	M	D	Morn	Even	Height.	M	D	Morn	Even	Height.	M	D	Morn	Even	Height.	M	D	Morn	Even	Height.	
		H. M.	H. M.	Ft. In.			H. M.	H. M.	Ft. In.			H. M.	H. M.	Ft. In.			H. M.	H. M.	Ft. In.			H. M.	H. M.	Ft. In.	
1	2	6 35	7 19	8 7	1	2	8 47	9 29	16 6	1	2	11 59	0 43	9 9	1	2	10 37	11 17	11 6	1	2	6 18	6 59	17 0	
3	4	7 58	8 35	8 11	3	4	10 10	10 49	16 8	3	4	0 43	1 57	10 5	3	4	11 53	0 25	12 0	3	4	7 36	8 12	17 6	
5	6	9 4	9 33	9 2	5	6	11 25	11 56	17 0	5	6	0 43	1 57	11 0	5	6	0 25	0 54	12 10	5	6	8 43	9 13	18 1	
7	8	10 0	10 25	9 6	7	8	0 49	1 13	18 5	7	8	1 57	2 53	11 6	7	8	1 21	1 45	13 7	7	8	9 39	10 5	18 7	
9	10	10 49	11 10	9 8	9	10	1 36	1 58	18 11	9	10	2 53	3 43	11 8	9	10	2 8	2 30	14 0	9	10	10 27	10 48	18 11	
11	12	11 33	11 54	9 9	11	12	2 18	2 38	19 3	11	12	4 28	5 12	11 11	11	12	2 53	3 12	14 3	11	12	11 10	11 30	19 1	
13	14	0 16	0 38	9 10	13	14	3 57	4 17	19 3	13	14	5 12	6 24	11 10	13	14	3 31	3 51	14 5	13	14	11 50	12 10	19 3	
15	16	0 56	1 13	9 9	15	16	5 22	5 41	17 6	15	16	6 24	7 1	10 9	15	16	4 45	5 4	14 4	15	16	0 9	0 28	19 2	
17	18	1 33	1 52	9 9	17	18	6 32	6 50	19 0	17	18	7 1	8 15	9 8	17	18	5 23	5 43	13 7	17	18	0 46	1 6	18 11	
19	20	2 28	2 46	9 1	19	20	7 44	8 15	19 3	19	20	8 15	9 0	9 8	19	20	6 2	6 21	12 11	19	20	1 24	1 43	18 7	
21	22	3 23	3 41	9 9	21	22	8 55	9 31	15 7	21	22	9 0	10 49	11 28	21	22	7 29	7 54	11 7	21	22	2 1	2 20	18 2	
23	24	4 27	4 45	8 8	23	24	10 5	10 38	15 8	23	24	10 49	11 28	11 8	23	24	8 20	8 51	11 0	23	24	3 39	4 17	7 1	
25	26	5 26	5 44	8 8	25	26	11 10	11 39	16 1	25	26	11 28	12 8	11 9	25	26	9 27	10 31	10 6	25	26	4 9	5 44	16 4	
27	28	6 38	6 56	8 2	27	28	12 11	12 40	16 3	27	28	12 8	1 0	11 10	27	28	10 38	11 10	7 7	27	28	6 20	6 53	16 4	
29	30	7 45	8 20	8 6	29	30	1 11	1 40	16 3	29	30	1 42	2 34	10 10	29	30	11 43	12 11	11 2	29	30	7 24	7 56	16 10	
31	32	8 48	9 14	8 9	31	32	2 11	2 40	16 3	31	32	2 39	3 28	10 3	31	32	0 10	0 38	11 11	31	32	8 25	8 52	17 4	
		9 37	10 0	9 1			3 0	3 29	16 3			3 39	4 28	10 3			1 4	1 25	12 7			9 16	9 38	17 11	
		10 22	10 45	9 3			4 0	4 29	16 3			4 39	5 28	10 3			1 45	2 7	13 5			10 2	10 25	18 6	
		11 6	11 27	9 9			5 0	5 29	16 3			5 49	6 38	11 11			2 27	2 46	13 11			10 46	11 5	18 10	
		11 46		9 9			6 0	6 29	16 3			6 49	7 38	12 2			3 5	3 24	14 2			11 24	11 45	19 0	
		0 10	0 35	9 11			7 0	7 29	16 3			7 49	8 38	12 2			4 27	4 49	14 8			0 29	0 51	19 4	
		0 58	1 18	9 11			8 0	8 29	16 3			8 49	9 38	12 2			5 12	5 36	14 5			1 15	1 38	19 3	
		1 42	2 5	9 9			9 0	9 29	16 3			9 49	10 38	12 2			6 0	6 27	13 11			2 2	2 25	18 10	
		2 28	2 52	9 7			10 0	10 29	16 3			10 49	11 38	12 2			6 54	7 22	13 3			2 52	3 17	18 4	
		3 17	3 40	9 3			11 0	11 29	16 3			11 49	12 38	12 2			7 53	8 27	12 6			3 48	4 18	17 10	
		4 7	4 37	8 11			12 0	12 29	16 3			12 49	1 38	13 0			9 5	9 45	11 11			4 52	5 27	17 4	
		5 12	5 47	8 8			1 1	1 30	16 3			1 41	2 30	13 9			10 21	10 53	11 9			6 1	6 32	17 3	
		6 21	6 51	8 7			2 1	2 30	16 3			2 41	3 30	13 9			11 24	11 58	12 0			7 6	7 39	17 4	
		7 28	8 4	8 10			3 1	3 30	16 3			3 41	4 30	13 9											

GREENOCK			LONDON			CORK			Sunderland and Shields.			Hull and Bridport			Southampton & Portsmouth		
M	D	Height.	M	D	Height.	M	D	Height.	M	D	Height.	M	D	Height.	M	D	Height.
Even			Even			Even			Even			Even			Even		
M. Ft. in.			M. Ft. in.			M. Ft. in.			M. Ft. in.			M. Ft. in.			M. Ft. in.		
Morn			Morn			Morn			Morn			Morn			Morn		
H. M.			H. M.			H. M.			H. M.			H. M.			H. M.		
1			1			1			1			1			1		
8	36	9	10	54	11	0	24	0	0	54	0	2	59	3	8	12	8
9	33	10	11	56	17	1	26	2	1	45	1	3	57	4	9	13	9
10	25	10	0	24	49	2	25	3	2	31	2	4	50	5	10	5	10
11	12	11	1	13	32	3	10	4	3	11	3	5	38	6	10	48	11
12	11	54	1	58	18	4	50	5	3	11	3	6	21	11	11	31	11
13	0	16	2	38	18	5	33	5	4	26	4	7	18	20	0	31	0
14	0	59	3	15	18	6	11	6	5	3	5	8	59	7	0	1	5
15	1	33	3	51	4	7	17	7	5	40	5	9	36	8	0	31	0
16	2	45	4	25	4	8	3	8	6	18	6	10	12	9	1	1	5
17	3	21	5	1	5	9	5	9	7	59	7	11	8	10	2	2	17
18	4	38	6	19	6	10	8	10	8	40	8	12	47	11	3	4	26
19	5	43	7	6	7	11	7	11	9	42	9	13	51	12	4	5	28
20	6	49	8	13	8	12	6	12	10	49	10	14	46	13	5	6	30
21	7	50	9	14	9	13	5	13	11	49	11	15	17	14	6	7	31
22	8	54	10	13	10	14	4	14	12	40	12	16	16	15	7	8	30
23	9	44	11	14	11	15	3	15	13	1	13	17	16	16	8	9	23
24	10	38	0	35	0	16	2	16	14	0	14	18	16	17	9	10	17
25	11	27	1	25	1	17	1	17	13	1	1	19	16	18	10	11	10
26	0	45	2	11	2	18	0	18	12	1	0	20	16	19	11	12	4
27	1	32	3	21	3	19	0	19	11	1	1	21	16	20	12	13	1
28	2	22	4	31	4	20	0	20	10	1	1	22	16	21	13	14	4
29	3	14	5	41	5	21	0	21	9	1	1	23	16	22	14	15	8
30	4	1	6	51	6	22	0	22	8	1	1	24	16	23	15	16	2
	5	55	7	61	7	23	0	23	7	1	1	25	16	24	16	17	4
	6	55	8	71	8	24	0	24	6	1	1	26	16	25	17	18	7
	7	8	1	81	9	25	0	25	5	1	1	27	16	26	18	19	11
	8	1	2	91	10	26	0	26	4	1	1	28	16	27	19	20	17
	9	1	3	101	11	27	0	27	3	1	1	29	16	28	20	21	24
	10	1	4	111	12	28	0	28	2	1	1	30	16	29	21	22	40
	11	1	5	121	13	29	0	29	1	1	1	31	16	30	22	23	
	12	1	6	131	14	30	0	30	0	1	1	32	16	31	23	24	
	13	1	7	141	15	31	0	31	0	1	1	33	16	32	24	25	
	14	1	8	151	16	32	0	32	0	1	1	34	16	33	25	26	
	15	1	9	161	17	33	0	33	0	1	1	35	16	34	26	27	
	16	1	10	171	18	34	0	34	0	1	1	36	16	35	27	28	
	17	1	11	181	19	35	0	35	0	1	1	37	16	36	28	29	
	18	1	12	191	20	36	0	36	0	1	1	38	16	37	29	30	
	19	1	13	201	21	37	0	37	0	1	1	39	16	38	30		
	20	1	14	211	22	38	0	38	0	1	1	40	16	39			
	21	1	15	221	23	39	0	39	0	1	1	41	16	40			
	22	1	16	231	24	40	0	40	0	1	1	42	16	41			
	23	1	17	241	25	41	0	41	0	1	1	43	16	42			
	24	1	18	251	26	42	0	42	0	1	1	44	16	43			
	25	1	19	261	27	43	0	43	0	1	1	45	16	44			
	26	1	20	271	28	44	0	44	0	1	1	46	16	45			
	27	1	21	281	29	45	0	45	0	1	1	47	16	46			
	28	1	22	291	30	46	0	46	0	1	1	48	16	47			
	29	1	23	301		47	0	47	0	1	1	49	16	48			
	30	1	24	311		48	0	48	0	1	1	50	16	49			

TIDE TABLES, — JULY, 1868.

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M	D	GREENOCK			LONDON			CORK			Sunderland and Shields			Hull and Bridport.			Southampton & Portsmouth		
		Morn	Even	Height.	Morn	Even	Height.	Morn	Even	Height.	Morn	Even	Height.	Morn	Even	Height.	Morn	Even	Height.
		H. M.	H. M.	Ft In	H. M.	H. M.	Ft In	H. M.	H. M.	Ft In	H. M.	H. M.	Ft In	H. M.	H. M.	Ft In	H. M.	H. M.	Ft In
1	1	9 5	9 34	8 11	11 26	11 56	16 8	1 55	2 25	10 5	0 26	0 56	12 5	3 27	3 58	18 4	8 44	9 14	17 9
2	2	10 0	10 25	9 0	0 51	0 26	17 0	2 54	3 19	10 8	1 23	1 47	12 9	4 26	4 51	18 10	9 41	10 7	18 0
3	3	10 50	11 13	9 1	1 39	1 15	17 5	3 43	4 8	10 10	2 10	2 33	13 0	5 15	5 39	19 2	10 29	10 52	18 2
4	4	11 36	11 57	9 2	2 21	2 40	18 0	4 31	4 53	10 11	2 56	3 15	13 2	6 3	6 22	19 4	11 14	11 53	18 3
5	5	0 36	0 17	9 3	3 58	3 16	18 1	5 15	5 34	11 0	3 33	3 52	13 3	6 41	7 1	19 6	11 51	0 30	18 4
6	6	1 18	1 33	9 4	4 42	4 25	18 2	6 28	6 43	11 1	4 47	5 4	13 4	7 19	7 36	19 7	0 9	0 30	18 5
7	7	1 51	2 8	9 5	5 16	5 35	18 3	7 0	7 18	11 2	5 21	5 39	13 5	7 56	8 7	19 8	0 50	1 6	18 6
8	8	2 23	2 42	9 6	6 4	6 23	18 4	7 34	7 54	10 10	6 56	6 15	14 0	8 25	8 44	19 9	1 22	1 39	18 7
9	9	3 0	3 16	9 7	7 16	7 35	18 5	8 13	8 30	10 11	7 36	6 55	14 1	9 2	9 22	19 10	1 56	2 14	18 8
10	10	3 35	3 53	9 8	8 53	8 14	18 6	8 51	9 11	10 4	8 17	7 39	14 2	9 44	10 3	18 11	2 33	2 51	17 11
11	11	4 12	4 35	9 9	9 35	9 56	18 7	9 32	9 56	10 0	8 52	8 26	14 3	10 23	10 44	18 12	3 10	3 31	17 12
12	12	4 58	5 25	9 10	10 26	10 47	18 8	10 20	10 47	9 5	9 55	9 21	14 4	11 4	11 31	17 13	3 50	4 15	17 13
13	13	5 39	6 32	9 11	11 32	11 53	18 9	11 23	11 56	9 5	10 58	10 31	14 5	11 58	12 17	17 14	4 38	5 7	17 14
14	14	6 7	7 34	9 12	12 4	12 25	18 10	0 58	1 26	10 3	11 3	11 32	15 0	0 29	1 216	17 15	5 39	6 12	16 10
15	15	7 0	8 37	9 13	13 32	13 53	18 11	2 1	2 32	10 10	0 33	1 312	15 1	1 36	2 516	17 16	6 43	7 14	16 11
16	16	8 3	9 42	9 14	14 4	14 25	18 12	3 3	3 30	11 5	1 31	1 54	13 2	2 33	3 417	17 17	7 44	8 18	17 4
17	17	9 12	9 42	9 15	15 11	15 2	18 13	4 4	4 25	11 9	2 22	2 49	14 3	3 35	4 59	17 18	8 52	9 23	17 11
18	18	10 11	10 39	9 16	16 0	16 13	18 14	5 5	5 18	12 2	3 12	3 37	14 4	4 35	5 56	17 19	9 52	10 21	18 6
19	19	11 7	11 31	9 17	17 11	17 2	18 15	6 6	6 10	12 6	4 4	4 27	14 5	5 28	6 45	17 20	10 46	11 9	18 11
20	20	0 31	0 59	10 1	18 4	18 13	18 16	7 7	7 18	12 7	5 5	5 15	15 0	6 19	6 45	17 21	11 37	19 3	18 19
21	21	1 22	1 45	10 2	19 0	19 1	18 17	8 8	8 32	11 11	6 30	6 57	15 1	7 13	7 37	17 22	0 4	0 30	19 6
22	22	2 8	2 30	10 3	20 5	20 2	18 18	9 9	9 24	11 4	7 22	7 47	15 2	8 1	8 23	17 23	0 55	1 17	19 7
23	23	2 55	3 18	9 4	21 4	21 3	18 19	10 10	10 41	11 5	8 30	8 57	15 3	8 47	9 11	17 24	1 40	2 3	19 6
24	24	3 42	4 4	9 5	22 7	22 6	18 20	11 11	11 45	11 6	9 10	9 43	15 4	9 36	10 220	17 25	2 28	2 52	19 0
25	25	4 40	4 55	8 11	23 6	23 5	18 21	12 12	12 41	11 10	10 20	10 53	15 5	10 26	10 50	17 26	3 18	3 41	18 6
26	26	5 19	5 47	8 7	24 10	24 9	18 22	13 13	13 48	12 7	11 18	11 46	16 0	11 18	11 46	17 27	4 7	4 31	17 11
27	27	6 21	6 54	8 4	25 8	25 7	18 23	14 14	14 45	12 10	12 28	12 53	16 1	0 50	1 28	16 28	4 57	5 27	17 4
28	28	7 27	8 4	8 5	26 11	26 10	18 24	15 15	15 45	12 11	13 11	13 31	16 2	2 1	2 32	16 29	6 1	6 35	16 11
29	29	8 40	9 12	8 7	27 5	27 4	18 25	16 16	16 45	12 12	14 11	14 31	16 3	3 4	3 37	17 30	7 7	7 43	16 10
30	30	9 41	10 7	8 10	28 10	28 9	18 26	17 17	17 45	12 13	15 1	15 28	16 4	4 10	4 38	17 31	8 19	8 52	17 2
31	31				29 1	29 0	18 27	18 18	18 45	12 14	16 7	16 34	16 5				9 21	9 48	17 6

TIDE TABLES—AUGUST, 1868.

M	D	GREENOCK			LONDON			CORK			Sunderland and Shields			Hull and Bridport			Southampton & Portsmouth		
		Morn	Even	Height.	Morn	Even	Height.	Morn	Even	Height.	Morn	Even	Height.	Morn	Even	Height.	Morn	Even	Height.
		H	M	Ft. in	H	M	Ft. in	H	M	Ft. in	H	M	Ft. in	H	M	Ft. in	H	M	Ft. in
1	1	10 33	10 57	8 11	0 33	0 58	16 9	3 26	3 53	10 6	1 56	2 20	12 7	5 1	5 25	18 7	10 13	10 36	17 10
2	2	11 16	11 37	9 0	1 23	1 45	17 3	4 15	4 34	10 8	2 43	3 5	12 11	5 50	6 13	19 0	10 56	11 15	18 1
3	3	11 58		9 2	2 4	2 23	17 8	4 55	5 16	10 11	3 22	3 40	13 1	6 30	6 49	19 4	11 35	11 55	18 3
4	4	0 19	0 38	9 4	2 42	3 0	18 1	5 36	5 52	11 2	3 57	4 9	13 4	7 5	7 18	19 7		0 11	18 5
5	5	0 56	1 11	9 5	3 16	3 32	18 4	6 8	6 21	11 3	4 24	4 41	13 6	7 34	7 51	19 10	0 27	0 44	18 6
6	6	1 28	1 44	9 5	3 47	4 3	18 6	6 37	6 53	11 4	4 58	5 15	13 7	8 7	8 23	19 11	1 0	1 17	18 7
7	7	2 1	2 15	9 4	4 19	4 35	18 5	7 11	7 25	11 3	5 31	5 47	13 6	8 38	8 55	19 10	1 33	1 47	18 7
8	8	2 32	2 49	9 3	4 50	5 6	18 3	7 44	8 1	11 1	6 6	6 22	13 4	9 10	9 28	19 6	2 4	2 22	18 4
9	9	3 10	3 26	9 1	5 24	5 42	17 11	8 23	8 40	10 10	6 42	7 1	12 10	9 47	10 5	18 11	2 40	3 0	18 1
10	10	3 42	4 2	8 11	6 0	6 19	17 8	9 0	9 22	10 6	7 21	7 44	12 4	10 25	10 47	18 3	3 18	3 40	17 8
11	11	4 21	4 45	8 8	6 41	7 3	17 3	9 42	10 7	10 9	8 7	8 35	11 5	11 9	11 38	17 7	3 59	4 26	17 4
12	12	5 9	5 41	8 5	7 30	7 57	16 9	10 31	11 5	9 5	9 4	9 39	11 0		0	8 16	4 51	5 23	17 0
13	13	6 17	6 44	8 4	8 31	9 8	16 6	11 41		9 10	10 17	10 55	11 0	0 48	1 25	16 6	5 58	6 35	16 9
14	14	7 39	8 12	8 7	9 47	10 27	16 1	0 19	1 34	11 3	11 34		11 6	1 57	2 35	17 1	7 15	7 52	17 1
15	15	8 48	9 23	8 9	0 45	1 13	18 2	1 34	2 3	14 11	0 11	0 45	12 4	3 11	3 46	18 3	8 28	9 2	17 8
16	16	9 55	10 24	9 8	1 40	2 5	19 3	2 43	3 14	11 5	1 15	1 44	13 4	4 17	4 47	19 6	9 35	10 4	18 4
17	17	10 53	11 19	9 9	2 31	3 41	20 0	3 42	4 11	11 9	2 9	2 35	14 0	5 13	5 40	20 9	10 31	10 56	18 11
18	18	11 47		10 0	3 17	4 24	20 1	4 37	5 5	12 4	3 0	3 25	14 6	6 6	6 32	21 3	11 22	11 48	19 3
19	19	0 15	0 40	10 3	4 0	5 19	20 3	5 32	5 54	12 9	3 49	4 10	15 2	6 57	7 19	22 0	0 10	10 19	8 8
20	20	1 5	1 26	10 1	4 2	5 20	20 1	6 15	6 36	12 5	4 33	4 56	15 2	7 43	8 6	22 1	0 35	0 58	19 9
21	21	1 49	2 12	9 11	4 4	5 8	19 8	6 58	7 22	12 3	5 19	5 43	15 0	8 28	8 51	21 10	1 22	1 45	19 7
22	22	2 32	2 54	9 10	4 47	5 19	11	7 43	8 7	12 1	6 5	6 29	14 6	9 12	9 35	21 3	2 6	2 28	19 3
23	23	3 17	3 38	9 5	5 30	5 53	18 11	8 31	8 54	11 5	7 40	8 16	13 9	9 58	10 19	20 2	2 51	3 12	18 8
24	24	3 58	4 17	9 0	6 14	6 37	18 2	9 18	9 37	10 7	8 30	8 59	11 10	10 44	11 6	18 10	3 34	3 56	18 0
25	25	4 41	5 8	8 6	6 59	7 25	17 5	10 2	10 30	9 9	9 33	10 12	10 11	11 35		17 6	4 20	4 47	17 3
26	26	5 36	6 12	8 2	7 53	8 26	16 5	10 59	11 36	9 1	10 53	11 31	10 6	0 6	0 41	16 4	5 18	5 54	16 8
27	27	6 52	7 29	8 1	9 4	9 44	15 9		0 17	8 11		0 10	10 11	1 18	1 56	15 10	6 34	7 11	16 4
28	28	8 9	8 49	8 4	10 23	11 3	15 8		1 32	9 10		1 13	11 6	2 32	3 10	16 3	7 51	8 27	16 7
29	29	9 19	9 47	8 7	11 41		15 3		2 39	9 10		2 0	12 3	3 47	4 16	17 2	8 58	9 27	17 1
30	30	10 11	10 33	8 10	0 12	0 39	16 3		3 30	10 4		3 8	12 9	4 42	5 5	18 1	9 52	10 15	17 7
31	31	11 0	11 16	9 0	1 2	1 24	17 0		4 19	10 7		4 20	13 9	5 26	5 47	18 10	10 38	10 55	18 31

Datum. Sill of North Dock Gates.

Low Water Levels of Ordinary Spring Tides.

Low Water Levels of Ordinary Spring Tides.

Calculated from the Mean Level of Low Water Spring Tides.

Calculated from the Mean Level of Low Water Spring Tides.

Calculated from the Mean Level of Low Water Spring Tides.

GREENOCK										LONDON										CORK										Sunderland and Shields.										Hull and Bridport										Southampton & Portsmouth																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
M		D		Height.		Morn		Even		Height.		Morn		Even		Height.		Morn		Even		Height.		Morn		Even		Height.		Morn		Even		Height.		Morn		Even		Height.		Morn		Even		Height.		Morn		Even		Height.		Morn		Even		Height.		Morn		Even		Height.		Morn		Even		Height.		Morn		Even		Height.		Morn		Even		Height.		Morn		Even		Height.		Morn		Even		Height.		Morn		Even		Height.		Morn		Even		Height.		Morn		Even		Height.		Morn		Even		Height.		Morn		Even		Height.		Morn		Even		Height.		Morn		Even		Height.		Morn		Even		Height.		Morn		Even		Height.		Morn		Even		Height.		Morn		Even		Height.		Morn		Even		Height.		Morn		Even		Height.		Morn		Even		Height.		Morn		Even		Height.		Morn		Even		Height.		Morn		Even		Height.		Morn		Even		Height.		Morn		Even		Height.		Morn		Even		Height.		Morn		Even		Height.		Morn		Even		Height.		Morn		Even		Height.		Morn		Even		Height.		Morn		Even		Height.		Morn		Even		Height.		Morn		Even		Height.		Morn		Even		Height.		Morn		Even		Height.		Morn		Even		Height.		Morn		Even		Height.		Morn		Even		Height.		Morn		Even		Height.		Morn		Even		Height.		Morn		Even		Height.		Morn		Even		Height.		Morn		Even		Height.		Morn		Even		Height.		Morn		Even		Height.		Morn		Even		Height.		Morn		Even		Height.		Morn		Even		Height.		Morn		Even		Height.		Morn		Even		Height.		Morn		Even		Height.		Morn		Even		Height.		Morn		Even		Height.		Morn		Even		Height.		Morn		Even		Height.		Morn		Even		Height.		Morn		Even		Height.		Morn		Even		Height.		Morn		Even		Height.		Morn		Even		Height.		Morn		Even		Height.		Morn		Even		Height.		Morn		Even		Height.		Morn		Even		Height.		Morn		Even		Height.		Morn		Even		Height.		Morn		Even		Height.		Morn		Even		Height.		Morn		Even		Height.		Morn		Even		Height.		Morn		Even		Height.		Morn		Even		Height.		Morn		Even		Height.		Morn		Even		Height.		Morn		Even		Height.		Morn		Even		Height.		Morn		Even		Height.		Morn		Even		Height.		Morn		Even		Height.		Morn		Even		Height.		Morn		Even		Height.		Morn		Even		Height.		Morn		Even		Height.		Morn		Even		Height.		Morn		Even		Height.		Morn		Even		Height.		Morn		Even		Height.		Morn		Even		Height.		Morn		Even		Height.		Morn		Even		Height.		Morn		Even		Height.		Morn		Even		Height.		Morn		Even		Height.		Morn		Even		Height.		Morn		Even		Height.		Morn		Even		Height.		Morn		Even		Height.		Morn		Even		Height.		Morn		Even		Height.		Morn		Even		Height.		Morn		Even		Height.		Morn		Even		Height.		Morn		Even		Height.		Morn		Even		Height.		Morn		Even		Height.		Morn		Even		Height.		Morn		Even		Height.		Morn		Even		Height.		Morn		Even		Height.		Morn		Even		Height.		Morn		Even		Height.		Morn		Even		Height.		Morn		Even		Height.		Morn		Even		Height.		Morn		Even		Height.		Morn		Even		Height.		Morn		Even		Height.		Morn		Even		Height.		Morn		Even		Height.		Morn		Even		Height.		Morn		Even		Height.		Morn		Even		Height.		Morn		Even		Height.		Morn		Even		Height.</	

GREENOCK

LONDON

CORK

Sunderland and Shields.

Hull and Bridport.

Portsmouth & Southampton

M	D	Morn	Even	Height.	M	D	Morn	Even	Height.	M	D	Morn	Even	SunInd.	Height.	M	D	Morn	Even	Hull	Height.	M	D	Morn	Even	Portsmouth.	Height.			
		H.	M.	Ft.	In.			H.	M.	Ft.	In.			H.	M.	Ft.	In.			H.	M.	Ft.	In.			H.	M.	Ft.	In.	
1	1	11	37	11	55	9	6	2	6	18	3	4	38	4	56	11	5	3	0	3	14	13	7	6	7	6	22	20	0	
2	2	0	14	9	8	2	38	18	9	1	9	5	13	5	31	11	9	3	31	3	48	13	10	6	40	6	57	20	5	
3	3	0	31	0	48	9	9	3	10	19	1	5	46	5	58	11	11	4	3	4	16	14	1	7	13	7	26	20	9	
4	4	1	5	1	21	9	9	3	39	19	2	6	14	6	30	11	11	4	33	4	52	14	2	7	42	8	120	10	10	
5	5	1	38	1	55	9	8	4	13	19	1	5	47	7	5	11	9	5	9	5	26	14	0	8	17	8	33	20	8	
6	6	2	11	2	30	9	9	4	48	18	9	5	45	5	4	13	8	5	45	6	4	13	8	8	51	9	9	20	1	
7	7	2	49	3	9	9	2	5	25	18	2	8	2	8	23	11	0	6	26	6	49	13	0	9	30	9	53	19	3	
8	8	3	28	3	51	8	10	6	10	17	6	8	43	9	9	10	4	7	13	7	40	12	4	10	16	10	44	18	3	
9	9	4	18	4	46	8	8	7	6	16	10	9	38	10	6	9	9	8	11	8	45	11	7	11	15	11	50	17	3	
10	10	5	25	6	6	8	4	8	17	16	4	10	47	11	29	9	4	9	26	10	11	11	1	1	16	0	33	16	6	
11	11	6	57	7	42	8	6	9	49	16	1	1	6	0	21	9	9	10	55	11	37	11	3	1	16	1	57	16	9	
12	12	8	23	8	57	9	0	10	13	16	5	1	6	1	46	10	8	0	45	0	13	12	3	2	38	3	14	18	1	
13	13	9	25	9	54	9	6	11	47	17	3	2	19	2	46	11	5	1	38	1	12	13	4	3	47	4	16	19	7	
14	14	10	21	10	45	9	10	0	15	0	4	3	14	3	40	12	1	2	24	2	2	14	2	4	42	5	7	20	10	
15	15	11	8	11	31	10	0	1	7	42	18	4	4	4	26	12	4	3	9	3	28	15	11	5	30	5	53	21	8	
16	16	11	53	11	33	10	2	2	14	19	11	4	49	5	10	12	7	3	50	4	11	15	5	6	17	6	36	22	0	
17	17	0	16	0	42	10	2	0	42	20	3	5	32	5	56	12	7	3	30	3	50	4	11	5	6	59	7	21	22	3
18	18	1	2	1	20	10	1	3	18	3		6	12	6	29	12	6	4	30	4	51	15	1	7	40	8	0	21	11	
19	19	1	41	1	48	9	10	3	56	4	16	19	7	8	11	11	3	5	12	5	31	14	6	8	20	8	39	21	3	
20	20	2	17	2	34	9	4	4	34	4	53	18	10	7	48	11	3	5	50	6	11	13	9	8	57	9	17	20	2	
21	21	2	54	3	14	8	11	5	12	5	33	17	9	8	6	28	10	6	34	6	56	12	10	9	39	10	0	18	11	
22	22	3	36	3	56	8	6	5	54	6	17	17	1	9	23	9	9	7	20	7	46	11	10	10	23	10	49	17	6	
23	23	4	19	4	50	8	2	6	41	7	6	16	5	9	10	11	9	8	13	8	48	10	11	11	17	11	51	16	3	
24	24	5	25	6	6	7	11	7	38	8	17	15	7	11	29	8	8	9	26	10	5	10	4	0	34	5	9	48	16	2
25	25	6	45	7	28	8	0	8	58	9	39	15	3	0	9	8	10	10	46	11	23	10	4	1	14	6	27	7	16	2
26	26	8	1	8	35	8	5	10	18	10	54	15	4	1	23	9	6	0	29	0	55	11	10	2	25	2	57	16	4	
27	27	9	4	9	29	8	7	11	11	57	15	10	2	0	25	10	1	1	18	1	35	12	7	3	31	3	58	17	6	
28	28	9	48	10	7	9	0	0	39	0	21	16	7	0	21	10	8	1	53	2	11	13	2	4	22	4	40	18	7	
29	29	10	30	10	46	9	4	0	39	0	58	17	4	3	25	3	48	1	1	18	1	35	12	7	4	58	5	17	19	5
30	30	11	5	11	23	9	6	1	17	1	33	18	1	4	4	23	11	2	2	28	2	44	13	10	5	34	5	50	20	3
31	31	11	39	11	59	9	8	1	50	2	7	18	8	4	4	57	11	3	3	1	3	17	14	0	6	8	6	26	20	6

TIDE TABLES—NOVEMBER, 1868.

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M	D	GREENOCK				LONDON				CORK	Sunderland and Shields				Hull and Bridport				Southampton & Portsmouth			
		Morn	Even	Height.		Morn	Even	Height.			Morn	Even	Height.		Morn	Even	Height.		Morn	Even	Height.	
		H. M.	H. M.	Ft. in		H. M.	H. M.	Ft. in			H. M.	H. M.	Ft. in		H. M.	H. M.	Ft. in		H. M.	H. M.	Ft. in	
1	2	0 36	0 57	9 10	Calculated from the Mean Level of Low Water Spring Tides.	2 24	2 40	19 1			3 33	3 49	14 1		6 43	6 58	20 9		11 51	0 29	19 2	
3	4	1 15	1 34	9 9		3 32	3 51	19 3			4 46	5 4	14 3		7 16	7 36	21 0		0 9	1 6	19 1	
5	6	2 34	2 54	9 4		4 48	5 10	18 5			5 25	5 45	13 10		8 33	8 53	20 4		1 25	1 46	18 10	
7	8	3 17	3 39	9 0		5 32	5 58	17 2			6 8	6 33	13 3		9 14	9 38	19 6		2 8	2 30	18 4	
9	10	4 8	4 39	8 7		6 24	6 55	17 9			7 0	7 27	12 6		10 4	10 30	18 7		2 56	3 20	17 10	
11	12	5 16	5 28	8 5		7 28	8 16	16 8			7 59	8 35	11 11		11 2	11 40	17 8		3 51	4 22	17 4	
13	14	6 41	7 28	8 7		8 52	9 34	16 5			9 17	9 59	11 4		1 5	0 24	16 11		5 0	5 41	16 11	
15	16	8 1	8 41	9 0		10 15	10 53	16 7			10 41	11 20	11 5		2 23	2 59	18 1		6 23	7 2	17 0	
17	18	9 5	9 38	9 4		11 29	11 57	17 3			11 57	0 55	13 1		3 29	3 56	19 4		7 38	8 16	17 7	
19	20	10 49	11 22	9 8		0 49	1 12	18 1			0 28	0 55	13 1		4 23	4 50	20 5		8 44	9 12	18 3	
21	22	11 47	0 23	9 11		1 33	1 55	19 2			1 20	1 45	13 11		5 13	5 35	21 1		9 40	10 5	18 10	
23	24	0 38	0 58	9 10		2 16	2 35	19 5			2 7	2 28	14 5		6 36	6 58	21 4		10 26	10 48	19 2	
25	26	1 18	1 37	9 8		3 34	3 53	19 1			3 28	3 49	14 7		7 18	7 38	21 2		11 9	11 28	19 4	
27	28	1 56	2 15	9 4		4 11	4 30	18 7			4 47	5 6	14 1		8 33	8 52	19 11		11 48	19 4	15 19	
29	30	2 33	2 49	9 0		5 28	5 49	17 10			5 26	5 46	13 6		9 12	9 34	18 10		0 12	0 32	19 3	
		3 48	4 10	8 8		6 11	6 34	16 7			6 6	6 29	12 9		10 41	11 6	16 10		0 51	1 9	19 0	
		4 37	5 10	8 1		7 28	7 51	15 5			6 51	7 14	12 0		11 39	11 16	15 8		1 28	1 47	18 7	
		5 46	6 24	8 0		8 17	8 40	15 7			7 38	8 3	11 4		0 15	0 55	15 8		2 6	2 25	18 0	
		6 54	7 32	8 8		9 17	9 51	15 3			8 35	9 10	10 9		1 30	2 2	16 0		3 29	3 53	16 11	
		8 5	8 34	8 2		10 25	10 57	15 9			9 49	10 25	10 5		2 33	3 1	16 11		4 21	4 54	16 6	
		9 1	9 27	8 10		11 26	11 52	16 3			10 58	11 30	10 8		3 27	3 53	17 11		5 30	6 7	16 3	
		9 47	10 8	9 2		0 38	0 57	17 8			0 25	0 50	12 1		4 18	4 39	18 10		6 39	7 11	16 5	
		10 30	10 50	9 5		1 17	1 37	18 3			1 14	1 35	12 9		5 58	5 18	19 9		7 42	8 13	16 11	
		11 11	11 32	9 6		2 57	3 17	18 9			2 31	2 51	13 10		6 18	6 37	20 8		8 41	9 8	17 6	
		11 53		9 9		4 50	5 11	11 10			3 10	3 29	14 0						9 26	9 47	18 0	

TIDE TABLES—DECEMBER, 1868.

[illegible]

Descriptive List of Principal Lights—Scotch Coast

Name of Light.	Situation.	No. of Light.	Appearance.	Distance visible.	Points of Compass within which visible.	North latitude.	West longitude.
INCHKEITH	Summit of Island, Fifehire ..	One	Revolving once every minute ..	—21—	All round the compass	56° 2'	3° 8'
ISLE OF MAY	Isle of May, in Fifehire	Two	Fixed. Bear from each other NN E & SSW $\frac{1}{2}$ W. 250 yards ..	21 & 15	All round compass. The low light only towards the car	56 11 2	33
BELL ROCK	A sunk reef 11 $\frac{1}{2}$ miles S. by E $\frac{1}{2}$ E. off Arbroath, Forfarshire ..	One	Revolving, showing alternately a bright & red light every 2 min.	—15—	All round the compass	56 26 2	23
GIRDLENESS	Girdleness, Kincardineshire..	Two	Fixed lights, one above the other	19 & 16	NNE to WSW $\frac{1}{2}$ W by E'ward	57 8 2	3
BUCHANNESS	Buchanness, Aberdeenshire..	One	Flashing once every 5 seconds ..	—16—	N by E to SW by W by E'ward	57 21 1	46
KINNAIRDHEAD	Kinnairdhead, Aberdeenshire ..	One	Fixed	—15—	White to NNW $\frac{1}{2}$ W. Red N.	57 42 2	1
TARBETNESS	Tarbetness, Cromartyshire ..	One	Visible 2 $\frac{1}{2}$ min., then eclipsed $\frac{1}{2}$ a min. To W. of the Ness Fixed	—18—	All round the compass	57 51 3	48
DUNNETHEAD	On the Head, Caithnesshire ..	One	Fixed	—23—	From SE $\frac{1}{2}$ E to W by N'ward	58 40 3	22
PENTLAND SKERRIES	On the Island	Two	Fixed NNE and SSW., 100 feet..	18 & 16	All round the compass	58 41 2	55
START POINT	East point of Sanda Island ..	One	Fixed	—15—	All round the compass	59 17 2	22
SUMBURGHHEAD	On S.W. point of Shetlands..	One	Fixed	—21—	NE by E to NW by N $\frac{1}{2}$ N by S	59 51 1	16
NORTH RONALDSHAY	On north point.. .. .	One	Flashing once every 10 seconds ..	—18—	All round the compass	59 23 2	24
CAPE WRATH	On the Cape, N.W. point of Scotland	One	Revolving, showing alternately a bright & red light every 2 min.	—23—	From S $\frac{1}{2}$ E to S W by W Northerly	58 37 5	0
ISLAND GLASS	E. point of Island, Harris Isle ..	One	Fixed	—17—	W by S to E N E $\frac{1}{2}$ E by S	57 52 6	33
BARRAHEAD	Highest point on Bernera Isle ..	One	Intermittent, continuing in view 2 $\frac{1}{2}$ min., then eclipsed $\frac{1}{2}$ a min.	—33—	From N by E to E N E westerly and southerly	56 48 7	38
ARDNAMURCHAN	southern point of Hebrides ..	One	Fixed	—18—	From N E by E $\frac{1}{2}$ E to S W S north'y and west'y	56 44 6	13
LISMORE	Ardnamurchan point, Argyle-shire	One	Fixed	—15—	From E to N E by E	56 27 5	36
CRINAN CANAL	Monsdale Island	One	Fixed, dark 2 $\frac{1}{2}$ point over land	—4—	All round the compass	56 5 5	33
RHINS OF ISLAY	East side	One	Flashing once every 5 seconds; disappears $\frac{1}{2}$ a mile off Cul point	—17—	From NNE to SE westerly	55 41 6	29
MULL OF CANTYRE.. .. .	Of Islay, Argyleshire	One	Fixed	—22—	From N N E $\frac{1}{2}$ E to S by W $\frac{1}{2}$ W westerly	55 19 5	49
SANDA ISLAND	South-western headland of Cantyre	One	Fixed, red light	—17—	NW $\frac{1}{2}$ W to SE by E $\frac{1}{2}$ E by SW'y	54 16 5	35
DEVAR ISLAND	Ship Rock	One	Revolves every half minute ..	—15—	N $\frac{1}{2}$ W to E by S by N	55 26 5	32
PLADDA	Eastern part	Two	Fixed, vertical N. and S. 8 yards apart	14 & 17	From S E by E N'y to S W by W	55 26 5	7
CORSEWALL	Pladda Isle, off south east of Arran, county of Bute ..	One	Revolving, showing alternately a bright & red light every 2 min.	—15—	From N E by E Northerly to S W	55 0 5	6
MULL OF GALLOWAY	W. side of entrance to Loch Ryan, in Wigtonshire ..	One	Intermittent, continuing in view 2 $\frac{1}{2}$ min, then eclipsed half a min	—23—	From N E to N W $\frac{1}{2}$ W	54 38 4	51
	Southern extremity of mainland of Scotland, Wigton-shire.						

Descriptive List of Lights—Isle of Man

Name of Light.	Situation.	Latitude North.	Longitude West.	No. of Lights.	Fixed or Revolving.	Miles visible in clear weather.	Remarks.
POINT OF AYR	A quarter of a mile SW of the Point	54 25	4 22	One	R	—15—	Shewing alternately a bright and red light every 2 min. Visible from S by W N E'y to W by N
Peel Harbour	On Pier and Breakwater	54 13	4 42	Two	F	—8—	Pier Head Light Red, Breakwater White
CALF OF MAN	West side of Calf Island	54 3	4 50	Two	R	24&22	Revolving every 2 min. When in one they lead on [the Chicken Rocks.
Port St. Mary	Pier Head	54 4	4 44	One	F	—9—	To be kept on the port hand on entering.
Castletown Harbour	New Pier Head	54 5	4 39	One	F	—8—	Also a light on Fort Island during herring fishing.
Derbyhaven	Entrance of the harbour	54 5	4 36	One	F	—2—	Not visible from Langness Point, but with 3 miles
DOUGLAS	Douglas Head	54 9	4 28	One	F	—14—	offing it will be seen N.E ½ E; and the Calf Light at the same time N N by W ½ W.
Douglas Harbour	North Pier Head	54 10	4 28	Two	F	—6—	Bright and Red. Sight Red Right to clear Break-
Ramsey Harbour	South side entrance	54 20	4 23	One	F	4 or 5	Red Light. (water works.
Bahama Bank Light Vessel	A mile of the S.E. tail of the Shoal. Moored in Eleven fathoms.	54 20	4 12	Two	F	—10—	A Gong is sounded in foggy weather. "Bahama Bank" is painted on her sides. King William Bank Buoy, E by N ½ N, nine miles.

Principal Lights—West Coast of England

Lee Scar	On the Rocks	54 52	3 25	One	F	—6—	On Piles. Base dries at 6 feet at low water.
Solway Light Vessel	Robin Rigg Channel	54 48	3 32	One	F	—6—	Red Light. Moored in 4½ fathoms. A black ball by [day. Tolls a bell in foggy weather.
ST. BEES	St. Bee's Head	54 31	3 38	One	F	—25—	Every minute. The fixed light is Red. N.W by W ¾ W, and S.E by E ¾ E, 340 yards.
WALNEY	S. Point of Walney Island	54 3	3 11	Two	1 R 1 F	—13—	Every 30 seconds—Red
Morecombe Bay Light Vessel	In 12 fathoms	53 54	3 31	One	R	—10—	Red light. A ball by day, and a M. M. light by night every 20 sec. is shown at the bows when 8 ft. water in Harbour Channel. Bell during fogs
	Between Yeoman and Clark Wharf	54 1	3 0	One	F	—5—	On Piles. A bell is tolled in foggy weather.
River Wyre	N.E elbow of N Wharf Bank	53 57	3 2	One	R	—10—	N. & S. 850 ft. Shown while 9 ft. water in Channel.
Fleetwood	H. Lt. in Town, L. Lt. Espld.	53 56	3 1	Two	F	13 & 9	Bright 3½ minutes, dark ¼ a minute.
River Ribble	Stanner Point, N. of entrance	53 44	3 1	One	Int	—12—	White between the bearings of S.E by E ¾ E round by the S to W; and Red from W to W ¾ N.
GREAT ORMSHEAD	North Point, Steep Cliff	53 20	3 52	One	F	—24—	Red Light. Painted Red, carries Red Ball. In 25 feet at low water. Crosby Lightship S.E ½ S, 2½ miles. N.W Mark, E by N ½ N, ¾ miles.
Formby Light Vessel	At the elbow of the Crosby and Queen's Channels	53 32	3 11	One	F	—8—	Yellow Light. Painted Red, carries Red Ball.
Crosby Light Vessel	N.E elbow of Gt. Burbo Bank	53 31	3 7	One	F	—8—	

Name of Light.	Situation.	Lat- tude North. °	Long- itude West. °	No. of Lights.	Fixed or Revol- ving.	Miles visible in clear weather.	Remarks.
Black Rock	Rock Point, west side of the entrance to the Mersey.	53 27	3 3	One	R	—14—	Every minute. White twice and Red once every 3rd minute. A Bell is tolled in foggy weather.
Leasowe	On the shore between the Mersey and Dee Rivers.	53 25	3 7	One	F	—15—	Bidston Light open E of Leasowe, and afterward to the west, lead up the Horse Channel.
BIDSTON	Bidston Hill	53 24	3 4	One	F	—23—	Obscured when inward bound, bearing S by W $\frac{1}{2}$ W
Hoylake	Near the Church	53 24	3 11	Two	F	13 & 11	The Upper Light exhibit, from N N W round to the E'ward, the Lower from N round to E'ward.
Liverpool N.W. Light Ship..	W. extreme of 3 and 4 fathom Tongue, in 6 $\frac{1}{4}$ fathoms	53 27	3 17	One	R	—11—	Black Ball during day. Blue Lt. every 2 hrs. during darkness after 6 p.m. Bell and Gong alt. in fogs
AIR ..	Air Point, at low water mark	53 22	3 19	One	F	—9—	On Piles. A bell is sounded in foggy weather
LYNAS ..	Point Lynas	53 25	4 17	One	Fl.	—16—	Flashing once every ten seconds.
SKERRIES ..	Highest Island.. .. .	53 25	4 36	One	F	—16—	
STACK ..	South Stack Rock, off N W Point of Holyhead Island	53 18	4 42	One	R	—20—	Revolving every 2 min. During foggy weather a smaller Bright Light is occasionally shown, 40 ft. above the sea and 30 yards N. of main Lighthouse
BARDSEY ..	Bardsey Island.. .. .	52 45	4 48	One	F	—17—	[sounded in foggy weather
Cardigan Bay Light Vessel..	Cardigan Bay	52 22	4 54	One	R	—9—	Red Light. Revolv. every 33 seconds. A Gong is
SOUTH BISHOP ..	South Bishop Rock.. .. .	51 51	5 25	One	R	—18—	Revolving every 20 seconds.
SMALLS ..	Smalls Island	51 43	5 40	One	F	—15—	Erected upon pillars 40 feet high.
ST. ANN'S ..	St. Ann's Point. Milford Haven	51 41	5 10	Two	F	20 & 18	High Light N by W $\frac{1}{4}$ W 609 feet from Low Light. when in one they lead clear of the Crow and Toes Rocks.
CALDY ..	Caldy Island, southern part	51 38	4 41	One	F	—20—	
MUMBLES ..	Mumbles Head	51 34	3 58	One	F	—15—	High Light S E by E $\frac{1}{4}$ E and N W by W $\frac{1}{4}$ W, 1000 feet from Low Light. The Lights in one lead a cable's length Southward of the Nash Sand.
NASH..	Nash Point	51 24	3 33	Two	F	19 & 17	Red. A Red light is also shown up the River.
USK ..	W. side of entrance to River	51 32	3 0	Two	F	—11—	
FLATHOLM ..	Flatholm Island, south point	51 23	3 7	One	F	—18—	The Low Light (fixed) is only visible from the West ward between NNW and WSW. The Revolving Light flashes every two minutes.
LUNDY ..	On the ridge of Lundy Island	51 10	4 40	Two	1 R 1 F	—31—	The Lower Light is 50 ft. in advance of the high one
TREVOSE HEAD ..	On north-western part ..	50 33	5 1	Two	F	20 & 17	

Descriptive List of Principal Lights—South and East Coasts of Ireland

Name of Light.	Situation.	Latitude North.	Longitude West.	No. of Lights.	Fixed or Revolving.	Miles visible in clear weather.	Remarks.
FASTNET	Summit of Rock	51 23	9 36	One	R	—18—	Attaining its greatest brilliancy every 2 minutes.
KINSALE . . .	South Point of Old Head ..	51 36	8 32	One	F	—21—	Red light is shown in a line to the Horse Rock in Courtmacsherry Bay, Bright to seaward.
CORK HARBOUR or Queenstown	Rock Point, E. side of Entrance..	51 48	8 15	Two	R&F	8 & 10	Red. White between the bearings of N.E. by E, and N.E. & N. to pass E'wards of Daunt's Rock. A Bell 8 times a minute in foggy weather.
BALLYCOTTIN ..	East Elbow of Spit Bank, in 9 feet..	51 51	8 16	One	F	—5—	Red. From NNE½E to SE by E½E round by E.
MINEHEAD ..	Outer Island, west side of Bay ..	51 49	7 59	One	Fl.	—18—	Every 10 secs. From W ½ S round N to E ½ S.
HOOK TOWER ..	South side of Head	52 0	7 35	One	Int.	—21—	Bright 50 secs., obscured 10 secs. From E by N
SALTEE'S LIGHT	East side entrance Waterford ..	52 7	6 56	One	F	—16—	[½ N to W ½ S.
VESEL	Off Conningbeg Rock, the Southern..	52 2	6 40	Two	F	10 & 8	Carries 2 Balls. Moored in 32 fathoms. During foggy weather a Gong is sounded.
TUSKAR	most of the Saltee Islands ..	52 12	6 12	One	R	—15—	Every 2 min. Twosides Bright, one Red. During foggy weather a Bell is tolled every ½ min. Red Light vis. every 6th minute, and seen 10 miles.
ARKLOW LT.-VESSEL.	S. end of Arklow Bank, in 22 fms.	52 42	6 0	One	R	—10—	Every min. ½ Globe over Globe at mainmasthead.
WICKLOW	N. end of Arklow Bank	52 58	6 0	Two	F	—9—	One on mainmast, and one on foremast.
CODLING BANK ...	Wicklow Head.. ..	52 58	6 0	One	Int.	—9—	10 Seconds bright, 3 seconds dark.
KISH LIGHT	3½ Miles S.E. by S. from S. end....	53 19	5 56	One	R	—10—	Every 20 seconds.
VESEL	Off N. Point of Kisk Bank, moored in 10 fathoms	53 18	6 8	One	R	—9—	Every min. Carries a Ball. A Gong is sounded during foggy weather.
Kingstown.. ..	Centre of East Pierhead of Kings-town Harbour	53 20	6 9	One	F	—2—	Every ½ min., showing a Bright and Red Light alternately. During foggy weather a Bell is tolled.
POOLBEG.. ..	West Pierhead.. ..	53 20	6 9	Two	F	—12—	A small Red Light.
BAILEY	End of S. Wall, at the entrance to the River Liffey	53 21	6 14	One	F	—10—	The Lower Light, which is much fainter than the Upper, is exhibited from half-flood to half-ebb. A Ball is hoisted at the same period during the day-time
CARLINGFORD..	End of N. Wall or N. Quay; Dublin ..	53 22	6 3	One	F	—15—	During foggy weather a Bell is tolled.
DUNDURUM BAY	S.E. Point of Howth Island.. ..	54 1	6 5	Two	F	—15—	The Lower from ½-f. to ½-ebb. A Ball is hoisted during the day, in foggs a Bell is tolled every ½ min.
SOUTH ROCK	Haulbowline Rock	54 13	5 40	One	Int.	—12—	Red Light. Every minute, 40 secs. red, and 15 secs. obscured.
CORTLAND	St. John's Point	54 24	5 20	One	R	—12—	Every minute and a half.

MISCELLANEOUS INFORMATION.

Isle of Man Fairs.

JANUARY.—5. St. Mark's, Malew.
FEBRUARY.—2. Greeba—12. Kirk Bride.
 —27. Baldwin.
MARCH.—17. St. John's.—25. Ramsey.
 —28. Peel.
APRIL.—5. Jurby.
MAY.—1. St. John's.—3. Sulby Cladagh.—10. Laxey.—12. St. Mark's.—15. Ballaugh.—26. Kirk Santon.
JUNE.—4. Sulby.—16. Kirk Michael.
JULY.—5. St. John's.—23. Sulby.
AUGUST.—5. Laxey.—12. Ballasalla.—26. Ballaugh.
SEPTEMBER.—29. Ballasalla.
OCTOBER.—10. Michael.—23. Arbory.
NOVEMBER.—1. St. John's.—8. Ramsey.—12. Douglas.—18. St. John's.
DECEMBER.—6. Colby, Kirk Arbory.—11. Kirk Andreas.

Those falling on Saturday, Sunday, or Monday, to be held on the following Tuesday—except the Tynwald Fair, which must be held on the 5th July, unless that day fall on a Sunday.

Cumberland—Abbey-Holme, Tuesday before Whitsunday, Oct. 29.—Alston Moor, last Thursday in May, Friday before 27th Sept., 1st Thur. in Nov.—Arclecdon, Ap. 24, 1st Friday in June, 17 Sep.—Bootle, April 5, 26, August 3, Sept. 24.—Brampton, April 22, 2nd Wed. after Whit. 2nd Wed. after 15th Sept.—Carlisle, Sat. next Whit., Aug. 26, Sep. 16, Sat. nearest 11th Nov.—Cockermouth, Feb. 18, Mon. before Easter, 1st and 3rd Wed. in May, Oct. 10.—Egremont, Feb. 18, 3rd Friday in May, Sept. 13.—Ennerdale, 2nd Tues. in Sept.—Eskdale, 2nd Monday in Sept.—Garrigill, 3rd Friday in May, 1st Friday in Sep.—Gosforth, April 25th, Oct. 18.—Hesket Newmarket, every alternate Fri. from May till Whit., last Thur. in August, 2nd Thur. in Oct.—Ireby, Feb. 21, Oct. 18.—Keswick, 3rd Thursday after 1st May, Oct. 11, Sat. after 29th Oct.—Kirkoswald, Thur. before Whit-Sun., Aug. 5.—Longtown, Thurs. before Whit-Sun., Thursday before Sept. 30.—Nether Wasdale, 1st Mon. in Sept.—Newlands, 1st Fri. in Sep.—Penrith, March 1, April 24, 25, 3rd Tues. in Oct., Tues. after Nov. 11.—Ravenglass, May 6, June 8, Aug. 5.—Roseley Hill, Whit-Mon., and every alter. Mon. till Michael.—Skinburnness, June 24.—Threldkeld, 1st Thurs. in Sept.—Uldale, August 22.—Ulpha, Mon. before Easter, July 5.—Whitehaven, Aug. 12.—Wigton, Feb. 20, April 5.—Workington, Wed. before Holy Thursday, Oct. 18.

Cheshire—Altringham, Ap. 22, Aug. 5, Nov. 22.—Budworth, Feb. 13, Ap. 5, Oct. 2.—Congleton, May 12, July 5, Nov. 22.—Chester, Feb. 23, April 27, July 5, Oct. 2, Nov. 24.—Knutsford, Whit-Tues., July 10, Nov. 8.—Macclesfield, May 6, June 22, July 11, Oct. 4, Nov. 11.—Malpas, Ap. 5,

July 25, Dec. 8.—Middlewich, Holy Th., Aug. 6.—Nantwich, Feb. 4, Mar. 15, Sep. 4, Dec. 11.—Northwich, August 2, Dec. 6.—Over, May 16, Sep. 25.—Sandbach, East. Tues., Tues. after Sept. 10.—Stockport, March 4, 25, May 1, Oct. 23.—Tarporeley, May 1, last Monday in Aug., Dec. 11.—Winsford, May 8, Nov. 25.

Lancashire—Blackburn, Easter-Mon., May 12, Oct. 17, every fortnight on Wed. from Feb. till Oct.—Bolton-le-moors, 1st Mon. after Jan. 5, and every Monday fortnight till May 12, July 30, 31, Oct. 13, 14.—Burnley, March 6, Easter Eve., May 6, 13, July 10, Oct. 11.—Broughton-in-F., August 1.—Bury, March 5, May 3, 2nd Thursday after Whit-Sun., Sep. 18.—Cartmell, March 22, Whit-Monday, Oct. 24, Nov. 5.—Chorley, March 26, May 5, Aug. 20.—Clithero, March 24, 25, August 1, 2, the 5th Thur. and Fri. after St. Michael's Day.—Conistone, 3rd Saturday in Sept.—Darwen, Holy Thurs., 1st Thurs. in Oct.—Dalton, April 28, June 6, Oct. 23.—Great Harwood, Mar. 3, Aug. 21.—Haslingden, May 8, July 1, Oct. 10.—Hawkshead, Mon. before Holy Thurs., Whit-Mon., Oct. 2.—Inglewhile, Oct. 5.—Kirkham, June 24.—Lancaster, May 1, July 5, Aug. 11, Oct. 10.—Liverpool, July 25, Nov. 11; Horse Fair every alternate Wednesday.—Longridge, May 13, Nov. 6.—Manchester, Whit-Mon., Oct. 1, Nov. 6.—Middleton, Thurs. after March 11, Thurs. after April 15, 2nd Thur. after Sept. 29.—Newburg, June 21.—Newbury, June 21.—Newchurch, April 29, Sept. 30.—Newton, May 17, July 15, and every Mon. fortnight, Aug. 12.—Oldham, May 2.—Ormskirk, Whit-Mon., Sept. 8.—Poulton, Feb 6, Ap. 13, Nov. 3.—Prescot, June 12, Aug. 24, 25, Nov. 1.—Preston, 1st Satur. after Jan. 6, March 27, Aug. 25, last 10 days, Nov. 7.—Rufford, May 19.—Radcliffe Bridge, April 29, 30, Sept. 21, 22.—Rochdale, May 14, Whit-Tues., Nov. 7.—Ulverstone, March 22, October 27.—Warrington, July 18, Nov. 30, each lasts 10 days; every Wedn. fortnight.—Wigan, Holy Thursday, June 27, Oct. 21.

Irish Fairs—Antrim.

Aboghill, June 4, Aug. 26, Dec. 5.—Antrim, Jan. 1, May 12, Aug. 1, Nov. 12.—Armoy, Jan. 25, Feb. 25, March 29, May 25, Aug. 16, Nov. 12, Dec. 25.—Ballinagabob, July 26.—Ballindery, second Monday in Feb., May, Aug., and Nov.—Ballintoy, June 3, Sept. 4, Oct. 14.—Ballicary, 2nd Mon. in Jan., 3rd Mon. in April, Aug. and Nov.—Ballycastle, Easter Tuesday, last Tues. in May, Aug. Oct. and Nov., July 26.—Ballyclare, last Tuesday in Jan., 2nd Tues. in May, July, and Nov. o. s.—Ballymena, July 26, Oct. 21.—Ballamoney, May 5, July 10, October 6.—Ballybarnice, 1st Tues. after 12th Jan. and Feb. Ballynure, May 15, Sept. 4, 2nd Tuesday in Oct. o. s.—Belfast, 1st Wed. in each month, Aug. 12, Nov. 1.—Broughshane, June 17, Sept. 1.

Aug. 12, Oc. 10, Dec. 10. Gilford, 2nd Tues. each month, and 21st June and Nov. Greencastle, 12th Jan. & Aug. Greyabbey, Mar. 28, June 22, Oct. 29, Dec. 4. Hillsborough, 3rd Wed. in each month. Hiltown, 2nd Tuesday in each month. Hollywood, 1st Monday in Feb., May, Aug., and Nov. Kikeel, 1st Wed. in each month. Killileagh, April 10, June 3 and 15, October 11, Dec. 11. Killinchy, 1st Wednes. in Feb., May, Aug. and Nov. Killough, Feb. 15, June 5, Aug. 15, Nov. 15. Kilmore, Feb. 4, March 14, May 1, June 3, Aug. 5, Sep. 29, Nov. 5, Dec. 16. Kircubbin, 1st Mon. in each month, and 28th of April, May, Aug. and Nov. Loughbrickland, Nov. 12, and 3rd Tues. of remaining months.

Ballbrigginn, 29th April, and September
Carrickmines, Dec. 6, April 14, June 24
Oct. 14. Donnybrook, Aug. 23. Field
town, Whit Monday. Garyistown, May
15, Aug. 15, Nov. 1. Kilsallaghan, Assen-
sion day, Sep. 8. Lusk, Easter Monday
May 4, June 24, July 13, Nov. 25. Naui
March 10, April 26, May 21, Sep. 28, Oct. 3
Palmerstown, August 21. Rathfarnham
July 10. Rush, May 1, Sep. 29. Saggart
June 15, Oct. 10, Nov. 8. Skerries, Apr.
22, Aug. 10. St. Margarets, July 30 and
31. Swords, March 17, May 9.

The following Table shows the month in which the undermentioned Fish IN or OUT of Season.

[illegible]

Annadoyne, May 14, Nov. 8. Ardmillan, 1st of Jan., April, July, Oct. Balloo, first Wednesday in Jan., Ap., July, & October. Ballynahinch, 3rd Thurs. in each month. Ballywalter, June 22, Nov. 8. Banbridge Jan. 12, 1st Monday in Feb., March, April, May, July, Sep., October, November, and Dec., June 9, Aug. 26. Bangor, Jan. 12, May 1, Aug. 1, Nov. 22. Carrodore, 7th of Feb., May, Aug., & Nov. Castlereagh, July 5, Oct. 26, Nov. 20. Castlewellan, 2nd Mon. in Jan., Mar., Ap., July, Aug., Oct.; 1st Feb., May, June, Sep.; Nov. 13, and Tuesday before Christmas. Clough, May 27, July 5, Nov. 22, 3rd Friday in October, and Friday before Christmas. Comber, Jan. 5, April 5, June 28, Oct. 19. Crossgar, second Wed. in each month. Donaghadee, last Wednes. in May, o. s., Aug. 16, Oct. 10, last Wednesday in Nov. o. s. Donaghmore, 22nd of June and Oct. Downpatrick, 1st Satur. in each month. Dromara, 1st Friday in Feb., May, Aug., and Nov., and 1st Friday after 15th March, June, Sep., and Nov. Dromore, 1st Sat. in March and Aug., May 12, Oct. 10, and Sat. but one before Christmas. Dundrum, 3rd Tues. in every month, Jan. 5, Thurs. before Candlemas day, o. s., May 12, Thursday bef.

ISLE OF MAN INFORMATION.

Manx Legislature

H. B. Loch, Esq., C.B., Lieut.-Governor
Sec. to his Excellency .. J. T. Clucas

COUNCIL.

Hon & Rt. Rev. H. Powys, D.D., Lord Bishop
Hon. James Gell, .. . Attorney-General
Hon. W. L. Drinkwater, South. Deemster
Hon. J. C. Stephen, Northern Deemster
Ridgway Harrison .. . Water-Bailiff
Hon. Mark H. Quayle, Clerk of the Rolls
Ven. Joseph C. Moore, .. . Archdeacon
Richard Jebb .. . Vicar General
J. T. Clucas, .. . Clerk of Council

HOUSE OF KEYS.

Douglas.

*W. F. Moore, Cronkbourn, Braddan.
G. W. Dumbell, Belmont .. . Conchan
*J. S. Goldie Taubman, Speaker, Braddan.
Castletown.
*John M. Jeffcott .. . Castletown
Ramsey.
*W. B. Christian, Milntown .. . Lezayre
Peel.
*Robert John Moore, Secretary .. . Peel
Rushen Sheading.
H. J. Waterson, .. . Arbory
R. A. Woods, Ballaspet .. . Patrick
*T. Moore, Great Meadow .. . Malew
Middle Sheading.
W. Dalrymple, Union Mills .. . Braddan
*J. C. T. Harrison, Ballaughton, Braddan
M. W. Goldie, .. . Conchan
Glenfaba Sheading.
W. E. S. Moore .. . German
J. S. Moore, Lhergydhoo .. . German
*John Gell, Kennaa .. . German
Garff Sheading.
Richard Rowe .. . Lonan
*William Haslam, Ballaglass, Maughold
J. E. Christian, Ballure .. . Maughold
Ayre Sheading.
*William Callister, Thornhill, Maughold
*E. C. Farrant, Ballakillingan .. Lezayre
J. T. Martin, Smeal .. . Andreas
Michael Sheading.
*John F. Crellin, Orrysdale .. . Michael
*Evan Gell, Whitehouse, .. . Michael
Thomas Craine, Glaick .. . Ballaugh
Those marked thus * were Members of
the House under the late Constitution.

Constituted Authorities

Samuel Harris, High-Bailiff, Douglas
John M. Jeffcott, do., Castletown
Frederick Tellet, do., Ramsey
Robert J. Moore, do., Peel
Registrar of Deeds .. S. Harris, Douglas
Deputy do. .. . W. Isdale, Douglas
Registrar General of Births and Mar-
riages, .. . S. Harris, Douglas
Deputy Registrars do., C. Cannell, Dou-
glas; J. M. Jeffcott, Castletown; Robert
J. Moore, Peel; F. Tellet, Ramsey.
Episcopal Registrar .. . Samuel Harris.

Archdeacon's Official .. . T. C. Callow
Archdeacon's Registrar .. R. H. L. Brown
Atholl Street, Douglas.
Seneschal .. .
Regulator of Weights and Measures .. F.
L. Gelling, Castletown
Agent for Woods and Forests F. C.
Skrimshire, Douglas
Tithe Agent .. . R. Harrison, Douglas
Southern Deemster's Clerk, John Quayle
Northern Deem. do. D. F. Wilson
Clerk to the Vicar General, .. . R. H.
Brown, Atholl Street, Douglas.
Registrar of J. S. Companies .. S. Harris.

Magistrates

The Members of the Council, .. }
The High Bailiff of Castletown, .. } For the
The High Bailiff of Douglas .. } time
The High Bailiff of Ramsey .. } being.
The High Bailiff of Peel .. }
Mark H. Quayle, C.R. Castletown
Wm. Watson Christian .. . Ballacurry
Evan Gell .. . Whitehouse
Richard Quirk .. . Rheaby
Cesar Bacon .. . Seafield
William Callister, .. . Thornhill
Ewan Cameron, .. . Glenfaba House
Clarence Horatio Cary .. . Beach House
John Frissell Crellin .. . Orrisdale
Edward Moore Gawne, .. . Kentraugh
Alexander Taubman Goldie .. Douglas
Richard Simpson .. . Onchan
J. G. Bennett, .. . Willaston
P. T. Cunningham .. . Castletown
William Farrant .. . Ballamoar
John Gell, .. . Kennaa
William Haslam .. . Ballaglass
W. F. Moore .. . Cronkbourn
J. S. Goldie Taubman, .. . Nunnery
Charles Ready .. . Douglas
Hugh H. Lloyd .. . Douglas
Edward C. Farrant .. . Lezayre
William B. Christian .. . Lezayre
Thomas Moore .. . Malew
CLERKS—Jas. Spittall, Douglas; Henry
C. Gill, Castletown; R. J. Kelly, Ramsey;
John Kelly, Peel.

Members of Manx Bar

Frederick Tellet, H.B. Ramsey
Frederick L. Gelling .. . Castletown
James Quirk .. . Douglas
William W. Christian .. . Andreas
William Clague .. . Peel
Mark H. Quayle, C.R., .. . Castletown
George Wm. Dumbell .. . Douglas
J. C. Stephen, Deemster .. . Ramsey
Edward H. Frizelle .. . Peel
Robert J. Kelly .. . Ramsey
Robert J. Moore, H.E. .. . Peel
Thomas C. Howard .. . New Zealand
John M. Jeffcott, H.B. Castletown
Laurence Craigie .. . Douglas
Ridgway Harrison, W.B. .. . Douglas
Samuel Harris, H.B. Douglas

Edward Callow.... Manchester
 Charles J. Stewart Lancashire
 John Kelly Peel
 Thomas C. Callow, A. O. Douglas
 James Gell, A. G. Castletown
 Daniel F. Wilson Ramsey
 J. G. M'Hutchin Castletown
 Samuel S. Rogers..... Australia
 James Spittall Douglas
 Alfred Walter Adams Douglas
 Frederick Call Australia
 A. N. Laughton Douglas
 Thomas A. Corlett..... Scotland
 Laurence W. Adamson Douglas
 Henry C. Gill Castletown
 J. C. Tobin Harrison Douglas
 Richard Tuton Douglas
 John Thomas Clucas Castletown
 Richard Sherwood..... Douglas
 Alfred Dumbell Ramsey
 Henry Evans Gelling..... Castletown
 Henry T. Lamothe..... Ramsey
 Claude Cannell, B.A. Douglas
 J. C. Lamothe Ramsey
 W. E. S. Moore Peel
 John Quayle Douglas
 John Frederick Gill..... Castletown
 C. W. Beckwith .. Douglas
 J. J. Gell Ramsey
 G. J. McDonald Peel

Notaries Public

R. Harrison, Water Bailiff, *ex officio*.
 DOUGLAS.—John Moore, J. C. T. Harrison, James Spittall, T. C. Callow, A. N. Laughton, R. Tuton, Claude Cannell, John Quayle, W. Berey.
 CASTLETOWN.—Frederick L. Gelling, H. C. Gill.
 RAMSEY.—Robt. J. Kelly, D. F. Wilson.
 J. C. Lamothe, J. J. Gell.
 PEEL.—J. Kelly.

Commissioners to take Affidavits.

English Court of Chancery & Irish Courts of Queen's Bench, and Common Pleas.—Robt. J. Kelly, Ramsey.
 English Courts of Queen's Bench, Exchequer, and Common Pleas—Thomas Cheslyn Callow, Douglas.
 English Court of Chancery, Queen's Bench, Common Pleas, Exchequer, and Probate.—Jas. Gell, Castletown; James Spittall, Douglas.
 English Court of Probate—L. W. Adamson, Douglas, Alfred N. Laughton, Douglas.
 Her Majesty's Court of Chancery..... L. W. Adamson, Douglas.

Coroners

Glentaba Wm. Quayle
 Michael Thomas Clarke
 Garif John Stephen
 Ayre John Chrystall
 Middle G. H. Wood
 Rushen John Radcliffe

Summers

Sumner-General John Quayle
 Kirk Maughoid John Bridson
 — Lonan Jas. Cannon
 — Onchan George Maley
 — Braddan George Maley
 — Marown T. Christian
 — Santon..... Wm. Corlett
 — Malew Wm. Corlett
 — Arbory Richard Corrin
 — Christ Rushen..... W. Thompson
 — Patrick P. Clucas
 — German P. Clucas
 — Michael Edward Cannell
 — Andreas Matthias Curphey
 — Bride Richard Pass
 Ballaugh John Stephen
 Jurby T. Moughtin
 Lezayre..... John Cain

Officers of Police

Head Constable, Isle of Man.... Capt. Geo. P. Goldie.
 John Sayle, Inspector..... Douglas
 James Martin, Sergeant .. Castletown
 W. Kermode .. do..... Ramsey
 Matthias Collister, do..... Peel
 William Hollinrake .. Mounted Sergeant of Police.

Officers of Customs

PORT DOUGLAS.

Collector R. S. D'Onsely
 Collector's First Clerk N. W. Walker
 Collector's 2nd Clerk }
 and Assistant Exam- } G. A. M'Cammon
 ining Officer
 Examining Officer R. J. Weaver
 Locker and Weigher ..
 Out-Door Officers Wm. Kirkbride,
 John Kelly, G. Wainman, and J. Sayle.

CREEK OF PEEL.

Principal Coast Officer .. Leslie Lockhart
 Out-Door Officers..... J. Cowley and J. J. Corlett

PORT RAMSEY.

Collector T. Jackson
 Examining Officer G. A. Adams
 Out-Door Officers..... Thos. Corlett, S. Farrington, and W. Looney.

PORT CASTLETOWN.

Collector R. Q. Crellin
 Assist. Examining Officer.. J. Watterson
 Out-Door Officers.. W. Archer, W. Bell, and T. W. Lawson

Customs Brokers & Commission Agents

W. Berey North Quay, Douglas
 Thomas Bawden Douglas
 H. Johnson Douglas
 John Clucas Castletown
 R. Teare Ramsey

Vice Consuls

Danish W. F. Moore
 Swedish and Norwegian .. H. B. Noble

Harbour Masters

Douglas..... { John Clague
 Deputy, Robert Gelling
 Ramsey Charles Teare
 Castletown John Caveen
 Peel J. Gill
 Port St. Mary Thomas Qualtrough

Commissioners of Harbours

R. Quirk, Receiver General
 R. S. D'Ousely James Corlett
 J. M. Jeffcott Robert J. Moore
 R. J. Weaver William Callister
 William F. Moore Robert Corrin

Receiver of Droits of Admiralty

R. S. D'Ousely Douglas

Agents for Lloyd's

Southern District, William Berey, Douglas
*Also for the Underwriters of Glasgow
 and Liverpool.*

Northern District.. Hugh Brown, Ramsey.

Douglas Town Commissioners.

W. A. Brearey, (Chairman), Thomas
 Teare, (Vice Chairman), Claude Cannell,
 John McGhie, R. Craine, W. Cannell, J.
 Perry, R. Archer, and C. Swinnerton.
 J. B. Cartwright, Clerk to Com-
 missioners.

J. Robertson, Out-door Overseer.

D. Callister, Inspector of Cars.

Ramsey Town Commissioners.

R. Teare, J. J. Cleator, Thos. Moore,
 R. O. Christian, J. C. Goldsmith, Daniel
 Joughin, Thomas Looney.
 James Woods, Clerk to Commissioners.

Bankers

Bank of Mona, Douglas—(Draw on Pres-
 cott, Grote, & Co., London)—J. K.
 Greig, Manager.

Douglas and Isle of Man Bank—(Draw on
 Glynn, Mills, & Co., London)—Dum-
 bell, Son, & Howard.

Bank for Savings, Atholl-street, Douglas
 —J. Spittall, Secretary

Isle of Man Banking Company (Limited)
 Atholl-street. (Draw on London and
 Westminster Bank, London.)—J. J.
 Karran, Manager.

Law Courts

COMMON LAW.—Douglas, Feb. 11, June
 30. Castletown, May 12, Oct. 6. Ramsey,
 Feb. 18, May 19, July 7, Oct. 13.

CHANCERY AND EXCHEQUER.—On the
 first THURSDAY in each month, the
 months of Jan., August, and September
 excepted.

ADMIRALTY, OR WATER-BAILIFF'S.—
 As occasion may require.

DEEMSTERS SUMMARY.—At Castle
 Rushen, Douglas, Ramsey, and Peel,
 fortnightly.

ECCLESIASTICAL.—At Douglas, Cas-
 tletown, Peel, and Ramsey once monthly.

CHAPTER.—Half-yearly, in Spring and
 Autumn.

HIGH BAILIFFS.—At Castletown, Doug-
 las, Peel, and Ramsey, weekly.

BARON.—In April and October.

PETTY SESSIONS.—Fortnightly.

Isle of Man Post-Office

*†Atholl Street, Douglas..Miss Macadam.

W. Quine, Chief Clerk.

SUB-POST-OFFICES & RECEIVING HOUSES.

Duke Street, Douglas G. A. Dean

Pillar Letter Box, Osborne Terrace, Douglas

Shore Road, Douglas..... E. G. Smith

Crescent, Douglas Geo. M. Jones

Wall Box Ballaughton, near Douglas....

Ballasalla T. Tyson

†CASTLETOWN John Kinvig

Wall Box, the Green, Castletown..

†Port St. Mary William Skillicorn

Union Mills W. Dalrymple

Crosby R. Kelly

St. John's..... John Garrett

†PEEL John Morrison

Onchan J. Lewin

†Laxey J. Kinley

†RAMSEY John Hampton

Wall Box, Sandy Road, Ramsey ..

Kirk Andreas..... Fred. Radcliffe

Sulby J. McWhannell

†Ballaugh W. Teare

Michael..... J. Cannan

Jurby A. Joughin

St. Mark's..... P. Mylrea

Foxdale T. Buzzo

Glenmay W. Quayle

Maughold D. Kinrade

Bride R. Pass

†Colby Wall Letter Box

Port Erin R. McComb

†Ballabeg W. Curphey.

*Government Insurance & Annuity Office

† Post Office Savings Bank.

LIVERPOOL INFORMATION.**Liverpool Pilot Boat Stations.**

NOTICE.—Every Liverpool Pilot Boat
 while on duty at night will display a
 single Bright Light at the Masthead.

The Pilot Boats off Point Lynas or on
 the first western Station, having the turn
 to board, will display a Red and White

Flag at the masthead by day; by night,
 in addition to the masthead Light, she
 will exhibit a flare-up Light every 15
 minutes.

The two western boats cruise off Point
 Lynas, and as far to the westward as the
 Middle Mouse, and to the eastward until

Priestholm Island bears S.S.W. With strong easterly winds and cross sea, the first western boat may Cruise under the lee of Cormel Head.

The third western boat cruises from Point Lynas to the west end of Great Ormshead, bearing S S.W. by compass, to board any vessel that may pass the first and second boats.

The fourth western boat cruises to the eastward of the eastern limit of third boat's station, until Talargogh Chimney on west end of Bar Land bears S.S.W. by compass.

The fifth, or first Hoylake boat cruises within a radius of five miles from the Northwest Lightship.

The sixth, or second Hoylake boat will board vessels after they pass the line of the Northwest Lightship and Point of Air, when the first boat is not within a reasonable distance- but her *especial duty* is to receive Pilots from vessels outward bound.

Rates of Pilotage.

For all Vessels Trading Foreign.

INWARD.	PER FOOT.
From the length of the west end of the Great Ormshead bearing S. by W., or before Penman Bachan be shut in with the Great Ormshead, at the rate of	9 0
From the eastward of the Great Ormshead, as above.....	8 0
From the only house now on Great Hilbre Island, bearing S.S.W. by the compass	4 0
OUTWARD.	s d
Through either of the Channels	4 0

No vessel trading to Foreign Parts, inward or outward bound, is to refuse a Pilot; but, if such vessel has passed the Brazil Buoy in the Rock Channel, or if a Pilot Boat falls in with a vessel in the narrows of the channels in stormy weather, that she cannot board her without imminent danger, the Pilot Boat shall then lead the way, and in either case be entitled to such Pilotage as shall be awarded by the Committee at their next meeting.

For Coasting Vessels, and those trading to and from Ireland the Islands of Faro or, Ferro, Jersey, Guernsey, Alderney, Sark, and Man.

INWARDS.	PER FOOT.
From the length of the Great Ormshead, as above at the rate of .	4 6
From the eastward of the Great Ormshead, as above ..	4 0

From the only house now on Great Hilbre Island, &c., as above 2 0

OUTWARD.

Through either of the channels 2 0

No Coasting Vessel to pay for less than eight feet of water, nor any vessel to pay for odd inches under half a foot. No coasting vessel, inward or outward bound, of the burden of one hundred tons or upward (unless she be in ballast) is to refuse a Pilot, as the master or owner, &c., must pay the full Pilotage, if one is offered. No vessel to be deemed a coaster unless she has been six months in that trade.

EXTRA PAY. PER DAY.

For every day of attendance whilst s. d.
in the river except the day of going to sea with such ships or vessels as shall be outward bound and the day of returning from sea for such as shall be inward bound 5 0
And if the attendance of a Pilot be required..... 42 0
Though the Pilot or boat be not employed a whole day, to be paid for a day.

CHARGES FOR TRANSPORTING VESSELS FROM DOCK TO DOCK—From one dock to another, £1: from Liverpool to Garston, £2, and vice versa.

Pilots' Rules and Regulations.

Any person acting as pilot without a license, to forfeit £20.

Pilots refusing to conduct or assist ships in distress, to forfeit £10 and license.

Masters of vessels forcibly taking Pilots beyond the limits of port, to forfeit not more than £20, nor less than £5.

Vessels liable to compulsory Pilotage are to display a signal for a Pilot on coming within the western limits of the stations—say, off the Middle Mouse—under a penalty of £5, and if refusing the first Pilot, or any Pilot that offers his services, is liable to a penalty of double Pilotage for every such offence.

Rewards for Pilots assisting ships in distress to be settled by the Committee.

Compensation to be made to Pilots for taking vessels out of port which have been forced back, to be fixed by the Committee.

When in stormy weather a vessel cannot be boarded with Pilots' small boats, the vessel should be steered with the wind on the quarter, the yards braced by; then the large boat will steer under the ship's lee quarter and a pilot will jump on board.

Life Boats.

All masters and others, entering or quitting the port, and requiring the assistance of the Life boats are requested to hoist the Distress Signal, in order that they may be despatched to their assistance as soon as possible. Vessels aground on the banks, and not hoisting the Distress Signal, will be supposed not to require the assistance of the Life Boats.

Life Boat Stations.

At Liverpool, on the North Landing Stage, two boats; the key kept at the Marine Surveyor's Office, Custom-house, and at the Life Boat Master's house, Pownall-street. Magazines, two boats, the key left at the Life Boat Master's house. Hoylake, one boat; the key kept at the Lower Hoylake Light-house. Point of Ayr, two boats; the key kept at the Master's house. Formby, one boat; the key kept at the Life Boat House by

the keeper. Hilbre Island, one boat.

Bidston Hill Signals.

SIGNALS OF DISTRESS.—For vessels in distress or on shore in the Rock Channel or about Hoyle—coming in; on the oblique pole to the southward of the lighthouse—for every ship, a ball with a flag half-mast; for every snow a cone, broad end up and a flag half-mast; for every brig or small vessel, a cone small end up and a flag half-mast. Going out, the same as above, but a broad pendant instead of a flag.

N.B.—For vessels in distress to the southward, when on shore to the main, the ball or cone to be put on the outside of the flag or pendant; but if on shore on Hoyle Bank, then the ball or cone to be put on the inside of the flag or pendant.

In Formby Channel.—The same signals to the northward of the Lighthouse.

Pilot Boats.

- | NO. | NAMES. | MASTERS AND SECOND MASTERS. |
|-----|--------------------------------|---|
| 1. | Queen (schooner) | Peter Dickinson, 23, Lower Mersey View, North Shore; Edward F. Callister, 37, Erskine Street, Liverpool. |
| 2. | Leader (schooner) | Samuel Jones, 30 Church-terrace, Church-road, Tranmere; John Morris, 6, Norwood-terrace, Whitefield-road. |
| 3. | Duke (schooner) | Thomas Parry, 24, Everton terrace; Wm. Harris, 74, South Chester-street. |
| 4. | Auspicious (cutter) | John Shepherd, 40, Wesley-street,; Mark N. Bridge, 105, Grove street. |
| 5. | Victoria and Albert (schooner) | Isaac Williams, Middle-lane, Wallasey, Cheshire; John Daniels, 54, Chester-street, Toxteth Park. |
| 6. | Pioneer (schooner) | John Williams, 56, Raglan-terrace, Everton; John Price, 10, Everton Valley. |
| 7. | Lancashire Witch (schooner) | Wm. Rowlands, 28, Great Mersey-street; Richard Edwards, 7, Thompson-street, Tranmere. |
| 8. | Pride of Liverpool (schooner) | Charles Christie, 19, Upper Warwick-street; William J. McCracken, 16, Everton-valley. |
| 9. | Guide (schooner) | Thomas Davies, 3, Vernon Place, Birkenhead; John Pritchard, 63, St. George's Hill, Everton. |
| 10. | Criterion (schooner) | James Wilson, 21, Avon-street, Windsor; John Jones, 10, Mona street. |
| 11. | Mersey (cutter) | Robert Williams, 22, Clarence-street, Everton; John Scott, 15, Bryan-street, Toxteth Park. |
| 12. | Perseverance (schooner) | George Bark, 10, Juvenal Street; John Tunstall 164, Grove-street. |

Superintendent of Pilotage Department—Robert P. J. Simpson.

The Pilotage Committee meet for the transaction of business every Monday at 12 o'clock, at the Committee Rooms, south end of Prince's Dock.

Mersey Docks and Harbour Board.**OFFICERS.**

- | | |
|--|--|
| Mr. John North, Solicitor.—Office, Dock Office. | Mr. George Jones, Receiver of Duties on Goods Inwards. |
| Mr. George Fosbery Lyster, Engineer of the Docks, &c.—Office, south side of Coburg Dock. | Mr. William McComb, Receiver of Duties on Goods Outwards. |
| Mr. John Harrison, Secretary. | Mr. James Halsall, Receiver of Duties on Goods Coastwise. [Runcorn.] |
| Mr. G. J. Jefferson, Treasurer. | Mr. Richard Jones, Receiver of Duties at |
| Mr. Graham H. Hills, R.N., Marine Surveyor. Office, Dock Office. | Mr. Thomas Hanlon, Superintendent of Albert Dock Warehouses. |
| Mr. M. A. Sweny, Assistant Marine Surveyor. | Mr. W. D. Turner, Superintendent of Stanley Dock Warehouses. |
| Mr. Francis O. Simpson, R.N., Water Bailiff.—Office, George's Pier. | Superintendent of Wapping Warehouses. |
| Mr. Robert H. Williams, Receiver of Duties on Tonnage. | Mr. W. H. Sloman, Superintendent of Birkenhead Warehouses. |

Mr. Thomas Hodgson, Harbour Master.—Office, George's Dock Passage.
 Mr. H. T. Cox, North Assistant Harbour Master.—Office, Sandon Graving Docks.
 Mr. Wm. Foyle, South Assistant Harbour Master.—Office, south end of Wapping Dock.
 Captain Jas. Hookey, R. N., Birkenhead Assistant Harbour Master—Office, Morpeth Dock Entrance.

Dock Masters.

Canada Josh Wood.
 Huskisson..... George Corfield.
 Sandon Thomas Barnes
 Wellington & Half-tide ..Owen Pritchard.
 Nelson & Bramley-Moore.. Jas. Sanders.
 Salisbury, Collingwood, and Stanley Edward Edwards.
 Clarence Half-tide, Clarence, Trafalgar, and Victoria Thomas Sterzeker.
 Waterloo (under alteration.)
 Prince's..... H. M. Liardet.
 George's Geo. A. Bond.
 Canning and Half-tide .. John Williams.
 Albert and Salthouse Docks and Wapping Basin..... George Wilson.
 King's and Wapping..... Joseph Curry.
 Queen's and Half-tide .. George Palmer.
 Coburg..... Shadrach Williams.
 Brunswick..... J. H. Hinrichson.
 Toxteth and Harrington.. Thomas King.

BIRKENHEAD.

Morpeth Basin and Morpeth and Egerton Docks..... S. Stokes.
 Alfred Dock T. J. Shepherd.
 The Dock Master's Offices are at the entrances of the respective docks.

Dock and Basin Signals.

All vessels are allowed to enter the Docks when signals are not hoisted at the respective pier-heads. All owners, masters, and consignees are, however, recommended to register their vessels as expeditiously as possible, in order the better to secure their right of turn to accommodation at the Dock quays.

DOCK SIGNALS.

CANADA — Flag on S. pier of the Canada Basin.
 HUSKISSON — Flag on N. pier of Sandon Basin entrance.
 SANDON—Flag on N. side of gateway.
 WELLINGTON AND HALF-TIDE—Flag on S. pier of Sandon Basin entrance.
 NELSON AND BRAMLEY-MOORE—Flag on the N. pier of the Salisbury Dock entrance.
 SALISBURY, COLLINGWOOD, AND STANLEY—Flag on S. pier of Salisbury Dock entrance.
 CLARENCE AND HALF-TIDE.—Flag on N. pier of Clarence Half-tide entrance.
 TRAFALGAR—Flag on S. pier of Clarence Half-tide Dock entrance.
 WATERLOO AND VICTORIA—Flag on N. pier of Prince's Basin entrance.
 PRINCE'S NORTH ENTRANCE—Flag on S. pier of Prince's Basin entrance.
 PRINCE'S SOUTH ENTRANCE—Flag on N. pier of George's Basin entrance.

GEORGE'S—Flag on S. pier of George's Basin entrance.

CANNING AND HALF-TIDE—Flag on N. pier of Canning half-tide entrance.

ALBERT AND SALTHOUSE—Flag on S. pier of Canning half-tide entrance.

KING'S—Flag on N. pier King's and Queen's Basin entrance.

WAPPING—Flag on N. end of the King's Parade.

QUEEN'S—Flag on S. pier of King's and Queen's Basin entrance.

COBURG—Flag on S. pier of entrance.

BRUNSWICK—Flag on S. side entrance.

TOXTETH—Flag on N. side of entrance.

HARRINGTON—Flag S. side of entrance.

BASIN SIGNALS.

SANDON—Ball on N. side.

PRINCE'S—Ball on S. pier of entrance.

GEORGE'S—Ball on S. pier of entrance.

Abstract of Dock Laws.

Goods causing obstruction on the Dock quay, may be removed by the Trustees at expence of owners.

Such a quantity of cargo or ballast to be kept on board each vessel as to enable it to be safely removed; penalty, £50.

Harbour and Dock Masters may remove vessels in dock, or from one dock to another, at owners expense: penalty for obstructing them, disobeying their orders or using abusive or offensive language to them, £10.

Vessels on which dues, &c., are owing may be detained until such are paid.

Shipowners have a lien for freight and all other lawful claims on goods discharged into dock warehouses.

Manifest of all goods imported or exported to be delivered at the Dock Office within 14 days after the discharge upwards or clearance outwards; penalty £10.

Collector, &c., not to receive entry of any vessel until the dock and light dues are paid; penalty, £20.

No ballast to be thrown into the docks, penalty, £50.

After ballast is discharged to be carted away as the trustees of the docks shall appoint; penalty, £5.

Vessels not to come into dock under sail; penalty £5.

Persons wilfully and maliciously damaging the docks, &c., adjudged guilty of felony.

Water-bailiff empowered to remove vessels lying in the river; penalty for obstructing him, £10.

Persons firing cannon, &c., within the port (except signals of distress) to forfeit £10 for every offence.

CUMBERLAND INFORMATION.

Members of Parliament, &c.

WHITEHAVEN.—G. A. C. Bentinck, Esq., 48, Charles-st., Berkley-square, London.

COCKERMOUTH.—J. Steele, Esq., 13, Bury-st., London. Lord Nass, 79 Eccleston-square, Palmerston House, London.

EASTERN DIVISION.—Hon Chas. G. W. Howard, Naworth Castle; 56, Park-st., Grosvenor-square, London. W. Marshall, Esq., Patterdale Hall; 85, Eaton-square, London.

WESTERN DIVISION.—Hon. Percy Wyndham. H. Lowther, Esq., 21 Milton Crescent, London.

CARLISLE.—E. Potter, Esq., Manchester, Reform Club, London. Wm. Nicholson Hodgson, Esq., 37, Jermyn-street, St. James's, London.

Lord Lieutenant . . . Earl of Lonsdale.
Clerk of the Peace . . T. D. Hodgson, Esq.
County Treasurer . . Mr. Dobson, Carlisle.
Gov. of Gaol. . Mr. T. H. Redin, Carlisle.

County Coroners.

Wm. Carrick, Esq., Wigton.

W. Lumb, jun., Esq., Whitehaven.

Dr. Bell, Cocker-mouth.

J. P. Myres, Esq., Broughton, Furness.

Quarterly Sessions.

Easter, in the first week after 31 March.

Midsummer, first week after 24 June.

Michaelmas, first week after 11 October.

Christmas, first week after 28 Dec.

The Easter, Midsummer, Michaelmas, and Christmas Sessions for Cumberland are held at Carlisle.

Bankers.

WHITEHAVEN.—The Whitehaven Joint Stock Banking Company, Peter Cameron, Manager.—London Joint Stock Bank, 5, Prince's Street.

Bank of Whitehaven, G. W. Brown, Manager.—London and Westminster Bank, 41, Lothbury, London.

Cumberland Union Branch Bank, W. Houlgate, Agent.—Barclay, Bevan, & Co., 54, Lombard-street, London.

Savings' Bank—Open Saturdays, from 6 to 8 p.m.—J. F. Lewes, Sec.

WORKINGTON.—Cumberland Union Bank Branch, R. S. Thompson, Agent.—Barclay, Bevan, & Co., 54, Lombard st.

Bank of Whitehaven Branch, Henry Bowes, Agent.—London and Westminster Bank, 41, Lothbury.

Carlisle City and District Bank, David Tweddle, Agent.—Glyn & Co., 67, Lombard-street, London.

MARYPORT.—Branch of the Cumberland Union Banking Company, Joseph Thompson, Agent.—Barclay, Bevan, & Co., 54, Lombard-street.

Carlisle City and District Bank, Joseph H. Wood, Agent.—Glyn & Co., Lombard Street.

COCKERMOUTH.—Branch of the Cum-

berland Union Banking Company, T. H. Tandy, Agent.—Barclay, Bevan & Co., 54, Lombard street.

Carlisle City and District Bank, J. H. Watson, Agent.—Glyn & Co., 67, Lombard-street.

WHITEHAVEN & WEST CUMBERLAND BENEFIT LAND AND BUILDING SOCIETY.—Public Office, Lowther-street; open on Saturdays from six to eight, p.m.—S. Armstrong, Secretary.

The Whitehaven and Furness Junction Railway.

Trains leave Bransty Station three times daily (Sunday excepted) for Bootle, Ulverston, Broughton, Fleetwood, Preston, Manchester, Liverpool, &c. This is the nearest route to Preston, Manchester, Liverpool, &c.—(See *West Cumberland Railway Guide*.)

The Whitehaven and Maryport Junction Railway.

Trains leave Bransty Station four times daily (Sunday excepted) for Workington, Maryport, Wigton, Carlisle, and Cocker-mouth; three times daily for Edinburgh, London, Birmingham, Liverpool, Manchester, Preston, Newcastle, York, and Darlington.—(See *West Cumberland Railway Guide*.)

The Whitehaven, Cleator, and Egremont Railway.

Trains leave Whitehaven three times daily (Sundays excepted) for Cleator Moore, Frizington, Woodend, and Egremont.—(See *West Cumberland Railway Guide*.)

Steamers and Traders.

LIVERPOOL.—The Whitehaven Steam Navigation Owners' powerful and commodious first-class steamers sail regularly with passengers and goods—Fares: Cabin 7s., Deck, 4s. Passengers are conveyed, in connection with the Railway Companies, between Newcastle, Carlisle, Dalston, and Wigton, to Liverpool at a through fare. Passengers by Railway arrive at Whitehaven by the last train before the steamer's sailing, and those from Liverpool being forwarded by first train after the vessel's arrival in Whitehaven.—Fares: Cabin and first-class, 10s.; Deck and Third-class, 5s. Agents—Carlisle. Edward Jobling; Liverpool, Fisher, Wilson, & Co.; Whitehaven—J. & J. Hodgson.

BELFAST.—The Whitehaven Steam Navigation Owners' steamers sail regularly with passengers and goods.—Fares: Cabin, 10s., Deck, 3s. Passengers are conveyed in connection with the Railway Companies, between Carlisle, Dalston, and Wigton, to Belfast at a through fare. Those from Carlisle, &c., arriving in Whitehaven by the last train before the steamer's sailing, and those from Belfast being forwarded by first train

after the vessel's arrival in Whitehaven.—Fares: Cabin and First-class, 12s.; Deck and Third-class, 5s. Agents—Belfast, R. Henderson, & Son, Donegal Quay; Carlisle, Edward Jobling; Whitehaven, J. & J. Hodgson.

DUBLIN.—The North British Steam Packet Company's first-class fast sailing Steamers sail between Silloth and Dublin twice a week, calling off Whitehaven (weather permitting) to land and embark passengers. Fares from Whitehaven to Dublin, First cabin, 15s.; second cabin, 6s. Agents for Whitehaven, J. & J. Hodgson, 36, King-street.

DOUGLAS (Isle of Man).—The North British Steam Packet Company's first-class fast sailing Steamers sail between Silloth and Douglas twice a week during summer months, calling off Whitehaven (weather permitting) to land and embark passengers. Fares from Whitehaven to Douglas, first cabin, 6s. 6d.; second cabin, 3s. 6d. Agents for Whitehaven, J. & J. Hodgson, 36, King-street.

RAMSEY (Isle of Man).—The Isle of Man Company's Steam ship "Mona's Isle" sails between Ramsey and Whitehaven ONCE a week, with goods and passengers to Douglas. Fares—Saloon 6s.; Fore cabin, 3s. Agents for Whitehaven—Frost and Nelson, Ship-brokers, 7½, West Strand.

LONDON.—The Whitehaven Steam Navigation in connection with the Belfast Screw Steam Company, sail a vessel ONCE a week. Agents:—Belfast, Robert Henderson & Son, London, Ogilby Moore & Co., Ingram Court, Fenchurch-street; Whitehaven, J. & J. Hodgson.

DUNDRUM.—The 'Ansbro,' and 'Robert Burns,' Screw Steamers, sail regularly between Dundrum and Whitehaven. Agents—Charles Fisher & Co., 36, King-street, Whitehaven.

LIVERPOOL.—The North British Steam Packet Company's first-class fast sailing Steamers sail between Silloth and Liverpool TWICE weekly calling off Whitehaven in the summer months. Fares: Carlisle and Liverpool first cabin, 8s.; Second cabin, 4s. Silloth and Liverpool first cabin, 7s.; second cabin, 4s. Whitehaven and Liverpool first cabin 7s.; second cabin, 4s. Agents for Whitehaven—J. & J. Hodgson, 36, King-street.

Carriers

Leave Whitehaven for Harrington, Workington, Cockermouth, Keswick, and Egremont, every Tuesday, Thursday, and Saturday; for Wigton every Wednesday; and for Gosforth every Tuesday, Thursday, and Saturday.

Rates for the Steam Tugs.

Vessels employed in the Coal or Coast-ing Trade shall pay every voyage on

clearing for sea one half-penny per Ton Register. Vessels arriving from a foreign port or from a discharging port one penny per Ton register.

Vessels engaged in the Coal or Coast-ing trade pay an additional half-penny per ton when they require the use of the Steam Tug Outwards, and the same Inwards.

No vessel towed out for less than 1s

Foreign Vessels as above, one penny per ton.

That the limits for towing vessels into and out of the harbour for one half-penny and one penny per ton respectively, be as follows, viz.; say a line drawn from St. Bee's Head to Mickleham Pit, on the Hill north of Parton, and two lines intersecting the above, from Redness Point and Tom Hurd Rock, bearing N.W. by N. and S.E. by E. by compass.

If the vessel first in turn be not afloat or not ready for the Tug Boat, then she is to take the first that is.

Vessels wanting the use of the Steam Tug are to hoist the Union Jack on the Main Top Gallant Masthead.

Harbour Boat Rates.

A Boat is stationed at the Old Quay Watch House, to attend on vessels entering the Port, and also to give assistance to those outward bound. Charges are as follows:—

	s	d
Vessels of 120 tons and upwards..	4	0
Vessels from 100 to 120	3	9
Vessels from 80 to 100	3	0
Vessels from 60 to 80	2	6
Vessels from 40 to 60 ..	2	0
Vessels from 20 to 40	1	6
Vessels less than 20	1	0

FOREIGN LADEN VESSELS.

Under 120 tons ..	4	0
Above 120 tons	6	0

The Harbour Boat to be paid as above by all vessels entering the Port; but if not employed by those leaving it, no charge to be demanded.

Rates for the Gridiron.

Every vessel previous to going on must be entered at the Harbour Office, and payment made according to the established rates, for which she may remain on four tides, counting the tide going on and the tide coming off.

	s	d	s	d
Vessels not exceed. 50 tons	5	0	1	0
About 50 and not ex. 100	7	0	1	6
.. 100.....	10	0	3	4
.. 150.....	15	0	5	0
.. 200.....	20	0	6	4
.. 250.....	25	0	3	4

Post Office, Whitehaven.—WILLIAM B. GIBSON, POSTMASTER.

Arrivals.—*Week Days*—London and all parts, 9 a.m.; 8 30 p.m. *Sundays*—London and all parts, 10 35 a.m.

Despatches.—*Week Days*—Local parts, 9 30 a.m.; North Mail, 2 50 p.m.; London and all parts, 6 15 p.m. *Sundays*—North Mail, 7 50 a.m.; Local parts, 11 30 a.m.; London and all parts, 5 p.m.

The letter box is closed 15 minutes before each despatch. Letters bearing one additional stamp will be forwarded for the first ten minutes. The deliveries by letter carriers commence during the week days at 9 35 a.m., and 8 55 p.m.; and on Sundays at 12 45.

POST OFFICES IN CONNECTION WITH THE WHITEHAVEN POST OFFICE.
Those marked thus † are empowered to grant and pay Money Orders.

OFFICES.	ARRIVAL.	DESPATCH.	RECEIVER.
Sandwith	10 30 a.m.	4 55 p.m.	A. Leeson
† St. Bees	7 15 .	8 58 a.m.	J. Mossop
Ditto	11 25 ..	4 10 p.m.	Ditto
Parton	10 30 ..	4 50 ..	E. Lightfoot
Distington	12 10 ..	3 20 ..	E. Lawrence
Hensingham	9 40 ..	5 26 ..	
Cleator Lane End	10 1 ..	5 5 ..	C. McGinn
Cleator	10 51 ..	4 5 ..	J. Harkness
† Cleator Moor	11 30 ..	3 20 ..	Jno. Atkinson
Arlecdon	1 45 p.m.	2 0 ..	J. James
† Egremont	10 12 a.m.	4 54 ..	James Welsh
Beckermont	10 34 ..	4 32 ..	M. Gilliot
Calderbridge	10 45 ..	4 21 ..	W. Mossop
Gosforth	11 0 ..	4 6 ..	P. Mossop
† Holm Rook	11 22 ..	3 44 ..	J. Birkett
Eskdale	12 21 p.m.	9 30 a.m.	J. Porter
Wasdale	1 41 ..	5 10 p.m.	M. Pharoah
† Ravenglass	11 41 ..	3 25 ..	R. Askew

STORM-WARNING SIGNALS.

				
Gale probably from the Northward.	Gale probably from the Southward.	Dangerous winds may be expected from nearly opposite quarters successively.	Dangerous wind probably at first from the Northward.	Dangerous wind probably at first from the Southward.

Whenever such a signal is shown (in consequence of a telegram from London) it will be kept up, shown distinctly, till dusk of *that day only*, unless otherwise specially directed. These cautionary or warning signals advert to winds during some part of the next nights or two or three days; therefore due *vigilance* should prevail (untill the weather is again thoroughly settled), but without suspending *departures* or any operations *unnecessarily*.

It should be remembered that only the greater and more *general* disturbances of the atmosphere are to be made known by this method (Warning Signal), not merely local or sudden changes (however violent or dangerous) which are not felt at a certain distance, and do not therefore affect other localities.

MERSEY DOCKS AND HARBOUR.

Tabular Statement, showing the Area of Water, Quay Space, Width of Entrance, and Depth of Sill for each Dock, also the length of Graving Docks. &c.

The Old Dock contains an area of 3 acres 1890 yds., and 557 lineal yds. quay space
 its Passage do 675 do., 90 do.

The Old Dock Sill is the Datum to which all levels refer, which is preserved on a Tide Gauge on the west side of the Centre Pier of the entrances to the Canning Half-tide Dock.

LIVERPOOL DOCKS.	Width of Entrance.		Sill under Old Dock Datum.		Coping at Hollow Quoins abv Datum		Water Area.		Quay Space.	
	Ft	In	Ft	In	Ft	In	Acr.	Yd	Mile	Yds.
North Carrier's Dock.... West Passage	40	0	6	0	27	0	2	3423		641
South ditto..... West Passage	40	0	6	0	27	0	1	4515		615
Canada Half-tide Dock.....	60	0	7	9	28	0	3	4380		468
West Entrance	32	0	6	0	28	0				
Northern West Lock Entrance (110 ft.)	20	0	6	0	28	0				
Southern West Lock Entrance (110 ft.)	20	0	3	0	27	0				
North Lock Passage (76 ft.)..	80	0	7	9	28	0				
South Passage	50	0	6	6	29	0	17	4043		1272
Canada Dock	80	0	6	6	29	0				
South Passages	100	0	7	9	28	0	1	3479		487
Canada Lock (498 ft.)							14	3451		1029
Huskisson Dock	80	0	6	6	38	0	7	592		910
Huskisson Branch Dock	45	0	6	0	26	0	0	4682		342
Huskisson East Lock (338 ft.).....	70	0	6	6	30	11	0	3650		330
Huskisson West Lock	70	0	6	9	30	9	10	100		867
Sandon Dock	50	0	6	6	28	0	3	813		400
Wellington Half-tide Dock, East Entr.	70	0	6	6	31	0	7	4120		820
West Entrance	60	0	6	0	26	0	9	3106		935
Wellington Dock	60	0	6	0	26	0				
Bramley-Moore Dock .. North Passage	60	0	6	6	26	0	7	4796		803
South Passage	51	0	5	8	29	0	7	120		753
Nelson Dock	60	0	6	9	26	0	5	244		553
Stanley Dock..... West Passage							3	2146		400
Collingwood Dock	60	0	6	11	26	0				
Salisbury Dock	50	0	6	11	26	0				
West Entrances	18	0	5	2	26	0				
Canal Lock	45	0	4	9	26	0	1	1056		291
Clarence Graving }.... North Passage	45	0	4	6	26	6	4	1794		635
Dock Basin }.... South Passage	47	0	3	2	26	0	6	273		914
Clarence Half tide Dock.... West Entr.	45	0	6	7	23	10	0	2937		256
Clarence Dock	45	0	4	11	26	5	5	4546		764
Trafalgar Lock N. and S. Passages	50	0	6	6	26	0	5	3559		755
Trafalgar Dock	60	0	8	0	22	6	2	3375		506
Victoria Dock	60	0	8	0	22	6	3	2146		533
Corn Warehouse Dock .. South Passage	65	0	8	0	31	0	5	3705		535
Waterloo Dock	32	0	8	0	31	0				
Half-tide Dock (West Entrances) North	65	0	8	0	31	0				
(Lock 110 ft.)	44	11	4	6	28	2	10	174		1078
Middle	41	11	4	6	24	6	5	2503		1001
South	40	1	4	6	24	5				
Prince's Dock .. North Passage	32	10	0	3†	23	3	1	595		339
(Lock 178 ft.) South Passage	33	8	3	6	24	3	0	315		57
George's Dock & Passage.. North Entr.	45	0	6	1	26	2	4	376		585
South Passage							2	2638		429
Manchester Dock	45	0	6	3	28	3				
Manchester Lock, (86 ft.) .. West Entr.	45	0	6	4	26	0	7	3542		853
Canning Dock	45	0	6	0	26	0				
Canning Half-tide Basin										
Two West Entrances .. each										
Albert Dock										
North Passage										
East Passage										

† The Sill of the Manchester Dock is 3 inches above Old Dock Datum.

TABULAR STATEMENT, continued.

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LIVERPOOL DOCKS.	Width of Entrance.		Sill under Old Dock Datum.		Coping at Hollow Quoins above Sill.		Water Area.	Quay Space.	
	Ft.	In.	Ft.	In.	Ft.	In.		Acr.	Yd.
Salthouse Dock North Passage	45	0	6	0	26	0	6 2019		784
Wapping Basin West Passage	40	0	6	0	25	0	1 3151		454
North and South Passages .. each	50	0	6	0	26	0			
Wapping Dock West Passage	50	0	6	0	26	0	5 499		815
South Passage	60	0	6	0	26	0			
King's Dock..... South Passage	42	0	5	0	26	1	7 38 6		875
Basin to Queen's Dock							3 3542		445
West Entrances North	70	0	6	9	31	0			
South	50	0	6	9	31	0			
Queen's Dock West Passage	50	0	6	0	26	0	10 1564		1214
South Passage	60	0	6	6	28	9			
Coburg Dock..... West Entrance	70	1	6	0	30	6	8 26		1053
Brunswick Dock North Passage	60	0	6	6	27	0	12 3010		1086
Brunswick half-tide Dock, .. East Pass.	42	0	5	6	26	0	1 3388		491
West Entrance	45	0	6	0	26	6			
Toxteth Dock..... West Entrance	40	0	5	0	26	0	1 469		393
Harrington Dock West Entrance	29	9	1	2	23	1	0 3740		315
Herculanum Half-tide Dock—									
West Entrances..... North	80	0	8	0	31	0	3 3000		93
South	60	0	8	0	31	0			
Total Water Area and Quay Space of Liverpool Dock							235 3148	16 1062	

LIVERPOOL BASINS.			Height of Piers above Datum.			
			Ft.	In.		
Canada Basin	250	0	32	0	6 4528	546
Sandon Basin	200	0	31	0	6 904	702
Seacombe Basin	52	0	24	10	0 1805	188
George's Basin	147	0	25	0	3 1852	455
George's Ferry Basin	70	0	23	8	0 1344	160
Manchester Basin	36	0	22	2	0 2568	288
South Ferry Basin	60	0	30	6	0 2927	205
Harrington Basin	40	0	23	3	0 3917	308
Total Water Area and Quay Space of the Liverpool Basins.....					19 485	1 1095
Do.	do.	do.	do.	Docks	235 3148	16 1062
Total					254 3633	18 394

BIRKENHEAD DOCKS.		Sill under Datum.			
		Ft.	In.		
Wallasey Pool..... Western Float	.. ..	.. ..	.. ..	52 319	2 210
Ditto..... Eastern Ditto	.. ..	.. ..	.. ..	59 3786	1 1506
Ditto Passage	100	0	7 6	26 6	
Ditto, Basin near Canada Works, West	50	0	.. ..	1 2554	543
Ditto, ditto East	50	0	.. ..	1 84	390
Ditto, Railway Company's Basin.....	.. ..	.. ..	.. ..	0 606	113
East Entrances to East Float—					
From Egerton Dock	70	0	7 0	25 0	
Lock of Low Water Basin, (288 feet) ..	50	0	.. ..	0 1333	0 234
Inner Sill of Lock .....	.. ..	9 0	26 0		
Outer Sill of ditto .....	.. ..	12 0	26 0		
Two Sluicing Passages, each..					
Inner Sills of ditto.....	30	0	7 8	26 0	
Outer Sills of ditto.....	.. ..	18 6	26 0		
South Lock of Intermediate Dock, } (274 feet)	50	0	.. ..	0 1522	0 300
Inner Sill of Lock .....	.. ..	9 0	26 0		
Outer Sill of ditto .....	.. ..	12 0	26 0		
Middle Lock of Inter. Dock, (198 ft.) ..	30	0	.. ..	0 667	0 260
Inner Sill of ditto .....	.. ..	9 0	26 0		
Outer Sill of ditto .....	.. ..	12 0	26 0		

BIRKENHEAD DOCKS, Continued.	Width of Entrance.		Sill under Datum.		Coping at Hollow Quoins above Sill		Water Area.	Quay Space.
	Ft.	In.	Ft.	In.	Ft.	In.		
North Passage of Intermediate Dock..	100	0	9	0	26	0		
Egerton Dock							3 4011	0 242
Morpeth Dock	70	0	5	3	25	0	11 522	0 1299
West Passage								
East Entrance	50	0	5	0	25	0		
Morpeth Lock, (398 feet)	85	0	12	0	26	0	0 3777	0 441
Intermediate Dock							8 2922	0 481
South Lock of ditto, (398 feet) ..	50	0	12	0	26	0	0 2222	0 391
Middle Lock of ditto, (198 feet) ..	30	0	12	0	26	0	0 667	0 377
North Lock of ditto, (348 feet) ..	100	0	12	0	26	0	0 3888	0 352
Total Water Area and Quay Space of the Birkenhead Docks ..							140 4680	7 838

BIRKENHEAD BASINS.	Width of Entrance.		Height of Piers above Datum.				
	Ft.	In.	Ft.	In.			
Morpeth Basin	300	0	25	6	S. Side	7 2954	0 732
" "			31	0	N. Side		
Low Water Basin	300	0	26	0	.. ..	14 0	0 1360
North Basin	500	0	31	0	.. ..	4 2406	0 530
Total Water Area and Quay Space of the Birkenhead Basins						26 520	1 905
Ditto do do Docks.....						140 4680	7 838
Total						167 360	9 005

TOTAL AREA OF THE LIVERPOOL AND BIRKENHEAD DOCKS AND BASINS.

Total Water Area and Quay Space of the L'pool Docks and Basins	254 3633	18 394
Total Water Area and Quay Space of the Birkenhead Docks and Basins	167 360	9 005
Total	421 3993	27 400

LIVERPOOL GRAVING DOCKS.	Width of Entrance.		Sill under Old Dock Datum.		Coping at Hollow Quoins above Sill		Length at Bottom.	Total Length at Bottom.
	Ft.	In.	Ft.	In.	Ft.	In.		
Canada Lock and Graving Dock	100	0	7	9	28	0	588	.. ..
Huskisson Lock and Graving Dock....	80	0	6	6	38	0	395	.. ..
Sandon Graving Docks, No. 1—East ..	60	0	3	6	26	0		565
No. 2— ..	70	0	3	6	26	0		565
No. 3— ..	60	0	3	6	26	0		565
No. 4— ..	70	0	3	6	26	0		565
No. 5— ..	45	0	3	6	26	0		565
No. 6— West	45	0	3	6	26	0	565	
Clarence Graving Docks—								33 0
No. 1—Outer Gates	45	0	3	0	26	6	451	
No. 1—Inner Gates	45	0	0	6	18	0	289	
No. 2—Outer Gates	45	0	3	0	26	6	454	
No. 2—Inner Gates	32	10	0	6	18	0	286	
Canning Graving Docks No. 1....	35	9	†		23	3	436	
No. 2....	35	9	0	0½	23	3½	482	
Queen's Graving Docks No. 1....	42	0	1	8½	27	7½	465	
No. 2....	70	1	3	6	27	5	467	
Brunswick Graving Docks .. No. 1....	42	0	2	6	26	6	460	
No. 2....	42	0	2	6	26	6	462	

TABULAR STATEMENT, Continued.

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GRAVING DOCKS, Continued.		Width of Entrance.		Sill under Old Dock Datum.		Coping at Hollow Quoins above Sill		Length at Bottom.	Total Length at Bottom.
		Ft.	In.	Ft.	In.	Ft.	In.	Lineal Yd	Lineal Yd
Herculaneum Graving Docks—									
	No. 1—West	60	0	4	0	26	0	758 6	
	No. 2—East	60	0	4	0	26	0	753 0	
									1511 6
Total measure at Bottom									10136 6

BIRKENHEAD GRAVING DOCKS.									
No. 1, Western Float		..	..	..	..	..	..	..	
No. 2, Ditto		50	0	7	9	25	0	750	
No. 3, Ditto		85	0	7	9	25	0	750	
									1500
Morpeth Lock as a Graving Dock		85	0	12	0	26	0		468
Total measure at Bottom.....									1968
Ditto of the Liverpool Graving Docks									10136 6
Total									12104 6

LIVERPOOL AND BIRKENHEAD GRIDIRONS.		Breadth	Length
LIVERPOOL.		Ft. n.	Ft. In.
Clarence Graving { Blocks South End 2ft 2in. below Datum }		25 6	313 6
Dock Basin { Ditto North End 0 3 ditto }		26 0	509 0
King's Pier, Blocks level of Old Dock Sill .....		.. ..	822 6
Total Length of Liverpool Gridirons .....		.. ..	.. ..
BIRKENHEAD.			
Morpeth Basin, Blocks South End 1ft. 8in. above Datum	} 36 3	228 3	.. ..
Ditto ,, North End 1 1½ below Datum			
Total Length of Gridirons at Liverpool and Birkenhead .. ..		.. ..	1050 9

LIVERPOOL CORPORATION DOCKS.		Width of Entrance.		Level of Sill.		Level of Coping above Sill.		Water Area.	
				Above Datum.	Below Datum.				
		Ft.	In.	Ft.	In.	Ft.	In.	Acre.	Yd
River Craft Dock, Lock, & Eagle Basin		..	..	..	..	..	..		
Outer Gates		30	0	0	3	25	4	1	3416
Inner Gates.....		30	0	1	3	25	10		
Duke of Bridgewater's Dock—									
Outer Gates.....		40	0	..	..	25	6	2	1336
Middle Gates		28	10	0	6	22	9		
Inner Gates....		40	0	..	..	25	0		

The calculations of the heights of water for the Liverpool Tide Table were originally constructed from the level of the old Dock. The datum is now precisely the same, notwithstanding the removal of the gates, the Register being scrupulously preserved near the same spot, on the eastern wall of the Canning Dock. **TIDES.**—The average level of Low-water of Spring Tides is 8 ft. 9 in. below the old Dock Sill; the average level of Low-water of Neap Tides is 1 ft. 9 in. below the old Dock Sill. At Low-water of a 21 ft. Tide there is only 1 ft. 6 in. of water on the Bar of the Rock Channel. To find the quantity of water in the Rock Channel, add 11 ft. to the height of any Tide specified in the Tide Table.

A Tide-Gauge Table for the Entrance of the Mersey,

Adapted to shew the *Height of Water* above low-water level of ordinary Spring Tides, at any required period.

When it is High Water at or near either of the following times.	H. W.												L. W.
	hour.	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	
	12 o'clock	30	29	27	25	22	19	16	13	10	8	5	3
	11 or 1	29	28	27	25	22	19	16	13	10	8	6	4
	10 or 2	27	26	25	24	21	19	16	13	11	9	7	6
	9 or 3	26	25	24	23	21	18	16	13	11	9	8	7
	8 or 6	25	24	23	22	20	18	16	14	12	10	9	8
	7 or 5	24	23	22	21	20	18	16	14	12	11	10	9
	6	23	22	21	20	19	18	16	14	13	12	11	10

Graving Dock Rates

FOR	£	s.	d.	£	s.	d.
2 Tides, the tide in & next tide out	1	16	2	2	0	6
3 —, includ. going in & coming out	2	2	2	9	0	7
4 —	2	8	2	16	0	8
5 —	2	14	3	3	0	9
6 —	3	3	0	3	10	10
7 —	3	6	3	17	0	11
8 —	3	12	4	4	0	12
9 —	3	18				
10 —	4	4				
11 —	4	10				
12 —	4	16				
2 Neaps	12	0	16	0	2	0
3 —	18	0	24	0	3	0
4 —	24	0	32	0	4	0
5 —	30	0	40	0	5	0
6 —	36	0	48	0	6	0
7 —	42	0	56	0	7	0
8 —	48	0	64	0	8	0

Latitude and Longitude of Liverpool

Lat. of the Observatory .. 53° 24' 47.8" N.
Longitude in Time 12m. 0.11s. before Greenwich Time.

Fair and Foul Weather Prognosticator

The following Table and the accompanying remarks, are the results of many years actual observation; and will show the observer what kind of weather will probably follow the entrance of the Moon into any of her Quarters.

MOON	TIME OF CHANGE	IN SUMMER.	IN WINTER.
Full Moon—First Quarter happens	Between Midnight and 2 in the Morn..	Fair	Hard Frost, unless the wind be S. or W.
	— 2 and 4 do {	Cold, with frequent Showers ..	Snow and stormy
	— 4 and 6 ..	Rain ..	Rain.
	— 6 and 8 ..	Wind and Rain ..	Stormy.
	— 8 and 10 {	Changeable	Cold rain, if the wind be W. Snow, if E.
	— 10 and 12..	Frequent Showers	Cold and high winds.
New Moon—Last Quarter happens	At 12 o'clock at Noon and to 2 P.M.....	Very Rainy	Snow or rain.
	Between 2 and 4 After.	Changeable	Fair and mild.
	— 4 and 6	Fair	Fair.
	— 6 and 8.... {	Fair, if the wind N.W. Rainy, if S. or S.W.	Fair and frosty, if N. or N.E. Rain or Snow, if S. or S.W.
	— 8 and 10	Ditto	Ditto.
	— 10 and 12	Fair	Fair and Frosty.

REMARKS.—1. The nearer the time of the Moon's Change, First Quarter, Full, and Last Quarter to MIDNIGHT, the fairer will the weather be during the 7 days following. The space for this calculation occupies from 10 at night to 2 next morning.—2. The nearer to MIDDAY these phases happen, the more foul or wet the weather may be expected the next 7 days. The space for this calculation occupies from 10 in the forenoon to 2 afternoon.—3. The Phases happening from 4 to 10 in the afternoon, may be followed by fair weather, but this mostly depends upon the wind.—4. To prognosticate correctly, where the WIND is concerned, a good VANE should be within sight. Dr. Kirwan remarks, if a storm arise from the East on or immediately preceding the time of the Spring Equinox, or from any point of the compass near a week after: then, in either of these cases, the succeeding summer is dry, four times out of five: but if a storm arise from the SW, or WSW on or just before the Spring Equinox then the summer following is wet, five times in six.

MISCELLANEOUS INFORMATION.

Eclipses, 1868.

In the course of this year there will be two Eclipses; both of the Sun and both visible in this country. There will also be a transit of Mercury over the Sun's disc, partly visible here. The Greenwich mean time of these occurrences will be as follows:—

First. An Annular Eclipse of the Sun on the 23rd February, beginning on the earth generally at 11 17 morning, and ending at 5 25 evening. The Eclipse will be visible in the South Pacific, South America, a great part of the Atlantic, in Africa and the South of Europe.

Second. A total Eclipse of the Sun on the 18th August, beginning on the earth generally at 2 35 morning, and ending at 7 49. This Eclipse will be visible in the eastern parts of Africa, the Southern parts of Europe and Asia, and in the Indian and Pacific Oceans.

TRANSIT OF MERCURY.—The transit of the planet Mercury over the Sun's disc. will take place on the 5th November, at 26 minutes past 5 in the morning; the Sun will rise at Douglas 28 minutes past 7, being 14 minutes after the middle of the transit, last contact 3 minutes past 9 in the morning.

Chronological Notes

Mar Cycle or Golden Number	7	Septuagesima Sunday	February 9
Fast	6	Lent begins	March 1
Mar Cycle	1	Easter Day	April 12
Minical Letter	C.D	Ascension Day	May 21
Roman Indiction	11	Trinity Sunday	June 7
Roman Period	6581	Advent Sunday	November 29

Quarters of the Year

Spring Quarter commences 20th March 7h 41m, morning—☉ enters ♈	Autumnal Quarter commen. 22nd Sept. at 6h 32m, evening—☉ enters ♏
Summer Quarter commences 21st June 4h 9m, evening—☉ enters ♊	Winter Quarter commences 21st Dec. at 0h m, 28 afternoon—☉ enters ♐

The Revolutions, Distances, &c., of the Planets

Names.	Periodical Revolution.					Mean distance from Sun.		Diameter.	Time of Rotation upon their Axis.				Inclination of Axis to Ecliptic.			Hourly motion in their Orbits.
	Yrs	d	h	m	s				d	h	m	s	°	'	"	
Mercury ..	0	87	23	15	44	36,890,000	887,076	2,950	1	0	5	28	.....	.....	.....	111,256
Venus ..	0	224	16	49	8	68,770,000	7,900	7,900	0	23	21	8	.....	.....	.....	81,398
Earth	1	0	5	48	48	95,298,260	7,912	7,912	0	23	56	4	23	28	0	75,222
Moon	0	27	7	43	5	95,268,260	2,160	2,160	27	7	43	5	1	43	0	2,335
Mars	1	321	22	18	27	145,205,000	4,500	4,500	1	0	37	20	28	42	0	56,121
Jupiter ..	11	315	14	39	2	495,917,000	88,780	88,780	0	9	55	21	3	22	0	30,358
Saturn ..	29	164	7	21	50	909,026,000	77,230	77,230	0	10	16	1	30	0	0	22,351
Uranus ..	83	294	8	39	0	1,828,071,000	35,000	35,000	.....	.....	.....	.....	.....	.....	.....	15,846

Population of the United Kingdom according to the Census of 1861.

	Popula. Enumerated.		Increase, 1861.		Decrease, 1861.	
	1851.	1861.	Persons.	Rate per cent.	Persons.	Rate per cent.
ENGLAND AND WALES	17,927,609	20,061,725	2,134,116	12	—	—
SCOTLAND	2,888,742	3,061,117	172,375	6	—	—
IRELAND	6,552,385	5,764,543	—	—	787,842	12
ISLANDS IN THE BRIT. SEAS	143,126	143,779	653	—	—	—
TOTAL UNITED KINGDOM ..	27,511,862	29,031,164	2,307,144	—	787,842	—

Net Increase 1,519,302, or 6 per cent.

Population of the Isle of Man.

1851.—Males, 24,915; Females, 27,472—Total, 52,387. 1861.—Males, 24,458; Females, 27,794—Total, 52,252. Total Decrease, 135.

List of LIFE BOATS on the Coasts of the United Kingdom.

England.			
NORTHUMBERLAND.	SUFFOLK—	CORNWALL—	Scotland.
Berwick.	Southwold [2]	Bude Haven	Ayr
Holy Island	Thorpness [2]	NORTH DEVON—	Irvine
N. Sunderland	Aldborough	Appledore	Ardrossan
Boulmer	KENT—	Braunton	Thurso
Alnmouth	Margate	Ilfracombe	Wick
Hauxley	North Deal	SOMERSET—	Lossiemouth
Newbiggin	Kingsgate	Burnham	Buckie
Blyth [2]	Ramsgate		Banff
Cullercoats	Broadstairs [2]	Wales.	Fraserburgh
Tynemouth [2]	Walmer	Penarth	Peterhead
Shields [3]	Kingsdown	Porthcawl	Aberdeen [2]
DURHAM—	Dover	Swansea	Cove Bay
Whitburn	Dungeness	Llanelly	Stonehaven
Sunderland	SUSSEX—	Carmarthen B.	Montrose
Seaham	Camber	Tenby	Arbroath
Hartlepool [5]	Rye	Fishguard	Buddon Ness
Seaton Carew	Winchelsea	Cardigan	Broughty Ferry
YORKSHIRE—	Hastings	Newquay	Arbroath
Middlesboro'	Eastbourne	Aberystwith	St. Andrew's
Redcar	Newhaven	Aberdovey	Anstruther
Saltburn	Brighton	Barmouth	North Berwick
Runswick	Shoreham	Port Madoc	Dunbar
Whitby [2]	Worthing	Carnarvon	ORKNEY ISLANDS—
Upgang	Selsey	Porthdinllaen	Stromness
Robin Hood's Bay	Chichester Har.	Llanddwyn	
Scarborough	West Wittering	Rhoscolyn	Ireland.
Filey	HAMPSHIRE—	Holyhead	Greencastle
Bridlington	Hayling Island	Cemlyn	Portrush
Hornsea	Chapman's Pool	Moelfre	Groomsport
Withernsea	ISLE OF WIGHT—	Penmon	Ballywalter
Spurn point	Brooke	Orme's Head	Tyrella
LINCOLNSHIRE—	Grange	Rhyl	Newcastle
Donna Nook	GUERNSEY—	England.	Dundalk
Theddlethorpe	St. Sampson's	CHESHIRE—	Drogheda
Sutton	DORSET—	New Brighton	Balbriggan
NORFOLK—	Lyme Regis	LANCASHIRE—	Skerries
Hunstanton	Poole	Liverpool [7]	Howth
Blakeney	SOUTH DEVON—	Southport	Pool Beg
Skegness	Exmouth	Lytham	Kingstown
Sherringham	Teignmouth	Blackpool	Wicklow
Cromer	Brixham	Fleetwood	Arklow
Mundesley	Plymouth	Piel	Cahore
Bacton	CORNWALL—	ISLE OF MAN—	Wexford
Hasborough	Looe	Castletown	Courtown
Palling	Fowey	CUMBERLAND—	Rosslare Fort
Winterton	Falmouth	Whitehaven	Carnsore
Caister [2]	Cadgwith	Maryport	Tramore
Yarmouth [2]	Lizard	Silloth	Dungarvon
ESSEX—	Mullion		Ardmore
Harwich	Porthleven	Scotland.	Youghal
SUFFOLK—	Penzance	Kirkcudbright	Ballycotton
Gorleston [2]	Sennen Cove	Port Logan	Queenstown
Lowestoft	St. Ives	Girvan	Courtmacsherry
Pakefield	Hayle	Campbeltown	Valencia
Kessingland	Newquay		Westport
	Padstow		

MARINERS' GUIDE
TO THE
Principal Ports and Harbours
IN THE
BRISTOL AND ST. GEORGE'S
CHANNELS,
THE IRISH SEA,
AND THE NORTH CHANNEL;
CONTAINING A SERIES OF CLEAR AND CONCISE
SAILING DIRECTIONS
FOR THE
WEST COASTS OF ENGLAND, WALES, AND
SCOTLAND, THE ISLE OF MAN,
AND THE
EAST, SOUTH-EAST, NORTH-EAST, AND
NORTH-WEST COASTS OF IRELAND;
WITH
Tables of the Magnetic Bearings and Distances
OF DIFFERENT
HEADLANDS, HARBOURS, AND LIGHTS
ON THOSE COASTS.

* * * The Bearings and Courses in these Directions are those by compass,
and the Distances are nautical miles, of 60 to a degree.

MARINERS' GUIDE.

ISLE OF MAN.

The **ISLE OF MAN** lies in a N.E. by E. and S.W. by W. direction, and is about 30 miles in length and 11 in breadth. The Northernmost Point of Ayre is in lat. 54 deg. 27 min. N., and long. 4 deg. 20 min. W. The

Calf Island,

At the S.W., is in lat. 54 deg. 3 min. N. and lon. 4 deg. 50 min. W. On this Island are two Lighthouses, 187 yards distant from each other, bearing N.E. $\frac{1}{2}$ E. and S.W. $\frac{1}{2}$ W. The *higher* Light bears from the dangerous sunken rocks called the *Chickens* N.E. $\frac{1}{2}$ E., distant about a mile and a quarter: when the Lights are in one they lead on the Chickens. These Lights are *DOUBLY* revolving, without color, making their revolution in 2 minutes, and becoming gradually fainter during that time, until, at a distance, they appear totally obscured. At their brightest period they may be seen seven leagues off, resembling a planet. Between the Chickens and Calf is a passage about a mile broad, through which the tide sets from the W. round the Calf Point *very strong* outside of the Eye Rock, and also through the passage between the Island and S.W. Point of Man. There has been erected in the Sound of the Calf, on the "Thusla Rock," a tall iron basket-topped Perch, painted red. In the Sound of the Calf the stream runs W. 2 hours before high water on the shore, and continues 6, i.e., 2 hours before it ebbs on shore. $2\frac{1}{2}$ miles to the east is

Port St. Mary,

where there is good anchorage behind the Pier, which has been lately very much improved, but a dangerous rock called Carrick, lies about $\frac{3}{4}$ of a mile S.S.E. $\frac{1}{2}$ E. from the Village. This harbour has about 9 or 10 feet water at neap tides, and 14, 15, 18, &c. at spring tides. In running for it, keep Scarlet Head to the S. of Castletown, a good sail's breadth open, to avoid the Carrick Rock. On entering, take the quay as close as circumstances will admit. A *LIGHT* is exhibited throughout the year, on the larboard hand on entering the harbour. Five miles E. from the Chickens and $2\frac{1}{4}$ from Port St. Mary, is Scarlet Head, the westernmost point of

Castletown Bay.

The bottom towards the entrance is generally rocky, and there are three shoals or rocks dry at low water, the largest of

which, Lheeahrio, is a quarter of a mile long and 500 feet wide, and is marked on the east end by a large Black Buoy. A *RED* stationary light, to be kept on the larboard hand on entering, is erected on the new pierhead, which lies 80 yards outside the old pierhead, in a S.S.E. direction therefrom. The Buoy on Lheeahrio Rock is placed in five fathoms at low water, having Langness Point, by compass bearing S. $\frac{3}{4}$ E., and the lighthouse on the pierhead, N. $\frac{3}{4}$ E. On entering the Bay, be careful to leave the Buoy on the *larboard* hand, and in working into the Bay from the Westward, you must not bring the Buoy to the Southward of E.S.E.; nor open Spanish Head to the Northward of the Stack of Scarlet until Eastward of the Buoy, or until the lighthouse on the pierhead bears N. $\frac{1}{2}$ E., then steer for the harbour. The anchorage is sheltered from N.W. round by N. to S.S.E., the marks for which are, Spanish Head just open to the Southward of the Stack of Scarlet; the Steeple of Castletown Chapel in line with the Eastern part of a Gap in the Mountain bearing N. by W., and King William's College N.E. by N., where there are 9 fathoms at low water, spring tides, and safe anchorage.

Langness Point,

An isthmus running out from the main land, 2 miles to the S.W., has a turret on the point to identify its situation. There are *SUNKEN* rocks all about it, and the tide sets like a race upon the Point from the Chickens, at the rate (spring tides) of 6 miles an hour, and runs E.N.E. from 2 to 5 or 6 miles from the land, diminishing in strength to Maughold Head. To avoid the inset between the Chickens and Langness Point, it is advisable for strangers on no account to come within 3 or 4 miles of the land. On the E. side is

Derbyhaven,

Affording anchorage for large merchant ships, and sheltered from all winds except E. to S.E. The best *ANCHORAGE* is on the N. side of St. Michael's Island, in 3 or 4 fathoms, the castle (or fort) on it bearing S.E. by S. Small vessels may run further up. There is a *LIGHT* at the entrance of the harbour, which is lighted only during the herring fishing season. The stream, or rather eddy, along the E. side of Langness runs 10 hours S., from 2 hours of flood to the last of ebb on the shore. About 3 miles to the E. of Derbyhaven is St. Ann's Head, from which to

Douglas Head.

E. is about 2 miles, upon which a LIGHTHOUSE has been erected, the light from which is STATIONARY, and appears like a star of the first magnitude at the distance of 14 miles. The bearings of the light are as follows:—From CLAY HEAD, W. by S. $\frac{1}{4}$ S., 4 miles; from LANGNESS POINT, E. by N. $7\frac{1}{2}$ miles. The light will not be visible from Langness Point; but with an offing of 3 miles from that Point, the light will be seen bearing N. E. $\frac{1}{4}$ E., and the Calf Lights at the same time bearing N. W. by W. $\frac{1}{4}$ W. Vessels running for Douglas, between E. by N. $\frac{1}{4}$ N. to W. by S. $\frac{1}{4}$ S., will see the light at 5 miles' distance. Blowing fresh from the W. and bound for the bay, a vessel should keep pretty close to Douglas Head, or she will be thrown to the leeward of St. Mary's Rock, by the strong and variable gusts off the high land to the S. W., where she will be exposed and in bad anchorage. On the rock a tower has been erected, the appearance of which in the night is like a square rigged sloop under sail. Anchor in the bay between St. Mary's and the S. shore, 3 or 4 cables E. of the pierhead, where there are two lights, white and red, exhibited throughout the year. No vessel should enter Douglas Bay from the westward until having sighted the red light from the Pierhead, so as to clear the Breakwater Works. To enter the harbour keep close to the Pierhead. Four miles E.N.E. from Douglas Head is

Clay Head,

Round which is Laxey Bay, where there is good anchorage in 6 fathoms depth. From Clay Head to Maughold Head the course is N. E. $\frac{1}{2}$ E. 7 miles, and round the latter to

Ramsey,

N. W. Nl'y. $2\frac{1}{2}$ miles. To the E.S.E. of the town is Port Lewague, and a short distance to the N.W. of it lies a little rock called the carrick, which covers at $\frac{1}{2}$ flood. There is excellent anchorage and shelter from 1 to $1\frac{1}{2}$ miles opposite the town, as the bottom is good stiff clay; but there is generally a heavy sea and hard riding in it with winds from S. to E.N.E., to all of which it is open. The harbour, which is a dry one, will admit vessels drawing 17 or 18 feet water at spring tides, and 11 or 12 feet at neap tides. There is a light house on the quay, a stationary light, of a RED colour, is exhibited throughout the year. In the bay the stream runs nine hours N. and three hours S., beginning at 2 hours flood. There are three banks off this bay that deserve notice. The BAHAMA BANK, or RIG, bears N. E. 2 leagues from Ramsey town, and is about 6 miles in length from S.S.E. to N.N.W., with only 6 feet depth of water at the S. end, differing in other parts from 9 to 12 feet, and is rather more than $\frac{1}{2}$ a mile

broad. The BAHAMA FLOATING LIGHT, exhibiting two BRIGHT FIXED LIGHTS, is moored a mile off the S.E. tail of the shoal, in eleven fathoms, low water, spring tides, and with the following compass bearings:—King William's Bank Buoy, E. by N. $\frac{1}{4}$ N. nine miles; Point of Ayre lighthouse, N. by W. $\frac{1}{4}$ W.; Maughold Head W. by S.: Clay Head, S.W. by W. $\frac{1}{4}$ W. WHITEHOUSE BANK, so called from its composition, lies S.S.E. $1\frac{1}{2}$ miles from the extreme Point of Ayre, with a good passage between them; it bears N. N.E. from Maughold Head, and is $\frac{1}{2}$ a mile in length N. and S., and a $\frac{1}{2}$ in breadth E. and W., with 6 feet at low water spring tides. POINT OF AYRE BANK is a ridge extending $\frac{1}{2}$ a mile from the Point to the distance of 1 mile E., and thence circularly to the S. and E., always with a considerable ripple, nearly in a line with the BAHAMA BANK. KING WILLIAM'S BANK is 8 miles in length from S.E. to N.W., and a $\frac{1}{2}$ mile broad; the N.W. end is E. $6\frac{1}{2}$ miles from the Point of Ayre, and N.E. 11 miles from Maughold Head, from which the S.E. end bears E.N.E. $\frac{1}{2}$ E. $13\frac{1}{2}$ miles, and from the Point of Ayre E.S.E. 12 miles distant. The least depth of water on it is 18 feet. A Green Buoy, marked "wreck," is moored on the wreck of a vessel which lies about 4 miles N.E. ward off Ramsey, in the fairway of vessels coasting along the E. side of the island. The Buoy is moored about 10 fathoms to the Eastward on outside of the wreck in 6 fathoms low water spring tides. The following are the bearings from the buoy:—Point of Ayre Lighthouse, N.; Lighthouse on Ramsey Pier, S.W. $\frac{1}{4}$ W.; Maughold Head, S. $\frac{1}{2}$ W. Another Green Buoy marked "wreck," is moored on the wreck of a second vessel in Ramsey Bay, about 4 miles N. Eastward of Maughold Head, in the way of vessels coasting along the E. side of the island. The Buoy is moored about 10 fathoms to the Eastward on outside of the wreck in $6\frac{1}{2}$ fathoms. The following are the bearings from the buoy:—Ramsey Mill, N.W. by W.; Maughold Head, S.W. The

Point of Ayre Lighthouse

Bears N.N.E. $\frac{1}{2}$ E. from Maughold Head, distant 8 miles, and the lantern is 106 feet above the sea, from the shore of which it stands about $\frac{1}{4}$ mile inland. It is REVOLVING, showing alternately a BRIGHT and RED coloured light, becoming from a star-like appearance gradually stronger until the attainment of the utmost brilliancy every two MINUTES. The light of the common colour is to be seen 4 or 5 leagues off; but the RED one is not distinct at so great a distance. Maughold Head prevents the light being seen by a navigator S. of it, as does Rue Point when he is W. of it. N. by W. $\frac{1}{4}$ W. $1\frac{1}{2}$ miles from the Pt. of Ayre is STRAUNKILI

BANK, bearing from Jurby Point E. by N. 5 miles; it is $1\frac{1}{2}$ miles long E.S.E. and W. N.W., and nearly $\frac{1}{2}$ a mile broad. There are 3 fathoms on the shoalest end, but the sea breaks and the tide sets strong upon it; keeping WITHIN $1\frac{1}{2}$ miles of the land will clear the whole.—From the Point of Ayre to Jurby is 7 miles to the W. and hence to the Peel Pierhead Light, S.W. $\frac{1}{2}$ W. 11 miles; 4 miles from Jurby W. $\frac{1}{2}$ N. and about 3 miles from the land abreast, is a **BLIND ROCK**, and from

Peel Pierhead Light,

N.E. by E., 9 miles. This light (Red) is stationary, is exhibited throughout the night, and is visible at a distance of eight miles in clear weather. The harbour at Peel is a dry one. Between Jurby and Peel, off Ballabui, lies a shoal $1\frac{1}{2}$ miles from the land, and $3\frac{1}{2}$ miles N.E. $\frac{1}{2}$ E. from the light. A vessel may ride in the bay with the Castle bearing from S.S.W. to S.W. in 6 or 7 fathoms' depth of water. On entering the Harbour, keep the point of the Jetty close on board on the starboard hand and run in, keeping the light on the pierhead on the port hand. A white light is exhibited from the end of the breakwater. The Mull of Galloway light adds to the convenience of this Harbour, being visible from the Castle, and only distant N. by E. 26 miles. The Peel Light is about 300 yards S.S.W. from the N.E. point of the Castle. The streams of flood that come to the E. from along the S. coast, and along the N. coast of Ireland, meet about a mile W. of Contrary Head, so called from this circumstance, and there divide into two branches, one of which runs N.E. to the Point of Ayre, and on to Maughold Head, the other S.W. to the Calf; one proceeding round the Calf at 6, the other round the Point of Ayre at 4 miles an hour, meeting off Maughold Head. From Contrary Head to abreast the Calf Lights the course is S.W. 10 miles; and $4\frac{1}{2}$ miles from the W. end of that Isle is

Port Erin,

a sheltered little creek, surrounded by very high land, easy of access, and affording shelter against all E. winds. At the entrance, between the headlands, there is a depth of about 15 fathoms water; here the tide runs very strong at the rate of 6 miles an hour. Keep the Calf Lights well open when passing Langness Point.

TIDES.—On the full and change days, it is high water on the shore at Peel at 10h. 48m.; in the Calf Sound, 10h. 57m.; at Douglas, 10h. 48m.; at Ramsey, 10h.; and at the Point of Ayre, 10h. In the Isle of Man, spring tides rise 18 or 20 feet perpendicular; neap tides 9 or 10.

Magnetic Bearings & Distances,
FROM THE HEADLANDS OR HARBOURS
IN THIS ISLAND, TO OTHER HEADLANDS
OR HARBOURS IN THE CHANNEL.

FROM DOUGLAS HEAD TO		MILES.
St. Bees Light	E. by N.	42
Ravenglass	E. by S.	40
Lancaster Channel	S.E. $\frac{1}{2}$ E.	54
Liverpool Floating Light, S. by E.	$\frac{1}{2}$ E.	59
Chester Bar	S. by E.	60
Great Ormshead	S. $\frac{1}{2}$ W.	54
Skerries Light	S.W. by S.	46
Langness Point.....	S.W. by W.	8

FROM THE POINT OF AYRE TO		MILES.
Maughold Head.....	S.S.W. $\frac{1}{2}$ W.	8
St. Bees Light ..	E.S.E. $\frac{1}{2}$ E.	26
Whitehaven	E.S.E. $\frac{1}{2}$ E.	28
Maryport	E. $\frac{1}{2}$ N.	37
Ross Light, Kirkcudbright	N.E. $\frac{1}{2}$ E.	24
Burrow Head	N.N.E.	16
Mull of Galloway... N.W. by N.	$\frac{1}{2}$ N.	21
Copeland Light, Belfast..	N.W. $\frac{1}{2}$ N.	44
Liverpool Floating Light	S. $\frac{1}{2}$ E.	70

FROM MAUGHOLD HEAD TO		MILES.
Skerries Light.....	S.W. $\frac{1}{2}$ S.	56
Great Ormshead	S. by W.	60
Liverpool Floating Light	S. $\frac{1}{2}$ E.	60
Lancaster Channel	S.E. $\frac{1}{2}$ S.	54
St Bees Head	E.	42
Ravenglass ...	E.S.E.	40
Whitehaven	E. $\frac{1}{2}$ N.	37

FROM THE CALF OF MAN TO		MILES.
Langness	E.S.E. $\frac{1}{2}$ S.	3
Mull of Galloway	N.N.E.	3
Copeland Light	N. $\frac{1}{2}$ W.	4
South Rock Light....	N. by W.	$\frac{1}{2}$ W.
Strangford Lough	N.N.W.	$\frac{1}{2}$ W.
Carlingford Lough.....	W.N.W.	4
Drogheda	W $\frac{1}{2}$ N.	3
Howth Head	W.S. W $\frac{1}{2}$ W.	6
Kish L'ship, Dublin Bay	W.S.W. $\frac{1}{2}$ W.	6
Holyhead	S.S.W.	4
Great Ormshead	S. by E.	54
Liverpool Floating Light	S.S.E. $\frac{1}{2}$ E.	60
Skerries Light	S. by W.	$\frac{1}{2}$ W.
Point Lynas.....	S. $\frac{1}{2}$ E.	4

FROM PEEL TO

Mull of Galloway Light....	N. by E.	21
Copeland Light.....	N.N.W. $\frac{1}{2}$ N.	44
Strangford Lough.....	N.W. $\frac{1}{2}$ W.	44
Maidens Light	N. by W.	$\frac{1}{2}$ W.

Free Harbours

No tolls are exigible on vessels entering any of the Harbours in the Isle of Man.

Abstract of the Bye-Laws for regulating the Harbours.

1. Any vessel, through mismanagement, injuring the quays, &c., such injury to be repaired, under penalty of double the value of the damage.
2. No chain cables to be used for mooring vessels, under penalty of £2.
3. No ballast to be discharged without a port sail, under penalty of £2.
4. Vessels heaving ballast or stone into the harbours, penalty £2 per ton.
5. That no person heave stones, dung &c., into the harbours, under the penalty of £2; and if not removed when ordered a further penalty of £2.

6. Masters of vessels not obeying Harbour Masters in mooring vessels, penalty £2: all expenses incurred by the Harbour Master in mooring vessels to be paid by master or owners of said vessel. Any person obstructing Harbour Master in executing his duty, penalty £5.

7. No person to make a fire on the quays without permission, penalty £3.

8. No clog fenders to be used, under penalty of £1, unless hung lengthways.

9. Any person throwing off ends or cutting hawsers, besides paying the damage to the owners, to forfeit £5.

10. That all gunpowder be landed immediately after arrival, under penalty of £10 for every 24 hours it remains on board; and no fire or light to be kept on board while such gunpowder remains in the vessel, further penalty £20.

11. Any dock made for repairing vessels in harbour to be filled up in 24 hours after removal of the vessel, under penalty of £5 for every 24 hours it lies open.

12. No vessel to unload ballast at night under penalty of £10.

13. That no timber, iron, &c. (unless for repairing vessels) be left on the quays longer than two days, on penalty, for every day longer than the said two days, after notice given by the Pier Master, of £1.

14. That no vessel be allowed to take ballast from another, penalty £1, unless by leave of the Harbour Commissioners.

15. Ballast not to lie on the quay longer than 24 hours, under penalty of 5s. per day.

16. All vessels unloading merchandize to have preference of berth in turn.

17. Vessels taking in goods to have any unoccupied berth, but to give it up on the arrival of a loaded vessel.

18. & 19. One person at least to be on board every vessel when afloat, in harbour or bay, under penalty of £2.

20. & 21. No person to act as pilot without commission, under penalty of £10. No vessel compelled to take a pilot.

22. Proprietors of lime-kilns to screen their lights, if liable to be mistaken for harbour lights, under penalty of £5.

23. Persons firing on pier, &c., (except on days of public rejoicing,) penalty 10s.

24. Boats plying for passengers without licence, penalty £2; and owners to be accountable for breach of harbour laws by any of the crew.

25. No person to erect stalls on the quays to cure fish, or deface the quays, &c. under penalty of £2 for every offence.

26. No person to enforce higher rates for pilotage than as follows, which include attendance of boat and four men:

Vessels of 40 Tons	£0	5	0
Vessels above 40 and under 60	0	7	0
Vessels above 60 and under 100	0	13	0
Vessels 100 Tons and larger	1	0	0

27. Vessels must allow ropes or warps of other vessels to be made fast to them, under penalty of £2.

28. All vessels in harbour must keep in their jib and mizen booms, under penalty of £2.

29. No lumber to remain on the quays or steps, under penalty of £1.

30. No conveyance having wheels shod with iron, allowed on Douglas pier, under penalty of £2.

WEST COAST OF ENGLAND.

RIVER RIBBLE TO SOUTHERNESS LIGHT.

The River Ribble.—PORT OF PRESTON.—The entrance to the River Ribble and Port of Preston is indicated by a large buoy at sea called *Nelson*, which should be observed by vessels bound for the river. It is a large Black Buoy with a Cage-Ball at the top, stands 26 feet out of the water, and may be seen in clear weather 10 miles. *Nelson of Preston* is painted upon it. Having observed the *Nelson Buoy*, the entrance to the River may be made by the North Channel or the Gut. The entrance to the North Channel is north-eastward, and to the Gut south-eastward of *Nelson Buoy*. The North Channel is buoyed by 10 buoys, numbered 1 to 10, and marked with the letter N.; the Gut by 5 buoys with cages on the top. The buoys are placed in the deepest parts of the Channels. The Gut joins the North Channel at No. 8 buoy, nearly opposite Lytham Lighthouse. The outer buoys of

both Channels are placed in 3 fms. water, and from them the other buoys can be seen. From No. 10 buoy to the commencement of the stone embankments, about three miles east of the town of Lytham, the Channel is marked by perches and small buoys placed upon the north side, and from thence to Preston by perches placed on the stone embankments on both sides of the Channel. Between buoys four and six in the North Channel vessels drawing 14 feet of water may lie at anchor afloat at low water. A lighthouse has been erected N.E. of Stanner Point, N. side of entrance, showing an Intermittent light, $3\frac{1}{2}$ min. bright, $\frac{1}{2}$ min. dark. The light is visible to mariners all round from the Blackpool to the Southport shores, and is situate in lat. $53^{\circ} 44' 38''$ and lon. $3^{\circ} 1' 17''$, and is 81 feet 8 inches above the mean water of the sea. On the north shore of the Ribble, and 3 miles east of the lighthouse,

is the town of Lytham, before which there is a small tide light on the end of the new Pier which extends from the beach to the channel. Here also is a dock, where vessels can lie in safety. Vessels drawing 12 to 14 ft. can go up to Preston Quays at spring tides. The quays are connected by a branch with the Railways leading to Manchester, Bolton, Blackburn, Bury, Accrington, and the various other manufacturing towns of Lancashire and Yorkshire, and the Wigan and Burnley coal fields. Mr. W. Allsup's two Steam Tug Boats ply upon the River for the purpose of towing vessels to and from Preston, and at present, when required, tow vessels at the following rates per reg. ton.—No. 1 buoy to Preston, and back 1s. 4d.; No. 1 buoy to Preston, or Preston to No. 1 buoy, 1s.; No. 1 buoy to Lytham, or Lytham to No. 1 buoy, 6d.; Lytham to Preston and back 8d.; Lytham to Preston, or Preston to Lytham, 6d. Masters of vessels requiring a Pilot or tug-boat, and not meeting with one outside the channels, should signal in sight of the lighthouse. A Pilot will also, if required, go to any port to conduct vessels into the river on a letter being addressed to Captain Whalley, Harbour Master, Lytham, Lancashire.—By applying to the Admiralty agent, J. D. Potter, 38, Poultry, London, a Chart of the Entrance to the Ribble, published in 1860, can be had for 1s. 6d.

Morecambe Bay.—In sailing towards this bay, from the southward, which is about 8 leagues from Formby Point, keep full 4 miles from the shore, on account of the flat shoal water, known by the name of "Shell Wharf," this begins nearly abreast of the "Red Banks," and extends to the south side of Lune Deep. The western edge of these grounds is steep to, and there are on some parts of the Shell Wharf not more than 6 and 9 feet at low water. The entrance to Morecambe Bay is known by the name of Lune Channel, and is $2\frac{1}{2}$ miles wide at the west end. On the southern side is the Point of Rossal, and on the northern side is the Island of Walney; on the former is a conspicuous beacon or landmark, and on the latter a lighthouse, which bears from each other nearly north and south, distant 8 miles. The Point of Rossal is lowland, and the beacon, when seen at the distance, of about 5 miles, has the appearance of a vessel under sail. Morecambe Bay is encumbered with numerous large sandbanks, many of which dry at low water, and some at half ebb. The general direction of the mariner, if bound to Lancaster, will be to attend particularly to his soundings, taking care to get into the deep water of the Lune Channel, and to remain there until he obtains a pilot. When in 24 and

25 fathoms, you will perceive the ends of the rock weeds floating, and the water of a darker blue than when you are over any of the banks. A light vessel is moored off the entrance of Morecambe Bay, in 12 fathoms at low water spring tides, with the following compass bearings:—St. Bee's Head Light, N. by E. $\frac{3}{4}$ E., distant 36 miles; Walney Light, E. by N., distant $14\frac{1}{2}$ miles; foot of Wyre Light, E. by S. $\frac{1}{4}$ S., distant $16\frac{1}{2}$ miles; Blackpool Church, S. E. $\frac{1}{4}$ E., distant $17\frac{1}{2}$ miles; Calf of Man Light, N. W. by W., distant 49 miles; Liverpool N. W. Lightship, S. by W., distant 25 miles.

The River Wyre.—The following are the directions for entering the Port of Fleetwood.—On coming from sea, keep the westernmost part of Walney Island to the eastward of Blackcombe until Rossall Landmark bears S. E.; here you are entering the deep water of Lune, where you will have 28 fathoms at low water. The shoals to be avoided on approaching Wyre are Shell Wharf, North Wharf, and King's Scar Ridge. A large red buoy is laid down nearly on the point of the Ridge, to which a good berth should be given; it also marks the southern side of the Lune deep. A black perch is placed on North Wharf, about three-quarters of a mile S. E. by S. from the King's Scar Buoy. On the north side of Lune deep a black buoy, with globe on the top, and marked "Danger Patch," is placed a few fathoms westward of a shoal patch bearing that name. Between these buoys is the Lune deep or channel, the course up which is E. $\frac{1}{2}$ N. Rossall Landmark is a large wooden structure (of a conical shape) built on the shore of Rossall point, and denotes the southern limit of Morecombe Bay. Walney Island, on which is a revolving light, is the northern limit. Shell Wharf extends to the westward of Rossall Landmark and North Wharf upwards of three miles. If in hazy weather you fall in with low land, and not knowing whether it is Walney or Rossall land, your lead, which should never be neglected, will at once inform you; for 4 or 5 miles off Walney, you will have 8 or 10 fathoms, but at the same distance off Rossall only 4 or 5 fathoms. After passing the Danger Patch and King's Scar buoys you will observe the Fairway Buoy to Fleetwood channel. It is a vertically striped black and white buoy, and lies half-a mile N. N. W. from the Screw Pile or Fleetwood Lighthouse. Enter the channel between the Fairway Buoy and the lighthouse, giving the lighthouse a good berth on the starboard hand and running up for the No. 2 black buoy on the Little Ford, leaving that buoy on the port hand. You will now have come up with the red buoy guarding the north end of the Big Ford; leave that on the starboard hand, then leaving all the

black buoys, which mark the eastern side of the channel, on the port hand, and the red buoys and perches (the latter having red globes on the top) on the starboard hand, round close to the Steep Breast, on the edge of which stands the Lower Shore Lighthouse, and where the tides run very strong: you then enter the Harbour. There are large red buoys for mooring ships to. Sail between the buoys and the shore, letting go your anchor when you reach the upper part of the Canshe Hole; but be careful not to foul the moorings of the buoys, as they run in various directions across the harbour. Strangers visiting this port should always hoist signal for a pilot, several of whom are constantly on the look-out. There are two pilot cutters (numbered 1 and 2) with pilots for any of the ports in the bay, and are generally cruising off the bay. The Screw Pile or Fleetwood Light is a Fixed Bright Light, seen 8 or 10 miles in clear weather. There are also two Fixed Shore Lights, lighted from half-flood to half-ebb. By day, a black ball hoisted on a pole at the Screw Pile Light and Lower Shore Lighthouses, denotes the same interval of tide. A bell, tolling three strokes per minute in foggy weather, is sounded from the Screw Pile Lighthouse, and may be heard at the distance of two miles. There is good anchorage off North Wharf, anywhere between the King's Scar Buoy and the Lighthouse, in such water as the state of the tides and a vessel may require. A green buoy is placed near a wreck on the Bernard Sand, about half a mile N.E. of the Screw Pile Lighthouse; but your vessel should never be that far to the eastward, as the flood tides run across there, and will set you ashore. There is now at low water spring tides, six feet of water from sea into the Harbour, by the buoyed channels, keeping the best of the deep. The powerful steam-tug "Wyre," belonging to the port, tows vessels in and out of the harbour at moderate rates.

The **River Lune.**—**SUNDERLAND, GLASSON, and LANCASTER.**—Sunderland Harbour is at the mouth of the River Lune, and is dry. Large vessels may go in after half-flood, and lie on clean ground below the houses, and with neap tides, ships of 12 feet water may ride afloat in the pool, off the westernmost houses in the village. It is not safe riding in the pool with spring tides, because of the rapidity of the stream, which runs there about $4\frac{1}{2}$ miles an hour when strongest. The channel leading into Sunderland is buoyed, and there is a Lighthouse on the south side, over against the point of Sunderland. Bernard's Wharf, the westernmost bank, begins to dry at half-ebb. At the easternmost buoy there is a patch of sand that dries with spring

tides only. To come up with the outer or westernmost buoy of the channel of Lune River, take half-flood, and stand no nearer the North Wharf Bank than 8 fathoms water; or keep Lancaster Church Steeple a small sail's breadth open to the southward of the Bluff End of Highfield or Lawson's Wood,—a long hill under the same high land, which terminates in a remarkable Bluff Point, a little to the northward of the Church Steeple. This mark will bring you to the outermost Buoy, clear of North Wharf and Bernard's Wharf; or, when this mark cannot be seen, keep the westernmost part of Walney Island to the eastward of Blackcombe, until the Landmark bears about S.E. In this situation you are entering the deep water of the Lune, where you will have 28 fathoms at low water, and the outermost Buoy bearing about east from you; and should you be forced in by strong gales, or night coming on with a flood-tide, that you cannot keep an offing, you may by observing these directions bring your vessel to an anchor to the southward of the buoy.—If in dark hazy weather you should fall in with low land, bearing E.N.E., &c., and not know whether it is Walney or Rossall land, your lead will at once inform you; for at the distance of 4 or 5 miles from Walney, in that direction you will have 8 or 10 fathoms water, but at that bearing and distance from Rossall, only 4 or 5 fms. —*To avoid the Shoals on the north side of the Bay:*—Near low water come no further in, with a vessel of considerable draft of water, than where Walney Lighthouse is open to the eastward of the highest part of Blackcombe, when the Landmark bears S.E., as you are here to the westward of the Stony Patches on the north side of the Lune, where you may safely stand off and on for a pilot.—*To avoid the Shoals on the south side of the Bay:*—Shell Wharf extends W. by N. to W. by S. from the Landmark, therefore you must take care about low water to keep the Landmark to the southward of E.S.E., and when you steer for the buoy at the proper time of the tide, and having fallen into the deep water of the Lune, by observing the foregoing directions, you must allow for North Scar and North Wharf, a high bank, which runs out two miles northward of the Landmark, and covers about half-flood. About high water, you may venture in the day time to stand over any part of the bay from Pile of Foudry to the outermost buoy in the Lune; but in the night or thick weather, keep further out to the westward, taking care to have the lead constantly going, and watch every opportunity to take the bearings of the marks before mentioned, until you obtain a pilot.—The *First*, or Outermost Buoy, lies in $6\frac{1}{2}$ fathoms at

low water, neap tides, pass on the south side of the Buoy, with Pile Castle bearing N.N.W. $\frac{1}{2}$ N.; Lighthouse on Walney, N.W. by N. $\frac{1}{2}$ N.; North end of North Wharf, W. by S.; Landmark on Rossall Point, S.W.; Foot of Wyre Lighthouse, S.W. by W.; Lancaster Church Steeple, a little open with Highfield, E. by N.; Second Buoy, E.S.E. $\frac{1}{2}$ S. If too early for the tide, or too late in the evening to proceed up the river, you have good anchorage one cable's length to the westward of the second buoy, under Bernard's Wharf, where you will have 3 fathoms at low water, and little current; but you must not proceed up the river with a vessel of considerable water draft until after half-flood. The *Second Buoy* lies in 3 fathoms, with outermost buoy bearing W.N. $\frac{1}{2}$ W.; Third Buoy, E.S.E. The *Third Buoy* lies in 11 feet, with the second Buoy bearing W.N.W.; Fourth Buoy, E. by S. The *Fourth Buoy* lies in 2 feet, with Third Buoy bearing N. by W.; Fifth Buoy E. The *Fifth*, or innermost Buoy, lies in 3 feet, with Fourth Buoy bearing W. by S.; Lighthouse on Abbey Scar, E. by S. Keep the Upper and Lower Lighthouses in a line, and guard against the flood tide setting strong to the southward, up Cocker. Soon after you have passed the Lower Lighthouse, keep Basil Barn a little open to the southward of Overton Chapel which will take you clear of Thornbush Fishery and Town's Skear, to Sunderland, where you may obtain a pilot. The deepest water is on the south side of all the Buoys, and the river Buoys are placed on the north side of the channel.—GLASSON is about 5 miles before you reach Lancaster. Upon the pier is a harbour light, shown at tide time. The tide flows at the dock gates the same time as at Liverpool; adding two inches to every foot of water at Liverpool, will give the height at Glasson. Every vessel going into the dock must clew up her sails, and (if the wind be any way to the northward) let go an anchor before coming into the Dock Gut, to prevent her anchor bill running through her bows and destroying the works. If the wind be from the westward, and a flowing tide, she may safely touch on the west side, and be veered alongside the pierhead, by a line from the westward; but on no pretence whatever is any vessel to attempt going in under ever so easy sail, as several serious losses have already been sustained thereby; and no steam-vessels is to make use of her paddle wheels either in going in or out of dock, but to let off steam before they go in. Masters of vessels offending in these particulars are liable to a penalty of £5, besides having to repair the damage.—From Glasson to LANCASTER the channel is irregular, variable, and shallow; the shall-

lowest parts of it having no more than 7 feet water at high water with neap tides, and 12 or 14 at high water with spring tides. Pilots legally appointed to conduct vessels to and from the quays at Lancaster, may be obtained at Snatchems, near Sunderland.

Morecambe Harbour.—This harbour is situate at the terminus of the Midland, and London and North Western Railways. A new stone pier has recently been constructed, and superior accommodation provided for the transshipment of passengers and merchandise between the railway trains and steamboats. The dues levied on vessels in respect of lights and buoys are 2d. per ton on vessels from ports in the United Kingdom, and 3d. per ton on vessels from ports beyond, but when such dues have been paid three times in one year by any vessel, they are then reduced to 1d. per ton on the same vessel for the remainder of the year. There are no other dues or port charges on vessels.—The sailing directions for Fleetwood or Lancaster must still be adhered to until the Light at Foot of Wyre bears South one mile distant, then, if flood-tide, haul up N.E. by N., and, if ebb, N.E., this course leads to the entrance of the Channel to Morecambe Harbour, which is defined by No. 1 Red on the Starboard, and No. 1 Black buoys on the Port hand, moored as hereinafter described:—A NEW LIGHTSHIP has been substituted for the Screw Pile Lighthouse, formerly on Clark's Wharf, and is now moored in Mid-channel, about three-quarters of a mile Eastwards of No. 1 Black Buoy, in four fathoms low water of ordinary Spring tides; the Compass bearings of this Light-ship are as follows: To Walney Light, N.W. $\frac{3}{4}$ W. distance 6 $\frac{1}{2}$ miles; Wyre Light S.W. by S. distance 4 $\frac{1}{2}$ miles; Morecombe Harbour Pierhead Light, E. $\frac{3}{4}$ N., distance 5 $\frac{1}{2}$ miles. The Ship is painted Red with "Morecombe" in large white letters on her sides, has one Mast with Circular Beacon and exhibits a RED LIGHT from Sunset to Sunrise, visible all round the horizon in clear weather 5 $\frac{1}{2}$ miles; when there is 8 feet of water in the Channel up to the Harbour, a Black Ball will be hoisted on the Flag-staff aft by day and a White Light shown on the bluff of the Bows at night. During Foggy Weather or Snow, a bell will be struck three times every minute. N.B.—The Light-ship is moored with a single anchor, and in rough weather will ride with 100 fathoms of chain out. Masters of Vessels running in or out of the channel are therefore requested to give the ship a sufficiently wide berth. Seven Buoys define the Channel leading to Morecombe Harbour, viz.:—No. 1 Red buoy on the Western Point of Clark's Wharf Spit, the compass bearings from

high are:—To Foot of Wyre Light, S. by S. $\frac{1}{2}$ S.; to Walney Light, N.W. $\frac{1}{4}$ E.; to New Light Ship, N.E. $\frac{1}{4}$ E.; to No. 1 Black Buoy, N.E. by N. $\frac{1}{4}$ N. No. 1 Black Buoy on the Western Point of Yeoman's Wharff Spit, the compass bearings from which are:—To foot of Wyre Light, S.W. by S. $\frac{1}{4}$ S.; to Walney Light, N.W. $\frac{1}{4}$ W.; to New Light Ship, by N. $\frac{1}{4}$ N.; to No. 1, Red Buoy, S.W. $\frac{1}{4}$ S. N.B.—These two Buoys define the Mouth of the Channel; they are about one Sea mile apart, and have a depth of about 9 feet between them at dead Low Water Spring Tides. From New Lightship to No. 2 Red Buoy on the north side of Clark's Wharf, the compass bearings are E. $\frac{1}{2}$ N. No. 2, Red Buoy to No. 3 Red Buoy, N.E. by E. From New Lightship to No. 2 Black Buoy on the South side of Yeoman's Wharf, the compass bearings are N.E. by E. $\frac{1}{4}$ E. No. 2 Black Buoy to No. 3 Red Buoy, E. $\frac{1}{2}$ N. No. 3 Red Buoy is a circular Cage on the top, is placed at the Western Point of Low Scare, and may be passed on either hand. Vessels approaching the Harbour at Low Water should anchor below this Buoy, where there is excellent holding ground in a depth of not less than 5 fathoms at dead Low Water of Spring Tides, and remain there until a Black Ball, by day, is exhibited at the end of the Pier, and at night until Half Flood, when their will be a depth of 8 feet in a clear course between the No. 4 Buoys up to the harbour. The compass bearings from the Red Buoy are:—To No. 4 Red and No. 4 Black Buoys, E. $\frac{3}{4}$ S. No. 4 Red Buoy is on the end of Old Scare, and No. 4 Black Buoy is on the end of Stone Scare. The Lighthouse on the Stone Pier exhibits a White Light from Sunset to Sunrise; in day time a Ball is hoisted when there is 8 feet of water between the No. 4 Red and Black Buoys. The Pier Heads are distinguished at night by four Gas lamps coloured Green to the West and Red to the North. Two Red Lamps about the third up the Pier, when brought into use will lead between the No. 4 Red and Black Buoys.

Pile of Foudry.—Pile of Foudry is a harbour near the south end of Walney Island, where large merchant ships may ride in good shelter near the west or south-west side of Roe Island, in from 3 to 5 fathoms water. Small vessels commonly lie aground in the bight, on the east side of Pile of Foudry Island, about a cable's length from High Water mark, when the house bears S. by W. In the anchorage near Roe Island the streams of flood meet; one from the north, the other from the south, and make it troublesome to keep the anchor clear. The stream here runs about 3 miles an hour

when strongest. On the south end of Walney Island is a stone lighthouse, exhibiting a revolving light 70 feet above high water, flashing every minute, visible in clear weather 3 or 4 leagues; there is also a small Fixed Light of a red colour. $2\frac{1}{2}$ miles W. by S of this light lays the Fairway buoy for Pile Harbour, marked "Helpsford" in white letters on black ground. On the north side of this channel is Walney Island, which is low land, and on the south side are several sandbanks or stony ledges; the most dangerous of these is the Stony Patch, which lies to the westward of all the others, distant from the lighthouse on Haw's Point about four miles; to clear it to the westward, bring the Old Castle on Pile Island just open to the eastward of the lighthouse. The lead should be kept constantly going, and if coming from the southward, bring Blackcombe Hill on with the north end of Walney Island, and keep them so until Walney Lighthouse comes E.N.E., and the ruin upon Foula Island touches Haw's Point. The Helpsford Sand is on the S.E. side of Walney, within a mile of the shore, to clear which, you must bring the dwelling-house near the lighthouse a sail's breadth open of the southernmost sandhills, or the lighthouse just clear of the eastern chimney of the same house, bearing N.E. by E.; then, as you advance, bring the ruin of the house on Foula, before mentioned, on with Haw's Point, and these marks will lead you in. Upon the bar is 15 feet water at 2 hours' flood, and the rise of tide is sometimes $29\frac{1}{2}$ feet. The strength of the flood tide is $2\frac{1}{2}$ knots an hour, and the ebb nearly the same. In leading to the anchorage with a flood tide, and the wind scant, you may stand along the southern part of Walney about a mile from the shore, and have regular soundings. In dark weather, should you fall in with land bearing E.N.E., and uncertain whether it is Walney Island or the land adjacent to Rossall Point, then you must be guided by your lead, for at the distance of 5 miles from the former are 7 and 8 fathoms, but at the same distance from Rossall there are only 4 or 5 fathoms; allowance must be made for the rise and fall of the tides, making high water full and change at 11 o'clock. In running for the Pile of Foudry anchorage at half-flood, give Haw's Point a berth of half a cable's length, and keep off Pile Castle Point a similar distance, then, should your vessel draw 10 feet water, anchor in the bight below the house on Pile Island, or near to Roe Island, in 5 fathoms, with the lighthouse open to the starboard of Pile Castle. The breadth of the anchorage above Roe Island is nearly 2 cables. Here the ground holds well; as the tide ebbs you become quite landlocked and may shorten your cable, to enable

you to swing clear of either side at low water in 3 fathoms.—Vessels bound from Pile to Barrow should leave Roe Island Pier Lighthouse on the starboard hand, when they will fall in with the Fairway Buoy for Barrow, painted black and white. A strong flashing light from the Iron Works lately erected at Hindpool, $1\frac{1}{2}$ miles north of Barrow, may be seen bearing from Walney Island Light N. $\frac{1}{2}$ W.; Lillip's Ford N. N. E. $\frac{1}{2}$ N.; Cockspeck Scar, E., and may be seen 15 miles seaward.

Ravenglass is a dry harbour, where three rivulets, the Esk, Mite, and Orte, unite about 12 miles to the southward of St. Bee's Head. There is a buoy placed a little within the mouth of the channel, in the middle, near the Fish Wear, which marks the entry. At this buoy, and in most parts of the channel, the depth is 3 fathoms at high water, with neap tides. The best part for vessels to lie aground on is, half a cable's length from the west end of the town of Ravenglass, on the south side of a perch which stands on the point of a sand there. At this anchorage, in the mouth of the river Esk, and also at the meeting of the other rivers, there are 3 fathoms at high water with spring tides, and 10 ft. with neaps. To sail into Ravenglass Harbour, take 4 hours of flood, keep above a mile from the coast to avoid Selker and Drig rocks (till Ravenglass town bears E. N. E.): steer in that course till you see the buoy bearing east, and then steer right for it, keeping within a ship's length off it on either hand; when you are just past the buoy, steer E. N. E., or keep Ravenglass a sail's breadth open to the north of your stern, till you are about half a mile from the east end of the sandy hillocks; hook the small bay, which begins there; keep near a cable's length from the point at the end of the small bay, and anchor half a cable's length from the west end of the town, or off the perch, in the meeting of the three rivers. When the buoy in the entrance bears E., it is also in a line with the south shoulder of Newton Knot Hill, which is a small hill half a mile south of Ravenglass. The tide flows here, full and change, at 11 o'clock; and off the Bar runs as follows: the last half-flood and the first half-ebb set northward, at the rate of 2 miles per hour, spring-tides; and the last half-ebb and first half-flood southward at the same rate. There is a foot of water more on the Bar than shown in the Liverpool Tide Table in this Almanack.

St. Bee's Head.—To the northward of Ravenglass harbour, distant 13 miles, is St. Bee's Head. On its summit is a LIGHTHOUSE, the light from which is *stationary*, appearing like a bright star at the distance of 6 or 7 leagues in clear weather. From the entrance of Formby Channel to this Head, the course and distance are N. by E.

20 leagues. In sailing along from Walney Island to St. Bee's Head, keep 2 or 3 miles from the shore, and you will clear every danger. Vessels in moderate weather, may stop a tide any where along the coast, for the stream seldom runs more than a mile an hour.

Whitehaven.—About 3 miles E. N. E. from St. Bee's Head is the town of Whitehaven: the harbour is dry, and divided into basins by strong quays, which break off the sea. Within the second basin is the best place for vessels drawing above 10 feet water. Here you will find 18 to 22 feet water spring-tides, and 12 to 14 neap. The HARBOUR LIGHTS are upon the outer and inner Pierheads. The inner Light is *stationary*, of a RED colour, and is lighted while there are 9 ft. water between the Pierheads. The outer Light *revolves*, is lighted all night, and is seen at a distance of 3 or 4 leagues in clear weather. The light appears in its brightest state once every 2 min., and gradually becomes less luminous, till eclipsed. In the day a Flag is hoisted on a pole at the top of the old Lighthouse, while there are 9 feet water in the harbour, on entering which, keep both lights on the starboard hand.—A BLUE Light is shown from a lighthouse on the end of the north pier, which has been extended 352 yards.

Harrington Harbour is 4 miles Northward of Whitehaven. A lighthouse was erected in 1848 by the late H. Curwen, Esq., with Argan burners, visible 10 miles, and is exhibited while there are 8 feet of water in the harbour—in the day a RED DRUM, at the inner end of the pier, during the same interval of tide.

Workington is 2 or 3 miles North-eastward of Port Harrington. A red ball is hoisted upon a pole on St. John's pier when there are 8 feet water in the harbour; and at night a light is exhibited on the pier-head, which answers a like purpose and can be seen in clear weather at about 3 leagues from any point seaward. The channel into this port is along the south shore, its entrance bearing from St. John's pier nearly E. by S. by compass. It is formed by red buoys on the south side and black buoys and perches on the north side the deepest water being midway between. The outer perch has a cask upon it painted black, which must be kept on the port side in entering. Steer in between the perches and red buoys, giving St. John's pier-head a berth of about 50 feet on the starboard side. After passing St. John's pier a perch with a white board upon it is the leading mark for the channel by day; and by night, the southernmost of the blast furnaces on the north side kept right a-head, until an inner light which is on a wooden pier

bears about S.E. $\frac{1}{2}$ S.; then steer S.E. $\frac{1}{2}$ E. for the entrance to the harbour keeping the light upon the wooden pier on the starboard side, and passing a perch with a small black cask upon it by about 10 feet on the port side, when the harbour boat will be in attendance.

Maryport, situate about 5 miles N.E. of Workington, is easy of access, free from sandbanks, and has a capacious dock, in which vessels are kept constantly afloat, as well as its original tidal harbour and basin. Depth of water in ordinary spring tides, 21 ft. 6 in., neap tides, 13 ft. 6 in. or by adding 3 feet to the water shewn in Holden's Liverpool, and the Manx tide tables, a near approximation for each tide will be obtained. A fixed bright light is exhibited on the outer pierhead all night, and another on the inner stone pier whilst there are 8 feet in the harbour; both lights are on the starboard side in entering, and are visible at sea from E.N.E. to W.S.W., the former at a distance of 15 miles, and the latter 10 miles. A Red Ball near the inner lighthouse denotes 8 feet in the day time. The Jetty on the south side is distinguished by a Red light, and the north tongue by a Green one. Steam Tugs are in readiness every tide, and when required by vessels at night, two lights must be shown one above the other; or by day a union jack at the main. There is good anchorage in stiff clay, about 1 $\frac{1}{2}$ miles off shore, the outer lighthouse bearing S.E.

Solway Frith.—The entrance to Solway Frith may be considered to commence abreast of Workington, on the English, and at Abbey Head on the Scottish shore the distance between which is 5 leagues. On the eastern side of the Frith of Solway, about ten miles northwards from Maryport, is

Port Silloth.—This place is daily increasing in importance, being connected by railway with Carlisle, Newcastle, and Edinburgh, the rails of which are laid on the quays. It contains a wet dock, with entrance gates 60 feet wide, and a jetty from the dock entrance 1000 feet outwards to low water mark. The dock is fitted up with Hydraulic Machinery, by which vessels are discharged and loaded with the greatest possible despatch. The dock sill is 3 feet 6 inches above low water mark, and by adding 5 feet to the Liverpool tide table in this Almanack, the depth over the sill will be given for high water. A Yellow Light is shown in the Lighthouse at the outer end of the jetty from sunset to sunrise; except during the time the gates are open, when the Yellow Light is discontinued and a Green Light is exhibited in its place. A Red Ball is hoisted on a pole at the Lighthouse during the time gates are open by day.

In Silloth Bay (between Lee Scar Light and the jetty) there is excellent anchorage in from 4 to 6 fathoms at low water, clay bottom. There is a good anchorage in Catherine Hole, a little above the fairway buoy. It is high water here, full and change, 11h. 35m.; spring tides rise 26 feet, and neaps 20 feet. The fairway course, from about a mile off Workington to the Lightship at the entrance of the channel is N.E. $\frac{1}{2}$ N., and to avoid the tail of Robin Spit, care should be taken not to bring the vessel to the eastward of N.E. by E. This Light vessel is in the middle of the channel, in 3 $\frac{1}{2}$ fathoms at low water, and exhibits a Fixed Red Light at 25 feet above the water, visible six miles. From it Maryport outer light bears S. by W. $\frac{1}{4}$ W., 4 $\frac{1}{2}$ miles; Southernness light, N. $\frac{1}{4}$ E., 5 $\frac{1}{2}$ miles; and Lee Scar light, E.N.E. 6 miles. It has a Black Ball at the mast head during the day, and in fogs a bell is tolled. Having passed the Light Ship, run up N.E. by N. $\frac{1}{4}$ N., keeping the West Furnace light at Workington a ship's length S. of the Lightship, which will lead up mid-channel to near the turn buoys B 2 black, and B 2 red, where the bright light on Lee Scar comes in one with the Cott Red Light, bearing E. by N. $\frac{1}{4}$ N. alter your course to that direction which will carry you up the fairway to Lee Scar. On passing the lighthouse, keep a good cable's length to the northward of it. Silloth Dock is about half a mile above Lee Scar. When following the proceeding instruction, it is necessary to bear in mind that, as far as Silloth Bay, the black nun buoys should be kept on the port, and the red can buoys on the starboard hand. The black and white striped buoys marked E. in the fairway off Breckfoot is passable on either side. The shoalest part of the channel, in which there are 2 $\frac{1}{2}$ fathoms at low water, is a little below the turn buoys; thence up to Silloth the depth are from 3 to 5 fathoms. At Lee Scar there is a tide gauge indicating in large figures the depth of water in Dock Entrance Channel. A bell is tolled in the lighthouse during a fog. A steam tug is in attendance to tow vessels in or out of Dock on reasonable terms. Branch pilots may be had (if required) off Maryport; charge, 1s. 9d. per foot to Silloth. The harbour expenses are (including buoy and light charges:—Coasting vessels, 6d.; vessels to or from foreign ports, 7d. per register ton.

Port Carlisle, a dry harbour, 10 or 11 miles up the Frith from Silloth bay. The navigation to this port is now entirely closed by the Solway Junction viaduct.

Annan.—Vessels running up from sea and bound to Annan should alter course at Striped Buoy off Blackfoot, and

haul up at E. by E. $\frac{1}{2}$ E. for buoy No. 1, at entrance of North channel, thence N.E. by N. $\frac{1}{2}$ N. to No. 2, from which N. $\frac{1}{2}$ E. leads to No. 3; thence N.E. by E. leads up to Perch Buoy in Powfoot Channel. Vessels in the anchorage at Silloth bound up, may, after half-flood, take the South Swathway after leaving the Bay N.E. by N. will lead up past buoy No. 2, thence N. by E. leads up to Perch Buoy into Powfoot Channel; afterwards follow the buoys up, which are all placed in the fairway. At Annan Foot there is a bright tide-light, and two perches on the western side of the river; the light is shown from half-flood to half-ebb. The buoy and light charges to Annan are 3d. per register ton. Pilots for Annan may be had off Maryport; charge 3s. 6d. per foot..

Magnetic Bearings and Distances

FOR THE WEST COAST OF ENGLAND.
WESTERLY VARIATION 25 TO 26 DEGREES.

BUOY NELSON, OFF PRESTON (Lat. 53 43 N., Long. 3 11 14 W.) MILES.

To Beaumaris entrance.... W. by S. 39

To Dundalk Bar..... N.W. by W. 112
Douglas Head Light N.N.W. $\frac{3}{4}$ W. 50
Ross Light, Kirkcudbright.... N. 71

WYRE LIGHT, FLEETWOOD (Lat. 53 57 14 N., Long. 3 1 46 W.)

To Great Orms Head.. S.W. by W. $\frac{3}{4}$ W. 45
Dundalk Bar.... N.W. by W. $\frac{3}{4}$ W. 112

WYRE LIGHT, FLEETWOOD MILES.

To Wicklow Head Light W. $\frac{1}{4}$ S. 118
Calf of Man L'ts. N.W. by W. $\frac{1}{4}$ W. 65
Walney Light N. by W. $\frac{1}{4}$ W. 8

WALNEY LIGHT (Lat. 54 2 56 N., Long. 3 10 32.)

To Wyre Light S. by E. $\frac{1}{4}$ E. 8
N.W. L'tship, L'pool. . S.W. by S. 35
Kish Lightship W. $\frac{1}{4}$ N. 164
Calf of Man N.W. by W. $\frac{3}{4}$ W. 57

ST. BEES' HEAD (Lat. 54 30 50 N., Long. 3 18 W.) MILES.

To N.W. L'tship, L'pool S. by W. $\frac{1}{4}$ W. 65
Tuskar Rock Light S.W. by W. $\frac{1}{4}$ W. 162
Douglas Head Light .. . W. by S. 42

WHITEHAVEN (Lat. 54 33 N., Long. 3 26 2 W.)

To Beaumaris entrance .. S.W. $\frac{3}{4}$ S. 76
Skerries Light .. . S.W. $\frac{3}{4}$ W. 65
Bahama Lightship W. by S. 24

WEST COAST OF SCOTLAND.

SOUTHERNESS LIGHT TO THE MULL OF CANTYRE.

Southernness Light, at the west side of Solway Frith, is chiefly useful as a direction to the harbour of Dumfries. It shows a fixed bright light, from N.E. seaward to W., which can be seen at the distance of 11 miles in clear weather.

Little Ross Island—A Lighthouse has been erected upon this Island, which lies off the entrance of Kirkcudbright bay and harbour. It bears a fixed and flashing light, producing 12 bright flashes in a minute, visible from N. by E. to N.W. by W. Southerly, at the distance of 6 leagues.

Kirkcudbright is formed by the Points Balmae and Torrs to the E., and the Island of Little Ross to the W. There are two Towers on Little Ross bearing S.W. from each other, which being kept in one lead over the Bar in the best water to the First Perch on the S.E. shore; thence running N.E. about 300 yards, passing a Red Buoy on the point of the bank on the larboard hand; thence

N.N.W. passing the Perch on the point of St. Mary's Isle on the starboard hand; thence direct to the lower Fish-house, where is a Pool a vessel can ride afloat at spring ebbs. Abreast and above the upper Fish-house there is excellent lying on soft mud, moored to rings on the rocks, and no stream of tide. On the bar of Kirkcudbright River there are about 7 feet water at half-flood. Vessels running for this place, and not having water over the Bar, will find good anchorage in the Ross Roads in from 2 to 3 fathoms at low water, in good clay ground. Should the wind be Southerly, blowing hard, a vessel should bring up on the W. side of the beach just as the sound begins to open, the closer to the beach the better, as it is very steep to and quite out of the sea. At half-tide she can trip and run up the lake to the Lake or Fish-house, or waiting 4 hours' flood may run up for the Perch off St. Mary's, and proceed to Fish-house or the town. The coast from Kirkcudbright to Belcarey Bay

and River Urr is a bold rocky shore, with neither beach nor harbour.

Belcarey Bay, about 8 miles to the E. of Abbey Head, is formed by the High Lands of Aairds to the W., and Heston Island to the E.; entrance $\frac{1}{2}$ a mile wide. The Heston Island is also high, and highest in the middle: this is an excellent place and too little known. Vessels running for it should keep close past the Aairds, and keep close up till they come above the first salmon weir opposite the large house in the bight, when they may go as far in as water will admit, as it is all clean ground, and quite landlocked from all weathers. The tide sets strong E. and W. past all these places, till a vessel comes within the points mentioned.

Wigton Bay lies to the westward of Kirkcudbright Bay, and has a spacious entrance, with several places where vessels may stop in moderate weather, or when the wind blows off the shore. The river channel at the north-west or upper end of the bay, leading to the town of Wigton, is intricate, and only fit for small vessels who know the place. Vessels may stop with good anchorage in 7 or 8 fathoms water, about a mile to the northward of Stein Head, and half a mile from the shore, where the bottom is clean sand.

Garlieston.—This is a safe and sheltered dry harbour in the north-west corner of Wigton Bay, with a convenient quay, against which small vessels lie on an even and soft bottom. The outer bay has shelter from W. winds, and good anchorage between Criggleton Point and Eagerness Point. There is a small ship yard, and a town with good supplies at Garlieston. When desired a light is shown from the pier-head, which has been recently extended 250 feet, and where are at springs, 18 to 20 feet, and 11 to 12, neaps. From the pier-head the Ross Light bears S.E. by E. In taking the harbour, keep the perch off the breakwater on the larboard hand. Port charges, 1d. per ton; harbour boat, 3s. to 6s.

Whitehorn.—To the southward of Stein Head and near Burrow Head is Whitehorn Island, between which and the coast is Whitehorn harbour, in which vessels drawing 12 feet water cannot be neaped above twice a year at the quay. It is well sheltered from all winds. The only danger is the Screen's Reef, a rocky ledge, marked by a perch, extending from the west point, upon which the tide sets very strong. Going into the harbour from the west, if Stein Head be kept open of Kairnharrah Hill it will clear the rocks on the west side.

Glenluce Bay.—To the westward of Burrow Head is the bay of Luce, within which and near to the Mull of Galloway lie the Scar Rocks, always above water. There are no shoals near them; but off the Little Scar are two or three rocks, which the sea sometimes washes over. In moderate weather, with W. and S.W. winds, vessels may stop anywhere on the west side of the bay of Luce.

Mull of Galloway.—On the Southern point of the Mull of Galloway, a Lighthouse has been erected, and bears, by compass, from the largest of the Scar Rocks, W. $\frac{1}{2}$ N., 6 miles; from Burrow Head, W. by N. $\frac{1}{4}$ N., 18 miles. The light is intermittent, $2\frac{1}{2}$ minutes bright, then eclipsed $\frac{1}{2}$ a minute; is visible seaward 23 miles from N. E. to N. W. $\frac{1}{4}$ W.; but the high lands of Dramore shut the light from the view of the mariner in coasting along the Port Patrick shores. After rounding the Mull, which is a rocky shore, you will soon reach

Cromack Point, about 4 miles from which is

Port Nessie Harbour, fit only for small craft; but a vessel drawing not more than 6 or 7 feet, may find shelter from N. or N. W. winds, by running aground near the pier head. Seven and a half miles further is

Port Patrick, a small and dry harbour open to the westward. Small vessels must go in at high water, and run aground on the N. side of the creek, or within the pier, so as to be out of the reach of the sea, in case the wind should blow from the W. or South-westward.

Point Corsewall is about 14 miles to the northward of Port Patrick, and is the north-west point of entrance to Loch Ryan; between are some rocks, but they lie close in shore, and are mostly above water. On the rocks off Laggan Point, called Ebbstone Rocks, which dry at low water, is a red beacon consisting of a pyramid of iron pillars, 40 feet high, with a cylindrical open cage on the top. From it Corsewall Lighthouse bears N.E. by E.; the highest point of Ailsa Craig, N.E. $\frac{3}{4}$ N.; and Laggan Point, S.S.E. $\frac{1}{2}$ E. On Corsewall stands a Lighthouse, exhibiting a white and red light alternately; these lights revolve, and attain their greatest brilliancy every 2 minutes. They may be seen, like a star of the first magnitude, at the distance of 5 or 6 leagues, and are visible from N.E. by E. northerly, to S.W.

Loch Ryan is capacious, of easy access, well sheltered, with good holding

ground, and depth sufficient for large vessels. The only danger to be avoided is the Scar, a tongue of sand on the western side of the Loch, and about 3 miles up the harbour, which extends $1\frac{1}{2}$ miles south-eastward from Kirkholm Point. There is a large red Nun Buoy on the S. end of the Scar, which distinctly shows its position. The best anchorage is about half a mile to the southward of Cairn Point in 6 or 7 fathoms. On this point is a tower, exhibiting a fixed light of the natural appearance, serving to lead to the anchorage. Opposite the Light-house Tower is a small Red buoy to mark the eastern edge of the Scar. Fourteen miles N.N.E. from Loch Ryan is the

Craig of Ailsa, a rock 940 feet high, with deep water all round it, serving as a beacon to guide ships to the entrance of the Clyde.

The **Frith of Clyde** makes a fine open entry to several rivers, having no danger more than a quarter of a mile from the shore, excepting the Brist Rock, which lies three-quarters of a mile W. $\frac{1}{2}$ S. from Turnberry Point; it dries at half-ebb, and is about half a mile from shore.

Ayr.—Ten miles from Turnberry Point is the town of Ayr, with a lofty spire seen from a considerable distance. Here is a commodious harbour fit for vessels drawing 12 to 14 feet water. The bar, at low water, has from 4 to 6 feet water over it, and with spring tides at high water there are from 13 to 15 feet, and with neap from 11 to 12 feet over it; with fresh southerly winds there will be a foot more, for S. and S.W. winds raise the tides in all the rivers of the Frith of Clyde, and N. and N.E. winds have a contrary effect. On the north side of the harbour is a light-house exhibiting two lights; the upper bright, having a star like appearance, and the lower red. There is also tide light RED, shown when 8 feet of water is on the bar. The distance between the lights is 850 feet; and they bear from one another S.E. by E. $\frac{1}{4}$ E., and N.W. by W. $\frac{1}{4}$ W., and are leading lights for entering the harbour, and when kept in one lead over the bar in the deepest water. The upper or bright light may be seen 12 miles, the red 9 miles, and the tide light 4 miles off. Vessels drawing 7 feet water may make directly for the bar so soon as the tide lamp is lighted. A flag is hoisted in day time at half-flood, and continues to be so until half-ebb. About a cable's length S.W. of the south pier lies St. Nicholas Rock, which dries with spring tides only: you will avoid it by keeping the two red buoys on the starboard hand coming into the harbour, the breakwater

being on the port hand. There is an iron steam tug for towing vessels in and out; and the bar and harbour are being further deepened by means of a powerful dredging machine.

Troon Harbour has an extensive pier and breakwater, with 4000 feet of quayage room and an average depth of 12 feet at low water; at the outer pier the rise and fall of the tide is from 8 to 11 feet. About 1 mile S.S.W. of Troon Pier is the Lady Isle, a large patch of rock with a large and small Beacon on it. These Beacons are not leading marks, and there is plenty of water inside the Isle. At the distance of half a mile N.E. from the pier, is a half-tide shoal, on which is a red buoy. Here are exhibited two lights: one, on the inner end of the pier, intermittent, 40 seconds bright and 20 obscured; the other on the Pier-head, red. They bear from each other N.E. $\frac{1}{4}$ N. and S.W. $\frac{1}{4}$ S. 350 yards; and are visible, respectively, 9 and 6 miles. This harbour is perfectly safe, and may be run for in any weather by vessels of moderate draught of water, as there are no dangers but what are to be seen, and pilots are always in attendance. An extensive open wet dock or basin, 400 feet long by 300 wide, with 20 feet at low water tides, and capable of admitting the largest ships or steamboats, adds to the importance of this port. A branch of the Glasgow and Ayr Railway comes down to the harbour, as does also the Railway of the Duke of Portland from Kilmarnock. There is also an extensive ship-yard, with one of the finest graving docks in the west of Scotland, capable of receiving ships of the largest size. The magnetic bearings and nautic distances are as follows:—From Troon Pier Head to Ayr Harbour, S. by W. 5 miles; Dunure Point, S.W., 9 miles; Beacon on Lady Isle, W. by S. $2\frac{1}{4}$ miles.

Irvine.—Four miles and a half from Troon are the town and harbour of Irvine; and nearly midway is Lappock Rock, upon which was erected, in 1843, a beacon about 40 feet above the level of the sea bearing S.W. Southerly, distant about 9 miles from Irvine Bar. There are now from 12 to $13\frac{1}{2}$ feet water on the bar at high water spring tides: ordinary tides, 12 feet; and at low water 4 feet. There is a red warping buoy placed in the fairway of the river, about two cable's length from the bar perch, which perch must be kept on the starboard hand on going in. There are also pawls all the way up the river on both sides. Vessels running in should keep the middle of the river, and run right up till they come to the end of the stone quay, where they can either beach or anchor. There is a steam tug for vessels frequenting this harbour.

Ardrossan.—At about a mile to the N.N.W. of Saltcoats are the spacious wet dock and harbour of Ardrossan, in which 100 sail of coasters can lie with ease. The pier and breakwater completely shelter the harbour from southerly and westerly winds; and Horse Isle, with the other rocks, protect it from the N.W. The greatest depth at low water in the Inner Tidal Harbour is 10 feet, and in the Outer Harbour 18 feet. The entrance lock to the wet dock is 160 feet long and 40 feet wide; and at average tides there is a depth of 18 feet over the sill of the lock. The railway trains come alongside all the berths in the wet dock and harbour. There are a graving dock and patent slip attached to the wet dock. —In place of the two previously existing harbour lights, a new lighthouse, exhibiting a red light, has been erected at the extremity of the Breakwater. This light illuminates an arc of from 15° to 20° in the direction of the open channel leading into the harbour, and bears from the middle of this channel E. and by N., on which bearing it is brightest. A vessel running for the harbour should steer the usual course from Pladda towards Cumbray Light, and when about 14 miles past the former, and 7 miles from the latter light, the Ardrossan Light will be seen, in favourable states of the weather, on the starboard, at the distance of about 5 miles, and bearing E. by N. In running into the harbour the light should never be closed; but the vessel must be kept within the illuminated space, in which there is nowhere less than 22 feet at low water. A black buoy marks the north side of the channel by day, which is on the west Grinan Rock, and there is a perch on the Grinan Rock, both to be kept on the Port hand in entering.

THE **River Clyde** is remarkable for the ease and safety with which it may be navigated. It is provided with numerous well sheltered harbours, and spacious arms of the sea, of easy access, and capable of containing the largest fleets. In approaching it, there are neither rocks nor shoals, nor rapid tides to be feared. Ailsa is a high mountainous rock in the mouth of it, conspicuous at more than 10 leagues' distance, and serves as a remarkable beacon to direct ships to it; there are 4 Lighthouses to direct mariners farther up, and to good shelter in the night; and there is hardly one opening to be seen but what a stranger, without chart or pilot, might safely venture to run for in the day time, and find good anchorage within it. On coming up the S. or St. George's Channel, and passing Ailsa Rock at 2 miles distance, the course by compass for Cumbray Head is N.N.E. $\frac{1}{2}$ E. nearly, and will carry you clear of Holy Island,

which forms the harbour of Lamlash. If at night, the Lights will be seen on Pladda, a small low island off the S.E. of Arran Isle. The distance between Ailsa Rock and Pladda Lights is about 11 miles, and from Pladda Lights to the Light on Cumbray Island $18\frac{1}{2}$. There are very large Furnaces of Iron Works between Troon and Ardrossan, which shew for a long distance at night, and might mislead a stranger, unless aware of what they are. It would, however, be advisable for strangers to keep between the Rock Ailsa and the Island of Arran, till daylight. When coming in the north Channel, particularly during the winter months, with a N.W. gale, ships should never run to leeward of Arran during the night, but as soon as they pass the Island of Sanda, inside the Mull of Cantyre, they should haul by the wind, on the larboard tack, with the ship under easy sail, standing 2 hours each way. By this you keep in smooth water, and when daylight comes, can act according to circumstances. Should you run to the leeward of Arran, the wind, which was N.W. will be found at N.W. by N., and sometimes N.N.W., blowing heavy, with very heavy gusts. Keeping to windward, should the gale increase or continue long, you have Loch Ryan under your command; its entrance about 17 miles S $\frac{1}{2}$ W. from Ailsa; but once getting to leeward you can never regain your ground. On approaching the Cumbray Islands, 3 entrances appear before you: the middle one is the main ship channel. In clear weather you cannot mistake the Cumbray Island, being distinguished by an old Light Tower on its highest part, a little to the southward of the present Lighthouse, which is low down on the hill side. There is a good ship channel to the eastward of the Cumbray Island, but strangers should never attempt it without a pilot. The part of the Island of Cumbray on which the Light stands is bold and steep close to. Opposite to it lies the Island of Bute, the nearest point of which is Garroch Head, distant about 3 miles. Entering between these two headlands, with the Cumbray Light on your starboard hand, when in mid-channel your course to the Light on the Point of Clough is N.E. $\frac{1}{2}$ E., 12 or 13 miles. In proceeding on this course, a little more than half distance, you will see a REVOLVING LIGHT on your larboard hand, situated on the Point of Toward, which forms the starboard side of the entrance of Rothsay Bay. The Clough light stands on a bold shore. On the opposite side is the town of Dunoon, off which lies a ledge of half-tide rocks, called Gantocks. The position of these rocks is marked by a large stone obelisk, which can be seen from a considerable distance. The river afterwards inclines a little to

the eastward, until you get opposite to Gourrock, in a small bay on your starboard side. Opposite the middle of this bay is good anchorage; and here it is advisable to anchor till a pilot comes on board. The mark, the centre of the bay with the Clough Light on with Kempuck,

Greenock, which is the chief port for large vessels on the Clyde, has three fine basins adjacent to each other. They are known as the west, the east, and the Victoria harbours. Between the pier-heads, at the entrance of the west harbour, there are about 20 feet at high water, spring tides, and from 10 to 12 feet at low water; along side the quays is a depth of from 17 to 19 feet. The east harbour contains about the same depth of water, but is more spacious; on the quay is a crane capable of raising 50 tons. The custom house stands between these two basins. On the eastern side of the east basin is the Victoria harbour, opened in 1851. It has an area of 6 acres, is 563 feet long, and 458 feet wide, with a uniform depth of 26 feet at high water, and 14 feet at low water, spring tides. On the quay is a large crane of 70 tons lift; there is also 2 steam cranes of 15 tons lift, for loading coals. Connected with the east and west harbours are graving docks, the width of their respective entrances being 34 and 38 feet. There are two lines of Rails all round the Victoria and East Harbours, in connection with the Caledonian Railway. A large Coal Shoot has been erected at the East Harbour, from which a great quantity of Coals are shipped daily. A small light is placed on the quay, in front of the custom-house, as a guide to the shipping, and lights of a red colour are exhibited at the several entrances of the port. In the roadstead are warping buoys; but in order to avoid the shoal off the custom-house, care must be taken to anchor as close as possible *outside* the line of buoys. The best anchorage for small vessels is off Albert Quay, in 4 fathoms water. About a mile N.N.W. of the custom-house are two fixed red lights, visible at the distance of two leagues; when in one, bearing W.S.W. $\frac{3}{4}$ W., they lead to the anchorage below the "Tail of the Bank."—**COCKLE BANK** reaches from the east end of the town of Greenock to the *Old Castle of Newark* at Port Glasgow. A new harbour is now building to the N.W. of Mr. Scott's Building Yard, for the discharge of timber laden vessels, the depth of water at spring tides to be 27 feet, with a large space for storing deals.

Port Glasgow.—The channel from Greenock to Port Glasgow is narrow and intricate as far as *Garville Point*, and should not be attempted without a pilot;

about a $\frac{1}{2}$ of a mile N. from Garville Point is a buoy on the south edge of the *Cockle Bank*. Keep that buoy on the port hand, and run about a cable's length from it. Near the E. side of Garville Point is a beacon, which pass on the starboard hand, keeping not less than two ships' length from it, nor more than half a cable, to avoid the Cockle Bank. Between this last-mentioned beacon and *Inch Green* is first a buoy and then a beacon; keep both on the starboard side, sailing at the distances before directed. There is also a beacon near the quay of Port Glasgow, which you must pass at 2 ships' length on the starboard side, and enter the harbour about high water. At the quay there is water for small craft only. At low water it is dry, and with spring tides is capable of containing vessels that draw 10 and 11 feet water; the ground is soft and easy to lie on, and a good place for graving ships' bottoms is made here. A light is exhibited on the pier to direct the steamers; and at the entrance of the harbour is a light of a red colour on the west quay. About four miles from Port Glasgow is

Dumbarton Harbour, at the mouth of the river Leven. Vessels drawing from 13 to 14 feet may go in at high water. At low water there are from 5 to 7 feet water over the bar, and at high water, spring tides, from 14 to 16 feet. If pilots cannot be had, the following directions may be useful. Weigh anchor and sail from Port Glasgow at half flood; keep a cable's length from shore at the Old Castle of Newark; from thence steer eastward between Audoch and Dumbarton Castle, about 2 miles, until you come abreast of Finlayston; then steer south-eastward for the western buoy off Dumbarton Castle; there anchor until it is high water. Leave that buoy to port, and the other on the starboard, and stand in for the entry, keeping that side close until you have passed the Castle.

Between Port Glasgow and Bowling Bay are three Lights; at Auchenleck, the Garmoyle Floating Light, and the third about a mile above Dumbarton; all to be left on the starboard hand in going up the river.

Glasgow.—On the lower or western extremity of Broomielaw Quay, and port hand going up the river, a light, of star-like appearance, is placed for the direction of shipping.

Isle of Bute.—To the westward of the Isles of Cumbray is the Isle of Bute, on the eastern side of which, directly opposite Great Cumbray, is Killichattan Bay, where vessels may anchor in from 11 to 16 fathoms. to the northward is the Bay of Rothsay, the ground good and clean, and well sheltered: you may anchor in any part on the E. side of the Bay: but the most convenient place is 2 cables'

length N. of the pier-head, in order to be clear of the tract of the numerous steamers plying from the pierhead to all parts of the Clyde.

Kyles of Bute.—The channels between Bute and the Main are termed the Kyles of Bute: their access is easy, and well sheltered, the bottom is extraordinarily good, and the depth sufficient for the largest ships. They are distinguished by the names of the East and West Kyles.

Island of Arran lies to the southward: at its S. E. extremity lies the **ISLAND OF PLADDA**, upon which a **LIGHT HOUSE** is erected, 3 miles north-easterly of which is the **ISLAND OF LAMLASH**. This island lies right in the front of the bay and forms a good and well-sheltered anchorage: the N. side of it is shallow about 2 cables' length from the shore, but the best parts to ride in are off the houses in Holy Island, in 9 or 10 fathoms, or about 2 cables' length E. by N. or E.N.E. from the pier at the town of Lamlash. A red buoy (called Fergusson's) is placed on a rock, with 14 fathoms water in the south entrance to Lamlash. You can go either side; but the Island side is best. At the north entrance on the mainland side is Hamilton's Rock, for which, in thick weather, a good look out should be kept, though it is scarce a 4 of a mile from the shore and never quite covers. The lighthouse on Pladda exhibits two bright fixed lights, and may be seen from S.E. by E. northerly, to S.W. by W.; the upper at 17 and lower at 14 miles' distance. At the northern extremity of Arran Island is

Loch Ranza, the ground in which is very good, and water sufficient for large ships, but the place being narrow renders it fit for small vessels only. On the east side of the entrance there is a rocky ledge, dry at low water, which extends near one-third over to the opposite side; to avoid this ledge, keep in the middle of the channel. Anchor abreast of the houses of Ballino, in 5 or 6 fathoms water, nearest the E. side of the Bay, about a cable's length north of the Old Castle, which stands quite at the bottom of the Bay.

Loch Fyne.—After passing Ardnamont Point, the entrance opens to the Northward, and is about 7 miles from Skipness Point, forming an arm of the sea running in northwardly then eastwardly for a distance of 35 miles. The water in the middle is too deep for vessels to anchor. The east side from Skate Island to Kilfinan Bay is rocky, but do not extend far from shore, and they are mostly above water, so can be seen;

but deep water close to them. There is good anchorage in Kilbrennan Bay, and from there to the Spit of Otter Ferry, which is a shoal about two cables' length from shore, having a beacon on the North Point. On the west side of the Loch, about 6 miles from Skipness Point, is the little harbour of **EAST TARBET** well sheltered and good bottom, much frequented by steamers and small vessels; but the entrance narrow. From there, passing northward, you leave Barmore Island on the left, giving it a berth of a cable's length or so, to avoid some half-tide rocks off its N.E. end, and from there to Invermiel Bay the coast is bold. Off the Church at Invermiel there is a shoal about 2 cables' length from shore, with only 8 feet water on it. From thence to Ardrishaig Point the coast is clear, up to the Pier Head, on which there is a Lighthouse showing a fixed light. There is good anchorage on the north side of the Pierhead, and on the opposite side, north of Ilan Yone, in a line from the Pier, and about half a mile distant, there is a shoal near mid-channel, marked by a white buoy, and having only about 4 feet of water over it at low water. The shoal can be passed on either side: but the west side is the best. It is foul ground from Ilan Yone to Silver Craig. Abreast of the beacon on Otter Shoal, which you pass on the right, the channel is narrow, but clear, with strong tides. Sailing up Upper Loch Fyne the south side is clear to the head, and is the side used by sailing vessels. On the north side, passing the narrows at Otter about one mile, you open Gaerloch, a fine safe bay, much used by fishing vessels, having good anchorage in 3 fathoms water, but only narrow. Passing on you come to Minard Point, behind which there is good anchorage. Opposite Minard Castle, there is a shoal in the middle of the Lough, marked by a beacon on each end, the middle dries at low water. You can go on either side, but the west is the safest. Nearly abreast of Castle Lachlan is Paddy's Rock, keep the south side. Following the north shore, the whole coast round Furnace Point to Inverary is clear. South of the Pier of Inverary is a shoal called the Otter, to which a berth of 2 cables' length from the shore must be given. Anchor north of the Pier, and nearly opposite the large bridge, in a line with Inverary Castle, in 8 or 9 fathoms water. From Inverary to the head of the Loch is clear, and very deep water, so that it is safe sailing up at any time.

Campbeltown Harbour lies about 11 miles south westward of Point Cartladie; it is large, well sheltered, the ground good, and there is very little to be feared in sailing into it. On coming

from the S. or S.E., you will first see the Island of Devar and the *blind* sound to the southwest of it, through which is a view of the town. On Otter Buoy the north-east point of Devar Island, is a light-house, from which is exhibited a bright light every half minute: it is visible from N. $\frac{1}{4}$ W. to E. by S. by the N., and may be seen in clear weather about 15 miles. This light is a good light for clearing Paterson's Rock; if kept in sight, it will lead about 3 miles to the eastward of it. In standing in for Campbeltown at night, be careful to keep to the eastward until the light upon Devar Island is fairly open; then stand for it, keeping it on the port hand, and steering about one or two cables' length from the point of the Island, until you open the harbour; then haul up W. $\frac{1}{2}$ N., or W. by N., still keeping about the same distance from the shore. When abreast of the western end of Devar, a black buoy will be observed on Mulbeg Bank, about 60 fathoms from the Island; this must be passed on the port hand. Steering half a point more northerly, you will next pass on your starboard hand, a red buoy, placed nearly opposite a sandbank, which is always dry, except with spring tides. On this bank is a beacon, painted black. There is also another beacon, painted red, on Trench Flat. Hence the red light on the north pier will be seen, and soon after, on passing Trench Point, the green light shown from Dolintober Quay. Now steer W.N.W., or N. W. by W., and you may come to an anchor in any part of the loch—observing, however, to give the west shore a berth of two cables' length. In the Loch, inside the beacons, the deepest water is on the north side; a stranger should, however, keep the lead going, if working in, and put about the first shoal cast, as the bank is steep on both sides. The harbour has a depth of water of from 5 to 10 fathoms. Masters of vessels turning in with a west wind at night, must be careful not to shut the light on the Island when atanding south, but tack as soon as it becomes obscured by the high land of the Island, for in that case they are close to the South Bank, and the water shoalens at once; but by keeping the light E. by S. they will go clear. At night, however, it will be better to anchor at Black Rock, on the north side, about a quarter of a mile E.N.E. from the red buoy, or when Devar light bears about S.E. in 4 or 5 fathoms water, good holding ground, and well sheltered, being within Macrinian's Point, which forms the north entrance to the harbour.

Sanda Island.—About 9 miles south of the Island Devar is the Island of Sanda, a dangerous Island, being surrounded by ledges of Rocks. There are several ledges

of rocks about the east and west ends extending about a cable's length from shore; and near Gluinmore, which is always above water, there are several rocks that dry at low water, also off the east end around Island Ilanagurach. In the sound, between Ilanagurach and Sanda, is the anchorage, a kind of harbour fit only for small vessels in summer time or in moderate weather. It is protected by the reefs in the sound—the reef to the west, on which there is a beacon, pointing out the anchorage. Anchor when Fair Head is shut up on the end of Sanda in about 10 feet water, close to the houses, off an old quay. No vessel should attempt to pass between Sanda and Island Ilanagurach, the tide being strong and running very irregular. Round Gluinmore and Island Ilanagurach are reefs and sunken rocks with deep water. On the ship rock of Sanda, in lat. $54^{\circ} 16' 30''$ N., and lon. $5^{\circ} 34' 55''$ W., a lighthouse, exhibiting a fixed red light, has been erected. It is visible from N.W. $\frac{1}{2}$ W. to S.E. by E. $\frac{1}{2}$ E. by south-westerly, and may be seen at the distance of 5 leagues. It bears by compass from Pladda Light, W. by S. $\frac{3}{4}$ W., 18 miles; from Ailsa Craig, N.W. by W. $\frac{1}{2}$ W. 16 miles; from Corsewall Light, N. by W. $\frac{1}{4}$ W. 22 miles; from the Maiden's Rocks Lights, N.E. $\frac{1}{4}$ N., 21 $\frac{1}{2}$ miles; from N'most Point of Rathlin Island, S.E. by E. $\frac{1}{2}$ E., 21 miles; and from S'most Point of the Mull of the Cantyre, S.E. $\frac{3}{4}$ E., 6 miles. From Sanda Light, E. by S., distant $1\frac{1}{2}$ miles, is the Paterson's Rock Buoy, pointing out a dangerous rock, uncovered at low water. When the Mull Head of Cantyre is seen to the southward of Sanda, you are to the southward of this rock; when the Mull Head is to the northward of Sanda, you are to the northward of it. When Gluinmore Rock appears to the west end of Ilanagurach you are to the eastward; and when Gluinmore Rock appears to the east end of Ilanagurach, you will be to the westward of Paterson's Rock. A Beacon is now erecting on Patterson's Rock. In sailing east along the south end of Sanda keep the light in sight and you will pass south of the rock: the light is shut when you are in a line with the rock, and when the light is seen over the hill on east end you are within the rock.—Tides.—High water inshore 9, mid-channel 10 30, a.m.

Tides—The stream of flood within a mile of the Mull Head runs southward, and turns sooner than at a greater distance from the land, so that a vessel keeping near the west coast of Cantyre, will have the benefit of the stream 2 hours before one above a mile from the land.

Magnetic Bearings & Distances

FOR THE WEST COAST OF SCOTLAND.

WESTERLY VARIATION, 25 TO 26 DEGREES.

ROSS, OFF KIRKCUDBRIGHT, (Lat. 45° 46' N., Long. 4° 5' 1" W.) Miles

To Maryport	SE by E	20
St. Bees' Head Light ..	S by E $\frac{1}{2}$ E	21 $\frac{1}{2}$
Rossall Landmark	S $\frac{1}{2}$ E	61 $\frac{1}{2}$
Buoy Nelson, off Preston.....	S	71
N.W. Lightship, Liverpool..	S $\frac{1}{2}$ W	83
Beaumaris entrance	SSW	85
Bahama Lightship. I. M. ...	SW by S	26

MULL OF GALLOWAY (Lat. 54 38 9 N., Long. 4 51 20 W.)

To Beggar Scar Rock..	E $\frac{1}{2}$ S	6
St. Bees' Head Light.....	SE $\frac{1}{2}$ E	43
Point of Ayre, I. M.....	SE by S $\frac{1}{2}$ S	21
Bardsey Island Light	SSW $\frac{1}{2}$ W	113
Smalls Light	SW $\frac{1}{2}$ S	180
Tuskar Rock Light.....	SW	153

POINT OF CORSEWALL (Lat. 55 0 29 N., Long. 5 9 28 W.)

To Larne Loch Light	W $\frac{1}{2}$ N	24
Fair Head	NW $\frac{1}{2}$ N	37
Mull of Cantyre	NNW	30
Sanda Light	N by W $\frac{1}{2}$ W	26
Pladda Light	NE by N $\frac{1}{2}$ N	25
Ailsa Rock	NE by N	14 $\frac{1}{2}$
Cumbray Light	NE $\frac{1}{2}$ N	43
Ardrossan Harbour.....	NE	40

TROON (Lat. 55 33 N., Long. 4 41 W.)

To Heads of Ayr	SW $\frac{1}{2}$ S	8
Corsewall Light.....	SW $\frac{1}{2}$ W	36
Copeland Light	SW by W	58
Ailsa Rock	SW $\frac{1}{2}$ W	22 $\frac{1}{2}$
Larne Loch Light	WSW	56
Maidens Lights	W by S $\frac{1}{2}$ S	55
Pladda Light ..	W	16

ARDROSSAN (Lat. 55 38 37 N., Long. 4 49 28 W.)

To Troon	S by E	7 $\frac{1}{2}$
Ayr Harbour.....	S	11 $\frac{1}{2}$

Heads of Ayr	S by W $\frac{1}{2}$ W	13
Loch Ryan	SW $\frac{1}{2}$ S	38
Corsewall Light ..	SW	40
Ailsa Rock ..	SW $\frac{1}{2}$ W	26
Copeland Light.....	SW $\frac{1}{2}$ W	61
Pladda Light	SW by W $\frac{1}{2}$ W	17

CUMBRAY LIGHT, (Lat. 55 43 16 N., Long. 4 58 W.)

To Ardrossan ..	S $\frac{1}{2}$ E	6
Ayr Harbour	S $\frac{1}{2}$ E	12
Heads of Ayr ..	S by W	18 $\frac{1}{2}$
Turnberry Point	SSW	23
Loch Ryan entrance	SW by W	42
Corsewall Light	SW $\frac{1}{2}$ S	42
Ailsa Rock ..	SW $\frac{1}{2}$ S	29 $\frac{1}{2}$
Copeland Light	SW	64

PLADDA ISLAND LIGHT, (Lat. 55 26 N., Long. 5 7 6 W.)

To Cumbray Light, from 1 mile		
North of Pladda Light	NE	19
Irvine Harbour	E by N	18
Troon do	E	16
Ayr do	E by S $\frac{1}{2}$ S	16
Turnberry Point	SE by S	11
Loch Ryan entrance	SSW	24 $\frac{1}{2}$
Ailsa Rock	SW by S $\frac{1}{2}$ S	11
Corsewall Light.....	SW by S $\frac{1}{2}$ S	25
Copeland Light ..	SW	45
Belfast Lock entrance.....	SW $\frac{1}{2}$ W	43
Larne Loch Light	SW by W $\frac{1}{2}$ W	42
Maidens Lights	SW by W $\frac{1}{2}$ W	36

MULL OF CANTYRE, (Lat. 55 19 N., Long. 4 49 W.)

To Sanda Light	SE by E $\frac{1}{2}$ E	5
Ailsa Rock..	SE $\frac{1}{2}$ E	24
Corsewall Light.....	SSE	30
Calf of Man.....	S $\frac{1}{2}$ W	84
Maidens Lights.....	SSW	24
Fair Head	W $\frac{1}{2}$ S	13
Inisterhul Light	NW by W	49
Loch Ryan entrance	SE by S $\frac{1}{2}$ S	31
Larne Loch do	SW by S $\frac{1}{2}$ S	28
Rathlin Island, N. end..	W by N $\frac{1}{2}$ N	13
Sound of Islay, E. end ..	N by E $\frac{1}{2}$ E	28

MULL OF CANTYRE TO THE NORTH END OF SCOTLAND.

The **Mull of Cantyre** is a high rocky promontory, running to the southward, and approaching within 11 miles of the coast of Ireland. On its southwestern extremity is a lighthouse, which exhibits a fixed bright light, visible 22 miles in clear weather, from N.N.E. $\frac{1}{2}$ E. to S. by W. $\frac{1}{4}$ W. by W. Off Dunimore Head, which is about 5 miles to the northward of the lighthouse, is a rock, lying about a cable's length from the shore, which dries at half-ebb. A rocky shoal, with 3 or 4 feet on it at low water, lies further north, about a quarter of a mile off Usid Point, at the Saltpans: on this shoal the sea always swells, and breaks in the calmest weather.

West Loch Tarbit, on the main of

Cantyre; the bay of which is well sheltered, and the depth of water for a mile up sufficient for the largest ships; but the ground, being of soft mud, does not hold well with hard gales, except there is a full cable out. The common places of anchorage are, for large ships, off Ardfarik, in the mouth of the loch: and for small vessels, on the east side of Ilanagalligan. On the S. side of Ilan Trayn are several rocks above $\frac{1}{2}$ a cable's length from the island, or $\frac{1}{3}$ from it, and $\frac{2}{3}$ from the starboard side of the entry. There is also a sandbank extending from the E. point of Corran, nearly $\frac{1}{2}$ over to the N. side of the loch; to avoid which, keep nearest to the N. side, or keep the easternmost extremity of Ilan Trayn in a line with the W. end of the highest hill in Gia Island. About 3 miles up the

loch, off Duneturik, nearest to the N. shore is a small blind rock, having 5 feet water over it. Keep the middle of the Loch, and you will avoid it.

Loch Achastil is a fine harbour, and fit for ships of any size; the ground good, and only one rock, about midway, within it, covered only with spring tides. Ships may anchor in any part of this loch above Castle Swein. The danger to be avoided in sailing towards Achastil is a small rock on the N. side of the two Mackcarmack Islands, which dries with spring-tides only

Jura Island—To the westward is the Island of Jura; on the S.E. side of which is Loch Daguall, with good anchorage, well sheltered, and water enough for a merchant ship. This anchorage is very convenient for vessels bound to the southward. You will anchor near the middle of the bay, when Gia Island is just shut in by the N. point of the entry, and the northernmost Pap of Jura bears N.W. $\frac{1}{2}$ W. In running either in or out, stand not too near the sides, for on the N.N.E. and N.W. sides of the bay it shoals nearly 2 cables' length from shore.

Sound of Islay is the common track for shipping to and from the N. A Lighthouse has been erected on Rudha Mhail Point showing a Fixed Light, visible 15 miles. It shows RED from about NNE $\frac{1}{2}$ E.W'y. to about N. $\frac{1}{2}$ W.; MASKED W'y. from about N $\frac{1}{2}$ W to about N by W $\frac{3}{4}$ W. and from about N by W $\frac{3}{4}$ W round S'y and E'y to about NNE $\frac{1}{2}$ E it will show WHITE, excepting where intercepted by the land. When proceeding into, or through Islay Sound, this light kept in view clears the Black rock and other shoals at the south entrance. A Lighthouse is also erected on MacArthur's Head, on East side of Islay, and south entrance to the Sound, showing a Fixed Light, visible 17 miles. It shows WHITE up the Sound till it bears S. $\frac{1}{2}$ W; RED towards Jura from S $\frac{1}{2}$ W till it bears about W; and WHITE from about W. round by the S., or until obscured by the south side of Islay. A tide or a night is the longest any vessel should stop here except in Macdougall's Bay, where one cable may be made fast to a ring or rock on the shore. In entering Islay Sound from the southward, you are to bring Glashilan Island to bear N., or to keep within a cable's length or two from the Islay shore, and you will clear the Skerchray Rock, which lies on the starboard side, W. of the small Island of Frochilan.

Loch Tarbet is filled with small rocks, especially on its southern side, it is therefore hazardous to enter. The anchorage is $\frac{1}{2}$ of a mile above Guimore, but the best and safest place is

near the mouth of the Loch in Glenaberig Bay. This is easy of access, and has 3 and 4 fathoms water. Keep a cable's length from the point in passing, and anchor the same distance eastward of it. About a mile eastward of this anchorage is a cluster of small rocks above water; on the E. side of these a ship may ride safe in five fathoms water, keeping $\frac{1}{2}$ cable's length from them in going up.

Loch Indaal.—Having rounded the Mull of Kinho, which is the south-western part of Islay, you will open Loch Indaal. This may be said to be the only place in Islay where vessels in winter time can ride in safety. Here small vessels drawing 9 or 10 feet of water may ride, and be well sheltered; larger ships, drawing 15 feet, must ride with the mouth of the loch open, and will therefore not be so safe when the wind blows from the W. or S.W. But the best anchorage is at the further end of the loch called Kilirn Bay, when Bomore House bears S.S.E., lying somewhat nearer to the S. than to the N. side of the harbour, in 3 fathoms, sandy ground. Larger ships anchor more to the westward bringing Bomore House S.E. by E. in 4 fathoms. At the entrance to this harbour are 2 spits of sand; one on the S. side, which never dries, extending from Atturach Point northwards; the other running from the opposite side southward, which dries gradually. These two spits of sand almost enclose the harbour. In the channel between their two points are 2 and 2 $\frac{1}{2}$ fathoms, low water, spring tides.

Rhins of Islay Light, on the northern side of the entrance to Loch Indaal, upon the small Island of Oversa, bearing by compass from the Mull of Kinho, N. by W. $\frac{3}{4}$ W., distant 10 miles; and from the STATIONARY LIGHT of the Mull of Cantyre, N. by W. $\frac{3}{4}$ W., 33 miles. From the north eastern extremity of the Island of Rachlin, N. $\frac{1}{2}$ E., distant 25 miles. From the REVOLVING Light of Innistrathul, E. distant 28 miles. From the Revolving Light, producing a bright flash once in every minute, on the Rock of Skerryvore, distant from Hynish Point, in Tyree, W. S.W. $\frac{1}{2}$ W., 10 $\frac{1}{2}$ miles, it bears S. $\frac{1}{2}$ W. distant 44 miles. From the Rocks of Dunheertach, lying 11 miles S.W., from Icolmkill, it bears S.S.W., distant 29 miles; and from Tranvore Head, S.W. by S., distant 6 $\frac{1}{2}$ miles. It will be known to Mariners as a STATIONARY and a FLASHING LIGHT. To a distant observer it appears like a star of the first magnitude, producing a bright flash of light every 3 seconds, without those intervals of total darkness which characterise other Revolving Lights upon the coast. In clear weather it will be visible at the distance of 6 leagues, and is open from N.N.E. to

S.E. (westerly); half a mile off Cull Point it disappears.

Oronsa and Colinsa Islands.—

Oronsa is much the smaller Island, and is nearly 4 miles to the northward of Ruinishag Point, in Islay. Off its southern sides are several Rocks, one of which extends W.S.W., from Gudimel, a small Island on the S.E. part of Oronsa. This rock dries at half-ebb. There is a shoal also about a $\frac{1}{2}$ mile to the southward of the middle of the rock, on which are 6 feet at low water. At the S.W. point of Oronsa is Ilana Roan; one mile S.W. of which are 2 or 3 rocks, which dry with Spring-tides only, and some shoals on which the sea always break. A leading mark to go to the southward of these dangers is Ruvaal Point in Islay, on with the S. end of Beninore Hill in Jura. Sail not nearer to Colinsa than till Ruvaal Point, bears on the middle of the hill. To the W. of Colinsa are several Rocks and Shoals, lying a mile out from Ardsinish Point, some are above, some below, and others dry only at low water; you will avoid the whole of them by keeping about 2 miles from the shore, or one mile from those rocks you see above water. There is no anchorage on the W. side of Colinsa, and but indifferent on the E. side.

The **Gulf of Coryvreckan**, which is formed by the N. end of Jura, and the Island Scarba, is distinguished by a violent breaking sea with whirlpools, partly occasioned by an excessively rapid stream running over a steep rock, at the N. side of the Sound, near the W. Point of Scarba. On the Jura side of the Gulf the sea rages, and forms whirlpools, both with ebb and flood: but the waves do not rise so high as on the Scarba side of the Gulf.

The **Sound of Mull Lighthouse** is situated on a small rock called Runa Gall, on the south shore of the Sound of Mull, Argyshire, about one mile northwards from Tobermory. The Tower is about 50 yards within the high water mark of spring-tides, and is connected with the shore by a bridge of two spans. The Light is an azimuthal condensing Light, and shows a **FIXED RED LIGHT** northwards out to sea; a **FIXED GREEN LIGHT** towards the New Rocks, the Red Rocks, and the Stirks Rocks, in the Sound of Mull; a **FIXED WHITE LIGHT** southwards into the sound of Mull. The light is exhibited from a tower of masonry about 55 feet above high water of spring tides, and may be seen in clear weather at the distance of about twelve nautical miles.

Adnamurchan Point.—A Lighthouse, exhibiting a Fixed Light of the natural appearance, has been erected on this point; and bears by compass from

Caillach Head, N.E. $\frac{1}{2}$ E., distant 7 miles; from the Cairns of Coll, S.S.E., 8 miles; from Kana Head, S $\frac{1}{2}$ E., 30 miles; from Scour of Eigg, S.W. by S. $\frac{1}{2}$ W., 11 miles; from Bo Askadil Rock, W.S.W., 7 miles. It is visible 18 miles in clear weather.

Ushenish Lighthouse is situated on the most easterly head land on the eastern side of the Island of South Uist, one of the Hebrides, in the county of Inverness. The Light is a dioptric first-class **FIXED RED LIGHT**, and is exhibited from a tower of masonry erected on the headland. The Light is about 176 feet above high water of spring tides, and may be seen in clear weather at the distance of about 12 nautic miles.

Island Glass Light, situate on the eastern side of Glass, and on the western side of the channel between Skye and the Long Island. The Light is **STATIONARY**, appearing like a star of the first magnitude, at the distance of 5 or 6 leagues, from W. by S. to E.N.E. $\frac{1}{2}$ E. by the S.

Skergratiack Rock.—A Beacon, painted black, has been erected on this rock, situate in the Minsh. It consists of a Frame-work of Iron, surmounted by a cylindric cage, and rising to about 30 feet above high water spring tides. There are steps leading from the rock to the cage in which shipwrecked mariners may find a temporary shelter. This Beacon bears by compass from Skernamule beacon N.N.W., distant 3 miles; from Dunvegan Head, in Skye, N.E. $\frac{1}{2}$ E., 18 miles; from Island Glass Lighthouse, S.E. by S. $\frac{1}{2}$ S., 7 $\frac{1}{2}$ miles; from the Greater Galtimore (one of the Shiant Islands), S.W. $\frac{1}{2}$ S., 8 miles. There is foul ground nearly all the way from Skergratiack Rock to Fladdahuan Island, from which the beacon lies 2 $\frac{1}{2}$ miles to the N. by E.

Loch Terriden.—In entering Loch Terriden avoid Runawagh Point, its southern entrance, a little way off which point is a rock under water, which dries at spring tides. Excepting this rock, there is no danger in sailing into or up this Loch; for Skerintram Rock, which lies on the North side, is always above water, with deep water all round. Here therefore the access is easy, the ground good and so well sheltered, that several hundreds of the largest Ships may ride with safety in all weathers. Its Entry is 2 $\frac{1}{2}$ miles wide, the Loch running in S. by E. $\frac{1}{2}$ E. to abreast of Loch Shieldag, then S.E. by E. to the furthest end. The best place for Anchorage is in Loch Shieldag, between the two narrows, on the S. side of the Basin, or any where above the second Narrow, which is what may properly be called Loch Terriden.

Loch Gerloch.—About 4 miles further N. is Loch Gerloch, a large and well

sheltered harbour, the ground in all parts clean, holding well, and capable of containing a fleet of the largest ships; its entrance is between Coupachar Point and Longa Island; distant from each other nearly two miles. There are no dangers either in or near it; and when it does not blow hard from the W. or S.W. ships may ride in any part, particularly on the E. side of Island Longa. In winter the best anchorages is between Flowerdale and the Island of Horisdale, in from 9 to 20 fathoms water. Small vessels may ride on the W. side of this Island, S. E. of a rock above water.

Loch Yew.—From Longa Island to Ru Rhea the bearing and distance are N. E. $\frac{1}{2}$ N., $3\frac{1}{2}$ leagues. Five miles to the eastward is Loch Yew, a place large and well sheltered, forming a bay of easy access, a moderate depth of water, and having good holding anchorage, where whole fleets may ride in the greatest safety at all times. The entrance to Loch Yew is a mile wide, and nearly off its western point lies the small Island of Fura, with 2 or 3 islets to the eastward of it; there is also a little rock off the northern point of Fura; keep therefore at a distance in passing it, and the channel in is free from danger. In the middle of the bay is Yew Island, at the northern point of which are some rocks above water. The best places to ride are on the E. side of the Island Yew, or on the E. side of the bay, off Tunag, and off Inveraspadae at the opposite side of the Loch.

Loch More or Great Loch Brim.—To the northward of Loch Beg, are several Islands, lying before Loch More, or Great Loch Brim. Loch More is a great and safe branch of the sea, capable of accommodating the largest fleets, and having no rocks or dangers within it, except a small ledge on the E. side of Ullapool extending above a cable's length from that shore, which is avoided by keeking $\frac{1}{2}$ from the Ullapool side. You may anchor in this bay in 14 or 15 fathoms water above a cable's length from the shore, or any where above Logie Point, in from 13 to 24 fathoms. Should you, in entering or sailing from this Loch, go between the larboard point, or Ru Handerrick, and the Carniskere Islands, remember to give the former a berth on account of a rock called Nuela, which lies nearly a cable's length from the shore, and dries about half ebb.

Loch Kylescough is nearly 7 miles E. S. E. $\frac{1}{2}$ E. from Ru Stoir, and $3\frac{1}{2}$ miles in the same direction from Ouldenay Island. This is a large and well sheltered branch of the sea, the approach to which is safe, and the anchorage good; but for some miles within the Loch the water is too

deep for ordinary vessels, being from 30 to 50 fathoms, unless you carry an anchor on shore. Above the Island Ranich where the contracted channel commences again to widen, ships may anchor any where, the stream in the narrowest part running not more than 1 mile an hour.—The only rock necessary to notice, lies near the Island Caraway, off the larboard side of entrance; it bears W. S. W. from it and dries at low water; keep Runachusan Point in Ouldenay Island on with the extremity of Ru Stoir, and you will clear this rock to the Southward. At the N. side of the entrance to Loch Kylescough is Loch Shark, and N. E. of Shark lies Loch Calaway.

Loch Inshard.—One league to the eastward of Lusford is Loch Inshard, the last bay before you round Cape Wrath. In sailing in, great caution must be observed, as there is a rock lying right at the entrance, which appears at spring ebbs only. Within the Loch you will be well sheltered, your depth moderate, and your ground good. Sail up until you are landlocked, and anchor near the north or east side. To the north west of Loch Ardcar are some Islands, close to the main, called Ilanarone; and nearly N. N. E. of these 4 miles, is Balag Island, having a small rock above water, at both the N. and S. extremities. This Island lies about a mile from Ru Wochel. Near the latter is a rock above water, close to the land. From hence to Cape Wrath the coast is high and rocky. Off Cape Wrath are said to lie several rocks under water, called the Stags. Vessels in sailing round this headland should always give it a good berth, of $1\frac{1}{2}$ or two miles, and steering E'ward, they will reach the Pentland Frith.

Isle Oronsay Lighthouse is situated on a low point at the south-east end of the Island of Oronsay, Inverness-shire, in the Sound of Skye, also called Sound of Sleat. The Light is an azimuthal condensing Light, and shows a **FIXED WHITE LIGHT**, from a tower of masonry about 58 feet above high water of spring tides. The Light may be seen in clear weather about twelve nautic miles.

Kyleakin Lighthouse is situated on a point of rock which covers at high water spring tides, and projects from the west end of Eilan Dool, or Gillean Island, in Ross-shire, at the western entrance of "The Narrows," leading to Loch Alsh. The tower is about fifty-three yards within the high water mark of spring tides, and is connected with the Island by a bridge of five spans. The Light is an azimuthal condensing Light, and shows a **FIXED WHITE LIGHT** in the fairway of the Sound of Loch Alsh, and a **FIXED WHITE LIGHT** in the fairway leading to the Sound of Applecross, and which White Light ex-

tends southwards to Pabba Island. From thence it shows a **FIXED RED LIGHT**, extending eastwards along the shore of Skye to the south of the fairway of Loch Alsh. It also shows a **FIXED RED LIGHT** to the north-eastwards of the fairway to the Sound of Applecross. To the north of the fairway of Loch Alsh the Light is not shown. It is exhibited from a tower of masonry about 53 feet above high water of spring tides, and may be seen in clear weather at the distance of about eleven nautic miles.

Rona Lighthouse is situated on the northern end of the Island of Rona, in Inverness-shire, between the west coast of Ross-shire and the Island of Skye. The Light is a catadioptric second-class holophotal **FLASHING WHITE LIGHT**, showing a flash **EVERY TWELVE SECONDS**. It is exhibited from a tower of masonry erected on a peak at the north-east point of the Island. It is elevated about 222 feet above high water of spring tides, and may be seen in clear weather at the distance of about twenty nautic miles.

Cape Wrath Lighthouse, erected on the Cape, forming the north-western extremity of the main land of Scotland, in lat. 58 deg. 37 min. N., and in lon. 5 deg. W., bears from Hoy Head in Orkney, W. $\frac{1}{2}$ N., distant 50 miles; from the Butt of the Lewis, E. by S. $\frac{1}{2}$ S., 41 miles; from the rocks called the Stags off the Cape, S. W. by W. $\frac{1}{2}$ W., about 1 mile; from the sunken Rock called the Nun, S.S.W. $\frac{3}{4}$ W., distant 15 miles; and from the Islands of Stack and Skerry, W.S.W., the former 35 $\frac{1}{2}$ and the latter 38 miles distant. It is known to mariners as a **REVOLVING LIGHT**, of the natural appearance, changing with one tinged red, which attain their most luminous effect every two minutes, and become, to a distant observer, totally eclipsed for a short time. The light is visible from S. $\frac{1}{2}$ E. to S. W. by W. by the N., at the distance of 23 miles.

Dunnethead Light, on the Northern extremity of the mainland of Scotland, in lat. 58 deg. 40 min. N., bears by compass from the N. end of the Island of Stroma, in Pentland Frith, W.N.W., distant 7 $\frac{1}{2}$ miles; from Hoy Head, leading to Hoy Sound, S.S.W., distant 13 miles; from the Stack and Skerry, S. by E. $\frac{3}{4}$ E. distant thirty-three miles; and from Cape Wrath, in Sutherlandshire, S.E. by E. $\frac{3}{4}$ E., distant 54 miles. In reference to these bearings, the light will be visible to the mariner in a northerly direction from S.E. $\frac{1}{2}$ E. to W. by northward. The Light is **STATIONARY**, and being elevated 346 feet above the medium level of the sea, will be seen like a star of the first magnitude, at the distance of from 7 to 8 leagues, and at lesser distances according to the weather,

Magnetic Bearings & Distances FOR THE NORTH AND EAST COASTS OF SCOTLAND.

CAPE WRATH (Lat. 58 37 30 N., Long. 5 W.) MILES.

To Ru Store SW by W 26 $\frac{1}{2}$
Loch Maddy entrance ... W by S 92
Glass Island Light ... W by S $\frac{1}{4}$ S 70
Chicken Head W $\frac{3}{4}$ S 47
Tolsta Head W $\frac{1}{2}$ N 39
To Nun Rock NNE $\frac{3}{4}$ E 15
Hoy Mouth, Stromness E $\frac{3}{4}$ S 61
Holburn Head SE by E $\frac{1}{4}$ E 51

DUNNET HEAD (Lat. 58 40 16 N., Long. 3 22 20 W.)

To Thurso Bar SW by W $\frac{1}{2}$ W 5
Holburn Head.... W by S 5
Hoy Head..... NNE 13
Swona, South end of E by S 10
Pentland Skerries ESE 14

SULE SKERRIE (Lat. 59 3 N., Long. 4 13 W.)

To Dunnet Head SSE 33
Strathy Head S by W 28
Sumburgh Head, Shetland..... E 100
Westra Frith..... E by S 40

HOY MOUTH, STROMNESS (Lat. 59 3 N., Long. 3 23 W.)

To Scrabster Roads..... SW $\frac{1}{2}$ S 17
Strathy Head W by S $\frac{1}{4}$ S 23
Lock Erobol W 45
Cape Wrath W $\frac{3}{4}$ N 59

DENNESNESS LIGHT, NORTH RONALDSHA
(Lat. 59 23 N., Long. 2 23 W.) MILES

To Foul Island..... NE 45
Pappa Island, Shetland .. NE $\frac{1}{2}$ E 60
Sumburgh Light, Shetland E $\frac{3}{4}$ N 46
Fair Island E by S 28

START POINT IN SANDA ISLAND (Lat. 59 16 39 N., Long. 2 22 25 W.)

To Foul Island..... NE $\frac{1}{4}$ N 50
Fair Isle E 30
Noss Head .. SW $\frac{1}{2}$ W 50
Copinsha Island SW $\frac{1}{2}$ W 22

SUMBURGH HEAD, SHETLAND (Lat. 59 51 N., Long. 1 16 W.)

To Noss Island NE by E 20
Bucanness Light SW by S 140
Fair Isle SW by W 21
Start Point, Sanda I. W by S $\frac{1}{4}$ S 48

Foul Island..... NW by N $\frac{1}{2}$ N 28
NOSS HEAD (Lat. 58 28 38 N., Long. 3 3 5 W.)

To Duncansby NE by N 10
Pentland Skerries Lights ... NE 12 $\frac{1}{2}$
Fair Isle ENE 78
Sumburgh Head.. NE by E $\frac{1}{2}$ E 96

TARBETNESS LIGHT (Lat 57 51 N., Long. 3 48 W.)

To Troup Head..... SE $\frac{1}{4}$ E 48
Cowsey Point SE by S $\frac{1}{4}$ S 18
Burgh Head S $\frac{3}{4}$ W 13
Mairn SW $\frac{1}{4}$ S 16

KINARD'S HEAD (Lat. 57 42 N., Long. 2 1 W.)

To Rattry Brigs SE by S $\frac{3}{4}$ S 8
Helmsdale NW by N 60
Noss Head..... N by W 61

Duncansby Head... ..	N $\frac{1}{2}$ W	67
Copinsha Island	N by E	77
BUCANNESS LIGHT (Lat. 57 28 15 N., Long. 1 46 11 W.)		
To Peterhead, S.H.....	NNE	2 $\frac{1}{2}$
Rattray Brigs	NNE	9
Sumburgh Head.... ..	NE by N	140
Bell Rock	SW	66
St. Abb's Head	SW $\frac{3}{4}$ S	95
Girdleness Light.....	SW $\frac{1}{2}$ W..	25
THE GIRDLENESS (Lat. 57 8 15 N., Long. 2 3 2 W.)		
MILES.		
To Bucanness	NE $\frac{1}{2}$ E	25
St. Abb's Head	SSW	72
Bell Rock	SW $\frac{1}{4}$ S	42
Flambrough Head	S $\frac{1}{2}$ W	193
MONTROSE (Lat. 56 42 N., Long. 2 27 W.)		
To St. Abb's Head.....	S by W $\frac{1}{2}$ W	48
Bell Rock.... ..	SSW	11
May Island	SW by S	30
Flambrough Head	S	174
Longstone Light, Ferns....	S $\frac{1}{2}$ W	70
BELL ROCK (Lat. 56 26 3 N., Long. 2 23 6 W.)		
To Montrose entrance	NNE	11
Girdleness Lights.....	NE $\frac{1}{4}$ N	42
Bucanness Light	NE	66
Flamborough Head.....	S $\frac{1}{4}$ E	158
Buttonness	NW $\frac{1}{2}$ W	13

Arbroath	N by W $\frac{1}{2}$ W	7
Dumbar Harbour.....	SW $\frac{1}{2}$ S	27
St. Abb's Head	S. by W. $\frac{1}{2}$ W	32
Fifeness	SW by W $\frac{3}{4}$ W	11 $\frac{1}{2}$
MAY ISLAND (Lat. 56 11 8 N., Long. 2 33 20 W.)		
To Fifeness	N $\frac{1}{2}$ E	5
Arbroath	NE by N $\frac{1}{2}$ N	21
Bell Rock	NE $\frac{1}{2}$ E	10
St. Abb's Head.....	S $\frac{1}{2}$ E	21
Inchkeith	W $\frac{1}{2}$ N	22
INCHKEITH (Lat. 56 2 N., Long. 3 8 W.)		
To Kirkaldy.....	N by E $\frac{1}{2}$ E	6
Elieness	E by N $\frac{1}{2}$ N	14
Fidra Island.....	E by S $\frac{1}{2}$ S	12 $\frac{1}{2}$
Fisherow	S $\frac{1}{2}$ E	6
Colm Island	NNW	7
Garvy Island..	W by N $\frac{1}{2}$ N	9
May Island.....	E $\frac{1}{2}$ S	22
ST. ABB'S HEAD (Lat. 55 55 N., Long. 2 9 W.)		
To Buttonness	N	37
Bell Rock Light.....	N by E $\frac{1}{2}$ E	32
Aberdeen, Girdleness	NNE	72
Bucanness Light	NE $\frac{3}{4}$ N	95
Bass Rock	NW by N	11
Elieness	NW by N $\frac{1}{2}$ N	25 $\frac{1}{2}$
May Island	N by W	20

EAST COAST OF IRELAND.

POINT CARNSORE TO LOCH CARLINGFORD.

Point Carnsore is the S.E. point or extremity of Ireland, and lies about 42 leagues from Cape Cornwall, bearing N. by E. $\frac{1}{2}$ E.; from the Small's Light N. by W. $\frac{1}{2}$ W., distant 37 miles. Nearly E. by S. from Carnsore Point, distant 6 miles, lies the **TUSKAR**, a very remarkable rock 20 feet above the level of the sea at high water, upon which stands a lighthouse similar to that on the Eddystone, elevated 81 feet from its base. The light revolves every two minutes, showing two faces bright, and one red. The red light is visible 10 miles, and the bright 15 miles. During foggy weather a bell is tolled every half minute. This rock bears from the Smalls Lighthouse N. $\frac{1}{2}$ W., distant 33 miles. Ships coming from the westward and bound for St. George's Channel, should endeavour to see this rock before they shape their course to the northward.

Long Bank.—Three buoys are placed on this bank. One on the N. end, Conical buoy, Coloured Red, with Staff and Globe, and lettered "*Long Bank, No. 1.*" One on the S. end, Conical buoy, coloured Red, and lettered "*Long Bank, No. 3.*" An additional Red (Can) buoy has been placed equi-distant from the N. and S. buoys, and lettered "*Long Bank, No. 2.*"

Blackwater Bank, is a narrow sandbank running nearly in the direction of the coast at the distance of from 3 to 4 miles. A Black Conical buoy, surmounted by a Staff and Globe, lettered "*Blackwater No. 1.*" marks the N. end; and a Black Conical buoy, lettered "*Blackwater No. 4.*" marks the S. end. There are two intermediate Can buoys coloured Black, and marked respectively "*Blackwater No. 2.*" and "*Blackwater No. 3.*" Moored off the north end in 18 fathoms, at low water, spring tides is a Light Vessel, which exhibits a Fixed Light. The Light is shown from the mainmast, and in clear weather can be seen at a distance of 10 miles. The vessel has three masts, and carries two Globes at the main-mast-head; is painted black, with a White Stripe, having the word "*Black Water.*" in white letters on her sides; A gong is sounded in foggy weather.

Wexford Harbour, is capacious and sufficiently sheltered, but is obstructed by a bar extending across it, over which there are at times but 7 feet water. Buoys are laid in the deepest water across the bar; but to enter this harbour a pilot is necessary. On or about the 1st May, 1868, a Light-vessel

will be placed near the *Lucifer Shoals*, on the coast of Wexford, and will show a *Fixed Red light*, and her position will be about midway between Tusker Rock Lighthouse, and the Blackwater Bank Light-vessel; she will carry three masts, with a globe at the main-mast-head. Her hull will be painted similar to the other Light-vessels, but with the words "*Lucifer Shoals*" in white letters on her sides.

Arklow Bank, is a narrow sandbank off Arklow Bay, about two leagues from the land, and nearly 11 miles long from N.E. by N. to S.W. by S. and from half to three-quarter of a mile broad; the shallowest part is near the N. end where the least water is 4 feet; the S. end has from 6 feet to 3 fms. on it, and except at slack water, you will perceive its ripple; near to its East side are from 13 to 20 fathoms; approach it no nearer than 30 fms. The marks for its southern end are Arklow Rock N.W. by N. distant 7 miles, and in one with the northern declivity of the Copper Ore mountains; and the Great Sugar Loaf open to the eastward of the Ballynacarrig Hills, and also of Mizen Head, bearing about N. by E. There is also a Conical buoy, coloured red, placed to mark the south end, with the words "*Arklow Bank No. 5*" on it. The marks for its northern end are the top of Carrig Mc Keilly just open to the N. ward of Maughry Point, bearing N. W. $\frac{1}{2}$ N., and the Great Sugar Loaf open to the eastward of Wicklow Head, N. $\frac{1}{2}$ W. Wicklow Head bearing N. $\frac{1}{2}$ W. clears it. There is also a buoy placed to mark the north end, coloured red, surmounted by a staff and globe with the words "*Arklow Bank No. 1*" on it. Three Can Buoys coloured red, have been placed at equal distances from each other, between the North and South buoys, and marked respectively "*Arklow Bank No. 2*," "*Arklow Bank No. 3*," and "*Arklow Bank No. 4*." Two Light Vessels are now placed on this bank, one on the North and one on the South part. Arklow Bank North Light Vessel is placed about $3\frac{1}{4}$ miles S. E. by E. $\frac{1}{2}$ E. from the North end of the bank, and exhibits two fixed bright lights, one on the mainmast 38 feet above the level of the sea, and the other on the foremast 22 feet above the level of sea; she carries three masts, with a globe on the foremast and a globe on the mainmast head. Her hull is painted Black, with a White Stripe, and the words "*Arklow Bank North*," in white letters on her sides. Arklow Bank South light vessel has been shifted about two miles S.S.E. $\frac{1}{2}$ E. from her former position, and now exhibits a bright revolving light every minute; she carries three masts, with a half globe over a globe at her mainmast-head. Her hull is painted Black, with a White Stripe, and

the words "*Arklow Bank South*," in white letters on her sides.

On **Wicklow Head** is a light house showing an intermittent bright light alternately, 10 seconds bright and 3 seconds dark.

Wicklow Harbour, fit for small craft only, there being only 9 feet in the entrance at low water, spring tides, and 6 at neap tides. To make its entrance better, a new channel has been opened; this is formed by 2 Piers about half a furlong to the westward of the Old Bar, and there the depth is 12 and 14 feet.

The **Wicklow Banks** are 2 narrow patches of sand, lying about 5 miles E. from Wicklow Head. The southern patch called the India Bank, is about one mile long, N.N.E. $\frac{1}{2}$ E. and S.S.W. $\frac{1}{2}$ W., and half of a mile broad. On its middle are 2 fathoms, on its S.W. end $3\frac{1}{2}$ fathoms; at its S.W. extremity is a conical buoy coloured black and white in horizontal bands and moored in five fathoms low water from which Wicklow Head light bears W. by S. 5 miles.

The **South Ridge** lies at the N. end of the India Bank, it is $1\frac{1}{2}$ miles long and half a mile broad, with $3\frac{1}{4}$ to 5 fms. water on it. Its direction is N.N.E. $\frac{1}{2}$ E., and S.S.W. $\frac{1}{2}$ W., and its N.W. end is nearly $5\frac{1}{2}$ miles S.E. by E. from Six Mile Point.

The **Codling Bank**.—The south end of this bank lies N.E. by E., 3 miles from the South Ridge; it then runs N. by E. 3 miles, and turns suddenly to W. by N. for 2 miles, then curving round to the S.E. till it joins the south point. In the middle of the bank, which is 2 miles broad are from $3\frac{1}{4}$ to 5 fathoms. The Great Sugar Loaf open north of the Gap N.W. $\frac{3}{4}$ N., leads between the Codling, and the South Ridge. A Can Buoy, coloured black and white, in vertical stripes is moored on this bank. A light vessel is placed about $3\frac{1}{2}$ miles S.E. by S. from the south end of Codling Bank, from which is exhibited a Red quick Revolving Light, showing its greatest brilliancy every 20 seconds, has three masts, and carries a Globe with a half Globe underneath at her mainmast-head. Her hull is painted black, with a white stripe, and the words *Codling Bank* in white letters on her sides.

The **Bray Bank** lies N.N.E. $\frac{1}{2}$ E. and S.S.W. $\frac{1}{2}$ W.; is 2 miles long and $\frac{1}{2}$ a mile broad, with twelve feet on it. In the Channel, between the N.W. end of the Codling and the South end of the Bray, which is half a mile wide, there are 9 fms. gravelly ground. Carrickgollogan Hill, two degrees open north of Bray Head, N.W. $\frac{1}{2}$ N., clears the Codling to the northward. This mark will lead across the bay in 3 fathoms at low water. The south hummock of the Little Sugar Loaf in one with Windgate Hill, W.N.W. $\frac{1}{2}$ W. leads

between the Bray and the Kish Banks in $3\frac{1}{2}$ fathoms.

The **Kish** is a long narrow sand, stretching N. by E. $\frac{1}{2}$ E.; and S. by W. $\frac{1}{2}$ W., about $6\frac{1}{2}$ miles, and is from $\frac{1}{2}$ to $\frac{3}{4}$ of a mile broad; on its southern extremity is a conical buoy coloured black, and lettered "*Kish Bank, No. 3*;" on its northern extremity is placed a conical buoy, coloured black, surmounted by a staff and Globe, and lettered "*Kish Bank, No. 1*;" an additional Can Buoy coloured black, and lettered "*Kish Bank, No. 2*" has been placed midway between north and south buoys. On the Kish are from 9 feet to 3 fathoms, the latter depth being near its northern end. Three-quarters of a mile from the northern extremity of the Kish, a Floating Light Vessel is moored, with the following mark and bearing:—Ireland's Eye a little open of Howth Head, and Dublin Lighthouse, N.W. $\frac{1}{2}$ W., distance $7\frac{1}{2}$ miles. This vessel exhibits a White Revolving Light, which attains its greatest brilliancy once in every minute. At 3 miles to the southward of the light-vessel are only $7\frac{1}{2}$ feet water; at this spot the Great Sugar Loaf Hill appears on the saddle of Bray Head, bearing W. $\frac{1}{2}$ S., and Ireland's eye just open, and shut with the Head of Howth, N. $\frac{1}{4}$ W.

Bennett's Bank.—The S. end of this bank lies about 1 mile East of the Kish Lighthouse and 5 miles S.E. from Howth Head Lighthouse; it is about $2\frac{1}{2}$ miles in length, and has from 6 to $4\frac{1}{2}$ fathoms on it; at half mile southward are 12 to 14 fathoms.

The **Burford Bank**, at the entrance to Dublin Bay, is narrow, and runs in a N.N.E. $\frac{1}{4}$ E. and S.S.W. $\frac{1}{4}$ W. direction being about $1\frac{1}{2}$ mile long, but not a $\frac{1}{4}$ of a mile broad. Nelson's Pillar kept open to the southward of the Pigeon-house on Dublin Quay, will lead clear of its southern extremity in $4\frac{1}{2}$ and 5 fathoms water. There is a shallow part of this bank over which there is not more than 12 feet at low water. This lies with Malpas Obelisk in one with signal station, and Sutton Tower just open of Sheep's Hole Point. On all other points of the bank are from 3 to 4 fathoms. The mark to clear to the eastward of it, is Ireland's eye open to the Nose of Howth. Upon each end of this bank is a buoy; that on the southern end is a conical buoy, coloured red, surmounted by a staff and globe, and that on the northern chequered black and white.

Sailing for Dublin Bay from the Southward.—From the Tuskar to Wicklow Head the bearing and distance are N.E. $\frac{3}{4}$ N. nearly $46\frac{1}{2}$ miles, but to pass to the eastward of the Arklow Bank the course is N.E., observing to make due allowance thereon for the set of the tide, whether flood or ebb. When

Wicklow Head Lights bear N. by W. you will be clear of the Arklow Bank; then to sail within the Wicklow or India Banks bring the Great Sugar Loaf Hill well open of Wicklow Head, bearing N. by W. or Wicklow Lights in one; either of these will lead between the Arklow and India Banks, and when within 2 miles of the shore, a N. by E. $\frac{3}{4}$ E. course will carry you past Moulditch Bank and Dalkey Island. In working up between the banks and the shore with a flood tide and northerly wind, do not stand further from the land than four miles; for the tide with little wind may drift you upon the banks: while near the shore the stream commonly makes to the southward $1\frac{1}{2}$ hours before high water.

Stopping Places.—In moderate weather vessels may stop almost anywhere within the banks between Wicklow and Dublin, except off the Giant's Bed; where lies the Moulditch Bank; the best part, with westerly winds, is between Bray Bank and the main from $\frac{1}{2}$ to 2 miles from the shore. Here is very little stream of tide, and the violence of the sea is considerably broken by the banks.

In **Killiney Bay** vessels may anchor in 5 or 6 fathoms, sheltered from W.N.W. to N.N.E. winds

Dublin Bay.—There is good anchorage in the mouth of Dublin Bay when the wind does not blow hard from the E. and S.E.; with these winds a great sea sets in when it blows hard, so that vessels are obliged to run for some place of safety; with north-easterly winds, vessels run for Kingstown harbour, which lies on the S. side of Dublin Bay, and is enclosed by two large piers; on the head of the eastern of which is a lighthouse shewing a revolving light, presenting white and red faces alternately, and attaining their greatest brilliancy at intervals of thirty seconds. During foggy weather a bell is tolled. There is also a fixed red light on the west pier-head. The entrance to this harbour faces the N.E., and has 4 fathoms water; within, from 4 to $2\frac{1}{2}$ fathoms at low water. When going in, leave the revolving light on the port hand, and round it close to. **BAILEY LIGHT**, exhibited from the S. E. point of Howth Peninsula, is stationary, and is visible at a distance of fifteen miles. About a mile to W.S.W. of the Bailey lighthouse lies the Rosebeg Bank, which is easily distinguished in blowing weather by the sea breaking over it: and on which are from $2\frac{1}{2}$ to 3 fathoms water. The Revenue Barrack on with the Poolbeg Lighthouse, bearing N.W. by W. $\frac{3}{4}$ W., leads clear to the southward of it.

Dublin Harbour lies between two banks, the North and South Bull, and is sheltered on the south side by a wall on piles, carried eastward about 3 miles into the bay. At the end of the south wall is

Poolbeg lighthouse showing a fixed light all night, and a lower light, from half-flood to half-ebb: a ball is hoisted during the same period in the day. A bar lies across the entrance, on which are 12 feet at low water. Between the bar and lighthouse are 14 to 27 feet. A red buoy is moored on the bar, in 9 feet at low water: it lies a mile E.S.E. $\frac{1}{4}$ E. from the lighthouse. Pass about a cable's length to the southward of this buoy, observing the before-mentioned mark and you will carry 12 feet over the bar at low water. On the north side of the channel, and bearing E., 3-10th's of a mile from the lighthouse, is a white buoy, moored in 9 feet at low water, between which and the lighthouse are from 14 to 27 feet. The south bar buoy (black) lies S. $\frac{1}{4}$ W. 4-10th's of a mile from the lighthouse, on the southern extremity of the south bar patches, which commence about $\frac{1}{2}$ of a mile S.E. from the lighthouse, extending in that direction nearly $\frac{1}{2}$ a mile; then turning to the westward about the same distance, when they terminate where the black buoy is placed. On these patches are only from 4 to 5 feet low water. At 6-10th's of a mile within the lighthouse a white buoy is placed, which must be passed to the northward. The channel is regularly buoyed on the north side with black buoys, and on the south with red buoys from the Pigeon House to Ring's end. Between Poolbeg and the Pigeon House there are several places where vessels may anchor, in from 16 to 20 feet at low water, the channel having been greatly improved by means of powerful steam dredges. Ships in general, with suitable draughts of water sail over the bar to the north of the east buoy. This is called the East Channel, and the mark for it is the Church of Irishtown just open to the northward of the lighthouse. This mark will lead you about a cable's length to the southward of the east buoy in no less depth than 15 feet at half-flood. So soon as you are over the bar, the depth will increase to 18 and 20 feet. Keep about mid-channel between the Spit Buoy and the lighthouse, and when about $\frac{1}{2}$ a mile within the latter you may anchor in 15 or 16 feet at low water. This is called Poolbeg, and although a tolerably good place in summer, it is not so good in winter time; it is then best to go a mile further up, so as to take the ground about half-ebb, or to lie along the wall or along the quay above Ring's End. To sail in through the West Channel, you must pass to the southward of the South Bar Buoy; when the lighthouse bears N.E. $\frac{1}{4}$ N., and on with Baldoyle Chapel, or the ruins of Kilbarrack Church, steer for it in that direction, giving it a berth on your larboard hand, as you haul round to the westward. When coming from the southward, keep Sandy Cove Tower on with the eastern

extreme of the pier at Kingstown, S. $\frac{1}{4}$ E., until you bring the lighthouse on the above bearing: this will lead you in the best water, and well to the westward of the south bar buoy. In the channel are only 6 feet at low water, spring tides. The tide flows at the lighthouse, on full and change days, 11 hours 12 minutes, and rises 13 feet on springs. Vessels coming from the northward, bound for Dublin, must give the Hill of Howth a berth, to avoid the bank called Rosebeg. To avoid it on the east side, bring the eastern extreme of Howth open of the Bailey, or the Bailey Light N.E. $\frac{1}{4}$ N.; and on the south side, Poolbeg Lighthouse, N.W. by W. $\frac{1}{4}$ W.

Ireland's Eye is a small island $1\frac{1}{2}$ miles to the north of Howth Head; on its eastern side is anchorage in 6 fathoms; on its north in 7; but the best is on the west side in about 4 fathoms, with the Stack open to the southward of the height, and from whence it is easy to run for the pier of Howth in case of necessity.

Howth Harbour, which is at present being deepened and improved, to the S. of Ireland's Eye half a mile. There are two piers, on the easternmost of which there is a lighthouse exhibiting a fixed red light to seaward 45 ft. high, on the west side of the entrance and towards the end of the west pier there is 7 feet of water at low water spring tides, (rise of tides 13 feet at springs) and alongside the eastern pier there is 4 to 5 ft. at low water spring tides. The centre of the Harbour, from three-quarter cable length inside the jetty is a Rock, that dries at low water, and should be avoided. Entering the Harbour from the eastward keep Howth Church, W. $\frac{1}{4}$ S., open S. of the lighthouse to clear the rocks off Ireland's Eye; and entering from the northward keep the Martello tower between the Pier heads S. $\frac{1}{4}$ W. Give the eastern pier a wide berth to avoid the loose stones under it that dry at low water. List of Tolls, Rates, License, Duties, and Charges authorized by the Lords Commissioners of Her Majesty's Treasury, to be levied and paid at the Harbour of Howth:—On Vessels freighted with Coal, Dressed Stone, Bricks, Grain, or General Merchandise, per Ton Register, not exceeding 6d. On Vessels freighted with Limestone, Sand, Manure, Undressed Building or Road Stone, per Ton Register, not exceeding 2d. On Vessels engaged in Fishing, if exceeding 5 Tons burthen, a charge of 1s. for each Cargo landed, or an annual licence of 10s. On Vessels engaged in Fishing, if under 5 Tons burthen, a charge of 6d. for each cargo landed, or an annual licence of 5s. On small Boats, plying for Hire, an annual licence of 2s. 6d. Vessels engaged in Trade if occupying a Berth at the Quays for a period exceeding Ten

Days. to pay a charge of $\frac{1}{4}$ d. per Ton Register for each day exceeding such period.

Harbour of the Skerries—This Harbour may be easily known by Rockabill and St. Patrick's Islands; the former is a remarkable rock, always above water, and steep to all round, having from 9 to 18 fathoms close to it, and on the summit of which a Lighthouse is erected exhibiting a FLASHING light every 12 seconds, and can be seen 18 miles. The flash is white between N. $\frac{1}{4}$ W. and S.W. by S.; red between the same bearings round westward or towards the land. It lies 4 miles E. by S. of the Skerries, and about $2\frac{1}{2}$ miles from St. Patrick's Island. To sail in, after you have rounded St. Patrick's Island, steer N.W. by W. until all the town of Skerries appears open of the pier-head; you will then be clear of the Cross, and may round into the road, where you will have 4 or 5 fms. of water. Here the riding is safe, unless it come to blow hard from the E. or N.E.; but if you intend going up to the pier, stop about a cable's length from the pier-head, in 3 fathoms, until the tide serves.

Balbriggan Harbour is sheltered from the east by a Pier, on the S. side of the Bay, which runs northward. Within the Pier Head, at high spring-tides, are 12 feet water, and with neap-tides, 9 or 10. On the pier, S. side of entrance, is a white lighthouse, exhibiting a fixed light, visible at the distance of 10 miles, between W. S.W. and S.S.E. $\frac{1}{2}$ E.

Drogheda Bar lies $27\frac{1}{2}$ miles N. of Dublin, about 10 miles N. of Skerries, and 7 miles from Balbriggan, the river running due E. and W. Formerly the river from the Maiden Tower to the bar had a tendency to run N.E., but an annual outlay of nearly £6000 a-year in its improvements has contributed to give the entrance to the river an E. and W. direction, thereby enabling vessels to take the bar with much more safety than heretofore. The parallel walls at the mouth of the river having been extended within the last few years 1800 lineal yards seaward, and now nearly reaching the bar, has caused the water in the river adjacent to the bar to be comparatively smooth in the severest weather. These walls have also had the effect of deepening the channel, and directing its course in a more southerly direction, thereby making the bar much easier of access in bad weather. The continual dredging of the river has removed the banks and shoals which previously existed, leaving the navigable channel of a uniform depth, not less than from 18 ft. 6 in. to 19 ft. at high water of ordinary spring tides. The water on the bar at spring tides from 18 to 22 feet., with from 15 to 16 feet at neaps. There is an excellent tug-boat in attendance on ves-

sels requiring her assistance, with a number of experienced licensed pilots always looking out for vessels bound for this port. There are fifty sailing vessels, with five first-class paddle-steamers, having in the whole a registered tonnage of 7327 tons trading to this port, exclusive of other vessels which frequent this place with occasional cargoes. Four lighthouses are placed at the entrance of the river, and a number of stone towers built on the N. side, with wooden perches for landmarks on the S. side; the centre between them denoting the channel. The relative bearings of the E. and W. Lights will be occasionally changed, as the sandbanks alter their places. The present entrance of the river, keeping these two lights in one, is W. $\frac{1}{2}$ S., until you come abreast of the large Stone Pillar on the north side, then steer N.W. $\frac{1}{4}$ W. for the North Red Light. There has lately been placed at the East end of the North Wall a large Wooden Perch, with Cage and Barrel placed on the top of it, and must be kept about 100 feet on the starboard side in coming in. Ships drawing 10 $\frac{1}{2}$ feet should have at least 4 hours' flood tide in bad weather before taking the bar.

Dundalk.—Sailing N. you will pass Clogher Head and reach Dunany Point, off which, about a mile E. of high water mark, lies a small rock, drying with low water spring tides. The first buoy is in 6 fathoms at low water, about 4 miles from Dunany, bearing from it N. by E., keeping Clogher Head well open, and bearing from Cooley Point W. by N., distant about 4 miles. The second and third buoys bears N.N.W. $\frac{1}{4}$ N. from the first buoy. The second buoy is in $3\frac{1}{2}$ fathoms at low water; and the third is on the bar, on which there are, at low water springs, 3 and at low water neaps, 6 feet. The depth on the bar at high water springs, varies from 24 to 18 feet; and neaps, from 16 to 13 feet. These depths continue up to Soldier's Point, whence, to the quays, the depth is at high water springs 19 feet, and neaps 13 feet. A Lighthouse, on screw piles has been erected at the entrance of the Harbour Channel. The Light is a Fixed Light, varied by Flashes, giving a flash once in every 15 seconds; its focal point 33 feet over the level of the sea, at high water; and in clear weather it is visible at the distance of about 9 miles. To seaward the Light appears of the natural colour, Bright, between the bearings of W. by N. and N. $\frac{1}{4}$ W.; it is masked in the direction of the Dunany Reefs between the bearings of N. $\frac{1}{4}$ W. and N. by E. $\frac{1}{4}$ E.; it is coloured Red towards the west side of Dundalk Bay; and shows Bright towards the Harbour Channel, northerly. The Lighthouse is borne on screw piles of red colour, braced into an open framing below the dwelling, which is of octagonal form, and coloured

white: over this the Lighthouse has a dome-formed top. It stands within the entrance of the Channel, in lat. $53^{\circ} 58' 40''$ N., and lon. $6^{\circ} 18' W.$; and bears from Castle Rocks off Cooley Point N.W. $\frac{3}{4} W.$, distant $5\frac{1}{2}$ nautic miles; from Dundalk Patch (rocky shoal), N. by W. $\frac{3}{4} W.$, distant $6\frac{1}{2}$ nautic miles; from Dunany Reefs, eastward of Dunany Point, N.W. $\frac{1}{4} W.$, distant $6\frac{1}{2}$ nautic miles. When vessels bound to Dundalk come between Cooley Point and Clogher Head, they are required to hoist a signal for a pilot. A large bell has been placed on the roof of the lighthouse which strikes six times per minute in foggy weather. All vessels entering the Port to keep the Lighthouse on the starboard hand. Masters of vessels are cautioned to give the beacons and perches a sufficient berth. Vessels wanting the use of the Steam Tug are requested to hoist by day an Ensign at the Fore-top-gallant mast head, by night, Two Lights, one above the other. Masters of vessels necessitated to enter the Harbour without being able to obtain a pilot should observe that after passing the Lighthouse, the first and second lights are white, the third light is green, the fourth light is white, these are all to be kept on the port hand; the fifth light, placed on the Rock Beacon, is red, which is to be kept on the starboard hand; all the lights from thence to the Quays are white, and are to be kept also on the starboard hand. On entering the channel in daylight the black beacons and all perches with black ball signals on top are to be kept on the port hand, and all the red beacons and perches with red conical signals on top to be kept on the starboard hand. The Commissioners for Improving the Port and Harbour of Dundalk are erecting a Guide Wall from the North Bull towards the Bar, running in a direct line to and ending 300 feet to seaward of the Lighthouse; this end is marked by a red buoy, and the wall bears from it N. by W. $\frac{1}{2} W.$, said buoy to be kept on the starboard hand. Three Jetties have been constructed on the West side of the Channel, the river ends of which are marked by perches with black ball signals on top; these perches carry the first three lights on entering the Channel. Two Jetties are also in course of construction on the East side of the Channel, the river ends of which are marked by perches with red conical signals on top.—The Dundalk Harbour Commissioners have had built, at a cost of £3,000, a new and powerful Iron Steam Tug-boat for the accommodation of vessels trading to this Port.

DUNANY AND IMOGENE ROCKS DUNDALK BAY.—A black conical buoy, surmounted by a staff and ball, has been placed in $3\frac{1}{2}$ fathoms, at low water, spring tides, to mark the position of the Imogene Rocks, which lie about a mile and three

quarters S.S.E. off Cooley Point, north side of entrance to Dundalk Bay, and with the following marks and compass bearings:—Dundalk High Chimney, open of Rathcor Point, N.W. $\frac{1}{2} W.$; Cooley Point, N.N.W. $\frac{1}{2} W.$; Carlingford Lighthouse, N.E. $\frac{1}{2} N.$ —A red conical buoy, surmounted by a staff and ball, has been placed in 4 fathoms, low water, spring tides, on the outside of the Dunany Reefs, which lie off Dunany Point, south side of entrance to Dundalk Bay, and with the following marks and compass bearings:—Clogher Head, S. W. $\frac{3}{4} S.$; Dunany Church, W. $\frac{1}{2} S.$; Dundalk High Chimney, N. by W. $\frac{1}{2} W.$; Tipping Mountain on with a saddle in the distance, N.W.

Loch Carlingford lies two leagues to the eastward of Dundalk Harbour entrance, and forms a large well sheltered bay, the ground good, and water sufficient for the largest ships; but there are several rocks and dangers which must be attended to. Its entrance is between Ballaggan and Cranfield Points, which bear from each other nearly E. by N. and W. by S., distant $1\frac{1}{2}$ miles. The following Iron Nun Buoys have been laid down at low water, spring tides:—Black Buoy on the Shoal N.E. of the lighthouse, in 7 feet water at low water, lighthouse S.W., distant about 40 fathoms; Blockhouse, W.N.W. Red Buoy off the tail of the Scar, Cranfield Bay, in 8 feet water, lighthouse S.W.; Greencastle N. Red Buoy on the south end of the Earls Rock and shoal, in 8 feet water, Greenore Point W. by S.; Greencastle E.; distant from Greenore Point $\frac{3}{4}$ mile. Red Buoy on the S.W. end of Ballyedmont Bank, in 9 feet water, Monument N.; Old Castle, Carlingford, W.S.W. Black Buoy on the eastern edge of Carlingford Bank, in 8 ft. water, Greenore, S.S.E.; Old Castle of Carlingford, S.W. by S. When inward bound, masters of vessels will keep the red buoys on the starboard hand and black on the port. The Helly Hunter, upon which a large Red Buoy has been placed, is a rocky shoal lying to the eastward of the entrance of the Loch, and stretching about 1 mile S.W. and N.E.; its western end dries with extraordinary low tides only, and on the other parts the least water is 6 feet. To avoid the Helly Hunter, as you sail to Carlingford from the E. or S., do not bring Mount Culy to the westward of W. $\frac{1}{2} N.$ until the Blockhouse comes on with the top of Foy Mountain, bearing N.W. $\frac{1}{2} N.$ Then steer for the N. end of Blockhouse or Haulbowline Island, giving the Point of Cranfield and the Island a berth of a Cable's length each from the high-water mark. Between the W. side of Blockhouse Island and Ballaggan Point are several rocks and shoals, and consequently this passage must not be attempted.

Carlingford Loch Light, situate on Greenore Point, on the larboard side in going up Carlingford Loch, revolves, is of the natural appearance, attains its greatest magnitude every 45 secs., and is visible at a distance of 9 miles.

To Sail into Loch Carlingford, take flood-tide; and with the Blockhouse bearing from N. by W. $\frac{1}{2}$ W. to N.W. $\frac{1}{2}$ N. sail in for the E. side of the Island, giving it a berth of a cable's length or two on the larboard. Steer thence for Greenore Point keeping between $\frac{1}{2}$ a cable and 2 cables' length from it; then run N. by W. up the middle of the channel; and abreast of Killeen Point or above it, nearest the E. side, drop your anchor, in from 2 to 6 fathoms water. Small vessels may lie on

the W. side, easy and safe, about 2 cables length eastward of Carlingford Castle, on soft mud.

Carlingford Lights are shown from a tower erected on Hauibowline Rock, which lies upon the bar $\frac{1}{2}$ a mile W. by N. from Cranfield Point, on the larboard side of the entrance to the Loch. The upper is a fixed light, and the lower revolves. The higher light is shown throughout the night, and may be seen like a star of the first magnitude, at the distance of 15 miles. The lower light, having also a star-like appearance, is exhibited from half-flood to half-ebb. In the day during the same period, a ball is hoisted; and in fog-weather, a bell is tolled every half-minute.

NORTH-EAST AND NORTH-WEST COASTS OF IRELAND.

LOCH CARLINGFORD TO SLIGO BAY.

Annalong.—A small dry harbour, with excellent shelter for coasters after passing a narrow but easy entrance.

Newcastle.—A dry harbour, surrounded by a quay and sea-wall, affording good shelter for coasters, with an even bottom, and very easy access between the two pierheads.

Dundrum Harbour.—The entrance to Dundrum Harbour (a dry one) lies $2\frac{1}{2}$ miles eastward off Newcastle at the mountain foot. The Marquis of Downshire, has built a long two storied House, close to the western side of the entrance, the light colour of which is a useful guide for vessels endeavouring to make the harbour in thick weather. In the middle of the entrance channel a black buoy is laid down in 14 feet, low water spring tides. It may be picked up by keeping the old castle that stands above the town a sail's breadth in on the west point that forms the entrance. Steering north from this, you will arrive at a smaller buoy lying in the middle of the river; then by steering N.W. by W. you will come up with the first perch on the banks to the west, having on it a small barrel—give this a berth of half a cable's length on your larboard hand; after which by changing your course N. by E. you reach the second perch, having a triangle on it: allow this the same berth as the first. The third perch has a round black top. From the second perch, from which you have the town and pier open, steer N.N.W. up the river until abreast of the red-topped perch, to which give a berth of half a cable's length on

your starboard hand, and then keep to the pier-end.

St. John's Point.—On this Point in lat. $54^{\circ} 13' 10''$ N., and lon. $5^{\circ} 39' 30''$ W. is erected a tower, shewing an intermitting light, Red appearing of its full brightness during 45 secs. and ob. 15 secs. The light bears from Newcastle pier, (Dundrum bay) E. by S. $\frac{1}{2}$ S. $7\frac{1}{2}$ miles, and from the Calf of Man revolving light N.W. $\frac{1}{2}$ W., 33 miles, and can be seen seaward from W. by N. $\frac{1}{2}$ N. to E. $\frac{1}{2}$ N. The light kept open will lead clear of Gun Island and of the St. Patrick's rock, at the entrance of Strangford Lough.

Killough, half a league East of St. John's Point, has a good roadstead off-shore winds, and, within, offers coasters a safe dry harbour, with a muddy bottom. Killough Pier is built from the West side, and, between it and a smaller Pier on the Eastside, called Coney Island, lies the entrance to the port. Outside the entrance of the bay an Iron Perch marks the Water Rock, which is covered only at high water: to avoid it, bring a remarkable two-storied house, with white front and slate roof, (called Cotter's House, and situated inside the harbour,) one-third inboard from the West Pier-head, until you have passed the Perch; then keep more to the Eastward till you bring the House over to the extreme end of the Pier. Two cables N.N.E. $\frac{1}{2}$ E. from the Perch is the Little Plate Rock, and half a cable N. from this is the Big Plate, both covered except at spring ebbs; and, consequently, when there is water to enter the harbour, there is also water over these rocks. The

Garter, on which is an Iron Perch, is a ledge of foul ground which runs off from the Western side of the bay, under the Old Mill Stump. There is also a spit of rough stones, called Crane's Point, extending S. W. a short distance from Coney Island; but by keeping Cotter's House midway between the two Pier-ends, when you come within two cables' length of them, you avoid this spit. The best anchorage in the Bay is within the Water and Plate Rocks, in from about five to seven fathoms, with shelter from all but southerly winds.

Ardglass Harbour, $2\frac{1}{2}$ miles E. of St. John's Point, is easily known by several old Castles and a rising town on the W. side of the bay. You can anchor at the mouth of the bay, between Ringfad and Fennick Points, in from 6 to 10 fathoms water, but if the wind blows on shore, a small vessel may shelter inside the pier under the middle castle in from $1\frac{1}{2}$ to $2\frac{1}{2}$ fathoms water, with a warp to the quay, or run aground on the beach. A temporary red light is shown from the inner shore of harbour, 2 cables' length from entrance N. by W.

Loch Strangford lies N.E. at the distance of 60 miles from the Hill of Howth, and nearly E.N.E. $\frac{1}{2}$ E. 28 miles from Loch Carlingford. The stream at the entrance is very rapid, and when the tide is ebbing and wind strong at S., S.E., or E., the sea is short and broken, which gives the bar across the river the appearance of a ridge of sunken rocks; but there are not less than four fathoms at low water on any part of the bar, and it is quite free from rocks. Few places afford such safety to wind-bound vessels as this Loch, ships having at all times of tide abundance of water, not only on the bar, but also in the two principal roadsteads, *Ballyhenry* on the east, after passing Portaferry, and *Audley's Road* on the west side of the river, after passing Strangford. A small pillar or obelisk, lately built on the outer point of Gun's Isle is a guide to vessels from the southward, for making the square headed Iron Perch on Rock Patrick. This rock covers at half-flood. It is $\frac{3}{4}$ of a mile outside Killard Point, and has deep water on both sides, but it is best to leave it on the port hand, and steer for the Northern Bar or entrance, giving it a wide berth to the Garter Perch, which marks the south end of the Reef of Rock Angus, on account of the western, set of flood tide at this spot. On Rock Angus itself, stands a stone tower, to be left on the port hand. The starboard side or opposite side of the entrance is marked by the Perch on Pladdy Lug, which must not be approached nearer than 25 fathoms, on account of small outlying rocks. Off the north entrance

and in a direct line with Kilclief Castle and Ballyculter Church spire (which when brought in one, are the marks for vessels from the N. and E.) is a black fairway Buoy, lately placed there by the Ballast Board. It should be rounded on the starboard hand, as there are several Pladdies between it and Ballyquintin Point. Having passed the Tower on Rock Angus $1\frac{1}{2}$ mile, come to anchor, if you are late for the tide, opposite a White Beacon on the south shore, called Cross Roads, where you can stop a tide until you can get to Ballyhenry or Audley's Road, 2 miles further, and just beyond Strangford and Portaferry towns. A short half a mile above Cross Roads the mid-channel is marked by a tall red and white Pillar on the W. side, and a short white Beacon on the E. side of the Lough. The "Hole" of Strangford is a perfectly sheltered anchorage between the town and Swan Island, and there are 2 Quays opposite the Customhouse, with berths alongside them, and a little Bay with an even beach and smooth water for vessels desirous of taking the ground. There is also at PORTAFERRY (opposite) a good Quay, with berths and a smooth beach along the shore, under the town. A Horse Ferry plies between the two towns. There is a Red Pillar Beacon on the outer end of Swan Island, which marks the entrance into the "Hole" of Strangford. On hoisting a signal, experienced pilots can be had.

South Rock Light is erected on the South Rock, about 2 leagues northward from the entrance to Loch Strangford. The light revolves, attaining its greatest lustre every $1\frac{1}{2}$ minutes, and is visible at a distance of 12 miles. A reef of rocks called the Ridge, extends $1\frac{1}{2}$ miles to the E. of the lighthouse, on the extremity of which is a red buoy, which bears about S. by E. from the North Rock Beacon. The North Rock, about a mile N. by W. of the lighthouse, is marked by a solid Beacon, like a small church spire, erected in 1856. The Butter Pladdy, about $1\frac{1}{2}$ miles S.W. of the lighthouse, is marked by a black buoy, to be left on their outer hand by vessels taking the "Sound of the Light"—a channel much frequented by coasters and now well marked, between the lighthouse and the North Rock Beacon. Sailing along the Downshire shore from the Copeland to the North and South Rock, the South Light should be kept outside of Burr Isle, or the Black-head of the Gabbans, in Isle Magee, a sail's breadth outside of Donaghadee shore, or the Copeland Light North, to clear Sculmartin Rock that lies N. $\frac{1}{2}$ E. $3\frac{1}{2}$ miles from Burr Isle, and S.E. 1 mile from the town of Ballywater. To the northward of Sculmartin, on which is an Iron Perch, lie Ballawater Rocks, which stretch out about $\frac{1}{2}$ a mile, commencing

at Ballyferris Point, and run S. 2 miles. The S. end is seldom covered, the middle is covered at half-tide, the N. end seldom bare. Vessels of 60 and 70 tons frequently go in to discharge; and there is good shelter from all but N. E. winds, though the space is small, because after building the Quay, the Board of Works never cleared away the loose stones inside it. Six and a half miles N. of Ballywater is

Donaghadee. — This harbour has been greatly improved, and there is now a depth of 10 feet water at low water, spring tides, in the improved portion of the harbour, which extends along the S. Pier, from 100 feet west of the western crane to the black buoy, and thence to the N. Pier head. From the S.E. pier head a Light is shown, red to seaward from N. by E. $\frac{1}{2}$ E. to S. $\frac{1}{2}$ E., and bright towards the harbour and the entrance of Belfast Bay. Sailing in from the S'ward keep above half a cable's length from the shore until the harbour is open, then run in and let go your anchor inside the pier head. No buoys are allowed to anchors on account of the steamers. Mariners must be on their guard not to lose sight of the red Part of the light in sailing N. or S. of Donaghadee. About a mile north of Donaghadee is Foreland Point, from whence extends a ledge of rocks to the E., with an Iron Perch on it, and outside of that again is a large black buoy, which should not be rounded too close, particularly at low water. Deputy Rock, on which is a red buoy, lies half way between Donaghadee and Copeland, and has about 8 ft. at low water. The proper course through the sound is between the Foreland and Deputy buoys: but there is a channel on the E. side of the latter, keeping $\frac{1}{2}$ from the Copeland, as a shelf of foul ground runs out after passing the Deputy. Cairn Point, at N.W. end of Copeland, must have a good berth on the starboard hand, to avoid a rock called Gordon's Bush, that lies a cable's length S. of it, and is seldom bare at low water. These are all to be feared in the Sound of Donaghadee.

Copeland Island lies $2\frac{1}{2}$ miles N.E. $\frac{1}{2}$ N. from Donaghadee, and 1 mile to the E'ward of Nout Head. E.N.E. 1 mile from Copeland, are the Cross and Mew Islands, between which is a narrow channel not navigable. On the cross Island is the Copeland Light. Between these small islands and the Copeland is the outer sound. On the E. side of the Copeland, near the S. point, is a ledge of rocks extending above two cables' length to the E'ward: there is also a ledge extending from the Mew Island to the W'ward, between these is the channel. Half way between the sound of Copeland and Cross Island, is a small rock called the Pladdins, over which are, with common spring tides

3 or 4 feet water; it bears S. $\frac{1}{2}$ W. off the light. To avoid this rock on the east side, bring the lighthouse N. by W.; on the south side, bring the S.W. house in Donaghadee in sight with the S. end of Copeland Island: in this sound the currents are strong, and, as there are no buoys, is to be avoided by strangers.

Belfast. — The entrance to Belfast Lough is immediately to the N. of Copeland Light, and lies between Said Light and Black Head; the latter bearing from the former N. N. W., distant about eight miles. At the larboard side of the entrance, about a mile to the W. of Orloch Point, is a rocky ledge called the Briggs, stretching out $\frac{3}{4}$ of a mile, and upon which is a red buoy. About 6 miles to the W. of the Briggs is Grey Point, and, in a sort of bight between them, is the town and harbour of Bangor, which has about the same depth of water at the quay as is to be found at Carrickfergus, and, as an addition, a wooden wharf for the accommodation of steamers has been attached to the back of the stone pier, at which 7 feet will be found at ordinary low water. 2 miles further W. from Grey Point, a small ridge of rocks runs out from the shore rather more than a $\frac{1}{2}$ of a mile, on which is a buoy to be kept on the port hand. On the opposite side of the Lough, and bearing W by N $\frac{1}{2}$ N from Orloch Point, distant 9 miles, is the town of Carrickfergus, where there is a pier, having, with spring tides, 10 feet water, and with neaps 7 feet. As a guide to the entrance of this harbour at night, a red light is shown 2 hours before and 2 hours after high water: this light to be brought immediately over a street lamp in Governor's place—the red light showing about 2 feet above the white light, and from a vessel coming in due north. Off this town, to the S. and W. is a bank running out $1\frac{1}{2}$ miles from the shore, and extending N. $1\frac{1}{2}$ miles; the least water over it is 7 feet. Extending a mile from the shore on the S. side of the Lough, and opposite the village of Hollywood is Hollywood Bank, on which is a lighthouse built on screw piles, which shows a pale red light, visible 8 miles in clear weather. Between the Hollywood and middle bank is the commencement of the pool of Garmoye, which extends from abreast the large red buoy on the starboard hand, having from 3 to 4 fathoms at low water. From Garmoye the channel up to Belfast is now nearly straight, having above 10 feet at low water, spring tides; it is well buoyed—red on the larboard, and black on the starboard hand going up the quays. There is also a green light on Hollywood Bank, with three more of the same colour towards Belfast, all of which are to be left on the port side when going up. There is also a red light S.W. of the stone beacon

to be left on the starboard side. Large ships usually anchor off the town of Carrickfergus, near the middle of the Lough. Many vessels frequent this anchorage, which is marked on all the Admiralty Charts of the Lough, and Masters of ships pronounce it excellent. Vessels drawing not more than 16 feet water may anchor higher up in the Folly Roads—between Carrick bank and abreast of White Abbey; smaller vessels in Whitehouse Roads. Large vessels drawing 18 feet water, intending to reach the quays, may anchor in Garmoyle. A large pilot cutter is constantly under weigh during the daytime, at night also, (weather permitting); and generally boards vessels bound to Belfast abreast of Grey Point. The Briggs of Kilroot, now a perch on them, lie on the north side of the Loch, and stretch almost from Kilroot Point to White Head, and about a quarter of a mile from the shore to avoid which keep Black Head open with the White Head, and a vessel will be clear of all danger.—The Admiralty Chart of 1856, as surveyed and reported on by R. Hoskin, Master R.N., states:—Belfast Lough is an admirable refuge harbour. Above Grey Point ships may ride securely against all winds.

Loch Larn.—A lighthouse is erected on Farres Point, on the l'board hand, going into this spacious Loch, opposite which are the Maiden or Hulin Rocks. Sailing into Larn from the S.E. pass Muck Island, Brown's Point and Bay, give Barr's Point a berth near half a mile, as a ridge of rocks runs off above quarter of a mile; give Farres Point (on which is the lighthouse,) a berth of half a cable's length: run for Corran Point on Larn side, on which stands the ruin of an old castle, giving the Isle Magee side a large berth, as a long shoal runs out from it very near half-way across to the steam-packet's wooden wharf, opposite the salt pans, and continue to near the Point of Racknow, round which is Yellow Stone Roads, sheltered from all sea, and little tide. There is a long flat runs out from N.W. side of the entrance, which, when covered, is so deceitful to strangers, that they should open the mouth of the Loch well; keep no more than two cables' length from the lighthouse, run up past the wooden wharf, giving it a berth on the starboard hand. Anchor $\frac{2}{3}$ of a cable's length from Isle Magee shore. Small vessels from above the wharf should run up abreast of Corran Point in 2 fathoms keeping one third from Corran shore, and two-thirds from the Island. Large vessels should come to further out, about one third from Corran side. There are no rocks in Larn Loch and should a vessel run too far, she will only go on soft sand or mud. A stranger going in, in the night, should take his soundings from Isle Magee shore; but going to the Yel-

low Stone Road should take a pilot. Vessels may run in without anchors or cables—there are no rocks or shoals to interrupt them, coming from the southward, except Barr's Point before mentioned, and Hunter's Rock. Four miles of the mouth of Larn Loch, and 4 miles N. $\frac{1}{2}$ W. from Knee or Muck Island, the Sound of Muck appears open, and Corran Castle on with Larn Lighthouse.

Maiden, or Hulin Rocks Light Two lighthouses marked with broad red and white belts, are erected on the Maiden or Hulin Rocks. These rocks bear by compass from the Mull of Cantyre Light, S.S.W., distant 24 miles; from Sanda Island, S.S.W. $\frac{1}{2}$ W., 18 $\frac{3}{4}$ miles; from Ailsa W.S.W., 23 miles; from Copeland Island light, N. $\frac{1}{2}$ E., 16 $\frac{1}{4}$ miles, and from the eastern extremity of Rachlin Island, S. by E., distant 20 and a half miles. The lights are distant from each other 320 fathoms, and bear N.W. by W. and S.E. by E. The mariner in passing should give them a wide berth, there being a number of sunken rocks extending upwards of 3 miles N. and 1 $\frac{1}{2}$ miles S. of them.

Ballicastle Harbour.—Opposite Church Bay on the Irish coast, is Ballicastle Harbour, formed at the mouth of a small rivulet near the town affording shelter for small vessels drawing 7 feet water, for at high water there are 9 or 10 feet between the pier heads, with spring tides, and 8 feet with neaps. In summer ships may ride near the W. side of the bay in 9 or 10 fathoms water the glass-house bearing S.S.W., Sheep Island being shut in with Kinbaue Head, and Clare House bearing on the top of the cliff near it; but it will not be prudent to lie long here. Should the wind blow from the N. or N.W., and a swell begin to set in, weigh anchor, and rounding Tor Point, make for Cushinden, Cushindaal, or Larn.

The **Skerries** lie W. by N. 5 miles from Bengore Head, and about a mile from the shore; on the south side of the largest of these Islands, where it appears lowest, a vessel may anchor in 6 or 7 fathoms water, a little more than a cable's length from shore. In sailing into this anchorage be careful of the Stirks on the east side, and of the Kers on the west side: they lie a little to the southward of a cluster of rocks about half-a-mile westward of the Skerries, and dry at four hours ebb.

Port Rush is much improved by a pier and quay; there are from 8 to 24 feet within the harbour, while off the mouth of the port a vessel may anchor in 6 to 8 fathoms, on a bottom of sand. On entering the harbour you must give the North Pier a berth of at least 15 yards, to clear the stones which have been placed to break off the swell, which are covered at $\frac{3}{4}$ flood.

Loch Foyle is a capacious harbour

where the largest ships may ride in safety in all weathers; but the best place for large ships is on the N. side, 3 or 4 miles within the entrance, in from 5 to 8 fathoms water: but vessels of 11 or 12 feet draught will ride easiest between Quigley's Point and Ture, in from $2\frac{1}{2}$ to 3 fathoms. The danger to be avoided is the Tuns Bank, which lies on the S. side of the entrance, having a channel between it and the land, on the N. side $\frac{3}{4}$ of a mile wide. To sail into Loch Foyle, wait for flood tide, or a brisk leading wind to stem the ebb, which runs at the rate of $3\frac{1}{2}$ knots in the entrance: keep Glengad Head 2 or 3 ships' length open off Inishoan Head, until the mouth of Derry River at Kilmore Point is a little open of Magilligan's Point; then steer for the entrance, keeping $\frac{1}{2}$ of a mile from the N. shore, and you will pass between it and the Tuns Bank: when you are within Magilligan's Point, you may keep at a greater distance from shore, and run up to the anchorage. On Donagree Point, a little to the S. of Inishoan Head, are two lighthouses, bearing from each other E. and W., distant 153 yards. The lights are fixed, visible 13 miles, and when in one lead clear of the Tuns Bank.

Inistrahul Island, on the N. E. part of which a lighthouse stands, is 6 miles N. $\frac{1}{2}$ E. from Glenegad Head, and 4 miles from the nearest shore. The light makes a revolution every two minutes.

Loch Swilly.—The entrance of this Loch lies 7 miles W. by S. from Malin Head, and is about $3\frac{1}{2}$ miles wide, from shore to shore. Fannet Point is a low point at the W. side of the entrance; it is distinguished by a lighthouse which displays a steady light, which, when seen from sea, appears of a deep red colour but, from within the Loch, bright. This is a safe harbour for vessels of any size, but the best anchorages are off Burncranah House, 2 or 3 cables' length from shore, in from 4 to 8 fathoms, or between the Island Inch and Rathmullin, rather nearer to the latter, in from 5 to 8 fathoms.

Mulroy Harbour is known at a distance by Tory Island, Horn Head, and Rosgull Hill; it has water sufficient for the largest ships; but a part of the channel is narrow and difficult. Strangers should always take a pilot.

Sheephaven & Downing Bays.—Few vessels like to run for Sheephaven as many get on shore, yet some are compelled, not being aware of the excellent anchorage at Downing Bay, which lies on the E. side, at the bottom of Sheephaven. The bay is formed by points called Downing and Murlach. Close under Murlach Point is the anchorage, in from 4 to 6

fathoms. In running for it from Horn-head, the course will be S.E. by S., distant six miles, care being taken to give a berth to two half-tide rocks about a cable's length N.N.W. from Downing; when the sea breaks on them, which it generally does, they may be approached as most convenient; there are no other dangers.

Tory Island, the east end of which lies $7\frac{1}{4}$ miles N.W. from Horn Head, has no good anchorage on its S. side; but in the summer season, with S. winds, a vessel may stop on the north side in 18 or 20 fathoms, within half a mile of the shore. On its N.W. end is a lighthouse, exhibiting a steady bright light, visible from seaward 16 miles all round; but when passing to the S.E. of the Island, is shut in behind the heights between N.W. by N. and N.W. $\frac{1}{2}$ W.

Rathlin-O-Birne.—This island lies 2 miles S.W. $\frac{1}{2}$ W. from Malin More Head, and is about $\frac{1}{2}$ a mile long and $\frac{1}{2}$ of a mile wide. A lighthouse has been erected upon it, in N. lat. $54^{\circ} 40'$ and W. long. $8^{\circ} 50'$ exhibiting a flashing light, at an interval of 20 seconds, visible at a distance of 16 miles, but red towards the mainland and sound, eastward of that island.

Donegal Harbour is on the E. side of the peninsula, called the Hassens, or Green Islands, 2 miles below the Town of Donegal, where small vessels may ride in 2 or 3 fathoms water at about a cable's length from shore. To sail in, take half-flood, and keep about $\frac{1}{2}$ a mile from the shore on the larboard or N. side, until you are near the Black Rock; then steer E. $\frac{1}{2}$ N. until you are a cable's length past it: you may then steer directly for the Green Islands, giving the north shore a berth of about two cables' length.

Sligo Bay is to the southward of the point of Raugly, and at the N.E. side of the bay is the entrance to Sligo Harbour; S. by E. $\frac{1}{2}$ E. from Raugly point is Black Rock, covered at high water, on which is a fixed bright light, shewing from S.W. seaward to S. E. by S. and seen at a distance of 13 miles. To sail in, keep about 2 cables' length to the northward of the lighthouse, in order to avoid the shoal water on the N. side of the rock. The only place where a vessel will lie afloat at all times of the tide, is Oyster Island Harbour, but the bottom is rocky, and does not hold well. On this Island are two fixed lights, bearing N.N.W. $\frac{1}{2}$ W. and S.S.E. $\frac{1}{2}$ E., 165 yards from each other. After passing the bar, the lights in one clear the Bun Gar Bank, and lead to the entrance of the harbour, or up to the Metal Man Beacon.

SOUTH-EAST COAST OF IRELAND.

WATERFORD TO BALTIMORE.

Waterford Harbour.—From Great Saltee Island to Hook Point, on which Waterford Lighthouse is erected, the bearing and distance are, W.N.W. 13 miles; and from the Longship Lighthouse off the Land's end, N. $\frac{1}{2}$ E. 43 leagues. When coming from the S. or the E. for Waterford, bring Sleanaman Mount a remarkable mountain inland, to bear N. E. until you see Hook Lighthouse on the E. side of the entrance of Waterford Harbour, from which a bright and steady light is exhibited. Go not nearer Hook Point than about 2 cables' length, to avoid falling into irregular streams of tide that run near it. Having passed the Hook, and intending to proceed for the anchorage at Passage, take a flood tide or a leading wind, and steer for Credan Head, giving it a berth of at least $\frac{1}{2}$ a cable's length. From Credan Head steer N. E. by N. for Duncannon Fort, carefully avoiding the sand banks which extend from both shores. That on the starboard side begins at Bluff Head, extends more than half a mile from the shore, and terminates at Duncannon Fort. Between Bluff Head and Duncannon Fort is Ballistraw Bay. The sand on the other side, called Drumroe Bank, extends more than a mile from shore, and narrows the passage abreast Duncannon fort to about a quarter of a mile. Two lights in Duncannon Fort, one above the other, are exhibited to direct vessels to that point. On the flat, or what is known as "the bar," 14 feet of water can be had on the lowest spring tides. This shallow lies nearly midway between Credan Head and Duncannon, extends for about a mile in length, and is composed of hard sand; the course by compass over it is from N. N. E. $\frac{1}{2}$ E. to N.N.E. $\frac{1}{4}$ E. Another lighthouse, having a fixed bright light, is erected N.N.E. $\frac{1}{4}$ E. from Duncannon Fort lighthouse, distant half a mile. These two lights kept in a line, will lead in the best channel across the bar between the eastern and middle buoys. When above the lights keep near the eastern side, steering about N. $\frac{1}{2}$ W. for the church of Ballihak, until the new lighthouse on the upper end of Drumroe Bank, comes on with the town of Passage; you may then steer upward N. W. by N. in mid-channel. Abreast of this new light house are 10 or 11 fathoms. The usual anchorage is about a mile above Passage Town, in 5 or 6 fathoms. Two or 3 miles above Passage is very good anchorage, and there the stream is much weaker than at Passage. In proceeding for this place, avoid a spit of sand called the Seedes Bank, which stretches off about W. S. W. from Buttermilk Castle, extending about half-way over to the opposite side; the least water on it is 9 feet. Avoid also a small rock which dries at low water, and has fourteen feet over it

at high water, which lies about half a cables' length from shore, on the south side of Cheek Point. In proceeding about low water, keep in the middle between the two points, or rather nearest to Buttermilk Point; if the flood-tide be running, keep in the rough part of the stream, and you will clear the shoal. Vessels drawing 20 or 22 feet water may go up to Waterford, where there are 2 fathoms at low water, a ship's length from the quay. The safest channel to Waterford is on the north side of little Island; the channel on the other side is deeper, but it is narrower, and subject to eddy-tides, which make it dangerous. Pilots may always be had at the entrance of the harbour. A lighthouse has been erected upon seven iron piles, at the Point of the Spit of Passage, seven miles within the entrance of Waterford Harbour, a fixed Red light will be shown from the lighthouse every night from sunset to sunrise.

Dungarvan Bay.—A lighthouse has been erected on Ballinacourty Point, on the northern side of Dungarvan Bay, with the following marks and compass bearings:—Helvick Head, S. $\frac{1}{2}$ W., $1\frac{1}{2}$ miles; Carrickapane Rock, S. S. E., 9 cables' length; and Whitehouse Spit, W. by N., $3\frac{1}{2}$ cables' length. It shows a fixed bright light, visible between the bearings of W. and S.E. $\frac{3}{4}$ S.; green, bearing from W. to N. W. by W.; and red in the direction of Carrickapane Rock. Its white appearance can be seen at the distance of about 10 miles in clear weather.—The intermittent light on Mine Head, S. W. by W., 4 miles from Helvick Head, marks the approach from the westward to Dungarvan Bay, and can be seen further eastward than the range of Dungarvan light. A vessel in the entrance of Dungarvan Bay must keep clear of the red colour of the light to avoid Carrickapane Rock; and on the northern side of the bay keep to the southward of the green light to avoid Carricknagaddy, and the rocks which extend half a mile eastward of Ballinacourty Point.

Youghall Harbour lies about 13 miles W.S.W. from the entrance to Dungarvon. During high water, spring tides, ships drawing fully 17 feet may go in, and ride off the middle of the town. Across the mouth of the harbour is a bar, which extends above a mile south from the entrance, and has 6 to 9 feet on it at low water. Except when the wind blows from the south, south-east or south-west, there is always smooth water on this bar; 14 to 15 feet water are on it at high water, neap tides. When Cable Island bears W.S.W. you are on the outer edge of the bar. When sailing for Youghall Bay from the southward, keep Knockmoldown Mountain N. by E. To anchor when

waiting to go over the bar, the best places are on the S. side of the bar, the harbour mouth bearing N.N.E., in 3 or 4 fathoms: or on the north side of Cable Island, in 3 to 6 fathoms, about 2 cables' length from the shore. From a tower on the west side and within the entrance, is shown a fixed bright light, open to the harbour, and seaward to S.W. by S., and may be seen at a distance of 6 miles.

Cork Harbour.—From a tower on Roche Point, at the east side of the entrance, is shown a red light, revolving every minute, and visible at the distance of 12 miles. From it Cork Head bears S.W. by W. about 4 miles. A fixed white light is also exhibited, visible between the bearings of N.E. by E. and N.E. $\frac{1}{2}$ N., to pass eastward of the Daunt's Rock. From the Longship lighthouse off the Land's End to the entrance of Cork Harbour is 46 leagues N. by W. $\frac{1}{2}$ W. Coming from the southward, and bound to this harbour, keep Knockmeldown Hill about N.E. by E., until you see the Old Head of Kinsale, a bluff point of land with a lighthouse on it. From this Head the entrance of Cork harbour lies E. $\frac{3}{4}$ N., distant about 5 leagues. When off the harbour, Roche Tower with its lighthouse is remarkable. A little without the point, on E. side of entrance, lie the Stag Rocks. There is clean ground in a moderate depth without the harbour's mouth, where ships may, with a northerly wind, wait the flood or daylight. A red buoy is placed on the edge of the bank off Fort Camden; another red buoy about a mile further in, to the northward of the entrance to Cross Haven; a third of the same colour, off the east side of Spike Island; and a red buoy on the eastern extremity of East Haulbowline Bank. Each of these buoys is numbered. There are also several black buoys on the side opposite, on the edge of the mud flat: they lie in 4 fathoms, and are likewise numbered. Having passed the narrows, which is about 450 fathoms over, the channel continues that width on a N. by E. and N.E. direction, between the red buoys on W. and black buoys on E. side, to the anchorage off Spike Island, on sandy ground; thence it leads upwards, narrowing round the beacons on the northern side of the Spit extending E.S.E. from Haulbowline Island, close in to Queenstown on the north shore. At the entrance of the passage to Queenstown is a white buoy; and at about 160 fathoms to the S.W. of this, in $2\frac{1}{2}$ fathoms, is the Lower Spit Buoy, red. The Upper Spit Buoy, red, lies in 9 feet. N.W. by W. $\frac{1}{2}$ a mile from the Lower Spit Buoy. Here the tide runs 2 or 3 knots; It is high water on the full and change at half-past 4, and the tide rises from 9 to 13 feet. Large ships going in at or near low water must be careful to avoid the Harbour

Rock, which lies a little within the Stag Rocks, on the east side. On it are two iron trunk buoys about $1\frac{1}{2}$ cables' length apart: one on the eastern chequered red and white with beacon; the other on the western edge chequered black and white. It has fifteen feet on it at low water spring tides. About half a mile N. by E. $\frac{1}{2}$ E. from the Harbour Rock lies the S. end of the Turbot Bank, extending thence N.W., and which has on its shoalest part, the north end, 18 feet low water average springs. The middle of this bank lies with a remarkable dark stone building, on the precipitous part of Kenly Cove, bearing W.S.W., and touching the projecting part of the land south-eastward of Temple Breedy Church. It has on it two iron trunk buoys about a cable's length apart: one on the east, chequered red and white, with beacon; the other on the west side, chequered black and white. In order to avoid the shoals on the east side, keep within two cables' length of the eastern shore; or bring the lower part of the white wall, which stands to the S'ward of the Fort upon Dog's Nose, on, or under the west bastion of that Fort. There are buoys placed in nearly mid-channel inside of Dog's Nose, marking a fairway, which is bounded on the east by black buoys marking the shoals on the eastern side, and on the west by a line of fairway buoys coloured black with white tops, which extend as far as Queenstown. To go to the westward of Harbour Rock and Turbot Bank, keep the fort on Dog's Nose open to the westward of the lower part of the white wall above-mentioned, or when without the harbour, bring and keep a village which appears upon a hill on Great Island, over some pine trees, touching the point of Dog's Nose, bearing N. 21 degrees E. which will lead clear of all dangers on that side. To go between the shoals, keep the flag-staff in the fort of Dog's Nose, on, or over the lower part of the white wall. To avoid the Harbour Rock on the S. side, keep the Crow Rock on with Poor Head. The Turbot Bank may be avoided by keeping nearer to the E. than to the W. side of the entrance. Between the Harbour Rock and the east point are 5 to 6 fathoms; between the Harbour Rock and Turbot Bank are 6 to 7 fathoms; and between the bank and the western shore are 5 and 6 fathoms at low water. About a mile E. by N. from Haulbowline Island, extends the Spike Sand, which begins to dry on the north side at half ebb, and shelters the anchorage at Queenstown. On the east elbow of this bank a lighthouse has been erected on screw piles, in 9 feet; it exhibits a fixed Red light, visible from N.N.E. $\frac{1}{2}$ E. to S.E. by E. $\frac{1}{2}$ E., round by eastward, and a distance of 8 miles. Masters of vessels are cautioned not to cross the

bank between the lighthouse and Haulbowline Island, and to give the lighthouse and detached beacon pillar sufficient berth in passing. In going from Dog's Nose for the anchorage off Queenstown, keep Dog's Nose Point S. by W. $\frac{3}{4}$ W.; or steer for the easternmost part of the fort on the N. shore, between the black and red buoys to avoid a flat which extends in some parts a mile from the E. shore, and also a rock that lies to the westward of Cork Beg, which appears at half-ebb, with a beacon on it. The best place for large ships to anchor is off the garrison, in from 8 to 5 fathoms. Merchant ships may ride off the town of Queenstown in smoother water and less tide, they may also go further up the harbour of Passage, and ride any where between the first houses and Ronan's Point. In proceeding from Queenstown to Passage, do not approach nearer than half a cable's length to the south side of Black Point; and give the W. side of it a berth of about a cable's length, to avoid a sand which extends from that shore, and dries at low water. You may go westward from Haulbowline Island, until you see Ronan's Point in the channel of Passage; then steer N'ward along the W. side of the channel, for the anchorage. Vessels drawing 16 feet may, with spring tides, go up to Black Rock, or to the city of Cork, and lie at the quays with 9 feet at low water, average tides. Between Passage and Horse Head is a spit of sand, of 6 feet water, extending above a cable's length eastward from the Clay Cliff: you will avoid the extremity of this spit by keeping Dunkettle House on with a grove of trees which stand on the top of a hill above the House. The point of this spit lies with Belveley Castle and Ronan's Point in one; and vessels which anchor

near it, should have the Castle fairly without Roan's Point, or wholly shut in with it. In a small creek called Cross Haven, within the entrance of Cork Harbour, and on the wes. side, opposite Dog's Nose, vessels may ride in 10 or 12 feet.

Kinsale Harbour.—A new lighthouse has been erected on the Rocky Point at the S. end of the old head, distant half a mile S.S.W. $\frac{1}{2}$ W. from the old lighthouse, bearing from Bulman's Rock S.W. $\frac{1}{4}$ W. $4\frac{1}{2}$ miles. This light is a fixed bright light, similar to that heretofore shown from the old lighthouse, and is visible from N.E. $\frac{1}{4}$ N. seaward to W. by N., and at the distance of 21 miles. In sailing towards the harbour from the southward, keep Knockmeldown Hill N. E. by E. until you see the Old Head of Kinsale: after making that, which is about $3\frac{1}{2}$ miles S.W. by S. from the entrance of the harbour, run in until the old lighthouse on it bears W.N.W. about 3 miles; then run in N.W. by W. until the old lighthouse bears S.W. by S.; and then steer N.E. by N. until you are abreast of the lower cove, where you may anchor in 6 fathoms. The only danger near Kinsale Harbour is Bulman Rock, which lies about a cable's length S.S.W. $\frac{1}{2}$ W. from Hangman's Point on the E. side of the entrance, and has 4 feet on it at low water. This rock is buoyed, and may be passed on either side, but the channel on its W. side is the safest for ships coming in or going out.

Baltimore Harbour lies about $5\frac{1}{2}$ miles to the north eastward of Cape Clear, and is very convenient for ships bound either eastward or westward. Small vessels may ride 2 or 3 cable lengths N.N.W. of Baltimore Town, in 10 or 11 feet at low water, sheltered from all winds.

BRISTOL CHANNEL.

LIGHT VESSELS AND BUOYS.

Light Vessels are moored, and Buoys laid in this Channel as follows:—

Light Vessels.

A LIGHT VESSEL, exhibiting a bright light, which revolves every minute, and is visible 10 miles, lies near the English and Welsh Grounds, on the south side of the Bristol Channel, and in lat. 51 deg. 26 min. N., and long. 2 deg. 58 min. W. This vessel is painted red, carries a ball during the day, has the words *English and Welsh Grounds* upon her sides, and is moored on the northern edge of the sand in 6 fathoms low water, spring tides, about 10 miles from King Road, with the high land at Minehead on with Flat-holm Light Tower, W. by S.; the Usk

Light Tower, N. by E. $\frac{1}{2}$ E.; a remarkable Peak on the distant land (See mee or See-me-not), on with St. Thomas' Head, S. $\frac{1}{2}$ W. A gong is sounded in foggy weather.

Off the west end of the Skerweather Sand there is a LIGHT SHIP placed to prevent the stranger from passing into the dangers of Swansea Bay. It exhibits a Red Revolving light, shewing a flash every 20 seconds, at an elevation of 38 feet above the level of the sea. It is intended to show half a globe above the usual globe. Calculations for bearings and distances can be ascertained sufficiently accurate, by judging that of the West Skeawether Buoy.—The light is regarded as being very obscure, and this is accounted for by the lowness of

the north shore, which conveys a mist over the Swansea Bay. It is, however, very serviceable, and is relied on when entering the Bay.

A LIGHT VESSEL, bearing a bright light, which revolves every minute, and is visible 10 miles, lies off the western end of the Helwick Shoals, and in lat. 51 deg. 31 min. N., and long. 4 deg. 24 min. W. This vessel is painted red, shows a ball in the daytime, has the word *Helwicks* upon her sides, and is moored in 17 fathoms, low water, with Oxwich Point, E. by S. $\frac{3}{4}$ S.; Worm's Head, N. E. by E. $\frac{3}{4}$ E.; Caldy Lighthouse, N.N.W. $\frac{3}{4}$ W.; Lundy Island, S.W. $\frac{3}{4}$ W., 22 miles. During foggy weather a gong is sounded.

Near the western end of the One Fathom Bank lies a LIGHT VESSEL, exhibiting a quick revolving bright light every 15 secs., at an elevation of 38 feet above the water, and for the purpose of distinction a fixed red light will also be shown from a pedestal abaft at an elevation of 14 feet. It is moored in 8 fathoms, with Nash High lighthouse, nearly midway between the low lighthouse and St. Donat's White Mark, (rather nearer the latter), N.W.; Barry Church, in line with the easternmost Cliff of Cold Knap Point, N.N.E. $\frac{1}{2}$ E.; Penarth Church, in line with the east end of a clump of trees N.E. by E. $\frac{1}{4}$ E.; Nash high lighthouse, N.W., 10 6-10 miles; Breaksea Buoy, N.W. $\frac{3}{4}$ N., 5 miles; Barry Church, N.N.E. $\frac{1}{2}$ E., 3 7-10 miles; Flatholm lighthouse, E. 7 1-10 miles; One Fathom Bank Buoy, E. by S., 2 2-10 miles; West Culver Buoy, S.S.W., 3 5-10 miles.

A Red Light will be shown from the Tower of the Nash High lighthouse on a bearing from S. 46° E. to S. 57° E., the Southern limit of which will cut 2½ cables south of the Breaksea Buoy. A Red light will also be shown on and after this date from the Low lighthouse at Burnham, between the bearings of N. 81° W. and N. 86° W., the Northern edge of which will cut the Gore (in its present position) and the Little Gore Buoys. And a Red light from the same lighthouse will be shown up the River between the bearings of S. 1° W. and S. 10° W.

CARDIGAN BAY LIGHT VESSEL lies in 26 fathoms, low water, spring tides, one Red revolving light, shewing a flash every 30 seconds, 25 feet above the level of the sea, South Bishop Lighthouse, S.W. by W., 36½ miles; Strumble Head, S.W. $\frac{1}{4}$ S., 21½ miles; Kenmaes Head, S. $\frac{1}{4}$ W., 16½ miles; Causeway Buoy, E. by N. $\frac{3}{4}$ N., 25 miles; Bardsey Lighthouse, N. E. by N., 23 miles.

Buoys.

MORTE STONE, Black, Staff and Globe, lies in 9 fathoms low water, spring tides, 1½ cable's length to the N.W. of

the Ledge; Bull Point, E. $\frac{1}{4}$ S., 1½ miles; Morte Point, S.E. $\frac{1}{4}$ S., $\frac{1}{2}$ mile; Baggy Point S.W. by S., 2 7-10 miles, Hartland Point, W. by S. $\frac{3}{4}$ S., 14 4-10 miles; Lundy Lighthouse, W. by N. $\frac{3}{4}$ N. 16 miles. This Buoy warns mariners of a dangerous and rocky locality over which the tide sweeps at a terrific rate.

SAND RIDGE, Black, lies in 4 fathoms low water spring tides, with the Valley of Rocks Hotel, midway between Linton church and a conspicuous house on a hill westward, bearing S.W.; Hurstone, apparently a cable's length outside the Foreland, S. E. by E. $\frac{1}{4}$ E.; Rillage bearing W. by N. $\frac{1}{2}$ N., 10 miles.

GORE, Black, lies in 18 feet, Burnham High Light its length open northward of Low Light, bearing E. by S. $\frac{3}{4}$ S.; Flatholms Island, its apparent length open west of Steepholms; the Lighthouse, N. E. by N., 9 miles; Sand Point appearing open of Brean Down Point, N. E. by E. $\frac{1}{4}$ E.

WEST CULVER, Black and White in horizontal bands, with staff and triangle, lies in 4 fathoms, with Swallow Cliff, a little open of the South of Steepholme Island, E. $\frac{1}{4}$ N.; Willet's Tower, well open to the Westward of West Quantocks Wood, S.S.W. $\frac{1}{4}$ W. Westerly; East Culver Buoy, E. $\frac{1}{4}$ S., 5 miles.

EAST CULVER, Red and White in horizontal bands, with staff and globe, lies in 6½ fathoms, with Penarth Head, on with Lavernock Point, N.N.E. $\frac{1}{4}$ E.; Black Nose Point, just open Southward of Steepholm Island, E. by N. $\frac{1}{4}$ N.; Flatholm Lighthouse, N.E. $\frac{1}{4}$ E.; Burnham Church Tower, S.E. by S.

HONEYCOMB, Black, lies in 5 fathoms, about 25 fathoms N.W. of the Rock, with Weston-super-mare Church on with W. end of Piggot's Summer House, S.E. $\frac{3}{4}$ E.; Kewstock Church about a ship's length open N. of Breanbeck Island, E. by S. $\frac{1}{4}$ S.; Brean Down Point, S. W.; Swallow Cliff Point, N.E. by E. $\frac{1}{4}$ E.; Flatholm Lighthouse, N.W. $\frac{1}{4}$ W., 4 miles.

NEW PATCH, Red and White in horizontal bands, lies in 9 feet, with the high land of Minehead just open Southward of the South end of Flatholm Island, W. $\frac{3}{4}$ S.; Flatholm Light, W. $\frac{1}{4}$ S. S'y., $\frac{1}{2}$ mile; Grounds Light E. by N N'y. 6 5-10 miles; Cardiff Church Tower, and the two Glass House Chimnies at Cardiff, apparently at equal distances, the Church Tower being the Eastern object, N. $\frac{1}{4}$ E.; Hayes' Windmill over the East end of Sully Island, N.W. $\frac{1}{4}$ W.; Penarth Church, N. $\frac{3}{4}$ W.

WOLVES, Red, lies in 5 fathoms, half a cable's length westward of the rocks, with Hayes' Windmill on with the West end of Sully Island, N.W.; Breaksea Buoy bears W.N.W. W'y., 10 miles; Penarth Head, N. by E. $\frac{1}{4}$ E.; Flatholm Lighthouse, S.E. $\frac{1}{4}$ S. The Wolves are a

dangerous cluster of rocks: the tides both ebb and flow, set directly on them, therefore great caution is requisite.

SOUTH WEST PATCH, Red and White, in horizontal bands, with staff and globe, lies in 4 fathoms, with Worle Mill in a line with the western side of Middlehope Beach, S. $\frac{1}{2}$ E.; Monkstone Beacon W. $\frac{1}{2}$ S., 4 miles; Flatholm Lighthouse, W. by S. $\frac{3}{4}$ S.; Usk Lighthouse, N.N.E. $\frac{1}{2}$ E.N'y.; Grounds Light Vessel, S.E. by E. $\frac{3}{4}$ E. The Buoy, formerly called the Spit, protects one of the quickest sands in the Channel, and, like many other dangers, the tides set directly on them. The old passage between this sand and the Welsh Hook is now filled up, and rendered unnavigable.

WELSH HOOK, Red and White in chequers lies in 5 fathoms, low water spring tides, with Aust Head a ship's length open southward of Denny Island, E. by N. $\frac{1}{2}$ N.; Usk Lighthouse, N.N.W., 6 miles; See-me and See-me-not on with Clevedon Old Church, S.S.W. $\frac{1}{4}$ W.; Grounds Light-vessel, W.S'y., $3\frac{3}{4}$ miles.

RANNEY FLOATING BEACON, placed on the S.S.W. part of Ranie Spit, lies in $3\frac{1}{2}$ fathoms low water spring tides. Sailors' Home at Cardiff, just open off Penarth Head, N. by E. $\frac{1}{2}$ E.; the Western part of Brean Down on with Flatholms Island at low water; the Lighthouse, S. by E.; Ball Point, W. $\frac{1}{4}$ N.; the highest part of Sully Island, W. $\frac{1}{2}$ S.

WEST CARDIFF, Black with staff and triangle, lies in $4\frac{1}{2}$ fathoms with the Monkstone Beacon in line with Clevedon New Church, E. by S. $\frac{1}{2}$ S.; Ground light, E. $\frac{3}{4}$ S., $6\frac{3}{4}$ miles; Cardiff Hook buoy, S.W. $\frac{1}{2}$ W., 27-10 miles; Usk lighthouse, N.E. by E. $\frac{1}{4}$ E., $9\frac{3}{4}$ miles; the Eastern side of Steephholm, just open West of Flatholm, at high water, the lighthouse S.E'y.; Sully Island open a ship's length Southward of Ball Point W. $\frac{1}{4}$ S.; Penarth Church, N.

EAST CARDIFF, Black, lies in 6 fathoms, low water spring tides; Hook Buoy S. W. by W. $\frac{1}{2}$ W., 1 mile; Monkstone Beacon on with S.E. end of Steephholm, S.S.W. $\frac{1}{4}$ W.; Penarth Church, W. $\frac{1}{4}$ S.; Usk Lighthouse, E.N.E.

CARDIFF HOOK, Black, lies in 2 fathoms, with Cardiff Church Tower its apparent length open Eastward of a conspicuous clump of Trees, N.N.W. $\frac{1}{4}$ W.; Grounds Light, S.E. by E. $\frac{1}{2}$ E., $5\frac{1}{2}$ miles; Peterstone Church Tower apparently midway between the Spire of Newport New Church and the Tower of the Old Church, N.E. $\frac{3}{4}$ E.; the Usk Light Tower, N.E. by E. $\frac{3}{4}$ E.

A Can Buoy, coloured black, and marked "Middle Cardiff," is placed in Cardiff Roads, in 4 fathoms, with a large Red Brick House, open of Penarth Head, N.N.W.; the east end of Steephholm in line with the east end of the dwellings at Flatholm lighthouse, S. by E. $\frac{1}{4}$ E.;

West Cardiff Buoy, S.W. $\frac{1}{2}$ S. 9-10 mile; Cardiff Hook Buoy, N.E. by E. $\frac{1}{4}$ E. 12-10 mile.

A Spiral Buoy, coloured black and white, in chequers, and marked "Cardiff Spit," is placed in 3 fathoms, with Llandough Church Tower, its width open South of the South Pier Head at Penarth Dock, N.W. $\frac{1}{4}$ W.; The Peak of Sully Island $\frac{1}{4}$ from the South end of the Island towards Lavernock Point, W. $\frac{3}{4}$ S.; Monkstone Beacon, S. by W. $\frac{1}{4}$ W., 11-10 mile; West Cardiff Buoy, W. by S., 19-10 mile.

A Can Buoy, coloured red and white in vertical stripes, and marked "Middle Hook," lies in $4\frac{1}{2}$ fathoms, with the Hotel near Avon lighthouse, its width open of Posset Point, E. by S.; a large tree on high land, in line with Salt-house, S. by E. $\frac{1}{2}$ E.; Welsh Hook Buoy, E. by S., 26-10 miles, English and Welsh Grounds Light Ship, W.S.W., 25-10 miles; S.W. Patch Buoy, W. $\frac{3}{4}$ N., 3 miles.

BREAKSEA, Black and white in chequers, with Beacon, lies in 5 fathoms, about one cable's length from low water mark, and $\frac{1}{2}$ a cables length without the rocks, with the Nash Low Light Tower apparently midway between the High Light Tower and the White Beacon upon St. Donant's Cliff, N. W. $\frac{1}{4}$ W.; One fathom Bank Buoy, S.E. $7\frac{1}{2}$ miles; Evans' Farm House, apparently midway between a large Yellow Dwelling House and Limpert House, the latter being the Eastern object, N.N.E. $\frac{1}{4}$ E.; Brereton Windmill, N.N.W., $\frac{1}{2}$ W.

COCKBURN SHOAL, Black, lies in 4 fathoms, about 20 fathoms S.E. from the shoal with the Avon Lighthouse one-third between Penpole House and Miles' House, S. E.; high water mark of Black Nose Point on with Portishead Point, W. $\frac{1}{4}$ S.

WEST USK, Red and white, in chequers, dries at low water; a farm house at St. Brides in line with a bluff tree on the western land, N. W. by W. $\frac{1}{2}$ W.; Usk Lighthouse, N. by W. $\frac{1}{4}$ W.; Windbound Point, N. by E. $\frac{1}{4}$ E.

EAST USK, Red, dries at low water; a clump of tiles on Stone Hill just open westward of Windbound Point, N.N.W. $\frac{1}{4}$ W.; West Usk Buoy in line with Peterstone Church W. $\frac{1}{4}$ N.

EAST NASH, Black and White chequered lies in $4\frac{1}{2}$ fathom with Groes' House (yellow) twice its apparent width open. Westward of the Tower upon Dunraven Promontory, N.; the North side of the Nash High Light Tower on with the South side of the Low Light Tower, S. E. by E. $\frac{1}{4}$ E.; Nash Swatchway Buoy, N. W. $\frac{1}{4}$ W., $4\frac{1}{2}$ miles; Tusker Beacon, N.N.W. $\frac{1}{2}$ W. $4\frac{3}{4}$ miles: the fair channel course from the Mumbles to this buoy inside the sands, with the Mumbles Light Tower N. N. W. $\frac{3}{4}$ W., and the

Nash Low Light Tower S. S. E. $\frac{3}{4}$ E.
NASH SWATCHWAY, black and white, in vertical stripes, lies in $2\frac{1}{2}$ fathoms, with Sker House on with Rhwychwyn Point, N. $\frac{1}{4}$ E.; Newton Down Windmill, its apparent length open northward to Newton Nottage Church Tower, N.N.E. $\frac{3}{4}$ E.; the Nash High Light Tower, its apparent length open northward of the Low Light Tower, S.E. $\frac{1}{4}$ E.; Tuskar Beacon, N.E. $\frac{1}{4}$ N.; East Nash Buoy, S.E. $\frac{1}{4}$ E., $4\frac{1}{2}$ miles; West Nash Buoy, N.W. by W. N'ly., $2\frac{1}{4}$ miles.

WEST NASH, Black and White chequered, with Beacon, lies in 6 fathoms, with Newton Down Windmill on with the centre of the Breakwater at Porth Cawl, N.E. by E. $\frac{1}{4}$ E.; Nash High Light Tower, S.E. $\frac{1}{4}$ E., $7\frac{1}{4}$ miles; the Nash Low Light Tower, S.E. $\frac{1}{4}$ E.; East Skerweather Buoy, N. by E., $2\frac{1}{2}$ miles; West Skerweather, N.W. $\frac{1}{4}$ N., $6\frac{1}{2}$ miles; Mumbles Light Tower, NNW; Nash Swatchway Buoy, right between the Lighthouses, S.E. by E. S'ly., 2 miles; Tuskar Beacon, E. by S., 3 miles.

EAST SKERWEATHER, Red and White striped, lies in 6 fathoms, with a conspicuous Shaft on the summit of the highest Hill, open eastward of Constantinople Cottages, the apparent length of them, N.N.E. $\frac{1}{4}$ E.; Margam Trees, on with the west end of a long stone wall terminating near the Beach E. $\frac{1}{4}$ N.; the Windmill inland of Cwm Mawr on with Dunraven Point, S.E. $\frac{1}{4}$ E.; Kemfig Church $2\frac{1}{2}$ points open westward of the Scar House, N.E. by E. $\frac{1}{4}$ E.; Nash Low Light Tower, S.E. $\frac{1}{4}$ S., 9 miles; Mumbles Light Tower, N.N.W. $\frac{1}{4}$ W.; West Nash Buoy, S. by W., $2\frac{1}{2}$ miles; West Skerweather Buoy, N.W. by W. $\frac{1}{4}$ W., 5 miles; Mixon Buoy, N.N.W. $\frac{1}{4}$ W., 9 miles; Tuskar Beacon, S.E. $\frac{1}{4}$ E., 4 miles.

WEST SKERWEATHER, Red, with a Beacon, lies in $4\frac{1}{2}$ fathoms, with Constantinople Cottages on with the mouth of Aberafon Harbour, E.N.E. Northerly; Margam Trees open southward of Sker House three times their apparent width E. by S.; Nash High Light Tower, S.E., Easterly, 14 miles; Mumbles Light Tower, N., Easterly, 6 miles; East Skerweather Buoy, S.E. by E. $\frac{1}{4}$ E., 5 miles.

HUGO, Black, lies about a cable's length from the dry sand on the N.E. side of the Bank, in 3 fathoms low water with a large square House on with the South end of the large Store House at Porth Cawl, S.E. $\frac{1}{4}$ E.; Kemfig Church its apparent breadth open South of a White Cottage (the Northernmost in the Village), E. $\frac{1}{4}$ N.; Nash Low Light Tower, S.E. by S.; Mumbles Light, N. N. W. $\frac{3}{4}$ W.; Constantinople Cottages N.E. $\frac{1}{4}$ N.; East Skerweather Buoy, S. by E.

INNER GREEN GROUNDS, Red Nun, lies in

$3\frac{1}{2}$ fathoms, about one and a half cable's length from 5 feet on the S.E. end of the Shoal, with Kilvey Old Mill, $\frac{1}{4}$ distant from the Inn (a large brick house), towards Tennant's Look-out House, N.N.E. $\frac{1}{4}$ E.; Swansea East Pier Head, N. by E. $\frac{3}{4}$ E., $2\frac{3}{4}$ miles; Mumbles Lighthouse, W. $\frac{1}{4}$ N.; Woodland Castle, N.W. N'ly.

OUTER GREEN GROUNDS, Black and White chequered, lies in $2\frac{1}{2}$ fathoms, with the Tut between the two Houses on the Mumbles Point, W. $\frac{1}{4}$ N.; Woodland Castle, N. N. W. $\frac{3}{4}$ W.; Swansea Pier and Lighthouse, N.E. by N.; Kilvey Old Mill, N.E. $\frac{1}{4}$ N.; Green Grounds Buoy, E.

MIXON, Black, with Bell, lies in 10 fathoms, with Porth Einion Point on with Oxwich Point, W. by N. $\frac{1}{4}$ N.; Kilvey Old Mill Tower on with Swansea East Pier Head, N.E. $\frac{1}{4}$ E.; Mumbles Light Tower, N.E. $\frac{1}{4}$ N.; West Skerweather Buoy, S. $\frac{1}{4}$ E., $5\frac{1}{2}$ miles.

WEST HELWICK, Black, with Beacon, lies in 6 fathoms, and is surrounded by 11, 14, and 15 fathoms. Worms Head, bears N.E. by E. $\frac{1}{4}$ E.; Helwick Light Vessel, W. by N. $\frac{1}{4}$ N.; West Scar, S.E. $\frac{1}{4}$ S.

HELWICK SWATCHWAY, Black and White striped, lies in $4\frac{1}{2}$ fathoms, with Burry Holmes appearing in the centre of Worms Sound, N.N.E. N'ly; Oxwich Point on with Porth Einion Point, E. by S. $\frac{1}{4}$ S., Easterly; East Helwick Buoy, E. by S. $\frac{3}{4}$ S., $3\frac{1}{2}$ miles; Worms Head, N., $2\frac{1}{2}$ miles; West Helwick Buoy, W. by N. $\frac{3}{4}$ N., $2\frac{1}{2}$ miles.

EAST HELWICK Black, lies in $2\frac{1}{2}$ fathoms, with Rhossily Point open westward of Tears Point the supposed breadth of a ship, N. W. $\frac{3}{4}$ N.; a White Building upon the high land, apparently midway between two White Cottages below that building, N.N.E. $\frac{1}{4}$ E.; Helwick Swatchway Buoy, W. by N. $\frac{3}{4}$ N., $3\frac{1}{2}$ miles; West Skerweather Buoy, S.E. $\frac{1}{4}$ E. S'ly., $12\frac{1}{2}$ miles; Mixon Buoy, E. by S. $\frac{1}{4}$ S., $9\frac{1}{2}$ miles; Worms Head, N. W. $\frac{1}{4}$ N., 5 miles.

TUSKER AND MONKSTONE.—A mast with a large red ball attached is erected as a beacon upon each of these rocks. From the Tusker Beacon, Porth Cawl Point, N. $\frac{1}{4}$ W., is $1\frac{1}{2}$ miles; Mumbles Lighthouse, N. W. by N. 13 miles; Nash Low Light Tower, S. S. E. $\frac{1}{4}$ E., $5\frac{1}{2}$ miles; East Skerweather Buoy, N. W. $\frac{1}{4}$ W., 4 miles; East Nash Buoy, S.S.E. $\frac{3}{4}$ E., 5 miles; West Nash Buoy, W., $2\frac{1}{2}$ miles.

BEACON ON THE WOLF ROCK.—This Beacon consists of an artificial cone, bearing a mast having a large ball upon its summit at an elevation of 36 feet above the level of the sea at high water; the mariners are to observe that spring tides rise at this station 19 feet, and that at low water of those tides, the rock is uncovered to the height of 15 feet. St.

Michael's Mount open of Lemorn Cove leads $2\frac{1}{2}$ miles to the Eastward of it; Longships Lighthouse touching Cape Cornwall leads $1\frac{1}{4}$ miles Westward of it. The Bearings and Distances of the under-mentioned objects from this Beacon, are as follows, viz.:—Longships Lighthouse, N. E. $\frac{1}{4}$ N., $7\frac{3}{4}$ miles; Scilly Lighthouse, N. E. $\frac{1}{4}$ N., 21 miles; Rundlestone Rock, which covers at half-flood, E. by N. $\frac{1}{4}$ N., 7 miles; Seven Stones Light-vessel, N.N.W. $\frac{1}{4}$ W., Westerly, $12\frac{1}{2}$ miles; Lizard Lighthouses, E. S. E., 23 miles.

Directions for Sailing up the Bristol Channel.

The introduction of Railway communication between Kingroad and the City of Bristol, together with the contemplated formation of Channel Docks at the mouth of the River Avon, induces us to submit the following illustrations of the dangers of the Bristol Channel, which by way of preface, we may quote the remark of an eminent nautical man, "that the Bristol Channel is a harbour of refuge in itself," the dangers are many, but their avoidance is easy when judiciously encountered—hence the object of this paper. It will be needful to state that the lights and buoys are fully described in another column. We will place a stranger in the Chops of the Channel about 45 miles Northward of the Scilly Islands. The first place he must make is Lundy Island, which can be obtained by steering east. Should it be thick weather he will be cautioned on nearing it by the sound of a gun placed on the west-side which reports every 15 minutes; on making the Island, either north or south, difficulty is met with by the set of the tide. The proper passage is between the Island and Hartland Point. The ebb-tide sets W.S.W.; flood, E.N.E. Being bound up the course to avoid the dangers of Morte Bay, which consists of Baggy Leap, Rockham, Morte Stone, and a dead lee shore when the wind is from the N.W. is to steer on an ebb-tide E.N.E., and on the flood East until Morte Point bears S.S.W. This brings the vessel abreast the point, and a good berth off; the most experienced always think it right to keep the south side in sight, it is a bold high land up as far as the foreland, and perceivable in thick weather, therefore good for a departure. The next course is E. by S. $\frac{1}{2}$ S. which will clear the dangers which are close to the shore, and comprise the following:—Copperas Rock, Sandrige, and Foreland Ledge. On Departure from the Foreland ship your course E. by S., this will leave the west buoy of the Culver sands a peice on the starboard hand, make the One Fathom Bank buoy which is black, and bring you on to the Flatholmes; but if Bridge-water is the destination, when at the

Foreland alter the course to S.E. by E. $\frac{1}{4}$ E. then the Culvers are left on the port hand and the Gabriel and Kelve Patch will be escaped on the starboard, continue this course until you see Burnham Lights, on making them keep the high light a sail's breadth open of the low one, until the Flat Holm Light is open eastward of the Steep Holms, then draw both Lights in one, this will clear the Sturt and Lark Sands, giving the Gore a berth northward and bring the ship safely in Bridgewater river; we may remark, the course E. by S. $\frac{1}{2}$ S. will take you to the projected harbour at Brean down. Should Kingroad be your object you must (after steering E. by S. as stated before) haul up to E.N.E. which will bring you direct to the Light ship on the English and Welsh Grounds. This course will take you clear of the N.W. elbow of the English Grounds and pass you between that and a sand as quick as any in the Channel known as the S.W. Patch. When abreast this Welcome Light steer East, which will carry deep water and leave Clevedon Flats on the starboard hand and the Hook sand on the port, on which a black buoy is placed in 5 fathoms, (en passant we must refer to a fine roadstead, when Kingroad cannot be reached, called Walton's bay, it affords fine anchorage when the Light Ship bears W. by N.) by this time you will shorten sail for coming to anchor in Kingroad keeping the same course until you are opposite the Fort, which is a low bluff point: then steer E. by S. to avoid the Horse Shew, a sand midway between Portshead and the Cockburn Rock. Taking the ship south ward of both dangers, we now approach Kingroad, which affords the best holding ground, and can show accommodation for large vessels rarely equalled. The best berths are generally found when the Avon Light bears S.S.E., this will give 7 fathoms low water; the roadstead is on its own merits considered safe from every wind that blows, blue clay bottom, and the only wind that can influence it is N. W., when if a vessel forsakes her anchors a soft bed of mud will receive her on the east bank. Many ship have resorted to this under loss of anchors and chains. To enter the Avon steer E. by S. until you get the red light of the tower, open then port, this will take you over the Swatch, but must not be attempted by large vessels before half flood, We will now turn our attention to the down Channel Voyage, and until we get the English and Welsh Grounds Light Ship it will serve to "box the compass," on arrival there, and, bound to Newport Roads, it is necessary to bring up at anchor at the back or westward part of the S.W. Patch to wait the coming flood, getting the Light Ship to bear S.E. by E. you will then obtain 5 fathoms of water, which will increase as you near it.

in fact 5 fathoms can be relied on after the western side of this sand, but shallows as you approach the eastward. On the flood steer N.N.E. which will find the Usk light then make the Red light bear N. by W. $\frac{1}{4}$ W., then steer North and you will get into Sea Reach. We are once more at the English and Welsh Grounds Light-ship, bound for Penarth Roads, then ship a course W. by N. $\frac{1}{4}$ N. you will make Monkstone on your starboard hand, alter it, N.W. which will make the buoy on the West Cardiff Grounds. There is an eastern passage which it is not prudent to attempt at all times, and has got into disuse seeing that the western one can be obtained in the same time without the danger. It is now our object to get a good anchorage in Penarth Roads which can be secured by getting the Steep Holmes open West of the Flat Holmes. This roadstead cannot be relied upon, it has a very uneven bottom, and very little shelter, and it very frequently occurs that vessels bound out from Cardiff on meeting with an adverse wind rather than anchor there run for Kingroad, or under some circumstances anchor under the Flat Holmes, where good anchorage can be found. The ship is now bound out from Penarth Roads, the first danger is the Ranney Spit and Lavernock Point, over which the tide runs rapidly, to avoid which steer S.S.W. which will leave these dangers on the starboard hand, continue this course until the Flat Holmes Light bears S. by E. The ship is now making her passage North of the Flat Holmes, and will next encounter a cluster of rocks called the Wolves, which will be escaped by steering W. by N., the tide sets on these rocks at a tremendous rate direct from Monkstone. This same course will take you off the Nash Point, and clear of a rock known as the Old Chapel, on which small vessels have met with mishaps, (it is close in on the North shore) and also take you southward of a dangerous point known as Breaksea Point, which is 11 miles from the Flat Holmes, and give the One Fathom Bank a berth southward, to continue this course you will clear the Nash Sands, Scarweather, and all other

dangers, on the North side of the Channel. If Swansea is the Port and you want to go inside the Nash Sands, then haul up N. W. by N., which must make the Nash Lights. On effecting an entrance steer N.W. by N. $\frac{1}{4}$ N. this course will clear the Tuskar on the starboard hand, and the E. buoy off the Scarweather on the port, leaving Hugo Bank on the port side, and Kenfig Patches on the Starboard, follow this course until you get the Mumble Light to bear W. by N., this will leave the Green Grounds on the starboard hand, and will find good anchorage. It is our intention to proceed further down the Channel, and if a direct course for Lundy Island is required steer W.S.W. but we want to visit the North Shore, when under weigh for either, we must notice the Mixon which bears from the Mumble Light S.W. $\frac{1}{4}$ S. consequently we steer W. by S., until we get the light to bear N.E. by E.; then steer W. by N. which will bring you a piece to the South of the East end of the Helwick Sand, to run down after this sand steer W.N.W. this sand is 6 miles in length, and is divided by what is called a swatch way, the marks for passing through which is to see Burry Holmes through Worms Sound, there is a good passage inside, the entrance is narrow but deep water exists. The western entrance is obtained by getting Oxwich Head in one with Einion point. At the western part of these sands a bay called Rhossily, which is unfortunately situated for the safety of the Mariner, the Southern extremity of this bay has an obstruction, named the Worms Head, which is very prominent but has a tell tale of its own; a large cavity in the rocks causes a roar when the sea breaks on it, this bears from the Helwick Light Ship N.E. by E. $\frac{3}{4}$ E. to continue our voyage, and after making the Helwick, steer N.W. by N. which will find Caldy. With a good offing the Channel course will be west, if bound from between the Holmes for Lundy steer W. by N. which will make the Foreland, Ship a W.N.W. course and this will take you clear of all dangers until you get Lundy Island.

WEST COASTS OF ENGLAND AND WALES.

SMALLS LIGHT TO THE PORT OF LIVERPOOL.

Smalls Light is placed on Smalls Rocks, lying off St. David's Head in Pembrokeshire, and bearing from St. Ann's Point, N.W. by W., distant 18 miles. This light is stationary, appearing like a star of the first magnitude, at the distance of 13 miles. To avoid these rocks, keep above a mile from the highest on all sides, and do not attempt to pass inside of them without a good chart and ample di-

rections, or a pilot; with these there is excellent anchorage to be found in St. Bride's Bay in 8 or 9 fathoms.

South Bishop Light.—The Bishop and Clerks are a number of dangerous rocks, with great overfalls, lying north-west of Ramsey Island, at the distance of $2\frac{1}{2}$ miles. On the southernmost, called the South Bishop, is a lighthouse, exhibiting a revolving light, visible in

tions, and appearing with great
y at intervals of 20 seconds,
it will be readily distinguished
e Smalls and other lights in its
; it can be seen at the distance
les. This light is the principal
ne mariner has to enable him to
s exact situation, when sailing
is dangerous part of the coast
s. The light must be always
o the westward, and when to the
rd of it never bring it to the
d of south, until you are $3\frac{1}{2}$ or
rom it, particularly on a flood-
moderate weather, for then you
tide nearly on the beam, which
pidly through amongst the is-
at spring tides nearly 5 knots,
ses several overfalls. The pas-
etween the rocks must not be
ed by strangers.

St. David's Head to Strum-
l the course is E. N. E. $\frac{1}{2}$ E., dis-
 $\frac{1}{2}$ miles; between them at the
of $5\frac{1}{2}$ miles from the former, is
le Island, lying close to the land.
g from St. David's Head to Car-
ay you must give the shore a good
or several rocks under water lie
d about, some of which are nearly
from shore; they are called the
, and are 2 miles eastward of St.
Head.

gard Bay.—Three miles to the
d of Strumble Head you open Fish-
ay, having good anchorage with
nd, except from the N. to the E.,
und holding well. The best an-
e will be to the southward of the
lock, which is always above water.
5 fathoms, the rock bearing N. by
distance $\frac{1}{2}$ to $\frac{1}{2}$ a mile. This bay
desirable for vessels seeking shel-
ales from S. and W. than Studwall's
which is $5\frac{1}{2}$ miles to the leeward,
well sheltered from these gales.
Studwall's Road is not, and the bay
a more ready outlet to the S. or N.
ay place in the neighbourhood.

port Bay opens when you are 6
les distant from Stumble Head.—
r and channel to Newport lie about
les length from the shore, directly
the village of Newport. On the
e 13 feet water with spring tides,
or 8 at neaps. When a vessel is
he bar, she will be sheltered from
ads.

igan Bay.—The Buoy on the
way in Cardigan Bay has been
l, and now lies near the extremity
e Causeway Reef, in 5 fathoms at
water springs, with the following
and compass bearings; Slandebrog
n line with the east side of West
at St. Studwall, N. by E.; Penkilan
N. by W.; Bardsey Lighthouse,
 $\frac{1}{2}$ W. A LIGHT VESSEL in this
—see page 102.

Cardigan Harbour is adapted for

vessels drawing about 15 feet. In the
channel over the bar, which is liable to
shift, are 14 feet water with spring tides,
and 8 or 9 with neap; but in Cardigan
Road a ship may stop, in moderate wea-
ther, almost any part without the bar,
about two cables' length from the shore,
in 6 fathoms water.

Aberystwith Harbour is fit for
vessels which draw 15 feet. There are
land-marks to lead you over the bar, one
of which is moored on wheels, as the bar
shifts. When any vessel is seen off the
place in the evening, there are lights put
upon the marks, which must be brought
in one, to direct you over the bar.

Aberdovey is about 3 leagues to the
northward and eastward of Aberystwith,
and 6 miles to the south of the Diamond
Beacon on Beach Head. This harbour
has a shifting bar about a cable's length
broad, and about half that in and out.
The Trinity Board have placed a large
Black Buoy at the entrance, outside, and
a Red one inside the bar. A good look-
out should be kept for a small Buoy be-
tween the Black and Red Buoys, which
makes the angle of the passage if any.
These Buoys are all placed in the fairway.
Vessels may come to anchor half a mile
above the Red Buoy, and which is about
the same distance below the town, where
from 12 to 15 sail, drawing from 12 to 15
feet water may ride in safety and in good
holding ground.

Barmouth Bay may be known at a
distance by the highest mountain on that
coast; it has two tops—the southmost is
highest; and when seen from the west-
ward, is in a line with the N. side of the
entrance of Barmouth. From the N. side
of the Bay, and about 1 mile from the
main, shoal called the Causeway, ex-
tends W. by S. 3 leagues: at low water
there is not more than 2 or 3 feet water
all along the edge of it, where at a cable's
length the compass is so affected by mag-
netism, as to vary 90 degrees, and, as
you approach nearer, quite reverse the
points.

Studwall's Road affords excellent
anchorage for the largest ships, sheltered
from all winds except from E. to S. E. by
E. It is easily known by two Islands that
lie off the point, and there is no danger
except a small rock about $\frac{1}{4}$ of a mile east
ward of the Islands, between which there
is a good passage, as well as between the
westernmost and the main, at a cable
and a half's length from them.

Bardsey Island is separated from
the mainland by a channel more than a
mile and a half wide, having from 15 to
25 fathoms in it. On the S.W. part of
this Island is a Lighthouse exhibiting a
bright fixed light, visible seaward from E.
 $\frac{3}{4}$ S. to N.E. $\frac{1}{4}$ E., and at a distance of 17
miles; but masked between the bearings
of N. 50 deg. E. to S. 70 deg. E. If in a
gale of wind from the W.N.W. vessels

should be unable to weather Bardsey Island, this light will point out a secure asylum in Studwall's Road, enabling them to preserve a proper position until daylight, when they can proceed to the anchorage therein. Vessels bound to Studwall's Road, or lying-to for daylight, must not bring the light to bear to the westward of W.N.W.; and if they lose sight of the light when it bears from them nearly in that direction, they will be too far to the northward, and in danger of getting embayed in Hell's Mouth.

Carnarvon.—From Brauchypool Head the shore lies nearly E. N. E. to Carnarvon Bar, and from thence nearly N. by W. $\frac{1}{2}$ W. to Holyhead Island, forming Carnarvon Bay. Vessels going in are to leave the outer or Black Buoy on the port hand, the Red Buoys on the starboard hand, and the Perch beacon on the port hand. The black and white chequer buoy is placed in mid-channel. Nun buoys painted green, denoting sunken rocks, are placed off Llanddwyn Point. This Point may be distinguished in the daytime by two white towers (a large and a small one), and during the night by a fixed red light, visible in clear weather about five miles to seaward, between the bearings (from Llanddwyn by compass) of N.W. by N., and S.W. by W.; and which is intended solely as a leading light for the entrance to the Menai Straits. The bar should not be attempted until daylight, nor by vessels drawing more than 10 feet before half flood. During gales from W. to N., vessels may find shelter on the S.E. side of Llanddwyn Point. The proper anchorage is about a quarter of a mile from the shore, with the small tower a little open to the northward of the large tower. In running in give a good berth to the sunken rocks (the green buoys indicating which are placed to seaward), but it is much preferable for strangers to heave to outside sufficiently to windward and make signals for Pilot, four of whom are stationed at Llanddwyn, with a lifeboat, and Marryatt's code of signals. Vessels wishing to communicate will be answered from the large tower.

South Stack Light.—Off the N.W. point of Holyhead Island is the South Stack Rock, upon which is a lighthouse, bearing a brilliant light, which revolves every 2 minutes, whereby it will be readily distinguishable from the light on the Skerries, which is a stationary light, and bears from the light on the South Stack N.E. $\frac{1}{2}$ E., distant 8 miles, and may be seen through a great part of Carnarvon Bay. During foggy weather, a smaller bright light, revolving in $1\frac{1}{2}$ minutes, is occasionally shown, about 40 feet above the sea, and 30 yards north of the main lighthouse. Any vessel making either of these two great lights, can find no difficulty in navigating round the head, or into the harbour of Holyhead, if the wind

permits; and no directions that could be given would serve equal to that of having the two lights in sight, as will be the case in the situation above mentioned.

Holyhead Refuge Harbour is chiefly formed by an immense breakwater the heel resting on Soldier's Point, from whence it projects N.E. by E. nearly one and a half cables' length, then E.S.E. about 5 cables' length, and then E.N.E. to its end, which is marked by a red light, visible at a distance of 8 or 9 miles. The end of the breakwater is N.N.E., one mile from the Old Harbour Light.—To sail into Holyhead Refuge Harbour, give the end of the breakwater a good berth, as a strong tide sets to the westward nine hours out of the twelve, and strikes hard upon it. Having rounded the breakwater, steer to the W.S.W., between it and the outer Platters, leaving all the chequered buoys on the port hand, and anchor well in, close to the beach. There are passages between the Platters and Salt Island: but these should never be attempted by strangers. Vessels should have both anchors ready for letting go, with 50 or 60 fathoms of chain ranged according to the weather, and should be careful to anchor well up, or they will have to shift berth. Vessels disabled or without ground-tackle, may be laid on a beaching slope at the head of the harbour which has been prepared for the purpose.

Old Harbour of Holyhead.—A wooden pier extends from the Old Harbour lighthouse in a direction E. by S.; at its eastern end is a bright light of the sixth order, supported on iron pillars superseding that formerly exhibited from the stone lighthouse. All vessels bearing up for Holyhead Harbour should be prepared with both bower anchors ready to let go, and the end of a good warp for a boat to take to one of the dolphins, moored along the passage for that purpose. The course round the pier, up the harbour, is W. by N., then W.N.W.; therefore, with the wind at N., and to the westward of that point, a press of sail should be carried, especially after-sail; run the jetty close on board, and neither start tack nor sheet till the vessel is well inside the lighthouse and the packets' moorings, than act as circumstances may require. Rise of water at spring tides 17 feet; depth of water at the entrance, at low water, spring tides, about 12 feet. Holyhead Harbour being a tide harbour, and frequently with many anchors down in the way, vessels drawing 12 feet should not run in until about two hours' flood, and those of a heavy draught should, if possible, keep off until four hours' flood, in tempestuous weather no vessel should run for the harbour at night time. There is no occasion to use this as a harbour of shelter now the new harbour is established. All vessels anchoring outside must keep a light up during the night.

Holyhead Harbour Light, at the starboard hand in entering harbour, are stationary. The higher white light formerly shown from Light Tower on the old Pier Head of Old Harbour is discontinued, and a white light, at an elevation of 20 ft. above high water, shown from the structure above named on the end of the pier which now forms the entrance to the harbour. The small red light is still exhibited from the Light Tower on the Old Pier Head of the Old Harbour, between the bearings of S.S.W. and S.W. The former bearing clears end of the breakwater, and the latter danger on the east side of the bay. Light is shown from the mast 84 yds. at the eastern extremity of the new breakwater off the New Harbour at an elevation of forty feet above the level of high water. A gong is sounded in foggy weather. At night vessels should not enter for the New Harbour until the red light in the Old Harbour is clear, and in entering or leaving the harbour they should not approach the breakwater light nearer than $\frac{3}{4}$ of a cable.

SIGNAL STATION.—On the North Point is a fog gun of large size, the attendants' residence, magazine, flag staff, all painted white. For the safety of vessels navigating in the vicinity of Holyhead, and of Her Majesty's packets in particular, the gun is fired during foggy weather every half hour; except from 10.45 a.m. and the same time p.m., when for six hours, or till the arrival of the day mail packets, it is fired every quarter of an hour, Greenwich time being served.

The Skerries is a cluster of islets and rocks 13.5 miles to the northward of Carmel Point, occupying a space of about half a mile. Upon the centre and west islet of the group is a lighthouse 17 feet high, showing a fixed bright light 17 feet above the level of high water, 16 miles. The position of this lighthouse is lat. $53^{\circ} 25' 18''$ N. and long. $4^{\circ} 24' 17''$ W. A short distance all round the islands is deep water, except on the northern side of the group, where is a dangerous rock $2\frac{3}{4}$ fathoms, called the *Penman*, lying with the lighthouse in one line. Pengarn Hill bearing S.S.E. Upon this rock there is a great overfall when the tide is running either way. Between the Skerries islets and Carmel Point is a dangerous ledge of rocks, drying with rising tides only, called the *East Platters*. These rocks to all round are 8 to 16 fathoms, and there is a strong rippling when the tide is heavy. You may sail between the rocks and the Skerries by bringing the North Stack Bridge over the North Stack and between them and Carmel Point by bringing the South Stack and North Stack one. The Beacon on the West Mouse

Rock in one with the Middle Mouse, also clears it on the south side.

Point Lynas lies S.E. by E. $\frac{1}{4}$ E. of the eastern point of Amlwch Bay, distant $1\frac{1}{4}$ mile, and is situate in lat. $53^{\circ} 25' N.$, and long. $4^{\circ} 17' W.$ It is a bold conspicuous point of land both from the eastward and westward. A lighthouse is erected on the high pitch of the point, and is a castellated building, with a white basement. It exhibits a flashing light, which becomes instantaneously obscured at intervals of 10 seconds, and remains obscured 2 seconds only, so that it is readily distinguishable from the Skerries and other lights in the vicinity. From Lynas lighthouse to Great Orms Head, S.E., 16 miles; N.W. Lightship, Liverpool, E.S.E., 37 miles; Calf of Man, N. $\frac{1}{4}$ W. 42 miles; Buoy Nelson, of Preston, E., 41 miles; St. Bee's Head, N.E., 70 miles.

Port of Amlwch, Anglesea—In the day time, when the Breakwater balks are down, a Ball is fixed on a pole at the easternmost point of the harbour. When too many vessels lie at the entrance of the harbour, a Red Light will be shown, and when the entrance is clear a white light.

To Sail into Beaumaris Harbour. THROUGH THE SOUND IN LOW WATER.—Steer in for Table Land, till the W. end of Puffin Island comes open with the E. end of Penmaenmawr Hill. These marks will clear the Dinmora Bank on your starboard hand. You then have the sound fairly open; but to avoid the rocks off Trwyndu Point, keep more to the Perch on your left; and when Beaumaris comes open off Trwyndu Point, haul up for the red buoy off Penman, keeping it on your starboard hand, and off the red buoy of the Causeway on your left. Anchor in 4 fathoms off Penman red buoy, clean and good holding ground, well sheltered from a north-westerly wind; but if one hour's flood, you will carry 15 feet over the flats off Penryn Point. Steer for the black buoy on the Spit of the Levan Sand, abreast of Friar's House, where anchor in 5 fathoms low water spring tides, or at half flood steer for the town, keeping the red buoy on Watch House Point on your starboard hand, in 6 or 7 fathoms. Keep that depth of water until the Church at Beaumaris bears N. N. E. by compass when you may anchor in 9 fathoms at that time of tide. Thence you will see Bangor Pool, which is above ferry Point. But if any of the buoys should be missing as you steer up, keep the Church Tower and Lodge Hill in one.—Opposite the Friar's House, in mid-channel, is a sand-bank, marked by a red and white chequered buoy; in sailing up to Beaumaris, keep this buoy on the starboard hand.

To Sail out of Beaumaris Harbour, FROM THE ANCHORAGE OFF THE TOWN.—Weigh at high water, and drop down to Friar's Road. Give the black Buoy off the Spit a berth on your starboard

hand, and the red buoy off Penman on your port. At half ebb take the eastern passage, keeping off the red buoy off the Causeway on your port hand. From the latter steer for the east end of Puffin Island on your port hand, keeping off it half a cable's length, and the black buoy off the Dutchman's Spit the same distance on your starboard hand.

Menai Lighthouse is erected at the north-eastern entrance of the Menai Straits. The light is STATIONARY and of a RED colour, visible from N.W. $\frac{3}{4}$ W. seaward, to S.W. $\frac{1}{4}$ W. excepting that by the intervention of Puffin Island the light will be eclipsed to vessels upon the bearing from it of E. by N. $\frac{1}{2}$ N., to E. $\frac{1}{2}$ S. A ledge of rocks extending under water from the base of the lighthouse nearly 53 yards, it is advisable not to approach the building within that distance.

Conway Harbour.—there are two channels leading into this harbour—the west and north. For the west channel, steer from the N.W. black buoy to the second black buoy, leaving them on your port hand; keep the red buoy off Penmaenbach, the chequered red and white buoy, the two red buoys, and the perch, on your starboard hand; haul up, and steer for the quay, keeping close to Deganwy Point on the port hand. The entrance to the north channel is marked with a black perched buoy; the second, third, and fourth are all black, and moored in the best of the channel. Vessels drawing from 10 to 12 feet may lash alongside the quay, on mud and sand, dry at low water.

To Sail from Point Lynas to the Great Ormshead.—The course from Point Lynas to the Great Ormshead is S.E. per compass; from whence keep the Ormshead as the line is drawn on the chart, till Rhyland Castle and St. Asaph Church are in one; then haul in till the south mark on Helbre and Bidstone Lighthouse come in one. Steer forward on that line, which is the deepest water along the shore. It will also clear the Middle Patch on the left, which is dry at low water, spring tides. Buoys are placed here; red on the starboard, and black on the port hand coming in. Give the Point of Ayr Lighthouse a berth of a mile on the starboard hand; and when it bears W. haul up S.S.E. for mid-channel. At that time the rippling of the tide on the edge of the Salisbury Bank will be very perceptible, as well as on the Welsh side. Continue that course, in mid channel, till the Grange Mill bears N.E. by E. by compass, then haul quick for Dawpool, and keep that bearing till Burton Mill comes over the town of Parkgate. That course clears the south end of Salisbury Bank, and the Bagilt Flats on your right. As you advance keep the lead going, and borrow on the Haswell Church side of the shore. It will carry you clear to Bear-

house Pool, where anchor till you obtain a pilot. The leading mark for passing at high water across the Salisbury Bank to Hoyle Lake is Helbre Eye on with the Grange Mill.

Chester Bar is a narrow sandbank between 3 and 4 miles in length, stretching rather circularly from S.E. to N.W.; its south end is near to Nant House, and is called the Middle Patch, sometimes drying, the middle of it is called Earwick, and dry at low water; but much the greater part of it never dries, having from 3 to 6 feet water over it at all times. To clear the Earwick to the eastward, bring Nant House and the barn above it in one. **TO SAIL OVER CHESTER BAR** in a ship drawing 12 feet, take half-flood; and when Craig Disart Hill bears S.S.E., which with Middle Hill and Comb Hill form an equilateral triangle, keep the two Ormsheads shut below, and a little open above; by this you will avoid all danger on the southward. To avoid the banks and shallows on the north side, open the Ormsheads below near a ship's length, but not more. If a vessel comes to Chester Bar before half-flood, and is apprehensive of not having sufficient water to cross it, she may sail between the Middle Patch and the Earwick, keeping the Ormsheads a little open below; and when Craig Disart Hill and Middle Hill are in a line, steer N.E. by E. until you deepen your water to 4 or 5 fathoms, and sail along Hoyle Sand for the Point of Ayr; giving that point a berth of half-a-mile. To avoid that part of Hoyle which is opposite to Ayr, keep Bidston Windmill to the south of Helbre Summerhouse; this will carry you through the Swashway toward Hoyle Lake. But the mark which leads clear of the north part of the Hoyle Sand, and directly into Hoyle Lake, is the Point of Ayr Lighthouse open to the northward of Helbre Island.

The River Dee.—Vessels may stop a tide about a mile to the eastward of the Point of Ayr, upon which a lighthouse is erected. The tide runs, when strongest, $3\frac{1}{2}$ miles an hour; and when the tide and wind are contrary to each other, make a rough sea here. At this place, which is called Wild Road, you can anchor in 5 or 6 fathoms; or you may proceed higher up to the anchorage off Linacre Creek, where, in 6 or 7 fathoms, you will be much better sheltered than in Wild Road from north-westerly winds, and ride on ground that holds well. To sail from Wild Road to Dawpool, a distance of near 6 miles, bring the southernmost house of Dawpool, which stands below a clay cliff, exactly in a line with the barn having a white end, standing on the top of the cliff, but the barn must not be brought on either side of the house, anchor about 2 cables' length from high water mark in $3\frac{1}{2}$ or 4 fathoms at low water. Here

the stream runs 5 miles an hour when strongest. At Parkgate, which is more than 4 miles up the river, vessels must lie aground on the beach; for though there are $2\frac{1}{2}$ fathoms in the channel off the town, and 3 fathoms above it, yet the stream is so strong, and the ground so indifferent, that a vessel would drag its anchor. Take the ground about 2 hours before high water, below the houses of Parkgate. Vessels in making their passage to Parkgate must use the utmost caution to avoid the Salisbury Bank, a dangerous shoal, and lying in the direction of the river. The channel now to Parkgate is opened into a swashway by

Bagilt and Flint; Four red buoys are placed on the edge of the Mostyn and Bagilt Banks, and two black ones on the Salisbury Bank, the former of these are to be left on the starboard side, the latter on the port. A black buoy lies on the SELDOM SEEN ROCKS in the channel between the Salisbury Bank and the Lime Wharf. There are three small islands or rocks, called the Helbre Islands, lying to the southward of the Hoyle Sands. Two wooden beacons or marks, distant from each other 1 mile, and called the Eye Beacon and Helbre Beach Mark, are placed inshore of Helbre Islands. They are used as leading marks for Helbre Swash.

BAY AND HARBOUR OF LIVERPOOL.

In the vicinity, and to the northward and westward of the Rivers Dee and Mersey, lie the banks which form the several channels to Liverpool, viz., the Hoyle Banks, the Burbo Sands and Flats, the Jordan Bank, Taylor's Bank, Formby Point Flats, &c. The principal channels are, the Horse and Rock Channels, the Victoria Channel, the Queen's Channel, and the Crosby or Main Channel.

The principal lights and sea-marks of Liverpool Bay are as follow:—

GREAT ORMSHEAD.—A first order Dioptric Fixed Light is exhibited from a new Lighthouse, situate on the Northern most point of the Great Ormshead, at an elevation of about 325 feet above the mean sea level. It appears as a bright fixed Light when seen from any direction between the bearings NW by W $\frac{1}{2}$ W. round by the North to East, and as a RED Light from East to E. $\frac{3}{4}$ S. By this arrangement the light will be found to mask suddenly when standing into Beaumaris Bay, if brought to bear to the Eastward of S.E. by E. $\frac{3}{4}$ E., warning of the approach to shoal water; when to the eastward of Ormshead, the change of colour from bright to Red arises upon the line of bearing of the N.W. Light Ship and the Fairway Bell Beacon, off the entrance to the Queen's Channel, in Liverpool Bay, and the Red Light will finally disappear if brought to bear to the northward of W. $\frac{3}{4}$ N., warning of the approach to the northern edge of West and East Hoyle; if the Red Light be kept in sight, those banks cannot be approached nearer than one mile.

The NORTH-WEST LIGHT SHIP lies in a position indicated by the transition of the Ormshead Light from Bright to Red, and by masking or unmasking of the Upper Holylake Light on a bearing of S. by E. $\frac{3}{4}$ E. nearly. She is painted BLACK with a WHITE RIBAND, and lies off the West extreme of Three and Four Fathom Tongue, in $6\frac{1}{2}$ fathoms at low water, and exhibits a powerful bright Revolving Light, appearing once in every minute. The following bearings mark

her position, viz:—Ormshead Light, west, 20 miles; Queen's Channel Bell Beacon, East, $3\frac{3}{4}$ miles; Formby Light Ship, E. $\frac{3}{4}$ S., 6 miles; N.W. Buoy of East Hoyle, S.S.E. $4\frac{1}{2}$ miles; Helbre Swash Fairway Buoy, S. by E., $4\frac{1}{4}$ miles.

The HORSE CHANNEL—BELL BEACON, (in the form of a Square Pyramid, of open lattice work, painted RED, and marked in white letters "HORSE CHANNEL, SE $\frac{1}{4}$ S.") is moored in the fair-way to the Horse Channel. This Beacon occupies the position formerly held by the N. W. Lightship; the marks for it are, the Beacon on the Eye, and Helbre Beach Mark in one, S. $\frac{3}{4}$ E. (nearly). Bidston Lighthouse open Eastward of Leasowe Lighthouse, S.E. $\frac{1}{4}$ S.

The FORMBY LIGHT VESSEL, at the elbow of the Crosby and Queen's Channels, moored in 25 feet at low water, shows one Red light visible 8 miles; a red ball is exhibited on foremast head during the day. Her hull is painted red. In foggy weather a bell is tolled. Crosby Lightship, S. E. $\frac{1}{2}$ S., $2\frac{1}{2}$ miles; N. W. Mark, E. by N. $\frac{1}{4}$ N., $3\frac{3}{4}$ miles; Buoy Q. Fy. (bell beacon), N.W. by W. $\frac{1}{2}$ W., $2\frac{1}{2}$ miles.

The CROSBY LIGHTHOUSE, situated to the north-eastward of Crosby Point, shows a fixed Bright light, elevated 96 ft. above the level of the sea at half-tide, and visible between the bearings of S.S. E. $\frac{1}{4}$ E. and E., which limits indicate respectively when a ship is westward of Formby Spit, or to the southward of Crosby Lightship.

About a mile and a quarter to the north-eastward of Crosby Lighthouse is the FORMBY OLD LIGHTHOUSE, the light from which has been discontinued. Near the latter, on the strand, is a beacon, formerly used as a leading mark for Victoria Channel; further to the northward is the Life Boat House; and near it just round Formby Point, is the North-west Mark. This mark in one with another on Mad Wharf, bearing S. E. by E. $\frac{1}{4}$ E., is the leading direction for entering the Old Formby Channel.

The CROSBY LIGHT VESSEL, at the north-east elbow of the Great Burbo

Bank, moored in 44 feet at low water, shows a single bright light, visible 8 miles and carries a red ball at the foremast-head in the daytime. Her hull is painted red. From hence the fairway course up the Mersey is S. by E. $\frac{1}{2}$ E. In sailing through Crosby Channel during ebb-tide, to avoid the indraught through the gullies in Great Burbo Bank, vessels should be kept well to the eastward of a line drawn between the Rock Lighthouse and Crosby Lightship.

On the south side of Liverpool Bay, on the peninsula separating the Mersey from the Dec, are many objects used as sea-marks, several of which will have been seen before arriving at the North-west Light Vessel. Off the west end of the peninsula are the islets, called the Great and Little Helbre, near which are placed the two Helbre Beacons. On the mainland, within two miles S.E. by S. of the Helbre Islets, are the village and church of Kirby, to the east of which is Grange Hill, surmounted by a beacon, in the form of a pillar, at 173 feet above half-flood. Within two miles S. S. E. from Kirby, is Irby Hill, with its mill and wood.

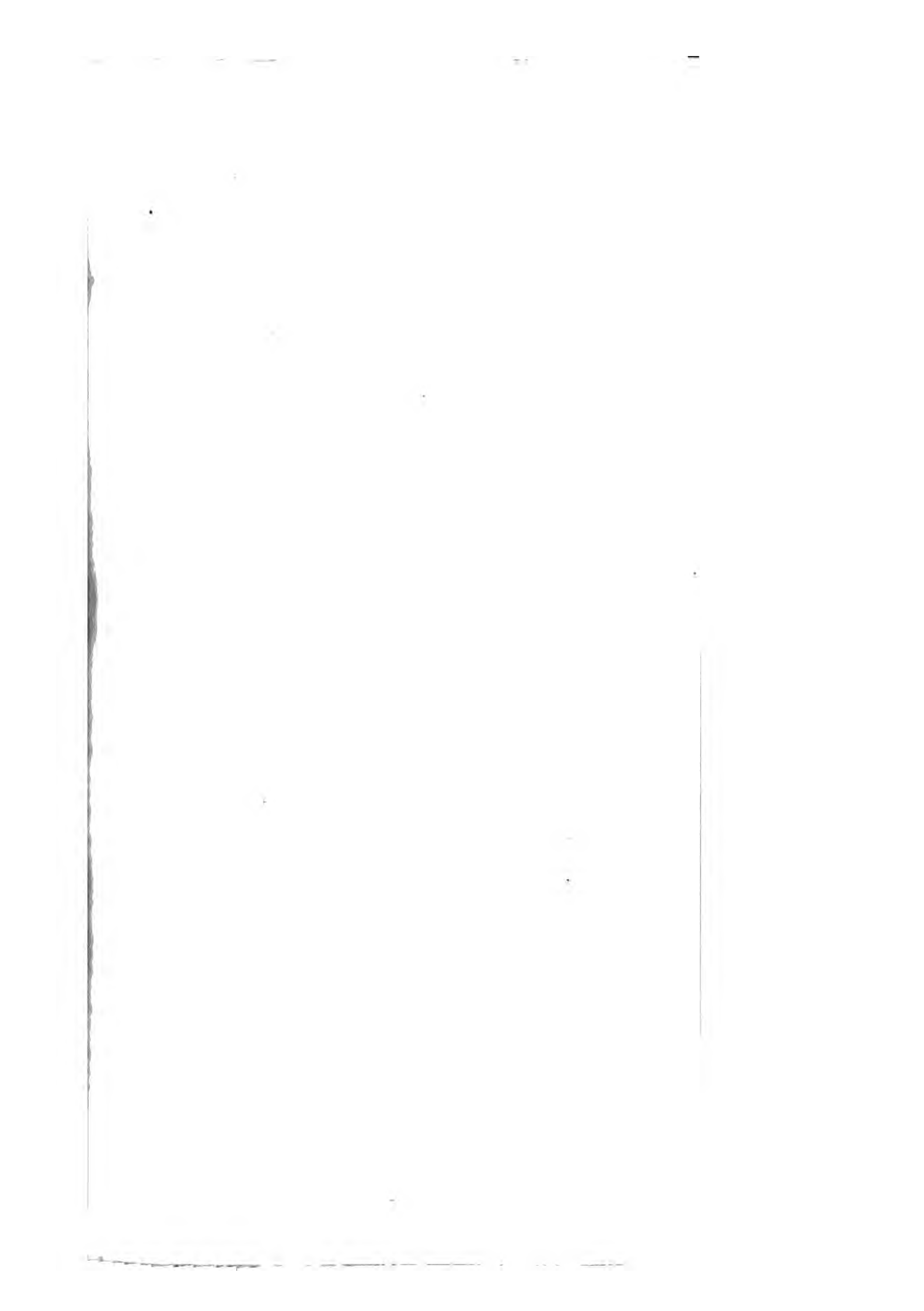
About a mile and a quarter north of Kirby, near the shore, is the Hoylake Hotel, and within half a mile E.N.E. from this are the new HOYLAKES LIGHT-HOUSES. The new Upper and Lower Hoylake Light-houses stand 400 yards apart, and bear from each other S.W. by S. Southerly, and N.E. by N. Northerly; when in one they lead midway between the Dove Spit Buoy (*R 1, Red Can*) and the *Spencer's Spit Bell Beacon* marking the elbow of the Horse and Rock Channels. Upper Hoylake masks, if standing to the westward, and unmasks, if standing to the eastward, when bearing from it N. by W. $\frac{3}{4}$ W. on a line which strikes the N.W. Light ship, and passes just to the eastward of the N.W. Buoy of East Hoyle, *H 1, Red Can with Perch*. Lower Hoylake Light masks, if standing to the westward, and unmasks, if standing to the eastward, when bearing from it N. $\frac{1}{4}$ W. on a line indicating the Fairway course in the Horse Channel, between East Hoyle and the Six and Four Feet Flats. (N.B.—The brilliancy of the New Lights is such that, in clear weather, a gleam of light is faintly perceptible even to the westward of the lines of masking. When coming from the westward the faint appearance may, at such times, be useful in giving warning of the approaching unmasking, but cannot be mistaken for the unmasking which takes place suddenly, and at once opens a brilliant light.) At a mile to the eastward of the lower light

are the Dove Beacons, erected as a mark for the eastern passage into Hoylake, the interior channel of communication between Helbre Swash, and the Horse Channel, which is now nearly choked up, and is frequented only by fishing boats.

The next conspicuous object is the LEASOWE LIGHTHOUSE, which is white; its light brilliant and fixed, 110 feet above the level of half-tide, is seen 5 leagues off, and suddenly masks on the bearing of S.W. $\frac{1}{2}$ S. when off West Wharf Buoy, (*R 3, Red*.) This is succeeded inland by the BIDSTON LIGHTHOUSE, upon the summit of Bidston Hill, with its church and mill, and the new Liverpool observatory. This lighthouse is of stone, of a dark colour. It shows a brilliant fixed light at 224 feet above the level of half-tide, which can be seen 23 miles off. This light masks on the bearing of S. by W. $\frac{1}{2}$ W. when abreast of East Wharf Buoy, (*R 4, Red*.) The lights of Leasowe and Bidston are called the Sea Lights, and are specially important for the navigation of the Horse and Rock Channels. At three-quarters of a mile eastward from the Leasowe Light is Leasowe Castle, and $2\frac{1}{2}$ miles further east is the Black Rock Lighthouse, standing upon the reef, so called, at the entrance of the Mersey.

THE BLACK ROCK LIGHTHOUSE is built on the rocks off New Brighton, on the west side of the entrance of the River Mersey, and is a handsome round tower of Anglesea limestone. It is surrounded by water at nearly half-tide. The height of the building, from the lantern to the base, is 75 feet, and the whole height above the level of the sea is 88 feet. The light revolves, appearing twice bright and once of a red colour, each at intervals of a minute, the whole revolution being completed in 3 minutes. The light in clear weather can be seen about 5 leagues off. A bright fixed light from a lower chamber is also shown down the Rock Channel and up the River while 11 feet water remain in the Gut, and a black ball denotes the same by day. Three bells toll in succession during foggy weather; and a blue flag is used to summons the life-boats when distress appears.

Garston Dock.—This Dock, which is 4 miles south of the Liverpool Docks, and on the same side of the river, is free from the Liverpool dock rates, vessels entering it being only liable for the harbour and light dues. The channel from Liverpool is buoyed with red and black



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[ENTERED AT STATIONERS' HALL.]

QUIGGIN'S
ISLE OF MAN
ALMANACK,

FOR THE YEAR OF OUR LORD

1869,

Being the First after Bissextile or Leap-Year,
AND THE 32nd-33rd OF THE REIGN OF HER PRESENT MAJESTY;

WITH CORRECT

TIDE TABLES,

FOR

LIVERPOOL, BRISTOL, GREENOCK,
LONDON, CORK, SUNDERLAND, SHIELDS, HULL,
BRIDPORT, SOUTHAMPTON, AND PORTSMOUTH,

AND

MARINERS' COMPANION;

CONTAINING ALSO EVERY CALCULATION NECESSARY FOR

WORKING A LUNAR DISTANCE.

CALCULATED TO MEAN TIME, IN LATITUDE $54^{\circ} 10'$ N. AND LONGITUDE
 $4^{\circ} 30'$ W.

↪ The Liverpool Tides are calculated for Greenwich mean time.

FORTY-FOURTH ANNUAL IMPRESSION.

DOUGLAS, ISLE OF MAN:
PRINTED AND PUBLISHED BY MATTHEW GLOVER,
52, NORTH QUAY.

PHASES OF THE MOON.	{	LAST QUARTER,	5th day, at	6h. 22m morning.
		NEW MOON,	12th day, at	6h. 53m. evening.
		FIRST QUARTER,	21st day, at	0h. 26m. morning.
		FULL MOON.	28th day, at	1h. 30m. evening.

M D.	Day brek.	Twil. ends.	☉'s semi.	☿ Mercury. sets. sout.	♀ Venus. rises. sout.	♂ Mars. rises. sout.	♃ Jupiter. sets. sout.	♄ Saturn. rises. sout.	M D.
1	6 m	7 6	a 0 16 18	3 a 26 0 a 0	5 m 09 m 50	8 a 28 3 m 48	11 a 49 5 a 39	6 m 09 m 50	1
8	6	6 6	7 16 18	3 58 0 22 6	9 9 59 7	5 6 3 21	11 27 5 15	5 36 9 34	8
15	6	3 6	16 16 18	4 38 0 44 6	25 10 9 7	22 2 51	11 5 4 50	5 12 9 9 15	15
22	5	58 6	27 16 17	5 25 1 5 6	37 10 19 6	44 2 19	10 44 4 27	4 48 8 45 22	22
29	5	49 6	39 16 16	6 9 1 21 6	44 10 29 6	4 1 44	10 23 4 4	4 24 8 20 28	29

M D	W D	Remarkable Days	HIGH WATER.—LIVERPOOL.				Equation of Time. / "
			MORNING.		EVENING.		
			Time.	Height.	Time.	Height.	
1	F	New Year's Day	0 49	18 2	1 11	18 10	3.58
2	S	General Wolfe born	1 36	17 6	2 1	18 3	4.26
3	C	2 Sun. aft. Christmas	2 28	16 8	2 52	17 4	4.54
4	M	Pro. [Isa. xli; Matthew ii. Les. [— xlii; Romans ii.	3 18	15 6	3 43	16 1	5.22
5	Tu	Bank Dividends due	4 11	14 4	4 40	14 10	5.48
6	W	Epiphany.	5 12	13 4	5 47	13 11	6.14
7	Th	Neptune souths 5 a 47	6 21	13 1	6 58	13 8	6.40
8	F	Lucian, P. & M.	7 33	13 4	8 7	14 1	7.6
9	S	Fontenelle died, 1801	8 40	14 2	9 9	14 8	7.31
10	C	1 Sun. aft. Epiphany	9 37	15 2	10 2	15 4	7.55
11	M	Pro. [Isa. xlii; Matt. viii. Les. [— xlii; Rom. viii.	10 26	16 0	10 46	15 10	8.19
12	Tu	H souths 11 a 36	11 7	16 2	11 25	16 1	8.42
13	W	Cambridge term begins	11 43	16 11	—	—	9.5
14	Th	Oxford term begins	0 1	16 3	0 18	17 2	9.27
15	F	British Museum opd.	0 35	16 2	0 52	17 0	9.48
16	S	B. of Corunna, 1809	1 10	16 0	1 28	16 8	10.9
17	C	2 Sun. aft. Epiphany	1 47	15 5	2 5	16 1	10.29
18	M	Proper [Isa. li; Matt. xv. Lessons. [— liii; Rom. xv.	2 22	14 9	2 38	15 3	10.48
19	Tu	Jas. Watt born, 1736	2 55	14 1	3 13	14 5	11.7
20	W	Australia Colonized,	3 32	13 4	3 55	13 5	11.24
21	Th	Agnes, V. & M. [1788	4 19	12 5	4 47	12 7	11.41
22	F	Vincent, Martyr.	5 20	11 11	5 54	12 1	11.57
23	S	Wm. Pitt died, 1806	6 29	11 11	7 6	12 5	12.12
24	C	Septuagesima Sun.	7 41	12 10	8 17	13 6	12.27
25	M	Proper [Gen. i; Matt. xxii. Lessons. [— ii; 1 Cor. vi.	8 49	14 4	9 20	14 11	12.41
26	Tu	Dr. Jenner died, 1823	9 47	16 1	10 13	16 5	12.53
27	W	Mozart born, 1756	10 37	17 8	11 0	17 8	13.5
28	Th	H souths 10 a 30	11 26	19 0	11 49	18 9	13.17
29	F	George III. died, 1820	—	—	0 10	20 0	13.27
30	S	Pro. [Gen. iii; Matt. xxviii. Les. [— vi.; 1 Cor. xii	0 33	19 2	0 57	20 3	13.37
31	C	Sexagesima Sunday	1 22	19 0	1 46	19 10	13.45

LIVERPOOL TIDES.				SUN.				MOON.				ASPECTS AND WEATHER.											
Rises, sets, H. M. F. I.				Rises, sets, H. M. F. I.				Rises, sets, H. M. F. I.				Rises, sets, H. M. F. I.											
H. M. F. I.				H. M. F. I.				H. M. F. I.				H. M. F. I.											
0	9	23	33	3	8	22	3	46	18	48	40	22	58	57	7	a 54	2m 28	16	n 6	18	1	The year	
16	10	11	32	4	8	22	3	47	18	53	5	22	53	36	9	15	3	25	12	25	19	2	♂♂, (11m 38
31	10	53	31	1	8	22	3	48	18	57	29	22	47	47	10	37	4	19	7	59	20	3	♀♂ ♯. 3 m 34
46	11	39	28	9	8	21	3	49	19	1	53	22	41	31	11	57	5	11	3	9	21	4	will most
1	0	5	26	4	8	21	3	51	19	6	16	22	34	48	morn	6	2	1	s 47	22	5	5	♂♂ ☉, 3 a 50
11	1	2	24	2	8	21	3	52	19	10	39	22	27	38	1	15	6	51	6	30	23	6	probably
21	2	13	23	9	8	20	3	53	19	15	2	22	20	1	2	30	7	41	10	47	24	7	begin with
36	3	37	25	0	8	20	3	55	19	19	24	22	11	59	3	43	8	31	14	25	25	8	stormy weather.
46	4	43	26	4	8	19	3	56	19	23	45	22	3	30	4	55	9	21	17	13	26	9	♂♂ ☉, 1 a 35
12	5	39	27	8	8	18	3	58	19	28	6	21	54	35	5	21	10	12	19	5	27	10	♀♂ ☉, 5 m 9
5	6	27	28	2	8	17	4	0	19	32	2	21	45	15	6	58	11	3	19	51	28	11	Now more
51	7	11	29	0	8	16	4	1	19	36	47	21	35	29	sets.	11	54	19	40	N	12	12	fair
31	7	50	29	8	8	15	4	3	19	41	6	21	25	18	5a	0	0a	42	18	27	1	13	♀♂ ☉, 10m 21
9	8	26	30	0	8	14	4	4	19	45	24	21	14	43	6	4	1	30	16	22	2	14	and
42	8	59	29	11	8	13	4	6	19	49	42	21	3	43	7	9	2	15	13	34	3	15	frosty
16	9	33	29	5	8	12	4	8	19	53	59	20	52	18	8	14	2	59	10	12	4	16	☉ in Apogee
49	10	5	28	6	8	11	4	9	19	58	16	20	40	31	9	19	3	42	6	25	5	17	unless the
18	10	32	27	7	8	10	4	11	20	2	32	20	28	19	10	25	4	24	2	22	6	18	wind be
48	11	4	26	1	8	9	4	13	20	6	47	20	15	45	11	32	5	6	1	s 49	7	19	♂♂ ☉, 1m 17
24	11	46	24	4	8	8	4	15	20	11	1	20	2	47	morn	5	49	5	59	8	20	8	southerly,
1	0	10	22	8	8	7	4	17	20	15	14	19	49	27	0	40	6	34	10	0	9	21	which
38	1	8	21	5	8	6	4	19	20	19	27	19	35	46	1	50	7	22	13	39	10	22	may
40	2	21	21	11	8	4	4	21	20	23	39	19	21	42	3	0	8	14	16	42	11	23	continue
4	3	47	24	4	8	3	4	22	20	27	50	19	7	17	4	11	9	9	18	52	12	24	for some
22	4	54	27	0	8	1	4	24	20	32	0	18	52	31	5	21	10	7	19	52	13	25	days.
23	5	51	29	9	8	0	4	26	20	36	9	18	37	25	6	23	11	8	19	28	14	26	♂♂ ☉, 11m 51
38	6	43	31	0	7	58	4	28	20	40	18	18	21	58	7	18	morn	—	—	—	15	27	☉ eclipse vis.
12	7	38	33	4	7	57	4	30	20	44	26	18	6	11	riser.	0	9	17	36	F	28	28	♂♂ ☉, 3 a 3
1	8	24	35	3	7	55	4	32	20	48	33	17	50	5	6a	49	1	9	14	23	17	29	Fair and
47	9	11	35	7	7	54	4	34	20	52	39	17	33	40	8	15	2	7	10	8	18	30	frosty.
33	9	56	35	1	7	52	4	36	20	56	44	17	16	57	9	39	3	3	5	15	19	31	

LUNAR DISTANCES FROM THE SUN.

Mean Astronomical Time at Greenwich.

NOON.	3 HOURS.	6 HOURS.	9 HOURS.	MIDN.	15 HOUR.	18 HOUR.	21 HOUR.
140 3 59	138 21 36	136 39 19	134 57 8	133 15 4	131 33 8	129 51 20	128 9 42
126 28 14	124 46 56	123 5 49	121 24 54	119 44 11	118 3 41	116 23 24	114 43 20
113 3 30	111 23 54	109 44 32	108 5 25	106 26 33	104 47 56	103 9 34	101 31 28
99 53 37	98 16 2	96 38 42	95 1 38	93 24 50	91 48 17	90 12 1	88 35 59
87 0 14	85 24 44	83 49 30	82 14 31	80 39 48	79 5 20	77 31 7	75 57 10
74 23 27	72 49 58	71 16 45	69 43 46	68 11 1	66 38 31	65 6 14	63 34 12
62 2 23	60 30 48	58 59 26	57 28 18	55 57 22	54 26 40	52 56 11	51 25 54
49 55 50	48 25 58	46 56 19	45 26 52	43 57 37	42 28 34	40 59 43	39 31 4
38 2 37	36 34 22	35 6 19	33 38 27	32 10 47	30 43 18	29 16 2	27 48 58
29 47 57	31 9 13	32 30 26	33 51 36	35 12 42	36 33 46	37 54 46	39 15 45
40 36 41	41 57 36	43 18 29	44 39 21	46 0 12	47 21 3	48 41 54	50 2 43
51 23 37	52 44 31	54 5 26	55 26 23	56 47 23	58 8 27	59 29 33	60 50 4
62 12 0	63 33 21	64 54 47	66 16 20	67 38 0	68 59 46	70 21 41	71 43 4
73 5 56	74 28 18	75 50 49	77 13 32	78 36 25	79 59 31	81 22 49	82 46 20
84 10 5	85 34 4	86 58 18	88 22 48	89 47 33	91 12 35	92 37 54	94 3 3
95 29 27	96 55 41	98 22 15	99 49 8	101 16 22	102 43 58	104 11 54	105 40 1
107 8 55	108 37 59	110 7 27	111 37 19	113 17 35	114 38 16	116 9 22	117 40 5
119 12 50	120 45 13	122 18 2	123 51 17	125 25 0	126 59 9	128 33 45	130 8 4
131 51 23	130 8 59	128 26 55	126 45 10	125 3 46	123 22 43	121 42 2	120 1 4

Explanations

The LIVERPOOL TIDES on the left-hand Calendar pages are calculated for Greenwich mean time; with the height above the level of the Old Dock Sill, now represented by the marks on the east side of the Canning Dock, and include the diurnal inequality in the height of each Tide.

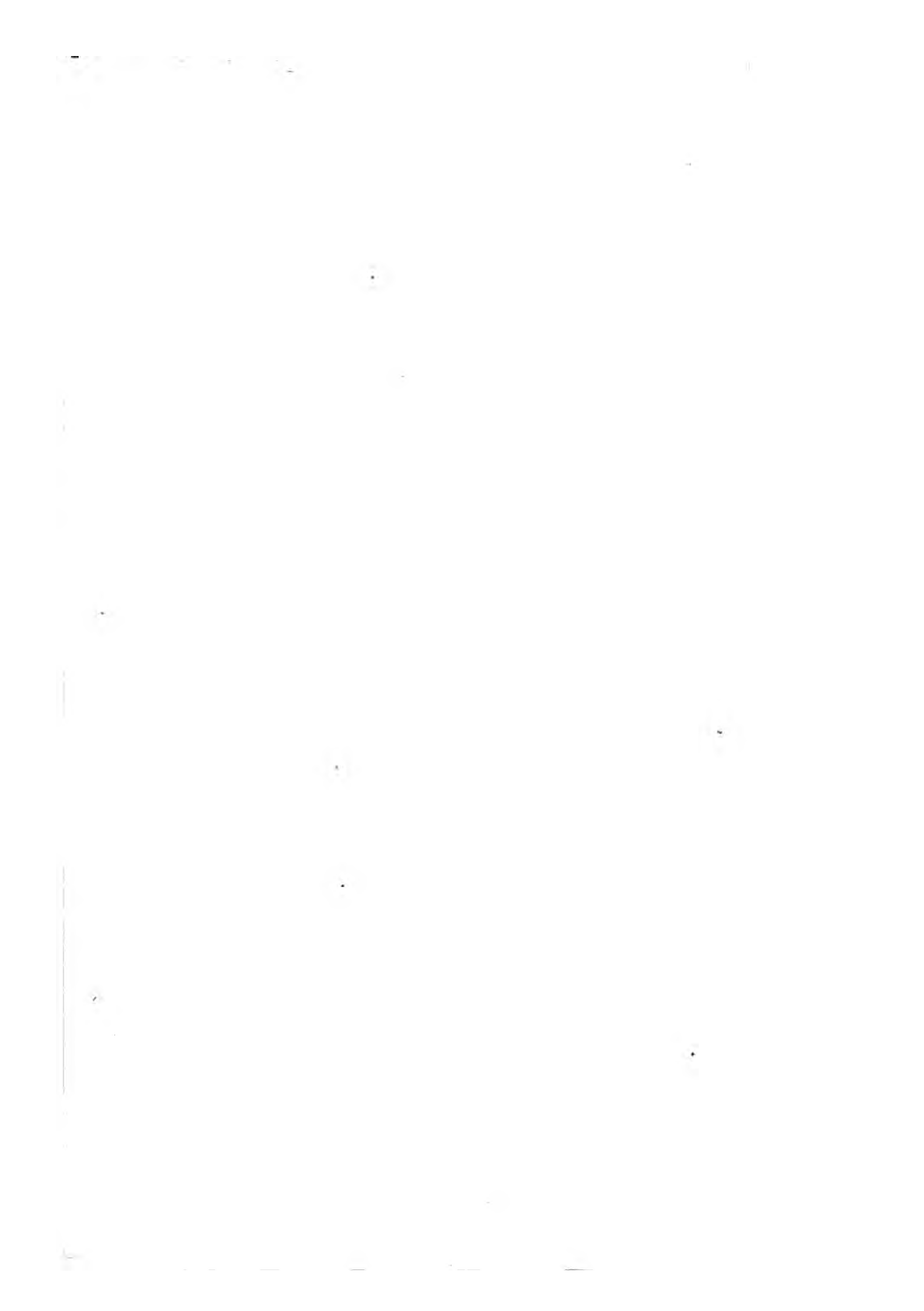
PHASES
OF THE
MOON.

LAST QUARTER, 3rd day, at 4h. 56m. evening.
NEW MOON, 11th day, at 1h. 54m. evening.
FIRST QUARTER, 19th day, at 5h. 6m. evening.
FULL MOON, 26th day, at 0h. 5m. evening.

M D.	Day brek.	Twil. ends.	☉'s semi.	♂ Mercury sets	sout.	♀ Venus. rises.	sout.	♂ Mars. rises.	sout.	♂ Jupiter. sets.	sout.	♂ Saturn. rises.	sout.
1	5m46	6a43	16 16	6a24	1a24	6m46	10m34	5a46	1m29	10a14	3a54	4m13	9m9
8	5 35	6 55	16 15	6 39	1 16	6 47	10 43	5 30	52	9 54	3 31	3 48	7 44
15	5 22	7 8	16 13	6 7	0 40	6 44	10 52	4 16	0 14	9 35	3 8	3 23	7 18
22	5 8	7 21	16 12	rises.	11m45	6 38	11 0	sets.	11a30	9 16	2 46	2 57	6 52
28	4 54	7 32	16 10	6m6	11 56	30	11 6	7m0	10 58	9 02	27	2 35	6 30

M W D D		Remarkable Days	HIGH WATER.—LIVERPOOL.				Equation of Time. / "
			MORNING.		EVENING.		
			Time.	Height.	Time.	Height.	
1	M	St. Bridget.	2 11	18 1	2 34	18 8	13 ⁵³
2	Tu	Purifi., B. V. Mary	2 57	16 9	3 20	17 1	14 ¹
3	W	Blasius, Bishop	3 44	15 3	4 8	15 3	14 ⁷
4	Th	Aldebaran souths 7 a 28	4 34	13 8	5 6	13 6	14 ¹³
5	F	Agatha, Sicil. Ves.	5 42	12 6	6 20	12 4	14 ¹⁷
6	S	Pleiades souths 6 a 32	6 58	12 3	7 39	12 3	14 ²¹
7	C	Shrove Sunday	8 16	12 10	8 52	13 2	14 ²⁴
8	M	Pro. [Genesis ix to v. 20; Mark vii Les. [— xii 2 Cor. iii.	9 21	13 11	9 47	13 10	14 ²⁷
9	Tu	Shrove Tuesday	10 12	15 1	10 35	14 9	14 ²⁹
10	W	Ash Wednesday	10 54	16 0	11 12	15 6	14 ²⁹
11	Th	Washington b., 1735	11 30	16 8	11 45	16 0	14 ³⁰
12	F	Rigel souths 7 a 36	— —	— —	0 1	17 3	14 ²⁹
13	S	Revolution, 1688	0 16	16 8	0 32	17 7	14 ²⁷
14	C	1 Sunday in Lent	0 48	17 7	1 4	17 6	14 ²⁵
15	M	Pro [Gen. xix to v. 30; Mark xiv. Les. [— xxii; 2 Cor. x.	1 20	16 6	1 35	17 1	14 ²²
16	Tu	Melancthon bn., 1495	1 52	16 1	2 9	16 5	14 ¹⁹
17	W	Procyon souths 9 a 41	2 26	15 4	2 42	15 6	14 ¹⁴
18	Th	Luther died, 1546	3 0	14 7	3 17	14 5	14 ⁹
19	F	Galileo born, 1564	3 37	13 7	4 0	13 2	14 ³
20	S	J. Hume died, 1855	4 26	12 6	5 0	12 1	13 ⁵⁷
21	C	2 Sunday in Lent	5 37	11 11	6 27	11 8	13 ⁵⁰
22	M	Proper [Gen. xxvii; Luke iv. Lessons. [— xxxiv; Galat. iv.	7 1	12 5	7 45	12 7	13 ⁴²
23	Tu	Sir J. Reynolds died,	8 24	13 0	8 59	14 2	13 ³³
24	W	St. Matthias [1792	9 29	15 10	9 57	16 1	13 ²⁴
25	Th	Sir C. Wren, d., 1723	10 24	17 9	10 46	17 9	13 ¹⁴
26	F	Hare hunting ends	11 8	19 5	11 31	19 2	13 ⁴
27	S	Pro. [Genesis xxxix; Luke xi. Les. [— xlii; Ephes. v.	11 54	20 9	— —	— —	12 ⁵³
28	C	3 Sunday in Lent	0 16	19 10	0 38	21 2	12 ⁴²

To reduce the Liverpool Tides for the Isle of Man generally, subtract twelve minutes; for the rise or fall of the water from tide to tide, subtract one sixth for the approximate rise or fall in Douglas.



Bristol tides

SUN.

MOON.

ASPECTS

AND
WEATHER.

Bristol tides				SUN.				MOON.				ASPECTS AND WEATHER.	
sun.	even.	height		rises.	sets.	rt.	ascen.	declin.	S.	rises.	souths	declin.	
M. H. M. P. I.				H. M. H. M. H. M. S.						H. M. H. M. S.			
0 17	10 36	32 3		7 50	4 38	21	0 49	16 59	55	11a 1	3m56	0 8 20	1
1 56	11 16	30 9		7 18	4 40	21	4 52	16 42	35	morn	4 47	4 s 50	21
1 37	12 0	27 6		7 47	4 42	21	8 55	16 24	57	0 19	5 38	9 24	22
—	0 27	24 2		7 45	4 44	21	12 57	16 7	2	1 34	6 28	13 18	23
0 58	1 32	21 11		7 43	4 46	21	16 59	15 48	51	2 45	7 18	16 24	24
2 11	3 0	21 10		7 41	4 48	21	20 59	15 30	23	3 52	8 9	18 34	25
3 45	4 24	23 9		7 39	4 50	21	24 59	15 11	40	4 53	8 59	19 43	26
4 55	5 22	25 5		7 37	4 52	21	28 58	14 52	41	5 47	9 49	19 49	27
5 48	6 13	27 1		7 35	4 55	21	32 56	14 33	27	6 32	10 38	18 57	28
6 35	6 55	27 11		7 33	4 57	21	36 54	14 13	59	7 5	11 26	17 10	29
7 16	7 32	29 0		7 31	4 59	21	40 50	13 54	16	sets.	0a12	14 37	N 11
7 50	8 7	30 1		7 29	5 1	21	44 46	13 34	19	6a 3	0 57	11 26	1 12
8 23	8 38	30 8		7 27	5 3	21	48 41	13 14	10	7 9	1 40	7 46	2 13
8 53	9 8	30 9		7 25	5 5	21	52 36	12 53	47	8 15	2 22	3 48	3 14
9 22	9 38	30 4		7 23	5 7	21	56 29	12 33	12	9 22	3 4	0 21	4 15
9 53	10 9	29 7		7 21	5 9	22	0 22	12 12	25	10 29	3 46	4 30	5 16
10 22	10 38	28 3		7 19	5 11	22	4 14	11 51	26	11 36	4 30	8 32	6 17
10 52	11 8	26 5		7 17	5 13	22	8 6	11 30	16	morn	5 15	12 16	7 18
11 28	11 52	24 8		7 15	5 15	22	11 56	11 8	56	0 44	6 4	15 30	8 19
—	0 21	22 1		7 13	5 17	22	15 46	10 47	25	1 53	6 55	18 1	9 20
1 53	1 38	21 2		7 10	5 19	22	19 36	10 25	44	3 1	7 50	19 33	10 21
2 15	3 8	22 9		7 8	5 21	22	23 24	10 3	54	4 5	8 48	19 52	11 22
3 55	4 32	26 1		7 5	5 23	22	27 13	9 41	54	5 2	9 48	18 48	12 23
5 3	5 33	29 6		7 3	5 25	22	31 0	9 19	46	5 52	10 48	16 19	13 24
6 2	6 27	31 0		7 0	5 27	22	34 46	8 57	29	6 32	11 47	12 34	14 25
6 52	7 17	34 1		6 58	5 29	22	38 33	8 35	5	rises.	morn	—	F 26
7 43	8 7	36 3		6 56	5 31	22	42 19	8 12	33	7 a8	0 45	7 54	16 27
8 29	8 52	37 0		6 54	5 33	22	46 4	7 49	54	8 34	1 41	2 41	17 28

LUNAR DISTANCES FROM THE SUN.
Mean Astronomical Time at Greenwich.

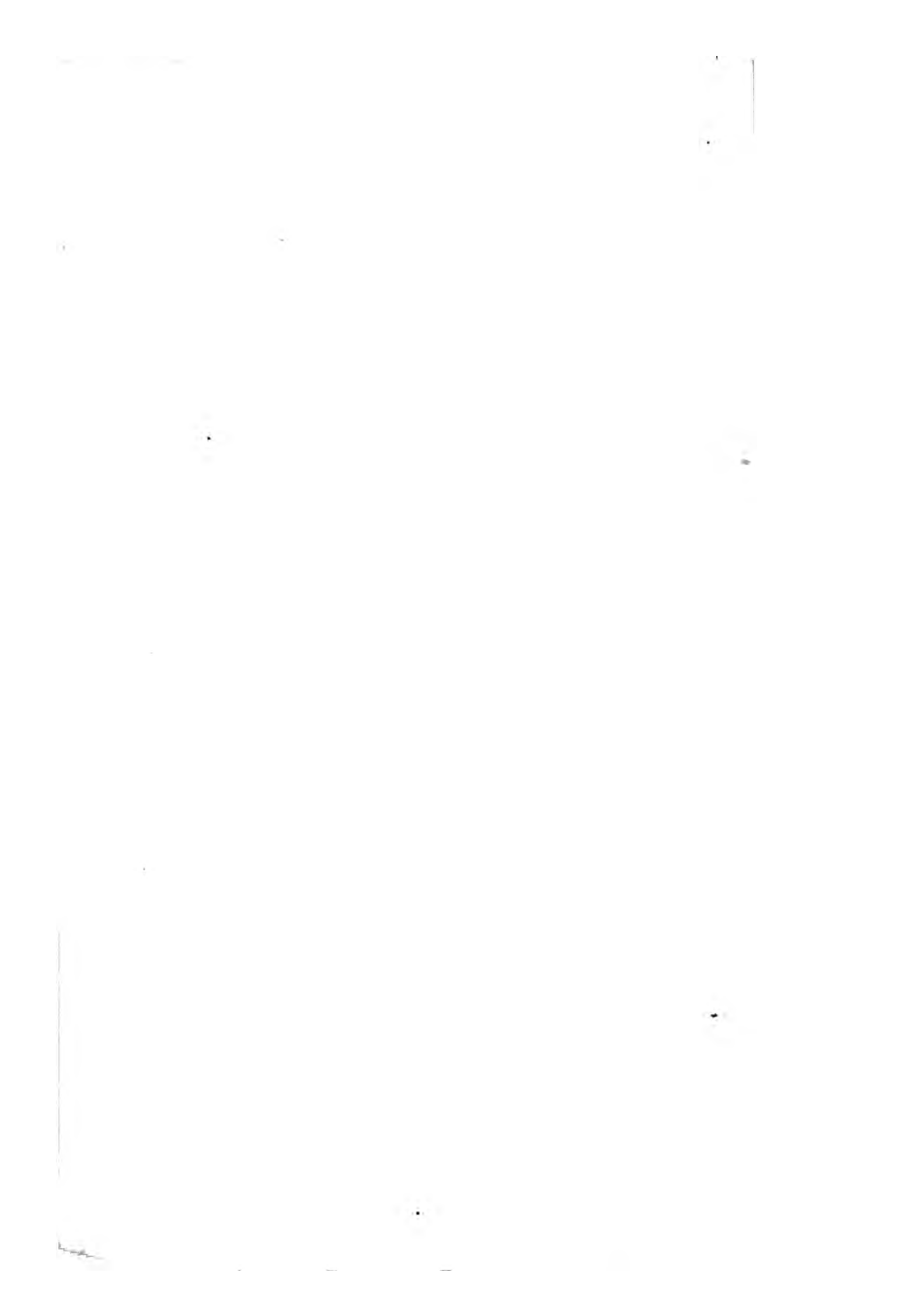
NOON.	3 HOURS.	6 HOURS.	9 HOURS.	MIDN.	15 HOUR.	18 HOUR.	21 HOUR.
° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "
118 21 44	116 42 8	115 2 55	113 24 5	111 45 37	110 7 32	108 29 50	106 52 31
105 15 34	103 39 1	102 2 50	100 27 2	98 51 37	97 16 34	95 41 53	94 7 34
92 33 37	91 0 2	89 26 48	87 53 55	86 21 22	84 49 10	83 17 19	81 45 47
80 14 34	78 43 41	77 13 6	75 42 50	74 12 52	72 43 11	71 13 48	69 44 42
68 15 52	66 47 19	65 19 1	63 50 59	62 23 12	60 55 39	59 28 21	58 1 17
56 34 27	55 7 49	53 41 25	52 15 13	50 49 13	49 23 25	47 57 49	46 32 24
45 7 10	43 42 6	42 17 12	40 52 29	39 27 55	38 3 30	36 39 15	35 15 8
33 51 11	32 27 21	31 3 39	29 40 6	28 16 40	26 53 21	25 30 10	24 7 5
20 53 7	22 14 13	23 35 20	24 56 27	26 17 35	27 38 43	28 59 53	30 21 4
31 42 18	33 3 33	34 24 51	35 46 11	37 7 35	38 29 2	39 50 33	41 12 7
42 33 47	43 55 31	45 17 20	46 39 15	48 1 16	49 23 24	50 45 38	52 7 59
53 30 29	54 53 6	56 15 52	57 38 47	59 1 51	60 25 6	61 48 31	63 12 7
64 35 54	65 59 54	67 24 6	68 48 30	70 13 9	71 38 1	73 3 8	74 28 30
75 54 8	77 20 2	78 46 12	80 12 40	81 39 25	83 6 29	84 33 51	86 1 33
87 29 34	88 57 56	90 26 38	91 55 42	93 25 7	94 54 55	96 25 5	97 55 38
99 26 35	100 57 56	102 29 41	104 1 50	105 34 25	107 7 25	108 40 50	110 14 42
111 48 59	113 23 43	114 58 54	116 34 31	118 10 34	119 47 5	121 24 3	123 1 27
124 39 18	126 17 36	127 56 21	129 35 31	131 15 8	132 55 11	134 35 40	136 16 33

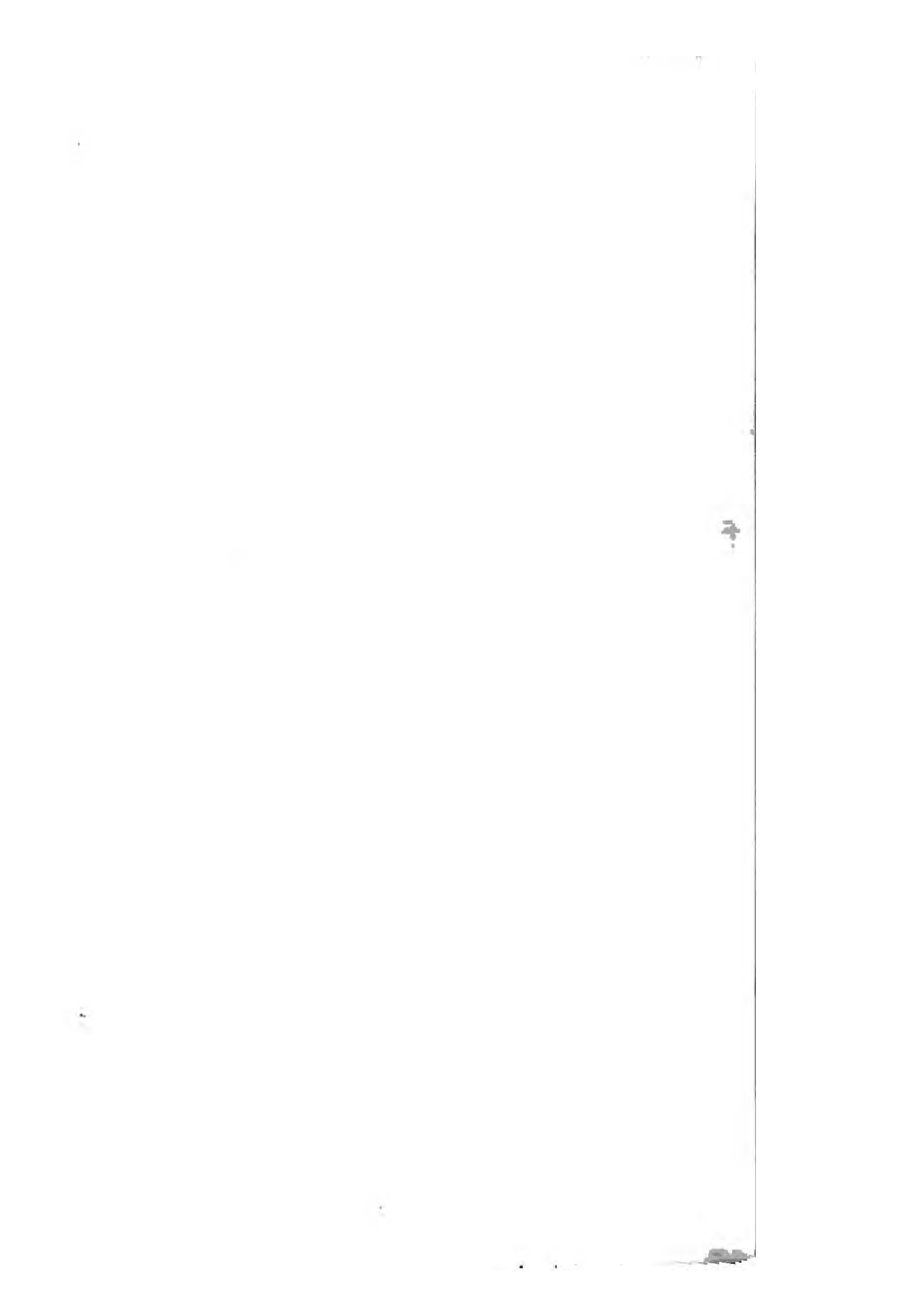
The EQUATION of TIME is given to the nearest second for Greenwich mean noon; as the difference between the equation of time for mean noon and apparent noon does not in any instance amount to the fifth part of a second, the given minutes and seconds may be used for reducing mean time into apparent time, or contrary. When the column is headed "Clock before Sun," the Equation to be subtracted from mean time to reduce it to apparent; or, in the case of celestial observation, the result being apparent time, the equation must be added to reduce it to mean time. And when "after Sun," the equation must be added to mean time, to reduce it to apparent time, or subtracted from apparent time.

PHASES OF THE MOON. { LAST QUARTER, 5th day, at 5h. 43m. morning.
NEW MOON, 13th day, at 8h. 46m. morning.
FIRST QUARTER, 21st day, at 5h. 54m. morning.
FULL MOON, 27th day, at 9h. 33m. evening.

M D.	Day brek.	Twil. ends.	☉'s semi.	♂ Mercury rises. sout.		♀ Venus. rises. sout.		♂ Mars. sets. sout.		♂ Jupiter. sets. sout.		♂ Saturn. rises. sout.		M D.
1	4m53	7a55	16 10	6m2	11m0	6m29	11m7	6m55	10a53	8a58	2a24	2m31	6m26	1
8	4	347	50 16	8 5	47 10 35	6 18	11 13	6 23	10 17	8 39	2 2	2 5	6 0	8
15	4	168	4 16	6 5	38 10 27	6 5	11 19	5 51	9 44	8 21	41	1 39	5 33	15
22	3	568	19 16	4 5	29 10 28	5 51	11 24	5 20	9 14	8 3	19	1 12	5 6	22
29	3	348	36 16	3 5	20 10 35	5 37	11 28	4 49	8 46	7 45	0 58	0 44	4 38	29

M D	W D	Remarkable Days	HIGH WATER.—LIVERPOOL.				Equation of Time.
			MORNING.		EVENING.		
			Time.	Height	Time.	Height.	
1	M	St. David	1 2	19 10	1 25	20 8	12 30
2	Tu	Chad. Archbishop	1 46	19 0	2 8	19 3	12 18
3	W	Waller born, 1605	2 31	17 6	2 52	17 5	12 5
4	Th	Regulus sou. 11 a 10	3 13	15 9	3 37	15 3	11 52
5	F	Dr. Arne died, 1778	4 2	13 11	4 39	13 1	11 38
6	S	Procyon souths 8 a 34	5 1	12 4	5 39	11 5	11 24
7	C	4 Sunday in Lent	6 22	11 6	7 2	11 1	11 9
8	M	Pro. [Genesis xlii; Luke xviii. Les. [— xlv; Coloss. ii.	7 13	12 0	8 24	11 9	10 54
9	Tu	Castor souths, 8 a 6	8 59	13 2	9 28	13 0	10 39
10	W	B. West died, 1810	9 50	14 7	10 13	14 3	10 23
11	Th	Tasso born, 1544	10 34	15 9	10 52	15 4	10 8
12	F	Gregory, Bishop.	11 7	16 8	11 20	16 2	9 51
13	S	H discovered, 1781	11 37	17 4	11 51	16 10	9 35
14	C	5 Sunday in Lent	—	—	0 7	17 10	9 18
15	M	Proper [Exodus iii; John i. Lessons. [— v; 1 Thes. v.	0 20	17 2	0 35	17 11	9 1
16	Tu	Julius Cæsar died	0 52	17 3	1 8	17 8	8 44
17	W	St. Patrick	1 23	17 0	1 40	17 1	8 26
18	Th	Edwd. King, West S.	1 57	16 4	2 15	16 1	8 9
19	F	Cambridge term ends	2 31	15 5	2 52	14 11	7 51
20	S	Oxford term ends	3 11	14 4	3 34	13 7	7 33
21	C	6 Sunday in Lent.	3 59	12 10	4 29	12 3	7 15
22	M	Pro. [Exodus ix; Matt. xxvi. Les. [— x; Heb. v to v. 11.	5 5	12 3	5 18	11 7	6 56
23	Tu	Sirius souths 6 a 34	6 33	12 1	7 18	12 3	6 38
24	W	Q. Elizabeth d., 1603	8 0	13 10	8 38	14 0	6 20
25	Th	Lady Day	9 10	16 0	9 39	16 1	6 1
26	F	Good Friday	10 5	18 1	10 28	17 11	5 42
27	S	Peace of Amiens, 1802	10 50	19 9	11 11	19 4	5 24
28	C	Easter Sunday	11 32	20 10	11 53	20 0	5 5
29	M	Proper [Exodus xii; Rom. vi. Lessons. [— xiv; Acts ii to v 22.	—	—	0 16	21 1	4 47
30	Tu	Easter Tuesday	0 37	19 11	0 59	20 5	4 28
31	W	Oxford term begins	1 21	19 1	1 43	19 0	4 10





Bristol tides				SUN.							MOON.					ASPECTS AND WEATHER.			
morn.		even.		height	rises		sets.		rt. ascen.		declin. S.	rises.		souths.		declin.			
D.	H. M.	H. M.	F. I.	I.	H. M.	H. M.	N. H.	H. M.	M. S.	°	'	"	H. M.	H. M.	M.	°	'	"	D.
1	9 14	9 33	36	4	6 51	5 35	22	49	49	7 27	8		9a56	2m35	2s35	18	1		Now
2	9 53	10 14	34	3	6 49	5 37	22	53	33	7 4	16		11 16	3 28	7 34	19	2		inclined
3	10 32	10 49	31	8	6 47	5 39	22	57	17	6 41	17		morn	4 21	11 56	20	3	♀	stationary
4	11 9	11 31	27	11	6 44	5 41	23	1	0	6 18	13		0 32	5 13	15 28	21	4		to rain
5	—	0 5	24	0	6 42	5 43	23	4	43	5 55	4		1 43	6 5	18 1	22	5	♂	in Aphelion
6	0 22	0 54	20	9	6 39	5 44	23	8	25	5 31	49		2 47	6 56	19 31	23	6		more
7	1 33	2 16	20	0	6 37	5 46	23	12	7	5 8	30		3 43	7 46	19 57	24	7	h □ ☉, 8 a 48	
8	3 6	3 54	21	10	6 35	5 48	23	15	49	4 45	7		4 29	8 36	19 23	25	8	♀	in Aphelion
9	4 32	5 24	1	1	6 32	5 50	23	19	30	4 21	41		5 7	9 24	17 52	26	9		or less ;
10	5 25	5 49	26	4	6 30	5 52	23	23	11	3 58	11		5 37	10 10	15 32	27	10	♂ ☉ ☉, 9 a 43	
11	6 13	6 33	27	3	6 27	5 54	23	26	52	3 34	38		6 3	10 55	12 32	28	11	♀ ☉ ☉, 11 a 7	
12	6 50	7 5	28	11	6 25	5 56	23	30	32	3 11	2		6 27	11 38	9 0	29	12	♀ ☉ ☉, 5 m 40	
13	7 23	7 40	30	4	6 22	5 58	23	34	12	2 47	24		sets.	0a21	5 5	N	13		changeable
14	7 57	8 11	31	3	6 20	6 0	23	37	52	2 23	45		7a12	1 3	0 57	1	14		and
15	8 26	8 42	31	7	6 17	6 2	23	41	31	2 0	4		8 16	1 45	3m15	2	15	♂ ☉ ☉, 11 m 28	
16	8 57	9 11	31	6	6 15	6 4	23	45	11	1 36	22		9 24	2 28	7 22	3	16		showery,
17	9 26	9 42	30	8	6 12	6 6	23	48	50	1 12	39		10 34	3 13	11 13	4	17		which
18	9 59	10 12	29	4	6 10	6 7	23	52	29	0 48	56		11 44	4 0	16 6	5	18	♂	gr. elon. W.
19	10 30	10 46	27	8	6 7	6 9	23	56	8	0 25	13		morn	4 4	18 26	6	19		may
20	11 5	11 27	25	3	6 5	6 11	23	59	46	0 1	31		0 51	5 41	19 48	7	20	☉	ent. Aries,
21	11 54	—	22	10	6 3	6 13	0	3	24	0 22	10		1 55	6 36	19 59	8	21		[Spring com.
22	0 24	1 2	21	2	6 0	6 15	0	7	3	0 45	50		2 54	7 33	19 35	9	22	♂ ☉ ☉, 4 m 58	
23	1 43	2 37	22	4	5 57	6 17	0	10	41	1 9	29		3 44	8 31	17 47	10	23		continue
24	3 28	4 10	26	1	5 55	6 19	0	14	19	1 33	5		4 26	9 29	14 42	11	24	♂ ☉ ☉, 0 a 14	
25	4 44	5 13	29	10	5 52	6 21	0	17	57	1 56	40		5 1	10 26	10 31	12	25		with
26	5 42	6 8	31	7	5 50	6 22	0	21	35	2 20	11		5 31	11 22	5 33	13	26	h	stationary
27	6 33	6 57	34	4	5 47	6 24	0	25	13	2 43	40		rises.	morn	—	F	27	♂	stationary
28	7 20	7 42	36	5	5 45	6 26	0	28	51	3 7	5		7a26	0 18	0 12	15	28		intervals
29	8 7	8 28	36	11	5 43	6 28	0	32	29	3 30	27		8 50	1 12	5 6	16	29		of
30	8 49	9 9	36	2	5 40	6 30	0	36	7	3 53	44		10 11	2 6	9 58	17	30	♀	gr. hel. I.S.
31	9 29	9 48	34	1	5 38	6 32	0	39	45	4 16	58		11 27	3 1	14 5	18	31		sunshine.

LUNAR DISTANCES FROM THE SUN.
Mean Astronomical Time at Greenwich.

M.	NOON.	3 HOURS.	6 HOURS.	9 HOURS.	MIDN.	15 HOUR.	18 HOUR.	21 HOUR.
D.	° / "	° / "	° / "	° / "	° / "	° / "	° / "	° / "
1	137 37 11	135 55 29	134 14 11	132 33 16	130 52 47	129 12 44	127 33 6	125 53 53
2	124 15 7	122 36 48	120 58 55	119 21 28	117 44 28	116 7 55	114 31 48	112 56 7
3	111 20 53	109 46 6	108 11 44	106 37 48	105 4 18	103 31 13	101 58 33	100 26 18
4	98 54 27	97 23 1	95 51 58	94 21 18	92 51 1	91 21 6	89 51 34	88 22 22
5	86 53 32	85 25 3	83 56 54	82 29 4	81 1 34	79 34 22	78 7 29	76 40 53
6	75 14 34	73 48 32	72 22 46	70 57 15	69 32 0	68 7 0	66 42 13	65 17 41
7	63 53 22	62 29 15	61 5 20	59 41 38	58 18 7	56 54 46	55 31 36	54 8 36
8	52 45 46	51 23 5	50 0 32	48 38 8	47 15 52	45 53 44	44 31 43	43 9 49
9	41 48 2	40 26 21	39 4 46	37 43 17	36 21 53	35 0 35	33 39 22	32 18 14
10	30 57 12	29 36 14	28 15 21	26 54 33	25 33 50	24 13 13	22 52 41	21 32 16
11	23 45 55	22 25 7	21 5 57	20 52 29	19 32 15	18 12 41	16 52 30	15 32 30
12	34 46 38	33 26 9	32 7 56	31 33 24	30 14 49	28 55 47	27 36 43	26 17 13
13	45 57 43	44 37 22	43 17 48	42 7 15	40 57 18	39 37 33	38 17 54	36 58 34
14	57 20 41	56 0 47	54 41 1	53 21 35	52 1 40	50 42 23	49 22 63	48 3 25
15	68 58 11	67 38 23	66 18 71	65 5 11	63 42 7	62 22 53	61 3 77	59 54 43
16	80 53 19	79 33 24	78 13 7	76 53 14	75 33 26	74 13 29	72 53 38	71 33 8
17	93 9 12	91 49 47	90 29 96	89 9 44	87 49 51	86 29 99	85 9 25	83 49 45
18	105 48 22	104 28 51	103 9 109	101 49 59	100 29 112	99 9 113	97 49 115	96 29 117
19	118 52 1	117 32 41	116 12 122	114 52 6	113 32 125	112 12 127	110 52 128	109 32 130
20	130 36 57	129 16 129	128 5 127	126 55 51	125 35 124	124 15 122	122 55 121	121 35 119

to reduce it to mean time.

IN THE TIDE TABLE FOR BRISTOL, on the right-hand pages, the heights are given of those Tides which happen nearest to noon in each day at the Cumberland Gates, without taking into account the diurnal inequality of the height.

PHASES OF THE MOON. { LAST QUARTER, 3rd day, at 8h. 48m. evening.
NEW MOON, 12th day, at 1h. 47m. morning.
FIRST QUARTER, 19th day, at 3h. 6m. evening.
FULL MOON, 26th day, at 6h. 21m. morning.

M D.	Day brek.	Twil. ends.	☉'s semi.	♂ Mercury rises. sout.	♀ Venus. rises. sout.	♂ Mars. sets. sout.	♂ Jupiter. sets. sout.	♂ Saturn. rises. sout.	M D.
1	3m26	8 a 43	16 2	5m16 10m39	5 m31 11m 20	4m37 8 a 35	7 a 38 0 a 49	0m28 4m26	1
8	3 49	2 16 0	4 53 10 52	5 15 11 34	4 8 8 10	7 20 0 28	11a59 3 58		8
15	2 20 9	23 15 58	4 41 11 9	5 0 11 38	3 41 7 47	rises. 0 6	11 30 3 30		15
22	2 12 9	45 15 56	4 42 11 30	4 46 11 43	3 16 7 26	4m46 11m45	11 23 2 22		22
29	1 42 10	12 15 54	4 32 11 57	4 32 11 48	2 51 7 7	4 21 11 24	10 33 2 33		29

M D	W D	Remarkable Days	HIGH WATER.—LIVERPOOL.				Equation of Time.					
			MORNING.		EVENING.							
			Time.	Height.	Time.	Height.						
1	Th	Day incr. 5h. 45m.	2	4	17	7	2	26	16	11	3	52
2	F	Cam. Term begins	2	47	15	11	3	11	14	10	3	34
3	S	Richard, Bishop	3	33	14	1	3	59	12	8	3	16
4	C	1st Sun. after Easter	4	28	12	4	5	3	11	1	2	58
5	M	Proper [Numbers xvi; Acts i. Lessons. [— xxii; Heb. vi.	5	45	11	6	6	27	10	7	2	40
6	Tu	Old Lady Day	7	11	11	9	7	49	11	2	2	23
7	W	Lalande died, 1811	8	26	12	9	8	55	12	6	2	6
8	Th	Arcturus south, 1 m 4	9	19	14	2	9	41	13	11	1	49
9	F	Lord Bacon d., 1626	10	2	15	5	10	20	15	1	1	32
10	S	Regulus souths 8 a 45	10	35	16	6	10	51	16	1	1	16
11	C	2 Sunday aft Easter	11	4	17	2	11	20	16	10	0	59
12	M	Pro. [Num. xxiii; xxiv; Acts viii. Less. [— xxv; Heb. xiii.	11	35	17	8	11	51	17	4	0	44
13	Tu	Sir G. C. Lewis d. 1863	—	—	—	—	0	6	17	11	0	28
14	W	Handel died, 1759	0	22	17	6	0	39	17	9	0	13
15	Th	Easter Term begins	0	46	17	4	1	13	17	2	0	2
16	F	B. of Culloden, 1746	1	30	16	8	1	50	16	4	0	17
17	S	Ben, Franklin d. 1790	2	9	15	11	2	31	15	1	0	31
18	C	3 Sun. after Easter	2	52	14	8	3	17	13	9	0	45
19	M	Proper [Deut. iv; Acts xv. Lessons. [— v; 1 Peter ii.	3	43	13	7	4	14	12	5	0	58
20	Tu	Regulus souths 8 a 5	4	51	12	10	5	33	11	11	1	11
21	W	Bishop Heber b. 1783	6	16	12	11	6	59	12	8	1	24
22	Th	Pleiades sets 10 a 10	7	40	14	4	8	15	14	3	1	36
23	F	St. George	8	46	16	2	9	13	15	6	1	48
24	S	Oliver Cromwell born	9	39	18	0	10	4	17	8	1	59
25	C	4 Sun. after Easter	10	27	19	4	10	46	18	10	2	10
26	M	Pro. [Deut. vi; Acts xxii. Les. [— vii; 1 John i.	11	8	20	0	11	30	19	4	2	20
27	Tu	Sir W. Jones d. 1794	11	50	20	1	—	—	—	—	2	30
28	W	Mutiny of Bounty	0	14	19	3	0	35	19	4	2	39
29	Th	Pleiades set 9 a 42	0	57	18	7	1	17	18	1	2	48
30	F	Jas. Montgomery died	1	39	17	4	1	59	16	4	2	56

[1854

[1854]

ristol tides					SUN.					MOON.					ASPECTS AND WEATHER.	
morn.	even.	height			rises.	sets.	rt. ascen.	declin. N.		rises.	souths declin.					
M. H. M. F. I.	H. M. H. M. F. I.				H. M. H. M. H. M. S.			° ' "		H. M. H. M. H. M. S.						
8 10 26 31 2	5 35 6 34	0 43 24	4 40 7	morn 3m54 17s13 19	1	h δ (, 5a47										
46 11 5 27 8	5 33 6 36	0 47 2	5 3 11	0 36 4 48 19 14 20	2	Changeable										
27 11 52 23 10	5 30 6 38	0 50 41	5 26 9	1 37 5 40 20 6 21	3	h □ ⊙, 4 m 6										
0 22 20 8	5 28 6 40	0 54 19	5 49 2	2 28 6 31 19 53 22	4	and										
58 1 37 19 6	5 25 6 41	0 57 58	6 11 49	3 10 7 20 18 39 23	5	showery.										
28 3 14 20 9	5 23 6 43	1 1 37	6 34 30	3 44 8 7 16 33 24	6	Showers										
57 4 28 23 4	5 20 6 45	1 5 17	6 57 4	4 10 8 52 13 44 25	7	at										
53 5 16 25 9	5 18 6 47	1 8 56	7 19 31	4 35 9 36 10 20 26	8	(in Apogee										
38 5 58 27 8	5 16 6 49	1 12 36	7 41 51	4 59 10 19 6 30 27	9	intervals.										
16 6 34 28 7	5 14 6 50	1 16 16	8 4 3	5 13 11 1 2 22 28	10	δ δ (, 8 m 13										
49 7 6 30 0	5 11 6 52	1 19 57	8 26 7	5 31 11 43 1 53 29	11	δ δ (, 7 m 18										
23 7 40 31 2	5 9 6 54	1 23 37	8 48 2	sets. 0a26 6 7 N 12	12	δ δ (, 6 m 34										
57 8 13 31 8	5 6 6 56	1 27 18	9 9 49	8a30 1 11 10 9 1 13	13	Now										
29 8 35 31 8	5 4 6 58	1 31 0	9 31 26	9 38 1 57 13 47 2 14	14	more										
1 9 16 31 0	5 17 0	1 34 41	9 52 55	10 45 2 46 16 48 3 15	15	fair										
35 9 52 29 9	4 59 7 1	1 38 23	10 14 13	11 50 3 37 19 0 4 16	16	and										
11 10 29 28 3	4 57 7 3	1 42 6	10 35 21	morn 4 31 20 9 5 17	17	δ δ ⊙, 6 m 12										
51 11 13 25 11	4 55 7 5	1 45 49	10 56 19	0 50 5 26 20 7 6 18	18	h δ (, 11 m 40										
40 — — 23 7	4 52 7 7	1 49 32	11 17 6	1 42 6 22 18 49 7 19	19	warm										
12 0 48 22 1	4 50 7 9	1 53 15	11 37 42	2 25 7 18 16 16 8 20	20	but										
27 2 15 23 3	4 48 7 11	1 56 59	11 58 6	3 1 8 14 12 37 9 21	21	δ δ (, 1 m 10										
6 3 47 26 7	4 45 7 13	2 0 43	12 18 18	3 32 9 8 8 4 10 22	22	still										
20 4 48 29 10	4 43 7 15	2 4 28	12 38 18	3 59 10 3 2 56 11 23	23	δ δ ⊙, 1 m 25										
15 5 43 32 8	4 41 7 17	2 8 13	12 58 5	4 23 10 56 2 24 12 24	24	δ δ ⊙, 6 a 8										
8 6 30 33 9	4 39 7 18	2 11 59	13 17 40	4 46 11 50 7 33 13 25	25	showery										
54 7 18 35 1	4 37 7 20	2 15 45	13 37 1	rises. morn — — F 26	26	δ δ ⊙, 7 a 40										
40 8 5 35 6	4 35 7 22	2 19 32	13 56 9	9 a 2 0 44 12 11 15 27	27	and										
25 8 46 34 6	4 32 7 24	2 23 19	14 15 3	10 18 1 39 15 57 16 28	28	changeable.										
5 9 25 32 9	4 30 7 26	2 27 7	14 33 44	11 26 2 34 18 37 17 29	29	h δ (, 1 m 53										
43 10 3 30 2	4 28 7 28	2 30 55	14 52 10	morn 3 29 20 5 18 30	30	δ in ♂, 7 a 12										

LUNAR DISTANCES FROM THE SUN.

Mean Astronomical Time at Greenwich.

NOON.	3 HOURS.	6 HOURS.	9 HOURS.	MIDN.	15 HOUR.	18 HOUR.	21 HOUR.
° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "
118 2 39	116 30 17	114 58 21	113 26 50	111 55 43	110 25 1	108 54 43	107 24 49
105 55 18	104 26 11	102 57 26	101 29 2	100 1 1	98 33 21	97 6 1	95 39 2
94 12 23	92 46 2	91 20 0	89 54 17	88 28 51	87 3 42	85 38 50	84 14 14
82 49 53	81 25 47	80 1 55	78 38 17	77 14 53	75 51 40	74 28 40	73 5 52
71 43 14	70 20 47	68 58 30	67 36 22	66 14 23	64 52 33	63 30 50	62 9 15
60 47 46	59 26 24	58 5 8	56 43 58	55 22 52	54 1 52	52 40 55	51 20 2
49 59 13	48 38 27	47 17 43	45 57 2	44 36 24	43 15 47	41 55 11	40 34 37
39 14 5	37 53 33	36 33 3	35 12 33	33 52 5	32 31 37	31 11 11	29 50 46
28 3 45	29 29 19	30 55 9	32 21 16	33 47 39	35 14 17	36 41 10	38 8 17
39 35 39	41 3 16	42 31 6	43 19 11	45 27 29	46 56 2	48 24 49	49 53 50
51 23 5	52 52 35	54 22 18	55 52 17	57 22 30	58 52 57	63 23 40	61 54 37
63 25 49	64 57 17	66 28 59	68 0 58	69 33 12	71 5 41	72 38 27	74 11 29
75 44 46	77 18 21	78 52 11	80 26 18	82 0 42	83 35 23	85 10 20	86 45 34
88 21 5	89 56 54	91 32 59	93 9 22	94 46 1	96 22 58	98 0 12	99 37 42
101 15 30	102 53 34	104 31 55	106 10 33	107 49 26	109 28 36	111 8 1	112 47 42
114 27 38	116 7 49	117 48 14	119 28 53	121 9 46	122 50 51	124 32 9	136 13 38
127 55 19	129 37 10	131 19 10	133 1 19	134 43 36	136 26 0	138 8 29	139 51 4
137 18 6	135 45 38	134 13 32	132 41 48	131 10 25	129 39 25	128 8 47	126 38 30
125 8 35	123 39 2	122 9 51	120 41 1	119 12 31	117 44 23	116 16 34	114 49 6

THE SUN'S RIGHT ASCENSION is given in time to the nearest second for Greenwich mean noon, and with the table of the right ascension of the principal fixed stars, in page 29, is useful to find the time by the meridian distance of those stars. The SUN'S DECLINATION is also given for Greenwich mean noon, and may be used to any other place by applying the proportional part of the daily difference.

PHASES OF THE MOON. { LAST QUARTER, 3rd day, at 1h. 40m. evening.
NEW MOON, 11th day, at 4h. 7m. evening.
FIRST QUARTER, 18th day, at 9h. 30m. evening.
FULL MOON, 25th day, at 3h. 23m. evening.

M D.	Day brek.	Twil. ends	☉'s semi.	♂ Mercury sets sout.	♀ Venu. rises sout.	♂ Mars. sets. sout.	♂ Jupiter. rises. sout.	♂ Saturn. rises. sout.	M D.
1	1m31	10a28	15 54	7 a 47 0 a 6	4m28 11m50	2m42 7 a 1	4m14 11m18	10a25 2m24	1
8	0 25	11 16	15 52	8 55 0 38	sets 11 56	2 17 6 43	3 49 10 57	9 55 1 55	8
15	noreal night.	noreal night.	15 51	9 53 1 7	8 a 2 0 a 3	1 53 6 26	3 25 10 35	9 25 1 26	15
22	noreal night.	noreal night.	15 50	10 20 1 28	8 25 0 11	1 29 6 9	3 0 10 14	8 55 0 56	22
29	noreal night.	noreal night.	15 48	10 26 1 37	8 46 0 20	1 55 53	2 36 9 53	8 25 0 27	29

M W D D	Remarkable Days	HIGH WATER.—LIVERPOOL.				Equation of Time.	
		MORNING.		EVENING.			
		Time.	Height	Time.	Height.		
1 S	St. Philip & St James	2 22	15 10	2 46	14 5	3	4
2 C	Rogation Sunday	3 9	14 4	3 33	12 8	3	11
3 M	Proper [Deut. viii; Acts xviii. Lessons. — ix; Rom. i.	3 59	12 10	4 28	11 4	3	18
4 Tu	Dr. Barrow died, 1677	5 5	12 1	5 45	10 10	3	24
5 W	Napoleon I died, 1821	6 23	11 9	6 59	11 1	3	30
6 Th	Ascension Day	7 35	12 7	8 8	12 2	3	34
7 F	Altair rises 9 a 49	8 35	13 6	9 0	13 5	3	39
8 S	Easter Term ends	9 21	14 11	9 41	14 8	3	43
9 C	Sun. aft. Ascen. Day	10 0	15 11	10 16	15 9	3	46
10 M	Pro. [Deut. xii; Matt. vii. Les. — xiii; Rom. viii.	10 32	16 8	10 48	16 6	3	48
11 Tu	Lord Chatham d. 1778	11 5	17 4	11 25	17 0	3	50
12 W	Ld. Strafford bhd. 1641	11 40	17 6	11 56	17 5	3	52
13 Th	Old May Day	—	—	0 13	17 6	3	52
14 F	Oxford Term ends	0 31	17 5	0 51	17 1	3	53
15 S	D. O'Connell d., 1847	1 10	17 2	1 31	16 4	3	52
16 C	Whit Sunday	1 54	16 4	2 16	15 3	3	52
17 M	Proper [Deut xvi to v 18; Acts x v. 31 Lessons. [Isa. xi.; Acts xix to v. xxi	2 39	15 5	3 6	14 2	3	50
18 Tu	Whit Tuesday	3 36	14 5	4 7	13 1	3	48
19 W	Dunstan, Archbishop	4 44	13 9	5 23	12 8	3	46
20 Th	Columbus died, 1506	6 13	13 10	6 36	13 2	3	43
21 F	Heber died, 1783	7 14	14 10	7 46	14 5	3	39
22 S	Trinity Term begins	8 16	16 2	8 44	15 9	3	35
23 C	Trinity Sunday.	9 12	17 4	9 40	17 1	3	31
24 M	Proper [Genesis i; Matt. iii. Lessons. [— xviii; 1 John v.	10 6	18 3	10 30	17 10	3	26
25 Tu	Prin. Helena b. 1846	10 52	18 7	11 13	18 3	3	20
26 W	Arcturus souths 9 a 51	11 34	18 6	11 53	18 4	3	14
27 Th	Corpus Christi	—	—	0 16	18 0	3	8
28 F	Wm. Pitt born, 1759	0 36	17 10	0 58	17 6	3	1
29 S	K. Chas. II. restored	1 19	17 1	1 40	15 9	2	53
30 C	1 Sun. after Trinity	2 2	16 4	2 24	14 4	2	45
31 M	Pro. [Joshua x; Matt. xxviii. Les. [— xxiii; 1 Cor. xlii.	2 45	14 8	3 8	13 1	2	37



Bristol tides.					SUN.					MOON.					ASPECTS AND WEATHER.	
M D.	morn. H. M.	even. H. M.	height F. I.	rises. H M	sets. H M	rt. ascen. H. M. S.	declin. N ° ' "	rises. H. M.	south H. M.	declin. ° ' "	M D.					
1	10 24	10 43	27 5	4 26	7 30	2 34 44	15 10 21	0 m 22	4 m 22	20 s 21	19 1	This				
2	11 3	11 26	24 4	4 24	7 31	2 38 33	15 28 18	1 7	5 13	19 30	20 2	month				
3	11 51	—	21 7	4 22	7 33	2 42 23	15 45 59	1 44	6 2	17 42	21 3	fair				
4	0 23	0 58	19 11	4 20	7 35	2 46 14	16 3 25	2 14	6 48	15 5	22 4	and				
5	1 33	2 15	20 6	4 18	7 37	2 50 5	16 20 35	2 38	7 33	11 51	23 5	☽ in Perihel.				
6	2 59	3 38	22 9	4 16	7 39	2 53 57	16 37 28	3 0	8 16	8 7	24 6	warm				
7	4 8	4 34	24 11	4 14	7 40	2 57 49	16 54 5	3 19	8 58	4 3	25 7	at				
8	4 56	5 17	27 0	4 12	7 42	3 1 42	17 10 26	3 37	9 40	0 n 13	26 8	the				
9	5 37	5 55	28 8	4 10	7 44	3 5 35	17 26 29	3 56	10 23	4 32	27 9	☽ in sup. ☽ ☉				
10	6 13	6 32	29 3	4 8	7 46	3 9 29	17 42 15	4 16	11 7	8 44	28 10	☽ ☽ ☽, 2 m 32				
11	6 51	7 12	30 5	4 6	7 47	3 13 24	17 57 43	sets.	11 53	12 37	N 11	☽ ☽ ☽, 2 a 55				
12	7 29	7 47	31 2	4 4	7 49	3 17 19	18 12 53	8 a 35	0 a 42	15 58	1 12	☽ ☽ ☽, 7 a 57				
13	8 4	8 21	31 4	4 3	7 51	3 21 15	18 27 45	9 42	1 33	18 33	2 13	commen't				
14	8 40	8 58	31 1	4 1	7 53	3 25 11	18 42 18	10 45	2 27	20 6	3 14	Still				
15	9 17	9 38	30 1	3 59	7 54	3 29 8	18 56 32	11 41	3 22	20 9	4 15	☽ ☽ ☽, 6 a 44				
16	9 58	10 17	28 10	3 57	7 56	3 33 5	19 10 28	morn	4 18	19 35	5 16	more				
17	10 41	11 7	27 0	3 56	7 58	3 37 3	19 24 3	0 27	5 14	17 26	6 17	fair				
18	11 34	—	25 0	3 54	7 59	3 41 2	19 37 19	1 5	6 9	14 8	7 18	☽ ☽ ☽, 10 a 25				
19	0 7	0 40	23 8	3 53	8 1	3 45 1	19 50 15	1 37	7 2	9 57	8 19	☽ ☽ ☽, 8 a 26				
20	1 13	1 50	24 4	3 51	8 2	3 49 0	20 2 50	2 4	7 55	5 6	9 20	and				
21	2 35	3 16	26 11	3 50	8 4	3 53 0	20 15 5	2 27	8 47	0 4	10 21	pleasant.				
22	3 49	4 18	29 4	3 48	8 6	3 57 1	20 26 59	2 49	9 39	5 s 15	11 22	Now				
23	4 47	5 17	31 3	3 47	8 7	4 1 2	20 38 32	3 12	10 31	10 6	12 23	changeable				
24	5 45	6 12	32 1	3 45	8 9	4 5 3	20 49 44	3 37	11 25	14 18	13 24	inclined				
25	6 36	6 59	32 9	3 44	8 10	4 9 5	21 0 34	rises.	morn	—	F 25	to				
26	7 23	7 43	33 1	3 43	8 11	4 13 8	21 11 2	9 a 7	0 20	17 34	15 26	☽ ☽ ☽, 8 m 29				
27	8 7	8 26	32 5	3 41	8 13	4 17 11	21 21 9	10 9	1 15	19 40	16 27	showery				
28	8 47	9 7	31 2	3 40	8 14	4 21 15	21 30 54	11 2	2 10	20 33	17 28	and				
29	9 26	9 46	29 4	3 39	8 16	4 25 19	21 40 16	11 43	3 3	20 13	18 29	☽ gr. elon. E.				
30	10 5	10 22	27 5	3 38	8 17	4 29 23	21 49 16	morn	3 54	18 49	19 30	wet				
31	10 42	11 3	25 3	3 37	8 18	4 33 28	21 57 53	0 15	4 42	16 30	20 31	weather.				

LUNAR DISTANCES FROM THE SUN.

Mean Astronomical Time at Greenwich.

M. D.	NOON.	3 HOURS.	6 HOURS.	9 HOURS.	MIDN.	15 HOUR.	18 HOUR.	21 HOUR.
	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "
1	113 21 58	111 55 9	110 28 39	109 2 27	107 36 33	106 10 57	104 45 38	103 20 35
2	101 55 49	100 31 18	99 7 2	97 43 1	96 19 14	94 55 40	93 32 19	92 9 10
3	90 46 14	89 23 28	88 0 53	86 38 28	85 16 13	83 54 6	82 32 8	81 10 17
4	79 48 34	78 26 58	77 5 27	75 44 2	74 22 42	73 1 26	71 40 15	70 19 6
5	68 58 0	67 36 57	66 15 55	64 54 55	63 33 56	62 12 56	60 51 57	59 30 57
6	58 9 55	56 48 53	55 27 48	54 6 41	52 45 31	51 24 18	50 3	48 41 41
7	47 20 16	45 58 47	44 37 14	43 15 35	41 53 52	40 32 3	39 10 9	37 48 10
8	36 26 6	35 3 55	33 41 40	32 19 20	30 56 55	29 34 26	28 11 54	26 49 19
9	22 14 22	23 43 8	25 12 22	26 42 0	28 12 1	29 42 22	31 13 3	32 44 3
10	34 15 19	35 46 53	37 18 42	38 50 46	40 23 5	41 55 39	43 28 26	45 1 27
11	46 34 41	48 8 9	49 41 48	51 15 41	52 49 45	54 24 2	55 58 30	57 33 10
12	59 8 1	60 43 4	62 18 18	63 53 43	65 29 19	67 5 6	68 41 4	70 17 12
13	71 53 30	73 30 0	75 6 38	76 43 28	78 20 27	79 57 36	81 34 56	83 12 24
14	84 50 2	86 27 50	88 5 46	89 43 52	91 22 7	93 0 30	94 39 2	96 17 42
15	97 56 30	99 35 27	101 14 31	102 53 42	104 33 0	106 12 25	107 51 57	109 31 35
16	111 11 19	112 51 9	114 31 4	116 11 3	117 51 7	119 31 14	121 11 25	122 51 39
17	124 31 55	126 12 14	129 52 33	129 32 53	131 13 12	132 53 31	134 33 49	136 14 4
18	132 26 37	130 59 48	122 33 16	128 7 0	126 41 0	125 15 16	123 49 47	122 24 33
19	120 59 34	119 34 49	118 10 18	116 46 1	115 21 57	113 58 6	112 34 27	111 10 59
20	109 47 43	108 24 38	107 1 43	105 38 58	104 15 23	102 53 56	101 31 37	100 9 25

THE SUN'S RISING AND SETTING, and the MOON'S RISING, SOUTHING, AND SETTING are given, for Latitude 54° 10' N., and Longitude 4° 30' W.
THE MOON'S DECLINATION is given to the nearest minute for her transit over the meridian of Greenwich.

PHASES OF THE MOON.	LAST QUARTER,	2nd day, at 7h. 21m. morning.
	NEW MOON,	10th day, at 3h. 52m. morning.
	FIRST QUARTER,	17th day, at 2h. 15m. morning.
	FULL MOON,	24th day, at 1h. 39m. morning.

M D.	Day brek.	Twil. ends.	☉'s semi.	☿ Mercury sets. sout.	♀ Venus. sets. sout.	♂ Mars. sets. sout.	♃ Jupiter. rises. sout.	♄ Saturn. rises. sout.	M D.
1	no real ni. this mon.	no real ni. this mon.	15 48	10a21 1a37	8a54 0a24	0m56 5a47	2m25 9m43	8a12 0m14	1
8			15 47	9 55 1 26	9 11 0 34	0 32 5 32	2 19 22	sets. 11a40	8
15			15 47	9 11 0 58	9 23 0 44	0 6 5 17	1 36 9 0	3m12 11 10	15
22			15 46	rises. 0 17	9 30 0 54	11a43 5 3	1 11 8 38	2 43 10 41	22
29			15 46	3m37 11m33	9 32 1 4	11 20 4 49	0 46 8 16	2 14 10 11	29

M W D D	Remarkable Days	HIGH WATER.—LIVERPOOL.				Equation of Time.	
		MORNING.		EVENING.			
		Time.	Height.	Time.	Height.		
1 Tu	Nicomede, Martyr	3 32	13 7	3 56	11 11	2 28	
2 W	Lyra souths 1 m 50	4 23	12 7	4 54	11 4	2 19	
3 Th	W. Harvey died, 1657	5 28	12 2	6 4	11 3	2 9	
4 F	Bat. of Magenta, 1859	6 35	12 4	7 4	11 10	1 59	
5 S	Boniface, Bishop	7 33	13 1	8 4	12 10	1 49	
6 C	2 Sun. after Trinity	8 31	14 0	8 56	14 0	1 38	
7 M	Proper [Judges iv; Mark vii. Lessons. [— v; 1 Cor. iv.	9 18	15 0	9 39	15 0	1 27	
8 Tu	Antares souths 11 a 12	10 1	15 10	10 21	16 1	1 16	
9 W	Dr. Rees died, 1825	10 40	16 6	10 58	16 10	1 4	
10 Th	Roger Bacon d. 1294	11 17	17 0	11 37	17 4	0 52	
11 F	St. Barnabas, Apostle	11 55	17 3	—	—	0 40	
12 S	Altair souths, 1 m 22	0 17	17 8	0 38	17 2	0 28	
13 C	3 Sunday aft Trinity	0 59	17 7	1 21	16 10	0 15	
14 M	Pro. [1 Sam. li; Mark xlii. Les. [— iii; 2 Cor. x.	1 45	17 2	2 9	15 11	0 3	
15 Tu	Regulus sets 11 a 42	2 34	16 6	3 3	15 1	0 10	
16 W	J. Wesley born, 1703	3 31	15 8	3 59	14 1	0 23	
17 Th	St. Alban, Martyr	4 30	14 10	5 3	13 6	0 36	
18 F	B. of Waterloo, 1815	5 38	14 6	6 12	13 5	0 48	
19 S	Mag. Char. sig. 1215	6 46	14 8	7 19	14 1	1 1	
20 C	4 Sun. after Trinity	7 51	15 4	8 22	15 0	1 14	
21 M	Pro. [1 Samuel xlii; Luke iv. Les. [— xlii; Galat. iv.	8 52	16 1	9 20	16 0	1 27	
22 Tu	Machiavelli d. 1527	9 47	16 9	10 12	16 9	1 40	
23 W	J. Hampden d. 1643	10 36	16 11	10 59	17 2	1 53	
24 Th	Midsummer Day	11 21	17 0	11 41	17 5	2 6	
25 F	Cambridge term ends	—	—	0 1	16 9	2 18	
26 S	George IV. d. 1830	0 20	17 4	0 41	16 4	2 31	
27 C	5 Sun. after Trinity	1 0	16 11	1 21	15 8	2 43	
28 M	[1 Samuel xv; Luke x. — xvii; Ephes. iv.	1 40	16 3	1 59	14 10	2 55	
29 Tu	St. Peter, Apostle	2 19	15 4	2 40	13 11	3 8	
30 W	Regulus sets 10 a 42	3 1	14 6	3 21	13 1	3 19	



Bristol tides					SUN.					MOON.					ASPECTS AND WEATHER	
D.	morn.		even.		height	rises.		sets.		rt. ascen.	declin.		N.	D.		
	H. M.	F. I.	H. M.	F. I.		H. M.	H. M.	H. M.	H. M.		'	"				
1	11 24		11 48	23	1	3 36	8 19	4 37	34	22 6	7			1	Now expect showery and ☾ ☉, 0 a 32 wet	
2	—		0 14	21	5	3 35	8 21	4 41	39	22 13	59			2		
3	0 43		1 6	20	10	3 35	8 22	4 45	46	22 21	27			3		
4	1 46		2 22	21	8	3 34	8 23	4 49	52	22 28	31			4		
5	2 58		3 35	23	9	3 33	8 24	4 53	59	22 35	13			5		
6	4 4		4 30	25	7	3 32	8 25	4 58	6	22 41	30			6	☾ ☉, 10 a 44 weather, ☾ in ☉, 4 m 55 and ☾ ☉, 8 a 34 ☾ ☉, 1 a 32 ☾ ☉, 3 m 37 more or less ☾ ☉, 0 m 58 ☾ ☉, 2 a 22 ☾ in Aphelion unsettled. Some ☉ enters ☉ [Sun. com. fine ☾ in Inf. ☉ ☉ ☾ ☉, 2 a 16 and warm about ☾ in Perihel. the end. ☉ in Apogee.	
7	4 53		5 15	27	3	3 31	8 26	5 2	14	22 47	24			7		
8	5 39		6 1	28	10	3 31	8 27	5 6	22	22 52	54			8		
9	6 22		6 43	29	5	3 30	8 28	5 10	30	22 57	59			9		
10	7 3		7 26	30	7	3 30	8 29	5 14	38	23 2	41			10		
11	7 45		8 8	31	2	3 29	8 29	5 18	47	23 6	58			11		
12	8 29		8 49	31	5	3 29	8 30	5 22	56	23 10	51			12		
13	9 10		9 31	31	1	3 29	8 31	5 27	5	23 14	19			13		
14	9 53		10 14	30	2	3 28	8 31	5 31	14	23 17	23			14		
15	10 40		11 4	28	11	3 28	8 32	5 35	23	23 20	2			15		
16	11 28		11 56	27	1	3 28	8 32	5 39	33	23 22	17			16		
17	—		0 24	25	7	3 28	8 33	5 43	42	23 24	6			17		
18	0 53		1 23	24	10	3 28	8 33	5 47	52	23 25	31			18		
19	2 0		2 41	25	9	3 28	8 33	5 52	1	23 26	31			19		
20	3 21		3 55	27	8	3 28	8 34	5 56	11	23 27	6			20		
21	4 26		4 54	29	2	3 28	8 34	6 0	20	23 27	17			21		
22	5 24		5 51	30	1	3 29	8 34	6 4	29	23 27	2			22		
23	6 18		6 43	30	4	3 29	8 34	6 8	39	23 26	23			23		
24	7 7		7 25	30	8	3 29	8 34	6 12	48	23 25	19			24		
25	7 51		8 11	30	7	3 30	8 34	6 16	57	23 23	50			25		
26	8 30		8 50	30	2	3 30	8 34	6 21	6	23 21	57			26		
27	9 9		9 26	29	3	3 31	8 34	6 25	15	23 19	39			27		
28	9 43		10 2	28	0	3 31	8 34	6 29	24	23 16	56			28		
29	10 19		10 37	26	9	3 32	8 34	6 33	33	23 13	49			29		
30	10 54		11 15	25	3	3 32	8 34	6 37	41	23 10	18			30		

LUNAR DISTANCES FROM THE SUN.
Mean Astronomical Time at Greenwich.

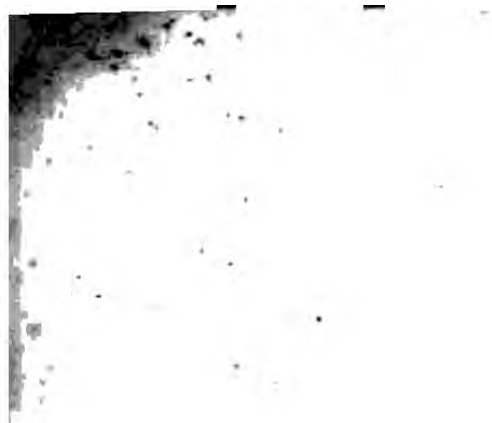
M. D.	NOON.		3 HOURS.		6 HOURS.		9 HOURS.		MIDN.		15 HOUR.		18 HOUR.		21 HOUR.	
	'	"	'	"	'	"	'	"	'	"	'	"	'	"	'	"
1	98	47	21	97	25	24	96	3	32	94	41	46	93	20	5	91
2	87	53	56	86	32	31	85	11	6	83	49	43	82	28	19	81
3	77	2	36	75	41	5	74	19	31	72	57	53	71	36	11	70
4	66	8	29	64	46	18	63	23	59	62	1	32	60	38	57	59
5	55	7	6	53	43	43	52	20	9	50	56	25	49	32	28	48
6	43	54	42	42	29	44	41	4	33	39	39	9	38	13	32	36
7	32	28	51	31	2	9	29	35	14	28	8	7	26	40	50	25
8	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
9	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
10	29	43	38	31	20	3	32	56	41	34	33	32	36	10	34	37
11	42	40	27	44	18	18	45	56	16	47	34	21	49	12	32	50
12	55	46	16	57	24	54	59	3	36	60	42	22	62	21	11	64
13	68	56	54	70	35	55	72	14	57	73	54	0	75	33	4	77
14	82	9	24	83	48	29	85	27	33	87	6	36	88	45	39	90
15	95	21	33	97	0	27	98	39	18	100	18	7	101	56	53	103
16	108	31	26	110	9	55	111	48	20	113	26	41	115	4	57	116
17	121	27	10	123	14	59	124	52	42	126	30	19	128	7	49	129
18	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
19	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
20	139	47	37	138	23	7	136	58	49	135	34	42	134	13	46	132
21	128	36	47	127	13	41	125	50	45	124	27	57	123	5	17	121
22	117	35	51	116	13	45	114	51	45	113	29	50	112	7	59	110
23	106	41	9	105	19	32	103	57	56	102	36	21	101	14	46	99
24	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
25	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
26	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
27	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
28	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
29	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
30	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...

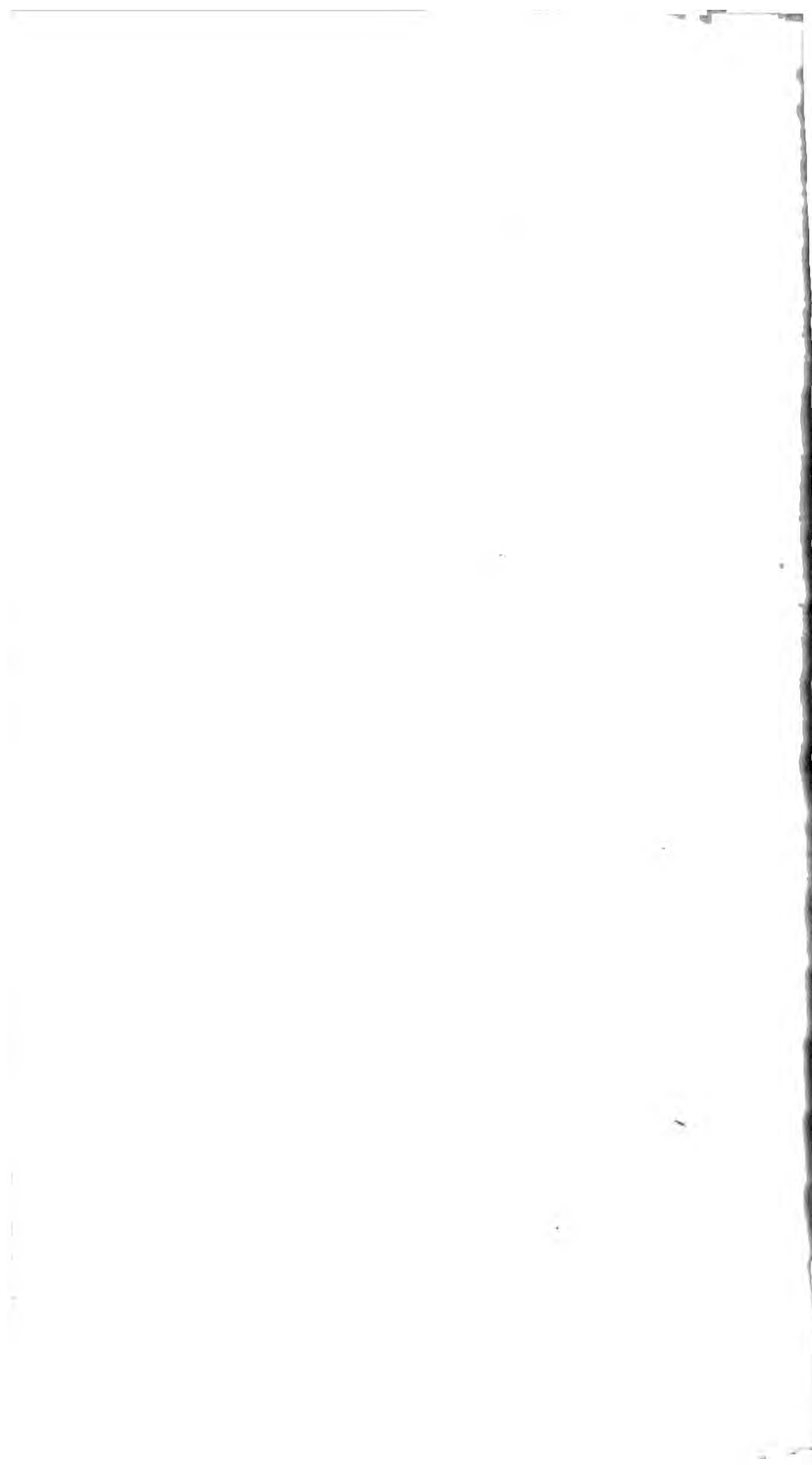
THE MOON'S SEMI-DIAMETER is given to the nearest second for Greenwich mean noon and midnight on page 26, and the HORIZONTAL PARALLAX on page 27.
THE LUNAR DISTANCES FROM THE SUN are given with a view to assist those who may not have an opportunity of using the Nautical Almanack, and are given for every three hours of Greenwich astronomical mean time. As the rest of the Almanack is adapted to CIVIL time, this distinction must be kept in mind; the Civil

PHASES OF THE MOON. { LAST QUARTER, 2nd day, at 0h. 46m. morning.
NEW MOON, 9th day, at 1h. 38m. afternoon.
FIRST QUARTER, 16th day, at 6h. 48m. morning.
FULL MOON, 23rd day, at 1h. 54m. afternoon.
LAST QUARTER, 31st day, at 5h. 6m. evening.

M	Day	Twil	☉'s	♂ Mercury	♀ Venus	♂ Mars.	♂ Jupiter.	♂ Saturn.
D.	brek.	end.	semi.	rises. sout.	sets. sout.	sets. sout.	rises. sout.	sets. sout.
1	no real ni.	no real ni.	15 46	3m 26	11 m 22	9 a 31 1 a 6	11 a 14 4 a 45	0 m 39 8 m 9
8	no real ni.	no real ni.	15 46	2 52	10 51	9 27 1 15	10 51 4 32	0 14 7 47
15	no real ni.	no real ni.	15 46	2 30	10 39	9 20 1 23	10 29 4 19	11 a 44 7 24
22	no real ni.	no real ni.	15 47	2 26	10 44	9 10 1 29	10 7 4 6	11 19 7 0
29	no real ni.	no real ni.	15 48	2 46	11 6	8 56 1 35	9 44 3 54	10 54 6 36

M	W	Remarkable Days	HIGH WATER.—LIVERPOOL.							
D	D		MORNING.		EVENING.					
			Time.	Height.	Time.	Height.				
1	Th	Bat. of Boyne, 1690	3 44	13 8	4 7	12 4				
2	F	Visit. B. V. M.	4 32	12 8	5 1	11 10				
3	S	Dog Days begin	5 33	12 5	6 5	11 8				
4	☾	6 Sun. after Trinity	6 34	12 5	7 5	12 3				
5	M	Proper [2 Samuel xii; Luke xvi. Lessons. [— xix; Phil. iv.	7 35	13 0	8 4	13 2				
6	Tu	Old Midsummer Day	8 34	13 11	9 1	14 4				
7	W	John Huss burnt, 1415	9 24	14 11	9 50	15 7				
8	Th	Adam Smith d. 1790	10 15	15 10	10 38	16 8				
9	F	Sheridan died, 1816	10 58	16 8	11 20	17 6				
10	S	Columbus born, 1447	11 42	17 4	—	—				
11	☾	7 Sun. after Trinity	0 3	18 4	0 25	17 9				
12	M	Proper [2 Samuel xxi; Luke xxii. Lessons. [— xxiv; 1 Thess. iii.	0 48	18 8	1 11	17 8				
13	Tu	Dr. Bradley d., 1752	1 37	18 5	2 1	17 1				
14	W	Bastille destroyed, 1789	2 26	17 9	2 51	16 2				
15	Th	Swithin, Bishop,	3 19	16 10	3 46	15 2				
16	F	Sir J. Reynolds b. 1723	4 13	15 8	4 41	14 1				
17	S	Dr. Watts b. 1674	5 12	14 8	5 44	13 5				
18	☾	8 Sun. after Trinity	6 16	13 11	6 49	13 5				
19	M	Proper [1 Kings xlii; John vi Lessons. [— xvii; 1 Tim. ii, iii.	7 25	14 0	7 59	14 0				
20	Tu	Margaret V. & M.	8 34	14 6	9 7	14 7				
21	W	Ld. Russel behd. 1683	9 36	15 1	10 2	15 8				
22	Th	St. Mary Magdalen	10 25	15 8	10 47	16 6				
23	F	R. Burns died, 1796	11 9	15 11	11 29	16 11				
24	S	Gibraltar taken, 1804	11 47	16 3	—	—				
25	☾	9 Sun. after Trinity	0 4	17 2	0 23	16 3				
26	M	Proper [1 Kings xvi; John xiii. Lessons. [— xix; 2 Tim. iv.	0 40	17 1	0 59	16 0				
27	Tu	Fren. Revolution, 1830	1 17	16 10	1 36	15 6				
28	W	Wilberforce died 1833	1 54	16 3	2 11	14 11				
29	Th	Pleiades rises 10 a 34	2 29	15 6	2 48	14 3				
30	F	Cook's First V. 1768	3 5	14 7	3 23	13 6				
31	S	Ign. Loyola d. 1556	3 44	13 7	4 5	12 7				





ristol tides				SUN.										MOON.										M		ASPECTS AND WEATHER.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		
rn.	even.	height		rises.	sets.	rt.	asc.	declin.	N.	sets.	souths	declin.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																

PHASES OF THE MOON. { NEW MOON, 7th day, at 10h. 8m. evening.
FIRST QUARTER, 14th day, at 0h. 41m. afternoon.
FULL MOON 22nd day, at 4h. 24m. morning.
LAST QUARTER, 30th day, at 7h. 58m. morning.

M D.	Day	Twil.	☉'s ends.	semi.	☿ Mercury rises.	sout.	♀ Venus. sets.	sout.	♂ Mars. sets.	sout.	♃ Jupiter. rises.	sout.	♄ Saturn. sets.	sout.
1	no	night	15 48		3 m 2	11 m 19	8 a 50	1 a 37	9 a 35	3 a 49	10 a 44	6 m 26	11 a 55	7 a 33
8	1 m 17	10 a 49	15 49		sets.	11 51	8 34	1 42	9 13	3 37	10 18	6 2	11 27	7 27
15	1 52	10 15	15 50		7 a 47	0 a 20	8 19	1 46	8 52	3 26	9 52	5 37	10 59	7 0
22	2 18	9 45	15 51		7 40	0 42	8 31	1 49	8 31	3 14	9 25	5 11	10 32	6 32
29	2 41	9 17	15 53		7 25	0 59	7 48	1 52	8 10	3 4	8 59	4 45	10 56	5 5

M D.	W D.	Remarkable Days	HIGH WATER.—LIVERPOOL.				EQUINOX OF TIME			
			MORNING.		EVENING.					
			Time.	Height.	Time.	Height.				
1	C	10 Sun. after Trinity	4 30	12 8	5 0	12 0	6			
2	M	Proper Lessons. [1 Kings xxi; John xx. xxii; Hebrew iv.	5 34	12 0	6 9	11 8	5			
3	Tu	E. Baines died, 1848	6 44	12 1	7 18	12 6	5			
4	W	Pilgrim Fath. S. 1620	7 52	12 10	8 27	13 8	5			
5	Th	Neptune souths 4 m 20	8 56	14 0	9 24	15 2	5			
6	F	Transfiguration	9 52	15 6	10 20	16 9	5			
7	S	Name of Jesus	10 45	16 9	11 5	18 2	5			
8	C	11 Sun. after Trinity	11 27	17 11	11 48	19 4	5			
9	M	Proper Lessons. [2 Kings v; Acts vi. ix; Hebrew xi.	—	—	0 11	18 8	5			
10	Tu	St. Lawrence	0 32	19 11	0 46	18 10	5			
11	W	Dog Days end	1 21	19 10	1 43	18 4	4			
12	Th	Lyra souths 9 a 7	2 7	19 1	2 33	17 4	4			
13	F	Old Lammas Day	2 57	17 8	3 19	16 0	4			
14	S	Printing inventd. 1437	3 43	16 1	4 9	14 4	4			
15	C	12 Sun. after Trinity	4 38	14 3	5 11	13 1	4			
16	M	[2 Kings x; Acts xiii. xviii; James v.	5 47	12 10	6 23	12 6	4			
17	Tu	Pleiades rises 9 a 19	7 4	12 6	7 42	13 1	3			
18	W	Neptune souths 3 m 28	8 20	13 2	8 52	14 2	3			
19	Th	Royal Geo. sunk, 1782	9 22	14 0	9 50	15 3	3			
20	F	R. Bloomfield d. 1823	10 15	14 10	10 35	16 1	3			
21	S	Ct. Rumford d., 1814	10 53	15 6	11 12	16 8	2			
22	C	13 Sun. after Trinity	11 30	16 0	11 44	17 2	2			
23	M	Proper Lessons. [2 Kings xix; Acts xx. xxiii; 2 Peter ii.	—	—	0 1	16 10	2			
24	Tu	St. Bartholomew	0 18	17 4	0 34	16 5	2			
25	W	Ju. Cæsar land B.C. 55	0 51	17 3	1 7	16 3	1			
26	Th	Late P. Consort b. 1819	1 23	17 0	1 38	15 10	1			
27	F	Thomson died, 1748	1 55	16 4	2 12	15 3	1			
28	S	St. Augustine, Bishop	2 27	15 6	2 45	14 7	1			
29	C	14 Sun. after Trinity	3 3	14 5	3 22	13 6	0			
30	M	Proper Lessons. [Jeremiah v; Acts xxvii. xxii; 2 & 3 John	3 45	13 3	4 9	12 6	0			
31	Tu	J. Bunyan, died, 1688	4 41	12 2	5 17	11 10	0			



PHASES OF THE MOON. { NEW MOON, 7th day, at 10h. 8m. evening.
FIRST QUARTER, 14th day, at 0h. 41m. afternoon.
FULL MOON 22nd day, at 4h. 24m. morning.
LAST QUARTER, 30th day, at 7h. 58m. morning.

M D.	Day	Twil.	☉'s ends.	semi.	☿ Mercury rises.	sout.	♀ Venus. sets.	sout.	♂ Mars. sets.	sout.	♃ Jupiter. rises.	sout.	♄ Saturn. sets.	sout.
1	no	night	15	48	3 m 2	11 m 19	8 a 50	1 a 37	9 a 35	3 a 49	10 a 44	6 m 26	11 a 55	7 a 53
8	1 m 17	10 a 49	15	49	sets.	11 51	8 34	1 42	9 13	3 37	10 18	6 2	11 27	7 27
15	1 52	10 15	15	50	7 a 47	0 a 20	8 19	1 46	8 52	3 26	9 52	5 37	10 59	7 0
22	2 18	9 45	15	51	7 40	0 42	8 31	1 49	8 31	3 14	9 25	5 11	10 32	6 32
29	2 41	9 17	15	53	7 25	0 59	7 48	1 52	8 10	3 4	8 59	4 45	10 56	5 53

M D	W D	Remarkable Days	HIGH WATER.—LIVERPOOL.				Equation of Time.
			MORNING.		EVENING.		
			Time.	Height.	Time.	Height.	
1	C	10 Sun. after Trinity	4 30	12 8	5 0	12 0	6
2	M	Proper [1 Kings xxi; John xx. Lessons. [— xxii; Hebrew iv.	5 34	12 0	6 9	11 8	5
3	Tu	E. Baines died, 1848	6 44	12 1	7 18	12 6	5
4	W	Pilgrim Fath. S. 1620	7 52	12 10	8 27	13 8	5
5	Th	Neptune souths 4 m 20	8 56	14 0	9 24	15 2	5
6	F	Transfiguration	9 52	15 6	10 20	16 9	5
7	S	Name of Jesus	10 45	16 9	11 5	18 2	5
8	C	11 Sun. after Trinity	11 27	17 11	11 48	19 4	5
9	M	Proper [2 Kings v; Acts vi. Lessons. [— ix; Hebrew xi.	—	—	0 11	18 8	5
10	Tu	St. Lawrence	0 32	19 11	0 46	18 10	5
11	W	Dog Days end	1 21	19 10	1 43	18 4	4
12	Th	Lyra souths 9 a 7	2 7	19 1	2 33	17 4	4
13	F	Old Lammas Day	2 57	17 8	3 19	16 0	4
14	S	Printing inventd. 1437	3 43	16 1	4 9	14 4	4
15	C	12 Sun. after Trinity	4 38	14 3	5 11	13 1	4
16	M	[2 Kings x; Acts xlii. — xviii; James v.	5 47	12 10	6 23	12 6	4
17	Tu	Pleiades rises 9 a 19	7 4	12 6	7 42	13 1	3
18	W	Neptune souths 3 m 28	8 20	13 2	8 52	14 2	3
19	Th	Royal Geo. sunk, 1782	9 22	14 0	9 50	15 3	3
20	F	R. Bloomfield d. 1823	10 15	14 10	10 35	16 1	3
21	S	Ct. Rumford d., 1814	10 53	15 6	11 12	16 8	2
22	C	13 Sun. after Trinity	11 30	16 0	11 44	17 2	2
23	M	Proper [2 Kings xix; Acts xx. Lessons. [— xxiii; 2 Peter ii.	—	—	0 1	16 10	2
24	Tu	St. Bartholomew	0 18	17 4	0 34	16 5	2
25	W	Ju. Cæsar land B.C, 55	0 51	17 3	1 7	16 3	1
26	Th	Late P. Consort b. 1819	1 23	17 0	1 38	15 10	1
27	F	Thomson died, 1748	1 55	16 4	2 12	15 3	1
28	S	St. Augustine, Bishop	2 27	15 6	2 45	14 7	1
29	C	14 Sun. after Trinity	3 3	14 5	3 22	13 6	0
30	M	Proper [Jeremiah v; Acts xxvii. Lessons. [— xxii; 2 & 3 John	3 45	13 3	4 9	12 6	0
31	Tu	J. Bunyan, died, 1688	4 41	12 2	5 17	11 10	0



Bristol tides				SUN.				MOON.				M	ASPECTS AND WEATHER
morn.	even.	height		rises.	sets.	rt. ascen.	declin. N.	rises.	souths.	declin.			
H. M.	H. M.	P. I.		H. M.	H. M.	H. M. S.	° ' "	H. M.	H. M.	° ' "	° ' "	D.	
—	0 21 22	1	4 14 7 57	8 46 33	17 57 56	11a34	6m17	11x23	23	1	24	♂ (, 10m38	
0 50	1 22 21	1	4 16 7 55	8 50 26	17 42 36	morn	7 4	14 54	24	2	Fair		
1 55	2 38 22	0	4 17 7 53	8 54 18	17 26 59	0 1	7 54	17 47	25	3	and		
3 19	3 59 24	4	4 19 7 51	8 58 9	17 11 4	0 37	8 47	19 47	26	4	warm		
4 30	4 59 26	9	4 21 7 49	9 2 0	16 54 53	1 24	9 44	20 37	27	5	weather		
5 28	5 58 29	4	4 23 7 47	9 5 50	16 38 25	2 23	10 42	20 5	28	6	♂ (, 3m 27		
6 27	6 50 30	8	4 24 7 45	9 9 40	16 21 41	sets.	11 42	18 8	N	7	♂ (, 1a 57		
7 13	7 37 32	11	4 26 7 43	9 13 29	16 4 41	8a13	0a40	14 51	1	8	for the		
8 2	8 23 34	5	4 28 7 41	9 17 18	15 47 26	8 42	1 37	10 30	2	9	♂ (, 3a 57		
8 36	9 9 35	1	4 30 7 39	9 21 6	15 29 55	9 7	2 32	5 28	3	10	harvest		
9 29	9 52 34	5	4 31 7 37	9 24 53	15 12 10	9 30	3 26	0 8	4	11	♂ gr. hel. l. N.		
10 16	10 36 32	11	4 33 7 35	9 28 40	14 54 10	10 3	4 18	5s 7	5	12	♂ sup. ♂ (, 11		
10 54	11 15 30	6	4 35 7 33	9 32 26	14 35 56	10 27	5 10	9 56	6	13	season. [m12		
11 37	— 27	2	4 37 7 31	9 36 12	14 17 27	10 43	6 2	14 5	7	14	h stationary		
0 3	0 30 24	0	4 38 7 29	9 39 57	13 58 46	11 15	6 54	17 19	8	15	♂ in ♂, 5m33		
1 2	1 34 22	4	4 40 7 27	9 43 41	13 39 51	11 53	7 47	19 30	9	16	Now		
2 20	3 7 23	0	4 42 7 24	9 47 25	13 20 42	morn	8 40	20 32	10	17	expect		
3 51	4 26 24	11	4 44 7 22	9 51 9	13 1 22	0 40	9 32	20 26	11	18	change		
4 57	5 24 26	6	4 46 7 20	9 54 52	12 41 49	1 34	10 22	19 15	12	19	of		
5 53	6 15 27	2	4 47 7 17	9 58 34	12 22 4	2 34	11 11	17 7	13	20	weather		
6 36	6 57 28	5	4 49 7 15	10 2 16	12 2 7	3 39	11 57	14 11	14	21	tending		
7 17	7 33 29	4	4 51 7 13	10 5 58	11 41 59	rises.	morn	—	—	F 22	to		
7 51	8 9 30	2	4 53 7 11	10 9 39	11 21 39	8a 1	0 42	10 40	16	23	rain,		
8 25	8 41 30	4	4 55 7 8	10 13 20	11 1 9	8 18	1 25	6 44	17	24	(in Apogee		
8 56	9 10 30	2	4 56 7 6	10 17 0	10 40 28	8 37	2 7	2 32	18	25	or		
9 24	9 39 29	8	4 58 7 4	10 20 40	10 19 37	8 55	2 48	1n44	19	26	frequent		
9 55	10 8 28	9	5 0 7 1	10 24 19	9 58 37	9 15	3 30	5 58	20	27	showers.		
10 23	10 38 27	5	5 2 6 59	10 27 59	9 37 26	9 37	4 13	10 0	21	28	♂ (, 10a 37		
10 54	11 14 25	5	5 4 6 57	10 31 37	9 16 6	10 1	4 58	13 39	22	29	Now		
11 35	— 23	3	5 5 6 54	10 35 16	8 54 38	10 39	5 45	16 45	23	30	more		
0 3	0 34 21	3	5 7 6 52	10 38 54	8 33 0	11 11	6 35	19 6	24	31	fair.		

LUNAR DISTANCES FROM THE SUN.

Mean Astronomical Time at Greenwich.

NOON.			3 HOURS.			6 HOURS.			9 HOURS.			MIDN.			15 HOUR.			18 HOUR.			21 HOUR.		
° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "
81 6 47	79 41 11	78 15 18	76 49 7	75 22 38	73 55 51	72 28 44	71 1 18	69 33 32	68 5 26	66 36 58	65 8 10	63 38 59	62 9 26	60 39 30	59 9 12	57 38 30	56 7 25	54 35 55	53 4 2	51 31 45	49 59 3	48 25 56	46 52 24
45 18 28	43 44 6	42 9 20	40 34 9	38 58 32	37 22 31	35 46 5	34 9 14	32 32 0	30 54 21	29 16 18	27 37 51	25 59 2	24 19 50	22 40 16	21 0 20	19 32 0	17 54 21	16 16 42	14 38 3	12 59 56	11 21 19	9 42 46	7 64 13
22 4 27	23 49 20	25 34 12	27 19 2	29 3 48	30 48 30	32 33 7	34 17 38	36 2 2	37 46 17	39 30 24	41 14 21	42 58 8	44 41 43	46 25 7	48 8 18	49 51 16	51 34 0	53 16 29	54 58 44	56 40 43	58 22 27	60 3 53	61 45 4
63 25 57	65 6 32	66 46 50	68 26 49	70 6 31	71 45 54	73 24 58	75 3 44	76 42 11	78 20 19	79 58 8	81 35 38	83 12 49	84 49 41	86 26 14	88 2 28	89 38 23	91 14 0	92 49 17	94 24 17	95 58 58	97 33 21	99 7 26	100 41 13
102 14 43	103 47 55	105 20 49	106 53 27	108 25 48	109 57 53	111 29 41	113 1 13	114 32 29	116 3 30	117 34 15	119 4 45	120 35 0	122 5 0	123 34 46	125 4 18	126 33 36	128 2 40	129 31 31	131 0 8	132 28 32	133 56 44	135 24 42	136 52 28
132 39 52	131 18 21	129 56 47	128 35 9	127 13 26	125 51 39	124 29 47	123 7 49	121 45 44	120 23 33	119 1 15	117 38 49	116 16 15	114 53 33	113 30 41	112 7 40	110 44 28	109 21 6	107 57 32	106 33 47	105 9 50	103 45 39	102 21 15	100 56 37
99 31 45	98 6 38	96 41 15	95 15 35	93 49 39	92 23 26	90 56 55	89 30 6	88 2 58	86 35 30	85 7 43	83 39 35	82 11 7	80 42 17	79 13 5	77 43 31	76 13 34	74 43 14	73 12 31	71 41 23	70 9 52	68 37 56	67 5 35	65 32 48

any other part of the Almanack would be set down as such. The letters E. and W. inserted in the first column refer to the position of the Sun; E. East, W. West

The Planets

MERCURY [♂] will be visible in the mornings about the 18th March, 17th July

PHASES OF THE MOON. { NEW MOON, 6th day, at 6h. 7m. morning.
FIRST QUARTER, 12th day, at 9h. 23m. evening.
FULL MOON, 20th day, at 8h. 41m. evening.
LAST QUARTER, 28th day, at 9h. 10m. evening.

M n.	Day brek.	Twil. ends.	☉'s semi.	♂ Mercury sets. sout.	♀ Venus. sets. sout.	♂ Mars. sets. sout.	♂ Jupiter. rises. sout.	♂ Saturn. sets. sout.
1	2m52	9 a 6 15 54	7 a 17 1 a 4	7 a 39 1 a 54	8 a 1 2 a 59	8 a 47 4m34	9 a 52 5 a 54	
8	3 10 8	44 15 55	6 59 1 15	7 22 1 57	7 41 2 49	8 20 4 7	9 25 5 27	
15	3 27 8	21 15 57	6 40 1 21	7 5 2 0	7 21 2 40	7 53 3 39	8 59 5 1	
22	3 45 8	0 15 59	6 19 1 24	6 50 2 4	7 2 2 31	7 25 3 11	8 32 4 35	
29	3 58 7	40 16 1 5	5 57 1 21	6 35 2 9	6 44 2 23	6 57 2 42	8 6 4 10	

M D	W D	Remarkable Days	HIGH WATER.—LIVERPOOL.				Equat. of Time
			MORNING.		EVENING.		
			Time.	Height.	Time.	Height.	
1	W	Giles, Abbot	5 57	11 8	6 39	12 1	0
2	Th	London burnt, 1666	7 18	12 4	7 56	13 4	0
3	F	Cromwell died 1658	8 31	13 8	9 3	15 1	0
4	S	John Home d. 1808	9 33	15 5	9 59	17 0	1
5	C	15 Sun. aft. Trinity.	10 22	17 2	10 44	18 11	1
6	M	Proper [Jere. xxxv; Matt. vi. Lessons. [— xxxvi; Rom. vi.	11 7	18 9	11 30	20 3	1
7	Tu	Enurchus, Bishop	11 50	19 7	—	—	2
8	W	Nativity B. V. Mary	0 13	21 0	0 36	19 9	2
9	Th	Wm. the Conq. died	0 59	20 9	1 21	19 3	2
10	F	Tea first import. 1391	1 43	19 8	2 5	18 0	3
11	S	Mahomed born, 569	2 28	17 10	2 52	16 4	3
12	C	16 Sun. after Trinity	3 14	15 9	3 39	14 5	3
13	M	Proper [Ezekiel ii; Matt. xiii. Lessons. [— xlii; Rom. xlii.	4 7	13 7	4 39	12 10	4
14	Tu	Holy Cross Day	5 17	11 10	5 58	11 10	4
15	W	Moscow burnt, 1812	6 41	11 4	7 23	12 4	4
16	Th	James II died, 1701	8 4	11 11	8 37	13 5	5
17	F	Lambert, Bishop	9 7	13 1	9 32	14 9	5
18	S	George I & II landed	9 54	14 4	10 16	15 11	6
19	C	17 Sun. after Trinity	10 34	15 5	10 49	16 10	6
20	M	Proper [Ezekiel xiv; Matt. xx. Lessons. [— xviii; 1 Cor. iv.	11 4	16 2	11 19	17 4	6
21	Tu	St. Matthew Apostle.	11 34	16 7	11 48	17 8	7
22	W	Battle of Kutcha, 1854	—	—	0 5	16 10	7
23	Th	H souths 7 m 25	0 20	17 8	0 37	17 1	7
24	F	Charles I. dethroned	0 52	17 6	1 6	16 9	8
25	S	Porson died, 1808	1 22	16 11	1 40	16 0	8
26	C	18 Sun. after Trinity	1 57	15 10	2 12	15 1	8
27	M	Proper [Ezekiel xx; Matt. xxvii. Lessons. [— xxiv; 1 Cor. ii.	2 29	14 7	2 50	14 1	9
28	Tu	G. Buchanan d., 1582	3 13	13 2	3 37	12 10	9
29	W	St. Michael	4 6	11 11	4 42	11 11	9
30	Th	St. Jerome	5 23	11 2	6 9	11 11	10



ristol tides

SUN.

MOON.

ASPECTS.

orn.	even.	height	rises.	sets.	rt. ascen.	declin. N.	rises.	souths	declin.	age.	D.	AND WEATHER.
M.	H. M.	F. I.	H M	H M	H. M. S.	° / '	H. M.	H. M.	° / '	age.		
9	1 50	21 3	5 9	6 49	10 42 32	8 11 15	morn	7m29	20s27	25	1	Windy
39	3 25	23 6	5 11	6 47	10 46 10	7 49 21	0 4	8 25	20 35	26	2	♂ ♀, 3 a 59
4	4 37	26 8	5 13	6 44	10 49 47	7 27 19	1 10	9 23	19 21	27	3	♂ ♀, 8 m 39
8	5 36	29 9	5 15	6 42	10 53 24	7 5 11	2 23	10 22	16 43	28	4	and
2	6 27	31 7	5 16	6 40	10 57 1	6 42 55	3 44	11 20	12 51	29	5	wet
53	7 18	34 4	5 18	6 37	11 0 38	6 20 33	sets.	0a17	8 0	N	6	♂ in Perigee
40	8 43	36 2	5 20	6 35	11 4 14	5 58 4	7a31	1 12	2 36	1	7	♂ ♀, 1 a 35
26	8 48	36 8	5 22	6 32	11 7 50	5 35 29	7 53	2 7	2 s 55	2	8	♀ ♀, 9 m 22
9	9 29	35 10	5 23	6 30	11 11 26	5 12 49	8 17	3 1	8 9	3	9	♂ ♀, 9 m 10
49	10 9	33 8	5 25	6 27	11 15 2	4 50 3	8 44	3 55	12 45	4	10	weather
30	10 48	30 9	5 27	6 25	11 18 38	4 27 13	9 16	4 49	16 26	5	11	may
10	11 34	26 11	5 29	6 22	11 22 14	4 4 18	9 54	5 42	19 2	6	12	♂ ♀, 4 m 42
—	0 1	23 2	5 31	6 20	11 25 49	3 41 18	10 37	6 36	20 27	7	13	be
34	1 10	22 10	5 33	6 17	11 29 25	3 18 15	11 29	7 28	20 42	8	14	expected,
54	2 45	21 2	5 34	6 15	11 33 0	2 55 8	morn	8 19	19 48	9	15	♂ in Aphel.
34	4 10	23 4	5 36	6 12	11 36 36	2 31 58	0 27	9 8	17 57	10	16	except
41	5 7	25 7	5 38	6 10	11 40 11	2 8 45	1 31	9 55	15 15	11	17	the wind
30	5 55	27 6	5 40	6 7	11 43 46	1 45 30	2 37	10 40	11 54	12	18	be North
15	6 32	28 5	5 42	6 5	11 47 22	1 22 12	3 44	11 23	8 4	13	19	or N. East.
50	7 6	29 8	5 43	6 2	11 50 57	0 58 52	rises.	morn	—	F	20	♂ ♀ Spica Vir
23	7 38	30 7	5 45	6 0	11 54 32	0 35 31	6a13	0 5	3 55	15	21	♂ in Apogee
56	8 11	31 0	5 47	5 57	11 58 8	0 12 8	7 1	0 47	0 s 4	16	22	Changeable
27	8 41	31 4	5 49	5 55	12 1 44	0 11 15	7 19	1 28	4 42	17	23	♂ enters ☐.
54	9 8	30 9	5 51	5 52	12 5 19	0 34 40	7 39	2 10	8 50	18	24	[Autm.com,
25	9 41	29 7	5 52	5 50	12 8 55	0 58 4	8 2	2 55	12 38	19	25	♂ ♀, 4 m 39
10	7 28	1	5 54	5 47	12 12 32	1 21 29	8 31	3 41	15 56	20	26	but inclinod
510	45 26	0	5 56	5 45	12 16 8	1 44 53	9 7	4 29	18 32	21	27	to be
50	11 31	23 5	5 58	5 42	12 19 45	2 8 17	9 53	5 20	20 15	22	28	wet
—	0 2	21 2	6 0	5 40	12 23 21	2 31 40	10 50	6 14	20 52	23	29	or showery.
38	1 20	20 8	6 1	5 37	12 26 59	2 55 1	11 57	7 9	20 15	24	30	♂ ♀, 2 m 28

LUNAR DISTANCES FROM THE SUN.

Mean Astronomical Time at Greenwich.

Noon.	3 Hours.	6 Hours.	9 Hours.	Midn.	15 Hour.	18 Hour.	21 Hour
° / '	° / '	° / '	° / '	° / '	° / '	° / '	° / '
63 59 37	62 25 59	60 51 56	59 17 27	57 42 32	56 7 10	54 31 22	52 55 8
51 18 28	49 41 22	48 3 50	46 25 52	44 47 29	43 8 40	41 29 26	39 49 49
38 9 48	36 29 23	34 48 36	33 7 27	31 25 58	29 44 9	28 2 1	26 19 37
.. ..							
32 14 18	33 58 47	35 43 3	37 27 4	39 10 49	40 54 18	42 37 29	44 20 22
46 2 55	47 45 8	49 27 1	51 8 32	52 49 42	54 30 29	56 10 54	57 50 56
59 30 35	61 9 49	62 48 40	64 27 8	66 5 11	67 42 50	69 20 4	70 56 55
72 33 21	74 9 23	75 45 1	77 20 15	78 55 5	80 29 32	82 3 35	83 37 15
85 10 32	86 43 26	88 15 58	89 48 8	91 19 55	92 51 22	94 22 27	95 53 11
97 23 35	98 53 39	100 23 23	101 52 48	103 21 54	104 50 42	106 19 11	107 47 23
109 15 18	110 42 55	112 10 16	113 37 21	115 4 10	116 30 44	117 57 3	119 23 8
120 48 58	122 14 35	123 39 58	125 5 8	126 30 5	127 54 50	129 19 23	130 43 45
.. ..							
39 57 39	138 35 31	137 13 15	135 50 50	134 28 16	133 5 34	131 42 43	130 19 42
28 56 31	127 33 10	126 9 39	124 45 57	123 22 3	121 57 58	120 33 41	119 9 12
17 44 29	116 19 34	114 54 25	113 29 1	112 3 24	110 37 31	109 11 23	107 44 59
106 18 18	104 51 21	103 24 7	101 56 35	100 28 45	99 0 37	97 32 9	96 3 22
94 34 15	93 4 48	91 35 0	90 4 51	88 34 21	87 3 29	85 32 14	84 0 37
82 28 37	80 56 14	79 23 27	77 50 16	76 16 42	74 42 43	73 8 19	71 33 31
69 58 18	68 22 40	66 46 38	65 10 10	63 33 18	61 56 0	60 18 18	58 40 11

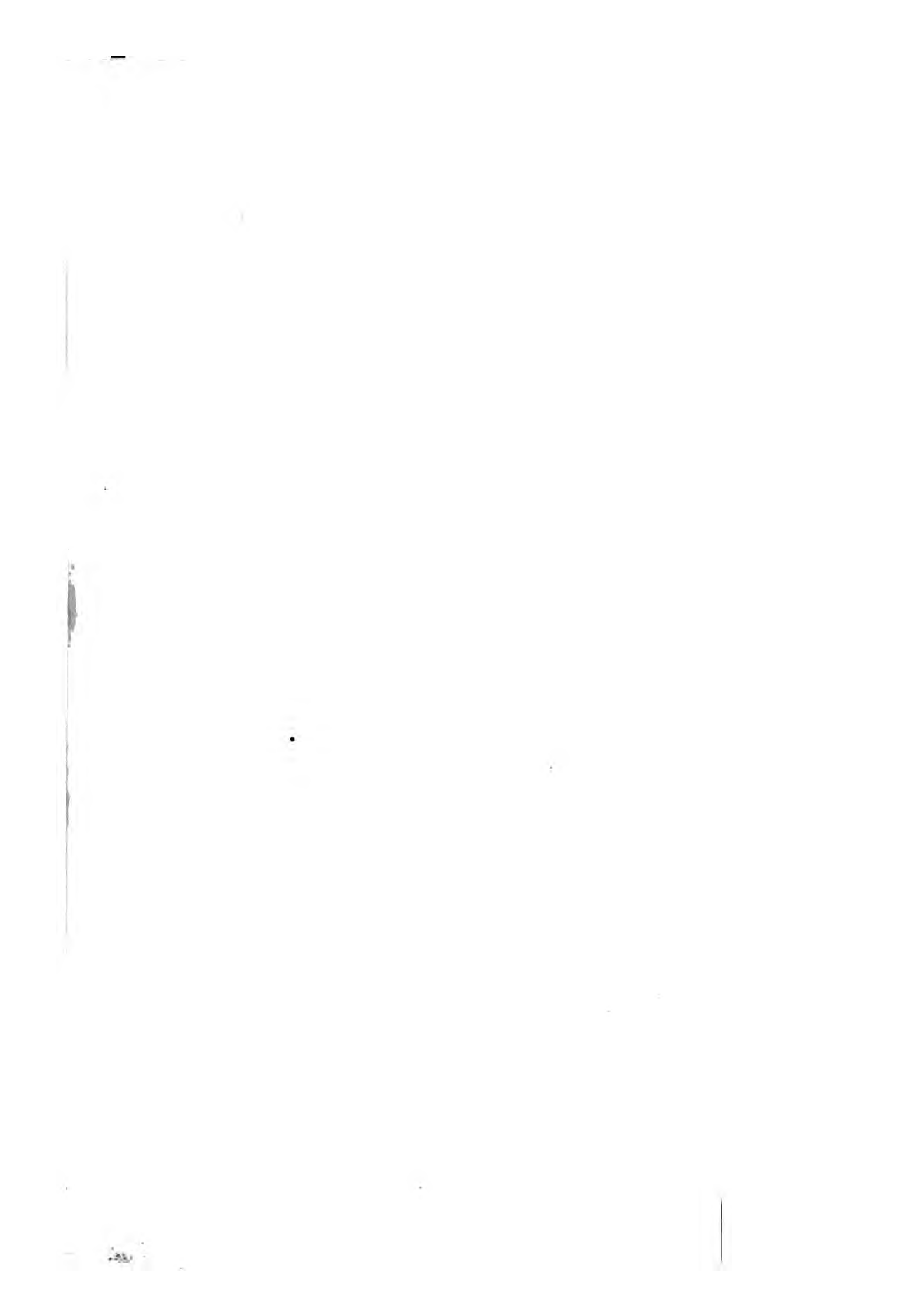
th November; and in the evenings about the 4th February, 29th May, and September. The most favourable time for seeing this beautiful planet will be beginning of February, being at that time in the best position for observation evening sky.

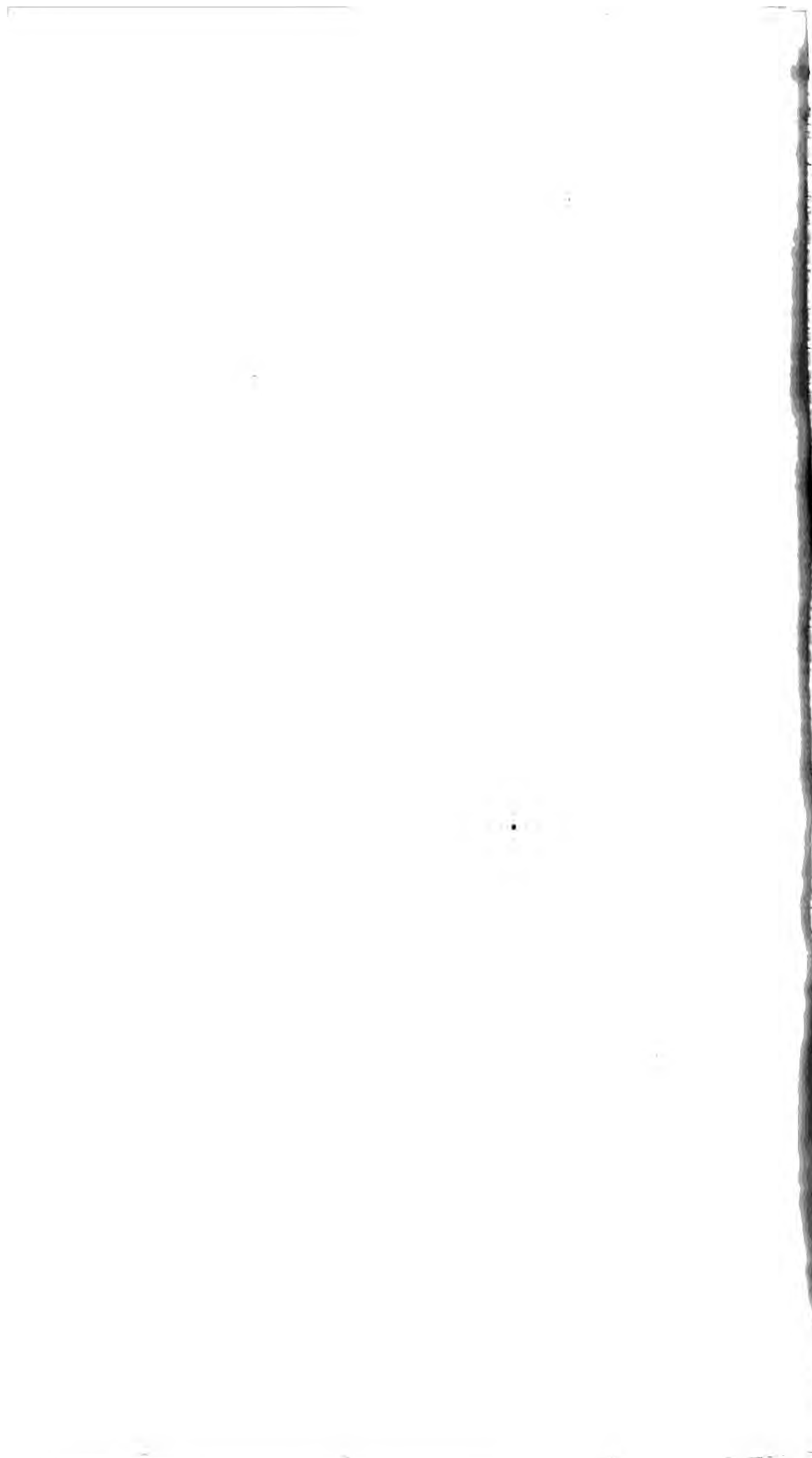
us [♀] will be a morning star to the 9th May, then a evening star during ear. This brilliant planet will not be seen to advantage this year, being so it from the earth.

PHASES OF THE MOON. { NEW MOON, 5th day, at 2h. 19m. evening.
FIRST QUARTER, 12th day, at 10h. 2m. morning.
FULL MOON, 20th day, at 1h. 57m. afternoon.
LAST QUARTER, 28th day, at 8h. 34m. morning.

M	Day	Twil.	☉'s	♂ Mercury		♀ Venus.		♂ Mars.		♂ Jupiter.		♂ Saturn.		M
D.	brek.	end.	semi.	sets.	sout.	sets.	sout.	sets.	sout.	rises.	sout.	sets.	sout.	D.
1	4 m 3	7 a 36	16	1 5 a 51	1 a 19	6 a 31	2 a 11	6 a 39	2 a 20	6 a 48	2 m 33	7 a 59	4 a 2	1
8	4 18	7 19	16	3 5 26	1 6 19	2 17	6 22	2 13	6 19	2 3	7 33	3 37	8	
15	4 30	7 0	16	5 5 10	2 6 9	2 24	6 6	5 5	5 50	1 33	7 7	3 12	15	
22	4 44	6 46	16	7 rises.	11 m 26	6 3	2 31	5 51	1 59	5 21	1 2	6 41	2 47	22
29	4 56	6 31	16	9 5 m 19	10 46	6 1	2 39	5 38	1 53	4 52	0 31	6 16	2 23	29

M W D D	Remarkable Days	HIGH WATER.—LIVERPOOL.				Equation of Time	
		MORNING.		EVENING.			
		Time.	Height.	Time.	Height.		
1 F	Cambridge T. begins	6 52	11 10	7 35	13 4	10	2
2 S	F. Arago died, 1853	8 12	13 5	8 44	15 5	10	4
3 C	19 Sun. after Trinity	9 12	15 7	9 37	17 7	11	2
4 M	Proper [Daniel iii; Mark vi. Lessons. — vi; 2 Cor. ii.	10 1	17 6	10 26	19 5	11	2
5 Tu	Battle of Cadiz, 1804	10 46	19 0	11 7	20 8	11	2
6 W	Faith, V. M.	11 28	20 0	11 50	21 2	11	2
7 Th	Arcturus sets 7 a 7	—	—	0 12	20 1	12	1
8 F	Dr. Kippis died, 1795	0 34	20 8	0 56	19 4	12	2
9 S	St. Denys, Bishop	1 19	19 3	1 40	18 0	12	4
10 C	20 Sun. after Trinity	2 2	17 3	2 24	16 3	13	2
11 M	Pro. [Joel ii; Mark xvi. Less. [Micah vi; 2 Cor. ix.	2 48	15 1	3 14	14 4	13	2
12 Tu	Wat Tyler died, 1381	3 41	12 10	4 11	12 9	13	2
13 W	Trans. King Edward	4 47	11 3	5 29	11 10	13	4
14 Th	Wm. Penn born, 1644	6 13	10 9	6 57	12 1	14	2
15 F	Virgil born, B.C. 70	7 35	11 5	8 10	13 4	14	2
16 S	Battle of Leipsic, 1813	8 40	12 8	9 5	14 5	14	2
17 C	21 Sun. after Trinity	9 26	14 1	9 46	15 8	14	2
18 M	Hab. ii; Luke iii. Prov. i; Gal. iii.	10 5	15 4	10 21	16 7	14	2
19 Tu	Dean Swift died, 1745	10 35	16 1	10 49	17 2	15	2
20 W	Bat. of Navarino 1827	11 5	16 10	11 19	17 7	15	2
21 Th	Bat. of Trafalgar, 1805	11 35	17 4	11 50	17 8	15	2
22 F	Dr. Arnold died, 1802	—	—	0 6	17 4	15	2
23 S	R. Exchange fd. 1667	0 21	17 7	0 37	17 3	15	2
24 C	22 Sun. after Trinity	0 54	17 0	1 10	16 7	15	2
25 M	Pro. [Proverbs ii; Luke x. Less. [— iii; Ephes. iv.	1 28	16 0	1 46	15 6	15	2
26 Tu	Hogarth died, 1764	2 6	14 9	2 28	14 6	15	2
27 W	Servetus burnt, 1553	2 51	13 6	3 16	13 5	16	2
28 Th	St. Sim. & St. Jude.	3 45	12 3	4 20	12 1	16	2
29 F	Bristol Riots, 1831	5 1	11 6	5 45	12 6	16	2
30 S	Pro. [Prov. xi; Luke xvii. Lessons. [— xlii; Coloss. i.	6 28	12 1	7 0	13 9	16	2
31 C	23 Sun. after Trinity	7 37	13 8	8 20	15 8	16	2





Bristol tides

SUN.

MOON.

ASPECTS

morn.	even.	height	rises.	sets.	rt.	ascen.	declin.	S.	rises.	souths.	declin.	M
H. M.	H. M.	F. I.	H. M.	H. M.	H. M.	H. M.	° ' "	° ' "	H. M.	H. M.	° ' "	D.
8	3 1	23 1	6 35	35 12	30 36	3 18	21		morn	8m6	18m18	25
44	4 18	27 0	6 55	33 12	34 14	3 41	38		1 13	9 2	15 4	26
47	5 13	30 8	6 75	30 12	37 52	4 4	53		2 36	9 59	10 43	27
40	6 8	33 6	6 95	28 12	41 30	4 28	6		4 14	10 55	5 33	28
31	6 53	35 0	6 115	25 12	45 9	4 51	15		sets.	11 50	0s 3	N
17	7 41	36 9	6 135	23 12	48 48	5 14	20		6 a 16	0a45	5 38	1
3	8 24	36 11	6 145	20 12	52 28	5 37	22		6 40	1 41	10 46	2
45	9 635	8	6 165	18 12	56 8	6 0	19		7 10	2 36	15 5	3
25	9 45	33 2	6 185	15 12	59 48	6 23	11		7 46	3 32	18 19	4
3	10 24	30 1	6 205	13 13	3 29	6 45	59		8 28	4 28	20 17	5
46	11 9	26 0	6 225	11 13	7 10	7 8	41		9 18	5 22	20 58	6
36	—	22 9	6 245	8 13	10 52	7 31	17		10 16	6 15	20 27	7
6	0 43	20 3	6 265	6 13	14 34	7 53	46		11 21	7 5	18 51	8
23	2 15	20 4	6 285	3 13	18 17	8 16	9	morn	7 53	16 22	9	14
1	3 42	23 1	6 305	1 13	22 0	8 38	25		8 38	13 11	10 15	15
13	4 39	25 0	6 314	59 13	25 44	9 0	33		1 34	9 22	9 27	11
1	5 22	27 2	6 334	56 13	29 28	9 22	34		2 41	10 4	5 21	12
44	6 2	28 2	6 354	53 13	33 13	9 44	26		3 49	10 46	1 3	13
18	6 34	29 6	6 374	52 13	36 59	10 6	10		4 55	11 27	3n20	14
51	7 7	30 8	6 394	50 13	40 45	10 27	45	rises morn	—	—	F 20	19
25	7 41	31 5	6 414	47 13	44 32	10 49	10	5 a 44	0 10	7 36	16	21
57	8 11	31 5	6 434	45 13	48 20	11 10	26	6 8	0 53	11 36	17	22
27	8 42	31 3	6 454	43 13	52 8	11 31	32	6 35	1 39	15 8	18	23
56	9 13	30 1	6 474	41 13	55 57	11 52	27	7 6	2 26	18 1	19	24
30	9 47	28 5	6 494	39 13	59 47	12 13	12	7 45	3 16	20 3	20	25
5	10 25	26 8	6 514	37 14	3 37	12 33	46	8 36	4 8	21 3	21	26
46	11 12	24 4	6 534	34 14	7 28	12 54	7	9 40	5 2	20 52	22	27
43	—	22 3	6 554	32 14	11 20	13 14	17	10 53	5 57	19 27	23	28
18	0 57	21 6	6 574	30 14	15 13	13 34	15	morn	6 52	16 47	24	29
41	2 22	23 7	6 594	28 14	19 6	13 53	59	0 12	7 46	12 59	25	30
7	3 53	27 4	7 14	26 14	23 0	14 13	31	1 34	8 40	8 17	26	31

AND WEATHER.

Expect fair

if wind be

gr. helia: S

N or NE

Q d d, 10m32

Changeable

δ δ (, 4m9

h δ (, 4a3

or wet

if wind

S or SW,

Cold

and

□ ⊙ 7m2

windy

which

Q in Aphelion

generally

infer. δ ⊙

ends in

δ δ (, 5m34

rain

or

snow,

Q d h, 2m7

or probably

Q in Perihelion

stormy

about

the end.

LUNAR DISTANCES FROM THE SUN.

Mean Astronomical Time at Greenwich.

NOON.	3 HOURS.	6 HOURS.	9 HOURS.	MIDN.	15 HOUR.	18 HOUR.	21 HOUR.
° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "
57 1 40	55 22 44	53 43 24	52 3 41	50 23 36	48 43 7	47 2 16	45 21 5
43 39 32	41 57 40	40 15 29	38 33 0	36 50 15	35 7 15	33 24 1	31 40 35
27 25 37	29 8 1	30 50 13	32 32 13	34 13 58	35 55 25	37 36 34	39 17 23
40 57 52	42 37 59	44 17 43	45 57 5	47 36 2	49 14 36	50 52 44	52 30 28
54 7 46	55 44 38	57 21 5	58 57 6	60 32 41	62 7 49	63 42 32	65 16 49
66 50 40	68 24 5	69 57 5	79 29 39	73 1 49	74 33 33	76 4 53	77 35 50
79 6 22	80 36 31	82 6 16	83 35 40	85 4 41	86 33 20	88 1 38	89 29 35
90 57 11	92 24 28	93 51 25	95 18 4	96 44 24	98 10 26	99 36 10	101 1 38
102 26 50	103 51 45	105 16 25	106 40 51	108 5 2	109 28 59	110 52 43	112 16 14
113 39 33	115 2 40	116 25 36	117 48 20	119 10 54	120 33 19	121 55 33	123 17 39
124 39 35	126 1 24	127 23 4	128 44 37	130 6 2	131 27 21	132 48 33	134 9 39
135 55 32	134 29 59	133 4 14	131 38 16	130 12 4	128 45 38	127 18 59	125 52 6
124 24 58	122 57 37	121 30 1	120 2 10	118 34 4	117 5 43	115 37 6	114 8 13
112 39 4	111 9 39	109 39 57	108 9 59	106 39 43	105 9 9	103 38 18	102 7 9
100 35 41	99 3 55	97 31 51	95 59 27	94 26 43	92 53 41	91 20 18	89 46 36
88 12 33	86 38 11	85 3 27	83 28 21	81 53 0	80 17 15	78 41 9	77 4 42
75 27 55	73 50 47	72 13 18	70 35 28	68 57 18	67 18 48	65 39 58	64 0 47
62 21 18	60 41 29	59 1 21	57 20 54	55 40 10	53 59 8	52 17 50	50 36 15
48 54 25	47 12 21	45 30 2	43 47 31	42 4 48	40 21 54	38 38 52	36 55 41

ARS [δ] will be a morning star to the 13th of February, being then in position, and will be a conspicuous object in the eastern sky as a large red star, apparently as large as Venus.

PHASES OF THE MOON. { NEW MOON, 3rd day, at 11h. 35m. night,
FIRST QUARTER, 11th day, at 2h. 56m. morning.
FULL MOON, 19th day, at 7h. 18m. morning.
LAST QUARTER, 26th day, at 6h. 14m. evening.

M D.	Day brek.	Twil. ends.	☉'s semi.	♂ Mercury		♀ Venus.			♂ Mars.			♂ Jupiter.		♂ Saturn.		M D.
				rises.	sout.	sets.	sout.		sets.	sout.	rises.	sout.	sets.	sout.		
1	5 m 2	6 a 24	16 10	5 m 10	10 m 38	6 a 12	2 a 43	5 a 33	1 a 50	4 a 38	0 m 18	6 a 6	2 a 12		1	
8	5 13 6	13 16	11 5	20 10	36 6	5 2	51 5	5 22	1 45	sets.	11 a 42	5 41	1 48		8	
15	5 24 6	5 16 13	5 51	10 45	6 16	2 59	5 13	1 40	6 m 46	11 11	5 16	1 24			15	
22	5 34 5	58 16	14 6	30 10	59 6	29 3	6 5	5 1	35 6	13 10	40 4	51 0	59 22		22	
29	5 44 5	53 16	16 7	10 11	16 6	46 3	12 5	0 1	31 5	41 10	9 4	26 0	39 29		29	

M W D D Remarkable Days

1	M	All Saints Day
2	Tu	Michaelmas Ter. beg.
3	W	Holywell Day
4	Th	Wm. III landed, 1688
5	F	Gunpowder Plot
6	S	Battle of Inkerman
7	C	24 Sun. after Trinity
8	M	Proper [Prov. xiii; Luke xxiii. Lessons. [— xiv; 1 Thess. iii.
9	Tu	Prince of Wales born
10	W	Luther born, 1483
11	Th	St. Martin, Bishop
12	F	R. Baxter born, 1615
13	S	Leibnitz died, 1716
14	C	25 Sun. after Trinity
15	M	Proper [Proverbs xv; John vi. Lessons. [— xvi; 1 Tim. ii, iii.
16	Tu	Ferguson died, 1776
17	W	Hugh, Bishop
18	Th	H souths 3 m 46
19	F	Neptune souths 9 a 10
20	S	Edmund, King.
21	C	26 Sun. after Trinity
22	M	Proper [Proverbs xvii; John xii Lessons. [— xix; 2 Tim. iv.
23	Tu	St. Clement
24	W	John Knox died, 1572
25	Th	Catherine V. & M.
26	F	Pleiades south 11 a 16
27	S	Capella souths, 0 m 43
28	C	Advent Sunday
29	M	[Isaiah i; John xx. — ii; Heb. iv.
30	Tu	St. Andrew, Apostle

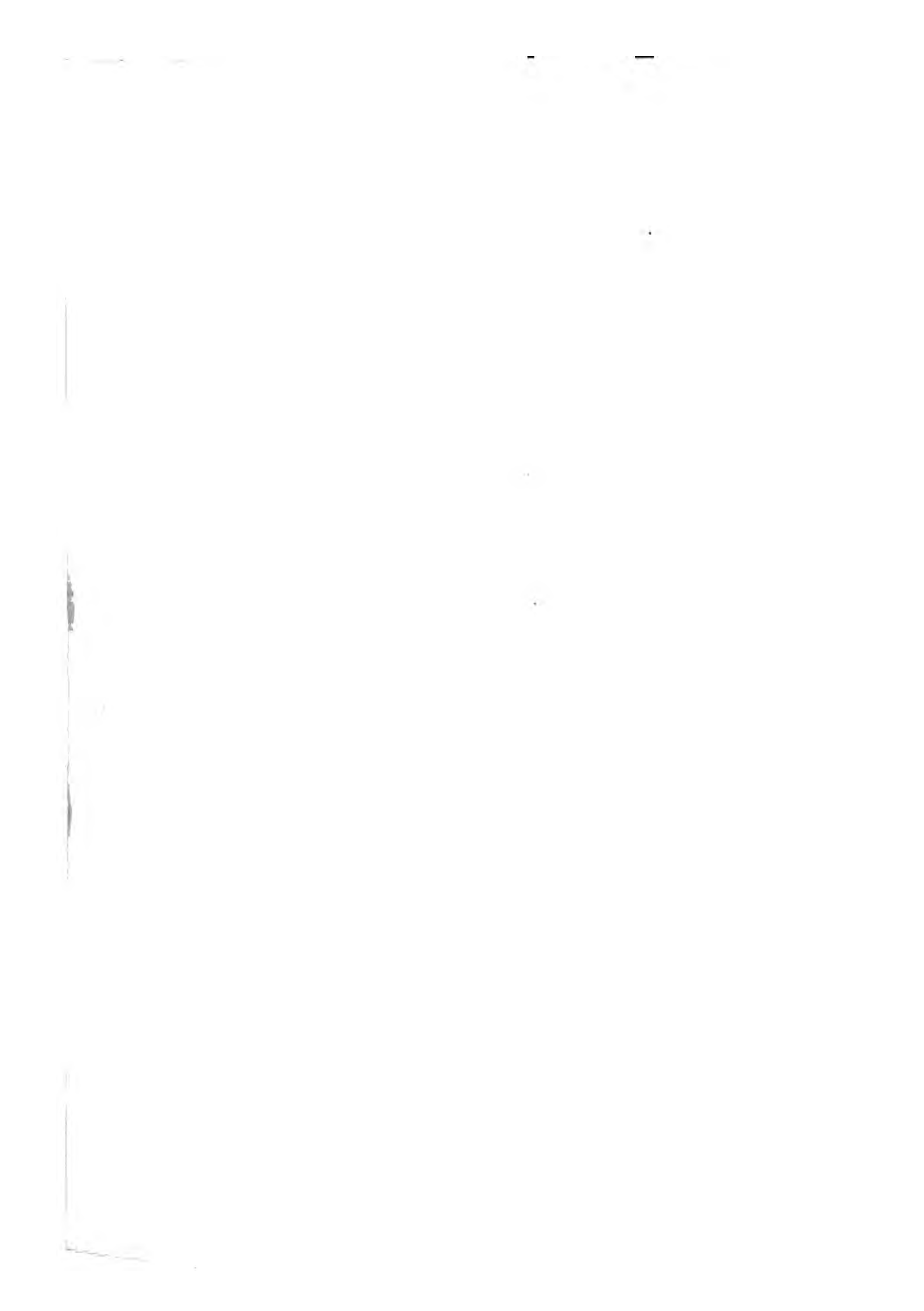
HIGH WATER.—LIVERPOOL.

MORNING.		EVENING.	
Time.	Height.	Time.	Height.

8	47	15	8	9	14	17	8
9	39	17	6	10	2	19	3
10	23	18	9	10	44	20	1
11	4	19	6	11	26	20	5
11	49	19	8	—	—	—	—
0	11	19	10	0	34	19	1
0	56	18	6	1	17	17	11
1	40	16	9	2	3	16	5
2	26	15	0	2	50	14	10
3	16	13	0	3	43	13	2
4	14	11	5	4	51	12	1
5	30	10	8	6	9	11	11
6	48	11	2	7	23	12	2
7	55	12	1	8	21	13	8
8	46	13	4	9	9	14	10
9	28	14	7	9	48	15	9
10	8	15	7	10	23	16	6
10	38	16	3	10	53	16	11
11	9	16	10	11	25	17	2
11	40	17	2	11	58	17	2
—	—	—	—	0	16	17	3
0	34	16	10	0	52	16	10
1	11	16	2	1	32	16	3
1	55	15	1	2	19	15	5
2	43	14	2	3	8	14	6
3	36	13	1	4	6	13	7
4	41	12	5	5	20	13	5
6	0	12	8	6	39	14	4
7	15	13	9	7	48	15	5
8	17	15	2	8	46	16	11

Equation
of Time.

16	19
16	19
16	19
16	18
16	16
16	14
16	10
16	6
16	1
15	55
15	48
15	40
15	32
15	23
15	12
15	1
14	50
14	37
14	24
14	9
13	54
13	48
13	22
13	4
12	46
12	27
12	7
11	47
11	26
11	4



Bristol tides					SUN.					MOON.					ASPECTS AND WEATHER.	
M.	morn.	even.	height.		rises.	sets.	rt. ascen.	declin.	S.	rises.	souths	declin.			M.	
D.	H. M.	H. M.	F. I.		H. M.	H. M.	H. M.	M. S.	° ' "	H. M.	H. M.	° ' "	° ' "	° ' "	D.	
1	4 21	4 49	30 10		7 3	4 24	14 26	56	14 32 49	2m59	9m34	2n56	27	1	♂♂ (, 2 a 17	
2	5 16	5 42	33 7		7 5	4 22	14 30	52	14 51 52	4 46	10 28	2s40	28	2	(in Perigee	
3	6 5	6 29	34 5		7 7	4 20	14 34	48	15 10 42	sets.	11 23	8 8	N	3	Expect	
4	6 51	7 15	35 9		7 9	4 18	14 38	46	15 29 16	5a7	0a19	13 2	1	4	fair	
5	7 40	8 2	35 10		7 11	4 16	14 42	44	15 47 35	5 38	1 16	16 59	2	5	♂ gr. elon. W.	
6	8 24	8 45	34 9		7 13	4 14	14 46	44	16 5 38	6 18	2 13	19 42	3	6	♂♂ (, 2 m48	
7	9 3	9 24	32 6		7 15	4 12	14 50	44	16 23 26	7 6	3 10	21 4	4	7	♀♂), 6 m 5	
8	9 45	10 5	29 11		7 17	4 10	14 54	44	16 40 56	8 3	4 5	21 4	5	8	♂♂ (, 6 m 20	
9	10 25	10 47	26 9		7 19	4 8	14 58	46	17 58 10	9 6	4 58	19 52	6	9	and	
10	11 10	11 37	23 4		7 21	4 6	15 2	49	17 15 6	10 13	5 48	17 39	7	10	♀ gr. H. L. S.	
11	—	0 9	20 9		7 23	4 4	15 6	52	17 31 44	11 21	6 35	14 39	8	11	frosty	
12	0 43	1 19	20 3		7 25	4 2	15 10	56	17 48 4	morn	7 19	11 3	9	12	weather ;	
13	2 4	2 47	21 6		7 27	4 1	15 15	1	18 4 5	0 29	8 2	7 1	10	13	changing	
14	3 25	3 54	23 10		7 29	3 59	15 19	7	18 19 48	1 36	8 44	2 44	11	14	(in Apogee	
15	4 20	4 44	25 10		7 31	3 58	15 23	14	18 35 10	2 43	9 25	1n41	12	15	to wind	
16	5 4	5 25	27 8		7 33	3 56	15 27	21	18 50 13	3 49	10 7	6 3	13	16	and	
17	5 47	6 4	29 0		7 35	3 55	15 31	30	19 4 56	4 58	10 50	10 14	14	17	rain	
18	6 21	6 38	29 8		7 37	3 53	15 35	39	19 19 19	6 7	11 35	14 2	15	18	♂♂ (, 4 m50	
19	6 54	7 14	30 4		7 39	3 52	15 39	49	19 33 20	rises.	morn	—	F	19	towards	
20	7 30	7 49	30 10		7 41	3 50	15 44	0	19 47 0	5a6	0 23	17 15	17	20	the	
21	8 7	8 24	30 9		7 42	3 49	15 48	11	20 0 19	5 47	1 13	19 40	18	21	latter	
22	8 41	8 58	30 2		7 44	3 48	15 52	24	20 13 15	6 36	2 5	21 3	19	22	end	
23	9 17	9 38	29 2		7 46	3 47	15 56	37	20 25 50	7 33	2 59	21 17	20	23	♂♂ (, 2 a 31	
24	9 59	10 19	27 11		7 48	3 46	16 0	51	20 38 1	8 39	3 53	20 15	21	24	of the	
25	10 41	11 5	26 1		7 49	3 45	16 5	6	20 49 50	9 54	4 47	17 59	22	25	month.	
26	11 32	—	24 2		7 51	3 44	16 9	21	21 1 16	11 16	5 41	14 37	23	26	Fair	
27	0 2	0 35	23 2		7 53	3 43	16 13	38	21 12 17	morn	6 33	10 18	24	27	if wind	
28	1 11	1 54	24 5		7 54	3 42	16 17	55	21 22 55	0 38	7 25	5 19	25	28	be	
29	2 39	3 18	26 11		7 56	3 41	16 22	12	21 33 9	2 1	8 17	0 s3	26	29	Northerly.	
30	3 50	4 20	29 8		7 58	3 40	16 26	31	21 42 58	3 24	9 9	5 30	27	30	(in Perigee	

LUNAR DISTANCES FROM THE SUN.

Mean Astronomical Time at Greenwich.

M.	NOON.	3 HOURS.	6 HOURS.	9 HOURS.	MIDN.	15 HOUR.	18 HOUR.	21 HOUR.
D.	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "
1E	35 12 24	33 29 2	31 45 37	30 2 41	28 18 48	26 35 29	24 52 18	23 9 20
2	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..
3	34 26 16	36 3 13	37 39 51	39 16 9	40 52 4	42 27 36	44 2 46	45 37 32
4	47 11 54	48 45 52	50 19 25	51 52 34	53 25 19	54 57 39	56 29 35	58 1 6
5	59 32 14	61 2 57	62 33 16	64 3 12	65 32 44	67 1 54	68 30 41	69 59 5
6	71 27 8	72 54 49	74 22 10	75 49 9	77 15 49	78 42 9	80 8 10	81 33 52
7	82 59 16	84 24 23	85 49 12	87 13 45	88 38 2	90 2 4	91 25 51	92 49 24
8	94 12 43	95 35 49	96 58 42	98 21 24	99 43 54	101 6 13	102 28 23	103 50 22
9	105 12 13	106 33 55	107 55 29	109 16 55	110 38 15	111 59 28	113 20 36	114 41 38
10	116 2 36	117 23 29	118 44 19	120 5 5	121 25 48	122 46 29	124 7 8	125 27 46
11	126 46 23	128 8 59	129 29 34	130 50 10	132 10 46	133 31 23	134 52 1	136 12 41
12	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..
13E	130 43 42	129 12 47	127 41 39	126 10 18	124 38 43	123 6 56	121 34 55	120 2 41
14	118 30 14	116 57 34	115 24 40	113 51 33	112 18 13	110 44 39	109 10 52	107 36 51
15	106 2 36	104 28 8	102 53 27	101 18 31	99 43 22	98 7 59	96 32 22	94 56 32
16	93 20 27	91 44 9	90 7 37	88 30 51	86 53 52	85 16 38	83 39 12	82 1 31
17	80 23 38	78 45 30	77 7 10	75 28 37	73 49 52	72 10 53	70 31 43	68 52 20
18	67 12 46	65 33 0	63 53 3	62 12 56	60 32 39	58 52 11	57 11 34	55 30 49
19	53 49 55	52 8 53	50 27 45	48 46 30	47 5 10	45 23 44	43 42 15	42 0 42
20	40 19 6	38 37 30	36 55 52	35 14 16	33 32 42	31 51 10	30 9 44	28 28 24

JUPITER [4] will be an evening star to the 17th April; a morning star from that time to the 8th November; then an evening star to the end of the year.

SATURN [7] will be a morning star to the 4th June; an evening star thence to the 11th December; afterwards an evening star to the end of the year.

PHASES OF THE MOON. { NEW MOON, 3d day, at 10h. 41m. morning.
FIRST QUARTER, 10th day, at 11h. 12m. night.
FULL MOON, 18th day, at 11h. 50m. night.
LAST QUARTER, 26th day, at 2h. 33m. morning.

M D.	Day	Twi. ends.	☉'s semi.	☿ Mercury rises.	sout.	♀ Venus sets.	sout.	♂ Mars sets.	sout.	♃ Jupiter sets.	sout.	♄ Saturn sets.	sout.	M D.
1	5m48	5 a 50	16 16	7m21	11 m21	6 a 51	3 a 14	4 a 59	1 a 30	5m32	10 a 0	4 a 19	0 a 28	1
8	5 53	5 50	16 17	7 59	11 39	7 9	3 17	4 57	1 26	5 19	30	3 54	0 4	8
15	6 15	5 51	16 17	sets.	11 59	7 27	3 19	4 56	1 22	4 30	9 0	rises.	11 m26	15
22	6 45	5 53	16 18	3 a 45	0 a 21	7 43	3 18	4 57	1 18	4 09	31	7m28	11 16	22
29	6 65	5 58	16 18	4 13	0 43	7 57	3 15	4 59	1 13	3 31	8 3	6 57	10 52	29

M W D D		Remarkable Days	HIGH WATER.—LIVERPOOL.				Equation of Time.	
			MORNING. Time. Height.		EVENING. Time. Height.			
1	W	Neptune souths 8 a 22	9 13	16 8	9 39	18 1	10 ³⁴	
2	Th	Mariner's compass inv.	10 5	17 10	10 28	18 8	10 ¹⁸	
3	F	James II abdica., 1688	10 48	18 6	11 12	18 10	9 ³⁴	
4	S	H souths 2 m 41	11 32	18 9	11 56	18 6	9 ³⁰	
5	C	2 Sunday in Advent	—	—	0 19	18 6	9 ¹⁵	
6	M	Proper [Isai. v; Acts vi. Lessons. — xxiv; Hebrews xi.	0 42	17 8	1 3	17 9	8 ³⁹	
7	Tu	Marshal Ney shot, 1815	1 24	16 5	1 45	16 7	8 ¹³	
8	W	Conception V. Mary	2 9	15 0	2 32	15 4	7 ⁴⁷	
9	Th	Milton born, 1608	2 54	13 9	3 18	14 1	7 ²⁰	
10	F	Pleiades south 10 a 21	3 40	12 4	4 4	12 10	6 ⁵²	
11	S	Chas. XII died, 1718	4 33	11 4	5 6	12 2	6 ²⁵	
12	C	3 Sunday in Advent	5 43	11 2	6 16	12 2	5 ⁵⁷	
13	M	Pro. [Isaiah xxv; Acts xii. Les. — xxvi; James v.	6 46	11 6	7 20	12 8	5 ²⁸	
14	Tu	Washington d., 1799	7 50	12 4	8 18	13 6	4 ⁵⁹	
15	W	Ember Week.	8 44	13 6	9 6	14 6	4 ³¹	
16	Th	Aldebaran sou. 10 a 46	9 26	14 8	9 47	15 4	4 ¹	
17	F	Oxford T. ends	10 7	15 7	10 28	16 0	3 ³²	
18	S	Thos. Guy died, 1724	10 46	16 4	11 4	16 6	3 ²	
19	C	4 Sunday in Advent	11 23	16 11	11 41	16 10	2 ³⁸	
20	M	[Isaiah xxx; Acts xix. — xxxii; 2 Peter ii.	11 59	17 5	—	—	2 ³	
21	Tu	St. Thomas.	0 20	17 0	0 41	17 6	1 ³³	
22	W	Pleiades south 9 a 32	1 2	16 9	1 25	17 4	1 ³	
23	Th	R. Arkwright b. 1792	1 47	16 1	2 11	16 8	0 ³³	
24	F	Hugh Miller, d., 1856	2 46	15 3	3 1	15 10	0 ³	
25	S	Christmas Day	3 25	14 6	3 52	15 1	0 ²⁶	
26	C	1st Sun. after Christ.	4 22	13 7	4 55	14 5	0 ⁵⁶	
27	M	[Isa. xxxvii; Acts 6 v. 8 & 7 to v. 30 — xxxviii; Acts 7 v. 30, to 55	5 29	13 2	6 5	14 2	1 ²⁶	
28	Tu	St. John	6 39	13 5	7 12	14 7	1 ⁵⁵	
29	W	Innocents	7 58	14 4	8 22	15 5	2 ²⁵	
30	Th	Pleiades south, 9 a 2	8 52	15 6	9 20	16 4	2 ⁵⁴	
31	F	Silvester, Bishop	9 47	16 6	10 16	16 10	3 ²³	

M	JANUARY.		FEBRUARY.		MARCH.		APRIL.		MAY.		JUNE.		M
	Noon.	Midn.	Noon.	Midn.	Noon.	Midn.	Noon.	Midn.	Noon.	Midn.	Noon.	Midn.	
D.	" "	" "	" "	" "	" "	" "	" "	" "	" "	" "	" "	" "	D.
1	16 28	16 26	16 16	16 9	16 25	16 17	15 43	15 36	15 17	15 11	14 51	14 50	1
2	16 23	16 20	16 2	15 56	16 10	16 2	15 28	15 21	15 5	15 1	14 49	14 48	2
3	16 16	16 12	15 49	15 42	15 54	15 47	15 15	15 9	14 57	14 53	14 49	14 50	3
4	16 7	16 3	15 36	15 30	15 39	15 32	15 4	14 59	14 51	14 49	14 51	14 54	4
5	15 58	15 53	15 24	15 19	15 25	15 18	14 55	14 52	14 47	14 47	14 57	15 0	5
6	15 48	15 43	15 14	15 10	15 13	15 7	14 49	14 47	14 47	14 47	15 4	15 8	6
7	15 39	15 34	15 5	15 2	15 3	14 58	14 46	14 45	14 48	14 50	15 13	15 18	7
8	15 30	15 25	14 58	14 55	14 55	14 52	14 44	14 45	14 53	14 55	15 23	15 28	8
9	15 21	15 17	14 53	14 50	14 49	14 47	14 45	14 46	14 58	15 2	15 33	15 38	9
10	15 13	15 10	14 48	14 47	14 45	14 44	14 48	14 50	15 5	15 9	15 43	15 48	10
11	15 6	15 3	14 45	14 44	14 44	14 43	14 52	14 54	15 13	15 17	15 52	15 56	11
12	15 0	14 57	14 44	14 43	14 43	14 44	14 57	15 0	15 21	15 26	15 59	16 2	12
13	14 54	14 52	14 43	14 44	14 45	14 46	15 3	15 7	15 30	15 34	16 5	16 7	13
14	14 50	14 48	14 45	14 46	14 47	14 49	15 11	15 14	15 38	15 42	16 9	16 10	14
15	14 46	14 45	14 48	14 50	14 51	14 53	15 19	15 23	15 46	15 50	16 11	16 11	15
16	14 45	14 45	14 53	14 57	14 56	15 0	15 27	15 32	15 53	15 57	16 11	16 11	16
17	14 46	14 47	15 1	15 5	15 3	15 7	15 37	15 42	16 0	16 3	16 11	16 10	17
18	14 48	14 51	15 11	15 16	15 12	15 17	15 47	15 52	16 6	16 9	16 8	16 7	18
19	14 54	14 58	15 23	15 29	15 22	15 28	15 58	16 3	16 12	16 14	16 5	16 3	19
20	15 2	15 7	15 37	15 44	15 34	15 41	16 8	16 13	16 15	16 17	16 0	15 5	20
21	15 13	15 19	15 52	16 0	15 47	15 54	16 18	16 22	16 18	16 18	15 54	15 58	21
22	15 26	15 33	16 8	16 15	16 1	16 8	16 25	16 28	16 17	16 16	15 46	15 45	22
23	15 41	15 49	16 23	16 29	16 15	16 21	16 30	16 31	16 14	16 12	15 38	15 33	23
24	15 57	16 4	16 35	16 40	16 27	16 32	16 31	16 30	16 9	16 5	15 28	15 24	24
25	16 12	16 19	16 43	16 46	16 37	16 40	16 28	16 25	16 0	15 55	15 19	15 14	25
26	16 25	16 31	16 47	16 46	16 42	16 43	16 21	16 17	15 50	15 44	15 10	15 5	26
27	16 35	16 39	16 44	16 41	16 42	16 40	16 11	16 5	15 38	15 32	15 1	14 58	27
28	16 41	16 42	16 36	16 31	16 37	16 33	15 58	15 51	15 26	15 21	14 55	14 52	28
29	16 41	16 39	..	..	16 27	16 21	15 44	15 37	15 15	15 10	14 50	14 49	29
30	16 36	16 32	..	..	16 14	16 7	15 30	15 23	15 5	15 1	14 48	14 48	30
31	16 27	16 22	..	..	15 59	15 51	..	..	14 57	14 54	..	..	31

M	JULY.		AUGUST.		SEPT.		OCTOBER.		NOVEMBER.		DECEMBER.		M
	Noon.	Midn.	Noon.	Midn.	Noon.	Midn.	Noon.	Midn.	Noon.	Midn.	Noon.	Midn.	
D.	" "	" "	" "	" "	" "	" "	" "	" "	" "	" "	" "	" "	D.
1	14 49	14 50	15 7	15 13	15 46	15 54	16 12	16 19	16 35	16 37	16 24	16 23	1
2	14 52	14 55	15 19	15 25	16 2	16 9	16 26	16 32	16 38	16 38	16 20	16 17	2
3	14 58	15 2	15 32	15 39	16 17	16 23	16 37	16 41	16 37	16 35	16 13	16 8	3
4	15 7	15 12	15 47	15 54	16 30	16 35	16 44	16 45	16 31	16 26	16 2	15 56	4
5	15 18	15 24	16 1	16 8	16 39	16 42	16 45	16 44	16 21	16 14	15 50	15 43	5
6	15 30	15 36	16 15	16 20	16 43	16 44	16 42	16 38	16 7	16 0	15 36	15 30	6
7	15 43	15 49	16 25	16 29	16 43	16 40	16 33	16 27	15 52	15 44	15 23	15 17	7
8	15 55	16 0	16 32	16 34	16 37	16 32	16 20	16 13	15 37	15 29	15 11	15 6	8
9	16 5	16 10	16 35	16 34	16 27	16 20	16 5	15 57	15 22	15 16	15 1	14 57	9
10	16 14	16 17	16 33	16 30	16 14	16 7	15 49	15 41	15 10	15 5	14 54	14 51	10
11	16 19	16 21	16 27	16 23	16 0	15 52	15 34	15 27	15 0	14 56	14 49	14 48	11
12	16 21	16 21	16 18	16 13	15 45	15 38	15 20	15 14	14 52	14 50	14 47	14 47	12
13	16 20	16 19	16 7	16 2	15 32	15 25	15 8	15 3	14 58	14 46	14 48	14 58	13
14	16 17	16 15	15 56	15 50	15 20	15 14	14 59	14 55	14 46	14 46	14 52	14 53	14
15	16 12	16 8	15 45	15 39	15 9	15 5	14 52	14 49	14 46	14 47	14 58	15 1	15
16	16 5	16 1	15 34	15 29	15 1	14 57	14 47	14 46	14 48	14 50	15 5	15 9	16
17	15 57	15 54	15 24	15 19	14 54	14 51	14 45	14 44	14 52	14 55	15 14	15 18	17
18	15 50	15 45	15 15	15 11	14 49	14 47	14 44	14 44	14 58	15 1	15 23	15 27	18
19	15 41	15 37	15 7	15 3	14 46	14 45	14 45	14 46	15 4	15 8	15 32	15 36	19
20	15 33	15 29	15 0	14 57	14 44	14 44	14 47	14 49	15 11	15 15	15 40	15 44	20
21	15 25	15 21	14 54	14 52	14 43	14 44	14 51	14 53	15 19	15 23	15 48	15 51	21
22	15 17	15 13	14 50	14 48	14 44	14 45	14 56	14 59	15 27	15 31	15 54	15 57	22
23	15 9	15 5	14 46	14 45	14 47	14 49	15 2	15 6	15 35	15 39	16 0	16 2	23
24	15 2	14 59	14 45	14 44	14 51	14 54	15 9	15 14	15 43	15 48	16 4	16 6	24
25	14 56	14 53	14 44	14 45	14 57	15 1	15 18	15 23	15 52	15 57	16 8	16 9	25
26	14 51	14 49	14 46	14 48	15 6	15 10	15 28	15 34	16 1	16 5	16 10	16 11	26
27	14 47	14 47	14 50	14 53	15 16	15 22	15 40	15 46	16 9	16 13	16 11	16 11	27
28	14 46	14 47	14 57	15 1	15 28	15 35	15 52	15 59	16 16	16 19	16 11	16 10	28
29	14 48	14 49	15 6	15 11	15 42	15 49	16 5	16 11	16 22	16 24	16 9	16 7	29
30	14 51	14 54	15 17	15 24	15 57	16 5	16 17	16 23	16 25	16 25	16 4	16 2	30
31	14 58	15 2	15 31	15 38	..	..	16 28	16 32	..	..	15 58	15 54	31

M	JANUARY.		FEBRUARY		MARCH,		APRIL.		MAY.		JUNE.		M
	Noon.	Midn.	Noon.	Midn.	Noon.	Midn.	Noon.	Midn.	Noon.	Midn.	Noon.	Midn.	
D.	"	"	"	"	"	"	"	"	"	"	"	"	D.
1	60 19	60 13	59 35	59 11	60 7	59 41	57 36	57 8	55 58	55 37	54 26	54 20	1
2	60 3	59 51	58 46	58 21	59 14	58 45	56 41	56 15	55 17	55 0	54 16	54 15	2
3	59 37	59 21	57 56	57 22	58 17	57 48	55 52	55 30	54 45	54 33	54 16	54 20	3
4	59 5	58 47	57 9	56 47	57 20	56 54	55 11	54 54	54 23	54 16	54 26	54 34	4
5	58 29	58 11	56 26	56 6	56 29	56 5	54 39	54 27	54 11	54 9	54 45	54 58	5
6	57 54	57 36	55 48	55 31	55 44	55 24	54 18	54 10	54 9	54 11	55 12	55 28	6
7	57 19	57 2	55 17	55 3	55 7	54 51	54 5	54 2	54 16	54 22	55 45	56 3	7
8	56 46	56 30	54 51	54 40	54 38	54 27	54 1	54 1	54 31	54 40	56 22	56 40	8
9	56 15	56 0	54 30	54 22	54 17	54 10	54 4	54 8	54 52	55 4	56 59	57 18	9
10	55 46	55 33	54 15	54 9	54 4	54 0	54 13	54 20	55 17	55 31	57 35	57 52	10
11	55 20	55 8	54 4	54 0	53 57	53 56	54 28	54 37	55 46	56 1	58 7	58 22	11
12	54 56	54 46	53 58	53 57	53 56	53 58	54 47	54 58	56 16	56 31	58 34	58 45	12
13	54 36	54 27	53 57	53 59	54 0	54 5	55 10	55 23	56 47	57 2	58 55	59 3	13
14	54 19	54 13	54 2	54 7	54 10	54 16	55 36	55 50	57 17	57 31	59 9	59 14	14
15	54 8	54 4	54 14	54 22	54 24	54 33	56 5	56 21	57 45	57 59	59 17	59 18	15
16	54 2	54 2	54 33	54 45	54 44	54 56	56 38	56 55	58 13	58 25	59 19	59 18	16
17	54 4	54 8	55 0	55 17	55 9	55 24	57 13	57 31	58 38	58 49	59 16	59 13	17
18	54 15	54 24	55 36	55 57	55 41	55 59	57 50	58 10	59 0	59 11	59 8	59 2	18
19	54 35	54 49	56 20	56 45	56 19	56 40	58 29	58 48	59 20	59 28	58 55	58 47	19
20	55 5	55 23	57 12	57 39	57 3	57 26	59 7	59 25	59 34	59 39	58 38	58 27	20
21	55 44	56 7	58 8	58 37	57 51	58 16	59 42	59 57	59 42	59 42	58 15	58 1	21
22	56 33	56 59	59 6	59 34	58 42	59 7	60 10	60 21	59 41	59 37	57 47	57 32	22
23	57 27	57 56	60 1	60 25	59 32	59 56	60 28	60 32	59 30	59 21	57 16	57 59	23
24	58 25	58 34	60 46	61 4	60 17	60 36	60 32	60 29	59 9	58 55	56 41	56 24	24
25	59 21	59 47	61 16	61 25	60 52	61 3	60 22	60 11	58 39	58 20	56 6	55 49	25
26	60 10	60 31	61 28	61 26	61 11	61 14	59 56	59 38	58 1	57 40	55 33	55 17	26
27	60 47	60 59	61 19	61 7	61 12	61 5	59 17	58 54	57 18	56 56	55 3	54 50	27
28	61 7	61 10	60 51	60 31	60 53	60 38	58 30	58 4	56 34	56 13	54 38	54 29	28
29	61 8	61 1	..	..	60 18	59 55	57 38	57 12	55 53	55 33	54 22	54 17	29
30	60 51	60 36	..	..	59 30	59 2	56 46	56 21	55 16	55 0	54 14	54 14	30
31	60 18	59 57	..	..	58 34	58 5	..	..	54 47	54 35	..	..	31

M	JULY.		AUGUST.		SEPT.		OCTOBER.		NOVEMBER		DECEMBER		M
	Noon.	Midn.	Noon.	Midn.	Noon.	Midn.	Noon.	Midn.	Noon.	Midn.	Noon.	Midn.	
D.	"	"	"	"	"	"	"	"	"	"	"	"	D.
1	54 17	54 22	55 24	55 44	57 45	58 14	59 21	59 48	60 46	60 54	60 6	60 1	1
2	54 29	54 39	56 6	56 30	58 43	59 11	60 12	60 34	60 58	60 58	59 52	59 39	2
3	54 52	55 7	56 56	57 22	59 38	60 3	60 52	61 7	60 54	60 44	59 24	59 6	3
4	55 23	55 42	57 49	58 16	60 26	60 45	61 18	61 23	60 31	60 14	58 45	58 23	4
5	56 2	56 24	58 42	59 7	61 0	61 11	61 24	61 19	59 53	59 29	58 0	57 35	5
6	56 47	57 10	59 31	59 51	61 16	61 17	61 9	60 55	59 3	58 36	57 10	56 46	6
7	57 33	57 56	60 10	60 24	61 13	61 5	60 37	60 15	58 8	57 40	56 22	55 59	7
8	58 18	58 38	60 35	60 41	60 52	60 35	59 50	59 23	57 12	56 45	55 38	55 19	8
9	58 57	59 14	60 44	60 42	60 15	59 52	58 55	58 26	56 20	55 56	55 2	54 47	9
10	59 28	59 39	60 37	60 28	59 28	59 2	57 57	57 29	55 34	55 14	54 35	54 25	10
11	59 47	59 53	60 16	60 1	58 36	58 9	57 1	56 35	54 57	54 42	54 18	54 13	11
12	59 55	59 55	59 43	59 25	57 43	57 18	56 11	55 48	54 30	54 20	54 11	54 12	12
13	59 52	59 47	58 5	58 44	56 54	56 31	55 28	55 9	54 13	54 8	54 15	54 20	13
14	59 40	59 31	58 23	58 2	56 9	55 50	54 53	54 39	54 5	54 5	54 28	54 37	14
15	59 20	59 8	57 41	57 21	55 31	55 15	54 28	54 18	54 6	54 10	54 49	55 2	15
16	58 56	58 42	57 1	56 42	55 0	54 47	54 11	54 5	54 15	54 22	55 16	55 31	16
17	58 28	58 14	56 24	56 8	54 36	54 26	54 1	53 59	54 30	54 39	55 47	56 4	17
18	57 59	57 44	55 52	55 37	54 18	54 11	53 59	54 0	54 49	55 1	56 20	56 37	18
19	57 29	57 14	55 23	55 10	54 6	54 1	54 2	54 6	55 13	55 25	56 53	57 9	19
20	56 59	56 44	54 58	54 47	53 59	53 57	54 11	54 17	55 38	55 52	57 25	57 39	20
21	56 29	56 14	54 37	54 28	53 57	53 58	54 24	54 33	56 6	56 21	57 52	58 5	21
22	55 59	55 44	54 20	54 13	54 0	54 4	54 42	54 53	56 35	56 50	58 17	58 27	22
23	55 30	55 17	54 8	54 4	54 10	54 17	55 5	55 18	57 6	57 21	58 37	58 45	23
24	55 4	54 52	54 1	54 0	54 25	54 36	55 32	55 48	57 37	57 53	58 53	59 0	24
25	54 41	54 32	54 1	54 3	54 48	55 2	56 5	56 23	58 9	58 25	59 5	59 10	25
26	54 23	54 17	54 7	54 13	55 18	55 36	56 42	57 2	58 41	58 56	59 14	59 16	26
27	54 12	54 8	54 22	54 33	55 55	56 17	57 24	57 46	59 11	59 25	59 18	59 18	27
28	54 7	54 8	54 46	55 1	56 40	57 5	58 9	58 32	59 37	59 48	59 17	59 14	28
29	54 12	54 18	55 18	55 38	57 31	57 59	58 55	59 18	59 57	60 4	59 9	59 2	29
30	54 26	54 37	56 0	56 24	58 26	58 54	59 40	60 0	60 8	60 9	58 54	58 43	30
31	54 50	55 5	56 50	57 17	..	..	60 18	60 34	..	..	58 31	58 17	31

Mean Refraction.

Dip of
The Horizon.

App. Alt.	Refr.	App. Alt.	Refr.	App. Alt.	Refr.	App. Alt.	Refr.	App. Alt.	Refr.
0 0	33 0	5 0	9 54	10 0	5 15	20 0	2 35	34 0	1 24
0 5	32 10	5 5	9 46	10 10	5 10	20 10	2 34	34 30	1 23
0 10	31 22	5 10	9 38	10 20	5 5	20 20	2 32	35 0	1 21
0 15	30 35	5 15	9 30	10 30	5 0	20 30	2 31	35 30	1 20
0 20	29 50	5 20	9 23	10 40	4 56	20 40	2 29	36 0	1 18
0 25	29 6	5 25	9 15	10 50	4 51	20 50	2 28	36 30	1 17
0 30	28 23	5 30	9 8	11 0	4 47	21 0	2 27	37 0	1 16
0 35	27 41	5 35	9 1	11 10	4 43	21 10	2 26	37 30	1 14
0 40	27 0	5 40	8 54	11 20	4 39	21 20	2 25	38 0	1 13
0 45	26 20	5 45	8 47	11 30	4 34	21 30	2 24	38 30	1 11
0 50	25 42	5 50	8 41	11 40	4 31	21 40	2 23	39 0	1 10
0 55	25 5	5 55	8 34	11 50	4 27	21 50	2 21	39 30	1 9
1 0	24 29	6 0	8 28	12 0	4 23	22 0	2 20	40 0	1 8
1 5	23 54	6 5	8 21	12 10	4 20	22 10	2 19	41 0	1 5
1 10	23 20	6 10	8 15	12 20	4 16	22 20	2 18	42 0	1 3
1 15	22 47	6 15	8 9	12 30	4 13	22 30	2 17	43 0	1 1
1 20	22 15	6 20	8 3	12 40	4 9	22 40	2 16	44 0	0 59
1 25	21 44	6 25	7 57	12 50	4 6	22 50	2 15	45 0	0 57
1 30	21 15	6 30	7 51	13 0	4 3	23 0	2 14	46 0	0 55
1 35	20 46	6 35	7 45	13 10	4 0	23 10	2 13	47 0	0 53
1 40	20 18	6 40	7 40	13 20	3 57	23 20	2 12	48 0	0 51
1 45	19 51	6 45	7 35	13 30	3 54	23 30	2 11	49 0	0 49
1 50	19 25	6 50	7 30	13 40	3 51	23 40	2 10	50 0	0 48
1 55	19 0	6 55	7 25	13 50	3 48	23 50	2 9	51 0	0 46
2 0	18 35	7 0	7 20	14 0	3 45	24 0	2 8	52 0	0 44
2 5	18 11	7 5	7 15	14 10	3 43	24 10	2 7	53 0	0 43
2 10	17 48	7 10	7 11	14 20	3 40	24 20	2 6	54 0	0 41
2 15	17 26	7 15	7 6	14 30	3 38	24 30	2 5	55 0	0 40
2 20	17 4	7 20	7 2	14 40	3 35	24 40	2 4	56 0	0 38
2 25	16 44	7 25	6 57	14 50	3 33	24 50	2 3	57 0	0 37
2 30	16 24	7 30	6 53	15 0	3 30	25 0	2 2	58 0	0 35
2 35	16 4	7 35	6 49	15 10	3 28	25 10	2 1	59 0	0 34
2 40	15 45	7 40	6 45	15 20	3 26	25 20	2 0	60 0	0 33
2 45	15 27	7 45	6 41	15 30	3 24	25 30	1 59	61 0	0 32
2 50	15 9	7 50	6 37	15 40	3 21	25 40	1 58	62 0	0 30
2 55	14 52	7 55	6 33	15 50	3 19	25 50	1 57	63 0	0 29
3 0	14 36	8 0	6 29	16 0	3 17	26 0	1 56	64 0	0 28
3 5	14 20	8 5	6 25	16 10	3 15	26 10	1 55	65 0	0 26
3 10	14 4	8 10	6 22	16 20	3 12	26 20	1 55	66 0	0 25
3 15	13 49	8 15	6 18	16 30	3 10	26 30	1 54	67 0	0 24
3 20	13 34	8 20	6 15	16 40	3 8	26 40	1 53	68 0	0 23
3 25	13 20	8 25	6 11	16 50	3 6	26 50	1 52	69 0	0 22
3 30	13 6	8 30	6 8	17 0	3 4	27 0	1 51	70 0	0 21
3 35	12 53	8 35	6 5	17 10	3 3	27 10	1 50	71 0	0 19
3 40	12 40	8 40	6 1	17 20	3 1	27 20	1 49	72 0	0 18
3 45	12 27	8 45	5 58	17 30	2 59	27 30	1 48	73 0	0 17
3 50	12 15	8 50	5 55	17 40	2 57	27 40	1 47	74 0	0 16
3 55	12 3	8 55	5 52	17 50	2 55	28 0	1 46	75 0	0 15
4 0	11 51	9 0	5 48	18 0	2 54	28 10	1 45	76 0	0 14
4 5	11 40	9 5	5 45	18 10	2 52	28 20	1 44	77 0	0 13
4 10	11 29	9 10	5 42	18 20	2 51	28 30	1 42	78 0	0 12
4 15	11 18	9 15	5 39	18 30	2 49	28 40	1 40	79 0	0 11
4 20	11 8	9 20	5 36	18 40	2 47	28 50	1 38	80 0	0 10
4 25	10 58	9 25	5 34	18 50	2 46	29 0	1 37	81 0	0 9
4 30	10 48	9 30	5 31	19 0	2 44	29 10	1 35	82 0	0 8
4 35	10 39	9 35	5 28	19 10	2 43	29 20	1 33	83 0	0 7
4 40	10 29	9 40	5 25	19 20	2 41	29 30	1 31	84 0	0 6
4 45	10 20	9 45	5 23	19 30	2 40	29 40	1 30	85 0	0 4
4 50	10 11	9 50	5 20	19 40	2 38	29 50	1 28	86 0	0 2
4 55	10 2	9 55	5 18	19 50	2 37	30 0	1 26	87 0	0 0

Height of the Eye.	Dip of the Horizon.	Height of the Eye.	Dip of the Horizon.
ft.	"	ft.	"
1	0 59	19	4 17
2	1 24	20	4 24
3	1 42	21	4 31
4	1 58	22	4 37
5	2 12	23	4 43
6	2 25	24	4 49
7	2 36	25	4 55
8	2 47	26	5 1
9	2 57	27	5 7
10	3 7	28	5 13
11	3 16	29	5 18
12	3 25	30	5 24
13	3 33	31	5 29
14	3 41	32	5 34
15	3 49	33	5 39
16	3 56	34	5 44
17	4 4	35	5 49
18	4 11	38	6 4

Dip at Different
Distances.

Miles.	Height of the Eye in Feet
	5 10 15 20 25 30
1	11 23 34 45 57 68
2	6 12 17 23 28 34
3	4 8 12 15 19 23
4	3 6 9 12 15 17
5	3 5 7 10 12 14
6	3 4 6 8 10 12
7	2 4 5 7 8 9
8	2 3 4 6 7 8
9	2 3 4 5 6 7
10	2 3 4 5 6 7
11	2 3 4 5 6 7
12	2 3 4 5 6 7
13	2 3 4 5 6 7
14	2 3 4 5 6 7
15	2 3 4 5 6 7
16	2 3 4 5 6 7
17	2 3 4 5 6 7
18	2 3 4 5 6 7
19	2 3 4 5 6 7
20	2 3 4 5 6 7

Table
Of Corrections

To be applied to the
Rising and Setting of
the Sun, Moon, and
Planets, when view-
ed from elevations
above the sea level—
Subtract from Rising,
add to Setting.

ft. s.	ft. m. s.	ft. m. s.
5 16	50 0 51	120 1 17
10 23	60 0 56	140 1 26
15 28	70 1 1	160 1 32
20 30	80 1 5	180 1 38
30 38	90 1 8	200 1 43
40 46	100 1 10	300 2 3

**Right Ascensions, and Declinations, and Semi-diurnal Arcs,
FOR LATITUDE 54° 10',
Of the Principal Fixed Stars**

NAMES.	Magni- tude.	Right Ascension. H. M. S.	Annual Variations "	Declination. ° ' "	Annual Variations "	Semi-diurnal Arcs. H. M.
α Andromedæ	2	0 1 37	+ 3.08	N 28 22 2	+19.90	9 19
γ Pegasi (Algenib)	3.2	0 6 29	+ 3.08	14 27 18	+20.03	7 27
α Cassiopeæ	Var.	0 33 5	+ 3.36	55 49 6	+19.81	sets not
β Ceti	2	0 37 1	+ 3.01	S 18 42 23	+19.82	4 12
α Ursæ Minor. (Polaris)	2	1 10 57	+19.77	N 88 36 40	+19.12	sets not
α Eridani (Achernar) . .	1	1 32 50	+ 2.23	S 57 54 10	+18.42	rises not
α Arietes.	2	1 59 48	+ 3.36	N 22 50 30	+17.23	8 27
α Ceti	2.3	2 55 26	+ 3.13	3 34 26	+14.35	6 23
α Persei	2	3 14 59	+ 4.25	49 23 32	+13.18	sets not
η Tauri	3	3 39 42	+ 3.55	23 41 52	+11.48	8 34
α Tauri (Aldebaran) . .	1	4 28 24	+ 3.43	16 14 36	+ 7.63	7 39
α Aurigæ (Capella)	1	5 7 1	+ 4.42	45 51 40	+ 4.17	sets not
β Orionis (Rigel)	1	5 8 15	+ 2.88	S 8 21 20	+ 4.48	5 17
β Tauri	2	5 18 1	+ 3.79	N 28 29 37	+ 3.46	9 21
δ Orionis	2	5 25 19	+ 3.06	S 0 23 56	+ 2.99	6 1
α Leporis	3	5 26 57	+ 2.65	17 55 5	+ 2.89	4 10
ε Orionis	2	5 29 34	+ 3.04	1 17 17	+ 2.65	5 57
α Columbæ	2	5 34 55	+ 2.18	34 8 42	+ 2.19	sets not
α Orionis	Var.	5 48 5	+ 3.25	N 7 22 48	+ 1.05	6 45
α Argus (Canopus)	1	6 21 3	+ 1.33	S 52 37 30	- 1.83	rises not
α Canis Majoris (Sirius)	1	6 39 23	+ 2.64	16 32 20	- 4.65	4 27
α Geminorum (Castor)	2.1	7 26 14	+ 3.84	N 32 10 22	- 7.44	10 13
α Canis Minoris (Proc.)	1	7 32 27	+ 3.14	5 33 31	- 8.90	6 35
β Geminorum (Pollux)	1.2	7 37 18	+ 3.68	28 20 24	- 8.31	9 20
α Hydræ	2	9 21 9	+ 2.95	S 8 5 32	-15.39	6 49
α Leonis (Regulus)	1.2	10 1 24	+ 3.20	N 12 36 23	-17.41	7 17
α Ursæ Majoris	2	10 55 37	+ 3.77	62 27 26	-19.35	sets not
δ Leonis	2.3	11 7 8	+ 3.20	21 14 27	-19.67	8 16
β Leonis	2	11 42 23	+ 3.06	15 18 15	-20.09	7 34
γ Ursæ Majoris	2.3	11 46 56	+ 3.19	54 25 23	-20.02	sets not
α Crucis	1	12 19 19	+ 3.26	S 62 22 18	-19.93	rises not
β Corvi	2.3	12 27 30	+ 3.13	22 40 20	-19.98	3 44
α Virginis (Spica)	2	13 18 18	+ 3.15	10 28 37	-18.94	5 5
β Centauri	1	13 54 36	+ 4.16	59 44 22	-17.67	rises not
α Bootis (Arcturus)	1	14 9 41	+ 2.73	N 19 51 56	-18.91	8 5
α Centauri	1	14 30 44	+ 4.03	S 60 17 24	-15.03	rises not
ε Bootis	2.3	14 39 16	+ 2.62	N 27 37 40	-15.40	9 13
α Libræ	2.3	14 43 38	+ 3.30	S 15 29 44	-15.22	4 34
β Ursæ Minoris	2	14 51 7	- 0.25	N 74 41 26	-14.76	sets not
β Libræ	2	15 9 58	+ 3.22	S 8 53 52	-13.57	5 14
α Coronæ Borealis	2	15 29 8	+ 2.54	N 27 9 26	-12.35	9 8
α Serpentis	2.3	15 37 49	+ 2.95	6 50 23	-11.61	6 42
α Scorpis (Antares)	1.2	16 21 23	+ 3.67	S 26 8 19	- 8.40	3 15
α Trianguli Australis . .	2	16 34 49	+ 6.28	68 46 57	- 7.37	rises not
α Herculis	Var.	17 8 40	+ 2.73	N 14 32 30	- 4.41	7 29
β Draconis	3.2	17 27 28	+ 1.35	52 23 57	- 2.84	sets not
α Lyræ (Vega)	1	18 32 30	+ 2.03	39 38 48	+ 3.11	sets not
β Lyræ	Var.	18 45 14	+ 2.21	33 12 43	+ 3.90	10 31
γ Aquilæ	3	19 40 2	+ 2.85	10 17 46	+ 8.47	7 2
α Aquilæ (Altair)	1.2	19 44 23	+ 2.93	8 31 28	+ 9.20	6 51
β Aquilæ	4	19 48 53	+ 2.95	6 4 54	+ 8.69	6 37
α Pavonis	2	20 15 16	+ 4.80	S 57 9 5	+11.12	rises not
α Cygni	2.1	20 36 58	+ 2.04	N 44 48 48	+12.68	sets not
α Cephei	3	21 15 27	+ 1.44	62 1 51	+15.10	sets not
β Aquarii	3	21 24 40	+ 3.16	S 6 8 45	+15.62	5 29
β Cephei	3	21 26 58	+ 0.80	N 69 59 9	+15.70	sets not
α Aquarii	3	21 59 3	+ 3.08	S 0 57 19	+17.31	5 58
α Gruis	2	21 59 58	+ 3.81	47 35 37	+17.18	rises not
α Piscium Australis	1.2	22 50 24	+ 3.33	30 18 57	+18.96	2 29
α Pegasi (Markab)	2	22 58 14	+ 2.98	N 14 30 4	+19.30	7 27

General Tide Table,

By which the times of High Water may be CORRECTLY FOUND on ANY Day.

N.B.—Add to the time of High Water in the Liverpool Tide Table in this Almanack, the Hours and Minutes in the Column opposite the Place required.

ENGLAND		H.M.			H.M.			H.M.
Alderney Pier..	..	7 35	Burrey Harbour..	..	6 50	Eyemouth ..	..	3 5
Alne River ..	..	3 35	Cardiff ..	..	6 50	Leith Pier ..	..	3 10
Barnstaple Bar..	..	6 20	Cardigan Bar ..	..	7 50	Montrose ..	..	2 35
Berwick ..	..	3 8	Caermarthen Bar ..	..	7 0	Tay Bar ..	..	2 35
Blakeney ..	..	7 40	Carnarvon Bar ..	..	9 50	Wick ..	..	10 5
Blythe ..	..	3 35	Denbigh ..	..	3 5			
Boston ..	..	8 5	Fisgard Bay ..	..	7 20			
Bridgewater ..	..	7 35	Milford Haven..	..	6 35			
Bridlington..	..	5 20	Newport ..	..	7 35			
Carlisle ..	..	0 50	Pembroke ..	..	6 54			
Chatham ..	..	1 44	Skerries ..	..	10 35			
Christchurch ..	..	9 40	Smalls and Swansea..	..	6 40			
Dartmouth..	..	6 55	Strumble Head	..	7 5			
Exmouth Bar ..	..	7 15						
Falmouth ..	..	6 20						
Flamboro' Head ..	..	5 20						
Flatholm ..	..	7 18						
Fowey ..	..	6 20						
Gravesend ..	..	2 20						
Guernsey (Eng.Chan)	..	7 20						
Hartlepool ..	..	4 35						
Humber River ..	..	6 20						
Ilfracombe ..	..	6 20						
Ipswich ..	..	0 50						
Jersey (En. Ch.) ..	..	7 0						
Land's End ..	..	5 20						
Loughships ..	..	5 20						
Lyme Regis ..	..	7 20						
Needles Point ..	..	10 35						
Newcastle ..	..	4 50						
Penzance ..	..	5 20						
Plymouth Dock..	..	6 20						
Poole ..	..	9 50						
Ramsgate ..	..	0 36						
Robin Hood's Bay ..	..	4 35						
Scarborough ..	..	5 15						
Scilly Islands ..	..	5 0						
Sheerness ..	..	1 29						
Spithead ..	..	10 20						
St. Ives ..	..	5 20						
Tees River ..	..	4 20						
Torbay ..	..	6 50						
Tynemouth Bar ..	..	3 40						
Weymouth..	..	7 20						
Whitby ..	..	4 35						
Wisbeach ..	..	8 20						
Yarmouth Roads ..	..	9 30						
Yarmouth, Isle Wight	..	10 20						
			</					

M	D	GREENOCK				LONDON				CORK				Sunderland and Shields.				Hull and Bridport.				Southampton & Portsmouth															
		Morn	Even	Height.	Height.	Morn	Even	Height.	Height.	Morn	Even	Height.	Height.	Morn	Even	Height.	Height.	Morn	Even	Height.	Height.	Morn	Even	Height.	Height.												
		H. M.	H. M.	Ft. In.	Ft. In.	H. M.	H. M.	Ft. In.	Ft. In.	H. M.	H. M.	Ft. In.	Ft. In.	H. M.	H. M.	Ft. In.	Ft. In.	H. M.	H. M.	Ft. In.	Ft. In.	H. M.	H. M.	Ft. In.	Ft. In.												
		Calculated from the Mean Level of Low Water Spring Tides.												Datum—Low Water Level of Ordinary Spring Tides.										Datum—Sill of North Dock Gates.													
1	1	36	1 57	9 11	7	3 46	4 10	19 7	7	6 45	7 6	12 1	1	5 5	5 28	14 7	7	8 14	8 36	21 4	4	1 9	1 30	19 3	3	1 9	1 30	19 3	3	1 9	1 30	19 3	3	1 9	1 30	19 3	3
2	2	21	2 45	9 9	7	4 32	4 56	19 4	4	7 31	7 57	11 11	11	5 53	6 18	14 2	2	9 0	9 24	20 9	2	1 54	2 18	18 11	11	1 54	2 18	18 11	11	1 54	2 18	18 11	11	1 54	2 18	18 11	11
3	3	12	3 32	9 7	7	5 20	5 46	18 11	11	8 26	8 48	11 7	7	6 47	7 12	13 9	9	9 52	10 15	20 2	2	2 44	3 8	18 9	9	2 44	3 8	18 9	9	2 44	3 8	18 9	9	2 44	3 8	18 9	9
4	4	3 56	4 21	9 3	3	6 11	6 36	18 5	5	9 13	9 41	11 0	0	7 38	8 6	13 1	1	10 42	11 12	19 4	4	3 34	3 58	18 3	3	3 34	3 58	18 3	3	3 34	3 58	18 3	3	3 34	3 58	18 3	3
5	5	4 48	5 16	8 11	11	7 2	7 31	17 3	3	10 10	10 39	10 5	5	8 37	9 8	12 5	5	11 44	12 18	18 4	4	4 26	4 54	17 9	9	4 26	4 54	17 9	9	4 26	4 54	17 9	9	4 26	4 54	17 9	9
6	6	5 45	6 20	8 8	8	8 1	8 34	17 6	6	11 9	11 44	9 11	11	9 43	10 17	11 9	9	0 16	0 50	17 6	6	5 25	5 59	17 3	3	5 25	5 59	17 3	3	5 25	5 59	17 3	3	5 25	5 59	17 3	3
7	7	6 51	7 28	8 8	8	9 9	9 44	16 9	9	0 53	1 15	9 9	9	10 51	11 26	11 6	6	1 22	1 54	17 2	2	6 32	7 8	17 1	1	6 32	7 8	17 1	1	6 32	7 8	17 1	1	6 32	7 8	17 1	1
8	8	8 3	8 36	8 8	8	10 20	10 56	16 16	16	1 58	2 32	10 5	5	0 30	1 11	9 1	1	2 28	3 2	17 6	6	7 43	8 16	17 3	3	7 43	8 16	17 3	3	7 43	8 16	17 3	3	7 43	8 16	17 3	3
9	9	9 11	9 40	8 11	11	11 31	0 32	16 16	16	2 59	3 27	10 9	9	1 29	2 12	4 4	4	3 33	4 6	18 3	3	8 50	9 20	17 8	8	8 50	9 20	17 8	8	8 50	9 20	17 8	8	8 50	9 20	17 8	8
10	10	10 59	11 20	9 2	2	0 4	1 23	17 6	6	3 53	4 17	10 10	10	2 19	2 55	12 9	9	4 34	5 0	18 10	10	9 48	10 14	18 0	0	9 48	10 14	18 0	0	9 48	10 14	18 0	0	9 48	10 14	18 0	0
11	11	11 43	0 26	9 9	9	1 47	2 8	17 11	11	4 37	5 0	11 0	0	3 2	3 22	13 0	0	5 25	5 49	19 2	2	10 39	11 0	18 2	2	10 39	11 0	18 2	2	10 39	11 0	18 2	2	10 39	11 0	18 2	2
12	12	0 5	1 6	9 9	9	2 29	3 24	18 5	5	5 22	5 42	11 3	3	4 17	4 13	5 6	6	6 10	6 31	19 6	6	11 22	11 41	18 4	4	11 22	11 41	18 4	4	11 22	11 41	18 4	4	11 22	11 41	18 4	4
13	13	0 5	1 6	9 9	9	3 3	3 24	18 5	5	6 31	6 48	11 4	4	4 52	5 9	13 6	6	7 26	7 43	19 11	11	11 59	12 18	18 6	6	11 59	12 18	18 6	6	11 59	12 18	18 6	6	11 59	12 18	18 6	6
14	14	0 46	1 39	9 9	9	3 3	3 24	18 5	5	7 6	7 24	11 2	2	5 24	5 42	13 5	5	8 30	8 47	19 9	9	0 18	0 37	18 7	7	0 18	0 37	18 7	7	0 18	0 37	18 7	7	0 18	0 37	18 7	7
15	15	1 22	2 14	9 9	9	4 14	4 31	18 4	4	7 42	8 0	10 11	11	6 3	6 21	13 1	1	9 8	9 25	19 4	4	0 55	1 11	18 7	7	0 55	1 11	18 7	7	0 55	1 11	18 7	7	0 55	1 11	18 7	7
16	16	1 56	2 48	9 9	9	4 48	5 6	18 1	1	8 18	8 33	10 8	8	6 38	6 57	12 8	8	9 41	10 0	18 9	9	1 28	1 55	18 6	6	1 28	1 55	18 6	6	1 28	1 55	18 6	6	1 28	1 55	18 6	6
17	17	2 31	3 19	9 9	9	5 23	5 39	17 9	9	9 26	9 50	9 11	11	7 16	7 35	12 2	2	10 19	10 39	18 1	1	2 38	2 53	17 11	11	2 38	2 53	17 11	11	2 38	2 53	17 11	11	2 38	2 53	17 11	11
18	18	3 4	4 30	8 8	8	6 33	6 53	17 1	1	10 15	10 45	9 6	6	8 47	9 19	11 2	2	11 1	11 26	17 5	5	3 11	3 29	17 6	6	3 11	3 29	17 6	6	3 11	3 29	17 6	6	3 11	3 29	17 6	6
19	19	3 33	4 30	8 8	8	7 15	7 40	16 1	1	11 17	11 50	9 2	2	9 51	10 25	10 11	11	11 54	12 16	16 9	9	4 33	5 0	16 10	10	4 33	5 0	16 10	10	4 33	5 0	16 10	10	4 33	5 0	16 10	10
20	20	4 8	5 22	8 8	8	8 9	8 42	16 1	1	12 10	12 45	9 2	2	11 0	11 35	10 11	11	0 27	0 57	16 8	8	5 31	6 6	16 8	8	5 31	6 6	16 8	8	5 31	6 6	16 8	8	5 31	6 6	16 8	8
21	21	4 53	5 26	8 8	8	9 17	9 53	15 1	1	1 0	1 24	9 4	4	11 0	11 35	10 11	11	1 30	2 2	16 3	3	6 40	7 17	16 8	8	6 40	7 17	16 8	8	6 40	7 17	16 8	8	6 40	7 17	16 8	8
22	22	5 33	6 26	8 8	8	10 29	11 5	15 1	1	2 10	2 41	9 11	11	0 39	1 11	11 5	5	2 36	3 10	17 0	0	7 51	8 26	17 1	1	7 51	8 26	17 1	1	7 51	8 26	17 1	1	7 51	8 26	17 1	1
23	23	6 59	7 37	8 8	8	11 40	0 43	17 2	2	3 9	3 38	11 3	3	1 40	2 5	13 2	2	3 41	4 15	18 3	3	8 59	9 31	17 8	8	8 59	9 31	17 8	8	8 59	9 31	17 8	8	8 59	9 31	17 8	8
24	24	8 8	8 48	8 8	8	0 13	0 43	17 2	2	4 4	4 30	11 7	7	2 29	2 54	14 0	0	4 45	5 11	19 5	5	10 51	11 15	18 4	4	10 51	11 15	18 4	4	10 51	11 15	18 4	4	10 51	11 15	18 4	4
25	25	9 20	9 51	9 9	9	1 9	1 34	18 2	2	5 47	6 9	12 7	7	3 17	3 42	14 4	4	5 36	6 2	20 6	6	11 42	12 19	18 10	10	11 42	12 19	18 10	10	11 42	12 19	18 10	10	11 42	12 19	18 10	10
26	26	10 19	10 46	9 4	4	1 59	2 23	19 1	1	6 30	6 53	12 8	8	4 5	5 14	15 2	2	6 26	7 37	21 9	9	0 6	0 29	19 6	6	0 6	0 29	19 6	6	0 6	0 29	19 6	6	0 6	0 29	19 6	6
27	27	11 12	11 36	9 9	9	2 48	3 12	19 10	10	7 18	7 42	12 8	8	5 40	6 14	15 2	2	7 15	8 21	22 1	1	1 40	2 3	19 7	7	1 40	2 3	19 7	7	1 40	2 3	19 7	7	1 40	2 3	19 7	7
28	28	0 32	0 58	10 2	2	3 34	3 56	20 2	2	8 30	8 53	12 8	8	6 30	6 53	12 8	8	8 2	9 7	22 2	2	0 53	1 16	19 8	8	0 53	1 16	19 8	8	0 53	1 16	19 8	8	0 53	1 16	19 8	8
29	29	1 20	1 44	10 3	3	4 19	4 43	20 2	2	9 18	9 42	12 8	8	7 18	7 42	12 8	8	9 2	10 7	22 2	2	1 40	2 3	19 7	7	1 40	2 3	19 7	7	1 40	2 3	19 7	7	1 40	2 3	19 7	7
30	30	2 8	2 31	10 2	2	5 7	5 20	20 2	2	10 16	10 40	12 8	8	8 2	8 26	12 8	8	10 2	11 7	22 2	2	2 3	2 26	19 8	8	2 3	2 26	19 8	8	2 3	2 26	19 8	8	2 3	2 26	19 8	8
31	31	3 2	3 21	10 2	2	6 16	6 39	20 2	2	11 16	11 40	12 8	8	9 2	9 26	12 8	8	11 2	12 7	22 2	2	3 2	3 25	19 8	8	3 2	3 25	19 8	8	3 2	3 25	19 8	8	3 2	3 25	19 8	8

GREENOCK			LONDON			CORK			Sunderland & Shields			Hull & Bridport			Southampton & Portsmouth		
M	D	Height.	M	D	Height.	M	D	Height.	M	D	Height.	M	D	Height.	M	D	Height.
		Ft. In.			Ft. In.			Ft. In.			Ft. In.			Ft. In.			Ft. In.
1	1	17	1	1	19	1	1	12	1	1	14	1	1	21	1	1	3
2	2	59	2	2	15	2	2	11	2	2	13	2	2	45	2	2	9
3	3	45	3	3	18	3	3	10	3	3	16	3	3	40	3	3	18
4	4	51	4	4	17	4	4	9	4	4	15	4	4	31	4	4	1
5	5	61	5	5	16	5	5	9	5	5	14	5	5	19	5	5	4
6	6	8	6	6	16	6	6	9	6	6	14	6	6	16	6	6	10
7	7	27	7	7	22	7	7	9	7	7	11	7	7	31	7	7	8
8	8	44	8	8	15	8	8	9	8	8	11	8	8	49	8	8	1
9	9	52	9	9	16	9	9	9	9	9	12	9	9	25	9	9	5
10	10	43	10	10	17	10	10	10	10	10	13	10	10	32	10	10	11
11	11	28	11	11	17	11	11	11	11	11	13	11	11	48	11	11	18
12	12	0	12	12	18	12	12	12	12	12	14	12	12	10	12	12	24
13	13	4	13	13	18	13	13	13	13	13	15	13	13	27	13	13	31
14	14	1	14	14	18	14	14	14	14	14	16	14	14	11	14	14	4
15	15	35	15	15	18	15	15	15	15	15	17	15	15	46	15	15	18
16	16	37	16	16	18	16	16	16	16	16	18	16	16	0	16	16	24
17	17	39	17	17	18	17	17	17	17	17	19	17	17	1	17	17	31
18	18	40	18	18	18	18	18	18	18	18	20	18	18	2	18	18	38
19	19	42	19	19	17	19	19	17	19	19	21	19	19	3	19	19	41
20	20	5	20	20	16	20	20	16	20	20	22	20	20	4	20	20	48
21	21	10	21	21	16	21	21	16	21	21	23	21	21	5	21	21	53
22	22	29	22	22	15	22	22	15	22	22	24	22	22	6	22	22	59
23	23	53	23	23	16	23	23	16	23	23	25	23	23	7	23	23	63
24	24	59	24	24	16	24	24	16	24	24	26	24	24	8	24	24	68
25	25	57	25	25	18	25	25	18	25	25	27	25	25	9	25	25	74
26	26	45	26	26	19	26	26	19	26	26	28	26	26	10	26	26	81
27	27	11	27	27	20	27	27	20	27	27	29	27	27	11	27	27	88
28	28	1	28	28	20	28	28	20	28	28	30	28	28	12	28	28	94

CORK

LONDON

GREENOCK

Southampton & Portsmouth

Hull & Bridport

Sunderland & Shields

TIDE TABLES—MARCH, 1869.

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GREENOCK.			LONDON			CORK			Sunderland & Shields			Hull & Bridport			Southampton & Portsmouth		
M	D	1	M	D	1	M	D	1	M	D	1	M	D	1	M	D	1
Height.			Height.			Height.			Height.			Height.			Height.		
Even	M.	Ft.	Even	M.	Ft.	Even	M.	Ft.	Even	M.	Ft.	Even	M.	Ft.	Even	M.	Ft.
1	4	24	1	4	24	1	4	24	1	4	24	1	4	24	1	4	24
2	5	6	2	5	6	2	5	6	2	5	6	2	5	6	2	5	6
3	5	49	3	5	49	3	5	49	3	5	49	3	5	49	3	5	49
4	6	31	4	6	31	4	6	31	4	6	31	4	6	31	4	6	31
5	6	18	5	6	18	5	6	18	5	6	18	5	6	18	5	6	18
6	7	11	6	7	11	6	7	11	6	7	11	6	7	11	6	7	11
7	7	52	7	7	52	7	7	52	7	7	52	7	7	52	7	7	52
8	8	33	8	8	33	8	8	33	8	8	33	8	8	33	8	8	33
9	8	19	9	8	19	9	8	19	9	8	19	9	8	19	9	8	19
10	9	10	10	9	10	10	9	10	10	9	10	10	9	10	10	9	10
11	9	44	11	9	44	11	9	44	11	9	44	11	9	44	11	9	44
12	10	25	12	10	25	12	10	25	12	10	25	12	10	25	12	10	25
13	10	11	13	10	11	13	10	11	13	10	11	13	10	11	13	10	11
14	10	51	14	10	51	14	10	51	14	10	51	14	10	51	14	10	51
15	11	34	15	11	34	15	11	34	15	11	34	15	11	34	15	11	34
16	11	17	16	11	17	16	11	17	16	11	17	16	11	17	16	11	17
17	11	58	17	11	58	17	11	58	17	11	58	17	11	58	17	11	58
18	12	39	18	12	39	18	12	39	18	12	39	18	12	39	18	12	39
19	12	24	19	12	24	19	12	24	19	12	24	19	12	24	19	12	24
20	12	10	20	12	10	20	12	10	20	12	10	20	12	10	20	12	10
21	12	41	21	12	41	21	12	41	21	12	41	21	12	41	21	12	41
22	13	24	22	13	24	22	13	24	22	13	24	22	13	24	22	13	24
23	13	10	23	13	10	23	13	10	23	13	10	23	13	10	23	13	10
24	13	51	24	13	51	24	13	51	24	13	51	24	13	51	24	13	51
25	14	34	25	14	34	25	14	34	25	14	34	25	14	34	25	14	34
26	14	17	26	14	17	26	14	17	26	14	17	26	14	17	26	14	17
27	14	58	27	14	58	27	14	58	27	14	58	27	14	58	27	14	58
28	15	39	28	15	39	28	15	39	28	15	39	28	15	39	28	15	39
29	15	24	29	15	24	29	15	24	29	15	24	29	15	24	29	15	24
30	15	10	30	15	10	30	15	10	30	15	10	30	15	10	30	15	10
31	15	41	31	15	41	31	15	41	31	15	41	31	15	41	31	15	41

TIDE TABLE—APRIL, 1869.

Southampton & Portsmouth																	
M	D	Morn	Even	Portmhl.	Hull	Even	Height.	Datum	Sill of North Dock Gates.	Morn	Even	Portmhl.	Hull	Even	Height.	M	D
1	2	20	2	41	18	11	1			2	20	2	41	18	11	1	2
2	3	3	3	27	18	2	2			3	3	3	27	18	2	2	3
3	4	3	4	14	17	4	3			3	4	3	14	17	4	3	4
4	5	4	4	2	16	8	4			4	4	4	2	16	8	4	5
5	6	5	5	7	38	16	5			5	5	5	7	38	16	5	6
6	7	7	7	21	58	16	6			7	7	7	21	58	16	6	7
7	8	8	8	35	9	5	7			8	8	8	35	9	5	7	8
8	9	9	9	30	9	5	8			9	9	9	30	9	5	8	9
9	10	10	10	15	10	3	9			10	10	10	15	10	3	9	10
10	11	10	11	49	11	6	10			10	11	11	49	11	6	10	11
11	12	11	12	18	11	3	11			11	12	12	18	11	3	11	12
12	13	11	13	52	18	9	12			11	13	13	52	18	9	12	13
13	14	0	14	25	18	10	13			0	14	14	25	18	10	13	14
14	15	0	15	42	18	11	14			0	15	15	42	18	11	14	15
15	16	1	16	31	18	10	15			1	16	16	31	18	10	15	16
16	17	1	17	47	18	11	16			1	17	17	47	18	11	16	17
17	18	2	18	24	18	12	17			2	18	18	24	18	12	17	18
18	19	3	19	8	17	6	18			3	19	19	8	17	6	18	19
19	20	3	20	58	17	2	19			3	20	20	58	17	2	19	20
20	21	5	21	4	16	9	20			5	21	21	4	16	9	20	21
21	22	6	22	27	16	7	21			6	22	22	27	16	7	21	22
22	23	7	23	50	17	4	22			7	23	23	50	17	4	22	23
23	24	8	24	56	18	3	23			8	24	24	56	18	3	23	24
24	25	9	25	52	10	1	24			9	25	25	52	10	1	24	25
25	26	10	26	41	11	7	25			10	26	26	41	11	7	25	26
26	27	11	27	24	11	4	26			11	27	27	24	11	4	26	27
27	28	0	28	11	9	1	27			0	28	28	11	9	1	27	28
28	29	0	29	84	0	5	28			0	29	29	84	0	5	28	29
29	30	1	30	16	1	3	29			1	30	30	16	1	3	29	30
30		1		56	2	3				1			56	2	3		

Hull and Bridport.																		
M	D	Morn	Even	Portmhl.	Hull	Even	Height.	Datum	Sill of North Dock Gates.	Morn	Even	Portmhl.	Hull	Even	Height.	M	D	
1	2	9	25	9	47	20	8			9	25	9	47	20	8	1	2	
2	3	10	10	10	37	19	2			10	10	10	37	19	2	2	3	
3	4	11	2	11	32	17	8			11	2	11	32	17	8	3	4	
4	5	0	4	1	23	15	3			0	4	1	23	15	3	4	5	
5	6	2	2	2	40	15	7			2	2	2	40	15	7	5	6	
6	7	3	18	3	53	16	9			3	18	3	53	16	9	6	7	
7	8	4	22	4	44	17	10			4	22	4	44	17	10	7	8	
8	9	5	5	5	26	18	10			5	5	5	26	18	10	8	9	
9	10	5	5	43	5	59	19			5	5	5	43	5	59	19	9	10
10	11	6	15	6	28	20	0			6	15	6	28	20	0	10	11	
11	12	6	16	6	46	7	2			6	16	6	46	7	2	11	12	
12	13	7	16	7	31	20	4			7	16	7	31	20	4	12	13	
13	14	7	16	8	4	20	8			7	16	8	4	20	8	13	14	
14	15	8	19	8	36	20	5			8	19	8	36	20	5	14	15	
15	16	8	53	9	11	19	11			8	53	9	11	19	11	15	16	
16	17	9	29	9	50	19	2			9	29	9	50	19	2	16	17	
17	18	10	16	10	42	18	1			10	16	10	42	18	1	17	18	
18	19	11	13	11	48	17	3			11	13	11	48	17	3	18	19	
19	20	1	12	1	52	16	6			1	12	1	52	16	6	19	20	
20	21	2	31	3	6	17	9			2	31	3	6	17	9	20	21	
21	22	3	34	4	11	19	4			3	34	4	11	19	4	21	22	
22	23	4	39	5	4	20	7			4	39	5	4	20	7	22	23	
23	24	5	28	5	51	21	0			5	28	5	51	21	0	23	24	
24	25	6	10	6	33	22	2			6	10	6	33	22	2	24	25	
25	26	6	58	7	16	22	2			6	58	7	16	22	2	25	26	
26	27	7	39	8	0	21	1			7	39	8	0	21	1	26	27	
27	28	8	21	8	41	21	1			8	21	8	41	21	1	27	28	
28	29	8	21	8	41	21	1			8	21	8	41	21	1	28	29	
29	30	8	21	8	41	21	1			8	21	8	41	21	1	29	30	
30		8	21	8	41	21	1			8	21	8	41	21	1	30		
Sunderland & Shields																		
M	D	Morn	Even	Portmhl.	Sunlnd.	Even	Height.	Datum	Sill of North Dock Gates.	Morn	Even	Portmhl.	Sunlnd.	Even	Height.	M	D	
1	2	6	21	6	44	14	1			6	21	6	44	14	1	1	2	
2	3	7	7	7	33	13	0			7	7	7	33	13	0	2	3	
3	4	7	7	8	25	11	11			7	7	8	25	11	11	3	4	
4	5	8	58	9	34	10	11			8	58	9	34	10	11	4	5	
5	6	10	17	10	58	10	5			10	17	10	58	10	5	5	6	
6	7	11	39	0	50	11	10			11	39	0	50	11	10	6	7	
7	8	1	18	1	39	12	0			1	18	1	39	12	0	7	8	
8	9	1	59	2	19	12	9			1	59	2	19	12	9	8	9	
9	10	2	36	2	52	13	3			2	36	2	52	13	3	9	10	
10	11	3	7	3	20	13	7			3	7	3	20	13	7	10	11	
11	12	3	37	3	52	13	10			3	37	3	52	13	10	11	12	
12	13	4	6	4	22	14	0			4	6	4	22	14	0	12	13	
13	14	4	38	4	56	14	1			4	38	4	56	14	1	13	14	
14	15	5	12	5	30	13	11			5	12	5	30	13	11	14	15	
15	16	5	47	6	6	13	7			5	47	6	6	13	7	15	16	
16	17	6	25	6	47	13	0			6	25	6	47	13	0	16	17	
17	18	7	12	7	39	12	2			7	12	7	39	12	2	17	18	
18	19	8	8	8	42	11	7			8	8	8	42	11	7	18	19	
19	20	9	22	9	41	1	1			9	22	9	41	1	1	19	20	
20	21	10	46	11	27	11	2			10	46	11	27	11	2	20	21	
21	22	0	39	0	5	11	11			0	39	0	5	11	11	21	22	
22	23	1	34	1	58	14	0			1	34	1	58	14	0	22	23	
23	24	2	21	2	43	14	9			2	21	2	43	14	9	23	24	
24	25	3	2	3	24	15	1			3	2	3	24	15	1	24	25	
25	26	3	48	4	6	15	3			3	48	4	6	15	3	25	26	
26	27	4	30	4	51	15	1			4	30	4	51	15	1	26	27	
27	28	5	13	5	34	14	1			5	13	5	34	14	1	27	28	
28	29	6	5	6	10	13	1			6	5	6	10	13	1	28	29	
29	30	6	51	7	12	12	1			6	51	7	12	12	1	29	30	
30		7	34	7	5	11	1			7	34	7	5	11	1	30		
GREENOCK																		
M	D	Morn	Even	Height.	M	D	Morn	Even	Height.	M	D	Morn	Even	Height.	M	D	Height.	
1	2	47	3	9	7	1	2	47	3	9	7	1	2	47	3	9	7	
2	3	3	3	48	9	1	3	3	3	48	9	1	3	3	3	48	9	
3	4	4	4	34	8	1	4	4	4	34	8	1	4	4	4	34	8	
4	5	5	2	35	8	1	5	5	5	35	8	1	5	5	5	35	8	
5	6	6	15	6	56	8	0	6	6	6	56	8	0	6	6	6	56	
6	7	7	39	8	18	8	1	7	7	7	39	8	1	7	7	7	39	
7	8	8	56	9	26	8	6	8	8	8	56	9	6	8	8	8	56	
8	9	9	50	10	12	8	9	9	9	9	50	10	8	9	9	9	50	
9	10	10	33	10	53	9	1	10	10	10	33	10	9	1	10	10	33	
10	11	11	10	11	27	9	3	11	11	11	27	9	3	3	11	11	27	
11	12	11	41	11	59	9	5	12	12	12	41	11	5	5	12	12	41	
12	13	<																

Datum—Sill of North Dock Gates.

Low water Levels at Ordinary Spring Tides.

Low water Levels of Ordinary Spring Tides.

Calculated from the Mean Level of Low water Spring Tides.

Calculated from the Mean Level of Low water Spring Tides.

Calculated from the Mean Level of Low water Spring Tides.

TIDE TABLES—MAY, 1869.

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GREENOCK			LONDON			CORK			Sunderland & Shields			Hull & Bridport			Southampton & Portsmouth			M	D
Morn	Even	Height.	Morn	Even	Height.	Morn	Even	Height.	Morn	Even	Sunlnd. Height.	Morn	Even	Height.	Morn	Even	Portmth. Height.		
H. M.	H. M.	Ft. In.	H. M.	H. M.	Ft. In.	H. M.	H. M.	Ft. In.	H. M.	H. M.	Ft. In.	H. M.	H. M.	Ft. In.	H. M.	H. M.	H. M.		
1	3	24	5	18	40	8	15	38	6	39	7	9	43	10	2	37	3	1	1
2	3	44	6	4	28	9	1	25	7	29	7	10	31	11	3	25	3	2	2
3	4	7	6	53	7	9	54	10	8	24	8	11	31	16	4	13	4	3	3
4	5	2	7	50	8	10	59	11	40	9	16	10	4	43	5	17	5	4	4
5	6	16	8	9	45	12	0	17	9	36	10	4	0	15	6	34	6	5	5
6	7	29	9	10	59	13	1	27	9	52	11	1	1	56	7	45	7	6	6
7	8	39	10	11	59	14	2	27	10	0	4	2	2	16	8	44	8	7	7
8	9	31	0	23	16	3	3	32	10	31	5	3	3	17	9	32	9	8	8
9	10	13	1	21	17	4	4	41	11	1	12	4	4	18	10	13	10	9	9
10	11	50	2	1	38	5	5	52	11	2	13	5	5	19	11	47	11	10	10
11	12	24	3	1	47	6	6	61	12	3	14	6	6	20	12	20	12	11	11
12	0	0	4	2	58	7	7	71	13	4	15	7	7	21	13	11	13	12	12
13	1	1	5	3	68	8	8	81	14	5	16	8	8	22	14	18	14	13	13
14	2	1	6	4	78	9	9	91	15	6	17	9	9	23	15	25	15	14	14
15	3	1	7	5	88	10	10	101	16	7	18	10	10	24	16	32	16	15	15
16	4	1	8	6	98	11	11	111	17	8	19	11	11	25	17	39	17	16	16
17	5	1	9	7	108	12	12	121	18	9	20	12	12	26	18	46	18	17	17
18	6	1	10	8	118	13	13	131	19	10	21	13	13	27	19	53	19	18	18
19	7	1	11	9	128	14	14	141	20	11	22	14	14	28	20	60	20	19	19
20	8	1	12	10	138	15	15	151	21	12	23	15	15	29	21	67	21	20	20
21	9	1	13	11	148	16	16	161	22	13	24	16	16	30	22	74	22	21	21
22	10	1	14	12	158	17	17	171	23	14	25	17	17	31	23	81	23	22	22
23	11	1	15	13	168	18	18	181	24	15	26	18	18	32	24	88	24	23	23
24	12	1	16	14	178	19	19	191	25	16	27	19	19	33	25	95	25	24	24
25	13	1	17	15	188	20	20	201	26	17	28	20	20	34	26	102	26	25	25
26	14	1	18	16	198	21	21	211	27	18	29	21	21	35	27	109	27	26	26
27	15	1	19	17	208	22	22	221	28	19	30	22	22	36	28	116	28	27	27
28	16	1	20	18	218	23	23	231	29	20	31	23	23	37	29	123	29	28	28
29	17	1	21	19	228	24	24	241	30	21	32	24	24	38	30	130	30	29	29
30	18	1	22	20	238	25	25	251	31	22	33	25	25	39	31	137	31	30	30
31	19	1	23	21	248	26	26	261		23	34	26	26	40		144		31	31

GREENOCK										LONDON										CORK										Sunderland and Shields.										Hull and Bridport										Southampton & Portsmouth																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													
		Height.		Even		Morn		Height.		Even		Morn		Height.		Even		Morn		Height.		Even		Morn		Height.		Even		Morn		Height.		Even		Morn		Height.		Even		Morn		Height.		Even		Morn		Height.		Even		Morn		Height.		Even		Morn		Height.		Even		Morn		Height.		Even		Morn		Height.		Even		Morn		Height.		Even		Morn		Height.		Even		Morn		Height.		Even		Morn		Height.		Even		Morn		Height.		Even		Morn		Height.		Even		Morn		Height.		Even		Morn		Height.		Even		Morn		Height.		Even		Morn		Height.		Even		Morn		Height.		Even		Morn		Height.		Even		Morn		Height.		Even		Morn		Height.		Even		Morn		Height.		Even		Morn		Height.		Even		Morn		Height.		Even		Morn		Height.		Even		Morn		Height.		Even		Morn		Height.		Even		Morn		Height.		Even		Morn		Height.		Even		Morn		Height.		Even		Morn		Height.		Even		Morn		Height.		Even		Morn		Height.		Even		Morn		Height.		Even		Morn		Height.		Even		Morn		Height.		Even		Morn		Height.		Even		Morn		Height.		Even		Morn		Height.		Even		Morn		Height.		Even		Morn		Height.		Even		Morn		Height.		Even		Morn		Height.		Even		Morn		Height.		Even		Morn		Height.		Even		Morn		Height.		Even		Morn		Height.		Even		Morn		Height.		Even		Morn		Height.		Even		Morn		Height.		Even		Morn		Height.		Even		Morn		Height.		Even		Morn		Height.		Even		Morn		Height.		Even		Morn		Height.		Even		Morn		Height.		Even		Morn		Height.		Even		Morn		Height.		Even		Morn		Height.		Even		Morn		Height.		Even		Morn		Height.		Even		Morn		Height.		Even		Morn		Height.		Even		Morn		Height.		Even		Morn		Height.		Even		Morn		Height.		Even		Morn		Height.		Even		Morn		Height.		Even		Morn		Height.		Even		Morn		Height.		Even		Morn		Height.		Even		Morn		Height.		Even		Morn		Height.		Even		Morn		Height.		Even		Morn		Height.		Even		Morn		Height.		Even		Morn		Height.		Even		Morn		Height.		Even		Morn		Height.		Even		Morn		Height.		Even		Morn		Height.		Even		Morn		Height.		Even		Morn		Height.		Even		Morn		Height.		Even		Morn		Height.		Even		Morn		Height.		Even		Morn		Height.		Even		Morn		Height.		Even		Morn		Height.		Even		Morn		Height.		Even		Morn		Height.		Even		Morn		Height.		Even		Morn		Height.		Even		Morn		Height.		Even		Morn		Height.		Even		Morn		Height.		Even		Morn		Height.		Even		Morn		Height.		Even		Morn		Height.		Even		Morn		Height.		Even		Morn		Height.		Even		Morn		Height.		Even		Morn		Height.		Even		Morn		Height.		Even		Morn		Height.		Even		Morn		Height.		Even		Morn		Height.		Even		Morn		Height.		Even		Morn		Height.		Even		Morn		Height.		Even		Morn		Height.		Even		Morn		Height.		Even		Morn		Height.		Even		Morn		Height.		Even		Morn		Height.		Even		Morn		Height.		Even		Morn		Height.		Even		Morn		Height.		Even		Morn		Height.		Even		Morn		Height.		Even		Morn		Height.		Even		Morn		Height.		Even		Morn		Height.		Even		Morn		Height.		Even		Morn		Height.		Even		Morn		Height.		Even		Morn		Height.		Even		Morn		Height.		Even		Morn		Height.		Even		Morn		Height.		Even		Morn		Height.		Even		Morn		Height.		Even		Morn		Height.		Even		Morn		Height.		Even		Morn		Height.		Even		Morn		Height.		Even		Morn		Height.		Even		Morn		Height.		Even		Morn		Height.		Even		Morn		Height.		Even		Morn		Height.		Even		Morn		Height.		Even		Morn		Height.		Even		Morn		Height.		Even		Morn		Height.		Even		Morn		Height.		Even		Morn		Height.		Even		Morn		Height.		Even		Morn		Height.	

TIDE TABLES,—JULY, 1869.

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M

D

GREENOCK

LONDON

CORK

Sunderland and Shields

Hull and Bridport.

Southampton & Portsmouth

Morn	Even	Height.	Calculated from the Mean Level of Low Water Spring Tides.																	
H.	M.	H.	M.	H.	M.	H.	M.	H.	M.	H.	M.	H.	M.	H.	M.	H.	M.	H.	M.	
4	21	4	42	8	6	6	40	7	3	16	10	7	58	16	5	8	23	8	55	
5	8	5	35	8	4	8	23	8	55	16	1	28	11	59	9	0	39	1	10	
6	4	6	35	8	3	9	28	9	58	15	11	0	28	9	10	11	40	2	7	
7	3	7	36	8	7	10	28	10	58	16	0	1	11	6	11	2	35	3	1	
8	4	8	31	8	10	11	28	11	57	16	3	1	1	6	11	2	35	3	1	
9	4	9	32	8	10	12	28	11	57	16	3	1	1	6	11	2	35	3	1	
10	57	10	22	9	1	3	46	1	11	17	6	4	2	6	11	2	35	3	1	
11	48	11	13	9	3	5	19	2	42	18	9	5	16	9	6	4	2	6	11	
12	35	11	58	9	5	8	3	5	3	27	19	2	6	3	6	4	2	6	11	
13	0	25	9	9	10	10	3	48	4	10	19	4	6	4	7	6	4	2	6	
14	51	1	12	9	10	10	3	32	4	57	19	3	7	6	12	1	10	10	10	
15	134	1	57	9	10	10	5	20	5	45	18	10	8	48	11	7	6	4	2	
16	22	2	45	9	9	9	6	9	6	36	18	5	9	45	11	1	8	36	9	
17	30	3	33	9	7	7	4	7	4	32	18	0	10	41	10	7	8	36	9	
18	59	4	24	9	3	0	14	10	41	10	7	8	36	9	6	12	7	8	36	
19	42	5	18	9	0	8	11	9	11	40	10	0	9	41	10	15	12	0	0	
20	6	6	17	8	8	7	9	6	9	39	16	11	10	47	11	19	11	9	9	
21	7	7	20	8	7	9	13	10	48	16	8	11	0	44	1	20	10	2	2	
22	8	8	30	8	9	10	52	2	26	10	6	11	0	52	2	26	10	6	11	
23	9	9	38	8	11	11	58	3	25	10	10	3	0	58	3	25	10	10	3	
24	10	10	34	9	1	12	53	4	17	11	0	4	1	53	4	17	11	0	4	
25	10	10	59	11	2	2	57	5	26	5	6	11	1	57	5	26	5	6	11	
26	11	11	47	11	3	3	46	6	3	6	11	3	3	44	4	4	13	6	6	
27	0	9	31	9	4	4	30	2	51	18	4	4	4	40	5	46	11	3	3	
28	0	51	1	10	9	5	30	3	28	18	6	6	3	46	6	3	6	20	11	
29	1	26	1	45	9	5	46	4	2	18	5	5	4	35	6	54	11	4	4	
30	2	21	2	21	9	4	40	4	38	18	3	7	5	34	5	53	13	4	0	
31	2	40	2	54	9	2	56	5	13	18	0	6	11	6	11	6	27	13	0	
32	3	11	3	28	9	0	7	52	8	6	10	11	8	6	11	6	27	13	0	
33	3	11	3	28	9	0	8	25	8	43	10	8	7	6	45	7	7	12	7	
34	4	4	1	4	1	8	9	1	9	19	10	3	6	7	26	7	46	12	1	
35	4	4	4	1	8	9	9	40	10	2	9	9	8	9	9	8	32	11	7	

Morn	Even	Height.	Calculated from the Mean Level of Low Water Spring Tides.																	
H.	M.	H.	M.	H.	M.	H.	M.	H.	M.	H.	M.	H.	M.	H.	M.	H.	M.	H.	M.	
6	40	7	3	16	10	7	58	16	5	8	23	8	55	16	1	28	11	59	9	
7	27	7	58	16	5	10	30	10	58	9	3	0	39	1	10	11	40	2	7	
8	23	8	55	16	1	11	28	11	59	9	0	0	28	9	10	11	40	2	7	
9	28	9	58	15	11	1	0	1	27	9	10	0	1	11	6	2	35	3	1	
10	28	10	58	16	0	1	51	2	25	10	4	0	28	0	56	12	1	1	6	
11	28	11	57	16	3	2	52	3	16	10	9	1	1	21	1	43	12	8	3	
12	0	46	1	11	17	6	3	41	4	6	11	0	2	7	2	30	13	3	8	
13	1	35	1	58	18	2	4	31	4	52	11	5	2	52	3	13	13	8	0	
14	2	19	2	42	18	9	5	16	5	41	11	9	3	35	3	59	14	0	3	
15	3	5	3	27	19	2	6	3	6	22	12	0	4	19	4	42	14	3	8	
16	3	48	4	10	19	4	6	43	7	6	12	1	5	5	5	28	14	4	4	
17	4	32	4	57	19	3	7	32	7	57	11	10	6	54	6	18	14	3	9	
18	5	20	5	45	18	10	8	24	8	48	11	7	6	4	7	10	13	9	9	
19	6	9	6	36	18	5	9	17	9	45	11	1	7	38	8	7	13	2	2	
20	7	4	7	32	18	0	10	14	10	41	10	7	8	36	9	6	12	7	7	
21	8	1	8	33	17	5	11	9	11	40	10	0	9	41	10	15	12	0	0	
22	9	6	9	39	16	11	0	10	10	9	11	9	10	47	11	19	11	9	9	
23	10	13	10	48	16	8	0	44	1	20	10	2	11	52	1	11	5	11	11	
24	11	23	11	57	16	9	1	52	2	26	10	6	0	23	0	55	12	5	6	
25	0	57	1	22	17	7	2	58	3	25	10	10	1	26	1	53	12	10	3	
26	1	46	2	9	18	0	3	53	4	17	11	0	2	17	2	41	13	3	5	
27	2	30	2	51	18	4	4	40	5	6	11	1	3	3	3	24	13	5	6	
28	3	10	3	28	18	6	6	3	6	5	46	11	3	4	4	4	13	6	6	
29	4	46	4	2	18	5	6	35	6	54	11	4	4	4	5	16	13	6	6	
30	4	20	4	38	18	3	7	12	7	31	11	1	5	6	11	6	27	13	0	
31	4	56	5	13	18	0	7	52	8	6	10	11	6	11	6	27	13	0	0	
32	5	29	5	46	17	8	8	25	8	43	10	8	6	45	7	7	12	7	7	
33	6	6	6	24	17	4	9	1	9	19	10	3	7	26	7	46	12	1	1	
34	6	43	7	5	17	5	9	40	10	2	9	9	8	9	8	32	11	7	7	

Morn	Even	Height.	Calculated from the Mean Level of Low Water Spring Tides.																	
H.	M.	H.	M.	H.	M.	H.	M.	H.	M.	H.	M.	H.	M.	H.	M.	H.	M.	H.	M.	
9	41	10	3	9	9	10	30	10	58	9	5	11	28	11	59	9	3	4	4	
10	30	10	58	9	5	10	4	10	36	10	11	1	0	39	1	10	16	3	4	
11	28	11	59	9	3	11	5	11	34	11	0	0	1	11	6	2	35	3	1	
12	0	28	9	10	4	0	28	0	56	12	1	1	1	1	1	1	1	1	1	
13	1	51	2	25	10	4	1	21	1	43	12	8	0	2	3	4	0	17	11	
14	2	52	3	16	10	9	2	7	2	30	13	3	4	26	4	49	18	9	9	
15	3	41	4	6	11	0	3	3	13	13	8	6	0	6	44	7	9	20	6	
16	4	31	4	52	11	5	4	19	4	42	14	0	7	28	7	50	20	10	10	
17	5	16	5	41	11	9	5	5	5	28	14	3	8	12	8	34	21	0	0	
18	6	3	6	22	12	0	6	4	19	4	42	14	3	8	12	8	34	21	0	
19	6	43	7	6	12	1	7	5	5	4	28	14	3	8	12	8	34	21	0	
20	7	32	7	57	11	10	8	24	8	48	11	7	6	4	7	10	13	9	9	
21	8	24	8	48	11	7	9	17	9	45	11	1	7	38	8	7	13	2	2	
22	9	17	9	45	11	1	10	14	10	41	10	7	8	36	9	6	12	7	7	
23	10	14	10	41	10	7	11	9	11	40	10	0	9	41	10	15	12	0	0	
24	11	9	11	40	10	0	0	10	10	9	11	9	10	47	11	19	11	9	9	
25	0	44	1	20	10	2	0	52	2	26	10	6	11	52	1	11	5	11	11	
26	1	52	2	26	10	6	1	58	3	25	10	10	0	23	0	55	12	5	6	
27	2	58	3	25	10	10	2	53	4	17	11	0	2	17	2	41	13	3	5	
28	3	53	4	17	11	0	3	53	5	6	11	1	3	3	3	24	13	5	6	
29	4	40	5	6	11	1	4	40	6	5	46	11	3	4	4	4	13	6	6	
30	5	26	6	5	46	11	4	3	6	20	11	4	4	4	4	4	13	6	6	
31	6	3	6	3	6	20	11	4	4	20	11	4	4	4	4	4	13	6	6	
32	6	35	6	54	11	4	5	34	5	5	16	13	4	5	6	11	6	27	13	
33	7	12	7	31	11	1	6	11	6	27	13	0	6	11	6	27	13	0	0	
34	7	52	8	6	10	11	7	52	8	6	10	11	8	6	11	6</				

TIDE TABLES—AUGUST, 1869.

GREENOCK			LONDON			CORK			Sunderland and Shields			Hull and Bridport			Southampton & Portsmouth		
M	D	Height.	M	D	Height.	M	D	Height.	M	D	Height.	M	D	Height.	M	D	Height.
Calculated from the Mean Level of Low Water Spring Tides.			Calculated from the Mean Level of Low Water Spring Tides.			Calculated from the Mean Level of Low Water Spring Tides.			Low Water Levels of Ordinary Spring Tides.			Low Water Levels of Ordinary Spring Tides.			Datum.		
Morn	Even	Height.	Morn	Even	Height.	Morn	Even	Height.	Morn	Even	Height.	Morn	Even	Height.	Morn	Even	Height.
H	M	Ft.	H	M	Ft.	H	M	Ft.	H	M	Ft.	H	M	Ft.	H	M	Ft.
1	5	34	1	7	52	1	10	57	1	8	59	1	0	37	1	4	45
2	6	40	2	8	56	2	11	0	2	10	40	2	1	10	2	5	47
3	7	47	3	9	63	3	12	7	3	11	39	3	2	15	3	6	55
4	8	54	4	10	70	4	13	14	4	12	46	4	3	21	4	7	58
5	9	59	5	11	75	5	14	19	5	13	51	5	4	26	5	8	1
6	10	63	6	12	79	6	15	22	6	14	54	6	5	31	6	9	3
7	11	66	7	13	82	7	16	25	7	15	57	7	6	35	7	10	4
8	0	69	8	14	85	8	17	28	8	16	60	8	7	39	8	11	5
9	1	71	9	15	87	9	18	31	9	17	63	9	8	42	9	12	6
10	2	73	10	16	89	10	19	34	10	18	66	10	9	45	10	13	7
11	3	75	11	17	91	11	20	37	11	19	69	11	10	48	11	14	8
12	4	77	12	18	93	12	21	40	12	20	72	12	11	51	12	15	9
13	5	79	13	19	95	13	22	43	13	21	75	13	12	54	13	16	10
14	6	81	14	20	97	14	23	46	14	22	78	14	13	57	14	17	11
15	7	83	15	21	99	15	24	49	15	23	81	15	14	60	15	18	12
16	8	85	16	22	101	16	25	52	16	24	84	16	15	63	16	19	13
17	9	87	17	23	103	17	26	55	17	25	87	17	16	66	17	20	14
18	10	89	18	24	105	18	27	58	18	26	90	18	17	69	18	21	15
19	11	91	19	25	107	19	28	61	19	27	93	19	18	72	19	22	16
20	12	93	20	26	109	20	29	64	20	28	96	20	19	75	20	23	17
21	13	95	21	27	111	21	30	67	21	29	99	21	20	78	21	24	18
22	14	97	22	28	113	22	31	70	22	30	102	22	21	81	22	25	19
23	15	99	23	29	115	23	32	73	23	31	105	23	22	84	23	26	20
24	16	101	24	30	117	24	33	76	24	32	108	24	23	87	24	27	21
25	17	103	25	31	119	25	34	79	25	33	111	25	24	90	25	28	22
26	18	105	26	32	121	26	35	82	26	34	114	26	25	93	26	29	23
27	19	107	27	33	123	27	36	85	27	35	117	27	26	96	27	30	24
28	20	109	28	34	125	28	37	88	28	36	120	28	27	99	28	31	25
29	21	111	29	35	127	29	38	91	29	37	123	29	28	102	29	32	26
30	22	113	30	36	129	30	39	94	30	38	126	30	29	105	30	33	27
31	23	115	31	37	131	31	40	97	31	39	129	31	30	108	31	34	28

TIDE TABLES—SEPTEMBER, 1869.

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GREENOCK			LONDON			CORK			Sunderland and Shields.			Hull and Bridport			Southampton & Portsmouth		
M	D	Even	Morn	Height.	Ft	In	Even	Morn	Height.	Ft	In	Even	Morn	Height.	Ft	In	Datum
1	1	6 27	8 40	9 20	15	10	1 13	0 34	11 51	9 2	8 10	0 55	2 10	6 9	6 50	16	6
2	2	7 49	10 1	10 41	15	9	2 23	1 49	2 54	8 11	9	1 32	2 10	7 28	8 5	16	10
3	3	9 2	11 20	11 55	16	3	3 23	2 54	3 52	10 6	1	2 47	3 21	8 41	9 14	17	5
4	4	10 4	0 55	0 26	17	1	4 15	3 52	4 38	3	1	3 55	4 26	9 45	10 12	18	3
5	5	10 57	1 44	1 20	18	2	5 31	4 38	5 29	4	1	4 58	5 21	10 36	10 57	18	11
6	6	11 45	2 30	2 53	20	7	6 12	5 29	6 12	5	1	5 46	6 8	11 21	11 47	19	4
7	7	0 11	3 14	3 37	20	7	7 15	6 12	7 38	6	1	6 30	7 39	0 32	0 56	20	0
8	8	1 1	4 42	4 21	20	6	8 0	7 38	8 22	8	0	7 16	8 25	1 18	1 39	19	11
9	9	1 45	5 24	5 46	19	1	9 34	8 22	9 6	11	6	8 32	9 7	2 0	2 21	19	5
10	10	2 27	6 58	6 39	16	4	10 52	9 6	10 12	2	2	9 28	10 9	2 43	3 8	18	10
11	11	3 8	8 0	7 27	17	5	11 52	10 12	11 12	11	11	10 15	11 39	3 30	3 54	18	0
12	12	3 50	9 21	8 41	15	8	12 38	11 12	12 29	9	9	11 17	12 38	4 21	4 53	17	3
13	13	4 41	10 47	10 11	16	4	1 0	12 29	1 18	8	8	0 55	1 33	5 30	6 10	16	8
14	14	5 49	12 0	11 27	15	7	2 58	1 18	2 29	9	7	2 13	2 53	7 2	7 33	16	6
15	15	7 13	13 35	12 55	8	8	3 45	2 29	3 22	10	10	3 28	4 2	8 13	8 47	16	10
16	16	8 35	15 0	14 16	16	9	4 27	3 45	4 8	11	11	4 32	5 4	9 18	9 44	17	4
17	17	9 38	16 10	15 17	15	8	5 0	4 27	5 17	11	11	5 19	6 10	10 6	10 29	17	11
18	18	10 26	17 11	16 18	16	9	6 35	5 17	6 42	12	12	6 30	7 13	10 48	11 4	18	4
19	19	11 9	18 11	17 18	18	10	7 31	6 42	7 50	13	13	7 29	8 16	11 19	12 35	18	7
20	20	11 42	19 11	18 18	18	11	8 59	7 50	8 20	14	14	8 29	9 16	12 51	1 18	18	8
21	21	0 34	20 11	19 18	19	12	10 11	8 20	9 5	15	15	9 0	10 40	1 0	2 24	18	9
22	22	0 53	21 11	20 18	19	13	11 31	9 5	10 35	16	16	10 0	11 42	2 5	3 24	18	10
23	23	1 7	22 11	21 18	20	14	12 48	10 35	11 17	17	17	11 0	12 38	4 0	5 24	18	10
24	24	1 37	23 11	22 18	21	15	1 0	11 17	12 48	18	18	12 0	1 42	5 11	6 24	18	9
25	25	2 5	24 11	23 18	22	16	2 21	12 48	13 5	19	19	1 15	2 21	6 0	7 24	18	9
26	26	2 38	25 11	24 18	23	17	3 26	13 5	14 10	20	20	2 15	3 10	7 13	8 24	18	7
27	27	3 6	26 11	25 18	24	18	4 31	14 10	15 17	21	21	3 10	4 0	8 44	9 24	18	7
28	28	3 48	27 11	26 18	25	19	5 36	15 17	16 24	22	22	4 0	5 4	9 16	10 24	18	7
29	29	4 38	28 11	27 18	26	20	6 41	16 24	17 31	23	23	5 4	6 16	10 44	11 24	18	8
30	30	5 53	29 11	28 18	27	21	7 46	17 31	18 38	24	24	6 16	7 21	11 42	12 24	18	8
							8 51	18 38	19 45	25	25	7 21	8 16	12 51	1 24	19	5

GREENOCK			LONDON			CORK			Sunderland and Shields.			Hull and Bridport.			Southampton & Portsmouth		
M	D	Height.	M	D	Height.	M	D	Height.	M	D	Height.	M	D	Height.	M	D	Height.
Calculated from the Mean Level of Low Water Spring Tides.			Calculated from the Mean Level of Low Water Spring Tides.			Calculated from the Mean Level of Low Water Spring Tides.			Low Water Level of Ordinary Spring Tides.			Low Water Level of Ordinary Spring Tides.			Datum — Sill of North Dock Gates.		
M	D	Even	M	D	Even	M	D	Even	M	D	Even	M	D	Even	M	D	Even
H.	M.	Ft.	H.	M.	Ft.	H.	M.	Ft.	H.	M.	Ft.	H.	M.	Ft.	H.	M.	Ft.
1	7	25	9	32	10	0	2	0	0	2	0	1	4	2	7	3	7
2	8	47	10	58	11	1	2	2	1	5	3	3	4	3	8	21	8
3	9	45	0	34	0	2	38	3	0	2	0	4	8	4	9	23	9
4	10	36	1	22	1	3	29	3	1	54	2	5	0	5	10	14	10
5	11	25	2	7	2	4	21	4	2	41	3	6	31	6	11	11	24
6			3	27	3	5	2	5	3	22	3	7	14	7	11	46	
7	0	36	4	21	4	6	51	6	4	6	4	8	22	8	0	9	32
8	1	20	5	1	5	7	12	7	5	12	5	7	22	9	0	53	14
9	2	3	6	3	6	8	29	8	6	20	6	8	22	10	1	36	19
10	2	43	7	4	7	9	12	9	7	14	7	9	22	11	2	17	23
11	3	25	8	5	8	10	54	10	8	5	5	10	22	12	3	4	30
12	4	14	9	6	9	11	40	11	9	7	7	10	22	13	4	5	41
13	5	18	10	7	10	12	33	12	10	4	8	11	22	14	5	0	54
14	6	42	11	8	11	13	22	13	11	43	9	11	22	15	6	24	7
15	8	6	12	9	12	14	11	14	12	10	10	12	22	16	7	44	8
16	9	11	13	10	13	15	4	15	13	9	1	13	22	17	8	51	9
17	9	58	14	11	14	16	37	16	14	8	2	14	22	18	9	38	10
18	10	39	15	12	15	17	30	17	15	7	3	15	22	19	10	19	35
19	11	12	16	13	16	18	24	18	16	6	4	16	22	20	11	49	4
20	11	43	17	14	17	19	18	19	17	5	5	16	22	21	11	21	36
21	0	1	18	15	18	20	11	20	18	6	6	17	22	22	12	53	18
22	0	36	19	16	19	21	4	21	19	7	7	18	22	23	13	0	26
23	1	7	20	17	20	22	36	22	20	8	8	19	22	24	14	0	55
24	1	38	21	18	21	23	28	23	21	9	9	20	22	25	15	1	27
25	2	11	22	19	22	24	20	24	22	10	10	21	22	26	16	2	18
26	2	45	23	20	23	25	13	25	23	11	11	22	22	27	17	3	21
27	3	26	24	21	24	26	6	26	24	12	12	23	22	28	18	4	32
28	4	17	25	22	25	27	0	27	25	13	13	24	22	29	19	5	43
29	5	30	26	23	26	28	9	28	26	14	14	25	22	30	20	6	57
30	7	4	27	24	27	29	18	29	27	15	15	26	22	31	21	7	72
31			28	25	28	30	26	30	28	16	16	27	22		22	8	89
			29	26	29	31	33	31	29	17	17	28	22		23	9	46

TIDE TABLES—NOVEMBER, 1869.

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GREENOCK			LONDON			CORK			Sunderland and Shields			Hull and Bridport			Southampton & Portsmouth		
M	D	Height.	Morn	Even	Height.	Morn	Even	Height.	Morn	Even	Sunland.	Morn	Even	Hull	Morn	Even	Portnh.
			H. M.	H. M.	Ft. In.	H. M.	H. M.	Ft. In.	H. M.	H. M.	Ft. In.	H. M.	H. M.	Ft. In.	H. M.	H. M.	Ft. In.
1	1	9 19	11 43	0 10	0 36	2 13	2 39	11 7	0 41	1 7	13 4	3 44	4 10	19 8	8 58	9 26	18 5
2	2	10 12	0 10	1 22	19 5	3 56	4 18	12 2	1 32	1 55	14 4	4 36	5 02	1 0	9 51	10 15	19 1
3	3	11 0	1 44	2 6	20 1	4 40	5 21	8 5	2 17	2 38	15 0	5 23	5 44	21 10	10 37	10 58	19 6
4	4	11 44	2 27	2 50	20 2	5 27	5 50	12 4	3 0	3 20	15 3	6 7	6 28	22 2	11 19	11 43	19 8
5	5	0 9	3 13	3 34	20 7	6 10	6 29	12 6	3 44	4 5	15 6	6 53	7 14	22 5	0	7 19	10
6	6	0 59	3 56	4 17	19 7	6 50	7 9	12 0	4 28	4 51	15 2	7 38	8 02	1 8	0 31	0 53	19 8
7	7	1 41	4 37	4 59	18 9	7 32	7 56	11 4	5 13	5 34	14 10	8 22	8 42	1 5	1 14	1 34	19 5
8	8	2 22	5 21	5 43	17 10	8 19	8 41	10 6	5 57	6 21	13 8	9 3	9 26	1 8	1 56	2 18	18 8
9	9	3 5	6 8	6 35	16 4	9 6	9 35	9 8	6 45	7 11	12 9	9 49	10 15	18 10	2 42	3 6	18 0
10	10	3 50	7 8	7 35	16 4	10 7	10 42	9 0	7 39	8 10	11 8	10 42	11 14	17 4	3 32	3 58	17 2
11	11	4 46	8 13	8 53	15 5	11 22	0 47	9 3	8 43	9 22	10 10	11 48	16	2 2	4 28	5 4	16 7
12	12	5 59	9 32	10 11	15 8	0 2	0 47	9 10	10 1	10 39	10 6	0 30	1 9	15 8	5 42	6 20	16 4
13	13	7 22	10 47	11 18	15 8	1 20	1 51	9 10	11 17	11 50	10 9	1 43	2 19	16 1	6 58	7 32	16 6
14	14	8 29	11 45	0 31	16 16	2 15	2 38	10 4	0 43	1 6	12 1	2 52	3 18	17 0	8 4	8 31	17 1
15	15	9 18	0 9	1 9	17 6	3 1	3 19	10 9	1 28	1 46	12 9	3 45	4 9	17 11	8 57	9 20	17 5
16	16	10 0	0 50	1 44	18 0	3 39	4 0	11 1	2 4	2 23	13 2	4 32	4 50	18 10	9 40	10 0	18 0
17	17	10 42	1 28	2 16	18 5	4 17	4 33	11 3	2 39	2 54	13 6	5 9	5 29	19 5	10 20	10 36	18 4
18	18	11 15	2 0	2 48	18 8	4 49	5 5	11 5	3 9	3 25	13 8	5 45	6 1	19 11	10 51	11 7	18 7
19	19	11 47	2 32	3 22	18 9	5 24	5 40	11 7	3 42	3 57	13 9	6 16	6 32	20 1	11 24	11 42	18 8
20	20	0 7	3 4	3 56	18 4	5 58	6 15	11 7	4 14	4 33	13 10	6 50	7 6	20 3	11 58	18	9 9
21	21	0 45	4 13	4 31	18 0	6 30	6 47	11 4	4 51	5 9	13 8	7 24	7 42	20 4	0 17	0 36	18 8
22	22	1 20	4 51	5 13	18 7	7 48	8 11	10 4	5 28	5 49	13 4	8 0	8 18	20 1	0 53	1 10	18 5
23	23	1 55	5 36	6 17	17 1	8 33	8 58	10 4	6 12	6 34	12 10	8 36	8 56	19 8	1 28	1 49	18 5
24	24	2 36	6 27	7 8	16 7	9 28	9 51	11 3	6 59	7 30	12 3	9 18	9 39	19 0	2 28	2 34	18 1
25	25	3 19	7 27	8 3	16 7	10 35	11 12	9 9	7 8	8 34	11 9	10 3	10 33	18 2	2 59	3 24	17 7
26	26	4 9	8 43	9 23	16 5	11 53	12 9	11 7	8 1	9 51	11 3	11 4	11 39	17 5	3 52	4 21	17 3
27	27	5 13	9 58	10 38	16 9	0 38	1 13	10 7	9 12	9 51	11 6	0 58	1 34	17 1	4 55	5 33	16 11
28	28	6 29	10 11	10 38	16 9	1 0	1 38	10 7	10 30	11 8	11 6	1 10	2 44	18 1	6 12	6 50	17 1
29	29	7 49	11 12	11 41	17 2	1 44	2 12	11 3	11 43	12 0	12 0	2 10	3 41	19 3	7 25	7 57	17 6
30	30	8 51	12 11	12 11	17 2	2 1	2 12	11 3	0 12	0 39	13 0	3 12	3 41	19 3	8	8	57 18

Datum—Sill of North Dock Gates.

Low Water Level of Ordinary Spring Tides.

Low Water Level of Ordinary Spring Tides.

Calculated from the Mean Level of Low Water Spring Tides.

Calculated from the Mean Level of Low Water Spring Tides.

Calculated from the Mean Level of Low Water Spring Tides.

TIDE TABLES—DECEMBER, 1869.

[illegible]

Name of Light.	Situation.	No. Light	Appearance.	Visible	Visible.	Latitude	Longitude.
INCHKEITH ..	Summit of Island, Fifehire ..	One	Revolving once every minute	-21-	All round the compass	56° 2'	3° 8'
ISLE OF MAY ..	Isle of May, in Fifehire	Two	Fixed. Bear from each other NN E & SSW $\frac{1}{2}$ W. 250 yards	21 & 15	All round the compass. The low light only towards the car	56 11	2 33
BELL ROCK ..	A sunk reef 11 $\frac{1}{2}$ miles S. by E $\frac{1}{2}$ E. off Arbroath, Forfarshire	One	Revolving, shewing alternately a bright & red light every 2 min.	-15-	All round the compass	56 26	2 23
GIRDLENESS ..	Girdleness, Kincardineshire..	Two	Fixed lights, one above the other	19 & 16	NN to WSW $\frac{1}{2}$ W by E'ward	57 8	2 3
BUCHANNESS ..	Buchanness, Aberdeenshire..	One	Flashing once every 5 seconds ..	-16-	N by E to SW by W by E'ward	57 21	1 46
KINNAIRDHEAD ..	Kinnairdhead, Aberdeenshire	One	Fixed.. .. .	-15-	White to NNW $\frac{1}{2}$ W. Red N.	57 42	2 1
TARBETNESS ..	Tarbetness, Cromartyshire ..	One	Visible 2 $\frac{1}{2}$ min., then eclipsed $\frac{1}{4}$ a min. To W. of the Ness Fixed	-18-	All round the compass	57 51	3 48
DUNNETHEAD ..	On the Head, Caithnesshire ..	One	Fixed	-23-	From SE $\frac{1}{2}$ E to W by N'ward	58 40	3 22
PENTLAND SKERRIES ..	On the Island	Two	Fixed NNE and SSW., 100 feet..	18 & 16	All round the compass	58 41	2 55
START POINT ..	East point of Sanda Island ..	One	Fixed	-15-	All round the compass	59 17	2 22
SUMBURGHHEAD ..	On S.W. point of Shetlands..	One	Fixed	-21-	NE by E $\frac{1}{2}$ E to NW by N $\frac{1}{4}$ N by S	59 51	1 16
NORTH RONALDSHEAD ..	On north point.. .. .	One	Flashing once every 10 seconds	-18-	All round the compass	59 23	2 24
CAPE WRATH ..	On the Cape, N.W. point of Scotland	One	Revolving, shewing alternately a bright & red light every 2 min.	-23-	From S $\frac{1}{2}$ E to S W by W Northerly	58 37	5 0
ISLAND GLASS ..	E. point of Island, Harris Isle	One	Fixed	-17-	W by S to E N E $\frac{1}{2}$ E by S	57 52	6 33
BARRAHEAD.. ..	Highest point on Bernera Isle	One	Intermittent, continuing in view 2 $\frac{1}{2}$ min., then eclipsed $\frac{1}{4}$ a min.	-33-	From N by E to E N E westerly and southerly	56 48	7 38
ARDNAMURCHAN ..	southern point of Hebrides	One	Fixed	-18-	From NE by E $\frac{1}{2}$ E to S W S north'y and west'y	56 44	6 13
LISMORE	Ardnamurchan point, Argyle-shire	One	Fixed	-15-	From E to N E by E	56 27	5 36
CRINAN CANAL ..	Mousdale Island	One	Fixed, dark 2 $\frac{1}{2}$ point over land	-4-	All round the compass	56 5	5 33
RHINS OF ISLAY ..	East side	One	Fixed, red light	-17-	From NNE to SE westerly	55 41	6 29
MULL OF CANTYRE..	Oversay Island, off S.W. point of Islay, Argyleshire	One	Flashing once every 5 seconds; disappears $\frac{1}{4}$ a mile off Cul point	-22-	From N N E $\frac{1}{2}$ E to S by W $\frac{1}{4}$ W westerly	55 19	5 49
SANDA ISLAND ..	South-western headland of Cantyre	One	Fixed	-17-	NW $\frac{1}{2}$ W to SE by E $\frac{1}{2}$ E by SW'ly	54 16	5 35
DEVAR ISLAND ..	Ship Rock	One	Fixed, red light	-15-	N $\frac{1}{2}$ W to E by S by N	55 26	5 32
PLADDA	Eastern part	Two	Revolves every half minute ..	14 & 17	From S E by E N'ly to S W by W	55 26	5 7
CORSEWALL.. ..	Pladda Isle, off south east of Arran, county of Bute ..	One	Fixed	-15-	From NE by E Northerly to S W	55 0	5 6
MULL OF GALLOWAY ..	W. side of entrance to Loch Ryan, in Wigtonshire ..	One	Revolving, shewing alternately a bright & red light every 2 min.	-23-	From NE to N W $\frac{1}{4}$ W	54 38	4 51
	Southern extremity of mainland of Scotland, Wigton-shire.	One	Intermittent, continuing in view 2 $\frac{1}{2}$ min, then eclipsed half a min				

Descriptive List of Lights—Isle of Man

Name of Light.	Situation.	Latitude North.	Longitude West.	No. of Lights.	Fixed or Revolving.	Miles visible in clear weather.	Remarks.
POINT OF AYR ..	A quarter of a mile SW of the Point ..	54 25	4 22	One	R	—15—	Shewing alternately a bright and red light every 2 min. Visible from S by W N E'y to W by N
Peel Harbour ..	On Pier and Breakwater ..	54 13	4 42	Two	F	—8—	Pier Head Light Red, Breakwater White
CALF OF MAN ..	West side of Calf Island ..	54 3	4 50	Two	R	24 & 22	Revolving every 2 min. When in one they lead on
Port St. Mary ..	Pier Head ..	54 4	4 44	One	F	—9—	[the Chicken Rocks.
Castletown Harbour ..	New Pier Head ..	54 5	4 39	One	F	—8—	To be kept on the port hand on entering.
Derbyhaven ..	Entrance of the harbour ..	54 5	4 36	One	F	—2—	Also a light on Fort Island during herring fishing.
DOUGLAS ..	Douglas Head ..	54 9	4 28	One	F	—14—	Not visible from Langness Point, but with 3 miles offing it will be seen N E $\frac{1}{2}$ E; and the Calf Light at the same time N N by W $\frac{1}{4}$ W.
Douglas Harbour ..	North Pier Head ..	54 10	4 28	Two	F	—6—	Bright and Red. Sight Red Light to clear Break-
Ramsey Harbour ..	South side entrance ..	54 20	4 23	One	F	4 or 5	Red Light. (water works.
Bahama Bank Light Vessel	A mile of the S.E. tail of the Shoal. Moored in Eleven fathoms.	54 20	4 1	Two	F	—10—	A Gong is sounded in foggy weather. "Bahama Bank" is painted on her sides. King William Bank Buoy, E by N $\frac{1}{2}$ N, nine miles.

Principal Lights—West Coast of England

Lee Scar ..	On the Rocks ..	54 52	3 25	One	F	—6—	On Piles. Base dries at 6 feet at low water.
Solway Light Vessel ..	Robin Rigg Channel ..	54 48	3 32	One	F	—6—	Red Light. Moored in 4 $\frac{1}{2}$ fathoms. A black ball by
ST. BEES ..	St. Bee's Head ..	54 31	3 38	One	F	—25—	[day. Tolls a bell in foggy weather.
WALNEY ..	S. Point of Walney Island ..	54 3	3 11	Two	1 R 1 F	—13—	Every minute. The fixed light is Red. N W by W $\frac{3}{4}$ W, and S E by E $\frac{1}{2}$ E, 340 yards.
Morecombe Bay Light Vessel	In 12 fathoms ..	53 54	3 31	One	R	—10—	Every 30 seconds—Red
	Between Yeoman and Clark Wharf ..	54 1	3 0	One	F	—5—	Red light. A ball by day, and a M. M. light by night every 20 sec. is shown at the bows when 8 ft. water in Harbour Channel. Bell during fogs
River Wyre ..	N.E. elbow of N Wharf Bank ..	53 57	3 2	One	R	—10—	On Piles. A bell is tolled in foggy weather.
Fleetwood ..	H. Lt. in Town, L. Lt. Espid. ..	53 56	3 1	Two	1 F Int	13 & 9	N. & S. 850 ft. Shown while 9 ft. water in Channel. Bright 3 $\frac{1}{2}$ minutes, dark $\frac{1}{2}$ a minute. by E $\frac{3}{4}$ E round
River Ribble ..	Stanner Point, N. of entrance ..	53 44	3 1	One	F	—12—	White between the bearings of S E by S $\frac{1}{2}$ N. In 25
GREAT ORMSHEAD ..	North Point, Steep Cliff ..	53 20	3 52	One	F	—24—	by the S to W; and Red from W to W $\frac{1}{2}$ N. In 25
Formby Light Vessel ..	At the elbow of the Crosby and Queen's Channels ..	53 32	3 11	One	F	—8—	Red Light. Painted Red; carries Red S E $\frac{1}{2}$ S, 24 miles. N W Mark, E by N $\frac{1}{2}$ N, 38 miles.
	N.E. elbow of St. Mary's Channel ..	53 31	3 7	One	F	—8—	Yellow Light. Painted Red, carries Red Ball.

Name of Light.	Situation.	Latitude North.	Longitude West.	No. of Lights.	Fixed or Revolving.	Miles visible in clear weather.	Remarks.
Black Rock	Rock Point, west side of the entrance to the Mersey.	53 27	3 3	One	R	14	Every minute. White twice and Red once every 3rd minute. A Bell is tolled in foggy weather.
Leasowe	On the shore between the Mersey and Dee Rivers.	53 25	3 7	One	F	15	Bidston Light open E of Leasowe, and afterward to the west, lead up the Horse Channel.
BIDSTON	Bidston Hill	53 24	3 4	One	F	23	Obscured when inward bound, bearing S by W ½ W
Hoylake	Near the Church	53 24	3 11	Two	F	13 & 11	The Upper Light exhibit, from N N W round to the E'ward, the Lower from N round to E'ward.
Liverpool N.W. Light Ship	W. extreme of 3 and 4 fathoms	53 27	3 17	One	R	11	Black Ball during day. Blue Lt. every 2 hrs. during darkness after 6 p.m. Bell and Gong alt. in fogs On Piles. A bell is sounded in foggy weather Flashing once every ten seconds.
AIR	Tongue, in 6½ fathoms	53 22	3 19	One	F	9	
LYNAS	Air Point, at low water mark	53 25	4 17	One	Fl.	16	
SKERRIES	Point Lynas	53 25	4 36	One	F	16	
STACK	Highest Island.	53 18	4 42	One	R	20	Revolving every 2 min. During foggy weather a smaller Bright Light is occasionally shown, 40 ft. above the sea and 30 yards N. of main Lighthouse
BARDSEY	Point of Holyhead Island	52 45	4 48	One	F	17	[sounded in foggy weather
Cardigan Bay Light Vessel	Bardsey Island.	52 22	4 54	One	R	9	Red Light. Revolv. every 33 seconds. A Gong is Revolving every 20 seconds.
SOUTH BISHOP	Cardigan Bay	51 51	5 25	One	R	18	Erected upon pillars 40 feet high.
SMALLS	South Bishop Rock.	51 43	5 40	One	F	15	High Light N by W ½ W 609 feet from Low Light. when in one they lead clear of the Crow and Toes Rocks.
ST. ANN'S	Smalls Island	51 41	5 10	Two	F	20 & 18	
	St. Ann's Point. Milford Haven	51 38	4 41	One	F	20	
CALDY	Caldy Island, southern part	51 34	3 58	One	F	15	
MUMBLES	Mumbles Head	51 24	3 33	Two	F	19 & 17	High Light S E by E ½ E and N W by W ½ W, 1000 feet from Low Light. The Lights in one lead a cable's length Southward of the Nash Sand.
NASH	Nash Point	51 23	3 7	One	F	11	Red. A Red light is also shown up the River.
USK	W. side of entrance to River	51 10	4 40	Two	F	18	
FLATHOLM	Flatholm Island, south point	51 23	3 7	One	F	31	The Low Light (fixed) is only visible from the West ward between NNW and WSW. The Revolving Light flashes every two minutes.
LUNDY	On the ridge of Lundy Island	51 33	5 1	Two	1 R 1 F	20 & 17	The Lower Light is 50 ft. in advance of the high one
TREVOSE HEAD	On north-western part	50 33	5 1	Two	F		

Descriptive List of Principal Lights—South and East Coasts of Ireland

Name of Light.	Situation.	Latitude North. ° /	Longitude West. ° /	No. of Lights.	Fixed or Revolving.	Miles visible in clear weather.	Remarks.
FASTNET	Summit of Rock	51 23 9	36 36	One	R	—18—	Attaining its greatest brilliancy every 2 minutes.
KINSALE	South Point of Old Head ..	51 36 8	32 32	One	F	—21—	Red light is shown in a line to the Horse Rock in Courtmacsherry Bay, Bright to seaward.
CORK HARBOUR or Queenstown	Roc e Point, E. side of Entrance..	51 48 8	15 15	Two	R&F	8 & 10	Red. White between the bearings of N.E. by E, and N.E. $\frac{1}{2}$ N. to pass E'wards of Daunt's Rock. A Bell 8 times a minute in foggy weather.
BALLYCOTTIN	East Elbow of Spit Bank, in 9 feet..	51 51 8	16 16	One	F	—5—	Red. From NNE $\frac{1}{2}$ E to SE by E $\frac{1}{2}$ E round by E.
MINEHEAD ..	Outer Island, west side of Bay ..	51 49 7	59 59	One	Fl.	—18—	Every 10 secs. From W $\frac{1}{2}$ S round N to E $\frac{1}{2}$ S.
HOOK TOWER ..	South side of Head	52 0 7	35 35	One	Int.	—21—	Bright 50 secs., obscured 10 secs. From E by N
SALTEE'S LIGHT	East side entrance Waterford ..	52 7 6	56 56	One	F	—16—	[$\frac{1}{4}$ N to W $\frac{3}{4}$ S.
VESSEL	Off Conningbeg Rock, the Southern-most of the Saltee Islands ..	52 2 6	40 40	Two	F	10 & 8	Carries 2 Balls. Moored in 32 fathoms. During foggy weather a Gong is sounded.
TUSKAR	Tuskar Rock	52 12 6	12 12	One	R	—15—	Every 2 min. Twosides Bright, one Red. During foggy weather a Bell is tolled every $\frac{1}{4}$ min. Red Light vis. every 6th minute, and seen 10 miles.
ARKLO LT.-VESSEL.	S. end of Arklow Bank, in 25 fms. ..	52 42 6	0 0	One	R	—10—	Every min. $\frac{1}{4}$ Globe over Globe at mainmasthead. One on mainmast, and one on foremast.
WICKLOW	N. end of Arklow Bank	52 58 6	0 0	Two	F	—9—	10 Seconds bright, 3 seconds dark.
COPLING BANK...	Wicklow Head.. ..	52 58 6	0 0	One	Int.	—9—	Every 20 seconds.
KISH LIGHT	3 $\frac{1}{4}$ Miles S.E. by S. from S. end	53 19 5	56 56	One	R	—10—	Every min. Carries a Ball. A Gong is sounded during foggy weather.
VESSEL	Off N. Point of Kisk Bank, moored in 10 fathoms	53 18 6	8 8	One	R	—9—	Every $\frac{1}{4}$ min., showing a Bright and Red Light alternately. During foggy weather a Bell is tolled.
Kingstown.. ..	Centre of East Pierhead of Kings-town Harbour	53 20 6	9 9	One	F	—2—	A small Red Light.
POOLBEG.. ..	West Pierhead.. ..	53 20 6	9 9	Two	F	—12—	The Lower Light, which is much fainter than the Upper, is exhibited from half-flood to half-ebb. A Ball is hoisted at the same period during the day-time
DUBLIN BAY	End of N. Wall or N. Quay; Dublin ..	53 21 6	14 14	One	F	—10—	During foggy weather a Bell is tolled.
BAILEY	S.E. Point of Howth Island.. ..	53 22 6	3 3	One	F	—15—	The Lower from $\frac{1}{4}$ fl. to $\frac{1}{4}$ ebb. A Ball is hoisted during the day, in foggs a Bell is tolled every $\frac{1}{4}$ min.
CARLINGFORD..	Haulbowline Rock	54 1 6	5 5	Two	F	—15—	Red Light. Every minute, 45 secs. red, and 15 secs. obscured.
DUNDRUM BAY	St. John's Point	54 13 6	40 40	One	Int.	—12—	Every minute and a half.
SOUTH ROCK ..	On the Rock	54 24 6	32 32	One	R	—16—	
COPELAND ..	Small Copeland Island ..	54 43 6	32 32	One	F	—16—	

MISCELLANEOUS INFORMATION.

Isle of Man Fairs.

JANUARY.—5. St. Mark's, Malew.
FEBRUARY.—2. Greeba—12. Kirk Bride.
 —27. Baldwin.
MARCH.—17. St. John's.—25. Ramsey.
 —28. Peel.
APRIL.—5. Jurby.
MAY.—1. St. John's.—3. Sulby Cladagh.—10. Laxey.—12. St. Mark's.—15. Ballaugh.—26. Kirk Santon.
JUNE.—4. Sulby.—16. Kirk Michael.
JULY.—5. St. John's.—23. Sulby.
AUGUST.—5. Laxey.—12. Ballasalla.—3. Ballaugh.
SEPTEMBER.—29. Ballasalla.
OCTOBER.—10. Michael.—28. Arbory.
NOVEMBER.—1. St. John's.—8. Ramsey.
 —12. Douglas.—18. St. John's.
DECEMBER.—6. Colby, Kirk Arbory.—Kirk Andreas.

Those falling on Saturday, Sunday, or Monday, to be held on the following Tuesday—except the Tynwald Fair, which must be held on the 5th July, unless that day fall on a Sunday.

Cumberland—Abbey-Holme, Tuesday before Whitsunday, Oct. 29.—Alston Moor, last Thursday in May, Friday before 27th Sept., 1st Thur. in Nov.—Arcleclon, Ap. 24, 1st Friday in June, 17 Sept.—Boothle, April 5, 26, August 3, Sept. 24.—Crampton, April 22, 2nd Wed. after Whit. 2d Wed. after 15th Sept.—Carlisle, Sat. next Whit., Aug. 26, Sep. 16, Sat. nearest 1st Nov.—Cockermouth, Feb. 18, Mon. before Easter, 1st and 3rd Wed. in May, Oct. 10.—Egremont, Feb. 18, 3rd Friday May, Sept. 13.—Ennerdale, 2nd Tues. Sept.—Eskdale, 2nd Monday in Sept.—Griggill, 3rd Friday in May, 1st Friday in June.—Gosforth, April 25th, Oct. 18.—Hesket Newmarket, every alternate Fri. from May till Whit., last Thur. in August, 2nd Thur. in Oct.—Ireby, Feb. 21, Oct. 18.—Kilbrink, 3rd Thursday after 1st May, Oct. 11, Sat. after 29th Oct.—Kirkoswald, Thur. before Whit-Sun., Aug. 5.—Longtown, Thurs. before Whit-Sun., Thursday before Sept. 30.—Nether Wasdale, 1st Mon. in Sept.—Newlands, 1st Fri. in Sept.—Penrith, March 1, April 24, 25, 3rd Tues. in Oct., Tues. after Nov. 11.—Rangliss, May 6, June 8, Aug. 5.—Roseley Hill, Whit-Mon., and every alter. Mon. 1 Michael.—Skinburness, June 24.—Wreldkeld, 1st Thurs. in Sept.—Uldale, August 22.—Ulpha, Mon. before Easter. July 5.—Whitehaven, Aug. 12.—Wigton, Feb. 20, April 5.—Workington, Wed. before Holy Thursday, Oct. 18.

Cheshire—Altringham, Ap. 22, Aug. Nov. 22.—Budworth, Feb. 13, Ap. 5, Oct.—Congleton, May 12, July 5, Nov. 22.—Chester, Feb. 23, April 27, July 5, Oct. Nov. 24.—Knutsford, Whit-Tues., July 1, Nov. 8.—Macclesfield, May 6, June 22, July 11, Oct. 4, Nov. 11.—Malpas, Ap. 5,

July 25, Dec. 8.—Middlewich, Holy Th., Aug. 6.—Nantwich, Feb. 4, Mar. 15, Sep. 4, Dec. 11.—Northwich, August 2, Dec. 6.—Over, May 16, Sep. 25.—Sandbach, East. Tues., Tues. after Sept. 10.—Stockport, March 4, 25, May 1, Oct. 23.—Tarporey, May 1, last Monday in Aug., Dec. 11.—Winsford, May 8, Nov. 25.

Lancashire—Blackburn, Easter-Mon., May 12, Oct. 17, every fortnight on Wed. from Feb. till Oct.—Bolton-le-moors, 1st Mon. after Jan. 5, and every Monday fortnight till May 12, July 30, 31, Oct. 13, 14.—Burnley, March 6, Easter Eve., May 6, 13, July 10, Oct. 11.—Broughton-in-F., August 1.—Bury, March 5, May 3, 2nd Thursday after Whit-Sun., Sep. 18.—Cartmell, March 22, Whit-Monday, Oct. 24, Nov. 5.—Chorley, March 26, May 5, Aug. 20.—Clithero, March 24, 25, August 1, 2, the 5th Thur. and Fri. after St. Michael's Day.—Conistone, 3rd Saturday in Sept.—Darwen, Holy Thurs., 1st Thurs. in Oct.—Dalton, April 28, June 6, Oct. 23.—Great Harwood, Mar. 3, Aug. 21.—Haslingden, May 8, July 1, Oct. 10.—Hawkshead, Mon. before Holy Thurs., Whit-Mon., Oct. 2.—Inglewhite, Oct. 5.—Kirkham, June 24.—Lancaster, May 1, July 5, Aug. 11, Oct. 10.—Liverpool, July 25, Nov. 11; Horse Fair every alternate Wednesday.—Longridge, May 13, Nov. 6.—Manchester, Whit-Mon., Oct. 1, Nov. 6.—Middleton, Thurs. after March 11, Thurs. after April 15, 2nd Thur. after Sept. 29.—Newburg, June 21.—Newbury, June 21.—Newchurch, April 29, Sept. 30.—Newton, May 17, July 15, and every Mon. fortnight, Aug. 12.—Oldham, May 2.—Ormskirk, Whit-Mon., Sept. 8.—Poulton, Feb. 6, Ap. 13, Nov. 3.—Prescot, June 12, Aug. 24, 25, Nov. 1.—Preston, 1st Satur. after Jan. 6, March 27, Aug. 25, last 10 days, Nov. 7.—Rufford, May 19.—Radcliffe Bridge, April 29, 30, Sept. 21, 22.—Rochdale, May 14, Whit-Tues., Nov. 7.—Ulverstone, March 22, October 27.—Warrington, July 18, Nov. 30, each lasts 10 days; every Wedn. fortnight.—Wigan, Holy Thursday, June 27, Oct. 21.

Irish Fairs—Antrim.

Ahoghill, June 4, Aug. 26, Dec. 5.—Antrim, Jan. 1, May 12, Aug. 1, Nov. 12.—Armoy, Jan. 25, Feb. 25, March 29, May 25, Aug. 16, Nov. 12, Dec. 25.—Ballinagabob, July 26.—Ballindery, second Monday in Feb., May, Aug., and Nov.—Ballintoy, June 3, Sept. 4, Oct. 14.—Ballicary, 2nd Mon. in Jan., 3rd Mon. in April, Aug. and Nov.—Ballycastle, Easter Tuesday, last Tues. in May, Aug. Oct. and Nov., July 26.—Ballyclare, last Tuesday in Jan., 2nd Tues. in May, July, and Nov. o. s.—Ballymena, July 26, Oct. 21.—Ballamoney, May 5, July 10, October 6.—Ballybernice, 1st Tues. after 12th Jan. and Feb. Ballynure, May 15, Sept. 4, 2nd Tuesday in Oct. o. s.—Belfast, 1st Wed. in each month, Aug. 12, Nov. 1.—Broughshane, June 17, Sept. 1.

MISCELLANEOUS INFORMATION.

Bushmills, March 28, June 28, August 24, Oct. 21, Dec. 12. **Cairnlough**, Feb. 10, Easter Mon., June 12, Aug. 10, Oct. 12, Dec. 12. **Carnmoney**, 1st Tues. May and Nov. *o. s.* **Carrickfurgus**, May 12, Nov. 1. **Clough**, May 5, July 5, Sep. 5, Nov. 22, Frid. before Christmas. **Connor**, Feb. 1, May 1, Aug. 2. **Craigbilly**, June 26, Aug. 21. **Grumlin**, 1st Mon. in month. **Cushendale**, Feb. 14, March 17, May 14, June 29, Aug. 14, Sep. 29, Nov. 14, Dec. 22. **Cashendon**, first Wednesday of Feb., April, June, Aug., Oct., and Dec. **Der- vock**, Jan. 12, Feb. 23, May 16, June 22, Aug. 12, Oct. 27. **Drinbar**, May 21. **Drumadoon**, June 9, Nov. 26. **Dunlice**, Nov. 12. **Giant's Causeway**, August 13. **Glenarm**, Jan. 26, May 26, Aug. 30, Oct. 29. **Glenavy**, 3rd Mon. Feb., May, Aug., and Nov. **Kells**, Jan. 8, March 1, June 10, Sep. 12. **Larne**, July 31, Dec. 1. **Lisburn**, July 21, Oct. 5. **Loughgill**, 19th of Feb., June, Aug., and Nov. **Mosside**, Feb. 13, May 21, Nov. 21. **Mounthill**, July 1, Oct. 1. **Newtoncrumlin**, Feb. 5, May 11, Aug. 2, Nov. 5. **Oldstone**, June 13, Oct. 22. **Parkgate**, Feb. 7, May 7, second Monday in June, Aug. 7, Nov. 4. **Portglenone**, 1st Tues. in each month, and 2nd Tues. in May, *o. s.* **Randalstown**, July 16, Nov. 1. **Rasharkan**, Nov. 16. **Roughfort**, 3rd Tues. in May and Nov. *o. s.* **Straid**, Sep. 4, Oct. 30. **Stranocum**, Feb. 10, March 10, April 20, June 16, July 14, Aug. 8, Sep. 28, Nov. 6, Dec. 29. **Tallaght**, July 7, Nov. 9. **Templepatrick**, May 11, July 10, last Tuesday in Oct. **Troome**, Easter Monday, Dec. 4. **Tullamore**, Nov. 17.

Down.

Annadoyne, May 14, Nov. 8. **Ardmillan**, 1st of Jan., April, July, Oct. **Balloo**, first Wednesday in Jan., Ap., July, & October. **Ballynahinch**, 3rd Thurs. in each month. **Ballywalter**, June 22, Nov. 8. **Banbridge**, Jan. 12, 1st Monday in Feb., March, April, May, July, Sep., October, November, and Dec., June 9, Aug. 26. **Bangor**, Jan. 12, May 1, Aug. 1, Nov. 22. **Carrodore**, 7th of Feb., May, Aug., & Nov. **Castlereagh**, July 5, Oct. 26, Nov. 20. **Castlewellan**, 2nd Mon. in Jan., Mar., Ap., July, Aug., Oct.; 1st Feb., May, June, Sep.; Nov. 13, and Tuesday before Christmas. **Clough**, May 27, July 5, Nov. 22, 3rd Friday in October, and Friday before Christmas. **Comber**, Jan. 5, April 5, June 23, Oct. 19. **Crossgar**, second Wed. in each month. **Donaghadee**, last Wednes. in May, *o. s.*, Aug. 16, Oct. 10, last Wednesday in Nov. *o. s.* **Donaghmore**, 22nd of June and Oct. **Downpatrick**, 1st Satur. in each month. **Dromara**, 1st Friday in Feb., May, Aug., and Nov., and 1st Friday after 15th March, June, Sep., and Nov. **Dromore**, 1st Sat. in March and Aug., May 12, Oct. 10, and Sat. but one before Christmas. **Dundrum**, 3rd Tues. in every month, Jan. 5, Thurs. before Candlemas day, *o. s.*, May 12, Thursday bef.

Aug. 12, Oc. 10, Dec. 10. Gilford, 2nd Tues. each month, and 21st June and Nov. Greencastle, 12th Jan. & Aug. Greyabbey, Mar. 28, June 22, Oct. 29, Dec. 4. Hillsborough, 3rd Wed. in each month. Hiltown, 2nd Tuesday in each month. Hollywood, 1st Monday in Feb., May, Aug., and Nov. Kikeel, 1st Wed. in each month. Killleagh, April 10, June 3 and 15, October 11, Dec. 11. Killinchy, 1st Wednes. in Feb., May, Aug. and Nov. Killough, Feb. 15, June 5, Aug. 15, Nov. 15. Kilmore, Feb. 4, March 14, May 1, June 3, Aug. 5, Sep. 29, Nov. 5, Dec. 16. Kircubbin, 1st Mon. in each month, and 28th of April, May, Aug. and Nov. Loughbrickland, Nov. 12, and 3rd Tues. of remaining months.

Dublin.

Ballbrigginn, 29th April, and September.
Carrickmines, Dec. 6, April 14, June 24,
Oct. 14. Donnybrook, Aug. 26. Field-
town, Whit Monday. Garyistown, May
15, Aug. 15, Nov. 1. Kilsallaghan, Asce-
sion day, Sep. 8. Lusk, Easter Monday,
May 4, June 24, July 13, Nov. 25. Naui,
March 10, April 26, May 21, Sep. 28, Oct. 2.
Palmerstown, August 21. Rathfarnham,
July 10. Rush, May 1, Sep. 29. Saggart,
June 15, Oct. 10, Nov. 8. Skerries, April
22, Aug. 10. St. Margarets, July 30 and
31. Swords, March 17, May 9.

Fish Table.

The following Table shows the months in which the undermentioned Fish are IN or OUT of Season.

[illegible]

ISLE OF MAN INFORMATION.

Manx Legislature

H. B. Loch, Esq., C.B... Lieut.-Governor
Sec. to his Excellency... J. T. Clucas

COUNCIL.

Hon & Rt. Rev. H. Powys, D.D., Lord Bishop
Hon. James Gell..... Attorney-General
Hon. W. L. Drinkwater, South. Deemster
Hon. J. C. Stephen, Northern Deemster
Ridgway Harrison Water-Bailiff
Hon. Mark H. Quayle, Clerk of the Rolls
Ven. Joseph C. Moore..... Archdeacon
Richard Jebb Vicar General
J. T. Clucas..... Clerk of Council

HOUSE OF KEYS.

Douglas.

*W. F. Moore, Cronkbourn, Braddan.
G. W. Dumbell, Belmont Conchan
*J. S. Goldie Taubman, Speaker, Braddan.
Castletown.
*John M. Jeffcott Castletown
Ramsey.
*W. B. Christian, Milntown Lezayre
Peel.
*Robert John Moore, Secretary Peel
Rushen Sheading.
H. J. Waterson..... Arbory
W. B. Stevenson..... Malew
*T. Moore, Great Meadow Malew
Middle Sheading.
W. Dalrymple, Union Mills Braddan
*J. C. T. Harrison, Ballaughton, Braddan
M. W. Goldie..... Conchan
Glenfaba Sheading.
W. E. S. Moore .. German
J. S. Moore. Lhergydhoo German
*John Gell, Kennaa..... German
Garff Sheading.
Richard Rowe Lonan
*William Haslam, Ballaglass.. Maughold
J. C. Goldsmith... Maughold
Ayre Sheading.
*William Callister, Thornhill.. Maughold
*E. C. Farrant, Ballakillingan .. Lezayre
J. T. Martin, Smeal Andreas
Michael Sheading.
*John F. Crellin, Orrysdale Michael
*Evan Gell, Whitehouse..... Michael
Thomas Craine, Glaick Ballaugh
Those marked thus * were Members of
the House under the late Constitution.

Constituted Authorities

Samuel Harris, High-Bailiff, Douglas
John M. Jeffcott, do., Castletown
Frederick Tellet, do., Ramsey
Robert J. Moore, do., Peel
Registrar of Deeds .. S. Harris, Douglas
Deputy do. W. Isdale, Douglas
Registrar General of Births and Mar-
riages... S. Harris, Douglas
Deputy Registrars do., C. Cannell, Doug-
las; J. M. Jeffcott, Castletown; Robert
J. Moore, Peel; F. Tellet, Ramsey.
Episcopal Registrar Samuel Harris
Archdeacon's Official T. C. Callow
Archdeacon's Registrar.. R. H. L. Brown
Atholl Street, Douglas.
Seneschal..... Ridgway Harrison

Regulator of Weights and Measures .. F.
L. Gelling, Castletown
Agent for Woods and Forests F. C.
Skrimshire, Douglas
Tithe Agent R. Harrison, Douglas
Southern Deemster's Clerk, John Quayle
Northern Deem. do., D. F. Wilson
Clerk to the Vicar General..... R. H.
Brown, Atholl Street, Douglas.
Registrar of J. S. Companies .. S. Harris

Magistrates

The Members of the Council....
The High Bailiff of Castletown.. } For the
The High Bailiff of Douglas } time
The High Bailiff of Ramsey } being.
The High Bailiff of Peel
Mark H. Quayle, C.R. Castletown
Wm. Watson Christian Ballacurry
Evan Gell Whitehouse
Richard Quirk Rheaby
Cesar Bacon Seafield
William Callister..... Thornhill
Ewan Cameron.... Glenfaba House
Clarence Horatio Cary Beach House
John Frissell Crellin Orrisdale
Edward Moore Gawne.... Kentraugh
Alexander Taubman Goldie .. Douglas
Richard Simpson Onchan
J. G. Bennett, Willaston
P. T. Cunningham Castletown
William Farrant Ballamoar
John Gell..... Kennaa
William Haslam .. Ballaglass
W. F. Moore Cronkbourn
J. S. Goldie Taubman..... Nunnery
Charles Ready Douglas
Rev. William Cromie..... Douglas
— Thomson, M.D..... Michael
W. B. Stevenson..... Malew
Edward C. Farrant .. Lezayre
William B. Christian Lezayre
Thomas Moore Malew
CLERKS—Jas. Spittall, Douglas; Henry
C. Gill, Castletown; R. J. Kelly, Ramsey;
John Kelly, Peel.

Members of Manx Bar

Frederick Tellet, H.B. Ramsey
Frederick L. Gelling .. Castletown
James Quirk Douglas
William W. Christian Andreas
William Clague Peel
Mark H. Quayle, C.R..... Castletown
George Wm. Dumbell ... Douglas
J. C. Stephen, Deemster, .. Ramsey
Edward H. Frizelle .. Peel
Robert J. Kelly .. Ramsey
Robert J. Moore, H.B. .. Peel
Thomas C. Howard New Zealand
John M. Jeffcott, H.B. Castletown
Laurence Craigie Douglas
Ridgway Harrison, W.B. Douglas
Samuel Harris, H.B Douglas
Edward Callow.... Manchester
Charles J. Stewart Lancashire
John Kelly Pee

Thomas C. Callow, A. O. Douglas
 James Gell, A. G. Castletown
 Daniel F. Wilson Ramsey
 J. G. M'Hutchin Castletown
 Samuel S. Rogers Australia
 James Spittall Douglas
 Alfred Walter Adams Douglas
 Frederick Call Australia
 A. N. Laughton Douglas
 Thomas A. Corlett Scotland
 Laurence W. Adamson..Northumberland
 Henry C. Gill Castletown
 J. C. Tobin Harrison Douglas
 Richard Tuton Douglas
 John Thomas Clucas Castletown
 Richard Sherwood Douglas
 Alured Dumbell Ramsey
 Henry Evans Gelling Castletown
 Henry T. Lamothe Ramsey
 Claude Cannell, B.A. Douglas
 J. C. Lamothe Ramsey
 W. E. S. Moore Peel
 John Quayle Douglas
 John Frederick Gill Castletown
 C. W. Beckwith .. Douglas
 J. J. Gell Ramsey
 G. J. McDonald Douglas

Notaries Public

R. Harrison, Water Bailiff, *ex officio*.
 DOUGLAS.—John Moore, J. C. T.
 Harrison, James Spittall, T. C. Callow,
 A. N. Laughton, R. Tuton, Claude Can-
 nell, John Quayle, W. Berey.
 CASTLETOWN.—Frederick L. Gelling,
 H. C. Gill.
 RAMSEY.—Robt. J. Kelly, D. F. Wilson,
 J. C. Lamothe, J. J. Gell.
 PEEL.—J. Kelly.

Commissioners to take Affidavits.

English Court of Chancery & Irish Courts
 of Queen's Bench, and Common Pleas.—
 Robt. J. Kelly, Ramsey.
 English Courts of Queen's Bench, Ex-
 chequer, and Common Pleas—Thomas
 Cheslyn Callow, Douglas.
 English Court of Chancery, Queen's
 Bench, Common Pleas, Exchequer, and
 Probate.—Jas. Gell, Castletown; James
 Spittall, Douglas.
 English Court of Probate—L. W. Adam-
 son, Douglas, Alfred N. Laughton, Dou-
 glas.
 Irish Court of Chancery.....
 James Spittall, Douglas.

Coroners

Glenfaba .. . Phillip Clucas
 Michael William Teare
 Garff John Chrystall
 Ayre John Stephen
 Middle George Maley
 Rushen William Thomson

Revising Advocates under House of Keys Election Act, 1886:—

Glenfaba, Peel, and Michael: John Kelly.
 Ayre, Garff, and Ramsey: A. Dumbell.
 Middle and Douglas: Alfred Nelson
 Laughton.
 Rushen and Castletown: H. C. Gill.

Summers

Sumner-General John Quayle
 Kirk Maughold John Bridson
 — Lonan Jas. Cannott
 — Onchan George Maley
 — Braddan George Maley
 — Marown T. Christian
 — Santon Wm. Corlett
 — Malew Wm. Corlett
 — Arbory Richard Corrin
 — Christ Rushen W. Thompson
 — Patrick P. Clucas
 — German P. Clucas
 — Michael Edward Cannell
 — Andreas Matthias Curpley
 — Bride Richard Pass
 Ballaugh John Stephen
 Jurby T. Moughtin
 Lezayre John Cain

Officers of Police

Head Constable, Isle of Man.... Capt.
 Geo. P. Goldie.
 John Sayle, Inspector..... Douglas
 James Martin, Sergeant .. Castletown
 W. Kermode .. do..... Ramsey
 Matthias Collister, do..... Peel
 William Hollinrake .. Mounted Sergeant
 of Police.

Officers of Customs

PORT DOUGLAS.

Collector R. S. D'Ouseley
 Collector's First Clerk N. W. Walker
 Collector's 2nd Clerk }
 and Assistant Exam- } G. A. M'Camm
 ining Officer }
 Examining Officer R. J. Wearer
 Locker and Weigher... G. B. Wainman
 Out-Door Officers Wm. Kirkbride
 John Kelly, J. Sayle and F. Whitney.

CREEK OF PEEL.

Principal Coast Officer G. A. Adams
 Out-Door Officers..... J. Cowley and
 J. J. Corlett

PORT RAMSEY.

Collector Leslie Lockhart
 Examining Officer..... Leslie Carr
 Out-Door Officers..... G. S. Farrington
 W. Looney and Thos. Vondy.

PORT CASTLETOWN.

Collector R. Q. Crellin
 Assist. Examining Officer..... P. Duffy.
 Out-Door Officers.. W. Bell, T. W. Law-
 son and T. Champion.

Vice Consuls

Danish W. F. Moore
 Swedish and Norwegian .. H. B. Noble

Customs Brokers & Commission Agents

W. Berey North Quay, Douglas
 Thomas Bawden Douglas
 H. Johnson Douglas
 John Clucas Castletown
 R. Teare Ramsey

Harbour Masters

Douglas { John Clague
 Deputy, Robert Gelling
 Ramsey Charles Teare
 Castletown John Caveen
 Peel J. Gill
 Port St. Mary Thomas Qualtrough

Commissioners of Harbours

R. Quirk, Receiver General
 R. S. D'Ousely James Corlett
 J. M. Jeffcott Robert J. Moore
 R. J. Weaver William Callister
 Thomas Moore Robert Corrin

Receiver of Droits of Admiralty

R. S. D'Ousely Douglas.

Agents for Lloyd's

Southern District, William Berey, Douglas
Also for the Underwriters of Glasgow and Liverpool.
 Northern District. Hugh Brown, Ramsey.

Douglas Town Commissioners.

J. Dearden (Chairman), R. Craine (Vice-Chairman), D. D. Lewin, John McGhie, W. Cannell, J. Perry, R. Archer, C. Swinnerton, T. Richards.
 J. B. Cartwright, Clerk to Commissioners.
 J. Robertson, Out-door Overseer.
 D. Callister, Inspector of Cars.

Ramsey Town Commissioners.

R. Teare, J. J. Cleator, Thos. Moore, L. Teare, William Corlett, Daniel Loughin, Thomas Looney.
 James Woods, Clerk to Commissioners.

Bankers

Bank of Mona, Douglas—(Draw on Prescott, Grote, & Co., London)—J. K. Greig, Manager.
 Douglas and Isle of Man Bank—(Draw on Glynn, Mills, & Co., London)—Dumbell, Son, & Howard.
 Bank for Savings, Atholl-street, Douglas—J. Spittall, Secretary
 Isle of Man Banking Company (Limited) Atholl-street. (Draw on London and Westminster Bank, London.)—J. J. Karran, Manager.

Law Courts

COMMON LAW.—Douglas, Feb. 19, June 29. Castletown, May 11, Oct. 12. Ramsey Feb. 16, May 18, July 6, Oct. 19.

CHANCERY AND EXCHEQUER.—On the first THURSDAY in each month; the months of Jan., August, and September excepted.

ADMIRALTY, OR WATER-BAILIFF'S.—As occasion may require.

DEEMSTERS SUMMARY.—At Castle Rushen Douglas, Ramsey, and Peel, fortnightly.

ECCLESIASTICAL.—At Douglas, Castletown, Peel, and Ramsey once monthly.

CHAPTER.—Half-yearly, in Spring and Autumn.

HIGH BAILIFFS.—At Castletown, Douglas, Peel, and Ramsey, weekly.

BARON.—In April and October.

PETTY SESSIONS.—Fortnightly.

Isle of Man Post-Office

*† Atholl Street, Douglas.. Miss Macadam.
 W. Quine, Chief Clerk.

SUB-POST-OFFICES & RECEIVING HOUSES.

Duke Street, Douglas G. A. Dean
 Pillar Letter Box, Osborne Terrace, Douglas
 M.O.O. Shore Road, Douglas, E. G. Smith
 Crescent, Douglas Geo. M. Jones
 Wall Box Ballaughton, near Douglas....
 Ballasalla T. Tyson
 † CASTLETOWN John Kinvig
 Wall Box, the Green, Castletown..
 † Port St. Mary William Skillicorn
 Union Mills W. Dalrymple
 Crosby R. Kelly
 St. John's..... John Garrett
 † PEEL John Morrison
 Onchan J. Lewin
 † Laxey J. Kinley
 † RAMSEY John Hampton
 Wall Box, Sandy Road, Ramsey ..
 Kirk Andreas..... Fred. Radcliffe
 Sulby J. McWhannell
 † Ballaugh W. Teare
 Michael..... J. Cannan
 Jurby A. Joughin
 St. Mark's..... P. Mylrea
 Foxdale T. Buzzo
 Glenmay W. Quayle
 Maughold D. Kinrade
 Bride R. Pass
 † Colby Wall Letter Box
 Port Erin R. McComb
 † Ballabeg W. Curphey.
 St. Ann's C. Oates
 *Government Insurance & Annuity Office
 † Post Office Savings Bank.

LIVERPOOL INFORMATION.

Liverpool Pilot Boat Stations.
 NOTICE.—Every Liverpool Pilot Boat on duty at night will display a single Bright Light at the Masthead.

The Pilot Boats off Point Lynas or on the first western Station, having the turn of board, will display a Red and White

Flag at the masthead by day; by night, in addition to the masthead Light, she will exhibit a flare-up Light every 15 minutes.

The two western boats cruise off Point Lynas, and as far to the westward as the Middle Mouse, and to the eastward until

Priestholm Island bears S.S.W. With strong easterly winds and cross sea, the first western boat may Cruise under the lee of Cornel Head.

The third western boat cruises from Point Lynas to the west end of Great Ormshead, bearing S.S.W. by compass, to board any vessel that may pass the first and second boats.

The fourth western boat cruises to the eastward of the eastern limit of third boat's station, until Talargoch Chimney on west end of Bar Land bears S.S.W. by compass.

The fifth, or first Hoylake boat cruises within a radius of five miles from the Northwest Lightship.

The sixth, or second Hoylake boat will board vessels after they pass the line of the Northwest Lightship and Point of Air, when the first boat is not within a reasonable distance- but her *especial duty* is to receive Pilots from vessels outward bound.

Rates of Pilotage.

For all Vessels Trading Foreign.

INWARD.	PER FOOT.
From the length of the west end of the Great Ormshead bearing S. by W., or before Penman Bachan be shut in with the Great Ormshead, at the rate of	9 0
From the eastward of the Great Ormshead, as above.....	8 0
From the only house now on Great Hilbre Island, bearing S.S.W. by the compass	4 0
OUTWARD.	s d
Through either of the Channels	4 0

No vessel trading to Foreign Parts, inward or outward bound, is to refuse a Pilot; but, if such vessel has passed the Brazil Buoy in the Rock Channel, or if a Pilot Boat falls in with a vessel in the narrows of the channels in stormy weather, that she cannot board her without imminent danger, the Pilot Boat shall then lead the way, and in either case be entitled to such Pilotage as shall be awarded by the Committee at their next meeting.

For Coasting Vessels, and those trading to and from Ireland the Islands of Faro or Ferro, Jersey, Guernsey, Alderney, Sark, and Man.

INWARDS.	PER FOOT.
From the length of the Great Ormshead, as above at the rate of . .	4 6
From the eastward of the Great Ormshead, as above ..	4 0

From the only house now on Great Hilbre Island, &c., as above 2 0

OUTWARD.

Through either of the channels 2 0

No Coasting Vessel to pay for less than eight feet of water, nor any vessel to pay for odd inches under half a foot No coasting vessel, inward or outward bound, of the burden of one hundred tons or upward (unless she be in ballast) is to refuse a Pilot, as the Master or owner, &c., must pay the full Pilotage, if one is offered. No vessel to be deemed a coaster unless she has been six months in that trade.

EXTRA PAY. PER DAY.

For every day of attendance whilst a. in the river except the day of going to sea with such ships or vessels as shall be outward bound and the day of returning from sea for such as shall be inward bound 8 0
And if the attendance of a Pilot be required..... 4 0
Though the Pilot or boat be not employed a whole day, to be paid for a day.

CHARGES FOR TRANSPORTING VESSELS FROM DOCK TO DOCK.—From one dock to another, £1: from Liverpool to Garston, £2, and vice versa.

Pilots' Rules and Regulations

Any person acting as pilot without a license, to forfeit £20.

Pilots refusing to conduct or assist ships in distress, to forfeit £10 and license.

Masters of vessels forcibly taking Pilots beyond the limits of port, to forfeit not more than £20, nor less than £5.

Vessels liable to compulsory Pilotage are to display a signal for a Pilot on coming within the western limits of the stations—say, off the Middle Mouse—under a penalty of £5, and if refusing the first Pilot, or any Pilot that offers his services, is liable to a penalty of double Pilotage for every such offence.

Rewards for Pilots assisting ships in distress to be settled by the Committee.

Compensation to be made to Pilots for taking vessels out of port which have been forced back, to be fixed by the Committee.

When in stormy weather a vessel cannot be boarded with Pilots' small boats, the vessel should be steered with the wind on the quarter, the yards braced by; then the large boat will steer under, the ship's lee quarter and a pilot will jump on board.

Life Boats.

All masters and others, entering or quitting the port, and requiring the assistance of the Life boats are requested to hoist the Distress Signal, in order that they may be despatched to their assistance as soon as possible. Vessels aground on the banks, and not hoisting the Distress Signal, will be supposed not to require the assistance of the Life Boats.

Life Boat Stations.

At Liverpool, on the North Landing Stage, two boats; the key kept at the Marine Surveyor's Office, Custom-house, and at the Life Boat Master's house, Pownall-street. New Brighton two boats, the key left at the Life Boat Master's house. Hoylake, one boat; the key kept at the Lower Hoylake Light-house. Point of Ayr, two boats; the key kept at the Master's house. Formby, one boat; the key kept at the Life Boat House by

the keeper. Hilbre Island, one boat.

Bidston Hill Signals.

SIGNALS OF DISTRESS.—For vessels in distress or on shore in the Rock Channel or about Hoyle—coming in; on the oblique pole to the southward of the light-house—for every ship, a ball with a flag half-mast; for every snow a cone, broad end up and a flag half-mast; for every brig or small vessel, a cone small end up and a flag half-mast. Going out, the same as above, but a broad pendant instead of a flag.

N.B.—For vessels in distress to the southward, when on shore to the main, the ball or cone to be put on the outside of the flag or pendant; but if on shore on Hoyle Bank, then the ball or cone to be put on the inside of the flag or pendant.

In Formby Channel.—The same signals to the northward of the Lighthouse.

Pilot Boats.

NO. NAMES. MASTERS AND SECOND MASTERS.

1. **Queen** (schooner)—Peter Dickinson, 23, Lower Mersey View, North Shore Edward F. Callister, 37, Erskine Street, Liverpool.
2. **Leader** (schooner)—Samuel Jones, 30 Church-terrace, Church-road, Tranmere; John Morris, 6 Caledonia-street.
3. **Duke** (schooner)—Thomas Parry, 24, Everton-village; Wm. Harris, 74, South Chester-street.
4. **Auspicious** (cutter)—John Shepherd, 38, Wesley-street; Mark N. Bridge, 105, Grove street.
5. **Victoria and Albert** (schooner)—Isaac Williams, Middle-lane, Wallasey, Cheshire; John Daniels, 54, Chester-street, Toxteth Park.
6. **Pioneer** (schooner)—John Williams, 56, Netherfield-road North; John Price, 10, Everton Valley.
7. **Lancashire Witch** (schooner)—Wm. Rowlands, 28, Great Mersey-street; Richard Edwards, Gorton-villa, Olive Mount, Tranmere.
8. **Pride of Liverpool** (schooner)—Charles Christie, 19, Upper Warwick-street; William J. McCracken, 16, Everton-valley.
9. **Guide** (schooner)—Thomas Davies, 3 Rose Brae, Woodside; John Pritchard, 126 Hamilton-street, Everton.
10. **Criterion** (schooner)—James Wilson, 21, Avon-street, Windsor; John Jones, 24, Pine street.
11. **Mersey** (cutter)—Robert Williams, 22, Clarence-street, Everton; John Scott, 15, Bryan-street, Toxteth Park.
12. **Perseverance** (schooner)—John Tunstall 164, Grove-street; George F. Burrows, 38 Avon-street, Lodge-lane.

Superintendent of Pilotage—Robert P. J. Simpson.

The Pilotage Committee meet for the transaction of business every Monday at 12 o'clock, at the Committee Rooms, south end of Prince's Dock.

Mersey Docks and Harbour Board.**OFFICERS.**

- | | |
|--|--|
| Mr. A. T. Squarey, Solicitor.—Office, Dock Office. | Mr. George Jones, Receiver of Duties on Goods Inwards. |
| Mr. George Fosbery Lyster, Engineer of the Docks, &c.—Office, south side of Coburg Dock. | Mr. William McComb, Receiver of Duties on Goods Outwards. |
| Mr. John Harrison, Secretary. | Mr. James Halsall, Receiver of Duties on Goods Coastwise. [at Runcorn. |
| Mr. G. J. Jefferson, Treasurer. | Mr. George H. Taylor, Receiver of Duties |
| Mr. Graham H. Hills, R.N., Marine Surveyor. Office, Dock Office. | Mr. Thomas Hanlon, Superintendent of Albert Dock Warehouses. |
| Mr. M. A. Sweny, Assistant Marine Surveyor. | Mr. W. D. Turner, Superintendent of Stanley Dock Warehouses. |
| Mr. Francis O. Simpson, R.N., Water Bailiff.—Office, George's Pier. | Mr. Thomas R. Gouthwaite, Superintendent of Wapping Warehouses.] |
| Mr. Robert H. Williams, Receiver of Duties on Tonnage. | Mr. W. H. Sloman, Superintendent of Birkenhead Warehouses. |

Mr. Thomas Hodgson, Harbour Master.—Office, George's Dock Passage.

Mr. Wm. Foyl, North Assistant Harbour Master.—Office, Sandon Graving Docks.

Mr. Henry M. Liardet, South Assistant Harbour Master.—Office, south end of Wapping Dock.

Captain Jas. Hooke, R. N., Birkenhead Assistant Harbour Master.—Office, Morpeth Dock Entrance.

Dock Masters.

Canada Josh Wood.

Huskisson George Corfield.

Sandon Thomas Barnes

Wellington & Half-tide .Owen Pritchard.

Nelson & Bramley-Moore.. Jas. Sanders.

Salisbury, Collingwood, and

Stanley John T. Gould

Clarence Half-tide, Clarence, Tra-

falgar Thomas Sterzeker.

Waterloo & Victoria... Edward Edwards.

Prince's Half Tide and Prince's

Dock George A. Bond.

George's John Williams.

Canning and Half-tide, Albert and

Salthouse Docks and Wapping

Basin George Wilson.

King's and Wapping..... Joseph Curry.

Queen's and Half-tide .. George Palmer.

Coburg Shadrach Williams.

Brunswick J. H. Hinrichson.

Toxteth and Harrington.. Thomas King.

BIRKENHEAD.

Low Water Basin and the entrance

therefrom to the Great Float

S. Stokes conjointly with T. J.

Alfred Dock T. J. Shepherd.

The Dock Master's Offices are at the

entrances of the respective docks.

Dock and Basin Signals.

All vessels are allowed to enter the

Docks when signals are not hoisted at

the respective pier-heads. All owners,

masters, and consignees are, however,

recommended to register their vessels as

expeditiously as possible, in order the

better to secure their right of turn to

accommodation at the Dock quays.

DOCK SIGNALS.

CANADA—Flag on S. pier of the

Canada Basin.

HUSKISSON—Flag on N. pier of Sandon

Basin entrance.

SANDON—Flag on N. side of gateway.

WELLINGTON AND HALF-TIDE—Flag

on S. pier of Sandon Basin entrance.

NELSON AND BRAMLEY-MOORE—Flag

N. pier of the Salisbury Dock entrance.

SALISBURY, COLLINGWOOD, AND STAN-

LEY—Flag on S. pier of Salisbury Dock

entrance.

CLARENCE AND HALF-TIDE.—Flag on

N. pier of Clarence Half-tide entrance.

TRAFALGAR—Flag on S. pier of Cla-

rence Half-tide Dock entrance.

WATERLOO AND VICTORIA—Flag on N.

pier of Prince's Half-Tide entrance.

PRINCE'S NORTH ENTRANCE—Flag on

S. pier of Prince's Half-Tide entrance.

PRINCE'S SOUTH ENTRANCE—Flag on

N. pier of George's Basin entrance.

GEORGE'S—Flag on S. pier of George's

Basin entrance.

CANNING AND HALF-TIDE—Flag on

N. pier of Canning half-tide entrance.

ALBERT AND SALTHOUSE—Flag on S.

pier of Canning half-tide entrance.

KING'S—Flag on N. pier Queen's half-

tide entrance.

WAPPING—Flag on N. end of the

King's Parade.

QUEEN'S—Flag on S. pier of Queen's

half-tide entrance.

COBURG—Flag on S. pier of entrance.

BRUNSWICK—Flag on S. side entrance.

TOXTETH—Flag on N. side of entrance.

HARRINGTON—Flag S. side of entrance.

BASIN SIGNALS.

SANDON—Ball on N. side.

GEORGE'S—Ball on S. pier of entrance.

Abstract of Dock Laws.

Goods causing obstruction on the Dock

quay, may be removed by the Trustees

at expence of owners.

Such a quantity of cargo or ballast to

be kept on board each vessel as to enable

it to be safely removed; penalty, £50.

Harbour and Dock Masters may re-

move vessels in dock, or from one dock

to another, at owners expense; penalty

for obstructing them, disobeying their

orders or using abusive or offensive lan-

guage to them. £10.

Vessels on which dues, &c., are owing

may be detained until such are paid.

Shipowners have a lien for freight and

all other lawful claims on goods dis-

charged into dock warehouses.

Manifest of all goods imported or ex-

ported to be delivered at the Dock Office

within 14 days after the discharge in-

wards or clearance outwards; penalty £10

Collector, &c., not to receive entry of

any vessel until the dock and light dues

are paid; penalty, £20.

No ballast to be thrown into the docks,

penalty, £50.

After ballast is discharged to be carted

away as the trustees of the docks shall

appoint; penalty, £5.

Vessels not to come into dock under

sail; penalty £5.

Persons wilfully and maliciously dam-

aging the docks, &c., adjudged guilty of

felony.

Water-bailiff empowered to remove

vessels lying in the river; penalty for

obstructing him, £10.

Persons firing cannon, &c., within the

port (except signals of distress) to forfeit

£10 for every offence.

CUMBERLAND INFORMATION.

Members of Parliament, &c.

WHITEHAVEN.—G. A. C. Bentinck, Esq., 48, Charles-st., Berkley-square, London.

COCKERMOUTH.—Major Thompson. Lord Nass, 79 Eccleston-square, Palmers-ton House, London.

EASTERN DIVISION.—Hon Chas. G. W. Howard, Naworth Castle; 56, Park-st., Grosvenor-square, London. W. Marshall, Esq., Patterdale Hall; 85, Eaton-square, London.

WESTERN DIVISION.—Hon. Percy Wyndham, 44 Belgrave square. H. Low-ther, Esq., 21 Milton Crescent, London.

CARLISLE.—E. Potter, Esq., Manchester, Reform Club, London. Wm. Nicholson Hodgson, Esq., 37, Jermyn-street, St. James's, London.

Lord Lieutenant Earl of Lonsdale. Clerk of the Peace . . T. D. Hodgson, Esq. County Treasurer. . Mr. Dobson, Carlisle. Gov. of Gaol. . Mr. T. H. Redin, Carlisle.

County Coroners.

Wm. Carrick, Esq., Wigton.
W. Lumb, jun., Esq., Whitehaven.
Dr. Bell, Cockermouth.
J. P. Myres, Esq., Broughton, Furness.

Quarterly Sessions.

Easter, in the first week after 31 March.
Midsummer, first week after 24 June.
Michaelmas, first week after 11 October.
Christmas, first week after 28 Dec.
The Easter, Midsummer, Michaelmas, and Christmas Sessions for Cumberland re held at Carlisle.

Bankers.

WHITEHAVEN.—The Whitehaven Joint Stock Banking Company, Peter Cameron, Manager.—London Joint Stock Bank, 5, Prince's Street.

Bank of Whitehaven, G. W. Brown, Manager.—London and Westminster Bank, 41, Lothbury, London.

Cumberland Union Branch Bank, W. Houlgate, Agent.—Barclay, Bevan, & Co. 54, Lombard-street, London.

Savings' Bank—Open Saturdays, from 6 to 8 p.m.—J. F. Loves, Sec.

WORKINGTON.—Cumberland Union Bank Branch, R. S. Tompson, Agent.—Barclay, Bevan, & Co., 54, Lombard-st.

Bank of Whitehaven Branch, Henry Bowes, Agent.—London and Westminster Bank, 41, Lothbury.

Carlisle City and District Bank, David Tweddle, Agent.—Glyn & Co., 67, Lombard-street, London.

MARYPORT.—Branch of the Cumberland Union Banking Company, Joseph Thompson, Agent.—Barclay, Bevan, & Co., 54, Lombard-street.

Carlisle City and District Bank, Joseph H. Wood, Agent.—Glyn & Co., Lombard Street.

COCKERMOUTH.—Branch of the Cum-

berland Union Banking Company, T. H. Tandy, Agent.—Barclay, Bevan & Co., 54, Lombard-street.

Carlisle City and District Bank, J. H. Watson, Agent.—Glyn & Co., 67, Lombard-street.

WHITEHAVEN & WEST CUMBERLAND BENEFIT LAND AND BUILDING SOCIETY.—Public Office, Lowther-street; open on Saturdays from six to eight, p.m.—S. Armstrong, Secretary.

The Whitehaven and Furness Junction Railway.

Trains leave Bransty Station three times daily (Sunday excepted) for Bootle, Ulverston, Broughton, Fleetwood, Preston, Manchester, Liverpool, &c. This is the nearest route to Preston, Manchester, Liverpool, &c.—(See *West Cumberland Railway Guide*.)

The Whitehaven and Maryport Junction Railway.

Trains leave Bransty Station four times daily (Sunday excepted) for Workington, Maryport, Wigton, Carlisle, and Cockermouth; three times daily for Edinburgh, London, Birmingham, Liverpool, Manchester, Preston, Newcastle, York, and Darlington.—(See *West Cumberland Railway Guide*.)

The Whitehaven, Cleator, and Egremont Railway.

Trains leave Whitehaven three times daily (Sundays excepted) for Cleator Moore, Frizington, Woodend, and Egremont.—(See *West Cumberland Railway Guide*.)

Steamers and Traders.

LIVERPOOL.—The Whitehaven Steam Navigation Owners' powerful and commodious first-class steamers sail regularly with passengers and goods—Fares: Cabin 7s., Deck, 4s. Passengers are conveyed, in connection with the Railway Companies, between Newcastle, 18s. 3d. and 9s. 1d., Carlisle, Dalston, and Wigton, to Liverpool at a through fare. Passengers by Railway arrive at Whitehaven by the last train before the steamer's sailing, and those from Liverpool being forwarded by first train after the vessel's arrival in Whitehaven.—Fares: Cabin and first-class, 10s.; Deck and Third-class, 5s. Agents—Carlisle. Edward Jobling; Liverpool, Fisher, Wilson, & Co.; Whitehaven—J. & J. Hodgson.

BELFAST.—The Whitehaven Steam Navigation Owners' steamers sail regularly with passengers and goods.—Fares: Cabin, 10s., Deck, 3s. Passengers are conveyed in connection with the Railway Companies, between Carlisle, Dalston, and Wigton, to Belfast at a through fare. Those from Carlisle, &c., arriving in Whitehaven by the last train before the steamer's sailing, and those from Belfast being forwarded by first train

after the vessel's arrival in Whitehaven. —Fares: Cabin and First-class, 12s.; Deck and Third class, 6s. Agents—Belfast, R. Henderson, & Son, Donegal Quay; Carlisle, Edward Jobling; Whitehaven, J. & J. Hodgson.

DUBLIN.—The North British Steam Packet Company's first-class fast sailing Steamers sail between Silloth and Dublin twice a week, calling off Whitehaven (wether permitting) to land and embark passengers. Fares from Whitehaven to Dublin, First Cabin, 15s.; Second Cabin, 6s. Agents for Whitehaven, J. & J. Hodgson, 36, King-street.

DOUGLAS (Isle of Man).—The North British Steam Packet Company's first-class fast sailing steamers sail between Silloth and Douglas twice a week during summer months, calling off Whitehaven (weather permitting) to land and embark passengers. Fares from Whitehaven to Douglas first cabin, 6s. 6d.; second cabin, 3s. 6d. Agents for Whitehaven, J. & J. Hodgson, 36, King-street.

RAMSEY (Isle of Man).—The Isle of Man Company's Steam ship "Mona's Isle" sails between Ramsey and Whitehaven ONCE a week, with goods and passengers to Douglas. Fares, Saloon 6s.; fore cabin, 3s. Agents for Whitehaven—Frost & Nelson, Ship-Brokers, 7½, West Strand.

LONDON.—The Whitehaven Steam Navigation in connection with the Belfast Screw Steam Company, sail a vessel ONCE a week. Agents: Belfast, Robert Henderson & Son, London, Ogilby Moore & Co., Ingram Court, Fenchurch Street; Whitehaven, J. & J. Hodgson.

DUNDRUM.—The 'Lady Alice Kenlis,' and 'Lady Alice Hill,' Screw Steamers, sail regularly between Dundrum and Whitehaven. Agents—Charles Fisher & Co., 36 King-street, Whitehaven.

LIVERPOOL.—The North British Steam Packet Company's first-class fast sailing Steamers sail between Silloth and Liverpool TWICE weekly calling off Whitehaven in the summer months. Fares: Carlisle and Liverpool first cabin, 10s.; Second cabin, 5s. Silloth and Liverpool first cabin, 7s.; second cabin, 3s. 6d. Whitehaven and Liverpool first cabin, 7s.; second cabin, 3s. 6d. Agents for Whitehaven—J. & J. Hodgson, 36, King-street.

Carriers.

Leave Whitehaven for Harrington, Workington, Cockermouth, Keswick, and Egremont, every Tuesday, Thursday and Saturday; for Wigton every Wednesday; and for Gosforth every Tuesday, Thursday, and Saturday.

Rates for the Steam Tugs.

Vessels employed in the Coal or Coasting Trade shall pay every voyage on

clearing for sea one half-penny per Ton Register. Vessels arriving from a foreign port, or from a discharging port one penny per Ton register.

Vessels engaged in the Coal or Coasting trade pay an additional half-penny per ton when they require the use of the Steam Tug Outwards, and the same Inwards.

No vessel towed out for less than 1s.

Foreign Vessels as above, one penny per ton.

That the limits for towing vessels into and out of the harbour for one half penny and one penny per ton respectively, be as follows, viz.: say a line drawn from St. Bee's Head to Mickleham Pit, on the Hill north of Parton, and two lines intersecting the above, from Redness Point and Tom Hurd Rock, bearing N. W. by N. and S. E. by E. by compass.

If the vessel first in turn be not ~~at~~ or not ready for the Tug Boat, then ~~it~~ is to take the first that is.

Vessels wanting the use of the Steam Tug are to hoist the Union Jack on the Main Top Gallant Masthead.

Harbour Boat Rates.

A Boat is stationed at the Old Quay Watch House, to attend on vessels entering the Port, and also to give assistance to those outward bound. Charges are as follows:—

Vessels of 120 tons and upwards.	4 0
Vessels from 100 to 120.....	3 9
Vessels from 80 to 100.....	3 0
Vessels from 60 to 80.....	2 6
Vessels from 40 to 60.....	2 0
Vessels from 20 to 40.....	1 6
Vessels less than 20.....	1 0

FOREIGN LADEN VESSELS.

Under 120 tons ..	4 0
Above 120 tons ..	6 0

The Harbour Boat to be paid as above by all vessels entering the Port; but if not employed by those leaving it, no charge to be demanded.

Rates for the Gridiron.

Every vessel previous to going ~~in~~ must be entered at the Harbour Office, and payment made according to the established rates, for which she may remain on four tides, counting the tide going on and the tide coming off.

	s	d	s	d
Vessels not exceed. 50 tons	5	0	0	0
About 50 and not ex. 100	7	0	0	0
.. 100.....	10	0	0	0
.. 150.....	15	0	0	0
.. 200.....	20	0	0	0
.. 250.....	25	0	0	0

On Entry. 5 0 0 0
10 0 0 0
15 0 0 0
20 0 0 0
25 0 0 0
Every four tides above four.

Post Office, Whitehaven.—WILLIAM B. GIBSON, POSTMASTER.

Arrivals.—*Week Days*—London and all parts, 8 50 a.m.; 8 40 p.m. *Sundays*—London and all parts, 10 35 a.m.

Despatches.—*Week Days*—Local parts, 9 20 a.m.; North Mail, 2 50 p.m.; London and all parts, 6 20 p.m. *Sundays*—North Mail, 7 50 a.m.; Local parts, 11 30 a.m. London and all parts, 5 p.m.

The letter box is closed 15 minutes before each despatch. Letters bearing one additional stamp will be forwarded for the first ten minutes. The deliveries by letter carriers commence during the week days at 9 25 a.m., and 9 5 p.m.; and on Sundays at 12 45.

POST OFFICES IN CONNECTION WITH THE WHITEHAVEN POST OFFICE.

Those marked thus † are empowered to grant and pay Money Orders.

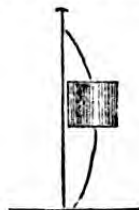
OFFICES.	ARRIVAL.	DESPATCH.	RECEIVER.
Sandwith	10 20 a.m.	4 55 p.m.	A. Leeson
† St. Bees	7 15 .	8 58 a.m.	J. Burnycat.
Ditto	11 15 ..	4 10 p.m.	Ditto
Parton	10 20 ..	4 50 ..	E. Lightfoot
Distinguon	12 0 ..	3 20 ..	E. Lawrence
Hensingham	9 30 ..	5 26 ..	R. D. Hooper.
Cleator Lane End	9 51 ..	5 5 ..	C. McGinn
Cleator	10 41 ..	4 5 ..	J. Harkness
† Cleator Moor	10 30 ..	3 20 ..	Jno. Atkinson
Arlecdon	1 15 p.m.	2 0 ..	J. James
† Egremont	10 2 a.m.	4 54 ..	James Welsh
Beckermont	10 24 ..	4 32 ..	M. Gilliot
Calderbridge	10 35 ..	4 21 ..	W. Mossop
Gosforth	10 50 ..	4 6 ..	P. Mossop
† Holm Rook	11 12 ..	3 44 ..	J. Birkett
Eskdale	12 30 p.m.	9 30 a.m.	J. Porter
Wasdale	1 41 ..	5 10 p.m.	M. Pharoah
† Ravenglass	11 31 ..	3 25 ..	R. Askew

STORM-WARNING SIGNALS.

Gale probably from the Northward.



Gale probably from the Southward.



Dangerous winds may be expected from nearly opposite quarters successively.



Dangerous wind probably at first from the Northward.



Dangerous wind probably at first from the Southward.

Whenever such a signal is shown (in consequence of a telegram from London) it will be kept up, shown distinctly, till dusk of *that day only*, unless otherwise specially directed. These cautionary or warning signals advert to winds during some part of the next nights or two or three days; herefore due *vigilance* should prevail (untill the weather is again thoroughly settled), but without suspending *departures* or any operations *unnecessarily*.

It should be remembered that only the greater and more *general* disturbances of the atmosphere are to be made known by this method (Warning signal), not merely local or sudden changes (however violent or dangerous) which are not felt at a certain distance, and do not therefore affect other localities.

MERSEY DOCKS AND HARBOUR.

Tabular Statement, showing the Area of Water, Quay Space, Width of Entrance, and Depth of Sill for each Dock, also the length of Graving Docks. &c.

The Old Dock contains an area of 3 acres 1890 yds., and 557 lineal yds. quay space
Its Passage do 675 do., 90 do.

The Old Dock Sill is the Datum to which all levels refer, which is preserved on a Tide Gauge on the west side of the Centre Pier of the entrances to the Canning Half-tide Dock.

LIVERPOOL DOCKS.	Width of Entrance.		Sill under Old Dock Datum.		Coping at Hollow Quoins abv Datum.		Water Area.		Quay Space.	
	Ft	In	Ft	In	Ft	In	Acr.	Yd.	Lineal Yds.	Yds.
North Carrier's Dock.... West Passage	40	0	6	0	27	0	2	3423	641	
South ditto West Passage	40	0	6	0	27	0	1	4515	615	
Canada Half-tide Dock.....	..	..	..	..	..	..	3	4380	466	
West Entrance	60	0	7	9	28	0				
Northern West Lock Entrance (110 ft.)	32	0	6	0	28	0				
Southern West Lock Entrance (110 ft.)	20	0	6	0	28	0				
North Lock Passage (76 ft.)..	20	0	3	0	27	0				
South Passage	80	0	7	9	28	0				
Canada Dock	..	..	..	..	..	..	17	4043	1273	
South Passages East	50	0	6	6	29	0				
West	80	0	6	6	29	0				
Canada Lock (498 ft.)	100	0	7	9	28	0	1	3479	487	
Huskisson Dock	..	..	..	..	..	..	14	3451	1039	
Huskisson Branch Dock	..	..	..	..	..	..	7	592	910	
Huskisson East Lock (338 ft.).....	80	0	6	6	38	0	0	4682	342	
Huskisson West Lock	45	0	6	0	26	0	0	3650	330	
Sandon Dock West Entrance	70	0	6	6	30	11	10	100	807	
Wellington Half-tide Dock, East Entr.	70	0	6	9	30	9	3	813	400	
West Entrance	50	0	6	6	28	0				
Wellington Dock West Passage	70	0	6	6	31	0	7	4120	890	
Bramley-Moore Dock .. North Passage	60	0	6	0	26	0	9	3106	935	
South Passage	60	0	6	0	26	0				
Nelson Dock South Passage	60	0	6	6	26	0	7	4786	803	
Stanley Dock..... West Passage	51	0	5	8	29	0	7	120	753	
Collingwood Dock West Passage	60	0	6	9	26	0	5	244	533	
Salisbury Dock	..	..	..	..	..	..	3	2146	400	
West Entrances North	60	0	6	11	26	0				
South	50	0	6	11	26	0				
Canal Lock	18	0	5	2	26	0				
Clarence Graving } North Passage	45	0	4	9	26	0	1	1056	201	
Dock Basin } South Passage	45	0	4	6	26	6				
Clarence Half tide Dock.... West Entr.	50	0	5	0	26	8	4	1794	638	
Clarence Dock West Passage	47	0	3	2	26	0	6	273	910	
Trafalgar Lock N. and S. Passages	45	0	6	7	23	10	0	2937	250	
Trafalgar Dock South Passage	45	0	4	11	26	5	5	4546	764	
Victoria Dock South Passage	50	0	6	6	26	0	5	3559	751	
Corn Warehouse Dock .. South Passage	60	0	8	0	22	6	2	3375	500	
Waterloo Dock South Passage	60	0	8	0	22	6	3	2146	330	
Half-tide Dock (West Entrances) North	65	0	8	0	31	0	5	3705	335	
(Lock 110 ft.) Middle	32	0	8	0	31	0				
South	65	0	8	0	31	0				
Prince's Dock North Passage	60	0	8	0	26	0	10	174	1079	
(Lock 178 ft.)... South Passage	44	11	4	6	28	2				
George's Dock & Passage.. North Entr.	41	11	4	6	24	6	5	2593	1001	
South Passage	40	1	4	6	24	5				
Manchester Dock West Entrance	32	10	0	3+	23	3	1	595	250	
Manchester Lock, (86 ft.) .. West Entr.	33	8	3	6	24	3	0	315	57	
Canning Dock West Passage	45	0	6	1	26	2	4	376	535	
Canning Half-tide Basin	..	..	..	..	..	..	2	2688	432	
Two West Entrances .. each	45	0	6	3	28	3				
Albert Dock North Passage	45	0	6	4	26	0	7	3542	685	
East Passage	45	0	6	0	26	0				

+ The Sill of the Manchester Dock is 3 inches above Old Dock Datum. -

LIVERPOOL DOCKS.	Width of Entrance.	Sill under Old Dock Datum.	Coping at Hollow Quoins above Sill.	Water Area.	Quay Space.
	Ft. In.	Ft. In.	Ft. In.	Acr. Yd.	Mile Yd.
Salthouse Dock North Passage	45 0	6 0	26 0	6 2019	784
Wapping Basin West Passage	40 0	6 0	25 0	1 3151	454
North and South Passages .. each	50 0	6 0	26 0		
Wapping Dock West Passage	50 0	6 0	26 0	5 499	815
South Passage	60 0	6 0	26 0		
King's Dock South Passage	42 0	5 0	26 1	7 38.6	875
Basin to Queen's Dock .....	.. ..	.. ..	.. ..	3 3542	445
West Entrances North	70 0	6 9	31 0		
South	50 0	6 9	31 0		
Queen's Dock West Passage	50 0	6 0	26 0	10 1564	1214
South Passage	60 0	6 6	28 9		
Coburg Dock West Entrance	70 1	6 0	30 6	8 26	1053
Brunswick Dock North Passage	60 0	6 6	27 0	12 3010	1086
Brunswick half-tide Dock, ... East Pass.	42 0	5 6	26 0	1 3388	491
West Entrance	45 0	6 0	26 6		
Toxteth Dock West Entrance	40 0	5 0	26 0	1 469	393
Harrington Dock West Entrance	29 9	1 2	23 1	0 3740	315
Herculaneum Half-tide Dock—					
West Entrances North	80 0	8 0	31 0	3 3000	93
South	60 0	8 0	31 0		
Total Water Area and Quay Space of Liverpool Dock				235 3148	16 1062

LIVERPOOL BASINS.		Height of Piers above Datum			
Canada Basin	250 0	32 0	.. ..	6 4528	546
Sandon Basin	200 0	31 0	.. ..	6 904	702
Seacombe Basin	52 0	24 10	.. ..	0 1805	188
George's Basin	147 0	25 0	.. ..	3 1852	455
George's Ferry Basin	70 0	23 8	.. ..	0 1344	160
Manchester Basin	36 0	22 2	.. ..	0 2568	288
South Ferry Basin	60 0	30 6	.. ..	0 2927	205
Harrington Basin	40 0	23 3	.. ..	0 3917	308
Total Water Area and Quay Space of the Liverpool Basins.....				19 485	1 1092
Do. do. do. Docks				235 3148	16 1062
Total				254 3633	18 394

BIRKENHEAD DOCKS.		Sill under Datum.			
Wallasey Pool..... Western Float	.. ..	.. ..	.. ..	52 319	2 210
Ditto..... Eastern Ditto	.. ..	.. ..	.. ..	59 3786	1 1506
Ditto Passage	100 0	7 6	26 6		
Ditto, Basin near Canada Works, West	50 0	.. ..	.. ..	1 2554	543
Ditto, ditto East	50 0	.. ..	.. ..	1 84	390
Ditto, Railway Company's Basin.....	.. ..	.. ..	.. ..	0 606	119
East Entrances to East Float—					
From Egerton Dock	70 0	7 0	25 0		
Lock of Low Water Basin, (288 feet) ..	50 0	.. ..	.. ..	0 1333	0 234
Inner Sill of Lock .....	.. ..	9 0	26 0		
Outer Sill of ditto .....	.. ..	12 0	26 0		
Two Sluicing Passages, each..	30 0	.. ..	.. ..		
Inner Sills of ditto.....	.. ..	7 8	26 0		
Outer Sills of ditto.....	.. ..	18 6	26 0		
South Lock of Intermediate Dock, } (274 feet)	50 0	.. ..	.. ..	0 1522	0 300
Inner Sill of Lock .....	.. ..	9 0	26 0		
Outer Sill of ditto .....	.. ..	12 0	26 0		
Middle Lock of Inter. Dock, (198 ft.) ..	30 0	.. ..	.. ..	0 667	0 264
Inner Sill of ditto		9 0	26 0		
Outer Sill of ditto		12 0	26 0		

TABULAR STATEMENT, Continued.

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GRAVING DOCKS, Continued.	Width of Entrance.		Sill under Old Dock Datum.		Coping at Hollow Quoins above Sill		Length at Bottom.		Total Length at Bottom.	
	Ft.	In.	Ft.	In.	Ft.	In.	Lineal Yd		Lineal Yd	
Herculaneum Graving Docks—										
No. 1—West	60	0	4	0	26	0	758	6		
No. 2—East	60	0	4	0	26	0	753	0		
									1511	6
Total measure at Bottom									10136	6

BIRKENHEAD GRAVING DOCKS.

No. 1, Western Float	..	..	..	..	..	..	..	..		
No. 2, Ditto	50	0	7	9	25	0	750			
No. 3, Ditto	85	0	7	9	25	0	750			
									1500	408
Morpeth Lock as a Graving Dock	85	0	12	0	26	0				
Total measure at Bottom.....									1969	
Ditto of the Liverpool Graving Docks									10136	6
Total									12104	6

LIVERPOOL AND BIRKENHEAD GRIDIRONS.

	Breadth		Length	
	Ft.	In.	Ft.	In.
LIVERPOOL.				
Clarence Graving { Blocks South End 2ft 2in. below Datum }	25	6	319	6
Dock Basin { Ditto North End 0 3 ditto }	26	0	509	0
King's Pier, Blocks level of Old Dock Sill	..	..	822	6
Total Length of Liverpool Gridirons				
BIRKENHEAD.				
Morpeth Basin, Blocks South End 1ft. 8in. above Datum	86	3	228	3
Ditto ,, "North End 1 1½ below Datum	..	..	1050	9
Total Length of Gridirons at Liverpool and Birkenhead				

LIVERPOOL CORPORATION DOCKS.	Width of Entrance.		Level of Sill.		Level of Coping above Sill.	Water Area.
	Ft.	In.	Above Datum.	Below Datum.	Ft.	In.
River Craft Dock, Lock, & Eagle Basin	..	..	..	..	..	..
Outer Gates	30	0	0	3	25	4
Inner Gates.....	30	0	1	3	25	10
Duke of Bridgewater's Dock—						
Outer Gates.....	40	0	..	..	25	6
Middle Gates	28	10	0	6	22	9
Inner Gates.....	40	0	..	..	25	0

The calculations of the heights of water for the Liverpool Tide Table were originally constructed from the level of the old Dock. The datum is now precisely the same, notwithstanding the removal of the gates, the Register being scrupulously preserved near the same spot, on the eastern wall of the Canning Dock. **TIDES.**—The average level of Low-water of Spring Tides is 8 ft. 9 in. below the old Dock Sill; the average level of Low-water of Neap Tides is 1 ft. 9 in. below the old Dock Sill. At Low-water of a 21 ft. Tide there is only 1 ft. 6 in. of water on the Bar of the Rock Channel. To find the quantity of water in the Rock Channel, add 11 ft. to the height of any Tide specified in the Tide Table.

A Tide-Guage Table for the Entrance of the Mersey,

Adapted to shew the *Height of Water* above low-water level of ordinary Spring Tides, at any required period.

When it is High Water at or near either of the following times.	H. W.											
	Last $\frac{1}{2}$ h. flood, or first $\frac{1}{2}$ h. ebb.											
hour.	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft
12 o'clock	30	29	27	25	22	19	16	13	10	8	5	3
11 or 1	29	28	27	25	22	19	16	13	10	8	6	4
10 or 2	27	26	25	24	21	19	16	13	11	9	7	6
9 or 3	26	25	24	23	21	18	16	13	11	9	8	7
8 or 6	25	24	23	22	20	18	16	14	12	10	9	8
7 or 5	24	23	22	21	20	18	16	14	12	11	10	9
6	23	22	21	20	19	18	16	14	13	12	11	10

Graving Dock Rates

FOR	£	s.	£	s.	£	s.
2 Tides, the tide in & next tide out	1	16	2	2	0	6
3 —, includ. going in & coming out	2	2	2	9	0	7
4 —	2	8	2	16	0	8
5 —	2	14	3	3	0	9
6 —	3	0	3	10	0	10
7 —	3	6	3	17	0	11
8 —	3	12	4	4	0	12
9 —	3	18				
10 —	4	4				
11 —	4	10				
12 —	4	16				
2 Neaps	12	0	16	0	2	0
3 —	18	0	24	0	3	0
4 —	24	0	32	0	4	0
5 —	30	0	40	0	5	0
6 —	36	0	48	0	6	0
7 —	42	0	56	0	7	0
8 —	48	0	64	0	8	0

Latitude and Longitude of Liverpool

Lat. of the Observatory .. $53^{\circ} 24' 47.8''$ N.
Longitude in Time 12m. 0.11s. before Greenwich Time.

Fair and Foul Weather Prognosticator

The following Table and the accompanying remarks, are the results of many years actual observation; and will show the observer what kind of weather will probably follow the entrance of the Moon into any of her Quarters.

MOON	TIME OF CHANGE	IN SUMMER.	IN WINTER.
If New Moon—First Quarter—Full Moon—or last Quarter happens	Between Midnight and 2 in the Morn..	Fair	Hard Frost, unless the wind be S. or W.
	— 2 and 4 do {	Cold, with frequent Showers	Snow and stormy
	— 4 and 6 ..	Rain	Rain.
	— 6 and 8 ..	Wind and Rain	Stormy.
	— 8 and 10 {	Changeable	Cold rain, if the wind be W. Snow, if E.
	— 10 and 12..	Frequent Showers	Cold and high winds.
	At 12 o'clock at Noon and to 2 P.M.	Very Rainy	Snow or rain.
	Between 2 and 4 After.	Changeable	Fair and mild.
	— 4 and 6	Fair	Fair.
	— 6 and 8.... {	Fair, if the wind N.W. Rainy, if S. or S.W.	Fair and frosty, if N. or N.E. Rain or Snow, if S. or S.W.
If New Moon—First Quarter—Full Moon—or last Quarter happens	— 8 and 10	Ditto	Ditto.
	— 10 and 12	Fair	Fair and Frosty.

REMARKS.—1. The nearer the time of the Moon's Change, First Quarter, Full, and Last Quarter to MIDNIGHT, the fairer will the weather be during the 7 days following. The space for this calculation occupies from 10 at night to 2 next morning.—2. The nearer to MIDDAY these phases happen, the more foul or wet the weather may be expected the next 7 days. The space for this calculation occupies from 10 in the forenoon to 2 afternoon.—3. The Phases happening from 4 to 10 in the afternoon, may be followed by fair weather, but this mostly depends upon the wind.—4. To prognosticate correctly, where the WIND is concerned, a good VANE should be within sight. Dr. Kirwan remarks, if a storm arise from the East on or immediately preceding the time of the Spring Equinox, or from any point of the compass near a week after; then, in either of these cases, the succeeding summer is dry, four times out of five; but if a storm arise from the SW, or WSW on or just before the Spring Equinox then the summer following is wet, five times in six.

MISCELLANEOUS INFORMATION.

Eclipses 1869.

In the course of this year there will be two Eclipses of the Sun and two of the Moon. The Greenwich mean time of their occurrence will be as follows:—

FIRST. A partial Eclipse of the Moon, commencing on the evening of 27th January, the first contact with the Earth's *penumbral* shadow will take place at 18 minutes past 11; the first contact with the *dark* shadow 29 minutes after midnight; middle of the Eclipse 38 minutes past 1 in the morning of the 28th; last contact with the dark shadow 47 minutes past 2; last contact with the penumbra 58 minutes past 3; magnitude 0.450. The whole of this Eclipse will be visible here.

SECOND. An annular Eclipse of the Sun on the 11th February, beginning on the Earth generally at 10h. 55m. in the morning and ending at 4h. 38m. evening. This Eclipse will only be visible in the southern parts of Africa and America, the South Atlantic and Southern Ocean.

THIRD. A partial Eclipse of the Moon on the 23d July, greatest obscuration at 2h. 2m. afternoon—invisible here, the Moon being below our horizon.

FOURTH. A total Eclipse of the Sun on the 7th August, beginning on the Earth generally 7h. 38m. evening and ending at 24 minutes past midnight. Visible chiefly in the North Pacific, the north-eastern parts of Asia and nearly the whole of North America.

Chronological Notes.

Lunar Cycle or Golden Number.....	8	Septuagesima Sunday....	January 24
Epact.....	17	Lent begins.....	February 10
Solar Cycle.....	2	Easter Day.....	March 28
Dominical Letter.....	C	Ascension Day.....	May 6
Roman Indiction.....	12	Trinity Sunday.....	May 23
Julian Period.....	6582	Advent Sunday.....	November 28

Quarters of the Year.

Spring Quarter commences 20th March at 7h 41m, morning—☉ enters ♈	Autumnal Quarter commen. 22nd Sept. at 6h 32m, evening—☉ enters ♏
Summer Quarter commences 21st June at 4h 9m, evening—☉ enters ♊	Winter Quarter commences 21st Dec. at 0h m, 28 afternoon—☉ enters ♏

The Revolutions, Distances, &c., of the Planets

Names.	Periodical Revolution.					Mean distance from Sun.		Diameter.	Time of Rotation upon their Axis.				Inclination of Axis to Ecliptic.		Hourly motion in their Orbits.
	Yrs	d	h	m	s	English miles.	Eng. miles		d	h	m	s	°	'	Miles.
Sun.....	.....	.....	.....	.....	.....	.....	887,076	.....	25	7	48	0	.....	.....	.....
Mercury..	0	87	23	15	44	36,890,000	2,950	.....	1	0	5	28	.....	.....	111,256
Venus ..	0	224	16	49	8	68,770,000	7,900	.....	0	23	21	8	.....	.....	81,398
Earth....	1	0	5	48	48	95,298,260	7,912	.....	0	23	56	4	23	28	75,222
Moon....	0	27	7	43	5	95,268,260	2,160	.....	27	7	43	5	1	43	2,335
Mars	1	321	22	18	27	145,205,000	4,500	.....	1	0	37	20	28	42	56,121
Jupiter ..	11	315	14	39	2	495,917,000	88,780	.....	0	9	55	21	3	22	30,358
Saturn ..	29	164	7	21	50	909,026,000	77,230	.....	0	10	16	1	30	0	22,351
Uranus ..	83	294	8	39	0	1,828,071,000	35,000	.....	.....	.....	.....	.....	.....	.....	15,846

Population of the United Kingdom according to the Census of 1861.

	Popula. Enumerated.		Increase, 1861.		Decrea. 1861.	
	1851.	1861.	Persons.	Rate per cent.	Persons.	Rate per cent.
ENGLAND AND WALES	17,927,609	20,061,725	2,134,116	12	—	—
SCOTLAND	2,888,742	3,061,117	172,375	6	—	—
IRELAND	6,552,385	5,764,543	—	—	787,842	12
ISLANDS IN THE BRIT. SEAS	143,126	143,779	653	—	—	—
TOTAL UNITED KINGDOM ..	27,511,862	29,031,164	2,307,144	—	787,842	—

Net Increase 1,519,302, or 6 per cent.

Population of the Isle of Man.

1851.—Males, 24,915; Females, 27,472—Total, 52,387. 1861.—Males, 24,458; Females, 27,794—Total, 52,252. Total Decrease, 135.

Table of Wages and Expences

TO WHICH A WITNESS ATTENDING THE MANX COURTS, AS UNDER, IS ENTITLED.

PARISHES.	Patrick.	German.	Michael.	Ballaugh.	Jurby.	Andreas.	Bride.	Lezayre.	Maughold.	Lonan.	Onchan.	Braddan.	Marown.	St. Ann.	Arbory.	Melaw.	Rushen.
	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.
Gentleman	3 0 4	6 6 0	7 6 9	0 10 6	12 0 9	0 10 6	12 0 9	0 10 6	12 0 9	0 10 6	12 0 9	0 10 6	12 0 9	0 10 6	12 0 9	0 10 6	12 0 9
Tradesman	2 6 3	0 3 6	4 0 4	6 5 0	5 6 4	6 5 0	5 6 4	6 5 0	5 6 4	6 5 0	5 6 4	6 5 0	5 6 4	6 5 0	5 6 4	6 5 0	5 6 4
Tradeswoman . . .	2 0 2	6 3 0	3 6 4	0 4 6	5 0 4	6 5 0	5 6 4	6 5 0	5 6 4	6 5 0	5 6 4	6 5 0	5 6 4	6 5 0	5 6 4	6 5 0	5 6 4
Labourer	1 8 2	0 2 4	2 8 3	0 3 4	3 0 3	4 3 4	3 0 3	4 3 4	3 0 3	4 3 4	3 0 3	4 3 4	3 0 3	4 3 4	3 0 3	4 3 4	3 0 3
Douglas Castletown																	
Gentleman	7 6 6	0 7 6	9 0 10	6 10 6	7 6 6	0 7 6	9 0 10	6 10 6	7 6 6	0 7 6	9 0 10	6 10 6	7 6 6	0 7 6	9 0 10	6 10 6	7 6 6
Tradesman	4 0 3	6 4 0	4 6 5	0 5 0	4 0 3	6 4 0	4 6 5	0 5 0	4 0 3	6 4 0	4 6 5	0 5 0	4 0 3	6 4 0	4 6 5	0 5 0	4 0 3
Tradeswoman . . .	3 6 3	0 3 6	4 0 4	6 4 6	3 6 3	0 3 6	4 0 4	6 4 6	3 6 3	0 3 6	4 0 4	6 4 6	3 6 3	0 3 6	4 0 4	6 4 6	3 6 3
Labourer	2 8 2	0 2 8	3 0 3	4 3 4	2 8 2	0 2 8	3 0 3	4 3 4	2 8 2	0 2 8	3 0 3	4 3 4	2 8 2	0 2 8	3 0 3	4 3 4	2 8 2
Ramsey																	
Gentleman	9 0 7	6 6 0	4 6 6	0 4 6	6 6 0	4 6 6	0 4 6	6 6 0	4 6 6	0 4 6	6 6 0	4 6 6	0 4 6	6 6 0	4 6 6	0 4 6	6 6 0
Tradesman	4 6 4	0 3 6	3 6 3	0 3 6	3 6 3	0 3 6	3 6 3	0 3 6	3 6 3	0 3 6	3 6 3	0 3 6	3 6 3	0 3 6	3 6 3	0 3 6	3 6 3
Tradeswoman . . .	4 0 3	6 3 0	2 6 3	0 2 6	3 0 2	6 3 0	2 6 3	0 2 6	3 0 2	6 3 0	2 6 3	0 2 6	3 0 2	6 3 0	2 6 3	0 2 6	3 0 2
Labourer	3 0 2	8 2 4	2 0 2	4 2 0	2 0 2	8 2 4	2 0 2	4 2 0	2 0 2	8 2 4	2 0 2	4 2 0	2 0 2	8 2 4	2 0 2	4 2 0	2 0 2

A Tradesman attending to give evidence respecting matters connected with his trade, to be allowed, at the discretion of the Court, any sum not exceeding 10s. 6d.; a professional Gentleman any sum not exceeding 21s. 0d.

General Marketing Table

	2d.	2½d.	3d.	3½d.	4d.	4½d.	5d.	5½d.	6½d.	7d.	7½d.	8d.	8½d.	9d.	9½d.	10d.	10½d.	11d.	11½d.		
N	s	d	s	d	s	d	s	d	s	d	s	d	s	d	s	d	s	d	s	d	
20	4	0	5	0	6	0	7	0	8	0	9	0	10	0	11	0	12	0	13	0	
40	8	0	10	1	1	0	1	2	1	4	1	6	2	8	2	10	3	12	6	14	0
60	12	0	15	1	1	2	1	3	2	4	2	6	4	8	6	10	9	12	12	0	0
80	16	0	20	1	1	2	1	3	2	4	2	6	4	8	6	10	9	12	12	0	0
100	20	0	25	1	1	2	1	3	2	4	2	6	4	8	6	10	9	12	12	0	0
120	24	0	30	1	1	2	1	3	2	4	2	6	4	8	6	10	9	12	12	0	0
140	28	0	35	1	1	2	1	3	2	4	2	6	4	8	6	10	9	12	12	0	0
160	32	0	40	1	1	2	1	3	2	4	2	6	4	8	6	10	9	12	12	0	0
180	36	0	45	1	1	2	1	3	2	4	2	6	4	8	6	10	9	12	12	0	0
200	40	0	50	1	1	2	1	3	2	4	2	6	4	8	6	10	9	12	12	0	0
220	44	0	55	1	1	2	1	3	2	4	2	6	4	8	6	10	9	12	12	0	0
240	48	0	60	1	1	2	1	3	2	4	2	6	4	8	6	10	9	12	12	0	0
260	52	0	65	1	1	2	1	3	2	4	2	6	4	8	6	10	9	12	12	0	0
280	56	0	70	1	1	2	1	3	2	4	2	6	4	8	6	10	9	12	12	0	0
300	60	0	75	1	1	2	1	3	2	4	2	6	4	8	6	10	9	12	12	0	0
320	64	0	80	1	1	2	1	3	2	4	2	6	4	8	6	10	9	12	12	0	0
340	68	0	85	1	1	2	1	3	2	4	2	6	4	8	6	10	9	12	12	0	0
360	72	0	90	1	1	2	1	3	2	4	2	6	4	8	6	10	9	12	12	0	0
380	76	0	95	1	1	2	1	3	2	4	2	6	4	8	6	10	9	12	12	0	0
400	80	0	100	1	1	2	1	3	2	4	2	6	4	8	6	10	9	12	12	0	0
420	84	0	105	1	1	2	1	3	2	4	2	6	4	8	6	10	9	12	12	0	0
440	88	0	110	1	1	2	1	3	2	4	2	6	4	8	6	10	9	12	12	0	0
460	92	0	115	1	1	2	1	3	2	4	2	6	4	8	6	10	9	12	12	0	0
480	96	0	120	1	1	2	1	3	2	4	2	6	4	8	6	10	9	12	12	0	0
500	100	0	125	1	1	2	1	3	2	4	2	6	4	8	6	10	9	12	12	0	0

Even numbers only are given in the above Table to make it more comprehensive.—For example, required the value of 17 yards of calico, at 8d. per yard. By referring to the Table, you will find 16 yards to be 10s. 8d., and by adding the price of the odd yards will give you the correct amount.

Table to calculate Wages, &c

Year	Per M.	P.W.	P.D.	Year	P.	M.	P.	W.	P.	D.
£	£	s	d	£	£	s	d	£	s	d
1	0	1	8	0	15	1	5	0	5	9
2	0	3	4	0	16	1	6	8	0	6
3	0	5	0	1	17	1	8	4	0	6
4	0	6	8	1	18	1	10	0	6	10
5	0	8	4	1	19	1	11	8	0	7
6	0	10	0	2	20	1	13	4	0	7
7	0	11	8	2	30	2	10	0	11	6
8	0	13	4	3	40	3	6	8	0	15
9	0	15	0	3	50	4	3	4	0	17
10	0	16	8	3	60	5	0	0	1	3
11	0	18	4	4	70	5	16	8	1	6
12	1	0	0	4	80	6	13	4	1	10
13	1	1	8	4	90	7	10	0	1	14
14	1	3	4	5	100	8	6	8	1	18

If the Wages be Guineas instead of Pounds, for each Guinea add One Penny to each Month, or One Farthing to each Week.

RULE FOR CALCULATING INTEREST, at 5 per cent.—Multiply the Pounds by the Days, and divide the Product by 365. The Quotient gives the interest at 5 per cent. in Shillings.

Weights

BY WHICH GRAIN, ETC., ARE SOLD

ISLE OF MAN.

lbs.

WHEAT, per bushel of 64, or boll of 350
 BARLEY, per bushel of 50, or boll of 300
 OATS, per bushel of . . . 40, or boll of 240
 BEANS or PEAS, per
 bushel of 60, or boll of 240
 POTATOES, per stone of 14, or boll of 440

LIVERPOOL.

WHEAT, per bushel 70
 BARLEY . . . do 60
 OATS do 45
 BEANS, per 480 lbs. and 30
 INDIAN CORN 25
 FLOUR, per sack 12
 FLOUR, per barrel 12
 OATMEAL, per load 24
 POTATOES, per measure 9

MARINERS' GUIDE
TO THE
Principal Ports and Harbours
IN THE
BRISTOL AND ST. GEORGE'S
CHANNELS,
THE IRISH SEA,
AND THE NORTH CHANNEL;
CONTAINING A SERIES OF CLEAR AND CONCISE
SAILING DIRECTIONS
FOR THE
WEST COASTS OF ENGLAND, WALES, AND
SCOTLAND, THE ISLE OF MAN,
AND THE
EAST, SOUTH-EAST, NORTH-EAST, AND
NORTH-WEST COASTS OF IRELAND;
WITH
Tables of the Magnetic Bearings and Distances
OF DIFFERENT
HEADLANDS, HARBOURS, AND LIGHTS
ON THOSE COASTS.

**** The Bearings and Courses in these Directions are those by compass,
and the Distances are nautical miles, of 60 to a degree.**

MARINERS' GUIDE.

ISLE OF MAN.

The **ISLE OF MAN** lies in a N.E. by E. and S.W. by W. direction, and is about 30 miles in length and 11 in breadth. The Northernmost Point of Ayre is in lat. 54 deg. 27 min. N., and long. 4 deg. 20 min. W. The

Calf Island,

At the S.W., is in lat. 54 deg. 3 min. N. and lon. 4 deg. 50 min. W. On this Island are two Lighthouses, 187 yards distant from each other, bearing N.E. $\frac{1}{2}$ E. and S.W. $\frac{1}{2}$ W. The *higher* Light bears from the dangerous sunken rocks called the *Chickens* N.E. $\frac{1}{2}$ E., distant about a mile and a quarter: when the Lights are in one they lead on the Chickens. These Lights are *DOUBLY* revolving, without color, making their revolution in 2 minutes, and becoming gradually fainter during that time, until, at a distance, they appear totally obscured. At their brightest period they may be seen seven leagues off, resembling a planet. Between the Chickens and Calf is a passage about a mile broad, through which the tide sets from the W. round the Calf Point *very strong* outside of the Eye Rock, and also through the passage between the Island and S.W. Point of Man. There has been erected in the Sound of the Calf, on the "Thusla Rock," a tall iron basket-topped Perch, painted red. In the Sound of the Calf the stream runs W. 2 hours before high water on the shore, and continues 6, i.e., 2 hours before it ebbs on shore. $2\frac{1}{2}$ miles to the east is

Port St. Mary,

where there is good anchorage behind the Pier, which has been lately very much improved, but a dangerous rock called Carrick, lies about $\frac{3}{4}$ of a mile S.S.E. $\frac{1}{2}$ E. from the Village. This harbour has about 9 or 10 feet water at neap tides, and 14, 15, 18, &c. at spring tides. In running for it, keep Scarlet Head to the S. of Castletown, a good sail's breadth open, to avoid the Carrick Rock. On entering, take the quay as close as circumstances will admit. A **LIGHT** is exhibited throughout the year, on the larboard hand on entering the harbour. Five miles E. from the Chickens and $2\frac{1}{4}$ from Port St. Mary, is Scarlet Head, the westernmost point of

Castletown Bay.

The bottom towards the entrance is generally rocky, and there are three shoals or rocks dry at low water, the largest of

which, Lheeahrio, is a quarter of a mile long and 500 feet wide, and is marked on the east end by a large Black Buoy. A **RED** stationary light, to be kept on the larboard hand on entering, is erected on the new pierhead, which lies 80 yards outside the old pierhead, in a S.S.E. direction therefrom. The Buoy on Lheeahrio Rock is placed in five fathoms at low water, having Langness Point, by compass bearing S. $\frac{3}{4}$ E., and the lighthouse on the pierhead, N. $\frac{3}{4}$ E. On entering the Bay, be careful to leave the Buoy on the *larboard* hand, and in working into the Bay from the Westward, you must not bring the Buoy to the Southward of E.S.E., nor open Spanish Head to the Northward of the Stack of Scarlet until Eastward of the Buoy, or until the lighthouse on the pierhead bears N. $\frac{1}{2}$ E., then steer for the harbour. The anchorage is sheltered from N.W. round by N. to S.S.E., the marks for which are, Spanish Head just open to the Southward of the Stack of Scarlet; the Steeple of Castletown Chapel in line with the Eastern part of a Gap in the Mountain bearing N. by W., and King William's College N.E. by N., where there are 9 fathoms at low water, spring tides, and safe anchorage.

Langness Point,

An isthmus running out from the main land, 2 miles to the S.W., has a turret on the point to identify its situation. There are **SUNKEN** rocks all about it, and the tide sets like a race upon the Point from the Chickens, at the rate (spring tides) of 6 miles an hour, and runs E.N.E. from 2 to 5 or 6 miles from the land, diminishing in strength to Maughold Head. To avoid the inlet between the Chickens and Langness Point, it is advisable for strangers on no account to come within 4 or 4 miles of the land. On the E. side is

Derbyhaven,

Affording anchorage for large merchant ships, and sheltered from all winds except E. to S.E. The best **ANCHORAGE** is on the N. side of St. Michael's Island, in 3 or 4 fathoms, the castle (or fort) on it bearing S.E. by S. Small vessels may run further up. There is a **LIGHT** at the entrance of the harbour, which is lighted only during the herring fishing season. The stream, or rather eddy, along the E. side of Langness runs 10 hours S., from 2 hours of flood to the last of ebb on the shore. About 3 miles to the E. of Derbyhaven is St. Ann's Head, from which to

Douglas Head,

E. is about 2 miles, upon which a LIGHTHOUSE has been erected, the light from which is STATIONARY, and appears like a star of the first magnitude at the distance of 14 miles. The bearings of the light are as follows:—From CLAY HEAD, W. by S. $\frac{1}{4}$ S., 4 miles; from LANGNESS POINT, E. by N. $7\frac{1}{2}$ miles. The light will not be visible from Langness Point; but with an offing of 3 miles from that Point, the light will be seen bearing N. E. $\frac{1}{4}$ E., and the Calf Lights at the same time bearing N. W. by W. $\frac{1}{4}$ W. Vessels running for Douglas, between E. by N. $\frac{1}{2}$ N. to W. by S. $\frac{1}{4}$ S., will see the light at 5 miles' distance. Blowing fresh from the W. and bound for the bay, a vessel should keep pretty close to Douglas Head, or she will be thrown to the leeward of St. Mary's Rock, by the strong and variable gusts off the high land to the S. W., where she will be exposed and in bad anchorage. On the rock a tower has been erected, the appearance of which in the night is like a square rigged sloop under sail. Anchor in the bay between St. Mary's and the S. shore, 3 or 4 cables E. of the pierhead, where there are two lights, white and red, exhibited throughout the year. No vessel should enter Douglas Bay from the westward until having sighted the red light from the Pierhead, so as to clear the Breakwater works. To enter the harbour keep close to the Pierhead. Four miles E. N. E. from Douglas Head is

Clay Head,

Round which is Laxey Bay, where there is good anchorage in 6 fathoms depth. From Clay Head to Maughold Head the course is N. E. $\frac{1}{2}$ E. 7 miles, and round the latter to

Ramsey,

N. W. Nl'y, $2\frac{1}{2}$ miles. To the E. S. E. of the town is Port Lewague, and a short distance to the N. W. of it lies a little rock called the carrick, which covers at $\frac{1}{2}$ flood. There is excellent anchorage and shelter from 1 to $1\frac{1}{2}$ miles opposite the town, as the bottom is good stiff clay; but there is generally a heavy sea and hard riding in it with winds from S. to E. N. E., to all of which it is open. The harbour, which is a dry one, will admit vessels drawing 17 or 18 feet water at spring tides, and 11 or 12 feet at neap tides. There is a lighthouse on the quay, a stationary light, of a RED colour, is exhibited throughout the year. In the bay the stream runs nine hours N. and three hours S. beginning at 2 hours flood. There are three banks off this bay that deserve notice. The BAHAMA BANK, or RIG, bears N. E. 2 leagues from Ramsey town, and is about 6 miles in length from S. S. E. to N. N. W., with only 6 feet depth of water at the S. end, differing in other parts from 9 to 12 feet, and is rather more than $\frac{1}{2}$ a mile

broad. The BAHAMA FLOATING LIGHT, exhibiting TWO BRIGHT FIXED LIGHTS, is moored a mile off the S. E. tail of the shoal, in eleven fathoms, low water, spring tides, and with the following compass bearings:—King William's Bank Buoy, E. by N. $\frac{1}{4}$ N. nine miles; Point of Ayre lighthouse, N. by W. $\frac{3}{4}$ W.; Maughold Head W. by S.; Clay Head, S. W. by W. $\frac{1}{4}$ W. WHITEHOUSE BANK, so called from its composition, lies S. S. E. $1\frac{1}{2}$ miles from the extreme Point of Ayre, with a good passage between them; it bears N. N. E. from Maughold Head, and is $\frac{1}{2}$ a mile in length N. and S., and a $\frac{1}{4}$ in breadth E. and W., with 6 feet at low water spring tides. POINT OF AYRE BANK is a ridge extending $\frac{1}{2}$ a mile from the Point to the distance of 1 mile E., and thence circularly to the S. and E., always with a considerable ripple, nearly in a line with the BAHAMA BANK. KING WILLIAM'S BANK is 8 miles in length from S. E. to N. W., and a $\frac{1}{2}$ mile broad; the NW. end is E. $6\frac{1}{2}$ miles from the Point of Ayre, and N. E. 11 miles from Maughold Head, from which the S. E. end bears E. N. E. $\frac{1}{2}$ E. $13\frac{1}{2}$ miles, and from the Point of Ayre E. S. E. 12 miles distant. The least depth of water on it is 18 feet. A Green Buoy, marked "wreck," is moored on the wreck of a vessel which lies about 4 miles N. E. 'ward off Ramsey, in the fairway of vessels coasting along the E. side of the Island. The Buoy is moored about 10 fathoms to the E'ward on outside of the wreck in 6 fathoms low water spring tides. The following are the bearings from the buoy:—Point of Ayre lighthouse, N.; lighthouse on Ramsey Pier, S. W. $\frac{1}{4}$ W.; Maughold Head, S. $\frac{1}{2}$ W. Another Green Buoy marked "wreck," is moored on the wreck of a second vessel in Ramsey Bay, about 4 miles N. Eastward of Maughold Head, in the way of vessels coasting along the E. side of the Island. The Buoy is moored about 10 fathoms to the Eastward on outside of the wreck in $6\frac{1}{2}$ fathoms. The following is the bearings from the buoy:—Ramsey Mill, N. W. by W.; Maughold Head, S. W. The

Point of Ayre Lighthouse

Bears N. N. E. $\frac{1}{2}$ E. from Maughold Head, distant 8 miles, and the lantern is 106 feet above the sea, from the shore of which it stands about $\frac{1}{4}$ mile inland. It is REVOLVING, showing alternately a BRIGHT and RED coloured light, becoming from a star-like appearance gradually stronger until the attainment of the utmost brilliancy every TWO MINUTES. The light of the common colour is to be seen 4 or 5 leagues off: but the RED one is not distinct at so great a distance. Maughold Head prevents the light being seen by a navigator S. of it, as does Rue Point when he is W. of it. N. by W. $\frac{1}{2}$ W. $1\frac{1}{2}$ miles from the Pt. of Ayre is STRUNAKILI

BANK, bearing from Jurby Point E. by N. 5 miles; it is $1\frac{1}{2}$ miles long E.S.E. and W. N.W., and nearly $\frac{1}{2}$ a mile broad. There are 3 fathoms on the shoalest end, but the sea breaks and the tide sets strong upon it; keeping WITHIN $1\frac{1}{2}$ miles of the land will clear the whole.—From the Point of Ayre to Jurby is 7 miles to the W. and hence to the Peel Pierhead Light. S.W. $\frac{1}{2}$ W. 11 miles; 4 miles from Jurby W. $\frac{1}{2}$ N. and about 3 miles from the land abreast, is a **BLIND ROCK**, and from

Peel Pierhead Light,

N.E. by E., 9 miles. This light (Red) is stationary, is exhibited throughout the night, and is visible at a distance of eight miles in clear weather. The harbour at Peel is a dry one. Between Jurby and Peel, off Ballabui, lies a shoal $1\frac{1}{2}$ miles from the land, and $3\frac{1}{2}$ miles N.E. $\frac{1}{2}$ E. from the light. A vessel may ride in the bay with the Castle bearing from S.S.W. to S.W. in 6 or 7 fathoms' depth of water. On entering the Harbour, keep the point of the Jetty close on board on the starboard hand and run in, keeping the light on the pierhead on the port hand. A white light is exhibited from the end of the breakwater. The Mull of Galloway light adds to the convenience of this Harbour, being visible from the Castle, and only distant N. by E. 26 miles. The Peel Light is about 300 yards S.S.W. from the N.E. point of the Castle. The streams of flood that come to the E. from along the S. coast, and along the N. coast of Ireland, meet about a mile W. of Contrary Head, so called from this circumstance, and there divide into two branches, one of which runs N.E. to the Point of Ayre, and on to Maughold Head, the other S.W. to the Calf; one proceeding round the Calf at 6, the other round the Point of Ayre at 4 miles an hour, meeting off Maughold Head. From Contrary Head to abreast the Calf Lights the course is S.W. 10 miles; and $4\frac{1}{2}$ miles from the W. end of that Isle is

Port Erin,

a sheltered little creek, surrounded by very high land, easy of access, and affording shelter against all E. winds. At the entrance, between the headlands, there is a depth of about 15 fathoms water; here the tide runs very strong at the rate of 6 miles an hour. Keep the Calf Lights well open when passing Langness Point.

TIDES.—On the full and change days, it is high water on the shore at Peel at 10h. 48m.; in the Calf Sound, 10h. 57m.; at Douglas, 10h. 48m.; at Ramsey, 10h.; and at the Point of Ayre, 10h. In the Isle of Man, spring tides rise 18 or 20 feet perpendicular; neap tides 9 or 10.

Magnetic Bearings & Distances,
FROM THE HEADLANDS OR HARBOURS
IN THIS ISLAND, TO OTHER HEADLANDS
OR HARBOURS IN THE CHANNEL.

FROM DOUGLAS HEAD TO		MILES.
St. Bees Light	E. by N.	42
Ravenglass	E. by S.	40
Lancaster Channel	S.E. $\frac{1}{2}$ E.	54
Liverpool Floating Light	S. by E.	59
Chester Bar	S. by E.	60
Great Ormshead	S. $\frac{1}{2}$ W.	54
Skerries Light	S.W. by S.	46
Langness Point	S.W. by W.	9

FROM THE POINT OF AYRE TO		MILES.
Maughold Head	S.S.W. $\frac{1}{2}$ W.	8
St. Bees Light	E.S.E. $\frac{1}{2}$ E.	26
Whitehaven	E.S.E. $\frac{1}{2}$ E.	28
Maryport	E. $\frac{1}{2}$ N.	37
Ross Light, Kirkcudbright	N.E. $\frac{1}{2}$ E.	24
Burrow Head	N.N.E.	16
Mull of Galloway	N.W. by N.	21
Copeland Light, Belfast	N.W. $\frac{1}{2}$ N.	44
Liverpool Floating Light	S. $\frac{1}{2}$ E.	79

FROM MAUGHOLD HEAD TO		MILES.
Skerries Light	S.W. $\frac{1}{2}$ S.	55
Great Ormshead	S. by W.	60
Liverpool Floating Light	S. $\frac{1}{2}$ E.	63
Lancaster Channel	S.E. $\frac{1}{2}$ S.	59
St Bees Head	E. $\frac{1}{2}$ S.	27
Ravenglass	E.S.E. $\frac{1}{2}$ E.	22
Whitehaven	E. $\frac{1}{2}$ N.	31

FROM THE CALF OF MAN TO		MILES.
Langness	E.S.E. $\frac{1}{2}$ S.	7
Mull of Galloway	N.N.E.	38
Copeland Light	N. $\frac{1}{2}$ W.	45
South Rock Light	N. by W.	31
Strangford Lough	N.N.W. $\frac{1}{2}$ W.	31
Carlingford Lough	W.N.W.	43
Drogheda	W. $\frac{1}{2}$ E.	35
Howth Head	W.S.W. $\frac{1}{2}$ W.	60
Kish L'ship, Dublin Bay	W.S.W. $\frac{1}{2}$ W.	60
Holyhead	S.S.W.	41
Great Ormshead	S. by E.	34
Liverpool Floating Light	S.S.E. $\frac{1}{2}$ E.	65
Skerries Light	S. by W.	38
Point Lynas	S. $\frac{1}{2}$ E.	43

FROM PEEL TO		MILES.
Mull of Galloway Light	N. by E.	35
Copeland Light	N.N.W. $\frac{1}{2}$ N.	40
Strangford Lough	N.W. $\frac{1}{2}$ W.	29
Maidens Light	N. by W.	37

Free Harbours

No tolls are exigible on vessels entering any of the Harbours in the Isle of Man.

Abstract of the Bye-Laws for regulating the Harbours.

1. Any vessel, through mismanagement, injuring the quays, &c., such injury to be repaired, under penalty of double the value of the damage.
2. No chain cables to be used for mooring vessels, under penalty of £2.
3. No ballast to be discharged without a port sail, under penalty of £2.
4. Vessels heaving ballast or stone into the harbours, penalty £2 per ton.
5. That no person heave stones, dung, &c., into the harbours, under the penalty of £2; and if not removed when ordered, a further penalty of £2.

6. Masters of vessels not obeying Harbour Masters in mooring vessels, penalty £2: all expenses incurred by the Harbour Master in mooring vessels to be paid by master or owners of said vessel. Any person obstructing Harbour Master in executing his duty, penalty £5.
7. No person to make a fire on the quays without permission, penalty £3.
8. No clog fenders to be used, under penalty of £1, unless hung lengthways.
9. Any person throwing off ends or cutting hawsers, besides paying the damage to the owners, to forfeit £5.
10. That all gunpowder be landed immediately after arrival, under penalty of £10 for every 24 hours it remains on board; and no fire or light to be kept on board while such gunpowder remains in the vessel, further penalty £20.
11. Any dock made for repairing vessels in harbour to be filled up in 24 hours after removal of the vessel, under penalty of £5 for every 24 hours it lies open.
12. No vessel to unload ballast at night under penalty of £10.
13. That no timber, iron, &c. (unless for repairing vessels) be left on the quays longer than two days, on penalty, for every day longer than the said two days, after notice given by the Pier Master, of £1.
14. That no vessel be allowed to take ballast from another, penalty £1, unless by leave of the Harbour Commissioners.
15. Ballast not to lie on the quay longer than 24 hours, under penalty of 5s. per day.
16. All vessels unloading merchandize to have preference of berth in turn.
17. Vessels taking in goods to have any unoccupied berth, but to give it up on the arrival of a loaded vessel.
18. & 19. One person at least to be on board every vessel when afloat, in harbour or bay, under penalty of £2.
20. & 21. No person to act as pilot without commission, under penalty of £10. No vessel compelled to take a pilot.
22. Proprietors of lime-kilns to screen their lights, if liable to be mistaken for harbour lights, under penalty of £5.
23. Persons firing on pier, &c., (except on days of public rejoicing,) penalty 10s.
24. Boats plying for passengers without licence, penalty £2; and owners to be accountable for breach of harbour laws by any of the crew.
25. No person to erect stalls on the quays to cure fish, or deface the quays, &c. under penalty of £2 for every offence.
26. No person to enforce higher rates for pilotage than as follows, which include attendance of boat and four men:

Vessels of 40 Tons	£0	5	0
Vessels above 40 and under 60	0	7	0
Vessels above 60 and under 100	0	13	0
Vessels 100 Tons and larger	1	0	0
27. Vessels must allow ropes or warps of other vessels to be made fast to them, under penalty of £2.
28. All vessels in harbour must keep in their jib and mizen booms, under penalty of £2.
29. No lumber to remain on the quays or steps, under penalty of £1.
30. No conveyance having wheels shod with iron, allowed on Douglas pier, under penalty of £2.

WEST COAST OF ENGLAND.

RIVER RIBBLE TO SOUTHERNESS LIGHT.

The River Ribble.—PORT OF PRESTON.—The entrance to the River Ribble and Port of Preston is indicated by a large buoy at sea called *Nelson*, which should be observed by vessels bound for the river. It is a large Black Buoy with a Cage-Ball at the top, stands 26 feet out of the water, and may be seen in clear weather 10 miles. *Nelson of Preston* is painted upon it. Having observed the Nelson Buoy, the entrance to the River may be made by the North Channel or the Gut. The entrance to the North Channel is north-eastward, and to the Gut south-eastward of Nelson Buoy. The North Channel is buoyed by 10 buoys, numbered 1 to 10, and marked with the letter N.; the Gut by 5 buoys with cages on the top. The buoys are placed in the deepest parts of the Channels. The Gut joins the North Channel at No. 8 buoy, nearly opposite Lytham Lighthouse. The outer buoys of

both Channels are placed in 3 fms. water, and from them the other buoys can be seen. From No. 10 buoy to the commencement of the stone embankments, about three miles east of the town of Lytham, the Channel is marked by perches and small buoys placed upon the north side, and from thence to Preston by perches placed on the stone embankments on both sides of the Channel. Between buoys four and six in the North Channel vessels drawing 14 feet of water may lie at anchor afloat at low water. A lighthouse has been erected N.E. of Stanner Point, N. side of entrance, showing an Intermittent light, $3\frac{1}{2}$ min. bright, $\frac{1}{2}$ min. dark. The light is visible to mariners all round from the Blackpool to the Southport shores, and is situate in lat. $53^{\circ} 44' 38''$ and lon. $3^{\circ} 1' 17''$, and is 81 feet 8 inches above the mean water of the sea. On the north shore of the Ribble, and 3 miles east of the lighthouse,

is the town of Lytham, before which there is a small tide light on the end of the new Pier which extends from the beach to the channel. Here also is a dock, where vessels can lie in safety. Vessels drawing 12 to 14 ft. can go up to Preston Quays at spring tides. The quays are connected by a branch with the Railways leading to Manchester, Bolton, Blackburn, Bury, Accrington, and the various other manufacturing towns of Lancashire and Yorkshire, and the Wigan and Burnley coal fields. Mr. W. Allsup's two Steam Tug Boats ply upon the River for the purpose of towing vessels to and from Preston, and at present, when required, tow vessels at the following rates per reg. ton.—No. 1 buoy to Preston, and back 1s. 4d.; No. 1 buoy to Preston, or Preston to No. 1 buoy, 1s.; No. 1 buoy to Lytham, or Lytham to No. 1 buoy, 6d.; Lytham to Preston and back 8d.; Lytham to Preston, or Preston to Lytham, 6d. Masters of vessels requiring a Pilot or tug-boat, and not meeting with one outside the channels, should signal in sight of the lighthouse. A Pilot will also, if required, go to any port to conduct vessels into the river on a letter being addressed to Captain Whalley, Harbour Master, Lytham, Lancashire.—By applying to the Admiralty agent, J. D. Potter, 38, Poultry, London, a Chart of the Entrance to the Ribble, published in 1860, can be had for 1s. 6d.

Morecambe Bay.—In sailing towards this bay, from the southward, which is about 8 leagues from Formby Point, keep full 4 miles from the shore, on account of the flat shoal water, known by the name of "Shell Wharf," this begins nearly abreast of the "Red Banks," and extends to the south side of Lune Deep. The western edge of these grounds is steep to, and there are on some parts of the Shell Wharf not more than 6 and 9 feet at low water. The entrance to Morecambe Bay is known by the name of Lune deep, and is $2\frac{1}{2}$ miles wide at the west end. On the southern side is the Point of Rossall, and on the northern side is the Island of Walney; on the former is a conspicuous beacon or landmark, and on the latter a lighthouse, which bears from each other nearly north and south, distant 8 miles. The Point of Rossall is lowland, and the beacon, when seen at the distance, of about 5 miles, has the appearance of a vessel under sail. Morecambe Bay is encumbered with numerous large sandbanks, many of which dry at low water, and some at half ebb. The general direction of the mariner, if bound to Lancaster, will be to attend particularly to his soundings, taking care to get into the deep water of

the Lune Channel, and to remain there until he obtains a pilot. When in 24 and 25 fathoms, you will perceive the ends of the rock weeds floating, and the water of a darker blue than when you are over any of the banks. A light vessel is moored off the entrance of Morecambe Bay, in 12 fathoms at low water spring tides, with the following compass bearings:—St. Bee's Head Light, N. by E. $\frac{1}{2}$ E., distant 36 miles; Walney Light, E. by N., distant $14\frac{1}{2}$ miles; foot of Wyre Light, E. by S. $\frac{1}{2}$ S., distant $16\frac{1}{2}$ miles; Blackpool Church, S. E. $\frac{1}{4}$ E., distant $17\frac{1}{2}$ miles; Calf of Man Light, N. W. by W., distant 49 miles; Liverpool N. W. Lightship, S. by W., distant 25 miles.

The River Wyre.—The following are the directions for entering the Port of Fleetwood.—On coming from sea, keep the westernmost part of Walney Island to the eastward of Blackcombe until Rossall Landmark bears S. E.; here you are entering the deep water of Lune, where you will have 28 fathoms at low water. The shoals to be avoided on approaching Wyre are Shell Wharf, North Wharf, and King's Scar Ridge. A large red buoy is laid down nearly on the point of the Ridge, to which a good berth should be given; it also marks the southern side of the Lune deep. A black perch is placed on North Wharf, about three-quarters of a mile S. E. by S. from the King's Scar Buoy. On the north side of Lune deep a black buoy, with globe on the top, and marked "Danger Patch," is placed a few fathoms westward of a shoal patch bearing that name. Between these buoys is the Lune deep or channel, the course up which is E. $\frac{1}{2}$ N. Rossall Landmark is a large wooden structure (of a conical shape) built on the shore of Rossall point, and denotes the southern limit of Morecombe Bay. Walney Island, on which is a revolving light, is the northern limit. Shell Wharf extends to the westward of Rossall Landmark and North Wharf upwards of three miles. If in hazy weather you fall in with low land, and not knowing whether it is Walney or Rossall land, your lead, which should never be neglected, will at once inform you; for 4 or 5 miles off Walney, you will have 8 or 10 fathoms, but at the same distance off Rossall only 4 or 5 fathoms. After passing the Danger Patch and King's Scar buoys, you will observe the Fairway Buoy to Fleetwood channel. It is a round red buoy, and lies half-a-mile N. W. from the Screw Pile or Fleetwood Lighthouse. To enter the channel leave the Fairway Buoy on the starboard hand, giving the lighthouse a good berth on the starboard hand and running up for the No. 2 black buoy on the Little Ford, leaving that buoy on

the port hand. You will now have come up with the red buoy guarding the north end of the Big Ford; leave that on the starboard hand; then leaving all the black buoys, which mark the eastern side of the channel, on the port hand, and the red buoys and perches (the latter having red globes on the top) on the starboard hand, round close to the Steep Breast, on the edge of which stands the Lower Shore Lighthouse, and where the tides run very strong: you then enter the Harbour. There are large red buoys for mooring ships to. Sail between the buoys and the shore, letting go your anchor when you reach the upper part of the Canshe Hole; but be careful not to foul the moorings of the buoys, as they run in various directions across the harbour. Strangers visiting this port should always hoist signal for a pilot, several of whom are constantly on the look-out. There are two pilot cutters (numbered 1 and 2) with pilots for any of the ports in the bay, and are generally cruising off the bay. The Screw Pile or Fleetwood Light is a Fixed Bright Light, seen 8 or 10 miles in clear weather. There are also two Fixed Shore Lights, lighted from half-flood to half-ebb. By day, a black ball hoisted on a pole at the Screw Pile Light and Lower Shore Lighthouses, denotes the same interval of tide. A bell, tolling three strokes per minute in foggy weather, is sounded from the Screw Pile Lighthouse, and may be heard at the distance of two miles. There is good anchorage off North Wharf, anywhere between the King's Scar Buoy and the Lighthouse, in such water as the state of the tides and a vessel may require. There is now at low water spring tides, six feet of water from sea into the Harbour, by the buoyed channels, keeping the best of the deep. The powerful steam-tug "Wyre," belonging to the port, tows vessels in and out of the harbour at moderate rates.

The River Lune.—**SUNDERLAND, GLASSON, and LANCASTER.**—Sunderland Harbour is at the mouth of the River Lune, and is dry. Large vessels may go in after half-flood, and lie on clean ground below the houses, and with neap tides, ships of 12 feet water may ride afloat in the pool, off the westernmost houses in the village. It is not safe riding in the pool with spring tides, because of the rapidity of the stream, which runs there about $4\frac{1}{2}$ miles an hour when strongest. The channel leading into Sunderland is buoyed, and there is a Lighthouse on the south side, over against the point of Sunderland. Bernard's Wharf, the westernmost bank, begins to dry at half-ebb. At the easternmost buoy there is a patch of sand that dries with spring

tides only. To come up with the outer or westernmost buoy of the channel of Lune River, take half-flood, and stand no nearer the North Wharf Bank than 8 fathoms water; or keep Lancaster Church Steeple a small sail's breadth open to the southward of the Bluff End of Highfield or Lawson's Wood,—a long hill under the same high land, which terminates in a remarkable Bluff Point, a little to the northward of the Church Steeple. This mark will bring you to the outermost Buoy, clear of North Wharf and Bernard's Wharf; or, when this mark cannot be seen, keep the westernmost part of Walney Island to the eastward of Blackcombe, until the Landmark bears about S.E. In this situation you are entering the deep water of the Lune, where you will have 28 fathoms at low water, and the outermost Buoy bearing about east from you; and should you be forced in by strong gales, or night coming on with a flood-tide, that you cannot keep an offing, you may by observing these directions bring your vessel to an anchor to the southward of the buoy.—If in dark hazy weather you should fall in with low land, bearing E.N.E., &c., and not know whether it is Walney or Rossall land, your lead will at once inform you; for at the distance of 4 or 5 miles from Walney, in that direction you will have 8 or 10 fathoms water, but at that bearing and distance from Rossall, only 4 or 5 fms. —*To avoid the Shoals on the north side of the Bay*;—Near low water come no further in, with a vessel of considerable draft of water, than where Walney Lighthouse is open to the eastward of the highest part of Blackcombe, when the Landmark bears S.E., as you are here to the westward of the Stony Patches on the north side of the Lune, where you may safely stand off and on for a pilot.—*To avoid the Shoals on the south side of the Bay*:—Shell Wharf extends W. by N. to W. by S. from the Landmark, therefore you must take care about low water to keep the Landmark to the southward of E.S.E., and when you steer for the buoy at the proper time of the tide, and having fallen into the deep water of the Lune, by observing the foregoing directions, you must allow for North Scar and North Wharf, a high bank, which runs out two miles northward of the Landmark, and covers about half-flood. About high water, you may venture in the day time to stand over any part of the bay from Pile of Foudry to the outermost buoy in the Lune; but in the night or thick weather, keep further out to the westward, taking care to have the lead constantly going, and watch every opportunity to take the bearings of the marks before mentioned, until you obtain a pilot.—The First, or Outermost Buoy, lies in $6\frac{1}{2}$ fathoms at

low water, neap tides, pass on the south side of the Buoy, with Pile Castle bearing N.N.W. $\frac{1}{2}$ N.; Lighthouse on Walney, N.W. by N. $\frac{1}{2}$ N.; North end of North Wharf, W. by S.; Landmark on Rossall Point, S.W.; Foot of Wyre Lighthouse, S.W. by W.; Lancaster Church Steeple, a little open with Highfield, E. by N.; Second Buoy, E.S.E. $\frac{1}{2}$ S. If too early for the tide, or too late in the evening to proceed up the river, you have good anchorage one cable's length to the westward of the second buoy, under Bernard's Wharf, where you will have 3 fathoms at low water, and little current; but you must not proceed up the river with a vessel of considerable water draft until after half-flood. The *Second Buoy* lies in 3 fathoms, with outermost buoy bearing W.N. $\frac{1}{2}$ W.; Third Buoy, E.S.E. The *Third Buoy* lies in 11 feet, with the second Buoy bearing W.N.W.; Fourth Buoy, E. by S. The *Fourth Buoy* lies in 2 feet, with Third Buoy bearing N. by W.; Fifth Buoy E. The *Fifth*, or innermost Buoy, lies in 3 feet, with Fourth Buoy bearing W. by S.; Lighthouse on Abbey Scar, E. by S. Keep the Upper and Lower Lighthouses in a line, and guard against the flood tide setting strong to the southward, up Cocker. Soon after you have passed the Lower Lighthouse, keep Basil Barn a little open to the southward of Overton Chapel which will take you clear of Thornbush Fishery and Town's Skear, to Sunderland, where you may obtain a pilot. The deepest water is on the south side of all the Buoys, and the river Buoys are placed on the north side of the channel.—GLASSON is about 5 miles before you reach Lancaster. Upon the pier is a harbour light, shown at tide time. The tide flows at the dock gates the same time as at Liverpool; adding two inches to every foot of water at Liverpool, will give the height at Glasson. Every vessel going into the dock must clew up her sails, and (if the wind be any way to the northward) let go an anchor before coming into the Dock Gut, to prevent her anchor bill running through her bows and destroying the works. If the wind be from the westward, and a flowing tide, she may safely touch on the west side, and be veered alongside the pierhead, by a line from the westward; but on no pretence whatever is any vessel to attempt going in under ever so easy sail, as several serious losses have already been sustained thereby; and no steam-vessels is to make use of her paddle wheels either in going in or out of dock, but to let off steam before they go in. Masters of vessels offending in these particulars are liable to a penalty of £5, besides having to repair the damage.—From Glasson to LANCASTER the channel is irregular, variable, and shallow; the shal-

lowest parts of it having no more than 7 feet water at high water with neap tides, and 12 or 14 at high water with spring tides. Pilots legally appointed to conduct vessels to and from the quays at Lancaster, may be obtained at Snatchems, near Sunderland.

Morecambe Harbour.—This harbour is situate at the terminus of the Midland, and London and North Western Railways. A new stone pier has recently been constructed, and superior accommodation provided for the transhipment of passengers and cargoes between the railway trains and vessels. The dues levied in respect of lights and buoys are 2d. per ton on vessels from ports in the United Kingdom, and 3d. per ton on vessels from ports beyond, but when such dues have been paid three times in one year by any vessel, they are then reduced to 1d. per ton on the same vessel for the remainder of the year. There are no other dues or port charges on vessels.—The sailing directions for Fleetwood or Lancaster must still be adhered to until the Light at Foot of Wyre bears South one mile distant, then, if flood-tide, haul up N.E. by N., and, if ebb, N.E., this course leads to the entrance of the Channel to Morecambe Harbour, which is defined by No. 1 Red on the Starboard, and No. 1 Black buoys on the Port hand, moored as hereinafter described:—A NEW LIGHTSHIP has been substituted for the Screw Pile Lighthouse, formerly on Clark's Wharf, and is now moored in Mid-channel, about three-quarters of a mile Eastwards of No. 1 Black Buoy, in four fathoms low water of ordinary Spring tides; the Compass bearings of this Light-ship are as follows: To Walney Light, N.W. $\frac{1}{2}$ W. distance $6\frac{1}{2}$ miles; Wyre Light S.W. by S. distance $4\frac{1}{2}$ miles; Morecambe Harbour Pierhead Light, E. $\frac{1}{2}$ N., distance $5\frac{1}{2}$ miles. The Ship is painted Red with "Morecambe" in large white letters on her sides, has one Mast with Circular Beacon and exhibits a RED LIGHT from Sunset to Sunrise, visible all round the horizon in clear weather $5\frac{1}{2}$ miles; when there is 8 feet of water in the Channel up to the Harbour, a Black Ball will be hoisted on the Flag-staff aft by day and a White Light shown on the bluff of the Bows at night. During Foggy Weather or Snow, a bell will be struck three times every minute. N.B.—The Light-ship is moored with a single anchor, and in rough weather will ride with 100 fathoms of chain out. Masters of Vessels running in or out of the channel are therefore requested to give the ship a sufficiently wide berth. Seven Buoys define the Channel leading to Morecambe Harbour, viz.:—No. 1 Red buoy on the Western Point of Clark's Wharf Spit, the compass bearings from

which are:—To Foot of Wyre Light, S. W. by S. $\frac{1}{4}$ S.; to Walney Light, N.W. $\frac{1}{4}$ N.; to New Light Ship, N.E. $\frac{1}{4}$ E.; to No. 1 Black Buoy, N.E. by N. $\frac{1}{4}$ N. No. 1 *Black Buoy* on the Western Point of Yeoman's Wharf Spit, the compass bearings from which are:—To foot of Wyre Light, S.W. by S. $\frac{1}{4}$ S.; to Walney Light, N.W. $\frac{1}{4}$ W.; to New Light Ship, E. by N. $\frac{1}{4}$ N.; to No. 1, Red Buoy, S.W. by S. $\frac{1}{4}$ S. N.B.—These two Buoys define the Mouth of the Channel; they are about one Sea mile apart, and have a depth of about 9 feet between them at dead Low Water Spring Tides. From New Lightship to No. 2 Red Buoy on the North side of Clark's Wharf, the compass bearings are E. $\frac{1}{2}$ N. No. 2, *Red Buoy* to No. 3 Red Perch Buoy, N. E. by E. From New Lightship to No. 2 Black Buoy on the South side of Yeoman's Wharf, the compass bearings are N.E. by E. $\frac{1}{4}$ E. No. 2 *Black Buoy* to No. 3 Red Perch Buoy, E. $\frac{1}{2}$ N. No. 3 *Red Perch Buoy* has a circular Cage on the top, is placed on the Western Point of Low Scare, and may be passed on either hand. Vessels approaching the Harbour at Low Water should anchor below this Buoy, where there is excellent holding ground in a depth of not less than 5 fathoms at dead Low Water of Spring Tides, and remain there until a Black Ball, by day, is exhibited at the end of the Pier, and at night until Half Flood, when their will be depth of 8 feet in a clear course between the No. 4 Buoys up to the harbour. The compass bearings from the Red Perch Buoys are:—To No. 4 Red and No. 4 Black Buoys, E. $\frac{3}{4}$ S. No. 4 *Red Buoy* is on the end of Old Scare, and No. 4 *Black Buoy* is on the end of Stone Scare. The Lighthouse on the Stone Pier exhibits a White Light from Sunset to Sunrise; in day time a Ball is hoisted when there is 8 feet of water between the No. 4 Red and Black Buoys. The Pier Heads are distinguished at night by four Gas Lamps coloured Green to the West and Red to the North. Two Red Lamps about one third up the Pier, when brought into one will lead between the No. 4 Red and Black Buoys.

Pile of Foudry.—Pile of Foudry is a harbour near the south end of Walney Island, where large merchant ships may ride in good shelter near the west or south-west side of Roe Island, in from 3 to 5 fathoms water. Small vessels commonly lie aground in the bight, on the east side of Pile of Foudry Island, about a cable's length from High Water mark, when the house bears S. by W. In the anchorage near Roe Island the streams of flood meet; one from the north, the other from the south, and make it troublesome to keep the anchor clear. The stream here runs about 3 miles an hour

when strongest. On the south end of Walney Island is a stone lighthouse, exhibiting a revolving light 70 feet above high water, flashing every minute, visible in clear weather 3 or 4 leagues; there is also a small Fixed Light of a red colour. $2\frac{1}{2}$ miles W. by S of this light lays the Fairway buoy for Pile Harbour, marked "Helpsford" in white letters on black ground. On the north side of this channel is Walney Island, which is low land, and on the south side are several sandbanks or stony ledges; the most dangerous of these is the Stony Patch, which lies to the westward of all the others, distant from the lighthouse on Haw's Point about four miles; to clear it to the westward, bring the Old Castle on Pile Island just open to the eastward of the lighthouse. The lead should be kept constantly going, and if coming from the southward, bring Blackcombe Hill on with the north end Walney Island, and keep them so until Walney Lighthouse comes E.N.E., and the ruin upon Foula Island touches Haw's Point. The Helpsford Sand is on the S.E. side of Walney, within a mile of the shore, to clear which, you must bring the dwelling-house near the lighthouse a sail's breadth open of the southernmost sandhills, or the lighthouse just clear of the eastern chimney of the same house, bearing N.E. by E.; then, as you advance, bring the ruin of the house on Foula, before mentioned, on with Haw's Point, and these marks will lead you in. Upon the bar is 15 feet water at 2 hours' flood, and the rise of tide is sometimes $29\frac{1}{2}$ feet. The strength of the flood tide is $2\frac{1}{2}$ knots an hour, and the ebb nearly the same. In leading to the anchorage with a flood tide, and the wind scant, you may stand along the southern part of Walney about a mile from the shore, and have regular soundings. In dark weather, should you fall in with land bearing E.N.E., and uncertain whether it is Walney Island or the land adjacent to Rossall Point, then you must be guided by your lead, for at the distance of 5 miles from the former are 7 and 8 fathoms, but at the same distance from Rossall there are only 4 or 5 fathoms; allowance must be made for the rise and fall of the tides, making high water full and change at 11 o'clock. In running for the Pile of Foudry anchorage at half-flood, give Haw's Point a berth of half a cable's length, and keep off Pile Castle Point a similar distance, then, should your vessel draw 10 feet water, anchor in the bight below the house on Pile Island, or near to Roe Island, in 5 fathoms, with the lighthouse open to the starboard of Pile Castle. The breadth of the anchorage above Roe Island is nearly 2 cables. Here the ground holds well; as the tide ebbs you become quite landlocked and may shorten your cable, to enable

you to swing clear of either side at low water in 3 fathoms.—Vessels bound from Pile to Barrow should leave Roe Island Pier Lighthouse on the starboard hand, when they will fall in with the Fairway Buoy for Barrow, painted black and white. A strong flashing light from the Iron Works lately erected at Hindpool, $1\frac{1}{2}$ miles north of Barrow, may be seen bearing from Walney Island Light N. $\frac{1}{2}$ W.; Hilp's Ford N. N. E. $\frac{1}{2}$ N.; Cockspeck Scar, E., and may be seen 15 miles seaward.

Ravenglass is a dry harbour, where three rivulets, the Esk, Mite, and Orte, unite about 12 miles to the southward of St. Bee's Head. There is a buoy placed a little within the mouth of the channel, in the middle, near the Fish Wear, which marks the entry. At this buoy, and in most parts of the channel, the depth is 3 fathoms at high water, with neap tides. The best part for vessels to lie aground on is, half a cable's length from the west end of the town of Ravenglass, on the south side of a perch which stands on the point of a sand there. At this anchorage, in the mouth of the river Esk, and also at the meeting of the other rivers, there are 3 fathoms at high water with spring tides, and 10 ft. with neaps. To sail into Ravenglass Harbour, take 4 hours of flood, keep above a mile from the coast to avoid Selker and Drig rocks (till Ravenglass town bears E. N. E.): steer in that course till you see the buoy bearing east, and then steer right for it, keeping within a ship's length off it on either hand; when you are just past the buoy, steer E. N. E., or keep Ravenglass a sail's breadth open to the north of your stern, till you are about half a mile from the east end of the sandy hillocks; hook the small bay, which begins there; keep near a cable's length from the point at the end of the small bay, and anchor half a cable's length from the west end of the town, or off the perch, in the meeting of the three rivers. When the buoy in the entrance bears E., it is also in a line with the south shoulder of Newton Knot Hill, which is a small hill half a mile south of Ravenglass. The tide flows here, full and change, at 11 o'clock; and off the Bar runs as follows: the last half-flood and the first half-ebb set northward, at the rate of 2 miles per hour, spring tides; and the last half-ebb and first half-flood southward at the same rate. There is a foot of water more on the Bar than shown in the Liverpool Tide Table in this Almanack.

St. Bee's Head.—To the northward of Ravenglass harbour, distant 13 miles, is St. Bee's Head. On its summit is a **Lighthouse**, the light from which is *stationary*, appearing like a bright star at the distance of 6 or 7 leagues in clear weather. From the entrance of Formby Channel to this Head, the course and distance are N. by E.

20 leagues. In sailing along from Walney Island to St. Bee's Head, keep 2 or 3 miles from the shore, and you will clear every danger. Vessels in moderate weather, may stop a tide any where along the coast, for the stream seldom runs more than a mile an hour.

Whitehaven.—About 3 miles E. N. E. from St. Bee's Head is the town of Whitehaven: the harbour is dry, and divided into basins by strong quays, which break off the sea. Within the second basin is the best place for vessels drawing above 10 feet water. Here you will find 18 to 22 feet water spring-tides, and 12 to 14 neap. The **HARBOUR LIGHTS** are upon the outer and inner Pierheads. The inner Light is *stationary*, of a **RED** colour, and is lighted while there are 9 ft. water between the Pierheads. The outer Light *revolves*, is lighted all night, and is seen at a distance of 3 or 4 leagues in clear weather. The light appears in its brightest state once every 2 min., and gradually becomes less luminous, till eclipsed. In the day a **Flag** is hoisted on a pole at the top of the old Lighthouse, while there are 9 feet water in the harbour, on entering which, keep both lights on the starboard hand.—A **BLUE** Light is shown from a lighthouse on the end of the north pier, which has been extended 352 yards.

Harrington Harbour is 4 miles Northward of Whitehaven. A lighthouse was erected in 1848 by the late H. Curwen, Esq., with Argan burners, visible 10 miles, and is exhibited while there are 8 feet of water in the harbour—in the day a **RED DRUM**, at the inner end of the pier, during the same interval of tide.

Workington is 2 or 3 miles North-eastward of Port Harrington. A red ball is hoisted upon a pole on St. John's pier when there are 8 feet water in the harbour; and at night a light is exhibited on the pier-head, which answers a like purpose and can be seen in clear weather at about 3 leagues from any point seaward. The channel into this port is along the south shore, its entrance bearing from St. John's pier nearly E. by S. by compass. It is formed by red buoys on the south side and black buoys and perches on the north side, the deepest water being midway between. The outer perch has a *cash* upon it painted black, which must be kept on the port side in entering. Steer in between the perches and red buoys, giving St. John's pier-head a berth of about 50 feet on the starboard side. After passing St. John's pier a perch with a white board upon it is the leading mark for the channel by day; and by night, the southernmost of the blast furnaces on the north side kept right a-head, until an inner light which is on a wooden pier

bears about S.E. $\frac{1}{2}$ S.; then steer S.E. $\frac{1}{2}$ E. for the entrance to the harbour, keeping the light upon the wooden pier on the starboard side, and passing a perch with a small black cask upon it by about 10 feet on the port side, when the harbour boat will be in attendance.

Maryport, situate about 5 miles N.E. off Workington, is easy of access, free from sandbanks, and has a capacious dock, in which vessels are kept constantly afloat, as well as its original tidal harbour and basin. Depth of water in ordinary spring tides, 21 ft. 6 in., neap tides, 13 ft. 6 in. or by adding 3 feet to the water shewn in Holden's Liverpool, and the Manx tide tables, a near approximation for each tide will be obtained. A fixed bright light is exhibited on the outer pierhead all night, and another on the inner stone pier whilst there are 8 feet in the harbour; both lights are on the starboard side in entering, and are visible at sea from E.N.E. to W.S.W., the former at a distance of 15 miles, and the latter 10 miles. A Red Ball near the inner lighthouse denotes 8 feet in the day time. The Jetty on the south side is distinguished by a Red light, and the north tongue by a Green one. Steam Tugs are in readiness every tide, and when required by vessels at night, two lights must be shown one above the other; or by day a union jack at the main. There is good anchorage in stiff clay, about 1 $\frac{1}{2}$ miles off shore, the outer lighthouse bearing S.E.

Solway Frith.—The entrance to Solway Frith may be considered to commence abreast of Workington, on the English, and at Abbey Head on the Scottish shore the distance between which is 5 leagues. On the eastern side of the Frith of Solway, about ten miles northwards from Maryport, is

Port Silloth.—This place is daily increasing in importance, being connected by railway with Carlisle, Newcastle, and Edinburgh, the rails of which are laid on the quays. It contains a wet dock, with entrance gates 60 feet wide, and a jetty from the dock entrance 1000 feet outwards to low water mark. The dock is fitted up with Hydraulic Machinery, by which vessels are discharged and loaded with the greatest possible despatch. The lock sill is 3 feet 6 inches above low water mark, and by adding 5 feet to the Liverpool tide table in this Almanack, the depth over the sill will be given for high water. A Yellow Light is shown in the Lighthouse at the outer end of the jetty from sunset to sunrise; except during the time the gates are open, when the Yellow Light is discontinued and a Green Light is exhibited in its place. A Red Ball is hoisted on a pole at the Lighthouse during the time gates are open by day. In Silloth Bay (between Lee Scar Light

and the jetty) there is excellent anchorage in from 4 to 6 fathoms at low water, clay bottom. There is a good anchorage in Catherine Hole, a little above the fairway buoy. It is high water here, full and change, 11h. 35m.; spring tides rise 26 feet, and neaps 20 feet. The fairway course, from about a mile off Workington to the Lightship at the entrance of channel is N.E. $\frac{1}{2}$ N., and to avoid the tail of Robin Spit, care should be taken not to bring the vessel to the eastward of E.N.E., on which bearing the Lee Scar light and light-ship will be in one. This light vessel is in the middle of the channel, in 5 fathoms at low water, and exhibits a Fixed Red Light at 25 feet above the water, visible six miles. From it Maryport outer light bears S. by W. $\frac{1}{4}$ W., 4 $\frac{1}{2}$ miles; Southernness lighthouse, N. $\frac{1}{4}$ E. 5 $\frac{1}{2}$ miles; and Lee Scar light, E.N.E. 6 miles. It has a Black Ball at the main head during the day, and in fogs a bell is tolled. Having passed the Light Ship continue the same course N.E. $\frac{1}{2}$ N., which will lead up mid-channel to the turn buoys B 2 red, and B 2 black, where the Cott red light will be two ship's length open North of Lee Scar bright, bearing E. by N. $\frac{1}{4}$ N. which course may be taken up after a quarter's flood, but when running up at or near low water, soon after rounding the red buoy B 2, haul in East until the two shore lights are in one, bearing E. by N. $\frac{1}{2}$ N., which course will lead up the fairway to Lee Scar. On passing the lighthouse, keep a good cable's length to the northward of it. Silloth Dock is about half a mile above Lee Scar. When following the preceding instructions, it is necessary to bear in mind that the large nun buoy, painted black and red, and marked "FAIRWAY," is in the fairway track, from seaward about 2 miles outside of the lightship, and is passable on either side, thence to Silloth the black nun buoys should be kept on the port, and the red can buoys on the starboard hand. The black and white striped buoy off Beckfoot is in mid channel, and may be passed on either side. The shoalest part of the channel, in which there are 2 $\frac{1}{2}$ fathoms at low water, is a little below the perch buoy, D 1; thence up to Silloth the depths are from 3 to 5 fathoms. At Lee Scar there is a tide gauge indicating in large figures the depth of water in Dock Entrance Channel. A bell is tolled in the lighthouse during a fog. A steam tug is in attendance to tow vessels in or out of Dock on reasonable terms. Branch pilots may be had (if required) off Maryport; charge, 1s. 9d. per foot to Silloth. The harbour expenses are (including buoy and light charges):—Coasting vessels, 6d.; vessels to or from foreign ports, 7d. per register ton.

Port Carlisle, a dry harbour, 10 or 11 miles up the Frith from Silloth bay. The navigation to this port is now entirely closed by the Solway Junction viaduct.

Annan.—Vessels bound up the Frith to Annan should alter course for North channel at Striped Buoy, and haul up N.E. by E. for buoy N 1, from which N. by E. $\frac{1}{2}$ E. leads to N 2, from which North leads up to N 3, thence N.E. $\frac{3}{4}$ E. leads up to Perch Buoy in Powfoot Channel; afterwards follow the buoys up which are placed mid channel. At Annan Foot there is a bright tide-light, and two perches on the western side of the entrance, the light is shown from half-flood to half-ebb. A bell is tolled at tide-time during fogs. Buoy and light charges to Annan, 3d. per registered ton. Branch Pilots may be had off Maryport; charge 3s. 6d. per foot.

Magnetic Bearings and Distances

FOR THE WEST COAST OF ENGLAND.
WESTERLY VARIATION 25 TO 26 DEGREES.

BUOY NELSON, OFF PRESTON (Lat. 53 43 N., Long. 3 11 14 W.) MILES.

o Beaumaris entrance.... W. by S. 39

To Dundalk Bar..... N.W. by W. 112
Douglas Head Light N.N.W. $\frac{3}{4}$ W. 50
Ross Light, Kirkcudbright.... N. 71

WYRE LIGHT, FLEETWOOD (Lat. 53 57 14 N., Long. 3 1 46 W.)

To Great Orms Head.. S.W. by W. $\frac{3}{4}$ W. 45
Dundalk Bar.... N.W. by W. $\frac{3}{4}$ W. 112

WYRE LIGHT, FLEETWOOD MILES.

To Wicklow Head Light W. $\frac{1}{4}$ S. 118
Calf of Man L'ts. N.W. by W. $\frac{1}{4}$ W. 65
Walney Light N. by W. $\frac{1}{4}$ W. 8

WALNEY LIGHT (Lat. 54 2 56 N., Long. 3 10 32.)

To Wyre Light S. by E. $\frac{1}{4}$ E. 8
N.W. L'tship, L'pool. . S.W. by S. 35
Kish Lightship W. $\frac{1}{4}$ N. 104
Calf of Man N.W. by W. $\frac{3}{4}$ W. 57

ST. BEES' HEAD (Lat. 54 30 50 N., Long. 3 18 W.) MILES.

To N.W. L'tship, L'pool S. by W. $\frac{1}{4}$ W. 65
Tuskar Rock Light S.W. by W. $\frac{1}{4}$ W. 103
Douglas Head Light .. W. by S. 41

WHITEHAVEN (Lat. 54 33 N., Long. 3 26 2 W.)

To Beaumaris entrance .. S.W. $\frac{3}{4}$ S. 76
Skerries Light ... S.W. $\frac{3}{4}$ W. 65
Bahama Lightship W. by S. 24 $\frac{1}{2}$

WEST COAST OF SCOTLAND.

SOUTHERNESS LIGHT TO THE MULL OF CANTYRE.

Southernness Light, at the west side of Solway Frith, is chiefly useful as a direction to the harbour of Dumfries. It shows a fixed bright light, from N.E. seaward to W., which can be seen at the distance of 11 miles in clear weather.

Little Ross Island—A Lighthouse has been erected upon this Island, which lies off the entrance of Kirkcudbright bay and harbour. It bears a fixed and flashing light, producing 12 bright flashes in a minute, visible from N. by E. to N.W. by W. Southerly, at the distance of 6 leagues.

Kirkcudbright is formed by the Points Balmae and Torrs to the E., and the Island of Little Ross to the W. There are two Towers on Little Ross bearing S.W. from each other, which being kept in one lead over the Bar in the best water to the First Perch on the S.E. shore; thence running N.E. about 300 yards, passing a Red Buoy on the point of the bank on the larboard hand; thence

N.N.W. passing the Perch on the point of St. Mary's Isle on the starboard hand; thence direct to the lower Fish-house, where is a Pool a vessel can ride afloat at spring ebbs. Abreast and above the upper Fish-house there is excellent lying on soft mud, moored to rings on the rocks, and no stream of tide. On the bar of Kirkcudbright River there are about 7 feet water at half-flood. Vessels running for this place, and not having water over the Bar, will find good anchorage in the Ross Roads in from 2 to 3 fathoms at low water, in good clay ground. Should the wind be Southerly blowing hard, a vessel should bring up on the W. side of the beach just as the sound begins to open, the closer to the beach the better, as it is very steep to and quite out of the sea. At half-tide she can trip and run up the lake to the Lake of Fish-house, or waiting 4 hours' flood may run up for the Perch off St. Mary's, and proceed to Fish-house or the town. The coast from Kirkcudbright to Belcarey Bay

and River Urr is a bold rocky shore, with neither beach nor harbour.

Belcarey Bay, about 8 miles to the E. of Abbey Head, is formed by the High Lands of Airds to the W., and Heston Island to the E.; entrance $\frac{1}{2}$ a mile wide. The Heston Island is also high, and highest in the middle: this is an excellent place and too little known. Vessels running for it should keep close past the Airds, and keep close up till they come above the first salmon weir opposite the large house in the bight, when they may go as far in as water will admit, as it is all clean ground, and quite landlocked from all weathers. The tide sets strong E. and W. past all these places, till a vessel comes within the points mentioned.

Wigton Bay lies to the westward of Kirkcudbright Bay, and has a spacious entrance, with several places where vessels may stop in moderate weather, or when the wind blows off the shore. The river channel at the north-west or upper end of the bay, leading to the town of Wigton, is intricate, and only fit for small vessels who know the place. Vessels may stop with good anchorage in 7 or 8 fathoms water, about a mile to the northward of Stein Head, and half a mile from the shore, where the bottom is clean sand.

Garlieston.—This is a safe and sheltered dry harbour in the north-west corner of Wigton Bay, with a convenient quay, against which small vessels lie on an even and soft bottom. The outer bay has shelter from W. winds, and good anchorage between Criggleton Point and Eagerness Point. There is a small ship yard, and a town with good supplies at Garlieston. When desired a light is shown from the pier-head, which has been recently extended 250 feet, and where are 18 springs, 18 to 20 feet, and 11 to 12, leaps. From the pier-head the Ross light bears S.E. by E. In taking the harbour, keep the perch off the breakwater on the larboard hand. Port charges, 1d. per ton; harbour boat, 3s. to 6s.

Whitehorn.—To the southward of Stein Head and near Burrow Head is Whitehorn Island, between which and the coast is Whitehorn harbour, in which vessels drawing 12 feet water cannot be neaped above twice a year at the day. It is well sheltered from all winds. The only danger is the Screen's reef, a rocky ledge, marked by a perch, extending from the west point, upon which the tide sets very strong. Going to the harbour from the west, if Stein Head be kept open of Kairnharrah Hill will clear the rocks on the west side.

Glenluce Bay.—To the westward of Burrow Head is the bay of Luce, within which and near to the Mull of Galloway lie the Scar Rocks, always above water. There are no shoals near them; but off the Little Scar are two or three rocks, which the sea sometimes washes over. In moderate weather, with W. and S.W. winds, vessels may stop anywhere on the west side of the bay of Luce.

Mull of Galloway.—On the Southern point of the Mull of Galloway, a Lighthouse has been erected, and bears, by compass, from the largest of the Scar Rocks, W. $\frac{1}{2}$ N., 6 miles; from Burrow Head, W. by N. $\frac{1}{4}$ N., 18 miles. The light is intermittent, $2\frac{1}{2}$ minutes bright, then eclipsed $\frac{1}{2}$ a minute; is visible seaward 23 miles from N. E. to N. W. $\frac{1}{4}$ W.; but the high lands of Dramore shut the light from the view of the mariner in coasting along the Port Patrick shores. After rounding the Mull, which is a rocky shore, you will soon reach

Cromack Point, about 4 miles from which is

Port Nessie Harbour, fit only for small craft; but a vessel drawing not more than 6 or 7 feet, may find shelter from N. or N. W. winds, by running aground near the pier head. Seven and a half miles further is

Port Patrick, a small and dry harbour open to the westward. Small vessels must go in at high water, and run aground on the N. side of the creek, or within the pier, so as to be out of the reach of the sea, in case the wind should blow from the W. or South-westward.

Point Corsewall is about 14 miles to the northward of Port Patrick, and is the north-west point of entrance to Loch Ryan; between are some rocks, but they lie close in shore, and are mostly above water. On the rocks off Laggan Point, called Ebbstone Rocks, which dry at low water, is a red beacon consisting of a pyramid of iron pillars, 40 feet high, with a cylindrical open cage on the top. From it Corsewall Lighthouse bears N.E. by E.; the highest point of Ailsa Craig, N.E. $\frac{1}{2}$ N.; and Laggan Point, S.S.E. $\frac{1}{4}$ E. On Corsewall stands a Lighthouse, exhibiting a white and red light alternately; these lights revolve, and attain their greatest brilliancy every 2 minutes. They may be seen, like a star of the first magnitude, at the distance of 5 or 6 leagues, and are visible from N.E. by E. northerly, to S.W.

Loch Ryan is capacious, of easy access, well sheltered, with good holding

ground, and depth sufficient for large vessels. The only danger to be avoided is the Scar, a tongue of sand on the western side of the Loch, and about 3 miles up the harbour, which extends $1\frac{1}{2}$ miles south-eastward from Kirkholm Point. There is a large red Nun Buoy on the S. end of the Scar, which distinctly shows its position. The best anchorage is about half a mile to the southward of Cairn Point in 6 or 7 fathoms. On this point is a tower, exhibiting a fixed light of the natural appearance, serving to lead to the anchorage. Opposite the Lighthouse Tower is a small Red buoy to mark the eastern edge of the Scar. Fourteen miles N.N.E. from Loch Ryan is the

Craig of Ailsa, a rock 940 feet high, with deep water all round it, serving as a beacon to guide ships to the entrance of the Clyde.

The **Frith of Clyde** makes a fine open entry to several rivers, having no danger more than a quarter of a mile from the shore, excepting the Brist Rock, which lies three-quarters of a mile W. $\frac{1}{4}$ S. from Turnberry Point; it dries at half-ebb, and is about half a mile from shore.

Ayr.—Ten miles from Turnberry Point is the town of Ayr, with a lofty spire seen from a considerable distance. Here is a commodious harbour fit for vessels drawing 12 to 14 feet water. The bar, at low water, has from 4 to 6 feet water over it, and with spring-tides at high water there are from 13 to 15 feet, and with neap from 11 to 12 feet over it; with fresh southerly winds there will be a foot more, for S. and S.W. winds raise the tides in all the rivers of the Frith of Clyde, and N. and N.E. winds have a contrary effect. On the north side of the harbour is a lighthouse exhibiting two lights; the upper bright, having a star-like appearance, and the lower red. There is also tide-light RED, shown when 8 feet of water is on the bar. The distance between the lights is 850 feet; and they bear from one another S.E. by E. $\frac{1}{4}$ E., and N.W. by W. $\frac{1}{4}$ W., and are leading lights for entering the harbour, and when kept in one lead over the bar in the deepest water. The upper or bright light may be seen 12 miles, the red 9 miles, and the tide light 4 miles off. Vessels drawing 7 feet water may make directly for the bar so soon as the tide lamp is lighted. A flag is hoisted in day time at half-flood, and continues to be so until half-ebb. About a cable's length S.W. of the south pier lies St. Nicholas Rock, which dries with spring tides only: you will avoid it by keeping the two red buoys on the starboard hand coming into the harbour, the breakwater

being on the port hand. There is an iron steam tug for towing vessels in and out; and the bar and harbour are being further deepened by means of a powerful dredging machine.

Troon Harbour has an extensive pier and breakwater, with 4000 feet of quayage room and an average depth of 12 feet at low water; at the outer pier the rise and fall of the tide is from 8 to 11 feet. About 1 mile S.S.W. of Troon Pier is the Lady Isle, a large patch of rock with a large and small Beacon on it. These Beacons are not leading marks, and there is plenty of water inside the Isle. At the distance of half a mile N.E. from the pier is a half-tide shoal, on which is a red buoy. Here are exhibited two lights: one, on the inner end of the pier, intermittent, 40 seconds bright and 20 obscured; the other on the Pier-head, red. They bear from each other N.E. $\frac{1}{4}$ N. and S.W. $\frac{1}{4}$ S. 350 yards; and are visible, respectively, 9 and 6 miles. This harbour is perfectly safe, and may be run for in any weather by vessels of moderate draught of water, as there are no dangers but what are to be seen, and pilots are always in attendance. An extensive open wet dock or basin, 400 feet long by 300 wide, with 20 feet at low water tides, and capable of admitting the largest ships or steamboats, adds to the importance of this port. A branch of the Glasgow and Ayr Railway comes down to the harbour, as does also the Railway of the Duke of Portland from Kilmarnock. There is also an extensive ship-yard, with one of the finest graving docks in the west of Scotland, capable of receiving ships of the largest size. The magnetic bearings and nautic distances are as follows:—From Troon Pier Head to Ayr Harbour, S. by W. 5 miles; Dunure Point, S.W., 9 miles; Beacon on Lady Isle, W. by S. $2\frac{1}{2}$ miles.

Irvine.—Four miles and a half from Troon are the town and harbour of Irvine; and nearly midway is Lappock Rock, upon which was erected, in 1843, a beacon about 40 feet above the level of the sea bearing S.W. Southerly, distant about 2 miles from Irvine Bar. There are now from 12 to $13\frac{1}{2}$ feet water on the bar at high water spring tides: ordinary tides, 12 feet; and at low water 4 feet. There is a red warping buoy placed in the fairway of the river, about two cable's length from the bar perch, which perch must be kept on the starboard hand on going in. There are also pawls all the way up the river on both sides. Vessels running in should keep the middle of the river, and run right up till they come to the end of the stone quay, where they can either beach or anchor. There is a steam tug for vessels frequenting this harbour.

Ardrossan.—At about a mile to the N.N.W. of Saltcoats are the spacious wet dock and harbour of Ardrossan, in which 100 sail of coasters can lie with ease. The pier and breakwater completely shelter the harbour from southerly and westerly winds; and Horse Isle, with the other rocks, protect it from the N.W. The greatest depth at low water in the Inner Tidal Harbour is 10 feet, and in the Outer Harbour 18 feet. The entrance lock to the wet dock is 160 feet long and 40 feet wide; and at average tides there is a depth of 18 feet over the sill of the lock. The railway trains come alongside all the berths in the wet dock and harbour. There are a graving dock and patent slip attached to the wet dock.—In place of the two previously existing harbour lights, a new lighthouse, exhibiting a red light, has been erected at the extremity of the Breakwater. This light illuminates an arc of from 15° to 20° in the direction of the open channel leading into the harbour, and bears from the middle of this channel E. and by N., on which bearing it is brightest. A vessel running for the harbour should steer the usual course from Pladda towards Cumbray Light, and when about 14 miles past the former, and 7 miles from the latter light, the Ardrossan Light will be seen, in favourable states of the weather, on the starboard, at the distance of about 5 miles, and bearing E. by N. In running into the harbour the light should never be closed; but the vessel must be kept within the illuminated space, in which there is nowhere less than 22 feet at low water. A black buoy marks the north side of the channel by day, which is on the west Grinan Rock, and there is a perch on the Grinan Rock, both to be kept on the Port hand in entering.

THE **River Clyde** is remarkable for the ease and safety with which it may be navigated. It is provided with numerous well sheltered harbours, and spacious arms of the sea, of easy access, and capable of containing the largest fleets. In approaching it, there are neither rocks nor shoals, nor rapid tides to be feared. Ailsa is a high mountainous rock in the mouth of it, conspicuous at more than 10 leagues' distance, and serves as a remarkable beacon to direct ships to it; there are 4 Lighthouses to direct mariners farther up, and to good shelter in the night; and there is hardly one opening to be seen but what a stranger, without chart or pilot, might safely venture to run for in the day time, and find good anchorage within it. On coming up the S. or St. George's Channel, and passing Ailsa Rock at 2 miles distance, the course by compass for Cumbray Head is N.N.E. $\frac{1}{2}$ E. nearly, and will carry you clear of Holy Island,

which forms the harbour of Lamlash. If at night, the LIGHTS will be seen on Pladda, a small low island off the S.E. of Arran Isle. The distance between Ailsa Rock and Pladda Lights is about 11 miles, and from Pladda Lights to the Light on Cumbray Island $18\frac{1}{2}$. There are very large Furnaces of Iron Works between Troon and Ardrossan, which shew for a long distance at night, and might mislead a stranger, unless aware of what they are. It would, however, be advisable for strangers to keep between the Rock Ailsa and the Island of Arran, till daylight. When coming in the NORTH Channel, particularly during the winter months, with a N.W. gale, ships should never run to leeward of Arran during the night, but as soon as they pass the Island of Sanda, inside the Mull of Cantyre, they should haul by the wind, on the larboard tack, with the ship under easy sail, standing 2 hours each way. By this you keep in smooth water, and when daylight comes, can act according to circumstances. Should you run to the leeward of Arran, the wind, which was N.W. will be found at N.W. by N., and sometimes N.N.W., blowing heavy, with very heavy gusts. Keeping to windward, should the gale increase or continue long, you have Loch Ryan under your command; its entrance about 17 miles S. $\frac{1}{2}$ W. from Ailsa; but once getting to leeward you can never regain your ground. On approaching the Cumbray Islands, 3 entrances appear before you: the middle one is the main ship channel. In clear weather you cannot mistake the Cumbray Island, being distinguished by an old Light Tower on its highest part, a little to the southward of the present Lighthouse, which is low down on the hill side. There is a good ship channel to the eastward of the Cumbray Island, but strangers should never attempt it without a pilot. The part of the Island of Cumbray on which the Light stands is bold and steep close to. Opposite to it lies the Island of Bute, the nearest point of which is Garroch Head, distant about 3 miles. Entering between these two headlands, with the Cumbray Light on your starboard hand, when in mid-channel your course to the Light on the Point of Clough is N.E. $\frac{1}{2}$ E., 12 or 13 miles. In proceeding on this course, a little more than half-distance, you will see a REVOLVING LIGHT on your larboard hand, situated on the Point of Toward, which forms the starboard side of the entrance of Rothsay Bay. The Clough light stands on a bold shore. On the opposite side is the town of Dunoon, off which lies a ledge of half-tide rocks, called Gantocks. The position of these rocks is marked by a large stone obelisk, which can be seen from a considerable distance. The river afterwards inclines a little to

the eastward, until you get opposite to Gourrock, in a small bay on your starboard side. Opposite the middle of this bay is good anchorage; and here it is advisable to anchor till a pilot comes on board. The mark, the centre of the bay with the Clough Light on with Kempuck,

Greenock, which is the chief port for large vessels on the Clyde, has three fine basins adjacent to each other. They are known as the west, the east, and the Victoria harbours. Between the pier-heads, at the entrance of the west harbour, there are about 20 feet at high water, spring tides, and from 10 to 12 feet at low water; along side the quays is a depth of from 17 to 19 feet. The east harbour contains about the same depth of water, but is more spacious; on the quay is a crane capable of raising 50 tons. The custom-house stands between these two basins. On the eastern side of the east basin is the Victoria harbour, opened in 1851. It has an area of 6 acres, is 563 feet long, and 458 feet wide, with a uniform depth of 26 feet at high water, and 14 feet at low water, spring tides. On the quay is a large crane of 70 tons lift; there is also 2 steam cranes of 15 tons lift, for loading coals. Connected with the east and west harbours are graving docks, the width of their respective entrances being 34 and 38 feet. There are two lines of Rails all round the Victoria and East Harbours, in connection with the Caledonian Railway. A large Coal Shoot has been erected at the East Harbour, from which a great quantity of Coals are shipped daily. A small light is placed on the quay, in front of the custom-house, as a guide to the shipping, and lights of a red colour are exhibited at the several entrances of the port. In the roadstead are warping buoys; but in order to avoid the shoal off the custom-house, care must be taken to anchor as close as possible *outside* the line of buoys. The best anchorage for small vessels is off Albert Quay, in 4 fathoms water. About a mile N.N.W. of the custom-house are two fixed red lights, visible at the distance of two leagues; when in one, bearing W.S.W. $\frac{1}{2}$ W., they lead to the anchorage below the "Tail of the Bank."—**COCKLE BANK** reaches from the east end of the town of Greenock to the *Old Castle of Newark* at Port Glasgow. A new harbour is now building to the N.W. of Mr. Scott's Building Yard, for the discharge of timber laden vessels, the depth of water at spring tides to be 27 feet, with a large space for storing deals.

Port Glasgow.—The channel from Greenock to Port Glasgow is narrow and intricate as far as *Garville Point*, and should not be attempted without a pilot;

about a $\frac{1}{4}$ of a mile N. from *Garville Point* is a buoy on the south edge of the *Cockle Bank*. Keep that buoy on the port hand, and run about a cable's length from it. Near the E. side of *Garville Point* is a beacon, which pass on the starboard hand, keeping not less than two ships' length from it, nor more than half a cable, to avoid the *Cockle Bank*. Between this last-mentioned beacon and *Inch Green* is first a buoy and then a beacon; keep both on the starboard side, sailing at the distances before directed. There is also a beacon near the quay of Port Glasgow, which you must pass at 2 ships' length on the starboard side, and enter the harbour about high water. At the quay there is water for small craft only. At low water it is dry, and with spring tides is capable of containing vessels that draw 10 and 11 feet water; the ground is soft and easy to lie on, and a good place for graving ships' bottoms is made here. A light is exhibited on the pier to direct the steamers; and at the entrance of the harbour is a light of a red colour on the west quay. About four miles from Port Glasgow is

Dumbarton Harbour, at the mouth of the river Leven. Vessels drawing from 13 to 14 feet may go in at high water. At low water there are from 5 to 7 feet water over the bar, and at high water, spring tides, from 14 to 16 feet. If pilots cannot be had, the following directions may be useful. Weigh anchor and sail from Port Glasgow at half flood; keep a cable's length from shore at the *Old Castle of Newark*; from thence steer eastward between *Audoch* and *Dumbarton Castle*, about 2 miles, until you come abreast of *Finlayston*; then steer south-eastward for the western buoy off *Dumbarton Castle*; there anchor until it is high water. Leave that buoy to port, and the other on the starboard, and stand in for the entry, keeping that side close until you have passed the *Castle*.

Between Port Glasgow and *Bowling Bay* are three Lights; at *Auchenlock* the *Garmoyle Floating Light*, and the third about a mile above *Dumbarton*; all to be left on the starboard hand in going up the river.

Glasgow.—On the lower or western extremity of *Broomielaw Quay*, and port hand going up the river, a light, of star-like appearance, is placed for the direction of shipping.

Isle of Bute.—To the westward of the *Isles of Cumbray* is the *Isle of Bute*, on the eastern side of which, directly opposite *Great Cumbray*, is *Killichattan Bay*, where vessels may anchor in from 11 to 16 fathoms. to the northward is the *Bay of Rothsay*, the ground good and clean, and well sheltered; you may anchor in any part on the E. side of the *Bay*: but the most convenient place is 2 cables'

length N. of the pier-head, in order to be clear of the track of the numerous steamers plying from the pierhead to all parts of the Clyde.

Kyles of Bute.—The channels between Bute and the Main are termed the Kyles of Bute: their access is easy, and well sheltered, the bottom is extraordinarily good, and the depth sufficient for the largest ships. They are distinguished by the names of the East and West Kyles.

Island of Arran lies to the southward: at its S. E. extremity lies the ISLAND OF PLADDA, upon which a LIGHTHOUSE is erected, 3 miles north-easterly of which is the ISLAND OF LAMLASH. This island lies right in the front of the bay and forms a good and well-sheltered anchorage: the N. side of it is shallow about 2 cables' length from the shore, but the best parts to ride in are off the houses in Holy Island, in 9 or 10 fathoms, or about 2 cables' length E. by N. or E.N.E. from the pier at the town of Lamlash. A red buoy (called Ferguson's) is placed on a rock, with 14 fathoms water in the south entrance to Lamlash. You can go either side; but the island side is best. At the north entrance on the mainland side is Hamilton's Rock, for which, in thick weather, a good look-out should be kept, though it is scarce a $\frac{1}{4}$ of a mile from the shore and never quite covers. The lighthouse on Pladda exhibits two bright fixed lights, and may be seen from S.E. by E. northerly, to S.W. by W.; the upper at 17 and lower at 14 miles distance. At the northern extremity of Arran Island is

Loch Ranza, the ground in which is very good, and water sufficient for large ships, but the place being narrow renders it fit for small vessels only. On the east side of the entrance there is a rocky ledge, dry at low water, which extends near one-third over to the opposite side; to avoid this ledge, keep in the middle of the channel. Anchor abreast of the houses of Ballino, in 5 or 6 fathoms water, nearest the E. side of the Bay, about a cable's length north of the Old Castle, which stands quite at the bottom of the Bay.

Loch Fyne.—After passing Ardnamont Point, the entrance opens to the Northward, and is about 7 miles from Skipness Point, forming an arm of the sea running in northwardly then eastwardly for a distance of 35 miles. The water in the middle is too deep for vessels to anchor. The east side from Skate Island to Kilfinan Bay is rocky, but do not extend far from shore, and they are mostly above water, so can be seen; but deep water close to them. There is good anchorage in Kilbrennan Bay, and from there to the Spit of Otter Ferry, which is a shoal about two cables' length from

shore, having a beacon on North Point. On the west side of the Loch, about 6 miles from Skipness Point, is the little harbour of EAST TARBET, well sheltered and good bottom, much frequented by steamers and small vessels; but the entrance narrow. From there, passing northward, you leave Barmore Island on the left, giving it a berth of a cables' length or so, to avoid some half-tide rocks off its N.E. end, and from there to Invermel Bay the coast is bold. Off the Church at Invermel there is a shoal about 2 cables' length from shore, with only 8 feet water on it. From thence to Ardrishaig Point the coast is clear up to the Pier Head, on which there is a Lighthouse showing a fixed light. There is good anchorage on the north side of the Pierhead, and on the opposite side, north of Ilan Yone, in a line from the Pier, and about half a mile distant, there is a shoal near mid-channel, marked by a white buoy, and having only about 4 feet of water over it at low water. The shoal can be passed on either side: but the west side is the best. It is foul ground from Ilan Yone to Silver Craig. Abreast of the beacon on Otter Shoal, which you pass on the right, the channel is narrow, but clear, with strong tides. Sailing up Upper Loch Fyne the south side is clear to the head, and is the side used by sailing vessels. On the north side, passing the narrows at Otter about one mile, you open Gaerloch, a fine safe bay, much used by fishing vessels, having good anchorage in 3 fathoms water, but only narrow. Passing on you come to Minard Point, behind which there is good anchorage. Opposite Minard Castle, there is a shoal in the middle of the Lough, marked by a beacon on each end, the middle dries at low water. You can go on either side, but the west is the safest. Nearly abreast of Castle Lachlan is Paddy's Rock, keep the south side. Following the north shore, the whole coast round Furnace Point to Inverary is clear. South of the Pier of Inverary is a shoal called the Otter, to which a berth of 2 cables' length from the shore must be given. Anchor north of the Pier, and nearly opposite the large bridge, in a line with Inverary Castle, in 8 or 9 fathoms water. From Inverary to the head of the Loch is clear, and very deep water, so that it is safe sailing up at any time.

Campbeltown Harbour lies about 11 miles south westward of Point Cart-radle; it is large, well sheltered, the ground good, and there is very little to be feared in sailing into it. On coming from the S. or S.E., you will first see the Island of Devar and the blind sound to the south-west of it, through which is a view of the town. On Otter Buoy the north-east point of Devar Island, is a light-

house, from which is exhibited a bright light every half minute; it is visible from N. $\frac{1}{4}$ W. to E. by S. by the N., and may be seen in clear weather about 15 miles. This light is a good light for clearing Paterson's Rock; if kept in sight, it will lead about 3 miles to the eastward of it. In standing in for Cambeltown at night, be careful to keep to the eastward until the light upon Devar Island is fairly open; then stand for it, keeping it on the port hand, and steering about one or two cables' length from the point of the Island, until you open the harbour; then haul up W. $\frac{1}{2}$ N., or W. by N., still keeping about the same distance from the shore. When abreast of the western end of Devar, a black buoy will be observed on Mulbeg Bank, about 60 fathoms from the Island; this must be passed on the port hand. Steering half a point more northerly, you will next pass on your starboard hand, a red buoy, placed nearly opposite a sandbank, which is always dry, except with spring tides: On this bank is a beacon, painted black. There is also another beacon, painted red, on Trench Flat. Hence the red light on the north pier will be seen, and soon after, on passing Trench Point, the green light shown from Dolintober Quay. Now steer W.N.W., or N.W. by W., and you may come to an anchor in any part of the loch—observing, however, to give the west shore a berth of two cables' length. In the Loch, inside the beacons, the deepest water is on the north side; a stranger should, however, keep the lead going, if working in, and put about the first shoal cast, as the bank is steep on both sides. The harbour has a depth of water of from 5 to 10 fathoms. Masters of vessels turning in with a west wind at night, must be careful not to shut the light on the Island when standing south, but tack as soon as it becomes obscured by the high land of the Island for in that case they are close to the South Bank, and the water shoals at once; but by keeping the light E. by S. they will go clear. At night, however, it will be better to anchor at Black Rock, on the north side, about a quarter of a mile E.N.E. from the red buoy, or when Devar light bears about S.E. in 4 or 5 fathoms water, good holding ground, and well sheltered, being within Macrinian's Point, which forms the north entrance to the harbour.

Sanda Island.—About 9 miles south of the Island Devar is the Island of Sanda, a dangerous Island, being surrounded by ledges of Rocks. There are several ledges of rocks about the east and west ends extending about a cable's length from shore; and near Gluinmore, which is always above water, there are several rocks that dry at low water, also off the east end around Island Illanagurach. In

the sound, between Illanagurach and Sanda, is the anchorage, a kind of harbour fit only for small vessels in summer time or in moderate weather. It is protected by the reefs in the sound—the reef to the west, on which there is a beacon, pointing out the anchorage. Anchor when Fair Head is shut up on the end of Sanda in about 10 feet water, close to the houses, off an old quay. Round Gluinmore and Island Illanagurach are reefs and sunken rocks with deep water. On the ship rock of Sanda, in lat. $54^{\circ} 16' 30''$ N., and lon. $5^{\circ} 34' 55''$ W., a lighthouse, exhibiting a fixed red light, has been erected. It is visible from N.W. $\frac{1}{2}$ W. to S.E. by E. $\frac{1}{2}$ E. by south-westerly, and may be seen at the distance of 5 leagues. It bears by compass from Pladda Light, W by S $\frac{3}{4}$ W, 18 miles; from Ailsa Craig, N.W. by W. $\frac{1}{2}$ W. 16 miles; from Corsewall Light, N. by W. $\frac{1}{2}$ W. 22 miles; from the Maiden's Rocks Lights, N.E. $\frac{1}{4}$ N. 21 miles; from N'most Point of Rathlin Island, S.E. by E. $\frac{1}{2}$ E., 21 miles; and from S'most Point of the Mull of the Cantyre, S.E. $\frac{3}{4}$ E., 6 miles. From Sanda Light, E. by S., distant $1\frac{1}{2}$ miles, is the Paterson's Rock buoy, pointing out a dangerous rock, uncovered at low water. When the Mull Head of Cantyre is seen to the southward of Sanda, you are to the southward of this rock; when the Mull Head is to the northward of Sanda, you are to the northward of it. When Gluinmore Rock appears to the west end of Illanagurach you are to the eastward; and when Gluinmore Rock appears to the east end of Illanagurach, you will be to the westward of Paterson's Rock. A Bell Buoy is erected on Paterson's Rock. In sailing east along the south end of Sanda keep the light in sight and you will pass south of the rock: the light is shut when you are in a line with the rock, and when the light is seen over the hill on east end you are within the rock.—Tides.—High water inshore 9, mid-channel 10 30, a.m.

Tides.—The stream of flood within a mile of the Mull Head runs southwest and turns sooner than at a greater distance from the land, so that a vessel keeping near the west coast of Cantyre, will have the benefit of the stream 2 hours before one above a mile from the land.

Magnetic Bearings & Distances

FOR THE WEST COAST OF SCOTLAND.
WESTERLY VARIATION, 25 TO 3 DEGREES.

ROSS, OFF KIRKCUDBRIGHT, (Lat. $43^{\circ} 45'$ N., Long. $4^{\circ} 5' 1''$ W.)

To Maryport SE by E $2\frac{1}{2}$
St. Bees' Head Light .. S by E $4\frac{1}{2}$ $2\frac{1}{2}$
Rossall Landmark S $\frac{1}{2}$ E $6\frac{1}{2}$
Buoy Nelson, off Preston..... S $7\frac{1}{2}$
N.W. Lightship, Liverpool .. S $\frac{1}{2}$ W $8\frac{1}{2}$

Beaumaris entrance	SSW	85	CUMBRAY LIGHT, (Lat. 55 43 16 N., Long.	
Bahama Lightship. I. M. ...	SW by S	26	4 58 W.)	
MULL OF GALLOWAY (Lat. 54 38 9 N.,			To Ardrossan	S $\frac{1}{2}$ E 6
Long. 4 51 20 W.)			Ayr Harbour	S $\frac{1}{2}$ E 12
To Beggar Scar Rock	E $\frac{3}{4}$ S	6	Heads of Ayr	S by W 18 $\frac{1}{2}$
St. Bees' Head Light	SE $\frac{1}{2}$ E	43	Turnberry Point	SSW 23
Point of Ayre, I. M.	SE by S $\frac{1}{2}$ S	21	Loch Ryan entrance	SW by S 42
Bardsey Island Light	SSW $\frac{1}{2}$ W	113	Corsewall Light	SW $\frac{3}{4}$ S 42
Smalls Light	SW $\frac{3}{4}$ S	180	Ailsa Rock	SW $\frac{3}{4}$ S 29 $\frac{1}{2}$
Tuskar Rock Light	SW	153	Copeland Light	SW 64
POINT OF CORSEWALL (Lat. 55 0 29 N.,			PLADDA ISLAND LIGHT, (Lat. 55 26 N.,	
Long. 5 9 28 W.)			Long. 5 7 6 W.)	
To Larne Loch Light	W $\frac{1}{2}$ N	24	To Cumbray Light, from 1 mile	
Fair Head	NW $\frac{1}{2}$ N	37	North of Pladda Light	NE 19
Mull of Cantyre	NNW	30	Irvine Harbour	E by N 18
Sanda Light	N by W $\frac{1}{2}$ W	26	Troon do	E 16
Pladda Light	NE by N $\frac{1}{2}$ N	25	Ayr do	E by S $\frac{1}{2}$ S 16
Ailsa Rock	NE by N	14 $\frac{1}{2}$	Turnberry Point	SE by S 11
Cumbray Light	NE $\frac{3}{4}$ N	43	Loch Ryan entrance	SSW 24 $\frac{1}{2}$
Ardrossan Harbour	NE	40	Ailsa Rock	SW by S $\frac{1}{2}$ S 11
TROON (Lat. 55 33 N., Long. 4 41 W.)			Corsewall Light	SW by S $\frac{1}{2}$ S 25
To Heads of Ayr	SW $\frac{1}{2}$ S	8	Copeland Light	SW 45
Corsewall Light	SW $\frac{3}{4}$ W	36	Belfast Lock entrance	SW $\frac{3}{4}$ W 43
Copeland Light	SW by W	58	Larne Loch Light	SW by W $\frac{1}{2}$ W 42
Ailsa Rock	SW $\frac{3}{4}$ W	22 $\frac{1}{2}$	Maidens Lights	SW by W $\frac{3}{4}$ W 36
Larne Loch Light	WSW	56	MULL OF CANTYRE, (Lat. 55 19 N., Long.	
Maidens Lights	W by S $\frac{3}{4}$ S	55	4 49 W.)	
Pladda Light	W	16	To Sanda Light	SE by E $\frac{1}{2}$ E 5
ARDROSSAN (Lat. 55 38 37 N., Long. 4 49			Ailsa Rock	SE $\frac{1}{2}$ E 24
28 W.)			Corsewall Light	SSE 30
To Troon	S by E	7 $\frac{1}{2}$	Calf of Man	S $\frac{1}{2}$ W 84
Ayr Harbour	S	11 $\frac{1}{2}$	Maidens Lights	SSW 24
Heads of Ayr	S by W $\frac{1}{2}$ W	13	Fair Head	W $\frac{1}{2}$ S 13
Loch Ryan	SW $\frac{1}{2}$ S	38	Inisterhul Light	NW by W 49
Corsewall Light	SW	40	Loch Ryan entrance	SE by S $\frac{1}{2}$ S 31
Ailsa Rock	SW $\frac{1}{2}$ W	26	Larne Loch do	SW by S $\frac{1}{2}$ S 28
Copeland Light	SW $\frac{1}{2}$ W	61	Rathlin Island, N. end..	W by N $\frac{1}{2}$ N 13
Pladda Light	SW by W $\frac{1}{2}$ W	17	Sound of Islay, E. end ..	N by E $\frac{1}{2}$ E 28

MULL OF CANTYRE TO THE NORTH END OF SCOTLAND.

The **Mull of Cantyre** is a high rocky promontory, running to the southward, and approaching within 11 miles of the coast of Ireland. On its south-western extremity is a lighthouse, which exhibits a fixed bright light, visible 22 miles in clear weather, from N.N.E. $\frac{1}{2}$ E. to S. by W. $\frac{1}{4}$ W. by W. Off Dunimore Head, which is about 5 miles to the northward of the lighthouse, is a rock, lying about a cable's length from the shore, which dries at half-ebb. A rocky shoal, with 3 or 4 feet on it at low water, lies further north, about a quarter of a mile off Usid Point, at the Saltpans: on this shoal the sea always swells, and breaks in the calmest weather.

West Loch Tarbit, on the main of Cantyre; the bay of which is well sheltered, and the depth of water for a mile up sufficient for the largest ships; but the ground, being of soft mud, does not hold well with hard gales, except there is a full cable out. The common places of anchorage are, for large ships, off Ardfarik, in the mouth of the loch: and for small vessels, on the east side of Ilanagalligan. On the S. side of Ilan Trayn are several rocks

above $\frac{1}{4}$ a cable's length from the island, or $\frac{1}{2}$ from it, and $\frac{3}{4}$ from the starboard side of the entry. There is also a sandbank extending from the E. point of Corran, nearly $\frac{1}{2}$ over to the N. side of the loch; to avoid which, keep nearest to the N. side, or keep the easternmost extremity of Ilan Trayn in a line with the W. end of the highest hill in Gia Island. About 3 miles up the loch off Duneturik, nearest to the N. shore is a small blind rock, having 5 feet water over it. Keep the middle of the Loch and you will avoid it.

Loch Achastil is a fine harbour, and fit for ships of any size; the ground good, and only one rock, about midway, within it, covered only with spring tides. Ships may anchor in any part of this loch above Castle Swein. The danger to be avoided in sailing towards Achastil is a small rock on the N. side of the two Mackcarmack Islands, which dries with spring-tides only.

Jura Island.—To the westward is the Island of Jura; on the S.E. side of which is Loch Daguall, with good anchorage, well sheltered, and water enough for a merchant ship. This anchorage is very convenient for vessels bound to the south-

ward. You will anchor near the middle of the bay, when Gia Island is just shut in by the N. point of the entry, and the northernmost Pap of Jura bears N.W. $\frac{1}{2}$ W. In running either in or out, stand not too near the sides, for on the N.N.E. and N. W. side of the bay it shoals nearly 2 cables length from shore.

Sound of Islay is the common track for shipping to and from the N. A Light-house has been erected on Rhudha Mhail Point showing a Fixed Light, visible 15 miles. It shows RED from about N.N.E. $\frac{1}{2}$ E. W'ly, to about N. $\frac{1}{2}$ W.; MASKED W'ly. from about N. $\frac{1}{2}$ W to about NbyW $\frac{3}{4}$ W. and from about NbyW $\frac{3}{4}$ W round S'ly and E'ly to about NNE $\frac{1}{2}$ E it will show WHITE, excepting where intercepted by the land. When proceeding into, or through Islay Sound, this light kept in view clears the Black Rock and other shoals at the south entrance. A Lighthouse is also erected on MacArthur's Head, on East side of Islay, and South entrance to the Sound, showing a Fixed Light, visible 17 miles. It shows WHITE up the Sound till it bears S. $\frac{1}{2}$ W.; RED towards Jura from S. $\frac{1}{2}$ W till it bears about W; and WHITE from about W. round by the S., or until obscured by the south side of Islay. A tide or a night is the longest any vessel should stop here except in Macdougall's Bay, where one cable may be made fast to a ring or rock on the shore. In entering Islay Sound from the southward, you are to bring Glashilan Island to bear N., or to keep within a cable's length or two from the Islay shore, and you will clear the Skerch-ray Rock, which lies on the starboard side W. of the small Island of Frochilan.

Loch Tarbet is filled with small rocks, especially on its southern side, it is therefore hazardous to enter. The anchorage is $\frac{1}{4}$ of a mile above Guinmore, but the best and safest place is near the mouth of the Loch in Glenaberig Bay. This is easy of access, and has 3 and 4 fathoms water. Keep a cable's length from the point in passing, and anchor the same distance eastward of it. About a mile eastward of this anchorage is a cluster of small rocks above water; on the E. side of these a ship may ride safe in five fathoms water, keeping $\frac{1}{2}$ cables' length from them in going up.

Loch Indaal.—Having rounded the Mull of Kinho, which is the south-western part of Islay, you will open Loch Indaal. This may be said to be the only place in Islay where vessels in winter time can ride in safety. Here small vessels drawing 9 or 10 feet of water may ride, and be well sheltered; larger ships, drawing 15 feet, must ride with the mouth of the loch open, and will therefore not be so safe when the wind blows from the W. or S. W. But the best anchorage is at the further end of the loch called Kilirn Bay,

when Bomore House bears S.S.E., lying somewhat nearer to the S. than to the N. side of the harbour, in 3 fathoms, sandy ground. Larger ships anchor more to the westward bringing Bomore House S. E. by E. in 4 fathoms. At the entrance to this harbour are 2 spits of sand; one on the S. side, which never dries, extending from Atturach Point northwards; the other running from the opposite side southward, which dries gradually. These two spits of sand almost enclose the harbour. In the channel between their two points are 2 and 2 $\frac{1}{2}$ fathoms, low water, spring tides.

Rhins of Islay Light, on the northern side of the entrance to Loch Indaal, upon the small Island of Oversa, bearing by compass from the Mull of Kinho, N. by W. $\frac{3}{4}$ W., distant 10 miles; and from the STATIONARY LIGHT of the Mull of Cantyre, N. by W. $\frac{3}{4}$ W., 33 miles. From the north eastern extremity of the Island of Rachlin, N. $\frac{1}{4}$ E., distant 25 miles. From the REVOLVING LIGHT of Innistrathul, E. distant 28 miles. From the Revolving Light, producing a bright flash once in every minute, on the Rock of Skerryvore, distant from Hynish Point, in Tyree, W. S.W. $\frac{1}{2}$ W., 10 $\frac{1}{2}$ miles, it bears S. $\frac{1}{4}$ W., distant 44 miles. From the Rocks of Dunheertach, lying 11 miles S. W. from Icolmkil, it bears S. S. W., distant 28 miles; and from Tranvore Head, S.W. by S., distant 6 $\frac{1}{2}$ miles. It will be known to mariners as a STATIONARY and a FLASHING LIGHT. To a distant observer it appears like a star of the first magnitude, producing a bright flash of light every 3 seconds without those intervals of total darkness which characterize other Revolving Lights upon the coast. In clear weather it will be visible at the distance of 6 leagues, and is open from N.N.E. to S.E. (westerly); half a mile off Cull Point it disappears.

Oronsa and Colinsa Islands.—

Oronsa is much the smaller island, and is nearly 4 miles to the northward of Ruinanishag Point, in Islay. Off its southern sides are several Rocks, one of which extends W.S.W. from Gudimel, a small Island on the S. E. part of Oronsa. This rock dries at half ebb. There is a shoal also about a $\frac{1}{4}$ mile to the southward of the middle of the rock, on which are 6 feet at low water. At the S. W. point of Oronsa is Ilana Roan; one mile S. W. of which are 2 or 3 rocks, which dry with Spring-tides only, and some shoals on which the sea always break. A leading mark to go to the southward of these dangers is Ruvaal Point in Islay, on with the S. end of Beninore Hill in Jura. Sail not nearer to Colinsa than till Ruvaal Point bears on the middle of the hill. To the W. of Colinsa are several Rocks and Shoals, lying a mile out from Ardskinish Point, some are above, some below, and

others dry only at low water; you will avoid the whole of them by keeping about 2 miles from the shore, or one mile from those rocks you see above water. There is no anchorage on the W. side of Colinsa, and but indifferent on the east side.

The **Gulf of Coryvreckan**, which is formed by the N. end of Jura, and the Island Scarba, is distinguished by a violent breaking sea with whirlpools, partly occasioned by an excessively rapid stream running over a steep rock, at the N. side of the Sound, near the W. Point of Scarba. On the Jura side of the Gulf the sea rages and forms whirlpools, both with ebb and flood: but the waves do not rise so high as on the Scarbo side of the Gulf.

The **Sound of Mull Lighthouse** is situated on a small rock called Runa Gall, on the south shore of the Sound of Mull, Argyshire, about one mile northwards from Tobermory. The Tower is about 50 yards within the high water mark of spring-tides, and is connected with the shore by a bridge of two spans. The Light is an azimuthal condensing Light, and shows a **FIXED RED LIGHT** northwards out to sea; a **FIXED GREEN LIGHT** towards the New Rocks, the Red Rocks, and the Stirks Rocks, in the Sound of Mull; a **FIXED WHITE LIGHT** southwards into the Sound of Mull. The Light is exhibited from a tower of masonry about 55 feet above high water of spring tides, and may be seen in clear weather at the distance of about twelve nautical miles.

Adnamurchan Point.—A Lighthouse, exhibiting a Fixed Light of the natural appearance, has been erected on this point: and bears by compass from Caillach Head, N.E. $\frac{3}{4}$ E., distant 7 miles; from the Cairns of Coll, S.S.E., 8 miles; from Kana Head, S. $\frac{1}{4}$ E., 30 miles; from Scour of Eigg, S.W. by S. $\frac{3}{4}$ W., 11 miles; from Bo Askadil Rock, W.S.W., 7 miles. It is visible 18 miles in clear weather.

Ushenish Lighthouse is situated on the most easterly head land on the eastern side of the Island of South Uist, one of the Hebrides, in the county of Inverness. The Light is a dioptric first-class **FIXED RED LIGHT**, and is exhibited from a tower of masonry erected on the headland. The Light is about 176 feet above high water of spring tides, and may be seen in clear weather at the distance of about 18 nautical miles.

Island Glass Light, situate on the eastern side of Glass, and on the western side of the channel between Skye and the Long Island. The Light is **STATIONARY**, appearing like a star of the first magnitude at the distance of 5 or 6 leagues from W. by S. to E.N.E. $\frac{1}{4}$ E. by the S.

Skergriatick Rock.—A Beacon, painted black, has been erected on this rock, situate on the Minsh. It consists

of a Frame-work of iron, surmounted by a cylindric cage, and rising to about 30 feet above high water spring tides. There are steps leading from the rock to the cage in which shipwrecked mariners may find a temporary shelter. This Beacon bears by compass from Skernamule Beacon N. N. W., distant 3 miles; from Dunvegan Head, in Skye, N.E. $\frac{3}{4}$ E., 18 miles; from Island Glass Lighthouse, S.E. by S. $\frac{3}{4}$ S., 7 $\frac{1}{2}$ miles; from the Greater Galtimore (one of the Shiant Islands), S.W. $\frac{1}{4}$ S., 8 miles. There is foul ground nearly all the way from Skergriatick Rock to Fiadhuan Island, from which the beacon lies 2 $\frac{1}{2}$ miles to the N. by E.

Loch Terriden.—In entering Loch Terriden avoid Runawagh Point, its southern entrance, a little way off which point is a rock under water, which dries at spring tides. Excepting this rock, there is no danger in sailing into or up this Loch; for Skerintram Rock, which lies on the north side, is always above water, with deep water all round. Here therefore the access is easy, the ground good and so well sheltered, that several hundreds of the largest ships may ride with safety in all weathers. Its entry is 2 $\frac{1}{2}$ miles wide, the Loch running in S. by E. $\frac{1}{4}$ E. to abreast of Loch Shieldag, then S.E. by E. to the furthest end. The best place for anchorage is in Loch Shieldag, between the two narrows, on the S. side of the Basin, or anywhere above the second Narrow, which is what may properly be called Loch Terriden.

Loch Gerloch.—About 4 mile further N. is Loch Gerloch, a large and well sheltered harbour, the ground in all parts clean, holding well, and capable of containing a fleet of the largest ships; its entrance is between Coupachar Point and Longa Island; distant from each other nearly two miles. There are no dangers either in or near it; and when it does not blow hard from the W. or S.W. ships may ride in any part, particularly on the E. side of Island Longa. In winter the best anchorage is between Flowerdale and the Island of Horisdale, in from 9 to 20 fathoms water. Small vessels may ride on the W. side of the Island, S. E. of a rock above water.

Loch Yew.—From Longa Island to Ru Rhea the bearing and distance are N. E. $\frac{1}{4}$ N. 3 $\frac{1}{2}$ leagues. Five miles to the eastward is Loch Yew, a place large and well sheltered, forming a bay of easy access, a moderate depth of water, and having good holding anchorage, where whole fleets may ride in the greatest safety at all times. The entrance to Loch Yew is a mile wide, and nearly off its western point lies the small Island of Frua, with 2 or 3 islets to the eastward of it; there is also a little rock off the northern point of Fura; keep therefore

at a distance in passing it, and the channel in is free from danger. In the middle of the bay is Yew Island, at the northern point of which are some rocks above water. The best places to ride are on the E. side of the Island Yew, or on the E. side of the bay, off Tunag, and off Inveraspadaie at the opposite side of the Loch.

Loch More or Great Loch Brim.

—To the northward of Loch Beg, are several Islands, lying before Loch More, or Great Loch Brim. Loch More is a great and safe branch of the sea, capable of accommodating the largest fleets, and having no rocks or dangers within it, except a small ledge on the E. side of Ullapool extending above a cable's length from that shore, which is avoided by keeping $\frac{1}{2}$ from the Ullapool side. You may anchor in this bay in 14 or 15 fathoms water above a cable's length from the shore, or anywhere above Logie Point, in from 13 to 24 fathoms. Should you, in entering or sailing from this Loch, go between the larboard point, or Ru Handerrick, and the Carniskere Islands, remember to give the former a berth on account of a rock called Nuela, which lies nearly a cable's length from the shore, and dries about half ebb.

Loch Kylescough is nearly 7 miles E.S.E. $\frac{1}{2}$ E. from Ru Stoir, and $3\frac{1}{2}$ miles in the same direction from Ouldenay Island. This is a large and well sheltered branch of the sea, the approach to which is safe, and the anchorage good; but for some miles within the Loch the water is too deep for ordinary vessels, being from 30 to 50 fathoms, unless you carry an anchor on shore. Above the Island Ranich where the contracted channel commences again to widen, ships may anchor anywhere, the stream in the narrowest part running not more than 1 mile an hour.—The only rock necessary to notice, lies near the Island Carraway, off the larboard side of entrance; it bears W.S.W. from it and dries at low water; keep Runachusan Point in Ouldenay Island on with the extremity of Ru Stoir, and you will clear this rock to the Southward. At the N. side of the entrance to Loch Kylescough is Loch Shark, and N. E. of Shark lies Loch Calaway.

Loch Inshard.—One league to the eastward of Lusford is Loch Inshard, the last bay before you round Cape Wrath. In sailing in, great caution must be observed, as there is a rock lying right at the entrance, which appears at spring ebbs only. Within the Loch you will be well sheltered, your depth moderate, and your ground good. Sail up until you are landlocked, and anchor near the north or east side. To the north west of Loch Ardcar are some Islands, close to the main, called Ilanarone; and nearly N.N.

E. of these 4 miles, is Balag Island, having a small rock above water, at both the N. and S. extremities. This Island lies about a mile from Ru Wochel. Near the latter is a rock above water, close to the land. From hence to Cape Wrath the coast is high and rocky. Off Cape Wrath are said to lie several rocks under water, called the Stags. Vessels in sailing round this headland should always give it a good berth, of $1\frac{1}{2}$ or 2 miles, and steering E'ward, they will reach the Pentland Frith.

Isle Oronsay Lighthouse is situated on a low point at the south-east end of the Island of Oronsay, Inverness-shire, in the Sound of Skye, also called Sound of Sleat. The Light is an azimuthal condensing Light, and shows a **FIXED WHITE LIGHT**, from a tower of masonry about 58 feet above high water of spring tides. The Light may be seen in clear weather about 12 nautic miles.

Kyleakin Lighthouse is situated on a point of rock which covers at high water spring tides, and projects from the west end of Eilan Dool, or Gillean Island, in Ross-shire, at the western entrance of "The Narrows," leading to Loch Alsh. The tower is about fifty-three yards within the high water mark of spring tides, and is connected with the Island by a bridge of five spans. The Light is an azimuthal condensing Light, and shows a **FIXED WHITE LIGHT** in the fairway of the Sound of Loch Alsh, and a **FIXED WHITE LIGHT** in the fairway leading to the Sound of Applecross, and which White Light extends southwards to Pabba Island. From thence it shows a **FIXED RED LIGHT**, extending eastwards along the shore of Skye to the south of the fairway of Loch Alsh. It also shows a **FIXED RED LIGHT** to the north-eastwards of the fairway to the Sound of Applecross. To the north of the fairway of Loch Alsh the Light is not shown. It is exhibited from a tower of masonry about 53 feet above high water of spring tides, and may be seen in clear weather at the distance of about eleven nautic miles.

Rona Lighthouse is situated on the northern end of the Island of Rona, in Inverness-shire, between the west coast of Ross-shire and the Island of Skye. The Light is a catadioptric second-class heliophotal **FLASHING WHITE LIGHT**, showing a flash **EVERY TWELVE SECONDS**. It is exhibited from a tower of masonry erected on a peak at the north-east point of the Island. It is elevated about 222 feet above high water of spring tides, and may be seen in clear weather at the distance of about twenty nautic miles.

Cape Wrath Lighthouse, erected on the Cape, forming the north-western extremity of the main land of Scotland, in lat. 58 deg. 37 min. N., and in lon. 5 deg.

W., bears from Hoy Head in Orkney, W. $\frac{1}{2}$ N., distant 50 miles; from the Butt of the Lewis, E. by S. $\frac{1}{2}$ S., 41 miles; from the rocks called the Stags off the Cape, S. W. by W. $\frac{1}{2}$ W., about 1 mile; from the sunken Rock called the Nun, S.S.W. $\frac{1}{2}$ W., distant 15 miles; and from the Islands of Stack and Skerry, .WS.W., the former 35 $\frac{1}{2}$ and the latter 38 miles distant. It is known to mariners as a REVOLVING LIGHT, of the natural appearance, changing with one tinged red, which attain their most luminous effect every two minutes, and become, to a distant observer, totally eclipsed for a short time. The light is visible from S. $\frac{1}{2}$ E. to S. W. by W. by the N., at the distance of 23 miles.

Dunnethead Light, on the Northern extremity of the mainland of Scotland, in lat. 58 deg. 40 min. N., bears by compass from the N. end of the Island of Strom, in Pentland Frith, W.N.W., distant 7 $\frac{1}{2}$ miles; from Hoy Head, leading to Hoy Sound, S.S.W., distant 13 miles; from the Stack and Skerry, S. by E. $\frac{1}{2}$ E. distant thirty-three miles; and from Cape Wrath, in Sutherlandshire, S.E. by E. $\frac{1}{2}$ E., distant 54 miles. In reference to these bearings, the light will be visible to the mariner in a northerly direction from S.E. $\frac{1}{2}$ E. to W. by northward. The Light is STATIONARY, and being elevated 346 feet above the medium level of the sea, will be seen like a star of the first magnitude, at the distance of from 7 to 8 leagues, and at lesser distances according to the weather.

Magnetic Bearings & Distances FOR THE NORTH AND EAST COASTS OF SCOTLAND.

CAPE WRATH (Lat. 58 37 30 N., Long. 5 W.)	MILES.
To Ru Store	SW by W 26 $\frac{1}{2}$
Loch Maddy entrance ...	W by S 92
Glass Island Light ...	W by S $\frac{1}{4}$ S 70
Chicken Head	W $\frac{3}{4}$ S 47
Tolsta Head	W $\frac{1}{2}$ N 39
To Nun Rock	NNE $\frac{3}{4}$ E 15
Hoy Mouth, Stromness	E $\frac{3}{4}$ S 61
Holburn Head	SE by E $\frac{1}{2}$ E 51
DUNNET HEAD (Lat. 58 40 16 N., Long. 3 22 20 W.)	
To Thurso Bar	SW by W $\frac{1}{2}$ W 5
Holburn Head	W by S 5
Hoy Head	NNE 13
Swona, South end of	E by S 10
Pentland Skerries	ESE 14
SULE SKERRIE (Lat. 59 3 N., Long. 4 13 W.)	
To Dunnet Head	SSE 33
Strathy Head	S by W 28
Sumburgh Head, Shetland	E 100
Westra Frith	E by S 40
HOY MOUTH, STROMNESS (Lat. 59 3 N., Long. 3 23 W.)	
To Scrabster Roads	SW $\frac{1}{2}$ S 17
Strathy Head	W by S $\frac{1}{2}$ S 23

Lock Erobol	W 45
Cape Wrath	W $\frac{1}{2}$ N 59
DENNESNESS LIGHT, NORTH RONALDSHA (Lat. 59 23 N., Long. 2 23 W.)	MILES
To Foul Island	NE 45
Pappa Island, Shetland ..	NE $\frac{1}{2}$ E 60
Sumburgh Light, Shetland	E $\frac{1}{2}$ N 46
Fair Island	E by S 28
START POINT IN SANDA ISLAND (Lat. 59 16 39 N., Long. 2 22 25 W.)	
To Foul Island	NE $\frac{1}{2}$ N 50
Fair Isle	E 30
Noss Head ..	SW $\frac{1}{2}$ W 50
Copinsha Island	SW $\frac{1}{2}$ W 22
SUMBURGH HEAD, SHETLAND (Lat. 59 51 N., Long. 1 16 W.)	
To Noss Island	NE by E 20
Bucanness Light	SW by S 140
Fair Isle	SW by W 21
Start Point, Sanda I. ..	W by S $\frac{1}{4}$ S 48
Foul Island	NW by N $\frac{1}{2}$ N 28
NOSS HEAD (Lat. 58 28 38 N., Long. 3 3 5 W.)	
To Duncansby	NE by N 10
Pentland Skerries Lights	NE 12 $\frac{1}{2}$
Fair Isle	ENE 78
Sumburgh Head ..	NE by E $\frac{1}{2}$ E 96
TARBETNESS LIGHT (Lat. 57 51 N., Long. 3 48 W.)	
To Troup Head	SE $\frac{1}{2}$ E 48
Cowsey Point	SE by S $\frac{1}{4}$ S 18
Burgh Head	S $\frac{3}{4}$ W 13
Mairn ..	SW $\frac{1}{2}$ S 16
KINARD'S HEAD (Lat. 57 42 N., Long. 2 1 W.)	
To Rattry Brigs	SE by S $\frac{3}{4}$ S 8
Helmsdale	NW by N 60
Noss Head	N by W 61
Duncansby Head ..	N $\frac{1}{2}$ W 67
Copinsha Island ...	N by E 77
BUCANNESS LIGHT (Lat. 57 28 15 N., Long. 1 46 11 W.)	
To Peterhead, S.H.	NNE 2 $\frac{1}{2}$
Rattry Brigs	NNE 9
Sumburgh Head	NE by N 140
Bell Rock ..	SW 66
St. Abb's Head	SW $\frac{3}{4}$ S 95
Girdleness Light	SW $\frac{1}{2}$ W 25
THE GIRDLENESS (Lat. 57 8 15 N., Long. 2 3 2 W.)	MILES.
To Bucanness	NE $\frac{1}{2}$ E 25
St. Abb's Head	SSW 72
Bell Rock	SW $\frac{1}{2}$ S 42
Flambrough Head	S $\frac{1}{2}$ W 193
MONTROSE (Lat. 56 42 N., Long. 2 27 W.)	
To St. Abb's Head	S by W $\frac{1}{2}$ W 48
Bell Rock ..	SSW 11
May Island ..	SW by S 30
Flambrough Head	S 174
Longstone Light, Ferns ..	S $\frac{1}{2}$ W 70
BELL ROCK (Lat. 56 26 3 N., Long. 2 23 6 W.)	
To Montrose entrance	NNE 11
Girdleness Lights	NE $\frac{1}{2}$ N 42
Bucanness Light	NE 66
Flamborough Head	S $\frac{1}{2}$ E 158
Buttonness ..	NW $\frac{1}{2}$ W 13
Arbroath	N by W $\frac{1}{2}$ W 7

Dumbar Harbour.....SW $\frac{1}{2}$ S 27	Fisherow .....S $\frac{1}{2}$ E 6
St. Abb's Head ....S. by W. $\frac{1}{2}$ W 32	Colm Island .....NNW 7
Fifeness.....SW by W $\frac{3}{4}$ W 11 $\frac{1}{2}$	Garvy Island... W by N $\frac{3}{4}$ N 9
MAY ISLAND (Lat. 56 11 8 N., Long. 2 33 20 W.)	May Island.....E $\frac{1}{2}$ S 23
To Fifeness.....N $\frac{3}{4}$ E 5	ST. ABB'S HEAD (Lat. 55 55 N., Long. 2 9 W.)
Arbroath ....NE by N $\frac{3}{4}$ N 21	To Buttonness .....N 37
Bell Rock ..NE $\frac{3}{4}$ E 16	Bell Rock Light.....N by E $\frac{1}{2}$ E 32
St. Abb's Head....S $\frac{3}{4}$ E 21	Aberdeen, Girdleness.....NNE 73
Inchkeith .....W $\frac{1}{2}$ N 22	Bucanness Light.....NE $\frac{3}{4}$ N 95
INCHKEITH (Lat. 56 2 N., Long. 3 8 W.)	Bass Rock .....NW by N 11
To Kirkaldy.....N by E $\frac{1}{2}$ E 6	Elieness .....NW by N $\frac{3}{4}$ N 25 $\frac{1}{2}$
Elieness .....E by N $\frac{1}{2}$ N 14	May Island .....N by W 29
Fidra Island.....E by S $\frac{1}{2}$ S 12 $\frac{1}{2}$	

EAST COAST OF IRELAND.

POINT CARNSORE TO LOCH CARLINGFORD.

Point Carnsore is the S.E. point or extremity of Ireland, and lies about 42 leagues from Cape Cornwall, bearing N. by E. $\frac{1}{2}$ E.; from the Small's Light N. by W. $\frac{1}{2}$ W., distant 37 miles. Nearly E. by S. from Carnsore Point, distant 6 miles, lies the TUSKAR, a very remarkable rock 20 feet above the level of the sea at high water, upon which stands a lighthouse similar to that on the Eddystone, elevated 81 feet from its base. The light revolves every two minutes, showing two faces bright, and one red. The red light is visible 10 miles, and the bright 15 miles. During foggy weather a bell is tolled every half minute. This rock bears from the Smalls Lighthouse N. $\frac{1}{2}$ W., distant 33 miles. Ships coming from the westward and bound for St. George's Channel, should endeavour to see this rock before they shape their course to the northward.

Long Bank.—Three buoys are placed on this bank. One on the N. end, Conical buoy, Coloured Red, with Staff and Globe, and lettered "*Long Bank, No. 1.*" One on the S. end, Conical buoy, coloured Red, and lettered "*Long Bank, No. 3.*" An additional Red (Can) buoy has been placed equi-distant from the N. and S. buoys, and lettered "*Long Bank, No. 2.*"

Blackwater Bank, is a narrow sandbank running nearly in the direction of the coast at the distance of from 3 to 4 miles. A Black Conical buoy, surmounted by a Staff and Globe, lettered "*Blackwater No. 1,*" marks the N. end; and a Black Conical buoy, lettered "*Blackwater No. 4,*" marks the S. end. There are two intermediate Can buoys coloured Black, and marked respectively "*Blackwater No. 2,*" and "*Blackwater No. 3.*" Moored off the north end in 18 fathoms, at low water, spring tides is a Light Vessel, which exhibits a Fixed Light. The Light is shown from the mainmast, and in clear weather can be seen at a distance of 10 miles. The vessel has three masts, and carries two Globes at the

main-mast-head; is painted black, with a White Stripe, having the word "*Black Water,*" in white letters on her sides; A gong is sounded in foggy weather.

Wexford Harbour, is capacious and sufficiently sheltered, but is obstructed by a bar extending across it, over which there are at times but 7 feet water. Buoys are laid in the deepest water across the bar; but to enter this harbour a pilot is necessary. On or about the 1st May, 1868, a Light-vessel will be placed near the *Lucifer Shoals*, on the coast of Wexford, and will show a *Fixed Red light*, and her position will be about midway between *Rock Tusker* Lighthouse, and the *Blackwater Bank* Light-vessel; she will carry three masts, with a globe at the main-mast-head. Her hull will be painted similar to the other Light-vessels, but with the words "*Lucifer Shoals*" in white letters on her sides.

Arklow Bank, is a narrow sandbank off Arklow Bay, about two leagues from the land, and nearly 11 miles long from N.E. by N. to S.W. by S. and from half to three-quarter of a mile broad; the shallowest part is near the N. end where the least water is 4 feet; the S. end has from 6 feet to 3 fms. on it, and except at slack water, you will perceive its ripple; next to its East side are from 13 to 20 fathoms; approach it no nearer than 30 fms. The marks for its southern end are *Arklow Rock* N.W. by N. distant 7 miles, and in one with the northern declivity of the Copper Ore mountains; and the *Great Sugar Loaf* open to the eastward of the *Ballynacarrig Hills*, and also of *Mizen Head*, bearing about N. by E. There is also a Conical buoy, coloured red, placed to mark the south end, with the words "*Arklow Bank No. 5*" on it. The marks for its northern end are the top of *Carrig Mc Keilly* just open to the N'ward of *Maughry Point*, bearing N. W. $\frac{3}{4}$ N., and the *Great Sugar Loaf* open to the eastward of *Wicklow Head*, N. $\frac{1}{4}$ W.

Wicklow Head bearing N. $\frac{1}{2}$ W. clears it. There is also a buoy placed to mark the north end, coloured red, surmounted by a staff and globe with the words "*Arklow Bank No. 1*" on it. Three Can Buoys coloured red, have been placed at equal distances from each other, between the North and South buoys, and marked respectively "*Arklow Bank No. 2*," "*Arklow Bank No. 3*," and "*Arklow Bank No. 4*." Two Light Vessels are now placed on this bank, one on the North and one on the South part. Arklow Bank North Light Vessel is placed about $3\frac{1}{4}$ miles S. E. by E. $\frac{1}{2}$ E. from the North end of the bank, and exhibits two fixed bright lights, one on the mainmast 38 feet above the level of the sea, and the other on the foremast 22 feet above the level of sea; she carries three masts, with a globe on the foremast and a globe on the mainmast head. Her hull is painted Black, with a White Stripe, and the words "*Arklow Bank North*," in white letters on her sides. Arklow Bank South light vessel has been shifted about two miles S.S.E. $\frac{1}{2}$ E. from her former position, and now exhibits a bright revolving light every minute; she carries three masts, with a half globe over a globe at her mainmast-head. Her hull is painted Black, with a White Stripe, and the words "*Arklow Bank South*," in white letters on her sides.

On **Wicklow Head** is a light house showing an intermittent bright light alternately, 10 seconds bright and 3 seconds dark.

Wicklow Harbour, fit for small craft only, there being only 9 feet in the entrance at low water, spring tides, and 6 at neap tides. To make its entrance better, a new channel has been opened; this is formed by 2 Piers about half a furlong to the westward of the Old Bar, and there the depth is 12 and 14 feet.

The **Wicklow Banks** are 2 narrow patches of sand, lying about 5 miles E. from Wicklow Head. The southern patch called the India Bank, is about one mile long, N.N.E. $\frac{1}{2}$ E. and S.S.W. $\frac{1}{2}$ W., and half of a mile broad. On its middle are 2 fathoms, on its S.W. end $3\frac{1}{2}$ fathoms; at its S.W. extremity is a conical buoy coloured black and white in horizontal bands and moored in five fathoms low water from which Wicklow Head light bears W. by S. 5 miles.

The **South Ridge** lies at the N. end of the India Bank, it is $1\frac{1}{2}$ miles long and half a mile broad, with $3\frac{1}{4}$ to 5 fms. water on it. Its direction is N.N.E. $\frac{1}{2}$ E., and S.S.W. $\frac{1}{2}$ W., and its N.W. end is nearly $5\frac{1}{2}$ miles S.E. by E. from Six Mile Point.

The **Codling Bank**.—The south end of this bank lies N.E. by E., 3 miles from the South Ridge; it then runs N. by E. 8 miles, and turns suddenly to W. by N. or 2 miles, then curving round to the

S.E. till it joins the south point. In the middle of the bank, which is 2 miles broad are from $3\frac{1}{4}$ to 5 fathoms. The Great Sugar Loaf open north of the Gap N.W. $\frac{1}{2}$ N., leads between the Codling, and the South Ridge. A Can Buoy, coloured black and white, in vertical stripes is moored on this bank. A light vessel is placed about $3\frac{1}{2}$ miles S.E. by S. from the south end of Codling Bank, from which is exhibited a Red quick Revolving Light, showing its greatest brilliancy every 20 seconds, has three masts, and carries a Globe with a half Globe underneath at her mainmast-head. Her hull is painted black, with a white stripe, and the words *Codling Bank* in white letters on her sides.

The **Bray Bank** lies N.N.E. $\frac{1}{2}$ E. and S.S.W. $\frac{1}{2}$ W.; is 2 miles long and $\frac{1}{2}$ a mile broad, with twelve feet on it. In the Channel, between the N.W. end of the Codling and the South end of the Bray, which is half a mile wide, there are 9 fms. gravelly ground. Carrickgollogan Hill, two degrees open north of Bray Head, N.W. $\frac{1}{2}$ N., clears the Codling to the northward. This mark will lead across the bay in 3 fathoms at low water. The south hummock of the Little Sugar Loaf in one with Windgate Hill, W.N.W. $\frac{1}{2}$ W. leads between the Bray and the Kish Banks in $3\frac{1}{2}$ fathoms.

The **Kish** is a long narrow sand, stretching N. by E. $\frac{1}{2}$ E.; and S. by W. $\frac{1}{2}$ W., about $6\frac{1}{2}$ miles, and is from $\frac{1}{2}$ to $\frac{3}{4}$ of a mile broad; on its southern extremity is a conical buoy coloured black, and lettered "*Kish Bank, No. 3*;" on its northern extremity is placed a conical buoy, coloured black, surmounted by a staff and Globe, and lettered "*Kish Bank, No. 1*;" an additional Can Buoy coloured black, and lettered "*Kish Bank, No. 2*" has been placed midway between north and south buoys. On the Kish are from 9 feet to 3 fathoms, the latter depth being near its northern end. Three-quarters of a mile from the northern extremity of the Kish, a Floating Light Vessel is moored, with the following mark and bearing:—Ireland's Eye a little open of Howth Head, and Dublin Lighthouse, N.W. $\frac{1}{2}$ W., distance $7\frac{1}{2}$ miles. This vessel exhibits a White Revolving Light, which attains its greatest brilliancy once in every minute. At 3 miles to the southward of the light-vessel are only $7\frac{1}{2}$ feet water; at this spot the Great Sugar Loaf Hill appears on the saddle of Bray Head, bearing W. $\frac{1}{2}$ S., and Ireland's eye just open, and shut with the Head of Howth, N. $\frac{1}{2}$ W.

Bennett's Bank.—The S. end of this bank lies about 1 mile East of the Kish Lighthouse and 5 miles S.E. from Howth Head Lighthouse; it is about $2\frac{1}{2}$ miles in length, and has from 6 to $4\frac{1}{2}$

fathoms on it; at half mile southward are 12 to 14 fathoms.

The **Burford Bank**, at the entrance to Dublin Bay, is narrow, and runs in a N.N.E. $\frac{1}{4}$ E. and S.S.W. $\frac{1}{4}$ W. direction being about $1\frac{1}{2}$ mile long, but not a $\frac{1}{4}$ of a mile broad. Nelson's Pillar kept open to the southward of the Pigeon-house on Dublin Quay, will lead clear of its southern extremity in $4\frac{1}{2}$ and 5 fathoms water. There is a shallow part of this bank over which there is not more than 12 feet at low water. This lies with Malpas Obelisk in one with signal station, and Sutton Tower just open of Sheep's Hole Point. On all other points of the bank are from 3 to 4 fathoms. The mark to clear to the eastward of it, is Ireland's eye open to the Nose of Howth. Upon each end of this bank is a buoy; that on the southern end is a conical buoy, coloured red, surmounted by a staff and globe, and that on the northern chequered black and white.

Sailing for Dublin Bay from the Southward.—From the Tuskar to Wicklow Head the bearing and distance are N.E. $\frac{3}{4}$ N. nearly $46\frac{1}{2}$ miles, but to pass to the eastward of the Arklow Bank the course is N.E., observing to make due allowance thereon for the set of the tide, whether flood or ebb. When Wicklow Head Lights bear N. by W. you will be clear of the Arklow Bank; then to sail within the Wicklow or India Banks bring the Great Sugar Loaf Hill well open of Wicklow Head, bearing N. by W. or Wicklow Lights in one; either of these will lead between the Arklow and India Banks, and when within 2 miles of the shore, a N. by E. $\frac{3}{4}$ E. course will carry you past Moulditch Bank and Dalkey Island. In working up between the banks and the shore with a flood tide and northerly wind, do not stand further from the land than four miles; for the tide with little wind may drift you upon the banks: while near the shore the stream commonly makes to the southward $1\frac{1}{2}$ hours before high water.

Stopping Places.—In moderate weather vessels may stop almost any where within the banks between Wicklow and Dublin, except off the Giant's Bed; where lies the Moulditch Bank; the best part, with westerly winds, is between Bray Bank and the main from $\frac{1}{2}$ to 2 miles from the shore. Here is very little stream of tide, and the violence of the sea is considerably broken by the banks.

In **Killiney Bay** vessels may anchor in 5 or 6 fathoms, sheltered from W.N.W. to N.N.E. winds.

Dublin Bay.—There is good anchorage in the mouth of Dublin Bay when the wind does not blow hard from the E. and S.E.; with these winds a great sea sets in when it blows hard, so that vessels are

obliged to run for some place of safety; with north-easterly winds, vessels run for Kingstown harbour, which lies on the S. side of Dublin Bay, and is enclosed by two large piers; on the head of the eastern of which is a lighthouse shewing a revolving light, presenting white and red faces alternately, and attaining their greatest brilliancy at intervals of thirty seconds. During foggy weather a bell is tolled. There is also a fixed red light on the west pier-head. The entrance to this harbour faces the N.E., and has 4 fathoms water; within, from 4 to $2\frac{1}{2}$ fathoms at low water. When going in, leave the revolving light on the port hand, and round it close to. **BAILEY LIGHT**, exhibited from the S. E. point of Howth Peninsula, is stationary, and is visible at a distance of fifteen miles. About a mile to W.S.W. of the Bailey lighthouse lies the Rosebeg Bank, which is easily distinguished in blowing weather by the sea breaking over it: and on which are from $2\frac{1}{2}$ to 3 fathoms water. The Revenue Barrack on with the Poolbeg Lighthouse, bearing N.W. by W. $\frac{3}{4}$ W., leads clear to the southward of it.

Dublin Harbour lies between two banks, the North and South Bull, and is sheltered on the south side by a wall on piles, carried eastward about 3 miles into the bay. At the end of the south wall is Poolbeg Lighthouse showing a fixed light all night, and a lower light from half-flood to half ebb: a ball is hoisted during the same period in the day. A bar lies across the entrance, on which are 12 feet at low water. Between the bar and lighthouse are 14 to 27 feet. A red buoy is moored on the bar, in 9 feet at low water: it lies a mile E.S.E. $\frac{1}{4}$ E. from the lighthouse. Pass about a cable's length to the southward of this buoy, observing the before-mentioned mark and you will carry 12 feet over the bar at low water. On the north side of the channel, and bearing E. 3-10th's of a mile from the lighthouse, is a white buoy, moored in 9 feet at low water, between which and the lighthouse are from 14 to 27 feet. The south bar buoy (black) lies S. $\frac{1}{4}$ W. 4-10th's of a mile from the lighthouse on the southern extremity of the south bar patches, which commence about $\frac{1}{2}$ a mile S.E. from the lighthouse, extending in that direction nearly $\frac{1}{2}$ a mile; then turning to the westward about the same distance, when they terminate where the black buoy is placed. On these patches are only from 4 to 5 feet low water. At 6-10th's of a mile within the lighthouse a white buoy is placed, which must be passed to the northward. The channel is regularly buoyed on the north side with black buoys, and on the south with red buoys from the Pigeon House to King's end. Between Pool Beg and the Pigeon

House, there are several places where vessels may anchor, in from 16 to 20 feet at low water, the channel having been greatly improved by means of powerful steam dredges. Ships in general, with suitable draughts of water sail over the bar to the north of the east buoy. This is called the East Channel, and the mark for it is the Church of Irishtown just open to the northward of the lighthouse. This mark will lead you about a cable's length to the southward of the east buoy in no less depth than 15 feet at half-flood. So soon as you are over the bar, the depth will increase to 18 and 20 feet. Keep about mid-channel between the Spit Buoy and the lighthouse, and when about $\frac{1}{2}$ a mile within the latter you may anchor in 15 or 16 feet at low water. This is called Poolbeg, and although a tolerably good place in summer, it is not so good in winter time; it is then best to go a mile further up, so as to take the ground about half-ebb, or to lie along the wall or along the quay above Ring's End. To sail in through the West Channel, you must pass to the southward of the South Bar Buoy; when the lighthouse bears N.E. $\frac{1}{4}$ N., and on with Baldoyle Chapel or the ruins of Kilbarrack Church, steer for it in that direction, giving it a berth on your larboard hand, as you haul round to the westward. When coming from the southward, keep Sandy Cove Tower on with the eastern extreme of the pier at Kingstown, S. $\frac{1}{4}$ E., until you bring the lighthouse on the above bearing. This will lead you in the best water, and well to the westward of the south bar buoy. In the channel are only 6 feet at low water, spring tides. The tide flows at the lighthouse, on full and change days, 11 hours 12 minutes, and rises 12 feet on springs. Vessels coming from the northward, bound for Dublin, must give the Hill of Howth a berth, to avoid the bank called Rosebeg. To avoid it on the east side, bring the eastern extreme of Howth open of the Bailey, or the Bailey Light N.E. $\frac{1}{4}$ N., and on the south side, Poolbeg Lighthouse, N.W. by W. $\frac{3}{4}$ W.

Ireland's Eye is a small island, $1\frac{1}{2}$ miles to the north of Howth Head; on its eastern side is anchorage in 6 fathoms; on its north in 7; but the best is on the west side in about 4 fathoms, with the Stack open to the southward of the height, and from whence it is easy to run for the pier of Howth in case of necessity.

Howth Harbour, which is at present being deepened and improved, to the S. of Ireland's Eye half a mile. There are two piers; on the easternmost of which there is a lighthouse exhibiting a fixed red light to seaward 45 ft. high, on the west side of the entrance and towards the end of the west pier there is 7 feet of

water at low water spring tides, (rise of tides 13 feet at springs), and alongside the eastern pier there is 4 to 5 ft. at low water spring tides. The centre of the Harbour, from three-quarter cable length inside the jetty is a Rock, that dries at low water and should be avoided. Entering the Harbour from the eastward keep Howth Church, W. $\frac{3}{4}$ S., open S. of the lighthouse to clear the rocks off Ireland's Eye; and entering from the northward keep the Martello tower between the Pier heads S. $\frac{1}{4}$ W. Give the eastern pier a wide berth to avoid the loose stones under it that dry at low water. The tolls levied are: On all boats above 5 tons is 10s. per year; and 5s. from 1st of September to 31st of December. Vessels employed in fishing 1s. 3d. per ton. On small boats plying for hire, an annual licence of 2s. 6d. Vessels engaged in trade, if occupying a berth at the quays for a period exceeding ten days to pay a charge of $\frac{1}{4}$ d. per ton register for each day exceeding such period.

Harbour of the Skerries.—This Harbour may be easily known by Rockabill and St. Patrick's Islands; the former is a remarkable rock, always above water, and steep to all around, having from 9 to 18 fathoms close to it, and on the summit of which a Lighthouse is erected exhibiting a FLASHING light every 12 seconds, and can be seen 18 miles. The flash is white between N. $\frac{1}{4}$ W. and S.W. by S.; red between the same bearings round westward or towards the land. It lies 4 miles E. by S. of the Skerries, and about $2\frac{1}{2}$ miles from St. Patrick's Island. To sail in, after you have rounded St. Patrick's Island, steer N. W. by W. until all the town of Skerries appears open of the pier-head; you will then be clear of the Cross and may round into the road, where you will have 4 or 5 fms. of water. Here the riding is safe, unless it come to blow hard from the E. or N.E.; but if you intend going up to the pier, stop about a cable's length from the pier-head, in 3 fms. until the tide serves.

Balbriggan Harbour is sheltered from the east by a Pier, on the S. side of the Bay, which runs northward. Within the Pier Head, at high spring-tides, are 12 feet water, and with neap-tides, 9 or 10. On the pier, S. side of entrance, is a white lighthouse, exhibiting a fixed light, visible at the distance of 10 miles, between W.S.W. and S.S.E. $\frac{1}{4}$ E.

Drogheda Bar lies $27\frac{1}{2}$ miles N. of Dublin, about 10 miles N. of Skerries, and 7 miles from Balbriggan, the river running due E. and W. Formerly the river from the Maiden Tower to the Bar had a tendency to run N.E., but an annual outlay of nearly £6000 a-year in its improvements has contributed to give the entrance to the river an E. and W. direction,

thereby enabling vessels to take the bar with much more safety than heretofore. The parallel walls at the mouth of the river having been extended within the last few years 1800 lineal yards seaward, and now nearly reaching the bar, has caused the water in the river adjacent to the bar to be comparatively smooth in the severest weather. These walls have also had the effect of deepening the channel, and directing its course in a more southerly direction, thereby making the bar much easier of access in bad weather. The continual dredging of the river has removed the banks and shoals which previously existed, leaving the navigable channel of a uniform depth, not less than from 18 ft. 6 in. to 19 ft. at high water of ordinary spring tides. The water on the bar at spring tides from 18 to 22 feet, with from 15 to 16 feet at neaps. There is an excellent tug-boat in attendance on vessels requiring her assistance, with a number of experienced licensed pilots always looking out for vessels bound for this port. There are fifty sailing vessels, with five first-class paddle-steamers, having in the whole a registered tonnage of 7327 tons trading to this port, exclusive of other vessels which frequent this place with occasional cargoes. Four lighthouses are placed at the entrance of the river, and a number of stone towers built on the N. side, with wooden perches for landmarks on the S. side; the centre between them denoting the channel. The relative bearings of the E. and W. Lights will be occasionally changed, as the sandbanks alter their places. The present entrance of the river, keeping these two lights in one, is W. $\frac{1}{4}$ S., until you come abreast of the large Stone Pillar on the north side, then steer N.W. $\frac{1}{4}$ W. for the North Red Light. There has lately been placed at the East end of the North Wall a large Wooden Perch, with Cage and Barrel placed on the top of it, and must be kept about 100 feet on the starboard side in coming in. Ships drawing 10 $\frac{1}{2}$ ft. should have at least 4 hours' flood tide in bad weather before taking the bar.

Dundalk.—Sailing N. you will pass Clogher Head and reach Dunany Point, off which, about a mile E. of high water mark, lies a small rock, drying with low water spring tides. The first buoy is in 6 fathoms at low water, about four miles from Dunany, bearing from it N. by E., keeping Clogher Head well open, and bearing from Cooley Point W. by N., distant about four miles. The second and third buoys bears N.N.W. $\frac{1}{4}$ N. from the first buoy. The second buoy is in 3 $\frac{1}{2}$ fathoms at low water; and the third is on the bar, on which there are, at low water springs 3, and at low water neaps 6 feet. The depth on the bar at high water springs, varies from 24 to 18 feet; and

neaps, from 16 to 13 feet. These depths continue up to Soldier's Point, whence, to the quays, the depth is at high water springs 19 feet; and neaps 13 feet. A lighthouse, on screw piles has been erected at the entrance of the Harbour Channel. The Light is a Fixed Light, varied by Flashes, giving a flash once in every 15 seconds; its focal point 33 feet over the level of the sea, at high water; and in clear weather it is visible at the distance of about 9 miles. To seaward the Light appears of the natural colour. Bright, between the bearings of W. by N. and N. $\frac{1}{4}$ W.; it is masked in the direction of the Dunany Reefs between the bearings of N. $\frac{1}{4}$ W. and N. by E. $\frac{1}{4}$ E.; it is coloured Red towards the west side of Dundalk Bay; and shows Bright towards the Harbour Channel, northerly. The Lighthouse is borne on screw piles of red colour, braced into an open framing below the dwelling, which is of octagonal form, and coloured white: over this the lighthouse has a dome-formed top. It stands within the entrance of the channel, in lat. $53^{\circ} 58' 40''$ N., and lon. $6^{\circ} 18' W.$; and bears from Castle Rocks off Cooley Point, N.W. $\frac{1}{4}$ W., distant $5\frac{1}{2}$ nautic miles; from Dundalk Patch (rocky shoal), N. by W. $\frac{1}{2}$ W., distant $6\frac{1}{2}$ nautic miles; from Dunany Reefs, eastward of Dunany Point, N. $\frac{1}{4}$ W. distant $6\frac{1}{2}$ nautic miles. When vessels bound to Dundalk come between Cooley Point and Clogher Head, they are required to hoist a signal for a pilot. A large bell has been placed on the roof of the lighthouse which strikes six times per minute in foggy weather. All vessel entering the Port to keep the lighthouse on the starboard hand. Masters of vessels are cautioned to give the beacons and perches a sufficient berth. Vessels wanting the use of the Steam Tug are requested to hoist by day an Ensign at the Fore-top-gallant mast head, by night, Two Lights, one above the other. Masters of vessels necessitated to enter the harbour without being able to obtain a pilot, should observe that after passing the lighthouse, the first and second lights are white, the third light is green; these three lights to be kept on the port hand; the fourth light is red, to be kept on the starboard hand; the fifth light is bright, to be kept on the port hand; the sixth light, placed on the Rock Beacon, is red, which is to be kept on the starboard hand; all the lights from thence to the Quays are white, and are to be kept also on the starboard hand. On entering the channel in daylight the black beacons and all perches with black ball signals on top are to be kept on the port hand, and all the red beacons and perches with red conical signals on top to be kept on the starboard hand. The Commissioners for improving the Port and Harbour of Dundalk are erecting a Guide

Wall from the North Bull towards the Bar, running in a direct line to, and ending 300 feet to seaward of the lighthouse; this end is marked by a red buoy, and the wall bears from it N. by W. $\frac{1}{2}$ W., said buoy to be kept on the starboard hand. Three Jetties have been constructed on the West side of the Channel, the river ends of which are marked by the first three lights on entering the channel. Two Jetties are also in course of construction on the East side of the Channel, the river end of the first is marked by a perch with red conical signal on top; the river end of the second is also marked with a similar perch, which carries the first red light on entering the Channel. The Dundalk Harbour Commissioners have had built, at a cost of £3,000 a new and powerful Iron Steam Tug-boat for the accommodation of vessels trading to this port.

DUNANY AND IMOGENE ROCKS DUNDALK BAY.—A Black Conical Buoy, surmounted by a staff and ball, has been placed in $3\frac{1}{2}$ fathoms, at low water, spring tides, to mark the position of the Imogene Rocks, which lie about a mile and three quarters S.S.E. off Cooley Point, north side of entrance to Dundalk Bay, and with the following marks and compass bearings:—Dundalk High Chimney, open of Rathcor Point, N.W. $\frac{1}{2}$ W.; Cooley Point, N.N.W. $\frac{1}{2}$ W.; Carlingford Lighthouse, N.E. $\frac{1}{2}$ N.—A red conical buoy, surmounted by a staff and ball, has been placed in 4 fathoms, low water, spring tides, on the outside of the Dunany Reefs, which lie off Dunany Point, south side of entrance to Dundalk Bay, and with the following marks and compass bearings—Clogher Head, S. W. $\frac{3}{4}$ S.; Dunany Church, W. $\frac{1}{2}$ S.; Dundalk High Chimney, N. by W. $\frac{1}{2}$ W.; Tipping Mountain on with a saddle in the distance, N. $\frac{1}{2}$ W.

Loch Carlingford lies two leagues to the eastward of Dundalk Harbour entrance, and forms a large well sheltered bay, the ground good, and water sufficient for the largest ships; but there are several rocks and dangers which must be attended to. Its entrance is between Ballagan and Cranfield Points, which bear from each other nearly E. by N. and W. by S., distant $2\frac{1}{2}$ miles. The channel is straight and its direction is 23 degrees west of magnetic north, and its length 1,500 feet. It is marked, at its outer entrance, by a Red Keel Buoy on the north or Cranfield side, and a Black Keel Buoy on the south or Ballagan side; said Buoys being moored with 11 fathoms chain, each at 225 feet from the centre line of said channel. The inner end of said channel is similarly marked by Red and Black Keel Buoys, similarly moored, and at the same distance from the centre line. These Keel Buoys carry a Circular Open Cage on top, and are marked C. Bar, Nos. 1, 2, 3, 4. To enter Carlingford Lough by this

channel keep Haulbowline and Greenore Lights in one until in the centre between the lines of the Red and Black Buoys; then keep midway between them, or within 150 feet of centre line either way until abreast of Haulbowline Lighthouse and then steer for Greenore. Tolls are levied on vessels as follows: For every vessel entering Carlingford Lough without delivering or loading cargo there, per registered ton 3d.; for every vessel entering or leaving Carlingford Lough, and delivering or loading cargo there, if coming from or going to any port in the United Kingdom or the Isle of Man, per registered ton, 6d.; if coming from or going to any port other than a port in the United Kingdom or the Isle of Man, per registered ton, 9d. Exemptions—All sailing vessels under 75 tons and all steam vessels under 100 tons exempt altogether; all vessels under 1000 tons exempt if they enter or leave between half-flood and the next half-ebb tide; all sailing vessels of and under one hundred and fifty tons and all steam vessels of and under two hundred tons delivering or loading cargo at the town or the river of Newry north of old Narrow Water Castle. The Helly Hunter, upon which a large Red Buoy has been placed, is a rocky shoal lying to the eastward of the entrance of the loch and stretching about 1 mile S.W. and N.E.; its western end dries with extraordinary low tides only, and on the other parts the least water is 6 feet. To avoid the Helly Hunter, as you sail to Carlingford from the E. or S., do not bring Mount Only to the westward of W. $\frac{1}{2}$ N. until the Blockhouse comes on with the top of Foy Mountain, bearing N.W. $\frac{1}{2}$ N. Then steer for the N. end of Block House or Haulbowline Island, giving the Point of Cranfield and the Island a berth of a cable's length each from the high water mark. Between the W. side of Blockhouse Island and Ballagan Point are several rocks and shoals, and consequently this passage must not be attempted.

Carlingford Loch Light, situate on Greenore Point, on the larboard side in going up Carlingford Loch, revolves, is of the natural appearance, attains its greatest magnitude every 45 secs., and is visible at a distance of 9 miles.

Carlingford Lights are shown from a tower erected on Haulbowline Rock, which lies upon the bar $\frac{1}{2}$ a mile W. by N. from Cranfield Point, on the larboard side of the entrance to the Loch. The upper is a fixed light, and the lower revolving. The higher light is shown throughout the night, and may be seen like a star of the first magnitude, at the distance of 15 miles. The lower light, having also a starlike appearance, is exhibited from half-flood to half-ebb. In the day during the same period, a ball is hoisted; and in foggy weather, a bell is tolled every half-minute.

NORTH-EAST AND NORTH-WEST COASTS OF IRELAND.

LOCH CARLINGFORD TO SLIGO BAY.

Annalong.—A small dry harbour, with excellent shelter for coasters after passing a narrow but easy entrance.

Newcastle.—A dry harbour, surrounded by a quay and sea-wall, affording good shelter for coasters, with an even bottom, and very easy access between the two pierheads.

Dundrum Harbour.—The entrance to Dundrum Harbour (a dry one) lies $2\frac{1}{2}$ miles eastward off Newcastle at the mountain foot. The Marquis of Downshire, has built a long two storied House, close to the western side of the entrance, the light colour of which is a useful guide for vessels endeavouring to make the harbour in thick weather. In the middle of the entrance channel a black buoy is laid down in 14 feet, low water spring tides. It may be picked up by keeping the old castle that stands above the town a sail's breadth in on the west point that forms the entrance. Steering north from this, you will arrive at a smaller buoy lying in the middle of the river; then by steering N.W. by W. you will come up with the first perch on the banks to the west, having on it a small barrel—give this a berth of half a cable's length on your larboard hand; after which by changing your course N. by E. you reach the second perch, having a triangle on it: allow this the same berth as the first. The third perch has a round black top. From the second perch, from which you have the town and pier open, steer N.N.W. up the river until abreast of the red-topped perch, to which give a berth of half a cable's length on your starboard hand, and then keep for the pier end.

St. John's Point.—On this Point in lat. $54^{\circ} 13' 10''$ N., and lon. $5^{\circ} 39' 50''$ W. is erected a tower, shewing an intermitting light, *Red* appearing of its full brightness during 45 secs. and ob. 15 secs. The light bears from Newcastle pier, (Dundrum bay) E. by S. $\frac{1}{2}$ S., $7\frac{1}{2}$ miles, and from the Calf of Man revolving lights N.W. $\frac{1}{2}$ W., 33 miles, and can be seen seaward from W. by N. $\frac{1}{2}$ N. to E. $\frac{1}{2}$ N. The light kept open will lead clear of Gun's Island and of the St. Patrick's rock, off the entrance of Strangford Lough.

Killough, half a league East of St. John's Point, has a good roadstead in off-shore winds, and, within, offers to coasters a safe dry harbour, with a muddy bottom. Killough Pier is built from the West side, and, between it and a smaller Pier on the East side, called Coney Island, lies the entrance to the port. Outside the entrance of the bay an Iron Perch marks

the Water Rock, which is covered only at high water: to avoid it, bring a remarkable two-storied house, with white front and slate roof, (called Cotter's House, and situated inside the harbour,) one-third inboard from the West Pier-head, until you have passed the Perch: then keep more to the Eastward till you bring the House over to the extreme end of the Pier. Two cables N.N.E. $\frac{1}{2}$ E. from the Perch is the Little Plate Rock, and half a cable N. from this is the Big Plate, both covered except at spring ebbs; and, consequently, when there is water to enter the harbour, there is also water over these rocks. The Garter, on which is an Iron Perch, is a ledge of foul ground which runs off from the western side of the bay, under the Old Mill Stump. There is also a spit of rough stones, called Craine's Point, extending S.W., a short distance from Coney Island; but by keeping Cotter's House midway between the two Pier-ends, when you come within two cables length of them, you avoid this spit. The best anchorage in the Bay is within the Water and Plate Rocks, in from about 5 to 7 fathoms, with shelter from all but southerly winds.

Ardglass Harbour, $2\frac{1}{2}$ miles E. of St. John's Point, is easily known by several old Castles and a rising town on the W. side of the bay. You can anchor at the mouth of the bay, between Ringfad and Fennick Points, in from 6 to 10 fathoms water, but if the wind blows on shore, a small vessel may shelter inside the pier, under the middle castle in from $1\frac{1}{2}$ to $2\frac{1}{2}$ fathoms water, with a warp to the quay, or run aground on the beach. A temporary red light is shown from the inner shore of harbour, 2 cables length from entrance N. by W.

Loch Strangford lies N.E. at the distance of 60 miles from the Hill of Howth, and nearly E.N.E. $\frac{1}{2}$ E. 28 miles from Loch Carlingford. The stream at the entrance is very rapid, and when the tide is ebbing and wind strong at S., S.E., or E., the sea is short and broken, which gives the bar across the river the appearance of a ridge of sunken rocks; but there are not less than 4 fathoms at low water on any part of the bar, and it is quite free from rocks. Few places afford such safety to wind-bound vessels as this Loch, ships having at all times of tide abundance of water, not only on the bar, but also in the two principal roadsteads, *Ballyhenry* on the east, after passing Portaferry, and *Audley's Road* on the west side of the river, after passing Strangford. A small pillar or obelisk, lately built on the outer point of Gun's Isle is a guide to vessels

from the southward, for making the square headed Iron Perch on rock Patrick. This rock covers at half-flood. It is $\frac{1}{2}$ of a mile outside Kildare Point, and has deep water on both sides, but it is best to leave it on the port hand, and steer for the Northern Bar or entrance, giving it a wide berth to the Gortar Perch, which marks the south end of the Reef of Rock Angus, on account of the western set of flood tide at this spot. On Rock Angus itself, stands a stone tower, to be left on the port hand. The starboard side or opposite side of the entrance is marked by the Perch on Pladdy Lug, which must not be approached nearer than 25 fathoms, on account of small outlying rocks. Off the north entrance and in a direct line with Kilclief Castle and Ballyculter Church spire (which when brought in one, are the marks for vessels from the N. and E.) is a black fairway Buoy, lately placed there by the Ballast Board. It should be rounded on the starboard hand, as there are several Pladdies between it and Ballyquintin Point. Having passed the Tower on Rock Angus $1\frac{1}{2}$ mile, come to anchor if you are late for the tide, opposite a White Beacon on the south shore, called Cross Roads, where you can stop a tide until you can get to Ballyhenry, or Audley's Road, 2 miles further, and just beyond Strangford and Portaferry towns. A short half a mile above Cross Roads the mid-channel is marked by a tall Red and White Pillar on the W. side, and a short white Beacon on the E. side of the Lough. The "Hole" of Strangford is a perfectly sheltered anchorage between the town and Swan Island, and there are 2 Quays opposite the Customhouse, with berths alongside them, and a little Bay with an even beach and smooth water for vessels desirous of taking the ground. There is also at PORTAFERRY (opposite) a good quay with berths and a smooth beach along the shore, under the town. A Horse Ferry plies between the two towns. There is a red pillar Beacon on the outer end of Swan Island which marks the entrance into the "Hole" of Strangford. On hoisting a signal, experienced pilots may be had.

South Rock Light is erected on the South Rock, about 2 leagues northward from the entrance to Loch Strangford. The light revolves, attaining its greatest lustre every $1\frac{1}{2}$ minutes, and is visible at a distance of 12 miles. A reef of rocks called the Ridge, extends $1\frac{1}{2}$ miles to the E. of the lighthouse, on the extremity of which is a red Buoy, which bears about S. by E. from the North Rock Beacon. The North Rock, about a mile N. by W. of the Lighthouse, is marked by a solid Beacon, like a small church spire, erected in 1856. The Butter Pladdy, about $1\frac{1}{2}$ miles S. W. of the lighthouse, is marked

by a Black Buoy, to be left on their outer hand by vessels taking the "Sound of the Light"—a channel much frequented by coasters and now well marked, between the lighthouse and the North Rock Beacon. Sailing along the Downshire shore from the Copeland to the North and South Rock, the South Light should be kept outside of Burr Isle, or the Black-head of the Gabbans, in Isle Magee, a sail's breadth outside of Donaghadee shore, or the Copeland Light North to clear Sculmartin Rock that lies N. $\frac{1}{2}$ E. $3\frac{1}{2}$ miles from Burr Isle, and S. E. 1 mile from the town of Ballywater. To the northward of Sculmartin, on which is an Iron Perch, lie Ballawater Rocks, which stretch out about $\frac{1}{2}$ a mile, commencing at Ballyferris Point, and runs S. 2 miles. the S. end is seldom covered, the middle is covered at half-tide, the N. end seldom bare. Vessels of 60 and 70 tons frequently go in to discharge; and there is good shelter from all but N. E. winds, though the space is small, because after building the Quay, the Board of Works never cleared away the loose stones inside it. Six and a half miles N. of Ballywater is

Donaghadee.—This harbour has been greatly improved, and there is now a depth of 10 feet water at low water, spring tides, in the improved portion of the harbour, which extends along the S. pier, from 100 feet west of the western craine to the black buoy, and thence to the N. Pier head. From the S. E. pier head a light is shown, red to seaward from N. by E. $\frac{1}{2}$ E. to S. $\frac{1}{2}$ E., and bright towards the harbour and the entrance of Belfast Bay. Sailing in from the S'ward keep above half a cable's length from the shore until the harbour is open, then run in and let go your anchors inside the pier head. No buoys are allowed to anchors on account of the steam packets. Mariners must be on their guard not to lose sight of the red part of the light in sailing N. or S. of Donaghadee. About a mile north of Donaghadee is Foreland Point, from whence extends a ledge of rocks to the E., with an Iron Perch on it, and outside of that again is a large black buoy, which should not be rounded too close, particularly at low water. Deputy rock, on which is a red buoy, lies half way between Donaghadee and Copeland, and has about 8ft. at low water. The proper course through the sound is between the Foreland and Deputy boys: but there is a channel on the E. side of the latter, keeping $\frac{1}{2}$ from the Copeland, as a shelf of foul ground runs out after passing the Deputy. Cairn Point, at N. W. end of Copeland, must have a good berth on the starboard hand, to avoid a rock called Gordon's Bush, that lies a cable's length S. of it, and is seldom bare at low water. These are all to be feared in the Sound of Donaghadee.

Copeland Island lies $2\frac{1}{2}$ miles N.E. $\frac{1}{4}$ N. from Donaghadee, and 1 mile to the E'ward of Nout Head. E.N.E. 1 mile from Copeland, are the Cross and Mew Islands, between which is a narrow channel not navigable. On the Cross Island is the Copeland Light. Between these small islands and the Copeland is the outer sound. On the E. side of the Copeland, near the S. point, is a ledge of rocks extending above two cables length to the E'ward; there is also a ledge extending from the Mew Island to the W'ward, between these is the channel. Half-way between the sound of Copeland and Cross Island, is a small rock called the Pladdins, over which are, with common spring tides 3 or 4 feet water; it bears S. $\frac{1}{4}$ W. off the light. To avoid this rock on the east side, bring the lighthouse N. by W.; on the south side, bring the S. W. house in Donaghadee in sight with the S. end of Copeland Island. In this sound the currents are strong, and as there are no buoys, is to be avoided by strangers.

Belfast.—The entrance to Belfast Lough is immediately to the N. of Copeland Light, and lies between said Light and Black Head; the latter bearing from the former N.N.W., distant about eight miles. At the larboard side of the entrance, about a mile to the W. of Orloch Point, is a rocky ledge called the Briggs, stretching out $\frac{3}{4}$ of a mile, and upon which is a red Buoy. About 6 miles to the W. of the Briggs is Grey Point, and, in a sort of bight between them, is the town and harbour of Bangor, which has about the same depth of water at the quay as is to be found at Carrickfergus, and, as an addition, a wooden wharf for the accommodation of steamers has been attached to the back of the stone pier, at which 7 feet will be found at ordinary low water. Two miles further W. from Grey Point, a small ridge of rocks runs out from the shore rather more than a $\frac{1}{4}$ of a mile, on which is a buoy to be kept on the port-hand. On the opposite side of the Lough, and bearing W. by N. $\frac{3}{4}$ N. from Orloch Point, distant 9 miles, is the town of Carrickfergus, where there is a pier, having, with spring tides, 10 feet water and with neaps 7 feet. As a guide to the entrance of this harbour at night, a red Light is shown 2 hours before and 2 hours after high water: this light to be brought immediately over a street lamp in Governor's place—the red light showing about 2 feet above the white light, and from a vessel coming in due north. Outside the old castle and pier at Carrickfergus there has been erected a wooden jetty, where there is 6 feet water, and the Lough steamers call, weather permitting, during the summer season. Off this town to the S. and W. is a bank running out $1\frac{1}{2}$ miles from the shore, and extending

N. $1\frac{1}{2}$ miles; the least water over it is 7 feet. Extending a mile from the shore on the S. side of the Lough, and opposite the village of Hollywood is Hollywood Bank, on which is a Lighthouse built on screw piles, which shows a pale red light, visible 8 miles in clear weather. Between the Hollywood and middle bank is the commencement of the pool of Garmoyle, which extends from abreast the large red buoy on the starboard hand, having from 3 to 4 fms. at low water. From Garmoyle the channel up to Belfast is now nearly straight, having above 10 feet at low water, spring tides; it is well buoyed—red on the larboard, and black on the starboard hand going up the quays. There is also a green light on Hollywood Bank, with three more of the same colour towards Belfast, all of which are to be left on the port side when going up. There is also a red light S.W. of the stone beacon to be left on the starboard side. Large ships usually anchor off the town of Carrickfergus, near the middle of the Lough. Many vessels frequent this anchorage, which is marked on all the Admiralty Charts of the Lough, and Masters of ships pronounce it excellent. Vessels drawing not more than 16 feet water may anchor higher up in the Folly Roads—between Carrick bank and abreast of White Abbey; smaller vessels in White-house Roads. Large vessels drawing 18 feet water, intending to reach the quays, may anchor in Garmoyle. A large pilot cutter is constantly under weigh during the daytime, at night also, (weather permitting); and generally boards vessels bound to Belfast abreast of Grey Point. The Briggs of Kilroot, now a perch on them, lie on the north side of the Loch, and stretch almost from Kilroot Point to White Head, and about a quarter of a mile from the shore to avoid which keep Black Head open with the White Head, and a vessel will be clear of all danger.—The Admiralty Chart of 1856, as surveyed and reported on by R. Hoskin, Master R.N., states:—Belfast Lough is an admirable refuge harbour. Above Grey Point ships may ride securely against all winds.

Loch Larn.—A lighthouse is erected on Farres Point, on the l'board hand, going into this spacious Loch, opposite which are the Maiden or Hulin Rocks. Sailing into Larn from the S.E. pass Muck Island, Brown's Point and Bay, give Barr's Point a berth near half a mile, as a ridge of rocks runs off above quarter of a mile; give Farres Point (on which is the lighthouse,) a berth of half a cable's length: run for Corran Point on Larn side, on which stands the ruin of an old castle, giving the Isle Magee side a large berth, as a long shoal runs out from it very near half-way across to the steam-packet's wooden wharf, opposite the salt

pass, and continue to near the Point of Racknow, round which is Yellow Stone Roads, sheltered from all sea, and little tide. There is a long flat runs out from N.W. side of the entrance, which, when covered, is so deceitful to strangers, that they should open the mouth of the Loch well; keep no more than two cables' length from the lighthouse, run up past the wooden wharf, giving it a berth on the starboard hand. Anchor $\frac{3}{4}$ of a cable's length from Isle Magee shore. Small vessels from above the wharf should run up abreast of Corran Point in 2 fathoms keeping one third from Corran shore, and two-thirds from the Island. Large vessels should come to further out, about one third from Corran side. There are no rocks in Larn Loch and should a vessel run too far, she will only go on soft sand or mud. A stranger going in, in the night, should take his soundings from Isle Magee shore; but going to the Yellow Stone Road should take a pilot. Vessels may run in without anchors or cables—there are no rocks or shoals to interrupt them, coming from the southward, except Barr's Point before mentioned, and Hunter's Rock. Four miles of the mouth of Larn Loch, and 4 miles N. $\frac{1}{2}$ W. from Knee or Muck Island, the Sound of Muck appears open, and Corran Castle on with Larn Lighthouse.

Maiden, or Hulin Rocks Light

Two lighthouses marked with broad red and white belts, are erected on the Maiden or Hulin Rocks. These rocks bear by compass from the Mull of Cantyre Light, S.S.W., distant 24 miles; from Sanda Island, S.S.W. $\frac{1}{2}$ W., 18 $\frac{1}{2}$ miles; from Ailsa W.S.W., 23 miles; from Copeland Island light, N. $\frac{1}{2}$ E., 16 $\frac{1}{4}$ miles, and from the eastern extremity of Rachlin Island, S. by E., distant 20 and a half miles. The lights are distant from each other 320 fathoms, and bear N.W. by W. and S.E. by E. The mariner in passing should give them a wide berth, there being a number of sunken rocks extending upwards of 8 miles N. and 1 $\frac{1}{2}$ miles S. of them.

Ballicastle Harbour.—Opposite Church Bay on the Irish coast, is Ballicastle Harbour, formed at the mouth of a small rivulet near the town affording shelter for small vessels drawing 7 feet water, for at high water there are 9 or 10 feet between the pier heads, with spring tides, and 8 feet with neaps. In summer ships may ride near the W. side of the bay in 9 or 10 fathoms water the glass-house bearing S.S.W., Sheep Island being shut in with Kinbane Head, and Clare House bearing on the top of the cliff near it; but it will not be prudent to lie long here. Should the wind blow from the N. or N.W., and a swell begin to set in, weigh anchor, and rounding Tor Point, make for Cushinden, Cushindaal, or Larn.

The **Skerries** lie W. by N. 5 miles from Bengore Head, and about a mile from the shore; on the south side of the largest of these Islands, where it appears lowest, a vessel may anchor in 6 or 7 fathoms water, a little more than a cable's length from shore. In sailing into this anchorage be careful of the Stirks on the east side, and of the Kers on the west side: they lie a little to the southward of a cluster of rocks about half-a-mile westward of the Skerries, and dry at four hours ebb.

Port Rush is much improved by a pier and quay; there are from 8 to 24 feet within the harbour, while off the mouth of the port a vessel may anchor in 6 to 8 fathoms, on a bottom of sand. On entering the harbour you must give the North Pier a berth of at least 15 yards, to clear the stones which have been placed to break off the swell, which are covered at $\frac{3}{4}$ flood.

Loch Foyle is a capacious harbour where the largest ships may ride in safety in all weathers; but the best place for large ships is on the N. side, 3 or 4 miles within the entrance, in from 5 to 8 fathoms water: but vessels of 11 or 12 feet draught will ride easiest between Quigley's Point and Ture, in from 2 $\frac{1}{2}$ to 3 fathoms. The danger to be avoided is the Tuns Bank, which lies on the S. side of the entrance, having a channel between it and the land, on the N. side $\frac{3}{4}$ of a mile wide. To sail into Loch Foyle, wait for flood tide, or a brisk leading wind to stem the ebb, which runs at the rate of 3 $\frac{1}{4}$ knots in the entrance: keep Glengad Head 2 or 3 ships' length open off Inishoan Head, until the mouth of Derry River at Kilmore Point is a little open of Magilligan's Point; then steer for the entrance, keeping $\frac{1}{2}$ of a mile from the N. shore, and you will pass between it and the Tuns Bank: when you are within Magilligan's Point, you may keep at a greater distance from shore, and run up to the anchorage. On Donagree Point, a little to the S. of Inishoan Head, are two lighthouses, bearing from each other E. and W., distant 153 yards. The lights are fixed, visible 13 miles, and when in one lead clear of the Tuns Bank.

Inistrahul Island, on the N. E. part of which a lighthouse stands, is 6 miles N. $\frac{1}{2}$ E. from Glenegad Head, and 4 miles from the nearest shore. The light makes a revolution every two minutes.

Loch Swilly.—The entrance of this Loch lies 7 miles W. by S. from Malin Head, and is about 3 $\frac{1}{2}$ miles wide, from shore to shore. Fannet Point is a low point at the W. side of the entrance; it is distinguished by a lighthouse which displays a steady light, which, when seen from sea, appears of a deep red colour but from within the Loch, bright. This

is a safe harbour for vessels of any size, but the best anchorages are off Burncranah House, 2 or 3 cables' length from shore, in from 4 to 8 fathoms, or between the Island Inch and Rathmullin, rather nearer to the latter, in from 5 to 8 fathoms.

Mulroy Harbour is known at a distance by Tory Island, Horn Head, and Rosgull Hill; it has water sufficient for the largest ships; but a part of the channel is narrow and difficult. Strangers should always take a pilot.

Sheephaven & Downing Bays.

—Few vessels like to run for Sheephaven as many get on shore, yet some are compelled, not being aware of the excellent anchorage at Downing Bay, which lies on the E. side, at the bottom of Sheephaven. The bay is formed by points called Downing and Murlach. Close under Murlach Point is the anchorage, in from 4 to 6 fathoms. In running for it from Hornhead, the course will be S.E. by S., distant six miles, care being taken to give a berth to two half tide rocks about a cable's length N.N.W. from Downing; when the sea breaks on them, which it generally does, they may be approached as most convenient; there are no other dangers.

Tory Island, the east end of which lies $7\frac{1}{2}$ miles N.W. from Horn Head, has no good anchorage on its S. side; but in the summer season, with S. winds, a vessel may stop on the north side in 18 or 20 fathoms, within half a mile of the shore. On its N.W. end is a lighthouse, exhibiting a steady bright light, visible from seaward 16 miles all round; but when passing to the S.E. of the Island, is shut in behind the heights between N.W. by N. and N.W. $\frac{1}{2}$ W.

Rathlin-O-Birne.—This island lies 2 miles S.W. $\frac{1}{2}$ W. from Malin More Head,

and is about $\frac{1}{2}$ a mile long and $\frac{1}{2}$ of a mile wide. A lighthouse has been erected upon it, in N. lat. $54^{\circ} 40'$ and W. long. $6^{\circ} 50'$ exhibiting a flashing light, at an interval of 20 seconds, visible at a distance of 16 miles, but red towards the mainland and sound, eastward of that island.

Donegal Harbour is on the E. side of the peninsula, called the Hassens, or Green Islands, 2 miles below the Town of Donegal, where small vessels may ride in 2 or 3 fathoms water at about a cable's length from shore. To sail in, take half-flood, and keep about $\frac{1}{2}$ a mile from the shore on the larboard or N. side, until you are near the Black Rock; then steer E. $\frac{1}{2}$ N. until you are a cable's length past it: you may then steer directly for the Green Islands, giving the north shore a berth of about two cables' length.

Sligo Bay is to the southward of the point of Raugly, and at the N.E. side of the bay is the entrance to Sligo Harbour; S. by E. $\frac{1}{2}$ E. from Raugly point is Black Rock, covered at high water, on which is a fixed bright light, shewing from S.W. seaward to S. E. by S. and seen at a distance of 13 miles. To sail in, keep about 2 cables' length to the northward of the lighthouse, in order to avoid the shoal water on the N. side of the rock. The only place where a vessel will lie afloat at all times of the tide, is Oyster Island Harbour, but the bottom is rocky, and does not hold well. On this Island are two fixed lights, bearing N.N.W. $\frac{1}{2}$ W. and S.S.E. $\frac{1}{2}$ E., 165 yards from each other. After passing the bar, the lights in one clear the Bun Gar Bank, and lead to the entrance of the harbour, or up to the Metal Man Beacon.

SOUTH-EAST COAST OF IRELAND.

WATERFORD TO BALTIMORE.

Waterford Harbour.—From Great Saltee Island to Hook Point, on which Waterford Lighthouse is erected, the bearing and distance are, W.N.W. 13 miles; and from the Longship Lighthouse off the Land's end, N. $\frac{1}{2}$ E. 43 leagues. When coming from the S. or the E. for Waterford, bring Sleanaman Mount a remarkable mountain inland, to bear N. E. until you see Hook Lighthouse on the E. side of the entrance of Waterford Harbour, from which a bright and steady light is exhibited. Go not nearer Hook Point than about 2 cables' length, to avoid falling into irregular streams of tide that run near it. Having passed the Hook, and intending to proceed for the anchorage at Passage, take a flood tide or a leading wind, and steer for Credan Head, giving it a berth of at least $\frac{1}{2}$ a cable's length.

From Credan Head steer N. E. by N. for Duncannon Fort, carefully avoiding the sand banks which extend from both shores. That on the starboard side begins at Bluff Head, extends more than half a mile from the shore, and terminates at Duncannon Fort. Between Bluff Head and Duncannon Fort is Ballistraw Bay. The sand on the other side, called Drumroe Bank, extends more than a mile from shore, and narrows the passage abreast Duncannon fort to about a quarter of a mile. Two lights in Duncannon Fort, one above the other, are exhibited to direct vessels to that point. On the flat, or what is known as "the bar," 14 feet of water can be had on the lowest spring tides. This shallow lies nearly midway between Credan Head and Duncannon, extends for about a mile in length, and is

composed of hard sand; the course by compass over it is from N. N. E. $\frac{1}{4}$ E. to N. N. E. $\frac{1}{4}$ E. Another lighthouse, having a fixed bright light, is erected N. N. E. $\frac{1}{4}$ E. from Duncannon Fort lighthouse, distant half a mile. These two lights kept in a line, will lead in the best channel across the bar between the eastern and middle buoys. When above the lights keep near the eastern side, steering about N. $\frac{1}{4}$ W. for the church of Ballihak, until the new lighthouse at the point of the Spit of Passage comes on with the town of Passage; you may then steer upward N. W. by N. in mid-channel. Abreast of this new light house are 10 or 11 fathoms. The usual anchorage is about a mile above Passage Town, in 5 or 6 fathoms. Two or 3 miles above Passage is very good anchorage, and there the stream is much weaker than at Passage. In proceeding for this place, avoid a spit of sand called the Seedes Bank, which stretches off about W. S. W. from Buttermilk Castle, extending about half-way over to the opposite side; the least water on it is 9 feet. Avoid also a small rock which dries at low water, and has fourteen feet over it at high water, which lies about half a cables' length from shore, on the south side of Cheek Point. In proceeding about low water, keep in the middle between the two points, or rather nearest to Buttermilk Point; if the flood-tide be running, keep in the rough part of the stream, and you will clear the shoal. Vessels drawing 20 or 22 feet water may go up to Waterford, where there are 2 fathoms at low water, a ship's length from the quay. The safest channel to Waterford is on the north side of little Island: the channel on the other side is deeper, but it is narrower, and subject to eddy-tides, which make it dangerous. Pilots may always be had at the entrance of the harbour. A lighthouse has been erected upon seven iron piles, at the Point of the Spit of Passage, seven miles within the entrance of Waterford Harbour, a fixed Red light will be shown from the lighthouse every night from sunset to sunrise.

Dungarvan Bay.—A lighthouse has been erected on Ballinacourty Point, on the northern side of Dungarvan Bay, with the following marks and compass bearings:—Helvick Head, S. $\frac{1}{4}$ W., $1\frac{1}{2}$ miles; Carrickapane Rock, S. S. E., 9 cables' length; and Whitehouse Spit, W. by N., $3\frac{1}{2}$ cables' length. It shows a fixed bright light, visible between the bearings of W. and S. E. $\frac{3}{4}$ S.; green, bearing from W. to N. W. by W.; and red in the direction of Carrickapane Rock. Its white appearance can be seen at the distance of about 10 miles in clear weather.—The intermittent light on Mine Head, S. W. by W., 4 miles from Helvick Head, marks the approach from the westward to Dungarvan Bay,

and can be seen further eastward than the range of Dungarvan light. A vessel in the entrance of Dungarvan Bay must keep clear of the red colour of the light to avoid Carrickapane Rock; and on the northern side of the bay keep to the southward of the green light to avoid Carricknagaddy, and the rocks which extend half a mile eastward of Ballinacourty Point.

Youghall Harbour lies about 13 miles W. S. W. from the entrance to Dungarvon. During high water, spring tides, ships drawing fully 17 feet may go in, and ride off the middle of the town. Across the mouth of the harbour is a bar, which extends above a mile south from the entrance, and has 6 to 9 feet on it at low water. Except when the wind blows from the south, south-east or south-west, there is always smooth water on this bar; 14 to 15 feet water are on it at high water, neap tides. When Cable Island bears W. S. W. you are on the outer edge of the bar. When sailing for Youghall Bay from the southward, keep Knockmellown Mountain N. by E. To anchor when waiting to go over the bar, the best places are on the S. side of the bar, the harbour mouth bearing N. N. E., in 3 or 4 fathoms: or on the north side of Cable Island, in 3 to 6 fathoms, about 2 cables' length from the shore. From a tower on the west side and within the entrance, is shown a fixed bright light, open to the harbour, and seaward to S. W. by S., and may be seen at a distance of 6 miles.

Cork Harbour.—From a tower on Roche Point, at the east side of the entrance, is shown a red light, revolving every minute, and visible at the distance of 12 miles. From it Cork Head bears S. W. by W. about 4 miles. A fixed white light is also exhibited, visible between the bearings of N. E. by E. and N. E. $\frac{1}{4}$ N., to pass eastward of the Daunt's Rock. From the Longship lighthouse off the Land's End to the entrance of Cork Harbour is 46 leagues N. by W. $\frac{1}{2}$ W. Coming from the southward, and bound to this harbour, keep Knockmellown Hill about N. E. by E., until you see the Old Head of Kinsale, a bluff point of land with a lighthouse on it. From this Head the entrance of Cork harbour lies E. $\frac{3}{4}$ N., distant about 5 leagues. When off the harbour, Roche Tower with its lighthouse is remarkable. A little without the point, on E. side of entrance, lie the Stag Rocks. There is clean ground in a moderate depth without the harbour's mouth, where ships may, with a northerly wind, wait the flood or daylight. A red buoy is placed on the edge of the bank off Fort Camden; another red buoy about a mile further in, to the northward of the entrance to Cross Haven; a third of the same colour, off the east side of Spike

Island; and a red buoy on the eastern extremity of East Haulbowline Bank. Each of these buoys is numbered. There are also several black buoys on the side opposite, on the edge of the mud flat: they lie in 4 fathoms, and are likewise numbered. Having passed the narrows, which is about 450 fathoms over, the channel continues that width on a N. by E. and N.E. direction, between the red buoys on W. and black buoys on E. side, to the anchorage off Spike Island, on sandy ground; thence it leads upwards, narrowing round the beacons on the northern side of the Spit extending E.S.E. from Haulbowline Island, close in to Queenstown on the north shore. At the entrance of the passage to Queenstown is a black and white buoy; and at about 160 fms. to the S.W. of this, in $2\frac{1}{2}$ fms., is the Lower Spit Buoy, red. The Upper Spit Buoy, red, lies in 9 feet, N.W. by W. $\frac{1}{2}$ a mile from the Lower Spit Buoy. Here the tide runs 2 or 3 knots; it is high water on the full and change at half-past 4, and the tide rises from 9 to 13 feet. Large ships going in at or near low water must be careful to avoid the Harbour Rock, which lies a little within the Stag Rocks, on the east side. On it are two iron trunk buoys about $1\frac{1}{2}$ cables' length apart: one on the eastern chequered red and white with beacon; the other on the western edge chequered black and white. It has fifteen feet on it at low water spring tides. About half a mile N. by E. $\frac{1}{2}$ E. from the Harbour Rock lies the S. end of the Turbot Bank, extending thence N.W., and which has on its shoalest part, the north end, 18 feet low water average springs. The middle of this bank lies with a remarkable dark stone building, on the precipitous part of Kenly Cove, bearing W.S.W., and touching the projecting part of the land south-eastward of Temple Breedy Church. It has on it two iron trunk buoys about a cable's length apart: one on the east, chequered red and white, with beacon; the other on the west side, chequered black and white. In order to avoid the shoals on the east side, keep within two cables' length of the eastern shore; or bring the lower part of the white wall, which stands to the S'ward of the Fort upon Dog's Nose, on, or under the west bastion of that Fort. There are buoys placed in nearly mid-channel inside of Dog's Nose, marking a fairway, which is bounded on the east by black buoys marking the shoals on the eastern side, and on the west by a line of fairway buoys coloured black with white tops, which extend as far as Queenstown. To go to the westward of Harbour Rock and Turbot Bank, keep the fort on Dog's Nose open to the westward of the lower part of the white wall above-mentioned, or when

without the harbour, bring and keep a village which appears upon a hill on Great Island, over some pine trees, touching the point of Dog's Nose, bearing N. 21 degrees E. which will lead clear of all dangers on that side. To go between the shoals, keep the flag-staff in the fort of Dog's Nose, on, or over the lower part of the white wall. To avoid the Harbour Rock on the S. side, keep the Crow Rock on with Poor Head. The Turbot Bank may be avoided by keeping nearer to the E. than to the W. side of the entrance. Between the Harbour Rock and the east point are 5 to 6 fathoms; between the Harbour Rock and Turbot Bank are 6 to 7 fathoms; and between the bank and the western shore are 5 and 6 fathoms at low water. About a mile E. by N. from Haulbowline Island, extends the Spit Sand, which begins to dry on the north side at half ebb, and shelters the anchorage at Queenstown. On the east elbow of this bank a lighthouse has been erected on screw piles, in 9 feet; it exhibits a fixed Red light, visible from N.N.E. $\frac{1}{2}$ E. to S.E. by E. $\frac{1}{2}$ E., round by eastward, and a distance of 8 miles. Masters of vessels are cautioned not to cross the bank between the lighthouse and Haulbowline Island, and to give the lighthouse and detached beacon pillar sufficient berth in passing. In going from Dog's Nose for the anchorage off Queenstown, keep Dog's Nose Point S. by W. $\frac{3}{4}$ W.; or steer for the easternmost part of the fort on the N. shore, between the black and red buoys to avoid a flat which extends in some parts a mile from the E. shore, and also a rock that lies to the westward of Cork Beg, which appears at half-ebb, with a beacon on it. The best place for large ships to anchor is off the garrison, in from 8 to 5 fathoms. Merchant ships may ride off the town of Queenstown in smoother water and less tide, they may also go further up the harbour of Passage, and ride any where between the first houses and Ronan's Point. In proceeding from Queenstown to Passage, do not approach nearer than half a cable's length to the south side of Black Point; and give the W. side of it a berth of about a cable's length, to avoid a sand which extends from that shore, and dries at low water. You may go westward from Haulbowline Island, until you see Ronan's Point in the channel of Passage; then steer N'ward along the W. side of the channel, for the anchorage. Vessels drawing sixteen feet may, with spring tides, go up to the city of Cork, and lie at the quays with nine feet at low water, average tides. Between Passage and Horse Head is a spit of sand, of 6 feet water, extending above a cable's length eastward from the Clay Cliff: you will avoid the extremity of this spit by

keeping Dunkettle House on with a grove of trees which stand on the top of a hill above the House. The point of this spit lies with Belveley Castle and Ronan's Point in one; and vessels which anchor near it, should have the Castle fairly without Roan's Point, or wholly shut in with it. In a small creek called Cross Haven, within the entrance of Cork Harbour, and on the west side, opposite Dog's Nose, vessels may ride in 10 or 12 feet.

Kinsale Harbour.—A new lighthouse has been erected on the Rocky Point at the S. end of the old head, distant half a mile S.S.W. $\frac{1}{2}$ W. from the old lighthouse, bearing from Bulman's Rock S.W. $\frac{1}{2}$ W. $4\frac{1}{2}$ miles. This light is a fixed bright light, similar to that heretofore shown from the old lighthouse, and is visible from N.E. $\frac{1}{2}$ N. seaward to W. by N., and at the distance of 21 miles. In sailing towards the harbour from the southward, keep Knockmoldown Hill N. E. by E. until you see the Old Head of

Kinsale: after making that, which is about $3\frac{1}{2}$ miles S.W. by S. from the entrance of the harbour, run in until the old lighthouse on it bears W.N.W. about 3 miles; then run in N.W. by W. until the old lighthouse bears S.W. by S.; and then steer N.E. by N. until you are abreast of the lower cove, where you may anchor in 6 fathoms. The only danger near Kinsale Harbour is Bulman Rock, which lies about a cable's length S.S.W. $\frac{1}{2}$ W. from Hangman's Point on the E. side of the entrance, and has 4 feet on it at low water. This rock is buoyed, and may be passed on either side, but the channel on its W. side is the safest for ships coming in or going out.

Baltimore Harbour lies about $5\frac{1}{2}$ miles to the north eastward of Cape Clear, and is very convenient for ships bound either eastward or westward. Small vessels may ride 2 or 3 cable lengths N.N.W. of Baltimore Town, in 10 or 11 feet at low water, sheltered from all winds.

BRISTOL CHANNEL.

LIGHT VESSELS AND BUOYS.

Light Vessels are moored, and Buoys laid in this Channel as follows:—

Light Vessels.

A LIGHT VESSEL, exhibiting a bright light, which revolves every minute, and is visible 10 miles, lies near the English and Welsh Grounds, on the south side of the Bristol Channel, and in lat. 51 deg. 26 min. N., and long. 2 deg. 58 min. W. This vessel is painted red, carries a ball during the day, has the words *English and Welsh Grounds* upon her sides, and is moored on the northern edge of the sand in 6 fathoms low water, spring tides, about 10 miles from King Road, with the high land at Minehead on with Flat-holm Light Tower, W. by S.; the Usk Light Tower, N. by E. $\frac{1}{2}$ E.; a remarkable Peak on the distant land (See mee or See-me-not), on with St. Thomas' Head, S. $\frac{1}{2}$ W. A gong is sounded in foggy weather.

Off the west end of the Skerweather Sand there is a **LIGHT SHIP** placed to prevent the stranger from passing into the dangers of Swansea Bay. It exhibits a Red Revolving light, shewing a flash every 20 seconds, at an elevation of 38 feet above the level of the sea. It is intended to show half a globe above the usual globe. Calculations for bearings and distances can be ascertained sufficiently accurate, by judging that of the West Skeawather Buoy.—The light is regarded as being very obscure, and this is accounted for by the lowness of

the north shore, which conveys a mist over the Swansea Bay. It is, however, very serviceable, and is relied on when entering the Bay.

A LIGHT VESSEL, bearing a bright light, which revolves every minute, and is visible 10 miles, lies off the western end of the Helwick Shoals, and in lat. 51 deg. 31 min. N., and long. 4 deg. 24 min. W. This vessel is painted red, shows a ball in the daytime, has the word *Helwicks* upon her sides, and is moored in 17 fathoms, low water, with Oxwich Point, E. by S. $\frac{3}{4}$ S.; Worm's Head, N. E. by E. $\frac{3}{4}$ E.; Caldy Lighthouse, N.N.W. $\frac{3}{4}$ W.; Lundy Island, S.W. $\frac{3}{4}$ W., 22 miles. During foggy weather a gong is sounded.

Near the western end of the One Fathom Bank lies a **LIGHT VESSEL**, exhibiting a quick revolving bright light every 15 secs, at an elevation of 38 feet above the water, and for the purpose of distinction a fixed red light will also be shown from a pedestal abaft at an elevation of 14 feet. It is moored in 8 fathoms, with Nash High lighthouse, nearly midway between the low lighthouse and St. Donat's White Mark, (rather nearer the latter), N.W.; Barry Church, in line with the easternmost Cliff of Cold Knap Point, N.N.E. $\frac{1}{2}$ E.; Penarth Church, in line with the east end of a clump of trees N.E. by E. $\frac{1}{2}$ E.; Nash high lighthouse, N.W., 10 6-10 miles; Breaksea Bnoy, N.W. $\frac{3}{4}$ N., 5 miles; Barry Church, N. N.E. $\frac{1}{2}$ E., 3 7-10 miles; Flat-holm lighthouse, E, 7 1-10 miles; One Fathom

Bank Buoy, E. by S., 2 2-10 miles; West Culver Buoy, S.S.W., 3 5-10 miles.

A Red Light will be shown from the Tower of the Nash High lighthouse on a bearing from S. 46° E. to S. 57° E., the Southern limit of which will cut 2½ cables south of the Breaksea Buoy. A Red light will also be shown on and after this date from the Low lighthouse at Burnham, between the bearings of N. 81° W. and N. 86° W., the Northern edge of which will cut the Gore (in its present position) and the Little Gore Buoy. And a Red light from the same lighthouse will be shown up the River between the bearings of S. 1° W. and S. 10° W.

CARDIGAN BAY LIGHT VESSEL lies in 26 fathoms, low water, spring tides, one Red revolving light, shewing a flash every 30 seconds, 25 feet above the level of the sea, South Bishop Lighthouse, S.W. by W., 36½ miles; Strumble Head, S.W. ½ S., 21½ miles; Kenmaes Head, S. ½ W., 16½ miles; Causeway Buoy, E. by N. ¾ N., 25 miles; Bardsey Lighthouse, N. E. by N., 23 miles.

Buoys.

MORTE STONE, Red, Staff and Globe, lies in 9 fathoms low water, spring tides, 1½ cable's length to the N.W. of the Ledge; Bull Point, E. ½ S., 1½ miles; Morte Point, S.E. ½ S., ½ mile; Baggy Point S.W. by S., 2 7-10 miles, Hartland Point, W. by S. ¾ S., 14 4-10 miles; Lundy Lighthouse, W. by N. ¾ N. 16 miles. This Buoy warns mariners of a dangerous and rocky locality over which the tide sweeps at a terrific rate.

SAND RIDGE, Red, lies in 4 fathoms low water spring tides, with the Valley of Rocks Hotel, midway between Linton church and a conspicuous house on a hill westward, bearing S.W.; Hurtstone, apparently a cable's length outside the Foreland, S. E. by E. ½ E.; Rillage bearing W. by N. ½ N., 10 miles.

GORE, Black, lies in 18 feet, Burnham High Light its length open northward of Low Light, bearing E. by S. ¾ S.; Flatholms Island, its apparent length open west of Steepholms; the Lighthouse, N. E. by N., 9 miles; Sand Point appearing open of Brean Down Point, N. E. by E. ½ E.

WEST CULVER, Red, and White in horizontal bands, with staff and diamond, lies in 4 fathoms, with Swallow Cliff, a little open of the South of Steepholme Island, E. ½ N.; Willet's Tower, well open to the Westward of West Quantocks Wood, S.S.W. ¼ W. Westerly; East Culver Buoy, E. ½ S., 5 miles.

EAST CULVER, Red and White in horizontal bands, with staff and triangle, lies in 6½ fathoms, with Penarth Head, on with Lavernock Point, N.N.E. ½ E.; Black Nose Point, just open Southward

of Steepholm Island, E. by N. ½ N.; Flatholm Lighthouse, N.E. ½ E.; Burnham Church Tower, S.E. by S.

HONEYCOMB, Red, lies in 5 fathoms, about 35 fathoms N.W. of the Rock, with Weston-super-mare Church on with W. end of Piggot's Summer House, S.E. ¾ E.; Kewstock Church about a ship's length open N. of Breanbeck Island, E. by S. ½ S.; Brean Down Point, S. W.; Swallow Cliff Point, N.E. by E. ½ E.; Flatholm Lighthouse, N.W. ¼ W., 4 miles

NEW PATCH, Red and White in chequers, lies in 9 feet, with the high land of Minehead just open Southward of the South end of Flatholm Island, W. ¾ S.; Flatholm Light, W. ½ S. S'ly., ½ mile; Grounds Light E. by N N'ly. 6 5-10 miles; Cardiff Church Tower, and the two Glass House Chimnies at Cardiff, apparently at equal distances, the Church Tower being the Eastern object, N. ½ E.; Hayes' Windmill over the East end of Sully Island, N.W. ¼ W.; Penarth Church, N. ¾ W.

WOLVES, Red, lies in 5 fathoms, half a cable's length westward of the rocks, with Hayes' Windmill on with the West end of Sully Island, N.W.; Breaksea Buoy bears W.N.W. W'ly., 10 miles; Penarth Head, N. by E. ½ E.; Flatholm Lighthouse, S.E. ½ S. The Wolves are a dangerous cluster of rocks: the tides both ebb and flow, set directly on them, therefore great caution is requisite.

SOUTH WEST PATCH, Red and White, in horizontal bands, with staff and triangle, lies in 4 fathoms, with Worle Mill in a line with the western side of Middlehope Beach, S. ½ E.; Monkstone Beacon W. ½ S., 4 miles; Flatholm Lighthouse, W. by S. ¾ S.; Usk Lighthouse, N.N.E. ½ E. N'ly.; Grounds Light Vessel, S.E. by E. ¾ E. The Buoy, formerly called the Spit, protects one of the quickest sands in the Channel, and, like many other dangers, the tides set directly on them. The old passage between this sand and the Welsh Hook is now filled up, and rendered unnavigable.

WELSH HOOK, Red and White in chequers lies in 5 fathoms, low water spring tides, with Aust Head a ship's length open southward of Denny Island, E. by N. ½ N.; Usk Lighthouse, N.N.W. 6 miles; See-me and See-me-not on with Clevedon Old Church, S.S.W. ¼ W. Grounds Light-vessel, WS'ly., 3½ miles.

RANNEY FLOATING BEACON, placed on the S.S.W. part of Ranie Spit, lies in ¾ fathoms low water spring tides. Sailors Home at Cardiff, just open off Penarth Head, N. by E. ½ E.; the Western part of Brean Down on with Flatholms Island at low water; the Lighthouse, S. by E.; Ball Point, W. ½ N.; the highest part of Sully Island, W. ½ S.

WEST CARDIFF, Black with staff and

globe, lies in $4\frac{1}{2}$ fathoms with the Monkstone Beacon in line with Clevedon New Church, E. by S. $\frac{1}{4}$ S.; Ground light, E. $\frac{3}{4}$ S., $6\frac{1}{2}$ miles; Cardiff Hook buoy, S.W. $\frac{1}{4}$ W., 27-10 miles; Usk lighthouse, N.E. by E. $\frac{1}{4}$ E., $9\frac{1}{2}$ miles; the Eastern side of Steephholm, just open West of Flatholm, at high water, the lighthouse S.E.'ly.; Sully Island open a ship's length Southward of Ball Point W. $\frac{1}{4}$ S.; Penarth Church, N.

EAST CARDIFF, Black, lies in 6 fathoms, low water spring tides; Hook Buoy S. W. by W. $\frac{1}{2}$ W., 1 mile; Monkstone Beacon on with S.E. end of Steephholm, S.S.W. $\frac{1}{2}$ W.; Penarth Church, W. $\frac{1}{4}$ S.; Usk Lighthouse, E.N.E.

CARDIFF HOOK, Black, lies in 2 fathoms, with Cardiff Church Tower its apparent length open Eastward of a conspicuous clump of Trees, N.N.W. $\frac{1}{2}$ W.; Grounds Light, S.E. by E. $\frac{1}{4}$ E., $5\frac{1}{2}$ miles; Peterstone Church Tower apparently midway between the Spire of Newport New Church and the Tower of the Old Church, N.E. $\frac{3}{4}$ E.; the Usk Light Tower, N.E. by E. $\frac{3}{4}$ E.

A Can Buoy, coloured black, and marked "Middle Cardiff," is placed in Cardiff Roads, in 4 fathoms, with a large Red Brick House, open of Penarth Head, N.N.W.; the east end of Steephholm in line with the east end of the dwellings at Flatholm lighthouse, S. by E. $\frac{1}{4}$ E.; West Cardiff Buoy, S.W. $\frac{1}{4}$ S. 9-10 mile; Cardiff Hook Buoy, N.E. by E. $\frac{1}{2}$ E. 12-10 mile.

A Spiral Buoy, coloured red and white, in chequers, and marked "Cardiff Spit," is placed in 3 fathoms, with Llandough Church Tower, its width open South of the South Pier Head at Penarth Dock, N.W. $\frac{1}{4}$ W.; The Peak of Sully Island $\frac{1}{2}$ from the South end of the Island towards Lavernock Point, W. $\frac{3}{4}$ S.; Monkstone Beacon, S. by W. $\frac{1}{4}$ W., 11-10 mile; West Cardiff Buoy, W. by S., 19-10 mile.

A Can Buoy, coloured red and white in vertical stripes, and marked "Middle Hook," lies in $4\frac{1}{2}$ fathoms, with the Hotel near Avon lighthouse, its width open of Posset Point, E. by S.; a large tree on high land, in line with Salt-house, S. by E. $\frac{1}{4}$ E.; Welsh Hook Buoy, E. by S., 26-10 miles; English and Welsh Grounds Light Ship, W.S.W., 25-10 miles; S.W. Patch Buoy, W. $\frac{1}{4}$ N., 3 miles.

BREAKSEA, Red and white in chequers, with Beacon, lies in 5 fathoms, about one cable's length from low water mark, and $\frac{1}{2}$ a cable's length without the rocks, with the Nash Low Light Tower apparently midway between the High Light Tower and the White Beacon upon St. Donant's Cliff, N. W. $\frac{1}{4}$ W.; One fathom Bank Buoy, S.E. $7\frac{1}{2}$ miles; Evans' Farm House,

apparently midway between a large Yellow Dwelling House and Limpert House, the latter being the Eastern object, N.N.E. $\frac{1}{4}$ E.; Brereton Windmill, N.N.W. $\frac{1}{2}$ W.

COCKBURN SHOAL, red and white chequered, lies in 4 fathoms, about 20 fathoms S.E. from the shoal with the Avon Lighthouse one-third between Penpole House and Miles' House, S.E.; high water mark of Black Nose Point on with Portishead Point, W. $\frac{1}{4}$ S.

WEST USK, Red and white, in chequers, dries at low water; a farm house at St. Brides in line with a bluff tree on the western land, N. W. by W. $\frac{1}{4}$ W.; Usk Lighthouse, N. by W. $\frac{1}{4}$ W.; Windbound Point, N. by E. $\frac{1}{4}$ E.

EAST USK, Red, dries at low water; a clump of tiles on Stone Hill just open westward of Windbound Point, N.N.W. $\frac{1}{2}$ W.; West Usk Buoy in line with Peterstone Church W. $\frac{1}{4}$ N.

EAST NASH, Red and White Bands, lies in $4\frac{1}{2}$ fathom with Groes' House (yellow) twice its apparent width open Westward of the Tower upon Dunraven Promontory, N.; the North side of the Nash High Light Tower on with the South side of the Low Light Tower, S. E. by E. $\frac{1}{4}$ E.; Nash Swatchway Buoy, N. W. $\frac{1}{4}$ W., $4\frac{1}{2}$ miles; Tuskar Beacon, N.N.W. $\frac{1}{2}$ W. $4\frac{1}{2}$ miles: the fair channel course from the Mumbles to this buoy inside the sands, with the Mumbles Light Tower N. N. W. $\frac{3}{4}$ W., and the Nash Low Light Tower S. S. E. $\frac{3}{4}$ E.

NASH SWATCHWAY, black and white, in vertical stripes, lies in $2\frac{1}{2}$ fathoms, with Sker House on with Rhwychwyn Point, N. $\frac{1}{4}$ E.; Newton Down Windmill, its apparent length open northward to Newton Nottage Church Tower, N.N.E. $\frac{3}{4}$ E.; the Nash High Light Tower, its apparent length open northward of the Low Light Tower, S.E. $\frac{1}{4}$ E.; Tuskar Beacon, N.E. $\frac{1}{4}$ N.; East Nash Buoy, S.E. $\frac{1}{4}$ E., $4\frac{1}{2}$ miles; West Nash Buoy, N.W. by W. N'ly., $2\frac{1}{2}$ miles.

WEST NASH, Red and White horizontal bands with staff and diamonds, lies in 9 fathoms, with Newton Down Windmill on with the centre of the Breakwater at Porth Cawl, N.E. by E. $\frac{1}{4}$ E.; Nash High Light Tower, S.E. $\frac{1}{4}$ E., $7\frac{1}{2}$ miles; the Nash Low Light Tower, S.E. $\frac{1}{4}$ E.; East Skerweather Buoy, N. by E., 26-10th miles; West Skerweather, N.W. $\frac{1}{2}$ N., $6\frac{1}{2}$ miles; Mumbles Light Tower, N.N.W. Nash Swatchway Buoy, right between the Lighthouses, S.E. by E. S'ly., 2 miles; Tuskar Beacon, E. by S., 3 miles.

EAST SKERWEATHER, Red and White horizontal bands, lies in 6 fms., with a conspicuous Shaft on the summit of the highest Hill, open eastward of Con-

stantinople Cottages, the apparent length of them, N.N.E. $\frac{1}{2}$ E.; Margam Trees, on with the west end of a long stone wall terminating near the Beach E. $\frac{1}{2}$ N.; the Windmill inland of Cwm Mawr on with Dunraven Point, S.E. $\frac{1}{2}$ E.; Kemfig Church 2 $\frac{1}{2}$ points open westward of the Scar House, N.E. by E. $\frac{1}{2}$ E.; Nash Low Light Tower, S.E. $\frac{1}{2}$ S., 9 miles; Mumbles Light Tower, N.N.W. $\frac{1}{2}$ W.; West Nash Buoy, S. by W., 2 4-10 miles; West Skerweather Buoy, N.W. by W. $\frac{1}{2}$ W., 5 miles; Mixon Buoy, N.N.W. $\frac{1}{2}$ W., 9 miles; Tuskar Beacon, S.E. $\frac{1}{2}$ E., 4 miles.

WEST SKERWEATHER, Red and White horizontal bands, lies in 4 $\frac{1}{2}$ fathoms, with Constantinople Cottages on with the mouth of Aberafon Harbour, E.N.E. Northerly; Margam Trees open southward of Sker House three times their apparent width E. by S.; Nash High Light Tower, S.E., Easterly, 14 miles; Mumbles Light Tower, N., Easterly, 6 miles; East Skerweather Buoy, S.E. by E. $\frac{1}{2}$ E., 5 miles.

HUGO, Black, lies about a cable's length from the dry sand on the N.E. side of the Bank, in 3 fathoms low water with a large square House on with the South end of the large Store House at Porth Cawl, S.E. $\frac{1}{2}$ E.; Kemfig Church its apparent breadth open South of a White Cottage (the Northernmost in the Village), E. $\frac{1}{2}$ N.; Nash Low Light Tower, S.E. by S.; Mumbles Light, N.N.W. $\frac{1}{2}$ W.; Constantinople Cottages N.E. $\frac{1}{2}$ N.; East Skerweather Buoy, S. by E.

INNER GREEN GROUNDS BUOY, Black and White vertical stripes, lies in 3 $\frac{1}{2}$ fathoms, about one and a half cable's length from 5 feet on the S.E. end of the Shoal, with Kilvey Old Mill, $\frac{1}{2}$ distant from the Inn (a large brick house), towards Tennant's Look-out House, N.N.E. $\frac{1}{2}$ E.; Swansea East Pier Head, N. by E. $\frac{3}{4}$ E., 2 3-10 miles; Mumbles Lighthouse, W. $\frac{1}{2}$ N.; Woodland Castle, N.W. N'rly.

OUTER GREEN GROUNDS, Black and White chequered, lies in 2 $\frac{1}{2}$ fathoms, with the Tut between the two Houses on the Mumbles Point, W. $\frac{1}{2}$ N.; Woodland Castle, N.N.W. $\frac{3}{4}$ W.; Swansea Pier and Lighthouse, N.E. by N.; Kilvey Old Mill, N.E. $\frac{1}{2}$ N.; Green Grounds Buoy, E.

MIXON, Black, with Bell, lies in 10 fathoms, with Porth Einion Point on with Oxwich Point, W. by N. $\frac{1}{2}$ N.; Kilvey Old Mill Tower on with Swansea East Pier Head, N.E. $\frac{1}{2}$ E.; Mumbles Light Tower, N.E. $\frac{1}{2}$ N.; West Skerweather Buoy, S. $\frac{1}{2}$ E., 5 $\frac{1}{2}$ miles.

WEST HELWICK, Red and White Horizontal Bands, with staff and diamonds, lies in 6 fathoms, and is surrounded by 11, 14, and 15 fathoms. Worms Head, bears N.E. by E. $\frac{1}{2}$ E.; Helwick Light Vessel, W. by N. $\frac{1}{2}$ N.; West Scar, S.E. $\frac{1}{2}$ S.

HELWICK SWATCHWAY, Red and White striped, lies in 4 $\frac{1}{2}$ fathoms, with Burry Holmes appearing in the centre of Worms Sound, N.N.E. N'rly; Oxwich Point on with Porth Einion Point, E. by S. $\frac{1}{2}$ S., Easterly; East Helwick Buoy, E. by S. $\frac{3}{4}$ S., 3 $\frac{1}{2}$ miles; Worms Head, N., 2 4-10 miles; West Helwick Buoy, W. by N. $\frac{3}{4}$ N., 2 $\frac{1}{2}$ miles.

EAST HELWICK Red and White Horizontal Bands, lies in 2 $\frac{1}{2}$ fathoms, with Rhossily Point open westward of Tears Point the supposed breadth of a ship, N. W. $\frac{3}{4}$ N.; a White Building upon the high land, apparently midway between two White Cottages below that building, N.N.E. $\frac{1}{2}$ E.; Helwick Swatchway Buoy, W. by N. $\frac{3}{4}$ N., 3 $\frac{1}{2}$ miles; West Skerweather Buoy, S.E. $\frac{1}{2}$ E. S'rly., 12 $\frac{1}{2}$ miles; Mixon Buoy, E. by S. $\frac{1}{2}$ S., 9 $\frac{1}{2}$ miles; Worms Head, N. W. $\frac{1}{2}$ N., 5 miles.

TUSKER AND MONKSTONE.—A mast with a large red ball attached is erected as a beacon upon each of these rocks. From the Tusker Beacon, Porth Cawl Point, N. $\frac{1}{2}$ W., is 1 $\frac{1}{2}$ miles; Mumbles Lighthouse, N. W. by N. 13 miles; Nash Low Light Tower, S. S. E. $\frac{1}{2}$ E., 5 $\frac{1}{2}$ miles; East Skerweather Buoy, N. W. $\frac{1}{2}$ W., 4 miles; East Nash Buoy, S.S.E. $\frac{1}{2}$ E., 5 miles; West Nash Buoy, W., 2 $\frac{1}{2}$ miles.

BEACON ON THE WOLF ROCK.—This Beacon consists of an artificial cone, bearing a mast having a large ball upon its summit at an elevation of 36 feet above the level of the sea at high water; the mariners are to observe that spring tides rise at this station 19 feet, and that at low water of those tides, the rock is uncovered to the height of 15 feet. St. Michael's Mount open of Lemorn Cove leads 2 $\frac{1}{2}$ miles to the Eastward of it; Longships Lighthouse touching Cape Cornwall leads 1 $\frac{1}{2}$ miles Westward of it. The Bearings and Distances of the under-mentioned objects from this Beacon, are as follows, viz.:—Longships Lighthouse, N. E. $\frac{1}{2}$ N., 7 $\frac{3}{4}$ miles; Scilly Lighthouse, W. by N. $\frac{1}{2}$ N., 21 miles; Rundlestone Rock, which covers at half-flood, E. by N. $\frac{1}{2}$ N., 7 miles; Seven Stones Light-vessel, N.N.W. $\frac{1}{2}$ W., Westerly, 12 $\frac{1}{2}$ miles; Lizard Lighthouses, E. S. E., 23 miles.

Notice—Buoys in the Bristol Channel.

The **TRINITY HOUSE**, London, has given notice that the following additional buoys have been laid in the Bristol Channel:—

Chapel.—A can buoy, painted red and white in vertical stripes, and marked Chapel, has been placed to the eastward of the Chapel Rock in 5½ fathoms.

Kenfig.—A conical black buoy, marked Kenfig, has been placed in the Shoal to the N.E. of the Hugo Bank in 3½ fms.

Fairy.—A chequered black and white can buoy, marked Fairy, has been placed to the northward of the Fairy rock in 4 fathoms.

South Hugo.—A chequered black and white buoy, marked South Hugo, has been placed at the south end of the Hugo bank in 5 fathoms.

North Scarweather.—A black can buoy, marked North Scarweather, has

been placed on the north side of the Scarweather middle in 5½ fathoms.

S. W. Nash.—A can buoy, painted red and white in vertical stripes, and marked S.W. Nash, has been placed in 7½ fathoms.

S. E. Nash.—A chequered red and white can buoy, marked S.E. Nash, has been placed in 7½ fathoms.

Newcome.—A can buoy, painted red and white in vertical stripes, and marked Newcome, has been placed on the west end of the Newcome shoal in 3½ fathoms.

Firefly.—A red conical buoy, marked Firefly, has been placed to the northward of the Firefly rock in 5 fathoms.

Flatness.—A red can buoy, marked Flatness, has been placed to the northward of the Flatness rocks in 3 fathoms.

The Hugo bank and the Nash Swatchway buoys have been removed.

WEST COASTS OF ENGLAND AND WALES.

SMALLS LIGHT TO THE PORT OF LIVERPOOL.

Smalls Light is placed on Smalls Rocks, lying off St. David's Head in Pembrokeshire, and bearing from St. Ann's Point, N.W. by W., distant 18 miles. This light is stationary, appearing like a star of the first magnitude, at the distance of 13 miles. To avoid these rocks, keep above a mile from the highest on all sides, and do not attempt to pass inside of them without a good chart and ample directions, or a pilot; with these there is excellent anchorage to be found in St. Bride's Bay in 8 or 9 fathoms.

South Bishop Light.—The Bishop and Clerks are a number of dangerous rocks, with great overfalls, lying north-west of Ramsey Island, at the distance of ½ miles. On the southernmost, called the South Bishop, is a lighthouse, exhibiting a revolving light, visible in all directions, and appearing with great brilliancy at intervals of 20 seconds, whereby it will be readily distinguished from the Smalls and other lights in its vicinity; it can be seen at the distance of 18 miles. This light is the principal guide the mariner has to enable him to know his exact situation, when sailing near this dangerous part of the coast of Wales. The light must be always passed to the westward, and when to the northward of it never bring it to the westward of south, until you are 3½ or 4 miles from it, particularly on a flood-tide, in moderate weather, for then you have the tide nearly on the beam, which runs rapidly through amongst the islands; at spring tides nearly 5 knots,

and causes several overfalls. The passages between the rocks must not be attempted by strangers.

From St. David's Head to Strumble Head the course is E. N. E. ½ E., distant 10½ miles; between them at the distance of 5½ miles from the former, is Abercastle Island, lying close to the land. In sailing from St. David's Head to Cardigan Bay you must give the shore a good berth, for several rocks under water lie scattered about, some of which are nearly a mile from shore; they are called the Sledges, and are 2 miles eastward of St. David's Head.

Fishgard Bay.—Three miles to the eastward of Strumble Head you open Fishgard Bay, having good anchorage with any wind, except from the N. to the E., the ground holding well. The best anchorage will be to the southward of the Crow Rock, which is always above water, in 4 or 5 fathoms, the rock bearing N. by E. ½ E., distance ¼ to ½ a mile. This bay is more desirable for vessels seeking shelter in gales from S. and W. than Studwall's Road, which is 5½ miles to the leeward, as it is well sheltered from these gales, which Studwall's Road is not, and the bay affords a more ready outlet to the S. or N. than any place in the neighbourhood.

Newport Bay opens when you are 6 or 7 miles distant from Strumble Head.—The bar and channel to Newport lie about ¼ a cables length from the shore, directly below the village of Newport. On the bar are 13 feet water with spring tides, and 7 or 8 at neaps. When a vessel is

over the bar, she will be sheltered from all winds.

Cardigan Bay.—The Buoy on the Causeway in Cardigan Bay has been moved, and now lies near the extremity of the Causeway Reef, in 5 fathoms at low water springs, with the following marks and compass bearings; Slandebrog Mill in line with the east side of West Island at St. Studwall, N. by E.; Penkylan Head, N. by W.; Bardsey Lighthouse, N. W. $\frac{1}{2}$ W. A LIGHT VESSEL in this Bay—see page 102.

Cardigan Harbour is adapted for vessels drawing about 15 feet. In the channel over the bar, which is liable to shift, are 14 feet water with spring tides, and 8 or 9 with neap; but in Cardigan Road a ship may stop, in moderate weather, almost any part without the bar, about two cables' length from the shore, in 6 fathoms water.

Aberystwith Harbour is fit for vessels which draw 15 feet. There are land-marks to lead you over the bar, one of which is moored on wheels, as the bar shifts. When any vessel is seen off the place in the evening, there are lights put upon the marks, which must be brought in one, to direct you over the bar.

Aberdovey is about 3 leagues to the northward and eastward of Aberystwith, and 6 miles to the south of the Diamond Beacon on Beach Head. This harbour has a shifting bar about a cable's length broad, and about half that in and out. The Trinity Board have placed a large Black Buoy at the entrance, outside, and a Red one inside the bar. A good lookout should be kept for a small Buoy between the Black and Red Buoys, which makes the angle of the passage if any. These Buoys are all placed in the fairway. Vessels may come to anchor half a mile above the Red Buoy, and which is about the same distance below the town, where from 12 to 15 sail, drawing from 12 to 15 feet water may ride in safety and in good holding ground.

Barmouth Bay may be known at a distance by the highest mountain on that coast; it has two tops—the southmost is highest; and when seen from the westward, is in a line with the N. side of the entrance of Barmouth. From the N. side of the Bay, and about 1 mile from the main, shoal called the Causeway, extends W. by S. 3 leagues: at low water there is not more than 2 or 3 feet water all along the edge of it, where at a cable's length the compass is so affected by magnetism, as to vary 90 degrees, and, as you approach nearer, quite reverse the points.

Studwall's Road affords excellent anchorage for the largest ships, sheltered from all winds except from E. to S. E. by E. It is easily known by two Islands that

lie off the point, and there is no danger except a small rock about $\frac{1}{4}$ of a mile eastward of the Islands, between which there is a good passage, as well as between the westernmost and the main, at a cable and a half's length from them.

Bardsey Island is separated from the mainland by a channel more than a mile and a half wide, having from 15 to 25 fathoms in it. On the S.W. part of this Island is a Lighthouse exhibiting a bright fixed light, visible seaward from E. $\frac{1}{2}$ S. to N.E. $\frac{1}{2}$ E., and at a distance of 17 miles; but masked between the bearings of N. 50 deg. E. to S. 70 deg. E. If in a gale of wind from the W.N.W. vessels should be unable to weather Bardsey Island, this light will point out a secure asylum in Studwall's Road, enabling them to preserve a proper position until daylight, when they can proceed to the anchorage therein. Vessels bound to Studwall's Road, or lying-to for daylight, must not bring the light to bear to the westward of W.N.W.; and if they lose sight of the light when it bears from them nearly in that direction, they will be too far to the northward, and in danger of getting embayed in Hell's Mouth.

Carnarvon.—From Brauchypool Head the shore lies nearly E. N. E. to Carnarvon Bar, and from thence nearly N. by W. $\frac{1}{2}$ W. to Holyhead Island, forming Carnarvon Bay. Vessels going in are to leave the outer or Black Buoy on the port hand, the Red Buoys on the star-board hand, and the Perch beacon on the port hand. The black and white chequer buoy is placed in mid-channel. Nun buoys painted green, denoting sunken rocks, are placed off Llanddwyn Point. This Point may be distinguished in the daytime by two white towers (a large and a small one), and during the night by a fixed red light, visible in clear weather about five miles to seaward, between the bearings (from Llanddwyn by compass) of N.W. by N., and S.W. by W.; and which is intended solely as a leading light for the entrance to the Menai Straits. The bar should not be attempted until daylight, nor by vessels drawing more than 10 feet before half flood. During gales from W. to N., vessels may find shelter on the S.E. side of Llanddwyn Point. The proper anchorage is about a quarter of a mile from the shore, with the small tower a little open to the northward of the large tower. In running in give a good berth to the sunken rocks (the green buoys indicating which are placed to seaward, but it is much preferable for strangers to heave to outside sufficiently to windward and make signals for Pilot, four of whom are stationed at Llanddwyn, with a life-boat, and Marryatt's code of signals. Vessels wishing to communicate will be answered from the large tower.

South Stack Light—Off the N.W. point of Holyhead Island is the South Stack Rock, upon which is a lighthouse, bearing a brilliant light, which revolves every 2 minutes, whereby it will be readily distinguishable from the light on the Skerries, which is a stationary light, and bears from the light on the South Stack N.E. $\frac{1}{2}$ E., distant 8 miles, and may be seen through a great part of Carnarvon Bay. During foggy weather, a smaller bright light, revolving in $1\frac{1}{2}$ minutes, is occasionally shown, about 40 feet above the sea, and 30 yards north of the main lighthouse. Any vessel making either of these two great lights, can find no difficulty in navigating round the head, or into the harbour of Holyhead, if the wind permits; and no directions that could be given would serve equal to that of having the two lights in sight, as will be the case in the situation above mentioned.

Holyhead Refuge Harbour is chiefly formed by an immense breakwater the heel resting on Soldier's Point, from whence it projects N.E. by E. nearly one and a half cables' length, then E.S.E. about 5 cables' length, and then E.N.E. to its end, which is marked by a red light, visible at a distance of 8 or 9 miles. The end of the breakwater is N.N.E., one mile from the Old Harbour Light.—To sail into Holyhead Refuge Harbour, give the end of the breakwater a good berth, as a strong tide sets to the westward nine hours out of the twelve, and strikes hard upon it. Having rounded the breakwater, steer to the W.S.W., between it and the outer Platters, leaving all the chequered buoys on the port hand, and anchor well in, close to the beach. There are passages between the Platters and Salt Island: but these should never be attempted by strangers. Vessels should have both anchors ready for letting go, with 50 or 60 fathoms of chain ranged according to the weather, and should be careful to anchor well up, or they will have to shift berth. Vessels disabled or without ground-tackle, may be laid on a beaching slope at the head of the harbour which has been prepared for the purpose.

Old Harbour of Holyhead.—A wooden pier extends from the Old Harbour lighthouse in a direction E. by S.; at its eastern end is a bright light of the sixth order, supported on iron pillars superseding that formerly exhibited from the stone lighthouse. All vessels bearing up for Holyhead Harbour should be prepared with both bower anchors ready to let go, and the end of a good warp for a boat to take to one of the dolphins, moored along the passage for that purpose. The course round the pier, up the harbour, is W. by N., then W.N.W.; therefore, with the wind at N., and to the westward of that point, a press of sail

should be carried, especially after-sail; run the jetty close on board, and neither start tack nor sheet till the vessel is well inside the lighthouse and the packets' moorings, than act as circumstances may require. Rise of water at spring tides 17 feet; depth of water at the entrance, at low water, spring tides, about 12 feet. Holyhead Harbour being a tide harbour, and frequently with many anchors down in the way, vessels drawing 12 feet should not run in until about two hours' flood, and those of a heavy draught should, if possible, keep off until four hours' flood, in tempestuous weather no vessel should run for the harbour at night time. There is no occasion to use this as a harbour of shelter now the new harbour is established. All vessels anchoring outside must keep a light up during the night.

Holyhead Harbour Lights, situate on the starboard hand in entering the harbour, are stationary. The higher fixed white light formerly shown from the Light Tower on the old Pier Head of the Old Harbour is discontinued, and a fixed white light, at an elevation of 20 ft. above high water, shown from the structure above named on the end of the wooden pier which now forms the entrance to the harbour. The small red light is still exhibited from the Light Tower on the Old Pier Head of the Old Harbour, between the bearings of S.S.W. $\frac{3}{4}$ W. and S.W. The former bearing clears the end of the breakwater, and the latter all danger on the east side of the bay. A red light is shown from the mast 84 yds. from the eastern extremity of the new breakwater off the New Harbour at an elevation of forty feet above the level of high water. A gong is sounded in foggy weather. At night vessels should not steer in for the New Harbour until the small red light in the Old Harbour is seen, and in entering or leaving the harbour they should not approach the breakwater light nearer than $\frac{3}{4}$ of a cable.

FOG SIGNAL STATION.—On the North Stack Point is a fog gun of large size, battery attendants' residence, magazine and flag-staff, all painted white. For the greater security of vessels navigating in the vicinity of Holyhead, and of Her Majesty's packets in particular, the above gun is fired during foggy weather once every half hour; except from 10.45 a.m., and the same time p.m., when for three hours, or till the arrival of the day and night mail packets, it is fired every quarter of an hour, Greenwich time being observed.

The Skerries is a cluster of islets and rocks 13.5ths mile to the northward of Carmel Point, occupying a space of about half a mile. Upon the centre and highest islet of the group is a lighthouse 54 feet high, showing a fixed bright light

at 117 feet above the level of high water, visible 16 miles. The position of this lighthouse is lat. $53^{\circ} 25' 18''$ N. and long. $4^{\circ} 36' 24''$ W. A short distance all round the Islands is deep water, except on the northern side of the group, where is a dangerous rock $2\frac{1}{2}$ fathoms, called the African, lying with the lighthouse in one with Pengarn Hill bearing S.S.E. Upon this rock there is a great overfall when the tide is running either way. Between the Skerries islets and Carmel Point is a dangerous ledge of rocks, drying with spring tides only, called the East Platters. Close to all round are 8 to 16 fathoms, and there is a strong rippling when the sea is heavy. You may sail between the rocks and the Skerries by bringing the South Stack Bridge over the North Stack and between them and Carmel Point by bringing the South Stack and North Stack in one. The Beacon on the West Mouse Rock in one with the Middle Mouse, also clears it on the south side.

Point Lynas lies S.E. by E. $\frac{1}{4}$ E. of the eastern point of Amlwch Bay, distant $1\frac{1}{4}$ mile, and is situate in lat. $53^{\circ} 25' N.$, and long. $4^{\circ} 17' W.$ It is a bold conspicuous point of land both from the eastward and westward. A lighthouse is erected on the high pitch of the point, and is a castellated building, with a white basement. It exhibits a flashing light, which becomes instantaneously obscured at intervals of 10 seconds, and remains obscured 2 seconds only, so that it is readily distinguishable from the Skerries and other lights in the vicinity. From Lynas lighthouse to Great Orms Head, S.E., 16 miles; N.W. Lightship, Liverpool, E.S.E., 37 miles; Calf of Man, N. $\frac{1}{4}$ W. 42 miles; Buoy Nelson, of Preston, E., 41 miles; St. Bee's Head, N.E., 70 miles.

Port of Amlwch, Anglesea—In the day time, when the Breakwater balks are down, a Ball is fixed on a pole at the easternmost point of the harbour. When too many vessels lie at the entrance of the harbour, a Red Light will be shown, and when the entrance is clear a white light.

To Sail into Beaumaris Harbour. THROUGH THE SOUND IN LOW WATER.—Steer in for Table Land, till the W. end of Puffin Island comes open with the E. end of Penmaenmawr Hill. These marks will clear the Dinmora Bank on your starboard hand. You then have the sound fairly open; but to avoid the rocks off Trwyndu Point, keep more to the Perch on your left; and when Beaumaris comes open off Trwyndu Point, haul up for the red buoy off Penman, keeping it on your starboard hand, and off the red buoy of the Causeway on your left. Anchor in 4 fathoms off Penman red buoy, clean and good holding ground, well sheltered from a north-westerly wind; but if one hour's flood, you will carry 15 feet over the flats

off Penryn Point. Steer for the black buoy on the Spit of the Levan Sand, abreast of Friar's House, where anchor in 5 fathoms low water spring tides, or at half flood steer for the town, keeping the red buoy on Watch House Point on your starboard hand, in 6 or 7 fathoms. Keep that depth of water until the Church at Beaumaris bears N. N. E. by compass when you may anchor in 9 fathoms at that time of tide. Thence you will see Bangor Pool, which is above ferry Point. But if any of the buoys should be missing as you steer up, keep the Church Tower and Lodge Hill in one.—Opposite the Friar's House, in mid-channel, is a sand-bank, marked by a red and white chequered buoy; in sailing up to Beaumaris, keep this buoy on the starboard hand.

To Sail out of Beaumaris Harbour, FROM THE ANCHORAGE OFF THE TOWN.—Weigh at high water, and drop down to Friar's Road. Give the black Buoy off the Spit a berth on your starboard hand, and the red buoy off Penman on your port. At half ebb take the eastern passage, keeping off the red buoy off the Causeway on your port hand. From the latter steer for the east end of Puffin Island on your port hand, keeping off it half a cable's length, and the black buoy off the Dutchman's Spit the same distance on your starboard hand.

Menai Lighthouse is erected at the north-eastern entrance of the Menai Straits. The light is STATIONARY and of a RED colour, visible from N.W. $\frac{3}{4}$ W. seaward, to S.W. $\frac{1}{4}$ W. excepting that by the intervention of Puffin Island the light will be eclipsed to vessels upon the bearing from it of E. by N. $\frac{1}{4}$ N., to E. $\frac{1}{4}$ S. A ledge of rocks extending under water from the base of the lighthouse nearly 50 yards, it is advisable not to approach the building within that distance.

Conway Harbour.—there are two channels leading into this harbour—the west and north. For the west channel, steer from the N.W. black buoy to the second black buoy, leaving them on your port hand; keep the red buoy off Penmaenbach, the chequered red and white buoy, the two red buoys, and the perch on your starboard hand; haul up, and steer for the quay, keeping close to Deganwy Point on the port hand. The entrance to the north channel is marked with a black perched buoy: the second, third, and fourth are all black, and moored in the best of the channel. Vessels drawing from 10 to 12 feet may lash alongside the quay, on mud and sand, dry at low water.

To Sail from Point Lynas to the Great Ormshead.—The course from Point Lynas to the Great Ormshead is S.E. per compass; from whence keep the Ormshead as the line is drawn on the

chart, till Rhyland Castle and St. Asaph Church are in one; then haul in till the south mark on Helbre and Bidstone Lighthouse come in one. Steer forward on that line, which is the deepest water along the shore. It will also clear the Middle Patch on the left, which is dry at low water, spring tides. Buoys are placed here; red on the starboard, and black on the port hand coming in. Give the Point of Ayr Lighthouse a berth of a mile on the starboard hand; and when it bears W. haul up S.S.E. for mid-channel. At that time the rippling of the tide on the edge of the Salisbury Bank will be very perceptible, as well as on the Welsh side. Continue that course, in mid channel, till the Grange Mill bears N.E. by E. by compass, then haul quick for Dawpool, and keep that bearing till Burton Mill comes over the town of Parkgate. That course clears the south end of Salisbury Bank, and the Bagilt Flats on your right. As you advance keep the lead going, and borrow on the Haswell Church side of the shore. It will carry you clear to Bearhouse Pool, where anchor till you obtain a pilot. The leading mark for passing at high water across the Salisbury Bank to Hoylake is Helbre Eye on with the Grange Mill.

Chester Bar is a narrow sandbank between 3 and 4 miles in length, stretching rather circularly from S.E. to N.W.; its south end is near to Nant House, and is called the Middle Patch, sometimes drying, the middle of it is called Earwick, and dry at low water; but much the greater part of it never dries, having from 3 to 6 feet water over it at all times. To clear the Earwick to the eastward, bring Nant House and the barn above it in one. **TO SAIL OVER CHESTER BAR** in a ship drawing 12 feet, take half-flood; and when Craig Disart Hill bears S.S.E., which with Middle Hill and Comb Hill form an equilateral triangle, keep the two Ormsheads shut below, and a little open above; by this you will avoid all danger on the southward. To avoid the banks and shallows on the north side, open the Ormsheads below near a ship's length, but not more. If a vessel comes to Chester Bar before half-flood, and is apprehensive of not having sufficient water to cross it, she may sail between the Middle Patch and the Earwick, keeping the Ormsheads a little open below; and when Craig Disart Hill and Middle Hill are in a line, steer N.E. by E. until you deepen you water to 4 or 5 fathoms, and sail along Hoyle Sand for the Point of Ayr; giving that point a berth of half-a-mile. To avoid that part of Hoyle

which is opposite to Ayr, keep Bidston Windmill to the south of Helbre Summerhouse; this will carry you through the Swashway toward Hoyle Lake. But the mark which leads clear of the north part of the Hoyle Sand, and directly into Hoyle Lake, is the Point of Ayr Lighthouse open to the northward of Hilbre Island.

The River Dee.—Vessels may stop a tide about a mile to the eastward of the Point of Ayr, upon which a lighthouse is erected. The tide runs, when strongest, $3\frac{1}{2}$ miles an hour; and when the tide and wind are contrary to each other, make a rough sea here. At this place, which is called Wild Road, you can anchor in 5 or 6 fathoms; or you may proceed higher up to the anchorage off Linacre Creek, where, in 6 or 7 fathoms, you will be much better sheltered than in Wild Road from north-westerly winds, and ride on ground that holds well. To sail from Wild Road to Dawpool, a distance of near 6 miles, bring the southernmost house of Dawpool, which stands below a clay cliff, exactly in a line with the barn having a white end, standing on the top of the cliff, but the barn must not be brought on either side of the house, anchor about 2 cables' length from high water mark in $3\frac{1}{2}$ or 4 fathoms at low water. Here the stream runs 5 miles an hour when strongest. At Parkgate, which is more than 4 miles up the river, vessels must lie aground on the beach; for though there are $2\frac{1}{2}$ fathoms in the channel off the town, and 3 fathoms above it, yet the stream is so strong, and the ground so indifferent, that a vessel would drag its anchor. Take the ground about 2 hours before high water, below the houses of Parkgate. Vessels in making their passage to Parkgate must use the utmost caution to avoid the Salisbury Bank, a dangerous shoal, and lying in the direction of the river. The channel now to Parkgate is opened into a swashway by Bagilt and Flint; Four red buoys are placed on the edge of the Mostyn and Bagilt Banks, and two black ones on the Salisbury Bank, the former of these are to be left on the starboard side, the latter on the port. A black buoy lies on the SELDOM SEEN ROCKS in the channel between the Salisbury Bank and the Lime Wharf. There are three small islands or rocks, called the Helbre Islands, lying to the southward of the Hoyle Sands. Two wooden beacons or marks, distant from each other 1 mile, and called the Eye Beacon and Helbre Beach Mark, are placed inshore of Helbre Islands. They are used as leading marks for Helbre Swash,

BAY AND HARBOUR OF LIVERPOOL.

In the vicinity, and to the northward and westward of the Rivers Dee and Mersey, lie the banks which form the several channels to Liverpool, viz., the Hoyle Banks, the Burbo Sands and Flats, the Jordan Bank, Taylor's Bank, Formby Spit, &c. The principal channels are, the Horse and Rock Channels, the Victoria Channel, the Queen's Channel, and the Crosby or Main Channel.

The principal lights and sea-marks of Liverpool Bay are as follow:—

GREAT ORMSHEAD.—A first order Dioptric Fixed Light is exhibited from a new Lighthouse, situate on the Northern most point of the Great Ormshead, at an elevation of about 325 feet above the mean sea level. It appears as a bright fixed Light when seen from any direction between the bearings NW by W $\frac{3}{4}$ W. round by the North to East, and as a RED Light from East to E. $\frac{3}{4}$ S. By this arrangement the light will be found to mask suddenly when standing into Beaumaris Bay, if brought to bear to the Eastward of S.E. by E. $\frac{3}{4}$ E., warning of the approach to shoal water; when to the eastward of Ormshead, the change of colour from bright to Red arises upon the line of bearing of the N.W. Light Ship and the Fairway Bell Beacon, off the entrance to the Queen's Channel, in Liverpool Bay, and the Red Light will finally disappear if brought to bear to the northward of W. $\frac{3}{4}$ N., warning of the approach to the northern edge of West and East Hoyle; if the Red Light be kept in sight, those banks cannot be approached nearer than one mile.

The NORTH-WEST LIGHT SHIP lies in a position indicated by the transition of the Ormshead Light from Bright to Red, and by masking or unmasking of the Upper Holylake Light on a bearing of S. by E. $\frac{3}{4}$ E., nearly. She is painted BLACK with a WHITE RIBBAND, and lies off the West extreme of Three and Four Fathom Tongue, in $6\frac{1}{2}$ fathoms at low water, and exhibits a powerful bright Revolving Light, appearing once in every minute. The following bearings mark her position, viz.:—Ormshead Light, west, 20 miles; Queen's Channel Bell Beacon, East, $3\frac{3}{4}$ miles; Formby Light Ship, E. $\frac{3}{4}$ S., 6 miles; N.W. Buoy of East Hoyle, S.S.E. $4\frac{1}{2}$ miles; Helbre Swash Fairway Buoy, S. by E., $4\frac{1}{4}$ miles.

The HORSE CHANNEL—BELL BEACON, (in the form of a Square Pyramid, of open lattice work, painted RED, and marked in white letters "HORSE CHANNEL, SE $\frac{1}{4}$ S.") is moored in the fair-way to the Horse Channel. This Beacon occupies the position formerly held by the N. W. Lightship; the marks for it are, the Beacon on the Eye, and Helbre Beach Mark in one,

S. $\frac{3}{4}$ E. (nearly). Bidston Lighthouse open Eastward of Leasowe Lighthouse, S.E. $\frac{1}{4}$ S.

The FORMBY LIGHT VESSEL, at the elbow of the Crosby and Queen's Channels, moored in 25 feet at low water, shows one Red light visible 8 miles; a red ball is exhibited on foremast head during the day. Her hull is painted red. In foggy weather a bell is tolled. Crosby Lightship, S. E. $\frac{1}{4}$ S., $2\frac{1}{2}$ miles; N. W. Mark, E. by N. $\frac{1}{4}$ N., $3\frac{3}{4}$ miles; Buoy Q. Fy. (bell beacon), N.W. by W. $\frac{1}{4}$ W., $2\frac{3}{4}$ miles.

The CROSBY LIGHTHOUSE, situated to the north-eastward of Crosby Point, shows a fixed Bright light, elevated 96 ft. above the level of the sea at half-tide, and visible between the bearings of S.S. E. $\frac{1}{4}$ E. and E., which limits indicate respectively when a ship is westward of Formby Spit, or to the southward of Crosby Lightship.

About a mile and a quarter to the north-eastward of Crosby Lighthouse is the FORMBY OLD LIGHTHOUSE, the light from which has been discontinued. Near the latter, on the strand, is a beacon, formerly used as a leading mark for Victoria Channel; further to the northward is the Life Boat House; and near it just round Formby Point, is the North-west Mark. This mark in one with another on Mad Wharf, bearing S. E. by E. $\frac{1}{4}$ E., is the leading direction for entering the Old Formby Channel.

The CROSBY LIGHT VESSEL, at the north-east elbow of the Great Burbo Bank, is moored in 44 feet at low water, shows a single bright light, visible 8 miles and carries a red ball at the foremast-head in the daytime. Her hull is painted red. From hence the fairway course up the Mersey is S. by E. $\frac{1}{4}$ E. In sailing through Crosby Channel during ebb-tide, to avoid the indraught through the gullies in Great Burbo Bank, vessels should be kept well to the eastward of a line drawn between the Rock Lighthouse and Crosby Lightship.

On the south side of Liverpool Bay, on the peninsula separating the Mersey from the Dec, are many objects used as sea-marks, several of which will have been seen before arriving at the North-west Light Vessel. Off the west end of the peninsula are the islets, called the Great and Little Helbre, near which are placed the two Helbre Beacons. On the mainland, within two miles S.E. by S. of the Helbre Islets, are the village and church of Kirby, to the east of which is Grange Hill, surmounted by a beacon, in the form of a pillar, at 173 feet above half-flood. Within two miles S. S. E. from Kirby, is Irby Hill, with its mill and wood.

About a mile and a quarter north of Kirby, near the shore, is the Hoylake

Hotel, and within half a mile E.N.E. from this are the new HOYLAK LIGHT-HOUSES. The new Upper and Lower Hoylake Light-houses stand 400 yards apart, and bear from each other S.W. by S. Southerly, and N.E. by N. Northerly; when in one they lead midway between the Dove Spit Buoy (R 1, Red Can) and the *Spencer's Spit Bell Beacon* marking the elbow of the Horse and Rock Channels. Upper Hoylake masks, if standing to the westward, and unmasks, if standing to the eastward, when bearing from it N. by W. $\frac{1}{2}$ W. on a line which strikes the N.W. Light ship, and passes just to the eastward of the N.W. Buoy of East Hoyle, H 1, Red Can with Perch. Lower Hoylake Light masks, if standing to the westward, and unmasks, if standing to the eastward, when bearing from it N. $\frac{1}{4}$ W. on a line indicating the Fairway course in the Horse Channel, between East Hoyle and the Six and Four Feet Flats. (N.B.—The brilliancy of the New Lights is such that, in clear weather, a gleam of light is faintly perceptible even to the westward of the lines of masking. When coming from the westward the faint appearance may, at such times, be useful in giving warning of the approaching unmasking, but cannot be mistaken for the unmasking which takes place suddenly, and at once opens a brilliant light.) At a mile to the eastward of the lower light are the Dove Beacons, erected as a mark for the eastern passage into Hoylake, the interior channel of communication between Helbre Swash, and the Horse Channel, which is now nearly choked up, and is frequented only by fishing boats.

The next conspicuous object is the LEASOWE LIGHTHOUSE, which is white; its light brilliant and fixed, 110 feet above the level of half-tide, is seen 5 leagues off, and suddenly masks on the bearing of S.W. $\frac{1}{2}$ S. when off West Wharf Buoy, (R 3, Red.) This is succeeded inland by the BIDSTON LIGHTHOUSE, upon the summit of Bidston Hill, with its church

and mill, and the new Liverpool observatory. This lighthouse is of stone, of a dark colour. It shows a brilliant fixed light at 224 feet above the level of half-tide, which can be seen 23 miles off. This light masks on the bearing of S. by W. $\frac{1}{2}$ W. when abreast of East Wharf Buoy, (R. 4, Red.) The lights of Leasowe and Bidston are called the Sea Lights, and are specially important for the navigation of the Horse and Rock Channels. At three-quarters of a mile eastward from the Leasowe Light is Leasowe Castle, and $2\frac{1}{2}$ miles further east is the Black Rock Lighthouse, standing upon the reef, so called, at the entrance of the Mersey.

THE BLACK ROCK LIGHTHOUSE is built on the rocks off New Brighton, on the west side of the entrance of the River Mersey, and is a handsome round tower of Anglesea limestone. It is surrounded by water at nearly half-tide. The height of the building, from the lantern to the base, is 75 feet, and the whole height above the level of the sea is 88 feet. The light revolves, appearing twice bright and once of a red colour, each at intervals of a minute, the whole revolution being completed in 3 minutes. The light in clear weather can be seen about 5 leagues off. A bright fixed light from a lower chamber is also shown down the Rock Channel and up the River while 11 feet water remain in the Gut, and a black ball denotes the same by day. Three bells toll in succession during foggy weather; and a blue flag is used to summons the life-boats when distress appears.

Garston Dock.—This Dock, which is 4 miles south of the Liverpool Docks, and on the same side of the river, is free from the Liverpool dock rates, vessels entering it being only liable for the harbour and light dues. The channel from Liverpool is buoyed with four red and four black nun buoys.

MERSEY DOCKS AND HARBOUR BOARD.

NOTICE TO MARINERS.

NOTICE IS HEREBY GIVEN that the undermentioned changes in the Lighting and Buoyage of the approaches to the Port of Liverpool, will take place (weather permitting) on the 7th October next and following days.

**N.B.—All Bearings are given by Compass,
Soundings at Low Water Spring Tides.**

VICTORIA CHANNEL.

- V 1 BLACK NUN BUOY WILL BE REMOVED, and the present Black Nun Buoy Numbered 2, will remain in its present position, becoming the outer black buoy of this channel, to be designated No. 1. The other black buoys now numbered 3 and 4 will be adjusted to the edge of Little Burbo Bank, in accordance with the Plan of the new survey, and will be numbered respectively 2 and 3.
- V 4 RED CAN WITH PERCH, WILL BE REMOVED, and the mark for turning from CROSBY into VICTORIA Channel will, in future, be indicated by a new buoy to be designated Q 3 AS UNDERMENTIONED.

QUEEN CHANNEL.

THE FAIRWAY BELL BEACON will be shifted 250 fathoms to seaward from its present position, preserving the same line of bearing with FORMBY LIGHTSHIP AND CROSBY LIGHTHOUSE IN LINE as at present.

N.B.—It should be carefully noticed that this line instead of leading mid-channel as formerly, now forms the clearing mark for the North side of Little Burbo Bank, therefore in entering the Channel the safe course is to leave the Bell Beacon on the Starboard hand and keep Crosby Shore Light to the Northward of Formby Floating Light, until after passing the Buoy Q 2 Red Can.

- Q 1 BLACK NUN BUOY, will be shifted 270 fathoms N.E. by N. from its present position in 10 feet at low water.
- Q 2 BLACK NUN BUOY, will be shifted 200 fathoms N.W. from its present position in 15 feet at low water.
- A NEW BUOY, BLACK NUN designated Q 3, will be stationed off the N.W. spit of Jordan Flats, in 18 feet low water, bearing from FORMBY LIGHTSHIP, N.W. $\frac{1}{2}$ N., distant 330 fathoms.
- A NEW BUOY, RED CAN WITH PERCH, designated Q 3 will be stationed so as to mark the turning point to and from Victoria and Crosby Channels.

CROSBY CHANNEL.

- C 1 BLACK NUN BUOY will be shifted S.E. by E. $\frac{1}{2}$ E. 550 fathoms from its present position, and will lie off Taylor's Bank in 18 feet at low water, Formby Lightship bearing W. by N. $\frac{1}{2}$ N., distant half a mile nearly.
- C 2 BLACK NUN BUOY will be shifted S.E. by E. 620 fathoms from its present position, and will lie off Taylor's Bank in 18 feet at low water, C 1 Black bearing N.W., distant $\frac{7}{8}$ of a mile.
- C 3 BLACK NUN BUOY will be shifted S.E. 680 fathoms from its present position, and will lie off Taylor's Bank in 18 feet at low water, C 2 Black bearing N.W. $\frac{1}{2}$ N., distant $\frac{7}{8}$ of a mile.
- C 4 BLACK NUN BUOY will be shifted S.E. $\frac{1}{2}$ S. 370 fathoms from its present position, and will lie off Crosby Shore in 18 feet at low water, C. 3 Black bearing N.W. $\frac{1}{2}$ N., distant $\frac{7}{8}$ of a mile.
- C 1 RED CAN BUOY will be shifted to the position now occupied by C 2 Red Can Buoy, and the latter will be shifted S.E. $\frac{1}{2}$ E., $\frac{3}{4}$ of a mile from its present position, and will lie in 18 feet at low water, C. 1 Red Can bearing N.W. $\frac{1}{2}$ W., $\frac{3}{4}$ of a mile.

- C 3 RED CAN BUOY WITH PERCH** will be shifted S.S.E. $\frac{3}{4}$ E. 550 fathoms from its present position, and will lie off the N.E. spit of GREAT BURBO BANK (sometimes called ASKEW'S SPIT), in 36 feet at low water, C 2 Red Can, bearing N.W. $\frac{1}{2}$ N. $\frac{3}{4}$ of a mile nearly.
- C 4 RED CAN BUOY** will be shifted S. by E. $\frac{1}{4}$ E., 330 fathoms from its present position, and will lie in 20 feet at low water, C 3 Red Can, bearing N. by W. $\frac{1}{4}$ W., distant 1 mile.
- C 5 RED CAN BUOY** will be shifted N.W. 100 fathoms from its present position, and will lie in 16 feet at low water, C 4 Red Can, bearing N. by W. $\frac{1}{4}$ W., distant 1 mile.
- C 6 RED CAN BUOY** will be shifted N.N.W. $\frac{1}{4}$ W. 370 fathoms from its present position, and will lie in 21 feet at low water, C 5 Red Can, bearing N. by W. $\frac{1}{4}$ W., distant 1 mile.

N.B.—The three Buoys last mentioned will lie respectively at the North-end, the middle and the South-end of a detached Bank, the shoal part of which has hitherto been marked by C 5 Red; this Bank has now as little as 13 feet water on it, therefore heavy Ships should keep mid-Channel and avoid any approach to the line of these Buoys.

- A NEW RED CAN BUOY** to be designated C 7, will be stationed off the S.E. extreme of the high part of Great Burbo Bank, and will lie in 30 feet at low water, C 6 Red, bearing N. by W. $\frac{1}{2}$ W., distant $\frac{3}{4}$ of a mile; Rock Lighthouse, S. by E. $\frac{1}{4}$ E., distant 1 mile.
- CROSBY LIGHTSHIP** will be shifted N.E. $\frac{3}{4}$ E. 230 fathoms from her present position, and will lie in 30 feet at low water, the FORMBY LIGHTSHIP bearing N. W. $\frac{1}{4}$ W., distant $2\frac{1}{2}$ miles; Crosby Shore Light E. $\frac{3}{4}$ S. $2\frac{1}{8}$ miles; Rock Lighthouse S. by E. 5 miles; C 3 Red Can Buoy S. W. 450 fathoms; C 3 Black Nun Buoy N. by W. $\frac{1}{2}$ W., 330 fathoms; C 4 Black Nun Buoy S.E. $\frac{1}{2}$ E. 550 fathoms.

N.B.—It is intended that as soon as the necessary preparations can be made, the Crosby Lightship shall be distinguished by the exhibition of an additional coloured light, particulars of which will be made known by public Notice in due course.

ZEBRA FLATS.

- THE ZEBRA FAIRWAY BUOY, NUN**, striped Black and White vertically with a Cheese Top, will be shifted from its present position, and will be stationed to the N. Westward of these Flats in 25 feet at low water, the Q Fy Bell Beacon bearing S.W. $\frac{1}{2}$ W., $1\frac{1}{2}$ miles; the Formby N.W. Buoy N.E. $\frac{1}{2}$ E., $1\frac{1}{2}$ miles; Q 1 Black Nun Buoy S. by W. $\frac{3}{4}$ W., $\frac{1}{2}$ of a mile; Formby Lightship S.S.E. $\frac{1}{4}$ E., $2\frac{1}{4}$ miles.

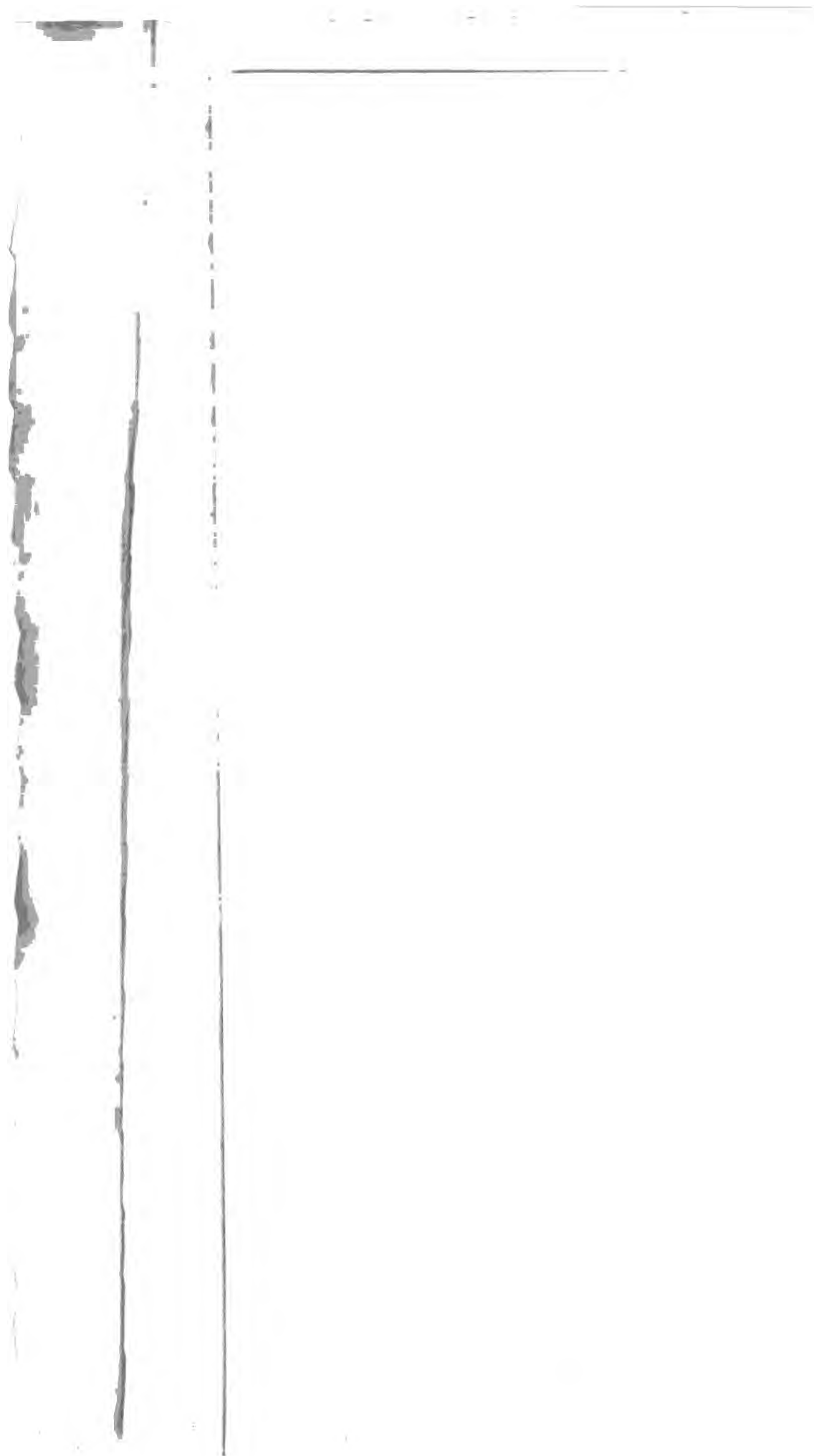
HILBRE SWASH.

- IE 1 BLACK NUN BUOY** will be shifted from its present position E.N.E. 100 fathoms, and will lie in 18 feet at low water, the Fairway Buoy bearing N.N.W. $\frac{1}{2}$ W., distant $1\frac{1}{4}$ miles.
- IE 2 BLACK NUN BUOY** will be shifted S.S.E. $\frac{1}{2}$ E. 400 fathoms from its present position, and will lie in 18 feet at low water, IE 1 Black Nun bearing N.N.W. $\frac{1}{2}$ W., distant 1 mile nearly.
- A NEW BLACK NUN BUOY** to be designated IE 3, will be stationed in the bight of East Hoyle Bank, in 18 feet at low water, IE 2 Black Nun bearing North, distant 1 mile nearly; Hilbre Telegraph S.S.W. $\frac{1}{4}$ W., 1 mile nearly.
- IE 4 BLACK NUN.**—The Buoy hitherto known as IE 3, will be deprived of the Perch and stationed off the elbow of Lime Wharf, Hilbre Telegraph Flagstaff bearing E. by N., distant 220 fathoms.

N.B.—A Chart of Liverpool Bay revised according to the survey made during the present year, including the various changes in the Buoyage and Lighting of the Port, as hereinbefore set out, is printing, and will be published as soon as possible.

GRAHAM. H. HILLS,

MARINE SURVEYOR.



— 1000 Yards, September 22nd, 1898.

MARINE SURVEILLANCE.

[ENTERED AT STATIONERS' HALL.]

QUIGGIN'S
ISLE OF MAN
ALMANACK,

FOR THE YEAR OF OUR LORD

1870,

Being the Second after Bissextile or Leap-Year,
AND THE 33rd-34th OF THE REIGN OF HER PRESENT MAJESTY;

WITH CORRECT

TIDE TABLES,

FOR

LIVERPOOL, BRISTOL, GREENOCK,
LONDON, CORK, SUNDERLAND, SHIELDS, HULL,
BRIDPORT, SOUTHAMPTON, AND PORTSMOUTH,

AND

MARINERS' COMPANION;

CONTAINING ALSO EVERY CALCULATION NECESSARY FOR

WORKING A LUNAR DISTANCE.

CALCULATED TO MEAN TIME, IN LATITUDE $54^{\circ} 10'$ N. AND LONGITUDE
 $4^{\circ} 30'$ W.

 The Liverpool Tides are calculated for Greenwich mean time.

FORTY-FIFTH ANNUAL IMPRESSION.

DOUGLAS, ISLE OF MAN:
PRINTED AND PUBLISHED BY MATTHEW GLOVER,
52, NORTH QUAY.

PHASES OF THE MOON.	NEW MOON,	2nd day, at	0h. 5m. morning.
	FIRST QUARTER,	9th day, at	9h. 2m. night.
	FULL MOON.	17th day, at	2h. 45m. afternoon.
	LAST QUARTER,	24th day, at	10h. 23m. morning.
	NEW MOON,	31st day, at	3h. 41m. afternoon.

M	Day	Twil.	☉'s	♀ Mercury.		♀ Venus.		♂ Mars.		♃ Jupiter.		♄ Saturn.		M												
D.	brek.	ends.	semi.	sets.	sout.	sets.	sout.	sets.	sout.	sets.	sout.	sets.	sout.	D.												
1	6m	7a	0	16	18	4a	28	0a	53	8a	23	13	5a	11	12	3m	19	7a	51	6m	54	10m	42	1		
8	6	6	6	7	16	18	5	8	1	12	8	11	3	5	5	1	7	2	52	7	23	6	30	10	18	8
15	6	3	6	16	16	18	5	4	6	1	26	8	15	2	53	5	10	1	2	25	6	56	6	6	9	15
22	5	58	6	27	16	17	6	5	1	22	8	13	2	37	5	16	0	57	2	0	6	30	5	42	29	22
29	5	49	6	39	16	16	5	3	0	48	8	2	2	14	5	22	0	52	1	35	6	4	5	18	9	29

M W D D				Remarkable Days	HIGH WATER.—LIVERPOOL.								Equation of Time. " "	
					MORNING. Time. Height.				EVENING. Time. Height.					
1	S			New Year's Day	10	39	17	3	11	1	17	3	3	51
2	B			2 Sun. aft. Christmas	11	23	17	6	11	45	17	2	4	20
3	M			Pro. [Isa. xli; Matthew i. Les. [— xliii; Romans i.	—	—	—	—	0	7	18	0	4	47
4	Tu			Neptune souths 6 a 8	0	27	17	1	0	47	17	11	5	15
5	W			Bank Dividends due	1	7	16	8	1	27	17	3	5	42
6	Th			Epiphany.	1	47	15	7	2	7	16	2	6	9
7	F			Fenelon died, 1715	2	27	14	7	2	45	15	4	6	35
8	S			Lucian, P. & M.	3	4	13	9	3	23	14	3	7	0
9	B			1 Sun. aft. Epiphany	3	44	12	9	4	6	13	2	7	25
10	M			Pro. [Isa. xlv; Matt. vii. Les. [— xlv; Rom. vii	4	31	11	11	4	59	12	4	7	50
11	Tu			Hilary term begins	5	33	11	5	6	7	11	10	8	14
12	W			Lavater died, 1801	6	39	11	6	7	12	12	1	8	37
13	Th			Cambridge trm. begins	7	45	12	3	8	20	12	10	9	0
14	F			Oxford term begins	8	48	13	4	9	14	13	11	9	22
15	S			H souths 11 a 44	9	37	14	8	10	2	15	0	9	43
16	B			2 Sun. aft. Epiphany	10	26	15	11	10	49	16	0	10	4
17	M			Proper [Isa. li; Matt. xiv. Lessons. [— liii; Rom. xiv.	11	7	17	0	11	59	16	11	10	23
18	Tu			Prisca, V. & M.	11	49	18	1	—	—	—	—	10	43
19	W			Neptune souths 5 a 9	0	8	17	7	0	29	18	3	11	1
20	Th			Fabian, Bishop	0	52	17	10	1	13	18	10	11	19
21	F			Agnes, V. & M.	1	35	17	8	1	59	18	7	11	36
22	S			Vincent, Martyr.	2	22	17	0	2	46	17	7	11	52
23	B			3 Sun. aft. Epiphany	3	9	16	0	3	32	16	6	12	8
24	M			Proper [Isa. lv; Matt. xxi. Lessons. [— vi; 1 Cor. v.	3	57	14	11	4	24	15	2	12	22
25	Tu			Conversion of St. Paul	4	53	13	10	5	28	14	0	12	36
26	W			Dr. Jenner died, 1823	6	4	13	0	6	41	13	5	12	49
27	Th			Mozart born, 1756	7	22	13	3	8	3	13	9	13	2
28	F			H souths 10 a 51	8	38	14	2	9	11	14	5	13	13
29	S			Neptune souths 4 a 31	9	41	15	4	10	8	15	4	13	24
30	B			4 Sun. aft. Epiphany	10	33	16	5	10	55	16	0	13	34
31	M			Pro. [Isa. lvii; Matt. xxvii. Les. [— lviii; 1 Cor. xi.	11	15	17	2	11	36	16	7	13	43



1870.

JANUARY 31 Days.

3

Bristol tides				SUN.							MOON.					M D.	ASPECTS AND WEATHER.
morn. H. M.	even. H. M.	height F. I.	rises. H. M.	sets. H. M.	rt. ascen. H. M. S.	declin. S. ° ' "	sets. H. M.	souths H. M.	declin. ° ' "	age D.							
1	6 21	6 45	30 8	8 22	3 46	18 47 36	23 0 13	3 a 24	11 m 35	21 s 14	29	1	1	Fair			
2	7 9	7 34	31 2	8 22	3 47	18 52 1	22 54 58	4 28	0 a 31	21 16	N	2	2	and			
3	7 58	8 18	31 6	8 22	3 48	18 56 25	22 49 16	5 33	1 26	20 2	1	3	3	☿ δ (, 0 m 6			
4	8 37	8 56	31 5	8 21	3 49	19 0 49	22 43 7	6 42	2 17	17 42	2	4	4	frosty			
5	9 15	9 33	30 4	8 21	3 51	19 5 13	22 36 30	7 53	3 6	14 31	3	5	5	stationary			
6	9 51	10 9	28 9	8 21	3 52	19 9 36	22 29 27	9 3	3 51	10 44	4	6	6	☿ δ δ, 9 a 52			
7	10 24	10 40	27 5	8 20	3 53	19 13 59	22 21 57	10 11	4 35	6 34	5	7	7	Neptune ☐ ☉			
8	10 56	11 14	25 6	8 20	3 55	19 18 21	22 14 0	11 19	5 17	2 11	6	8	8	which			
9	11 33	11 55	23 6	8 19	3 56	19 22 42	22 5 38	morn	5 58	2 n 15	7	9	9	may			
10	—	0 19	21 8	8 18	3 58	19 27 3	21 56 50	0 26	6 39	6 36	8	10	10	☿ δ ☉, 9 m 5			
11	0 49	1 20	20 9	8 17	4 0	19 31 24	21 47 35	1 33	7 22	10 44	9	11	11	☿ δ (, 1 a 42			
12	1 50	2 29	21 2	8 16	4 1	19 35 44	21 37 56	2 41	8 7	14 28	10	12	12	continue			
13	3 9	3 50	23 1	8 15	4 3	19 40 3	21 27 51	3 50	8 55	17 38	11	13	13	unless the			
14	4 21	4 48	25 1	8 14	4 19	44 21	21 17 22	4 59	9 46	19 58	12	14	14	wind be			
15	5 12	5 38	27 2	8 13	4 6	19 48 39	21 6 28	6 6	10 40	21 14	13	15	15	southerly,			
16	6 5	6 30	28 1	8 12	4 8	19 52 56	20 55 10	7 7	11 36	21 15	14	16	16				
17	6 51	7 15	29 10	8 11	4 9	19 57 13	20 43 28	rises.	morn	—	F	17	17	17	☾ eclipse vis.		
18	7 37	7 59	31 7	8 10	4 11	20 1 29	20 31 23	5 a 27	0 33	19 54	16	18	18	18	☿ gr. brillian		
19	8 20	8 42	32 8	8 9	4 13	20 5 44	20 18 54	6 47	1 29	17 14	17	19	19	19	☿ in ☉, 5 a 31		
20	9 3	9 22	33 2	8 8	4 15	20 9 58	20 6 3	8 8	2 24	13 24	18	20	20	20	Still		
21	9 45	10 6	32 10	8 7	4 17	20 14 11	19 52 48	9 30	3 18	8 44	19	21	21	21	☾ in Perigee		
22	10 26	10 46	31 7	8 6	4 19	20 18 24	19 39 12	10 53	4 10	3 32	20	22	22	22	Fair and		
23	11 6	11 27	29 7	8 4	4 21	20 22 36	19 25 14	morn	5 1	1 s 51	21	23	23	23	☿ in Perihel.		
24	11 51	—	27 6	8 3	4 22	20 26 48	19 10 54	0 16	5 52	7 6	22	24	24	24	mild.		
25	0 16	0 49	24 8	8 1	4 24	20 30 58	18 56 13	1 38	6 43	11 53	23	25	25	25	Now		
26	1 17	1 51	23 6	8 0	4 26	20 35 8	18 41 11	2 59	7 36	15 55	24	26	26	26	more		
27	2 40	3 30	24 7	7 58	4 28	20 39 17	18 25 49	4 16	8 31	18 59	25	27	27	27	☿ δ δ, 10 a 32		
28	4 10	4 45	26 4	7 57	4 30	20 43 25	18 10 7	5 27	9 26	20 51	26	28	28	28	Changeable		
29	5 16	5 44	28 0	7 55	4 32	20 47 32	17 54 5	6 28	10 21	21 25	27	29	29	29	and gloomy.		
30	6 12	6 37	28 9	7 54	4 34	20 51 39	17 37 44	sets.	11 16	20 42	28	30	30	30	☿ stationary		
31	6 59	7 22	29 11	7 52	4 36	20 55 44	17 21 5	4 a 25	0 a	8 18 49	N	31	31	31			

LUNAR DISTANCES FROM THE SUN.

Mean Astronomical Time at Greenwich.

M. D.	NOON.	3 HOURS.	6 HOURS.	9 HOURS.	MIDN.	15 HOUR.	18 HOUR.	21 HOUR.
	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "
4w	30 13 38	31 41 33	33 9 11	34 36 32	36 3 36	37 30 24	38 56 54	40 23 8
5	41 49 7	43 14 49	44 40 15	46 5 26	47 30 22	48 55 3	50 19 30	51 43 43
6	53 7 42	54 31 28	55 55 1	57 18 22	58 41 31	60 4 28	61 27 14	62 49 50
7	64 12 16	65 34 32	66 56 40	68 18 39	69 40 30	71 2 13	72 23 50	73 45 21
8	75 6 46	76 28 6	77 49 22	79 10 34	80 31 42	81 52 48	83 13 52	84 34 54
9	85 55 56	87 16 57	88 37 58	89 59 1	91 20 5	92 41 12	94 2 21	95 23 34
10	96 44 51	98 6 13	99 27 40	100 49 13	102 10 53	103 32 40	104 54 34	106 16 36
11	107 38 48	109 1 9	110 23 40	111 46 21	113 9 13	114 32 18	115 55 34	117 19 3
12	118 42 46	120 6 42	121 32 52	122 55 17	124 19 56	125 44 52	127 10 3	128 35 30
13	130 1 14	131 27 16	132 53 35	134 20 11	135 47 5	137 14 18	138 41 50	140 9 40
..								
20E	142 7 48	140 27 54	138 47 56	137 7 56	135 27 55	133 47 54	132 7 52	130 27 50
21	128 47 49	127 7 50	125 27 52	123 47 56	122 8 2	120 28 11	118 48 24	117 8 40
22	115 29 0	113 49 25	112 9 54	110 30 28	108 51 8	107 11 52	105 32 43	103 53 39
23	102 14 42	100 35 51	98 57 6	97 18 29	95 39 58	94 1 34	92 23 18	90 45 9
24	89 7 7	87 29 13	85 51 27	84 13 48	82 36 18	80 58 56	79 21 41	77 44 35
25	76 7 37	74 30 47	72 54 6	71 17 33	69 41 9	68 4 54	66 28 47	64 52 49
26	63 16 59	61 41 19	60 5 47	58 30 25	56 55 12	55 20 8	53 45 13	52 10 27
27	50 35 52	49 1 25	47 27 9	45 53 2	44 19 5	42 45 18	41 11 42	39 38 16
28	38 5 0	36 31 54	34 59 0	33 26 16	31 53 44	30 21 23	28 49 13	27 17 15
..								

Explanations

The LIVERPOOL TIDES on the left-hand Calendar pages are calculated for Greenwich mean time; with the height above the level of the Old Dock Sill, now represented by the marks on the east side of the Canning Dock, and include the diurnal inequality in the height of each Tide.

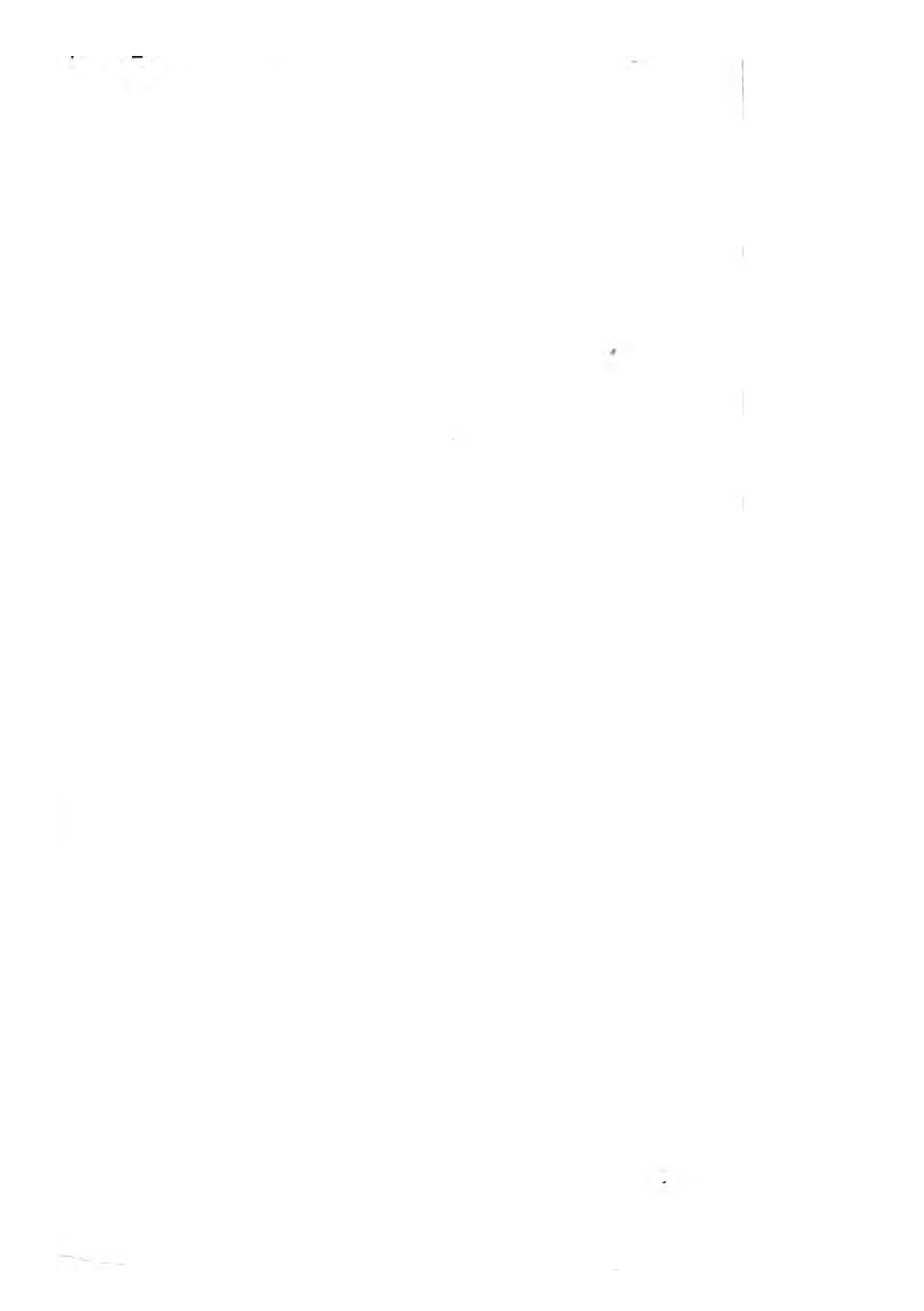
PHASES
OF THE
MOON.

FIRST QUARTER, 8th day, at 6h. 19m. evening.
FULL MOON, 16th day, at 3h. 28m. morning.
LAST QUARTER, 22nd day, at 6h. 46m. evening.

M D.	Day	Twil.	☉'s brek. ends. semi.	♂ Mercury sets. sout.	♀ Venus. sets. sout.	♂ Mars. sets. sout.	♂ Jupiter. sets. sout.	♂ Saturn. rises. sout.	M D.
1	5m46	6a43	16 16	5a13 0a24	7a55 2a3	5a23 0a49	1m25 5a53	5m7 8m54	1
8	5 35 6	5 55 16	15	rises. 11m25	7 28 1 31	5 28 0 43	1 15 29	4 43 8 29	8
15	5 22 7	8 16 13	6m22	10 47	6 50 0 51	5 34 0 37	0 38 5 4	4 18 8 4	15
22	5 8 7	21 16 12	6 10 10	30 rises.	0 8	5 39 0 30	0 15 4 41	3 53 7 39	22
28	4 54 7	32 16 10	6 6 10	28 5m42	11m31	5 44 0 24	11a57 4 21	3 31 7 17	28

M W D D		Remarkable Days	HIGH WATER.—LIVERPOOL.				Equation of Time. ' "
			MORNING. Time. Height.		EVENING. Time. Height.		
1	Tu	St. Bridget.	11 55	17 9	—	—	13 52
2	W	Purifi., B. V. Mary	0 15	16 10	0 30	17 11	13 59
3	Th	Blasius, Bishop	0 48	16 9	1 5	17 10	14 6
4	F	Pleiades souths 6 a 41	1 22	16 7	1 41	17 3	14 12
5	S	Agatha, Sicil. Ves.	1 58	15 10	2 15	16 4	14 17
6	B	5 Sun. aft. Epiphany	2 32	15 5	2 48	15 7	14 21
7	M	Pro. [Isa. lix; Mark vi. Les. [— xiv; 1 Cor. ii.	3 5	14 1	3 22	14 3	14 24
8	Tu	Mary Q. of Scots, bhd	3 40	13 1	4 1	12 11	14 26
9	W	Dr. Maskelyne d. 1811	4 24	12 0	4 53	11 9	14 28
10	Th	Queen married 1840	5 29	11 2	6 6	11 2	14 29
11	F	Washington b., 1732	6 42	11 6	7 23	11 8	14 29
12	S	Lady Jane Grey, bhd.	8 3	12 6	8 37	12 8	14 29
13	B	Septuagesima Sun.	9 10	13 10	9 39	14 1	14 27
14	M	Pro. [Gen. i.; Mark xiii. Les. [— ii; 1 Cor. ix.	10 4	15 8	10 30	15 10	14 25
15	Tu	Valentine, Bishop [14	10 51	17 4	11 11	17 1	14 22
16	W	Melancthon bn., 1495	11 32	18 8	11 52	18 3	14 18
17	Th	H souths 9 a 30	—	—	0 13	19 10	14 14
18	F	Luther died, 1546	0 34	18 11	0 56	20 1	14 9
19	S	Galileo born, 1564	1 18	19 0	1 39	19 11	14 3
20	B	Sexagesima Sunday	2 2	18 4	2 25	18 10	13 57
21	M	Proper [Gen. iii; Luke iii. Lessons. [— vi; Galat. iii.	2 49	17 2	3 9	17 4	13 50
22	Tu	French Revoln., 1848	3 32	15 7	3 57	15 4	13 42
23	W	Day 10h. 15m. long	4 24	13 11	4 56	13 4	13 34
24	Th	Cam. term divides M.	5 36	12 8	6 16	12 2	13 25
25	F	Sir C. Wren, d., 1723	7 1	12 5	7 44	12 4	13 16
26	S	Day increased 3h 16m	8 25	13 3	9 0	13 1	13 6
27	B	Shrove Sunday	9 32	14 7	9 58	14 4	12 55
28	M	Pro [Gen. ix to v. 20; Luke x. Les. [— xii; Eph. iv. Elliott's Victory in Ramsey Bay 1760 28th.	10 23	15 11	10 44	15 5	12 44

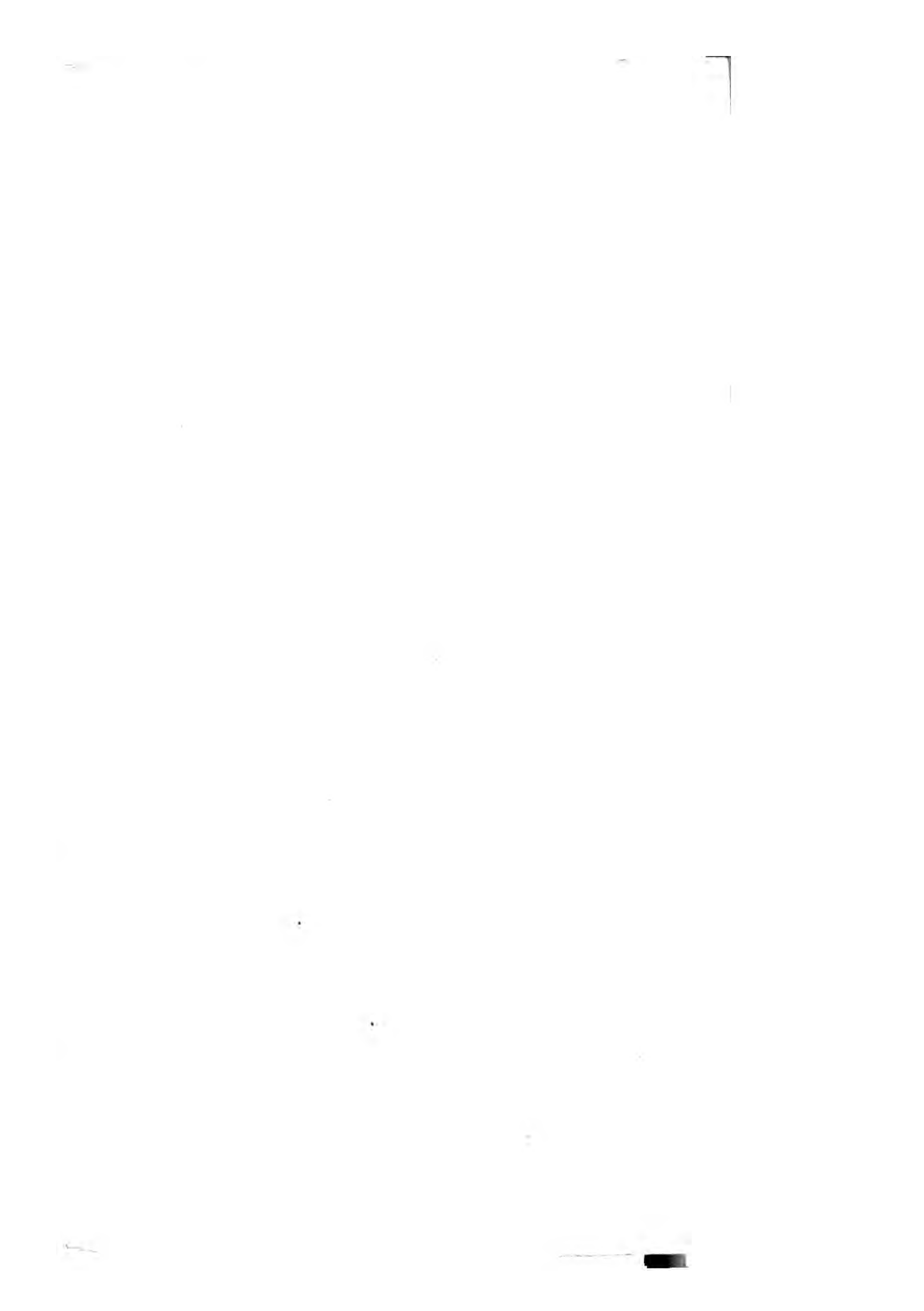
To reduce the Liverpool Tides for the Isle of Man generally, subtract twelve minutes; for the rise or fall of the water from tide to tide, subtract one sixth for the approximate rise or fall in Douglas.



PHASES OF THE MOON. { NEW MOON, 2nd day, at 8h. 40m. morning.
FIRST QUARTER 10th day, at 1h. 12m. afternoon.
FULL MOON, 17th day, at 1h. 52m. afternoon.
LAST QUARTER, 24th day, at 4h. 37m. morning.

M D.	Day	Twil.	☉'s brek. ends. semi.	♂ Mercury rises. sout.	♀ Venus. rises. sout.	♂ Mars. sets. sout.	♂ Jupiter. sets. sout.	♂ Saturn. rises. sout.	M D.
1	4m53	7a35	16 10	6m6 10m29	5m38 11m25	5a45 0a23	11a53 4a17	3m27 7m13	1
8	4 34	7 50	16 8	6 1 10 35	5 10 10 47	5 50 0 16	11 33 3 54	3 16 47 8	8
15	4 16	8 4	16 6	5 55 10 45	4 47 10 16	5 53 0 8	11 13 3 32	2 35 6 21	15
22	3 56	8 19	16 5	5 47 10 58	4 29 9 53	rises. 0 0	10 53 3 9	2 8 5 55	22
29	3 34	8 36	16 3	5 36 11 15	4 15 9 36	5m43 11m53	10 33 2 43	1 41 5 29	29

M W D D		Remarkable Days	HIGH WATER.—LIVERPOOL.				Equation of Time.
			MORNING.		EVENING.		
			Time.	Height	Time.	Height.	" "
1	Tu	Shrove Tuesday	11 1	16 10	11 20	16 2	12 ³³ 32
2	W	Ash Wednesday	11 38	17 10	11 54	16 10	12 ³³ 20
3	Th	Waller born, 1605	— —	— —	0 8	18 0	12 ³³ 8
4	F	Regulus, sou. 11 a 11	0 24	17 2	0 40	17 10	11 ⁵⁵ 55
5	S	Dr. Arne died, 1778	0 55	17 0	1 12	17 9	11 ⁵⁴ 41
6	B	1 Sunday in Lent	1 28	16 9	1 42	17 0	11 ⁵⁷ 27
7	M	Pro. [Gen xix. to v. 30; Luke xvii. Les. [— xxii; Coloss. i.	1 55	16 0	2 13	16 0	11 ⁵⁷ 13
8	Tu	Trocyon souths 8 a 25	2 30	15 1	2 48	14 10	10 ⁵⁸ 58
9	W	Castor souths, 8 a 18	3 3	14 0	3 23	13 5	10 ⁴³ 43
10	Th	Ben. West died, 1810	3 44	12 8	4 8	12 0	10 ²⁷ 27
11	F	Tasso born, 1544	4 36	11 7	5 13	10 11	10 ¹¹ 11
12	S	Treaty of Vienna	5 56	11 1	6 39	10 10	9 ⁵⁵ 55
13	B	2 Sunday in Lent	7 23	11 11	8 2	12 0	9 ³⁸ 38
14	M	Proper [Gen. xxvii; Luke xxiv. Lessons. [— xxxiv; 1 Thess. iv.	8 41	13 7	9 12	13 11	9 ²² 22
15	Tu	Rigel souths 5 a 36	9 39	15 10	10 5	16 0	9 ⁴ 4
16	W	Julius Cæsar died	10 29	17 11	10 51	17 2	8 ⁴⁷ 47
17	Th	St. Patrick	11 11	19 6	11 33	19 1	8 ³⁰ 30
18	F	Princess Louisa, born	11 52	20 9	— —	— —	8 ¹² 12
19	S	Lucknow taken, 1858	0 11	19 11	0 32	21 2	7 ⁵⁴ 54
20	B	3 Sunday in Lent	0 55	19 11	1 18	20 7	7 ³⁶ 36
21	M	Pro. [Gen. xxxix; John vii. Les. [— xlii; 1 Tim. iv.	1 41	19 2	2 3	19 3	7 ¹⁸ 18
22	Tu	Goethe died, 1822	2 26	17 8	2 47	17 2	6 ⁵⁹ 59
23	W	Regulus souths 9 a 57	3 10	15 11	3 35	15 0	6 ⁴¹ 41
24	Th	Q. Elizabeth d., 1603	4 1	13 11	4 32	12 7	6 ²² 22
25	F	Lady Day	5 10	12 5	5 56	11 4	6 ⁴ 4
26	S	Duke of Cam. b. 1819	6 41	12 0	7 24	11 4	5 ⁴⁶ 46
27	B	4 Sunday in Lent	8 5	12 10	8 43	12 5	5 ²⁷ 27
		Prophet. [Genesis xliii; John xiv.	0 12	14 3	9 39	13 10	5 ⁹ 9



1870.

MARCH 31 Days.

7

Bristol tides				SUN.					MOON.					ASPECTS AND WEATHER.	
M	morn.	even.	height	rises	sets.	rt.	ascen.	declin.	rises.	souths	declin.	M	D.		
D.	H. M.	H. M.	F. I.	H. M.	H. M.	H. M.	H. M. S.	° / '	H. M.	H. M.	° / '				
1	6 43	7 5 29	2	6 52	5 34	22 48	54	7 32 45	6m58	11m40	13s47	29	1	♀♂♂, 4 m45	
2	7 24	7 43 30	6	6 50	5 36	22 52	38	7 9 54	sets.	0a25	9 53	N	2	♂ gr. hel. lat.	
3	7 58	8 15 31	5	6 48	5 38	22 56	22	6 46 56	6a50	1 8	5 37	1	3	Changeable	
4	8 30	8 44 31	7	6 47	5 40	23 0	5	6 23 53	7 58	1 50	1 9	2	4	with	
5	9 0	9 15 31	4	6 44	5 42	23 3	49	6 0 44	9 6	2 31	3m19	3	5	high winds	
6	9 28	9 40 30	4	6 41	5 44	23 7	31	5 37 30	10 13	3 12	7 38	4	6	☾ in Apogee	
7	9 57	10 12 28	11	6 39	5 46	23 11	13	5 14 12	11 20	3 55	11 40	5	7	♂♂, 5 a 15	
8	10 27	10 39 27	5	6 36	5 48	23 14	55	4 50 50	morn	4 39	15 15	6	8	and wet	
9	10 55	11 14 24	11	6 34	5 50	23 18	36	4 27 24	0 26	5 26	18 12	7	9	♂ in Aphelion	
10	11 35	11 59 22	4	6 31	5 52	23 22	17	4 3 55	1 32	6 15	20 20	8	10	♂♂♀, 11 m 8	
11	—	0 31 20	0	6 29	5 54	23 25	58	3 40 23	2 37	7 6	21 28	9	11	weather	
12	1 9	1 49 19	8	6 26	5 56	23 29	38	3 16 49	3 36	8 1	21 25	10	12	♂♂, 6 a 38	
13	2 42	3 29 22	1	6 24	5 57	23 33	18	2 53 12	4 26	8 56	20 2	11	13	may	
14	4 13	4 46 25	9	6 21	5 59	23 36	58	2 29 34	5 7	9 53	17 19	12	14	♀ stationary	
15	5 14	5 41 29	6	6 19	6 1	23 40	37	2 5 54	5 43	10 49	13 22	13	15	now	
16	6 9	6 33 31	1	6 16	6 3	23 44	17	1 42 13	6 11	11 44	8 26	14	16	be	
17	6 56	7 19 33	11	6 14	6 5	23 47	56	1 18 31	rises.	morn	—	F	17	expected.	
18	7 41	8 2 36	3	6 11	6 7	23 51	34	0 54 49	7a34	0 39	2 51	16	18	☾ in Perigee	
19	8 22	8 44 37	1	6 9	6 9	23 55	13	0 31 7	9 2	1 34	2s57	17	19	☾☾☾, 0 m 42	
20	9 6	9 28 36	7	6 6	6 11	23 58	51	0 7 26	10 30	2 28	8 31	18	20	☾ ent. Aries,	
21	9 48	10 9 34	6	6 4	6 13	0 2	30	no 16 15	11 53	3 24	13 27	19	21	[Spring com.	
22	10 26	10 46 31	6	6 1	6 15	0 6	8	0 39 55	morn	4 20	17 24	20	22	still	
23	11 7	11 29 27	7	5 59	6 16	0 9	46	1 3 34	1 11	5 16	20 7	21	23	♂♂, 7 a 43	
24	11 56	—	23	5 56	6 18	0 13	24	1 27 11	2 19	6 12	21 30	22	24	inclined	
25	0 29	1 10 20	9	5 54	6 20	0 17	2	1 50 46	3 15	7 7	21 33	23	25	to wet	
26	1 52	2 44 20	11	5 51	6 22	0 20	41	2 14 19	4 1	8 0	20 22	24	26	♂ stationary	
27	3 33	4 15 23	4	5 49	6 24	0 24	19	2 37 49	4 37	8 50	18 7	25	27	and	
28	4 47	5 14 25	10	5 46	6 26	0 27	57	3 1 16	5 5	9 38	15 1	26	28	♀♂, 9 m59	
29	5 36	6 0 27	10	5 44	6 27	0 31	35	3 24 40	5 26	10 23	11 16	27	29	showery	
30	6 19	6 38 28	8	5 41	6 29	0 35	13	3 47 59	5 44	11 6	7 5	28	30	weather	
31	6 56	7 14 29	11	5 39	6 31	0 38	52	4 11 15	6 1	11 48	2 39	29	31	♀ gr. bril.	

LUNAR DISTANCES FROM THE SUN.

Mean Astronomical Time at Greenwich.

M.	NOON.	3 HOURS.	6 HOURS.	9 HOURS.	MIDN.	15 HOUR.	18 HOUR.	21 HOUR.
D.	° / '	° / '	° / '	° / '	° / '	° / '	° / '	° / '
4w	24 5 26	25 26 17	26 47 7	28 7 57	29 28 46	30 49 34	32 10 21	33 31 6
5	34 51 51	36 12 34	37 33 17	38 53 58	40 14 39	41 35 20	42 56 1	44 16 41
6	45 37 22	46 58 4	48 18 47	49 39 31	51 0 18	52 21 6	53 41 57	55 2 51
7	56 23 49	57 44 51	59 5 57	60 27 8	61 48 24	63 9 46	64 31 14	65 52 50
8	67 14 33	68 36 23	69 58 22	71 20 31	72 42 48	74 5 16	75 27 55	76 50 44
9	78 13 46	79 36 59	81 0 26	82 24 6	83 48 0	85 12 9	86 36 33	88 1 13
10	89 26 9	90 51 22	92 16 52	93 42 40	95 8 47	96 35 13	98 1 59	99 29 4
11	100 56 30	102 24 18	103 52 27	105 20 58	106 49 51	108 19 7	109 48 47	111 18 50
12	112 49 17	114 20 8	115 51 24	117 23 5	118 55 11	120 27 43	122 0 40	123 34 3
13	125 7 51	126 42 5	128 16 45	129 51 51	131 27 22	133 3 19	134 39 41	136 16 27
20E	138 23 26	136 40 22	134 57 32	133 14 59	131 32 43	129 50 45	128 9 5	126 27 44
21	124 46 44	123 6 3	121 25 44	119 45 46	118 6 9	116 26 54	114 48 2	113 9 32
22	111 31 24	109 53 39	108 16 18	106 39 19	105 2 42	103 26 29	101 50 39	100 15 12
23	98 40 7	97 5 24	95 31 5	93 57 7	92 23 32	90 50 18	89 17 26	87 44 55
24	86 12 45	84 40 56	83 9 28	81 38 20	80 7 32	78 37 3	77 6 53	75 37 3
25	74 7 31	72 38 17	71 9 21	69 40 42	68 12 21	66 44 17	65 16 29	63 48 57
26	62 21 41	60 54 40	59 27 55	58 1 24	56 35 8	55 9 6	53 43 18	52 17 44
27	50 52 24	49 27 16	48 2 21	46 37 39	45 13 9	43 48 52	42 24 47	41 0 54
28	39 37 13	38 13 44	36 50 27	35 27 22	34 4 29	32 41 48	31 19 20	29 57 5

to reduce it to mean time.

IN THE TIDE TABLE FOR BRISTOL, on the right-hand pages, the heights are given of those Tides which happen nearest to noon in each day at the Cumberland Gates, without taking into account the diurnal inequality of the height.

PHASES OF THE MOON.	NEW MOON,	1st day, at 1h. 58m. morning.
	FIRST QUARTER,	9th day, at 4h. 25m. morning.
	FULL MOON,	15th day, at 10h. 26m. night.
	LAST QUARTER,	22nd day, at 4h. 25m. evening.
	NEW MOON,	30th day, at 6h. 37m. evening.

M	Day	Twil.	☉'s	♿ Mercury	♀ Venus.	♂ Mars.	♃ Jupiter.	♄ Saturn.	M
D.	brek.	ends.	semi.	rises. sout.	rises. sout.	rises. sout.	sets. sout.	rises. sout.	D.
1	3m26	8a43	16 2	5m31 ^{11m22}	4m9 9m31	5m34 ^{11m50}	10a25 2a38	1m29 5m16	1
8	3 49	2 16	0	sets. 11 43	3 56 9 20	5 14 11 43	9 56 2 17	1 24 49 8	
15	2 20	9 23	15 58	7a12 0a8	3 44 9 13	4 54 11 34	9 47 1 55	0 34 4 21	15
22	2 12	9 45	15 56	8 19 0 36	3 32 9 9	4 34 11 26	9 29 1 34	0 63 53 22	
29	1 42	10 12	15 54	9 18 1 2	3 31 9 6	4 15 11 18	9 11 1 13	11a33 3 24 30	29

M	W	Remarkable Days	HIGH WATER.—LIVERPOOL.				Equation of Time.
D	D		MORNING.		EVENING.		
			Time.	Height.	Time.	Height.	" "
1	F	Day incr. 5h. 45m.	11 42	17 10	11 57	17 2	3 56
2	S	B. of Copenh'n, 1801	— —	— —	0 10	17 10	3 38
3	B	5 Sunday in Lent	0 26	17 3	0 41	17 8	3 20
4	M	Proper [Exodus iii; John xxi. Lessons. [— v; Heb. v.	0 56	17 0	1 12	17 1	3 2
5	Tu	Regulus souths 9 a 6	1 27	16 5	1 43	16 1	2 44
6	W	Old Lady Day	1 58	15 6	2 16	14 11	2 27
7	Th	Lalande died, 1811	2 34	14 6	2 52	13 7	2 10
8	F	Arcturus south, 0m49	3 14	13 9	3 39	12 2	1 53
9	S	Lord Bacon d., 1626	4 10	12 2	4 43	11 2	1 36
10	B	Palm Sunday	5 24	11 7	6 6	10 11	1 19
11	M	Pro. [Exodus ix; Matthew xxvi. Less. [— x; Heb. v. to v. 11.	6 51	12 3	7 34	12 1	1 3
12	Tu	Dr. Young died, 1765	8 11	13 11	8 44	14 0	0 47
13	W	Sir G. C. Lewis d. 1863	9 12	16 1	9 38	16 2	0 31
14	Th	Handel died, 1759	10 2	18 2	10 22	18 0	0 16
15	F	Good Friday	10 42	19 9	11 3	19 3	0 0
16	S	B. of Culloden, 1746	11 26	20 8	11 47	20 0	0 14
17	B	Easter Sunday	— —	— —	0 9	20 11	0 29
18	M	Proper [Exod. 12; Romans vi. Lessons. [— xiv; Acts ii to v. 22.	0 30	19 11	0 53	20 3	0 43
19	Tu	Easter Tuesday	1 17	19 2	1 41	18 7	0 56
20	W	Oxford term begins	2 3	17 8	2 27	16 9	1 9
21	Th	Bishop Heber b. 1783	2 53	15 10	3 19	14 4	1 22
22	F	Cam. Term begins	3 46	14 0	2 16	12 4	1 34
23	S	St. George	4 52	12 7	5 34	11 1	1 46
24	B	1st Sun. after Easter	6 17	12 2	6 46	11 3	1 58
25	M	Pro. [Numbers xvi; Acts xxi. Les. [— xxii; 2 Peter iii.	7 35	12 10	8 9	12 2	2 8
26	Tu	Pleiades set 9 a 56	8 39	13 11	9 6	13 4	2 19
27	W	Sir W. Jones d. 1794	9 28	15 1	9 49	14 8	2 29
28	Th	Mutiny of Bounty	10 9	16 1	10 25	15 7	2 38
29	F	Alexander II, b. 1818	10 40	16 9	10 53	16 3	2 47
30	S	Jas. Montgomery died	11 9	17 2	11 24	16 9	2 55

[1854]

Bristol tides				SUN.				MOON.				M	D.	ASPECTS AND WEATHER.
morn.	even.	height	rises.	sets.	rt. ascen.	declin. N.	sets.	souths	declin.	sets.	souths			
H. M.	H. M.	F. I.	H. M.	H. M.	H. M. S.	° ' "	H. M.	H. M.	° ' "	H. M.	H. M.	° ' "		
7 30	7 46	31	1 5	36 6 33	0 42 30	4 34 26	6a55	0a29	1n52	N	1			<i>Fair</i>
8 0	8 17	31	5 5	33 6 35	0 46 9	4 57 32	8 3	1 11	6 18	1	2			(in Apogee
8 31	8 45	31	4 5	31 6 37	0 49 47	5 20 32	9 11	1 53	10 30	2	3			<i>and</i>
9 0	9 14	30	8 5	28 6 39	0 53 26	5 43 27	10 18	2 36	14 16	3	4			h δ (, 10m49
9 29	9 42	29	3 5	26 6 41	0 57 5	6 6 16	11 24	3 22	17 28	4	5			<i>mild</i>
9 59	10 13	27	8 5	24 6 43	1 0 44	6 28 59	morn	4 9	19 55	5	6			<i>changing</i>
10 28	10 46	25	7 5	21 6 45	1 4 23	6 51 35	0 28	4 59	21 26	6	7			h stationary
11 9	11 37	23	1 5	19 6 47	1 8 3	7 14 4	1 27	5 51	21 50	7	8			h □ ⊙, 1 m17
—	0 4	20	11 5	16 6 48	1 11 43	7 36 25	2 20	6 44	21 2	8	9			h δ (, 2 m38
0 40	1 18	20	2 5	14 6 50	1 15 23	7 58 39	3 5	7 39	18 57	9	10			<i>to showery</i>
2 5	2 57	23	3 5	11 6 52	1 19 3	8 20 44	3 41	8 33	15 38	10	11			<i>and</i>
3 42	4 17	26	3 5	9 6 54	1 22 43	8 42 41	4 10	9 28	11 13	11	12			<i>wet</i>
4 46	5 14	29	11 5	7 6 56	1 26 24	9 4 30	4 35	10 22	5 56	12	13			☿ super δ ⊙
5 40	6 2	33	2 5	4 6 58	1 30 5	9 26 9	4 58	11 16	0 10	13	14			<i>weather</i>
6 25	6 49	34	5 5	2 7 0	1 33 46	9 47 38	rises.	morn	—	F	15			(in Perigee
7 14	7 37	36	4 5	0 7 1	1 37 28	10 8 58	7a56	0 11	5s42	15	16			<i>which</i>
8 0	8 21	36	9 4	57 7 3	1 41 10	10 30 8	9 26	1 7	11 11	16	17			☿ in Ω, 4a43
8 43	9 6	36	1 4	55 7 5	1 44 53	10 51 8	10 53	2 5	15 50	17	18			<i>may</i>
9 28	9 48	33	9 4	53 7 7	1 48 36	11 11 57	morn	3 3	19 18	18	19			<i>continue</i>
10 10	10 32	30	10 4	51 7 9	1 52 19	11 32 35	0 8	4 2	21 22	19	20			h δ (, 3m 40
10 53	11 15	27	1 4	48 7 11	1 56 5	11 53 1	1 11	4 59	21 57	20	21			<i>some days.</i>
11 42	—	23	7 4	46 7 13	1 59 47	12 13 16	2 2	5 55	21 9	21	22			☿ in Perihel.
0 13	0 49	20	10 4	44 7 15	2 3 32	12 33 20	2 41	6 47	19 11	22	23			<i>and</i>
1 28	2 2	20	11 4	41 7 16	2 7 17	12 53 11	3 10	7 36	16 17	23	24			<i>Now</i>
2 59	3 40	22	11 4	39 7 18	2 11 3	13 12 49	3 32	8 22	12 40	24	25			<i>more</i>
4 12	4 40	25	1 4	37 7 20	2 14 49	13 32 15	3 51	9 5	8 35	25	26			<i>fair</i>
5 3	5 25	27	1 4	35 7 22	2 18 36	13 51 27	4 9	9 47	4 11	26	27			☿ δ (, 9m 53
5 47	6 5	28	8 4	33 7 24	2 22 23	14 10 25	4 26	10 29	0n22	27	28			☿ in Ω, 6m 20
6 22	6 37	29	3 4	30 7 25	2 26 11	14 29 10	4 42	11 10	4 53	28	29			<i>and</i>
6 55	7 11	30	1 4	28 7 27	2 29 59	14 47 40	4 57	11 51	19 3	N	30			δ δ (, 4 a 10
														<i>warm</i>

LUNAR DISTANCES FROM THE SUN.

Mean Astronomical Time at Greenwich.

	NOON.			3 HOURS.			6 HOURS.			9 HOURS.			MIDN.			15 HOUR.			18 HOUR.			21 HOUR.		
	°	'	"	°	'	"	°	'	"	°	'	"	°	'	"	°	'	"	°	'	"	°	'	"
W	26	43	46	28	3	41	29	23	43	30	43	54	32	4	14	33	24	40	34	45	14	36	5	55
	37	26	43	38	47	38	40	8	40	41	29	49	42	51	5	44	12	29	45	34	1	46	55	40
	48	17	28	49	39	24	51	1	29	52	23	44	53	46	7	55	8	41	56	31	25	57	54	19
	59	17	24	60	40	40	62	4	9	63	27	49	64	51	43	66	15	50	67	40	10	69	4	44
	70	29	32	71	54	36	73	19	55	74	45	30	76	11	22	77	37	30	79	3	56	80	30	40
	81	57	42	83	25	3	84	52	43	86	20	43	87	49	3	89	17	44	90	46	46	92	16	10
	93	45	56	95	16	4	96	46	35	98	17	28	99	48	46	101	20	27	102	52	33	104	25	3
	105	57	58	107	31	17	109	5	2	110	39	13	112	13	49	113	48	50	115	24	18	117	0	11
	118	36	30	120	13	14	121	50	25	123	28	0	125	6	1	126	44	27	128	23	18	130	2	32
Re	129	59	17	128	20	1	126	41	8	125	2	39	123	24	35	121	46	57	120	9	44	118	32	56
0	116	56	34	115	20	38	113	45	8	112	10	3	110	35	24	109	1	10	107	27	21	105	53	58
1	104	21	0	102	48	26	101	16	17	99	44	31	98	13	10	96	42	12	95	11	37	93	41	25
2	92	11	35	90	42	7	89	13	1	87	44	16	86	15	52	84	47	47	83	20	3	81	52	37
3	80	25	31	78	58	42	77	32	12	76	5	59	74	40	3	73	14	23	71	48	59	70	23	50
4	68	58	57	67	34	18	66	9	53	64	45	42	63	21	44	61	57	58	60	34	24	59	11	2
5	57	47	52	56	24	53	55	2	4	53	39	26	52	16	57	50	54	38	49	32	27	48	10	26
6	46	48	33	45	26	48	44	5	11	42	43	42	41	22	20	40	1	5	38	39	57	37	18	57
7	35	58	3	34	37	16	33	16	37	31	56	4	30	35	39	29	15	21	27	55	12	26	35	11

THE SUN'S RIGHT ASCENSION is given in time to the nearest second for Greenwich mean noon, and with the table of the right ascension of the principal fixed stars, given in page 29, is useful to find the time by the meridian distance of those stars.

THE SUN'S DECLINATION is also given for Greenwich mean noon, and may be deduced to any other place by applying the proportional part of the daily difference.

PHASES OF THE MOON. { FIRST QUARTER, 8th day, at 3h. 38m. afternoon.
FULL MOON, 15th day, at 6h. 3m. morning.
LAST QUARTER, 22nd day, at 6h. 9m. morning.
NEW MOON, 30th day, at 9h. 57m. morning.

Day	Twil.	☉'s semi.	☿ Mercury sets	♀ Venus. rises.	♂ Mars. rises.	♃ Jupiter. sets.	♄ Saturn. rises.	Equation of Time.
1	0m31	10a28	15 54 9a32	1 a 8 3m15	9m 5 4m10	11m16	9 a 5 1 a 7	11a25 3m16
8	0 45	11 16	15 52 10 31	23 3 29	3 3 51	11 8	8 47 0 46	10 56 2 48
15	noreal night.	15 51	10 7 1 23	2 48 9 2	3 32 11 1	8 29 0 25	10 27 2 18	15 15
22	noreal night.	15 50	9 42 1 8	2 34 9 2	3 14 10 54	rises. 0 5	9 58 1 49	22 22
29	noreal night.	15 49	8 53 0 36	2 20 9 3	2 57 10 46	4m36 11m44	9 29 1 20	29 29

M D	W D	Remarkable Days	HIGH WATER.—LIVERPOOL.				Equation of Time.
			MORNING.		EVENING.		
			Time.	Height.	Time.	Height.	' "
1	B	2 Sunday aft Easter	11 40	17 3	11 56	16 11	3 33
2	M	Proper [Num. xxiii-iv; Jno i.v.43 Lessons. [— xxv; Jude.	—	—	0 12	17 1	3 34
3	Tu	Invent. of the Cross	0 28	16 10	0 44	16 9	3 37
4	W	Prince Arthur in Isle of Man, 1869.	1 0	16 9	1 17	16 1	3 38
5	Th	Napoleon I died, 1821	1 34	15 9	1 52	14 11	3 38
6	F	St. John Port. Lat.	2 13	14 10	2 35	13 10	3 33
7	S	Altair rises 9 a 25	2 58	13 11	3 24	12 8	3 38
8	B	3 Sun. after Easter	3 51	12 11	4 24	11 9	3 42
9	M	Pro. [Deut. iv; Matt. vi. Les. [— v; Rom. vii.	5 1	12 6	5 43	11 7	3 45
10	Tu	Battle of Lodi, 1778	6 24	13 0	7 2	12 8	3 48
11	W	Lord Chatham d. 1778	7 38	14 6	8 10	14 4	3 50
12	Th	Easter Term ends	8 37	16 4	9 5	16 2	3 52
13	F	Old May Day	9 30	18 0	9 53	17 9	3 53
14	S	Fahrenheit born, 1686	10 16	19 3	10 39	18 10	3 53
15	B	4 Sun. after Easter	11 3	19 10	11 25	19 5	3 53
16	M	Proper [Deut. vi; Matt. xiii. Lessons. [— vii; Rom. xiv	11 48	19 10	—	—	3 53
17	Tu	Dr. Jenner born, 1794	0 10	19 4	0 35	19 1	3 52
18	W	Dr. Franklin d., 1790	0 57	18 8	1 23	18 10	3 50
19	Th	Dunstan, Archbishop	1 47	17 4	2 12	15 11	3 48
20	F	Columbus died, 1506	2 36	15 11	3 0	14 2	3 45
21	S	Heber died, 1783	3 27	14 5	3 56	12 6	3 41
22	B	Rogation Sunday	4 27	13 1	5 2	11 7	3 37
23	M	Proper [Deut. viii; Matt. xx. Lessons. [— ix; 1 Cor. v.	5 37	12 7	6 13	11 7	3 34
24	Tu	Q. Victoria born 1819	6 47	12 10	7 20	11 11	3 32
25	W	Prin. Helena b. 1846	7 48	13 5	8 17	12 10	3 30
26	Th	Ascension Day	8 44	14 3	9 7	13 11	3 28
27	F	Venerable Bede	9 28	15 2	9 47	14 10	3 25
28	S	Wm. Pitt born, 1759	10 6	15 9	10 26	15 7	3 23
29	B	Sun. aft. Ascen. Day	10 42	16 2	10 57	16 1	3 21
30	M	Pro. [Deut. xii; Matt. xxvii. Les. [— xiii; 1 Cor. xii.	11 12	16 4	11 30	16 4	3 19
31	Tu	A. Pope died, 1744	11 47	16 5	—	—	3 17



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1870.

MAY 31 Days.

11

Bristol tides					SUN.					MOON.					ASPECTS AND WEATHER.			
M.	D.	morn. H. M.	even. H. M.	height P. I.	rises. H. M.	sets. H. M.	rt. ascen. H. M.	declin. N. S.	° ' "	rises. H. M.	south. H. M.	declin. ° ' "	M.	D.				
1	7	29	7	46	31	7	4	26	7	29	2	33	48	15	5	56	♂ 4, 8 m 42	
2	8	3	8	18	30	6	4	24	7	31	2	37	37	15	23	57	Changeable	
3	8	33	8	48	30	3	4	22	7	33	2	41	27	15	41	43	but	
4	9	4	9	20	29	4	4	20	7	35	2	45	18	15	59	13	♀ gr. elon. W.	
5	9	36	9	55	27	9	4	18	7	37	2	49	9	16	16	27	inclined	
6	10	13	10	33	26	3	4	16	7	38	2	53	0	16	33	25	♂ 4, 10 m 0	
7	10	55	11	19	24	3	4	14	7	40	2	56	52	16	50	7	to fair	
8	11	48	—	—	22	5	4	12	7	42	3	0	45	17	6	31	and	
9	0	20	0	56	21	8	4	10	7	43	3	4	38	17	22	39	warm	
10	1	34	2	20	23	4	4	8	7	45	3	8	32	17	38	29	weather.	
11	3	4	3	42	26	10	4	6	7	47	3	12	26	17	54	1	♂ gr. elon. E.	
12	4	11	4	40	30	0	4	5	7	49	3	16	21	18	9	15	Now	
13	5	6	5	31	32	7	4	3	7	51	3	20	17	18	24	10	expect	
14	5	57	6	22	33	8	4	1	7	52	3	24	13	18	38	47	showery	
15	6	49	7	13	35	0	4	0	7	54	3	28	9	18	53	6	and	
16	7	38	8	1	35	4	3	5	8	7	56	3	32	6	19	7	wet	
17	8	25	8	46	34	5	3	5	6	7	57	3	36	4	19	20	45	♂ 4, 11 m 40
18	9	10	9	32	32	4	3	5	4	7	59	3	40	2	19	34	5	Still
19	9	55	10	15	30	0	3	5	3	8	0	3	44	1	19	47	5	showery
20	10	35	10	59	27	2	3	5	1	8	2	3	48	1	19	59	46	or
21	11	24	11	51	24	2	3	5	0	8	3	3	52	1	20	12	5	rainy
22	—	—	0	21	21	11	3	4	8	5	3	56	1	20	24	5	unless	
23	0	52	1	24	21	8	3	4	7	8	7	4	0	2	20	35	43	the
24	2	1	2	41	22	1	3	4	6	8	8	4	4	4	20	47	1	♂ stationary
25	3	17	3	49	24	0	3	4	1	8	10	4	8	6	20	57	57	♂ 4, 2 m 34
26	4	18	4	41	25	9	3	4	3	8	11	4	12	9	21	8	31	wind
27	5	3	5	23	27	2	3	4	2	8	13	4	16	12	21	18	44	be
28	5	44	6	6	28	2	3	4	1	8	14	4	20	15	21	28	34	♂ 4, 6 a 49
29	6	24	6	41	28	8	3	4	0	8	15	4	24	19	21	38	2	northerly
30	6	58	7	18	29	1	3	3	8	17	4	28	24	21	47	8	♂ 4, 1 m 2	
31	7	36	7	55	29	6	3	3	7	8	18	4	32	29	21	55	52	♀ in Aphelion

LUNAR DISTANCES FROM THE SUN.
Mean Astronomical Time at Greenwich.

M.	D.	NOON.	3 HOURS.	6 HOURS.	9 HOURS.	MIDN.	15 HOUR.	18 HOUR.	21 HOUR.
		° / ' "	° / ' "	° / ' "	° / ' "	° / ' "	° / ' "	° / ' "	° / ' "
3w	30	8 23	31 30 52	32 53 33	34 16 27	35 39 34	37 2 53	38 26 24	39 50 7
4	41	14 2	42 38 9	44 2 29	45 27 1	46 51 45	48 16 42	49 41 53	51 7 16
5	52	32 53	53 58 43	55 24 47	56 51 6	58 17 39	59 44 27	61 11 30	62 38 48
6	64	6 22	65 34 12	67 2 19	68 30 42	69 59 22	71 28 20	72 57 35	74 27 9
7	75	57 1	77 27 12	78 57 42	80 28 31	81 59 40	83 31 9	85 2 58	86 35 8
8	88	7 39	89 40 32	91 13 46	92 47 21	94 21 18	95 55 38	97 30 19	99 5 23
9	100	40 50	102 16 40	103 52 52	105 29 27	107 6 24	108 43 45	110 21 29	111 59 35
10	113	38 4	115 16 56	116 56 10	118 35 45	120 15 42	121 56 2	123 36 42	125 17 42
11	126	59 2	128 40 42	130 22 42	132 4 59	133 47 34	135 30 26	137 13 33	138 56 55
12	135	37 25	134 0 26	132 23 52	130 47 43	129 11 59	127 36 40	126 1 47	124 27 19
13	122	53 17	121 19 41	119 46 29	118 13 43	116 41 22	115 9 26	113 37 54	112 6 47
14	110	36 4	109 5 44	107 35 48	106 6 15	104 37 5	103 8 16	101 39 50	100 11 44
15	98	44 0	97 16 36	95 49 31	94 22 46	92 56 20	91 30 12	90 4 22	88 38 49
16	87	13 33	85 48 33	84 23 49	82 59 19	81 35 4	80 11 4	78 47 16	77 23 41
17	76	0 19	74 37 8	73 14 8	71 51 19	70 28 40	69 6 10	67 43 50	66 21 38
18	64	59 34	63 37 37	62 15 47	60 54 4	59 32 27	58 10 55	56 49 28	55 28 5
19	54	6 47	52 45 32	51 24 20	50 3 11	48 42 4	47 21 0	45 59 57	44 38 55
20	43	17 54	41 56 54	40 35 54	39 14 54	37 53 54	36 32 53	35 11 52	33 50 50
21	32	29 47	31 8 43	29 47 38	28 26 32	27 5 25	25 44 18	24 23 11	23 2 4

PHASES OF THE MOON.	FIRST QUARTER,	6th day, at 11h. 16m. night.
	FULL MOON,	13th day, at 1h. 47m. afternoon.
	LAST QUARTER,	20th day, at 9h. 34m. night.
	NEW MOON,	28th day, at 11h. 33m. night.

M	Day	Twil.	☉'s	♂ Mercury		♀ Venus.		♂ Mars.		♂ Jupiter.		♂ Saturn.		M
D.	brek.	ends.	semi.	sets.	sout.	rises.	sout.	rises.	sout.	rises.	sout.	rises.	sout.	D.
1	no real ni.	no real ni.	15 48	8 a 29	0 a 19	2m 14	9 m 4	2m 50	10m 44	3m 26	11 m 35	9 a 16	1 m 3	1
8	no real ni.	no real ni.	15 47	rises.	11m 37	2	19 5	2 33	10 36	3	3 11	15 8	46 0	37 8
15	no real ni.	no real ni.	15 47	3m 12	11 0	1	48 9	8	2 18	10 29	2	40 10	54 8	16 0
22	no real ni.	no real ni.	15 46	2	47 10	38	1	38 9	12	2	6 10	23	7	46 11
29	no real ni.	no real ni.	15 46	2	28 10	30	1	28 9	16	1	55 10	16	7	16 11

M	W	Remarkable Days	HIGH WATER.—LIVERPOOL.				Equation of Time.			
D	D		MORNING.		EVENING.		Time.		Height.	
1	W	Nicomede, Martyr	0	4 16	7	0	21 16	3	2	30
2	Th	Arcturus souths 9 a 25	0	39 16	6	0	58 15	10	2	20
3	F	Oxford Term ends	1	19 16	2	1	39 15	2	2	11
4	S	Trinity Term begins	1	59 15	6	2	21 14	4	2	1
5	B	Whit Sunday	2	45 14	11	3	10 13	7	1	50
6	M	Proper [Deu xvi. v. 18; Ac. x. v. 34 Lessons. [Isaiah xi; Acts xix. to v. 21	3	37 14	2	4	6 12	10	1	40
7	Tu	Whit Tuesday	4	41 13	8	5	18 12	8	1	29
8	W	Lyra souths 1 m 28	5	55 13	10	6	30 13	3	1	18
9	Th	Dr. Rees died, 1825	7	0 14	9	7	30 14	5	1	7
10	F	Roger Bacon d. 1294	8	2 15	11	8	34 15	9	0	55
11	S	St. Barnabas, Apostle	9	3 17	2	9	30 17	0	0	43
12	B	Trinity Sunday.	9	58 18	1	10	23 17	11	0	31
13	M	Pro. [Gen. i; Matt. iii. Les. [— xviii; 1 John v.	10	46 18	5	11	12 18	6	0	18
14	Tu	B. of Marengo, 1800	11	35 18	6	11	56 18	6	0	6
15	W	Luther excomd. 1520	—	—	—	0	21 17	11	0	6
16	Th	Corpus Christi	0	44 18	3	1	8 17	0	0	13
17	F	St. Alban, Martyr	1	32 17	4	1	57 15	9	0	32
18	S	B. of Waterloo, 1815	2	19 16	3	2	43 14	6	0	45
19	B	1 Sun. after Trinity	3	6 15	1	3	31 13	4	0	58
20	M	Pro. [Joshua x; Luke iii. Less. [— xxiii; Galat. iii.	3	54 13	11	4	20 12	4	1	27
21	Tu	Queen Proclaimed	4	46 13	1	5	18 11	9	1	24
22	W	Machiavelli d. 1527	5	49 12	7	6	22 11	8	1	37
23	Th	J. Hampden d. 1643	6	51 12	8	7	20 12	2	1	50
24	F	St. John Baptist	7	50 13	2	8	18 13	0	2	8
25	S	[Midsummer Day	8	43 13	10	9	9 13	10	2	16
26	B	2 Sun. after Trinity	9	32 14	6	9	52 14	9	2	28
27	M	[Judges iv; Luke ix. v; Ephes. iii.	10	13 15	2	10	33 15	6	2	41
28	Tu	Lord Raglan d. 1855.	10	51 15	7	11	10 16	1	3	53
29	W	St. Peter Apostle	11	20 15	11	11	47 16	7	3	6

Bristol tides				SUN.				MOON.				M	D.	ASPECTS AND WEATHER.
norn. I. M.	even. H. M.	height F. I.		rises. H M	sets. H M	rt. ascen. H. M. S.	leclin. N. ° ' "	set. H. M.	souths H. M.	declin. ° ' "	age. days.			
8 12	8 29	29 10		3 36	8 19	4 36 34	22 4 12	10 16	1a43	2 4	2	1	♀ in Aphelion	
8 47	9 7	29 1		3 35	8 21	4 40 40	22 12 9	11 7	2 36 22	5	3	2	♂ ♀ (, 5 a 41	
9 25	9 43	28 3		3 34	8 22	4 44 46	22 19 43	11 48	3 29 20	53	4	3	Weather	
10 2	10 23	27 5		3 34	8 23	4 48 53	22 26 54	morn	4 21 18	28	5	4	♂ inf. ♂ ☉	
10 44	11 8	26 2		3 33	8 24	4 53 0	22 33 41	0 18	5 13 14	51	6	5	♀ in Aphelion	
11 33	—	24 0		3 33	8 25	4 57 7	22 40 5	0 43	6 4 10	33	7	6	variable,	
0 4	0 36	23 10		3 32	8 26	5 1 14	22 46 4	1 6	6 54 5	27	8	7	fair	
1 8	1 41	24 5		3 32	8 27	5 5 22	22 51 40	1 27	7 45 0	s 5	9	8	and	
2 18	2 56	26 8		3 31	8 27	5 9 30	22 56 51	1 47	8 37 5	43	10	9	warm.	
3 34	4 8	28 2		3 31	8 28	5 13 38	23 1 38	2 9	9 31 11	5	11	10	Now	
4 38	5 6	31 2		3 30	8 29	5 17 47	23 6 1	2 30	10 27 15	47	12	11	☾ in Perigee	
5 36	6 4	32 5		3 30	8 30	5 21 55	23 9 59	2 57	11 26 19	24	13	12	expect	
6 30	6 58	33 0		3 29	8 31	5 26 4	23 13 33	rises.	morn	—	F	13	♂ ♀ (, 6 a 59	
7 24	7 47	33 4		3 29	8 31	5 30 13	23 16 42	9a40	0 26 21	36	15	14	showery	
8 12	8 34	32 7		3 28	8 32	5 34 22	23 19 27	10 33	1 26 22	14	16	15	♂ in ☉, 9 m 45	
8 57	9 19	31 6		3 28	8 32	5 38 32	23 21 47	11 13	2 24 21	21	17	16	♀ stationary	
9 42	10 2	29 9		3 28	8 32	5 42 41	23 23 43	11 43	3 19 19	9	18	17	and	
10 22	10 43	28 0		3 28	8 33	5 46 50	23 25 14	morn	4 10 15	57	19	18	changeable	
11 3	11 23	25 10		3 28	8 33	5 51 0	23 26 20	0 6	4 58 12	4	20	19	for some	
11 46	—	23 10		3 28	8 34	5 55 9	23 27 1	0 24	5 42 7	44	21	20	days.	
0 8	0 36	22 1		3 28	8 34	5 59 19	23 27 17	0 40	6 25 3	10	22	21	☉ enters ☍	
1 3	1 33	21 6		3 28	8 34	6 3 29	23 27 9	0 56	7 6 1	28	23	22	[Sum. com.	
2 5	2 41	22 3		3 29	8 34	6 7 39	23 26 36	1 12	7 47 6	0	24	23	☾ in Apogee.	
3 17	3 49	23 10		3 29	8 34	6 11 48	23 25 38	1 29	8 29 10	18	25	24	♀ ♂ (, 9 m 35	
4 16	4 43	25 3		3 29	8 34	6 15 57	23 24 15	1 47	9 13 14	14	26	25	Fair	
5 7	5 28	26 6		3 30	8 34	6 20 6	23 22 28	2 9	9 58 17	35	27	26	♂ ♂ (, 8 a 22	
5 51	6 14	27 2		3 30	8 34	6 24 16	23 20 16	2 37	10 47 20	10	28	27	and	
6 34	6 55	28 0		3 31	8 34	6 28 25	23 17 39	sets.	11 38 21	47	N	28	☉ eclipsed in v	
7 16	7 36	28 10		3 31	8 34	6 32 33	23 14 38	9a3	0a30	22	15	1	warm.	
7 57	8 16	29 7		3 32	8 34	6 36 42	23 11 13	9 47	1 24 21	27	2	30	♂ ♂ (, 2 m 43	

LUNAR DISTANCES FROM THE SUN.
Mean Astronomical Time at Greenwich.

	NOON.	3 HOURS.	6 HOURS.	9 HOURS.	MIDN.	15 HOUR.	18 HOUR.	21 HOUR.
	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "
W	23 40 30	25 6 18	26 32 22	27 58 41	29 25 15	30 52 4	32 19 6	33 46 23
	35 13 53	36 41 37	38 9 34	39 37 45	41 6 9	42 34 47	44 3 39	45 32 43
	47 2 2	48 31 34	50 1 20	51 31 21	53 1 35	54 32 3	56 2 45	57 33 42
	59 4 54	60 36 20	62 8 1	63 39 57	65 12 9	66 44 35	68 17 18	69 50 15
	71 23 29	72 56 58	74 30 44	76 4 45	77 39 3	79 13 38	80 48 29	82 23 36
	83 59 1	85 34 42	87 10 40	88 46 55	90 23 27	92 0 17	93 37 23	95 14 46
	96 52 27	98 30 24	100 8 38	101 47 9	103 25 57	105 5 1	106 44 22	108 23 59
	110 3 52	111 44 1	113 24 25	115 5 4	116 45 58	118 27 7	120 8 30	121 50 6
	123 31 56	125 13 58	126 56 13	128 38 39	130 21 16	132 4 3	133 47 0	125 30 5
	...	...	...	...	...	...	...	...
E	141 36 41	140 2 39	138 29 0	136 55 45	135 22 53	133 50 25	132 18 20	130 46 38
	129 15 19	127 44 24	126 13 51	124 43 41	123 13 53	121 44 27	120 15 22	118 46 39
	117 18 17	115 50 15	114 22 34	112 55 12	111 28 10	110 1 27	108 35 2	107 8 55
	105 43 5	104 17 33	102 52 16	101 27 16	100 2 31	98 38 0	97 13 44	95 49 41
	94 25 52	93 2 15	91 38 50	90 15 36	88 52 33	87 29 40	86 6 57	84 44 22
	83 21 57	81 59 38	80 37 27	79 15 23	77 53 25	76 31 32	75 9 44	73 48 1
	72 26 21	71 4 44	69 43 10	68 21 38	67 0 7	65 38 38	64 17 8	62 55 39
	61 34 9	60 12 38	58 51 5	57 29 30	56 7 53	54 46 12	53 24 28	52 2 40
	50 40 47	49 18 49	47 56 46	46 34 37	45 12 22	43 50 1	42 27 32	41 4 56
	39 42 13	38 19 21	36 56 21	35 33 13	34 9 55	32 46 29	31 22 53	29 59 7

THE MOON'S SEMI-DIAMETER is given to the nearest second for Greenwich mean noon and midnight on page 26, and the HORIZONTAL PARALLAX on page 27. THE LUNAR DISTANCES FROM THE SUN are given with a view to assist those who may not have an opportunity of using the Nautical Almanack, and are given for every three hours of Greenwich astronomical mean time. As the rest of the Almanack is adapted to CIVIL time, this distinction must be kept in mind; the Civil

PHASES OF THE MOON. { FIRST QUARTER, 6th day, at 4h. 30m. morning.
FULL MOON, 12th day, at 10h. 35m. night
LAST QUARTER, 20th day, at 2h. 17m. afternoon.
NEW MOON, 28th day, at 11h. 18m. morning.

M D.	Day	Twil	☉'s	♂ Mercury	♀ Venus	♂ Mars.	♂ Jupiter.	♂ Saturn.	M
	brek.	end.	semi.	rises.	sout.	rises.	sout.	sets.	sout.
1	ni.	ni.	15 46	2m 25	10m 31	1m 25	9m 18	1m 48	10m 14
8	real ni.	real ni.	15 46	2 21	10 43	1 20	9 24	1 36	10 7
15	real ni.	real ni.	15 46	2 37	11 9	1 16	9 30	1 26	10 0
22	no real this	no real this	15 47	sets.	11 44	1 16	9 38	1 17	9 54
29	no real this	no real this	15 47	8 a 23	0 a 19	1 22	9 46	1 10	9 47

M W		Remarkable Days	HIGH WATER.—LIVERPOOL.						Equation of Time.
D D			MORNING.		EVENING.				
			Time.	Height.	Time.	Height.	Time.	Height.	
1	F	Bat. of Boyne, 1690	0 25	17 0	0 45	16 3			3 20
2	S	Visit. B. V. M.	1 6	17 0	1 28	16 0			3 41
3	B	3 Sunday aft Trinity	1 51	16 8	2 14	15 5			3 52
4	M	Proper Lessons. [1 Samuel ii; Luke xv. iii; Phil. iii.	2 38	16 2	3 1	14 10			4 3
5	Tu	Chusan taken, 1840.	3 27	15 6	3 53	14 1			4 14
6	W	Old Midsummer Day	4 20	14 11	4 51	13 7			4 24
7	Th	John Huss burnt, 1415	5 25	14 5	5 58	13 5			4 34
8	F	Adam Smith d. 1790	6 32	14 5	7 4	14 0			4 44
9	S	Oxford term ends	7 36	15 1	8 10	15 0			4 53
10	B	4 Sun. after Trinity	8 42	15 9	9 13	16 2			5 1
11	M	Proper Lessons. [1 Samuel xii; Luke xxii. xiii; 1 Thess. ii.	9 43	16 7	10 12	17 0			5 10
12	Tu	Erasmus died 1526.	10 37	17 0	10 59	17 8			5 17
13	W	Dr. Bradley d.. 1752	11 25	17 2	11 47	18 1			5 25
14	Th	Bastile destroyed, 1789	—	—	0 10	17 2			5 32
15	F	Swithin, Bishop,	0 32	18 0	0 53	16 9			5 38
16	S	Sir J. Reynolds b. 1723	1 15	17 7	1 37	16 0			5 44
17	B	5 Sun. after Trinity	1 58	16 10	2 17	15 2			5 49
18	M	Proper Lessons. [1 Samuel xv; John v. xvii; 1 Tim. i.	2 37	15 11	2 58	14 5			5 54
19	Tu	B. Hallidon Hill, 1233	3 17	14 11	3 37	13 4			5 59
20	W	Margaret V. & M.	3 59	13 9	4 21	12 5			6 2
21	Th	Ld. Russel behd. 1683	4 44	12 9	5 15	11 10			6 6
22	F	St. Mary Magdalen	5 47	12 1	6 19	11 7			6 8
23	S	R. Burns died, 1796	6 50	12 0	7 20	11 11			6 10
24	B	6 Sun. after Trinity	7 52	12 5	8 23	12 10			6 12
25	M	Proper Lessons. [2 Sam xii; John xii. xix; 2 Tim. iii.	8 53	13 2	9 22	13 11			6 13
26	Tu	St. Anne.	9 47	14 2	10 10	15 2			6 14
27	W	Fren. Revolution, 1830	10 32	15 2	10 53	16 2			6 14
28	Th	Wilberforce died 1833	11 13	16 0	11 32	17 2			6 13
29	F	Altair souths, 10 a 49	11 53	16 9	—	—			6 12
30	S	Proper Lessons. [2 Samuel xxi; John xix. xxiv; Heb. iii.	0 14	17 11	0 34	17 3			6 10
31	B	7 Sun. after Trinity	0 52	18 4	1 12	17 4			6 7

Bristol tides				SUN.				MOON.				M	D.	ASPECTS AND WEATHER.
orn.	even.	heigh		rises.	sets.	rt. asc.	declin. N.	sets.	souths	declin.				
M.	H. M.	F. I.		H. M. H. M. H. M. S.	° ' "	° ' "	° ' "	H. M. H. M. ° ' "	° ' "	° ' "	° ' "			
35	8 55	30 0		3 33 8	33 6 40	50 23 7 23		10 23 2 18	19 25			3	1	Expect ☉ in Apogee. wet and rainy weather for some ☾ in Perigee days.
15	9 36	29 10		3 34 8	33 6 44	59 23 3 8		10 52 3 10	16 12			4	2	
58	10 18	29 4		3 34 8	32 6 49	6 22 58 30		11 14 4 2	12 2			5	3	
38	11 1	28 6		3 35 8	32 6 53	14 22 53 28		11 34 4 52	7 8			6	4	
24	11 47	27 2		3 36 8	32 6 57	21 22 48 1		11 53 5 42	1 47			7	5	☾ in Perigee days. ☾ ☾ ☾, 0 m 54 Now ☾ ☾ ☾, 7 a 23 fair ☾ ☾ ☾, 1 m 5 and warm with ☾ in Perihel. some ☾ ☾ ☾, 8 a 48 showers and ☾ ☾ ☾, 4 a 52 sunshine, with still ☉ eclips. invis ☾ ☾ ☾, 3 m 47 changeable weather.
—	0 14	25 11		3 37 8	31 7 1	28 22 42 11		morn 6 32	3 44			8	6	
44	1 11	26 10		3 38 8	30 7 5	34 22 35 57		0 13 7 23	9 6			9	7	
42	2 21	25 6		3 39 8	30 7 9	40 22 29 20		0 34 8 16	13 58			10	8	
2	3 41	27 5		3 40 8	29 7 13	46 22 22 19		0 57 9 12	17 58			11	9	☾ in Perigee days. ☾ ☾ ☾, 0 m 54 Now ☾ ☾ ☾, 7 a 23 fair ☾ ☾ ☾, 1 m 5 and warm with ☾ in Perihel. some ☾ ☾ ☾, 8 a 48 showers and ☾ ☾ ☾, 4 a 52 sunshine, with still ☉ eclips. invis ☾ ☾ ☾, 3 m 47 changeable weather.
16	4 48	28 11		3 41 8	28 7 17	51 22 14 56		1 28 10 11	20 47			12	10	
19	5 51	30 3		3 42 8	27 7 21	56 22 7 9		2 8 11 10	22 8			13	11	
18	6 43	30 9		3 43 8	26 7 26	0 21 58 59		rises. morn —	—			14	12	
11	7 36	31 5		3 44 8	25 7 30	4 21 50 27		9 a 7 0 9	21 58			15	13	☾ in Perigee days. ☾ ☾ ☾, 0 m 54 Now ☾ ☾ ☾, 7 a 23 fair ☾ ☾ ☾, 1 m 5 and warm with ☾ in Perihel. some ☾ ☾ ☾, 8 a 48 showers and ☾ ☾ ☾, 4 a 52 sunshine, with still ☉ eclips. invis ☾ ☾ ☾, 3 m 47 changeable weather.
1	8 22	31 7		3 46 8	24 7 34	8 21 41 33		9 42 1 6	20 22			16	14	
42	9 3	31 2		3 47 8	23 7 38	11 21 32 16		10 8 1 59	17 35			17	15	
24	9 43	30 3		3 49 8	22 7 42	13 21 22 37		10 29 2 49	13 55			18	16	
0	10 18	29 0		3 50 8	20 7 46	15 21 12 37		10 47 3 35	9 41			19	17	☾ in Perigee days. ☾ ☾ ☾, 0 m 54 Now ☾ ☾ ☾, 7 a 23 fair ☾ ☾ ☾, 1 m 5 and warm with ☾ in Perihel. some ☾ ☾ ☾, 8 a 48 showers and ☾ ☾ ☾, 4 a 52 sunshine, with still ☉ eclips. invis ☾ ☾ ☾, 3 m 47 changeable weather.
36	10 52	27 8		3 51 8	19 7 50	16 21 2 15		11 3 4 19	5 7			20	18	
9	11 28	25 7		3 53 8	18 7 54	17 20 51 31		11 19 5 1	0 27			21	19	
48	—	23 8		3 54 8	17 7 58	18 20 40 27		11 34 5 43	4 11			22	20	
7	0 34	21 10		3 56 8	15 8 2	18 20 29 1		11 51 6 25	8 37			23	21	☾ in Perigee days. ☾ ☾ ☾, 0 m 54 Now ☾ ☾ ☾, 7 a 23 fair ☾ ☾ ☾, 1 m 5 and warm with ☾ in Perihel. some ☾ ☾ ☾, 8 a 48 showers and ☾ ☾ ☾, 4 a 52 sunshine, with still ☉ eclips. invis ☾ ☾ ☾, 3 m 47 changeable weather.
2	1 30	21 0		3 57 8	14 8 6	17 20 17 15		morn 7 7	12 42			24	22	
3	2 43	21 4		3 59 8	12 8 10	16 20 5 8		0 12 7 52	16 18			25	23	
12	3 54	23 1		4 0 8	11 8 14	14 19 52 41		0 37 8 39	19 13			26	24	
27	4 56	24 10		4 2 8	9 8 18	12 19 39 54		1 9 9 29	22 12			27	25	☾ in Perigee days. ☾ ☾ ☾, 0 m 54 Now ☾ ☾ ☾, 7 a 23 fair ☾ ☾ ☾, 1 m 5 and warm with ☾ in Perihel. some ☾ ☾ ☾, 8 a 48 showers and ☾ ☾ ☾, 4 a 52 sunshine, with still ☉ eclips. invis ☾ ☾ ☾, 3 m 47 changeable weather.
23	5 47	26 7		4 3 8	8 8 22	9 19 26 48		1 51 10 21	21 52			28	26	
12	6 35	27 10		4 5 8	6 8 26	5 19 13 22		2 43 11 15	21 55			29	27	
58	7 19	29 2		4 7 8	4 8 30	1 18 59 37		sets. 0 a 10	20 19			30	28	
42	8 5	30 9		4 8 8	3 8 33	56 18 45 33		8 a 53 1 4	17 28			31	29	☾ in Perigee days. ☾ ☾ ☾, 0 m 54 Now ☾ ☾ ☾, 7 a 23 fair ☾ ☾ ☾, 1 m 5 and warm with ☾ in Perihel. some ☾ ☾ ☾, 8 a 48 showers and ☾ ☾ ☾, 4 a 52 sunshine, with still ☉ eclips. invis ☾ ☾ ☾, 3 m 47 changeable weather.
25	8 42	31 10		4 10 8	1 8 37	51 18 31 11		9 19 1 57	13 32			32	30	
1	9 21	32 4		4 12 7	59 8 41	45 18 16 30		9 40 2 48	8 44			33	31	

LUNAR DISTANCES FROM THE SUN.

Mean Astronomical Time at Greenwich.

NOON.	3 HOURS.	6 HOURS.	9 HOURS.	MIDN.	15 HOUR.	18 HOUR.	21 HOUR.
° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "
30 12 35	31 44 55	33 17 28	34 50 12	36 23 8	37 56 15	39 29 35	41 3 6
42 36 48	44 10 41	45 44 46	47 19 2	48 53 28	50 28 6	52 2 55	53 37 54
55 13 4	56 48 25	58 23 56	59 59 38	61 35 30	63 11 32	64 47 44	66 24 7
68 0 40	69 37 23	71 14 15	72 51 18	74 28 30	76 5 52	77 43 24	79 21 6
80 58 56	82 36 56	84 15 5	85 53 24	87 31 51	89 10 27	90 49 12	92 28 5
94 7 7	95 46 17	97 25 35	99 5 1	100 44 35	102 24 16	104 4 4	105 44 0
107 24 1	109 4 10	110 44 24	112 24 45	114 5 11	115 45 12	117 26 18	119 6 58
120 47 43	122 28 31	124 9 22	125 50 16	127 31 12	129 12 10	130 53 10	132 34 10
.. ..							
135 58 16	134 30 18	133 2 38	131 35 16	130 8 13	128 41 26	127 14 57	125 48 45
124 22 49	122 57 9	121 31 45	120 6 36	118 41 42	117 7 2	115 52 36	114 28 23
113 4 23	111 40 36	110 17 0	108 53 36	107 30 22	106 7 18	104 44 25	103 21 40
101 59 4	100 36 35	99 14 14	97 52 1	96 29 53	95 7 51	93 45 54	92 24 1
91 2 12	89 40 27	88 18 44	86 57 3	85 35 24	84 13 46	82 52 8	81 30 29
80 8 50	78 47 10	77 25 27	76 3 41	74 41 53	73 20 1	71 58 4	70 36 3
69 13 56	67 51 43	66 29 23	65 6 57	63 44 23	62 21 40	60 58 49	59 35 50
58 12 41	56 49 21	55 25 51	54 2 10	52 38 18	51 14 14	49 49 58	48 25 30
47 0 48	45 35 53	44 10 45	42 45 22	41 19 46	39 53 54	38 27 48	37 1 28
35 34 51	34 8 0	32 40 53	31 13 30	29 45 51	28 17 56	26 49 46	25 21 19
.. ..							
25 57 16	27 34 9	29 11 12	30 48 25	32 25 48	34 3 20	35 41 1	37 18 50
38 56 47	40 34 52	42 13 3	43 51 21	45 29 45	47 8 15	48 46 50	50 25 30

Commences at *Midnight*, and the *Astronomical day* at the following *Noon*, being
 we hours later; thus the hours named 15, 18, and 21, on the 4th January, are
 xding to Civil reckoning, 3, 6, and 9 in the morning of the 5th of January, and

PHASES OF THE MOON. { FIRST QUARTER, 4th day, at 8h. 51m. morning.
FULL MOON 11th day, at 9h. 13m. morning.
LAST QUARTER, 19th day, at 7h. 50m. morning.
NEW MOON, 26th day, at 9h. 26m. evening.

M D.	Day	Twil.	☉'s	☿ Mercury	♀ Venus.	♂ Mars.	♃ Jupiter.	♄ Saturn.	M D.
	brek.	ends.	semi.	sets. sout.	rises. sout.	rises. sout.	rises. sout.	sets. sout.	
1	no	night	15 48	8 a 24 0 a 32	1m 25 9m 50	1m 7 9m 43	0 m 8 8m 31	0 m 38 8 a 46	1
8	1m 17	10a 49	15 49	8 18 0 56	1 36 9 58	1 19 36	11a 42 8 9	0 9 8 18	8
15	1 52	10 15	15 50	8 41 14	1 51 10 7	0 56 9 28	11 19 7 47	11a 37 7 49	15
22	2 18	9 45	15 51	7 47 1 25	2 9 10 15	0 52 9 20	10 56 7 24	11 9 7 23	22
29	2 41	9 17	15 53	7 27 1 32	2 29 10 22	0 49 9 12	10 32 7 1	10 41 6 54	29

M D.	W D.	Remarkable Days	HIGH WATER.—LIVERPOOL.				Equation of Time.
			MORNING.		EVENING.		
			Time.	Height.	Time.	Height.	
1	M	Lammas Day	1 34	18 3	1 57	16 11	6 4
2	Tu	Battle of Nile, 1798	2 20	17 8	2 40	16 3	6 0
3	W	E. Baines died, 1848	3 6	16 10	3 32	15 4	5 56
4	Th	Pilgrim Fath. S. 1620	3 57	15 8	4 25	14 3	5 31
5	F	Cabul Taken,, 1839	4 54	14 5	5 27	13 2	5 46
6	S	Transfiguration	6 5	13 1	6 42	13 0	5 39
7	B	8 Sun. after Trinity	7 20	13 7	7 59	13 11	5 32
8	M	Proper Lessons. [1 Kings xiii; Acts v. xvii; Hebrews x.	8 34	14 2	9 7	15 1	5 25
9	Tu	Dryden born, 1631	9 39	15 2	10 8	16 5	5 17
10	W	St. Lawrence	10 34	16 0	10 55	17 4	5 8
11	Th	Dog Days end	11 16	16 7	11 36	17 11	4 59
12	F	Altair souths, 9 a 54	11 55	17 0	—	—	4 49
13	S	Old Lammas Day	0 14	18 3	0 31	17 1	4 39
14	B	9 Sun. after Trinity	0 50	18 1	1 9	16 9	4 28
15	M	Proper Lessons. [1 Kings xviii; Acts xii. xix; James iv.	1 27	17 1	1 45	16 2	4 17
16	Tu	Neptune souths 3 m 45	2 2	16 8	2 22	15 3	4 5
17	W	Late Duchess of Kent b	2 38	15 7	2 54	14 3	3 53
18	Th	Flamstead born, 1646	3 11	14 4	3 30	13 2	3 40
19	F	Royal Geo. sunk, 1782	3 50	13 0	4 12	12 1	3 26
20	S	R. Bloomfield d. 1823	4 38	11 9	5 16	11 4	3 12
21	B	10 Sun. after Trinity	5 54	11 0	6 28	11 3	2 58
22	M	Proper Lessons. [1 Kings xxi; Acts xix. xxii; 2 Peter i.	7 6	11 3	7 45	12 0	2 43
23	Tu	Herschell died, 1822	8 21	12 3	8 53	13 5	2 28
24	W	St. Bartholomew	9 21	13 7	9 48	15 1	2 13
25	Th	Ju. Cæsar land B.C, 55	10 13	15 2	10 34	16 9	1 57
26	F	Late P. Consort b. 1819	10 53	16 6	11 14	18 1	1 40
27	S	Thomson died, 1748	11 33	17 8	11 51	19 3	1 23
28	B	11 Sun. after Trinity	—	—	0 11	18 5	1 6
29	M	Pro. [2 Kings v; Acts xxvi. ix; 1 John v.	0 31	19 10	0 52	18 9	0 49
30	Tu	Paley born, 1743	1 15	19 9	1 36	18 4	0 31
31	W	J. Bunyan, died, 1688	1 59	18 6	2 22	17 4	0 12



ristol tides				SUN.				MOON.				ASPECTS AND WEATHER	
orn.	even.	height		rises.	ets.	rt. ascen.	declin. N.	sets.	souths	declin.	age.		
M.	H. M.	F. I.		H. M.	H. M.	H. M. S.	° / "	H. M.	H. M.	° / "			
43	10 4	31 11		4 13	7 57	8 45 38	18 1 32	9a69	3a39	3n25	4 1	Weather	
20	10 43	31 1		4 15	7 56	8 49 31	17 46 16	10 20	4 29	2s 8	5 2	changeable	
6	11 28	29 4		4 17	7 54	8 53 23	17 30 42	10 42	5 20	7 34	6 3	(in Perigee	
52	—	27 1		4 18	7 52	8 57 15	17 14 52	11 5	6 12	12 34	7 4	and	
17	0 45	24 3		4 20	7 50	9 1 6	16 58 44	11 30	7 6	16 48	8 5	showery,	
18	1 53	23 4		4 22	7 48	9 4 56	16 42 20	morn	8 2	19 58	9 6	inclined	
40	3 27	24 11		4 24	7 46	9 8 46	16 25 41	0 2	9 0	21 41	10 7	h δ (, 5 m 39	
6	4 41	26 10		4 25	7 44	9 12 35	16 8 45	0 47	9 58	22 14	11 8	to wet,	
14	5 45	28 8		4 27	7 42	9 16 24	15 51 34	1 46	10 54	21 12	12 9	δ δ Reg. 7a17	
14	6 38	29 3		4 29	7 40	9 20 11	15 34 7	2 52	11 49	18 54	13 10	which	
2	7 24	30 8		4 31	7 38	9 23 59	15 16 26	rises.	morn	—	F 11	may	
44	8 5	31 5		4 32	7 36	9 27 46	14 58 30	8a32	0 40	13 35	15 12	continue	
22	8 40	31 8		4 34	7 34	9 31 32	14 40 19	8 51	1 28	11 32	16 13	during	
58	9 15	31 4		4 36	7 31	9 35 18	14 21 55	9 8	2 13	7 3	17 14	the	
31	9 46	30 4		4 38	7 29	9 39 3	14 3 16	9 23	2 56	2 21	18 15	greatest	
5	10 18	29 0		4 40	7 27	9 42 47	13 44 25	9 39	3 38	2n22	19 16	♀ δ H, 3 m 24	
31	10 46	27 2		4 41	7 25	9 46 32	13 25 20	9 55	4 20	6 56	20 17	part	
11	11 19	24 11		4 43	7 23	9 50 15	13 6 2	10 14	5 2	11 11	21 18	♀ in Q, 9 m 44	
138	12 0	22 7		4 45	7 21	9 53 58	12 46 32	10 37	5 45	14 59	22 19	of	
—	0 34	20 4		4 47	7 18	9 57 41	12 26 49	11 6	6 31	18 11	23 20	the	
1 7	1 38	19 7		4 49	7 16	10 1 23	12 6 55	11 43	7 19	20 35	24 21	♂ δ (, 11 m 12	
2 22	3 10	21 1		4 50	7 14	10 5 5	11 46 48	morn	8 10	22 0	25 22	month.	
3 52	4 27	23 8		4 52	7 11	10 8 47	11 26 31	0 30	9 3	22 16	26 23	δ δ (, 4 a 35	
4 56	5 24	26 5		4 54	7 9	10 12 27	11 6 3	1 29	9 57	21 14	27 24	♀ δ (, 6 m 10	
5 51	6 14	27 9		4 56	7 7	10 16 8	10 45 24	2 38	10 52	18 54	28 25	Now	
6 36	7 0	29 1		4 58	7 4	10 19 48	10 24 34	sets.	11 46	15 20	N 26	h statn. 8a34	
7 21	7 40	32 7		5 9	7 2	10 23 28	10 3 35	7a44	0a39	10 44	1 27	more	
8 2	8 22	34 2		5 17	0	10 27 7	9 42 26	8 4	1 32	5 25	2 28	δ δ (, 1 a 15	
8 42	9 3	34 10		5 36	57	10 30 46	9 21 8	8 23	2 24	0s15	3 29	fair.	
9 22	9 44	34 5		5 56	55	10 34 25	8 59 41	8 44	3 15	5 55	4 30	and warm.	
10 510	23 32 10			5 76	53	10 38 3	8 38 5	9 6	4 8	11 13	5 31	δ δ H, 6 a 23	

LUNAR DISTANCES FROM THE SUN.

Mean Astronomical Time at Greenwich.

	NOON.			3 HOURS.			6 HOURS.			9 HOURS.			MIDN.			15 HOUR.			18 HOUR.			21 HOUR.		
	°	'	"	°	'	"	°	'	"	°	'	"	°	'	"	°	'	"	°	'	"	°	'	"
W	52	4	15	53	43	4	55	21	57	57	0	53	58	39	53	60	18	56	61	58	1	63	37	9
	65	16	18	66	55	29	68	34	42	70	13	56	71	53	10	73	32	25	75	11	41	76	50	57
	78	30	13	80	9	28	81	48	43	83	27	57	85	7	10	86	46	22	88	25	32	90	4	41
	91	43	48	93	22	53	95	1	55	96	40	56	98	19	53	99	58	48	101	37	40	103	16	28
	104	55	13	106	33	55	108	12	32	109	51	6	111	29	35	113	8	0	114	46	20	116	24	35
	118	2	44	119	40	49	121	18	47	122	56	40	124	34	26	126	12	6	127	49	39	129	27	5
	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
131	48	26	130	25	6	129	1	56	127	38	56	126	16	5	124	53	23	123	30	50	122	8	24	
120	46	6	119	23	55	118	1	51	116	39	52	115	17	59	113	56	12	112	34	30	111	12	51	
109	51	16	108	29	44	107	8	14	105	46	46	104	25	20	103	3	55	101	42	30	100	21	4	
98	59	38	97	38	10	96	16	40	94	55	7	93	33	32	92	11	52	90	50	8	89	28	19	
88	6	24	86	44	23	85	22	16	84	0	1	82	37	38	81	15	7	79	52	26	78	29	36	
77	6	36	75	43	25	74	20	3	72	56	28	71	32	42	70	8	42	68	44	29	67	20	2	
65	55	21	64	30	25	63	5	14	61	39	46	60	14	3	58	48	3	57	21	46	55	55	12	
54	28	19	53	1	9	51	33	41	50	5	54	48	37	48	47	9	23	45	40	39	44	11	35	
42	42	12	41	12	29	39	42	27	38	12	6	36	41	25	35	10	25	33	39	6	32	7	28	
30	35	32	29	3	19	27	30	49	25	58	4	24	25	4	22	51	51	21	18	27	19	44	54	
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	
Sw	22	2	7	23	42	13	25	22	35	27	3	10	28	43	56	30	24	51	32	5	55	33	47	4
9	35	28	19	37	9	38	38	51	0	40	32	23	42	13	47	43	55	11	45	36	34	47	17	56
0	48	59	15	50	40	31	52	21	43	54	2	52	55	43	55	57	24	52	59	5	43	60	46	27
1	62	27	5	64	7	35	65	47	57	67	28	10	69	8	15	70	48	10	72	27	56	74	7	33

any other part of the Almanack would be set down as such. The letters E. and W. inserted in the first column refer to the position of the Sun; E. East, W. West

The Planets

MERCURY [♿] will be visible in the mornings about the 28th February, 29th June

PHASES OF THE MOON. { FIRST QUARTER, 2nd day, at 1h. 58m. afternoon.
FULL MOON, 9th day, at 10h. 12m. night.
LAST QUARTER, 18th day, at 1h. 30m. morning.
NEW MOON, 25th day, at 6h. 34m. morning.

M D.	Day	Twil.	☉'s brek. ends. semi.	♂ Mercury sets. sout. rises.	♀ Venus. sout. rises.	♂ Mars. rises. sout.	♂ Jupiter. rises. sout.	♂ Saturn. sets. sout.	M D.
1	2m	52	9 a 6 15 54	7 a 18 1 a 33 2m 38	10m 25	0m 47 9 m 8	10a 21 6m 51	10a 29 6a 42 1	
8	3	10	8 44 15 55	6 54 1 32 3	1 10 32	0 44 9 0	9 56 6 27	10 26 15 8	
15	3	27	8 21 15 57	6 30 1 23 3	24 10 38	0 42 8 50	9 31 6 2	9 35 5 48 15	
22	3	45	8 0 15 59	6 1 2 3 47	10 43	0 39 8 47	9 6 5 37	9 8 5 22 22	
29	3	58	7 40 16 1 5	32 0 21 4 11	10 48	0 37 8 30	8 41 5 12 8	42 4 56 29	

M W D D		Remarkable Days	HIGH WATER.—LIVERPOOL.				Equation of Time. ' "
			MORNING. Time. Height.		EVENING. Time. Height.		
1	Th	Giles, Abbot	2 43	17 7	3 5	16 1	0 6
2	F	London burnt, 1666	3 28	15 10	3 55	14 6	0 25
3	S	Cromwell died 1658	4 24	13 10	4 59	13 1	0 44
4	B	12 Sun. after Trinity	5 40	12 5	6 24	12 7	1 3
5	M	Proper [2 Kings x; Matt. v. Lessons [— xviii; Rom. v.	7 7	12 4	7 49	13 4	1 23
6	Tu	Hannah More d. 1823	8 27	13 1	8 59	14 8	1 43
7	W	Enurchus, Bishop	9 30	14 5	9 56	16 1	2 4
8	Th	Nativity B. V. Mary	10 22	15 6	10 41	17 2	2 24
9	F	Wm. the Conq. died	10 59	16 5	11 17	17 11	2 45
10	S	Tea first import. 1391	11 35	17 0	11 49	18 4	3 5
11	B	13 Sun. after Trinity	— —	— —	0 7	17 4	3 26
12	M	Proper [2 Kings xix; Matt. xii. Lessons. [— xxiii; Rom. xii.	0 24	18 3	0 40	17 2	3 47
13	Tu	Battle of Quebec, 1769	0 57	17 11	1 11	16 9	4 8
14	W	Holy Cross Day	1 27	17 1	1 43	16 0	4 29
15	Th	Moscow burnt, 1812	2 1	16 0	2 16	14 11	4 51
16	F	James II died, 1701	2 32	14 5	2 47	13 10	5 12
17	S	Lambert, Bishop	3 5	13 2	3 28	12 6	5 33
18	B	14 Sun. after Trinity	3 51	11 8	4 22	11 5	5 54
19	M	Proper [Jeremiah v; Matt. xix. Lessons. [— xxii; 1 Cor. iii.	4 59	10 7	5 41	10 11	6 15
20	Tu	Manx Fish ft. lt. 1787	6 24	10 7	7 7	11 8	6 36
21	W	St. Matthew Apostle.	7 47	11 8	8 23	13 1	6 57
22	Th	Battle of Kutcha, 1854	8 55	13 5	9 21	15 0	7 18
23	F	Neptune souths 1 m 4	9 48	15 5	10 11	17 3	7 39
24	S	Charles I. dethroned	10 31	17 1	10 47	19 0	7 59
25	B	15 Sun. aft. Trinity.	11 9	18 7	11 27	20 3	8 20
26	M	Proper [Jer. xxxv; Matt. xxvi. Lessons. [— xxxvi; 1 Cor. xi	11 47	19 6	— —	— —	8 40
27	Tu	Jesuits founded, 1540	0 9	20 10	0 30	19 9	9 0
28	W	G. Buchanan d., 1592	0 51	20 6	1 13	19 3	9 20
29	Th	St. Michael	1 35	19 4	1 58	18 0	9 40
30	F	St. Jerome	2 21	17 6	2 44	16 3	10 0



RECEIPTS

1	1911	10	10	10
2	1912	10	10	10
3	1913	10	10	10
4	1914	10	10	10
5	1915	10	10	10
6	1916	10	10	10
7	1917	10	10	10
8	1918	10	10	10
9	1919	10	10	10
10	1920	10	10	10
11	1921	10	10	10
12	1922	10	10	10
13	1923	10	10	10
14	1924	10	10	10
15	1925	10	10	10
16	1926	10	10	10
17	1927	10	10	10
18	1928	10	10	10
19	1929	10	10	10
20	1930	10	10	10
21	1931	10	10	10
22	1932	10	10	10
23	1933	10	10	10
24	1934	10	10	10
25	1935	10	10	10
26	1936	10	10	10
27	1937	10	10	10
28	1938	10	10	10
29	1939	10	10	10
30	1940	10	10	10
31	1941	10	10	10
32	1942	10	10	10
33	1943	10	10	10
34	1944	10	10	10
35	1945	10	10	10
36	1946	10	10	10
37	1947	10	10	10
38	1948	10	10	10
39	1949	10	10	10
40	1950	10	10	10
41	1951	10	10	10
42	1952	10	10	10
43	1953	10	10	10
44	1954	10	10	10
45	1955	10	10	10
46	1956	10	10	10
47	1957	10	10	10
48	1958	10	10	10
49	1959	10	10	10
50	1960	10	10	10
51	1961	10	10	10
52	1962	10	10	10
53	1963	10	10	10
54	1964	10	10	10
55	1965	10	10	10
56	1966	10	10	10
57	1967	10	10	10
58	1968	10	10	10
59	1969	10	10	10
60	1970	10	10	10
61	1971	10	10	10
62	1972	10	10	10
63	1973	10	10	10
64	1974	10	10	10
65	1975	10	10	10
66	1976	10	10	10
67	1977	10	10	10
68	1978	10	10	10
69	1979	10	10	10
70	1980	10	10	10
71	1981	10	10	10
72	1982	10	10	10
73	1983	10	10	10
74	1984	10	10	10
75	1985	10	10	10
76	1986	10	10	10
77	1987	10	10	10
78	1988	10	10	10
79	1989	10	10	10
80	1990	10	10	10
81	1991	10	10	10
82	1992	10	10	10
83	1993	10	10	10
84	1994	10	10	10
85	1995	10	10	10
86	1996	10	10	10
87	1997	10	10	10
88	1998	10	10	10
89	1999	10	10	10
90	2000	10	10	10
91	2001	10	10	10
92	2002	10	10	10
93	2003	10	10	10
94	2004	10	10	10
95	2005	10	10	10
96	2006	10	10	10
97	2007	10	10	10
98	2008	10	10	10
99	2009	10	10	10
100	2010	10	10	10

Bristol tides				SUN.				MOON.				ASPECTS.	
M	morn.	even.	height	rises.	sets.	rt. ascen.	declin. N	sets.	souths.	declin.	age.	M	AND
D.	H. M.	H. M.	F. I.	H. M.	H. M.	H. M. S.	° / '	H. M.	H. M.	° / '	°.	D.	WEATHER
1	10 41	11 13	30 3	5 9 6	50 10	41 41	8 16 21	9a33	5 2 15	46 6	1	♂ in Aphel.	
2	11 24	11 49	27 0	5 10 6	48 10	45 19	7 54 29	10 6	5 58 19	18 7	2	Now	
3	—	0 19	23 4	5 12 6	45 10	48 56	7 32 30	10 46	6 55 21	33 8	3	♂ (, 10m48	
4	0 54	1 34	22 1	5 14 6	43 10	52 33	7 10 23	11 37	7 52 22	23 9	4	expect	
5	2 26	3 16	23 4	5 16 6	40 10	56 10	6 48 9	morn	8 48 21	48 10	5	rain	
6	3 59	4 33	25 7	5 18 6	38 10	59 47	6 25 49	0 40	9 42 19	55 11	6	and	
7	5 5	5 33	27 9	5 19 6	35 11	3 23	6 3 23	1 50	10 33 16	57 12	7	changeable	
8	6 1	6 23	28 9	5 21 6	33 11	6 59	5 40 50	3 4	11 22 13	9 13	8	♂ gr. elon. E	
9	6 43	7 33	30 4	5 23 6	31 11	10 35	5 18 12	rises.	morn	—	F 9	Fair	
10	7 23	7 39	31 6	5 25 6	28 11	14 11	4 55 29	7a13	0 7	8 48 15	10	and	
1	7 58	8 15	32 0	5 27 6	26 11	17 47	4 32 40	7 29	0 51	4 8 16	11	warm	
2	8 30	8 46	31 10	5 28 6	23 11	21 22	4 9 47	7 44	1 33	0 38 17	12	for the	
3	8 59	9 13	31 1	5 30 6	21 11	24 58	3 46 49	7 59	2 15	5 18 18	13	season.	
4	9 28	9 45	29 8	5 32 6	18 11	28 33	3 23 47	8 16	2 57	9 44 19	14	♂ Reg 4m48	
5	9 58	10 11	28 0	5 34 6	16 11	32 8	3 0 41	8 35	3 40	13 45 20	15	♂ ☉, 7 m 12	
6	10 23	10 37	25 9	5 36 6	13 11	35 44	2 37 32	9 1	4 25	17 12 21	16	Still	
7	10 58	11 18	23 1	5 37 6	11 11	39 19	2 14 20	9 36	5 11	19 55 22	17	fair	
8	11 45	—	20 8	5 39 6	8 11	42 55	1 51 5	10 20	6 0	21 44 23	18	♂ (, 2 m 1	
9	0 17	0 54	19 0	5 41 6	6 11	46 30	1 27 47	11 13	6 51	22 30 24	19	and	
0	1 34	2 26	19 11	5 43 6	3 11	50 5	1 4 27	morn	7 44 22	3 25 20	20	♂ (, 0 a 5	
1	3 14	3 55	23 3	5 45 6	1 11	53 41	0 41 6	0 14	8 38 20	19 26 21	21	♂ gr. Hel. lat	
2	4 29	4 56	26 10	5 46 5	58 11	57 17	0 17 42	1 23	9 32 17	19 27 22	22	dry.	
3	5 24	5 50	29 11	5 48 5	56 12	0 52	so 5 42	2 42	10 25 13	9 28 23	23	☉ enters ♎	
4	6 12	6 31	31 7	5 50 5	53 12	5 28	0 29 7	4 12	11 18 8	4 29 24	24	[Autm. com	
5	6 55	7 15	34 3	5 52 5	51 12	8 5	0 52 32	sets.	0 all	2 21 N	25	Windy	
6	7 37	8 0	36 0	5 54 5	48 12	12 41	1 15 58	6a47	1 5	3 35 1	26	♂ (, 3 a 1	
7	8 20	8 40	36 6	5 56 5	46 12	16 17	1 39 23	7 8	1 59	9 18 2	27	and	
8	9 1	9 21	35 7	5 57 5	43 12	19 54	2 2 48	7 33	2 54 14	23 3	28	wet	
9	9 42	10 3	33 5	5 59 5	41 12	23 31	2 26 11	8 3	3 51 18	27 4	29	weather	
10	10 21	10 41	30 4	6 1 5	38 12	26 8	2 49 33	8 42	4 49 21	13 5	30	♂ (, 6 a 1	

LUNAR DISTANCES FROM THE SUN.

Mean Astronomical Time at Greenwich.

H.	NOON.			3 HOURS.			6 HOURS.			9 HOURS.			MIDN.			15 HOUR.			18 HOUR.			21 HOUR.			
	°	'	"	°	'	"	°	'	"	°	'	"	°	'	"	°	'	"	°	'	"	°	'	"	
V	75	46	59	77	26	15	79	5	20	80	44	15	82	22	58	84	1	31	85	39	52	87	18		
	88	55	59	90	33	45	92	11	19	93	48	42	95	25	52	97	2	50	98	39	36	100	16	1	
	101	52	31	103	28	40	105	4	36	106	40	21	108	15	52	109	51	12	111	26	18	113	1	1	
	114	35	54	116	10	23	117	44	39	119	18	43	120	52	34	122	26	12	123	59	38	125	32	5	
	125	5	51	127	38	37	130	11	11	131	43	32	133	15	40	134	47	34	136	19	15	137	50	4	
	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	128	46	44	127	25	46	126	4	50	124	43	54	123	22	58	122	2	3	120	41	7	119	20	1	
	117	59	12	116	38	12	115	17	10	113	56	4	112	34	55	111	13	43	109	52	26	108	31		
	107	9	36	105	48	3	104	26	23	103	4	36	101	42	41	100	20	38	98	58	26	97	36		
	96	13	34	94	50	52	93	27	59	92	4	55	90	41	38	89	18	9	87	54	26	86	30	2	
E	85	6	18	83	41	51	82	17	9	80	52	11	79	26	57	78	1	25	76	35	35	75	9	2	
	73	43	0	72	16	15	70	49	9	69	21	44	67	53	57	66	25	50	64	57	22	63	28	3	
	61	59	21	60	29	47	58	59	50	57	29	30	55	58	48	54	27	42	52	56	13	51	24	2	
	49	52	6	48	19	26	46	46	24	45	12	58	43	39	10	42	4	58	40	30	24	38	55	2	
	37	20	11	35	44	33	34	8	36	32	32	19	30	55	45	29	18	55	27	41	50	26	4	3	
	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	31	31	22	33	14	36	34	57	50	36	41	2	38	24	10	40	7	13	41	50	9	43	32	5	
	45	15	36	46	58	5	48	40	22	50	22	28	52	4	21	53	46	0	55	27	25	57	8	3	
	58	49	30	60	30	8	62	10	29	63	50	34	65	30	22	67	9	51	68	49	3	70	27	5	
	72	6	32	73	44	47	75	22	44	77	0	23	78	37	42	80	14	42	81	51	22	83	27	4	

d 19th October; and in the evenings about the 18th January, 11th May, September, and the end of December. The most favourable time for seeing this beautiful planet will be at its eastern elongation in May, being at that time in the best position for observation in the evening sky.

VENUS [♀] will be an evening star to the 23rd Feb., then a morning star to the end of December; her greatest brilliancy will be on the 31st March, as a morning star

PHASES OF THE MOON.	FIRST QUARTER,	1st day, at 9h. 19m. night.
	FULL MOON	9th day, at 1h. 43m. afternoon.
	LAST QUARTER,	17th day, at 6h. 13m. evening.
	NEW MOON,	24th day, at 3h. 36m. afternoon.
	FIRST QUARTER,	31st day, at 8h. 1m. morning.

M	Day	Twil.	☉'s	☿ Mercury	♀ Venus.	♂ Mars.	♃ Jupiter.	♄ Saturn.	M
D.	brek.	end.	semi.	sets. sout.	rises. sout.	rises. sout.	rises. sout.	sets. sout.	D.
1	4 m 3	7 a 36	16	1 5a 24 0 a 7	4 m 18 10 m 49	0 m 36 8 m 27	8 a 34 5 m 4	8 a 35 4 a 49	1
8	4 18 7	19 16	3	rises. 11 m 15	4 42 10 54 0	34 8 17	8 7 4 38 8	9 4 23 8	8
15	4 30 7	0 16	5	4 m 45 10 45	5 6 10 58 0	31 8 5	7 40 4 11 7	43 3 57 15	15
22	4 44 6	46 16	7	4 50 10 41	5 30 11 3 0	27 7 54	7 12 3 43 7	18 3 32 22	22
29	4 56 6	31 16	9	5 23 10 51	5 53 11 8 0	23 7 41	6 43 3 14 6	53 3 7 29	29

M W		Remarkable Days	HIGH WATER.—LIVERPOOL.								Equation
D	D		MORNING.				EVENING.				of Time.
			Time.	Height.	Time.	Height.	Time.	Height.			
1	S	Cambridge T. begins	3	7 15	4	3 35	14	4	10 19		
2	B	16 Sun. after Trinity	4	8 13	0	4 44	12	9	10 38		
3	M	Proper Lessons. [Ezekiel 2; Mark v. xiii; 2 Cor. i.	5	26 11	6	6 12	12	3	10 56		
4	Tu	Sir J. Rennie, d. 1821	7	0 11	7	7 43	13	1	11 15		
5	W	Battle of Cadiz, 1804	8	19 12	6	8 50	14	5	11 33		
6	Th	Faith, V. M.	9	15 14	0	9 38	15	11	11 50		
7	F	Neptune souths 0m 17.	10	0 15	2	10 18	16	11	12 8		
8	S	Dr. Kippis died, 1795	10	35 16	3	10 52	17	8	12 25		
9	B	17 Sun. after Trinity	11	8 16	11	11 21	18	1	12 41		
10	M	Pro. [Ezekiel xiv; Mark xii. Less. [— xviii; 2 Cor. viii.	11	36 17	4	11 51	18	1	12 57		
11	Tu	Old Michaelmas day.	—	—	—	0 8	17	4	13 13		
12	W	Wat Tyler died, 1381	0	23 17	8	0 39	17	0	13 28		
13	Th	Trans. King Edward	0	55 17	0	1 10	16	4	13 42		
14	F	Wm. Penn born, 1644	1	26 15	11	1 43	15	4	13 56		
15	S	Virgil born, B.C. 70	1	59 14	7	2 17	14	3	14 9		
16	B	18 Sun. after Trinity	2	34 13	4	2 57	13	1	14 22		
17	M	[Ezekiel xx; Luke ii. — xxiv; Gal. ii.	3	21 11	11	3 47	11	10	14 34		
18	Tu	St. Luke, Evangelist	4	23 10	9	5 6	11	3	14 46		
19	W	Dean Swift died, 1743	5	48 10	6	6 33	11	10	14 57		
20	Th	Bat. of Navarino 1827	7	12 11	7	7 52	13	6	15 8		
21	F	Bat. of Trafalgar, 1805	8	22 13	1	8 51	15	7	15 17		
22	S	Dr. Arnold died, 1802	9	16 15	8	9 38	17	8	15 26		
23	B	19 Sun. after Trinity	10	2 17	6	10 22	19	4	15 35		
24	M	Pro. [Daniel iii; Luke ix. Les. [— vi; Ephes. iii.	10	40 18	11	10 59	20	5	15 49		
25	Tu	Crispin, Martyr.	11	20 19	10	11 43	20	8	15 49		
26	W	Hogarth died, 1764	—	—	—	0 5	20	1	15 55		
27	Th	Servetus burnt, 1553	0	28 20	4	0 51	19	5	16 1		
28	F	St. Sim. & St. Jude.	1	13 19	1	1 38	18	1	16 6		
29	S	Bristol Riots, 1831	2	3 17	11	2 29	16	4	16 10		
30	B	20 Sun. after Trinity	2	53 14	9	3 20	14	6	16 13		
31	M	Proper Lessons. [Joel ii; Luke xvi. Micah vi; Phil. iv.	3	50 12	8	4 28	12	11	16 15		



M D.	Bristol tides				SUN.					MOON.					M D.	ASPECTS AND WEATHER.
	morn. H. M.	even. H. M.	height F. I.		rises. H. M.	sets. H. M.	rt. ascen. H. M.	declin. S.		sets. H. M.	souths H. M.	declin. ° /				
1	11 5	11 34	26 3		6 35	36 12	29 45	3 12	53	9a32	5a47	22s31	6	1		
2	—	0 5	22 7		6 55	33 12	33 23	3 36	11	10 33	6 44	22 20	7	2		
3	0 41	1 22	21 0		6 75	31 12	37 0	3 59	26	11 40	7 39	20 48	8	3		
4	2 18	3 10	22 5		6 95	28 12	40 39	4 22	38	morn	8 30	18 8	9	4		
5	3 51	4 24	24 11		6 105	26 12	44 17	4 45	48	0 51	9 12	14 31	10	5		
6	4 50	5 14	27 5		6 125	23 12	47 56	5 8	53	2 51	10 5	10 23	11	6		
7	5 38	5 58	29 3		6 145	21 12	51 35	5 31	55	3 19	10 49	5 48	12	7		
8	6 18	6 37	30 1		6 165	18 12	55 15	5 54	52	4 31	11 31	1 2	13	8		
9	6 54	7 9	31 2		6 185	16 12	58 55	6 17	45	rises morn	—	—	14	9		
10	7 25	7 42	31 9		6 205	13 13	2 36	6 40	33	6a 6	0 13	3N44	15	10		
11	7 58	8 12	31 7		6 225	11 13	6 17	7 3	15	6 22	0 54	8 18	16	11		
12	8 27	8 42	31 0		6 245	9 13	9 58	7 25	51	6 41	1 37	12 32	17	12		
13	8 56	9 11	29 10		6 255	7 13	13 40	7 48	22	7 4	2 21	16 14	18	13		
14	9 27	9 41	28 1		6 275	4 13	17 23	8 10	46	7 34	3 6	19 16	19	14		
15	9 56	10 9	26 3		6 295	2 13	21 6	8 33	3	8 11	3 54	21 26	20	15		
16	10 29	10 50	23 10		6 315	0 13	24 50	8 55	13	8 59	4 43	22 36	21	16		
17	11 13	11 44	21 4		6 334	57 13	28 34	9 17	16	9 58	5 34	22 39	22	17		
18	—	0 23	19 5		6 354	55 13	32 19	9 39	10	11 5	6 26	21 29	23	18		
19	1 0	1 46	20 1		6 374	53 13	36 5	10 0	57	morn	7 19	19 5 24	24	19		
20	2 34	3 22	23 5		6 394	51 13	39 51	10 22	34	0 20	8 11	15 31	25	20		
21	3 55	4 25	27 2		6 414	48 13	43 38	10 44	2	1 41	9 3	10 54	26	21		
22	4 51	5 15	30 8		6 434	46 13	47 25	11 5	22	3 6	9 56	5 29	27	22		
23	5 41	6 4	33 9		6 454	43 13	51 13	11 26	31	4 33	10 48	0s26	28	23		
24	6 25	6 45	34 9		6 474	41 13	55 2	11 47	30	sets.	11 42	6 27	N	24		
25	7 9	7 34	36 4		6 494	39 13	58 52	12 8	18	5a31	0a38	12 5	1	25		
26	7 56	8 18	36 7		6 514	37 14	2 42	12 28	54	5 59	1 36	16 54	2	26		
27	8 40	9 0	35 6		6 534	35 14	6 33	12 49	30	6 34	2 36	20 26	3	27		
28	9 23	9 46	33 0		6 554	32 14	10 25	13 9	33	7 21	3 37	22 26	4	28		
29	10 8	10 28	29 11		6 574	30 14	14 18	13 29	34	8 20	4 36	22 50	5	29		
30	10 51	11 17	26 1		6 594	28 14	18 11	13 49	22	9 29	5 34	21 42	6	30		
31	11 50	—	22 7		7 14	26 14	22 5	14 8	56	10 41	6 27	19 19	7	31		

LUNAR DISTANCES FROM THE SUN.

Mean Astronomical Time at Greenwich.

M D.	NOON.			3 HOURS.			6 HOURS.			9 HOURS.			MIDN.			15 HOUR.			18 HOUR.			21 HOUR.		
	°	'	"	°	'	"	°	'	"	°	'	"	°	'	"	°	'	"	°	'	"	°	'	"
1w	85	3	46	86	39	29	88	14	52	89	49	57	91	24	43	92	59	9	94	33	17	96	7	7
2	97	40	38	99	13	50	100	46	45	102	19	21	103	51	40	105	23	41	106	55	25	108	26	52
3	109	58	2	111	28	55	112	59	32	114	29	52	115	59	57	117	29	45	118	29	18	120	28	36
4	121	57	38	123	26	25	124	54	58	126	23	15	127	51	18	129	19	7	130	46	42	132	14	2
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
13E	137	2	6	135	41	32	134	20	53	133	0	10	131	39	22	130	18	30	128	57	32	127	36	29
14	126	15	20	124	54	5	123	32	43	122	11	14	120	49	37	119	27	53	118	6	0	116	43	58
15	115	21	47	113	59	27	112	36	56	111	14	14	109	51	22	108	28	17	107	5	0	105	41	30
16	104	17	47	102	53	51	101	29	40	100	5	14	98	40	32	97	15	35	95	50	21	94	24	50
17	92	59	1	91	32	55	90	6	30	88	39	45	87	12	41	85	45	17	84	17	32	82	49	27
18	81	20	59	79	52	10	78	22	58	76	53	23	75	23	25	73	53	3	72	22	18	70	51	7
19	69	19	33	67	47	33	66	15	8	64	42	17	63	9	1	61	35	19	60	1	11	58	26	38
20	56	51	38	55	16	12	53	40	21	52	4	3	50	27	20	48	50	12	47	12	38	45	34	41
21	43	56	18	42	17	32	40	38	24	38	58	33	37	19	1	35	38	48	33	58	17	32	17	28
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
26w	26	34	5	28	17	58	30	1	49	31	45	35	33	29	13	35	12	41	36	55	57	38	39	0
27	40	21	48	42	4	20	43	46	35	45	28	31	47	10	9	48	51	27	50	32	24	52	12	59
28	53	53	13	55	33	5	57	12	34	58	51	39	60	30	21	62	8	39	63	46	33	65	24	3
29	67	1	9	68	37	51	70	14	8	71	50	0	73	25	29	75	0	33	76	35	13	78	9	29
30	79	43	21	81	16	50	82	49	55	84	22	38	85	54	57	87	26	54	88	58	28	90	29	41
31	92	0	32	93	31	2	95	1	11	96	31	0	98	0	28	99	29	37	100	58	26	102	26	57

MARS [♂] will be an evening star to the 12th of March; then a morning star to the end of the year.

PHASES OF THE MOON. { FULL MOON, 8th day, at 7h. 32m. morning.
LAST QUARTER, 16th day, at 8h. 59m. morning.
NEW MOON, 23rd day, at 1h. 21m. morning.
FIRST QUARTER, 29th day, at 13h. 33m. night.

M D.	Day brak.	Twil. ends.	☉'s semi.	♂ Mercury		♀ Venus.		♂ Mars.		♃ Jupiter.		♄ Saturn.		M D.
				rises.	sout.	rises.	sout.	rises.	sout.	rises.	sout.	sets.	sout.	
1	5 m 26 a 24	16 10	5 m 39 10 m 57	6 m 4	11 m 10	0 m 21 7 m 36	6 a 31 3 m 2	6 a 41 2 a 57	1					1
8	5 13 6 13	16 11	6 21 11 12	6 28	11 16	0 16 7 23	6 12 32	6 16 2 32	8					8
15	5 24 6 3	16 13	7 4 11 28	6 53	11 23	0 11 7 10	5 31 2	5 52 2 8	15					15
22	5 34 5 58	16 14	sets. 11 45	7 17	11 31	0 6 6 56	5 11 31	5 27 1 43	22					22
29	5 44 5 53	16 16	3 a 43 0 a 4	7 41	11 40	11 a 56 6 42	4 30 1 0	5 31 19 39	29					29

M D	W D	Remarkable Days	HIGH WATER.—LIVERPOOL.				Equation of Time.
			MORNING.		EVENING.		
			Time.	Height.	Time.	Height.	
1	Tu	All Saints Day	5 9	11 4	5 52	12 4	16 ¹⁷
2	W	Michaelmas Ter. beg.	6 35	11 3	7 15	12 11	16 ¹⁸
3	Th	Holywell Day	7 48	12 3	8 21	14 1	16 ¹⁸
4	F	Wm. III landed, 1688	8 48	13 6	9 12	15 4	16 ¹⁷
5	S	Gunpowder Plot	9 32	14 9	9 50	16 3	16 ¹⁶
6	B	21 Sun. after Trinity	10 9	15 9	10 25	16 10	16 ¹⁴
7	M	Proper [Hab. ii; Luke xxii. Lessons [Prov. i; 1 Thess. ii.	10 40	16 4	10 55	17 2	16 ¹¹
8	Tu	Cam. Term div. N.	11 12	16 10	11 26	17 2	16 ⁷
9	W	Prince of Wales born	11 40	16 11	11 56	17 0	16 ²
10	Th	Luther born, 1483	— —	— —	0 10	16 10	15 ⁵⁶
11	F	St. Martin, Bishop	0 27	16 7	0 45	16 5	15 ⁵⁰
12	S	R. Baxter born, 1615	1 0	15 8	1 17	15 7	15 ⁴³
13	B	22 Sun. after Trinity	1 35	14 8	1 56	14 9	15 ³⁴
14	M	Proper [Proverbs ii; John v. Lessons. [— iii; 1 Tim. i.	2 14	13 7	2 36	13 9	15 ²⁵
15	Tu	Machutus, Bishop.	3 1	12 6	3 27	12 10	15 ¹⁵
16	W	Ferguson died, 1776	3 54	11 6	4 30	12 2	15 ⁴
17	Th	Hugh, Bishop	5 11	11 3	5 54	12 6	14 ⁵³
18	F	H souths 4 m 7	6 32	12 1	7 10	13 10	14 ⁴⁰
19	S	Neptune souths 9 a 20	7 43	13 8	8 13	15 7	14 ²⁷
20	B	23 Sun. after Trinity	8 39	15 6	9 5	17 4	14 ¹³
21	M	Proper [Proverbs xi; John xii. Lessons. [— xii; 2 Tim. iii.	9 31	17 2	9 56	18 9	13 ⁵⁸
22	Tu	Cecilia V and M.	10 17	18 6	10 38	19 7	13 ⁴²
23	W	St. Clement	11 1	19 4	11 22	19 11	13 ²⁵
24	Th	John Knox died, 1572	11 47	19 8	— —	— —	13 ⁸
25	F	Michaelmas Term ends	0 10	19 6	0 34	19 2	12 ⁵⁰
26	S	Pleiades south 11 a 17	0 59	18 4	1 23	18 1	12 ³¹
27	B	Advent Sunday	1 46	16 7	2 13	16 7	12 ¹¹
28	M	[Isaiah i; John xix. — ii; Heb. iii.	2 41	14 9	3 7	15 1	11 ⁵
29	Tu	Capella souths, 0 m 36	3 34	13 1	4 3	13 7	11 ³⁰
30	W	St. Andrew, Apostle	4 36	11 9	5 12	12 9	11 ⁸

Bristol tides

SUN.

MOON.

M

ASPECTS

morn.	even.	height	rises.	sets.	rt. ascen.	declin.	S.	sets.	souths	declin.	age.	D.	AND WEATHER
H. M.	H. M.	F. I.	H. M.	H. M.	H. M.	S.	° / "	H. M.	H. M.	° / "			
0 25	1 3	20 11	7 34	24 14	26 0	14 28	17	11a55	7a17	15s58	8	1	Expect
1 49	2 37	21 10	7 54	22 14	29 55	14 47	24	morn	8 4	11 54	9	2	Stationar
3 18	3 54	24 4	7 74	30 14	33 52	15 6	16	1 8	8 48	7 25	10	3	cold
4 22	4 47	26 5	7 94	18 14	37 49	15 24	53	2 20	9 30	2 40	11	4	rain,
5 8	5 27	28 2	7 114	16 14	41 47	15 43	15	3 31	10 12	2 8	12	5	unless
5 48	6 7	29 4	7 134	14 14	45 45	16 1	21	4 41	10 53	6 48	13	6	the
6 24	6 41	29 10	7 154	12 14	49 45	16 19	12	5 49	11 35	11 12	14	7	wind
6 59	7 15	30 6	7 164	11 14	53 46	16 36	45	rises.	morn	—	F	8	☾ in Apogee
7 30	7 47	30 7	7 184	9 14	57 47	16 54	2	5a 8	0 18	15 9	16	9	be
8 1	8 17	30 2	7 204	7 15	1 50	17 11	2	5 35	1 3	18 29	17	10	Northerly.
8 34	8 48	29 5	7 224	5 15	5 53	17 27	44	6 9	1 51	20 59	18	11	☽ ☾ ☽, 3 m 2
9 3	9 19	28 1	7 244	3 15	9 56	17 44	8	6 52	2 39	22 32	19	12	Stormy
9 39	9 53	26 8	7 264	2 15	14 1	18 0	13	7 46	3 30	23 0	20	13	and
10 12	10 33	24 11	7 284	0 15	18 7	18 16	0	8 48	4 21	22 17	21	14	☽ ☽ ☽, 5 m 1
10 56	11 19	22 10	7 303	59 15	22 13	18 31	27	9 59	5 12	20 22	22	15	cold
11 51	—	21 4	7 323	57 15	26 21	18 46	35	11 17	6 3	17 19	23	16	for some
0 26	1 5	21 4	7 343	56 15	30 29	19 1	24	morn	6 53	13 15	24	17	☽ ☽ ☽, 1 a
1 47	2 32	23 9	7 363	54 15	34 38	19 15	51	0 38	7 43	8 19	25	18	days.
3 13	3 46	27 3	7 383	53 15	38 48	19 29	58	2 1	8 34	2 44	26	19	Now
4 13	4 40	30 4	7 403	51 15	42 59	19 43	44	3 26	9 25	3s10	27	20	fair
5 7	5 35	32 10	7 423	50 15	47 10	19 57	9	4 54	10 19	9 2	28	21	and
5 57	6 22	33 9	7 433	49 15	51 23	20 10	11	6 27	11 16	14 25	29	22	☽ ☽ ☽, 12 m 8
6 47	7 11	35 0	7 453	47 15	55 36	20 22	52	sets.	0a16	18 48	N	23	frosty
7 38	8 0	35 4	7 473	46 15	59 50	20 35	10	5a7	1 18	21 45	1	24	☽ ☽ ☽, 8 a 25
8 23	8 48	34 6	7 493	45 16	4 5	20 47	4	6 7	2 20	23 1	2	25	with
9 9	9 30	32 5	7 513	44 16	8 20	20 58	36	7 13	3 21	22 34	3	26	some
9 54	10 18	29 11	7 523	43 16	12 36	21 9	44	8 23	4 19	20 37	4	27	snow
10 49	11 4	26 10	7 543	42 16	16 53	21 20	28	9 36	5 12	17 31	5	28	☽ in Aphelion
11 29	11 57	23 11	7 563	41 16	21 11	21 30	47	10 52	6 1	13 35	6	29	at the
—	0 28	21 9	7 573	40 16	25 29	21 40	42	morn	6 46	9 8	7	30	end.

LUNAR DISTANCES FROM THE SUN.

Mean Astronomical Time at Greenwich.

	NOON.	3 HOURS.	6 HOURS.	9 HOURS.	MIDN.	15 HOUR.	18 HOUR.	21 HOUR.
	° / "	° / "	° / "	° / "	° / "	° / "	° / "	° / "
V	103 55 9	105 23 3	106 50 40	108 17 59	109 45 2	111 11 48	112 38 18	114 4 33
	115 30 32	116 56 17	118 21 47	119 47 4	121 12 7	122 36 57	124 1 34	125 25 59
	126 50 11	128 14 12	129 38 2	131 1 40	132 25 7	133 48 25	135 11 31	136 34 28
								
E	134 26 43	133 4 0	131 41 7	130 18 4	128 54 50	127 31 26	126 7 51	124 44 5
	123 20 7	121 55 57	120 31 35	119 7 0	117 42 11	116 17 9	114 51 53	113 26 22
	112 0 37	110 34 36	109 8 20	107 41 47	106 14 57	104 47 51	103 20 26	101 52 44
	100 24 43	98 56 23	97 27 44	95 58 45	94 29 26	92 59 46	91 29 46	89 59 23
	88 28 39	86 57 32	85 26 3	83 54 11	82 21 56	80 49 17	79 16 14	77 42 47
	76 8 55	74 34 39	72 59 57	71 24 51	69 49 20	68 13 23	66 37 1	65 0 14
	63 23 1	61 45 22	60 7 19	58 28 50	56 49 57	55 10 38	53 30 55	51 50 48
	50 10 18	48 29 24	46 48 7	45 6 28	43 24 28	41 42 7	39 59 25	38 16 25
	36 33 6	34 49 30	33 5 38	31 21 32	29 37 13	27 52 42	26 8 2	24 23 15
								
V	20 27 41	22 11 10	23 54 33	25 37 46	27 20 47	29 3 32	30 46 1	32 28 12
	34 10 4	35 51 35	37 32 44	39 13 31	40 53 54	42 33 54	44 13 29	45 52 40
	47 31 25	49 9 43	50 47 36	52 25 3	54 2 3	55 38 36	57 14 43	58 50 23
	60 25 36	62 0 23	63 34 43	65 8 36	66 42 4	68 15 5	69 47 40	71 19 50
	72 51 34	74 22 54	75 53 49	77 24 20	78 54 27	80 24 11	81 53 32	83 22 30
	84 51 7	86 19 22	87 47 15	89 14 48	90 42 1	92 8 55	93 35 30	95 1 47
	96 27 45	97 53 26	99 18 51	100 43 59	102 8 51	103 33 28	104 57 51	106 21 59

JUPITER [♃] will be an evening star to the 25th May; a morning star to the 1st December; then an evening star to the end of the year.

SATURN [♄] will be a morning star to the 16th June; an evening star thence to the 22nd December.

PHASES OF THE MOON.	{	FULL MOON,	8th day, at 2h. 39m. morning.
		LAST QUARTER,	15th day, at 9h. 10m. night.
		NEW MOON,	22nd day, at 0h. 19m. afternoon.
		FIRST QUARTER,	29th day, at 4h. 38m. afternoon.

M	Day	Twil.	☉'s	☿ Mercury	♀ Venus.	♂ Mars.	♃ Jupiter.	♄ Saturn.	M
D.	brek.	ends.	semi.	sets. sout.	rises. sout.	rises. sout.	rises. sout.	sets. sout.	D.
1	5m48	5 a 50	16 16	3 a 44 0 a 9	7m48 11 m42	11a54 6m37	4 a 21 0m51	4 a 56 1a12	1
8	5 53	5 50	16 17	3 52 0 29	8 7 11 52	11 46 6 22	3 51 0 20	4 32 0 48	8
15	6 15	5 51	16 17	4 11 0 47	sets. 0 a 3	11 36 6 6	sets. 11a43	4 8 0 24	15
22	6 45	5 53	16 18	4 39 1 10	3 a 47 0 14	11 24 5 50	7m46 11 12	rises. 0 0 22	22
29	6 65	5 58	16 18	5 10 1 25	4 1 0 25	11 12 5 32	7 10 10 41	7m53 11 25 29	29

M	W	Remarkable Days	HIGH WATER.—LIVERPOOL.								Equation of Time.
D	D		MORNING.				EVENING.				
			Time.	Height.			Time.	Height.			
1	Th	Neptune souths 8 a 31	5	50	11	6	6	25	12	9	10 ² / ₄₆
2	F	Mariner's compass inv.	7	0	11	10	7	31	13	4	10 ² / ₂₃
3	S	James II abdica., 1688	8	1	12	9	8	29	14	1	10 ² / ₀
4	B	2 Sunday in Advent	8	53	13	9	9	16	14	10	9 ² / ₃₅
5	M	Proper [Isai. v; Acts v. Lessons. — xxiv; Hebrews x.	9	35	14	10	9	55	15	7	9 ² / ₁₁
6	Tu	Nicholas, Bishop	10	14	15	5	10	29	15	11	8 ² / ₄₅
7	W	Marsh. Ney shot 1815	10	46	15	11	11	2	16	2	8 ² / ₂₀
8	Th	Conception V. Mary	11	18	16	4	11	35	16	4	7 ² / ₅₄
9	F	Milton born, 1608	11	51	16	6	—	—	—	—	7 ² / ₂₇
10	S	Pleiades south 10 a 22	0	9	16	1	0	27	16	5	7 ² / ₀
11	B	3 Sunday in Advent	0	45	15	9	1	3	16	2	6 ² / ₃₂
12	M	Pro. [Isaiah xxv; Acts xi Les. — xxvi; James iv.	1	22	15	2	1	42	15	7	6 ² / ₄
13	Tu	Lucy V. and M,	2	4	14	5	2	34	14	11	5 ² / ₃₆
14	W	Washington d., 1799	2	47	13	8	3	14	14	3	5 ² / ₇
15	Th	Day 7h. 17m. long	3	38	12	10	4	7	13	8	4 ² / ₃₉
16	F	Cambridge Term ends	4	38	12	5	5	11	13	5	4 ² / ₉
17	S	Oxford Term ends	5	48	12	7	6	21	13	10	3 ² / ₄₀
18	B	4 Sunday in Advent	6	57	13	5	7	30	15	0	3 ² / ₁₀
19	M	[Isaiah xxx; Acts xviii. — xxxii; 2 Peter i.	8	2	14	10	8	33	16	4	2 ² / ₄₁
20	Tu	H souths 1 m 57	9	3	16	4	9	28	17	5	2 ² / ₁₁
21	W	St. Thomas.	9	56	17	7	10	21	18	2	1 ² / ₄₁
22	Th	Pleiades south 9 a 35	10	45	18	4	11	11	18	7	1 ² / ₁₁
23	F	R. Arkwright b. 1792	11	35	18	11	11	59	18	8	0 ² / ₄₀
24	S	Hugh Miller, d., 1856	—	—	—	—	0	23	18	10	0 ² / ₁₀
25	B	Christmas Day	0	57	17	10	1	11	18	1	0 ² / ₂₀
26	M	[Isa. ix to v. 8; Luke ii. — vii. v. 10 to 17; Tit iii v. 4-9	1	33	16	3	1	57	17	0	0 ² / ₅₀
27	Tu	St. John	2	21	15	4	2	47	16	0	1 ² / ₁₉
28	W	Innocents	3	11	14	2	3	33	14	10	1 ² / ₄₉
29	Th	Wickliffe died 1348.	3	57	12	11	4	23	13	6	2 ² / ₁₅
30	F	R. Boyle died 1691.	4	52	11	11	5	23	12	8	2 ² / ₄₇
31	S	Silvester, Bishop	5	53	11	6	6	23	12	4	3 ² / ₁₆

Bristol tides				SUN.								MOON.				M	ASPECTS						
morn.		even.		height	rises.		sets.		rt. ascen.		declin. S.		sets.		souths.		declin.	age	D.	AND WEATHER.			
H.	M.	H.	M.	F. I.	H.	M.	H.	M.	H.	M.	N.	S.	°	'	°	'	°	'					
1	2	1	36	21	6	7	59	3	39	16	29	47	21	50	12	0m 9	7a29	4s24	8	1	♂ ♂ ♂ Leonis		
2	19	2	57	22	10	8	0	3	39	16	34	7	21	59	17	1 21	8 11	0n26	9	2	Fair		
3	32	4	2	24	7	8	2	3	38	16	38	27	22	7	56	2 30	8 52	5 11	10	3	and		
4	27	4	41	26	3	8	3	3	37	16	42	48	22	16	10	3 38	9 34	9 43	11	4	frosty,		
5	11	5	32	27	6	8	5	3	37	16	47	9	22	23	57	4 47	10 16	13 52	12	5	☾ in Apogee		
6	53	6	11	28	0	8	6	3	36	16	51	31	22	31	19	5 55	11 17	27	13	6	changing		
7	39	6	48	28	7	8	7	3	36	16	55	53	22	38	14	7 4	11 47	20 18	14	7	♀ in ☿ 11 a 10		
8	5	7	24	29	1	8	8	3	35	17	0	16	22	44	42	rises. morn	—	—	F	8	♀ sup. ♂ ☉		
9	49	8	0	29	3	8	10	3	35	17	4	39	22	50	44	4a50	0 36	22	13	16	to snow,		
0	18	8	35	29	1	8	11	3	35	17	9	3	22	56	19	5 40	1 26	23	4	17	and		
1	52	9	9	28	7	8	12	3	35	17	13	27	23	1	26	6 40	2 17	22	44	18	☿ ☾ ☾, 9 m 41		
2	27	9	47	27	9	8	13	3	34	17	17	51	23	6	6	7 48	3 9	21	13	19	probably		
3	10 4	10	23	26	11	8	14	3	34	17	22	16	23	10	19	9 3	3 59	18	33	20	☿ ☉, 1 a 0		
4	10 47	11	8	25	7	8	15	3	34	17	26	41	23	14	4	10 20	4 49	14	52	21	stormy		
5	11 34	—	—	24	3	8	16	3	34	17	31	7	23	17	21	11 39	5 37	10	19	22	♂ ☾ ☾, 7 a 40		
6	0 1	0	28	23	4	8	17	3	35	17	35	33	23	20	10	morn	6 26	5	8	23	still		
7	1 1	1	31	23	10	8	18	3	35	17	39	59	23	22	32	1 1	7 15	0s29	24	17	♂ gr. Hel. lt. N		
8	2 15	2	56	26	1	8	19	3	35	17	44	25	23	24	25	2 26	8 6	6	13	25	changeable		
9	3 33	4	7	28	9	8	20	3	35	17	48	51	23	25	52	3 53	8 59	11	44	26	♀ ☾ ☿, 8 a 4		
0	4 38	5	4	30	1	8	20	3	36	17	53	18	23	26	47	5 21	9 55	16	35	27	but		
1	5 34	6	2	32	5	8	21	3	36	17	57	44	23	27	16	6 50	10 55	20	20	28	☉ enters ♍		
2	6 29	6	57	33	0	8	21	3	36	18	2	11	23	26	48	sets.	11 58	22	34	N	22	[Win. com.	
3	7 24	7	50	33	8	8	22	3	37	18	6	38	23	25	52	5a42	1a 1	23	4	1	23	♂ ☾ ☾, 5 a 96	
4	8 13	8	46	33	5	8	22	3	37	18	11	4	23	24	27	5 56	2 22	51	5	2	24	more	
5	8 59	9	19	31	11	8	22	3	38	18	15	31	23	22	35	7 12	2 59	19	12	3	25	inclined	
6	9 41	10	3	30	1	8	23	3	38	18	19	57	23	20	14	8 30	3 51	15	30	4	26	to Fair	
7	10 26	10	46	28	7	8	23	3	39	18	24	23	23	17	24	9 50	4 40	11	7	5	27	towards	
8	11 5	11	25	26	3	8	23	3	40	18	28	50	23	14	7	11 7	5 25	6	21	6	28	the	
9	11 48	—	—	23	10	8	23	3	41	18	33	15	23	9	1	morn	6 8	1	27	7	29	end	
0	0 13	0	40	21	11	8	23	3	42	18	37	41	23	10	22	0 19	6 50	3n24	8	30	8	30	of the
1	1 6	1	33	21	3	8	23	3	43	18	42	6	23	6	9	1 26	7 31	8	3	9	31	Year.	

LUNAR DISTANCES FROM THE SUN.

Mean Astronomical Time at Greenwich.

M.	NOON.	3 HOURS.	6 HOURS.	9 HOURS.	MIDN.	15 HOUR.	18 HOUR.	21 HOUR.
D.	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "
1w	107 45 54	109 9 36	110 33 6	111 56 24	113 19 30	114 42 46	116 5 11	117 27 47
2	118 50 13	120 12 30	121 34 39	122 56 40	124 18 34	125 40 21	127 2 2	128 23 36
3	129 45 5	131 6 29	132 27 48	133 49 3	135 10 14	136 31 22	137 52 26	139 13 28
..	..	..	..	..	..	..	..	..
12E	130 46 32	129 19 22	127 52 0	126 24 25	124 56 37	123 38 35	122 0 20	120 31 51
13	119 3 7	117 34 9	116 4 55	114 35 27	113 5 44	111 35 44	110 5 28	108 34 56
14	107 4 8	105 33 2	104 1 39	102 29 59	100 58 1	99 25 44	97 53 10	96 20 17
15	94 47 4	93 13 33	91 39 43	90 5 33	88 31 3	86 56 13	85 21 3	83 45 33
16	82 9 43	80 33 32	78 57 0	77 20 8	75 42 56	74 5 22	72 27 28	70 49 14
17	69 10 39	67 31 43	65 52 28	64 12 52	62 32 57	60 52 41	59 12 7	57 31 13
18	55 50 1	54 8 31	52 26 43	50 44 38	49 2 16	47 19 38	45 36 45	43 53 36
19	42 10 14	40 26 38	38 42 49	36 58 49	35 14 37	33 30 16	31 45 45	30 1 6
..	..	..	..	..	..	..	..	..
24w	26 59 54	28 39 8	30 17 59	31 56 26	33 34 28	35 12 4	36 49 15	38 26 2
25	40 2 22	41 38 16	43 13 44	44 48 46	46 23 22	47 57 31	49 31 15	51 4 33
26	52 37 24	54 9 50	55 41 51	57 13 26	58 44 36	60 15 21	61 45 41	63 15 38
27	64 45 11	66 14 20	67 43 7	69 11 30	70 39 32	72 7 12	73 34 31	75 1 30
28	76 28 8	77 54 26	79 20 26	80 46 7	82 11 30	83 36 35	85 1 24	86 25 57
29	87 50 13	89 14 15	90 38 2	92 1 36	93 24 56	94 48 3	96 10 59	97 33 43
30	98 56 16	100 18 39	101 40 52	103 2 56	104 24 52	105 46 40	107 8 20	108 29 54
31	109 51 22	111 12 45	112 34 2	113 55 15	115 16 24	116 37 30	117 58 33	119 19 34

URANUS [♅] will be in opposition on the 10th of January and will be in the best position for observation about that time.

NEPTUNE will be best observed with a good telescope about its opposition on the eighth of October; it will appear as a very small star in the constellation Pisces.

M	JANUARY.		FEBRUARY.		MARCH.		APRIL.		MAY.		JUNE.		D.
	Noon.	Midn.	Noon.	Midn.	Noon.	Midn.	Noon.	Midn.	Noon.	Midn.	Noon.	Midn.	
1	15 50	15 45	15 11	15 7	15 1	14 58	14 44	14 43	14 46	14 48	15 9	15 13	1
2	15 40	15 35	15 3	14 59	14 55	14 53	14 43	14 43	14 50	14 52	15 17	15 21	2
3	15 30	15 24	14 56	14 53	14 50	14 48	14 44	14 45	14 55	14 58	15 25	15 30	3
4	15 19	15 14	14 51	14 49	14 47	14 46	14 47	14 49	15 1	15 5	15 35	15 40	4
5	15 9	15 4	14 47	14 47	14 45	14 44	14 51	14 54	15 10	15 14	15 45	15 50	5
6	15 0	14 57	14 46	14 47	14 45	14 45	14 58	15 2	15 19	15 25	15 55	16 0	6
7	14 53	14 51	14 48	14 50	14 47	14 49	15 7	15 13	15 31	15 37	16 6	16 11	7
8	14 49	14 48	14 53	14 56	14 51	14 55	15 18	15 25	15 44	15 50	16 15	16 20	8
9	14 48	14 48	15 0	15 5	14 58	15 3	15 32	15 39	15 57	16 4	16 23	16 27	9
10	14 49	14 51	15 10	15 16	15 8	15 14	15 47	15 54	16 11	16 17	16 29	16 31	10
11	14 53	14 57	15 22	15 29	15 21	15 27	16 2	16 10	16 24	16 29	16 31	16 31	11
12	15 0	15 5	15 36	15 43	15 35	15 43	16 18	16 25	16 34	16 38	16 29	16 37	12
13	15 10	15 15	15 50	15 57	15 50	15 58	16 31	16 36	16 40	16 42	16 23	16 19	13
14	15 20	15 26	16 4	16 10	16 6	16 14	16 41	16 44	16 42	16 41	16 14	16 8	14
15	15 32	15 38	16 16	16 21	16 21	16 27	16 46	16 47	16 39	16 35	16 1	15 56	15
16	15 44	15 49	16 25	16 28	16 32	16 37	16 46	16 43	16 30	16 25	15 47	15 40	16
17	15 54	15 59	16 30	16 31	16 40	16 42	16 40	16 35	16 18	16 11	15 33	15 26	17
18	16 3	16 7	16 30	16 29	16 42	16 42	16 29	16 23	16 4	15 56	15 20	15 14	18
19	16 10	16 12	16 27	16 24	16 40	16 37	16 16	16 8	15 48	15 40	15 8	15 3	19
20	16 14	16 15	16 21	16 17	16 32	16 27	16 0	15 52	15 33	15 25	14 53	14 55	20
21	16 15	16 15	16 12	16 8	16 22	16 15	15 45	15 37	15 19	15 13	14 52	14 50	21
22	16 15	16 13	16 3	15 57	16 9	16 2	15 30	15 23	15 7	15 2	14 48	14 47	22
23	16 12	16 10	15 52	15 47	15 55	15 48	15 17	15 11	14 57	14 54	14 47	14 47	23
24	16 8	16 5	15 42	15 37	15 41	15 35	15 6	15 1	14 51	14 48	14 45	14 40	24
25	16 3	16 0	15 33	15 28	15 29	15 23	14 57	14 54	14 46	14 45	14 51	14 34	25
26	15 57	15 53	15 24	15 19	15 18	15 13	14 51	14 48	14 45	14 44	14 57	14 36	26
27	15 50	15 47	15 15	15 11	15 8	15 4	14 46	14 45	14 45	14 46	15 3	15 7	27
28	15 43	15 39	15 8	15 4	15 0	14 57	14 44	14 43	14 47	14 49	15 11	15 15	28
29	15 35	15 31	..	..	14 54	14 51	14 43	14 43	14 51	14 53	15 19	15 24	29
30	15 27	15 23	..	..	14 49	14 47	14 44	14 45	14 56	14 59	15 28	15 33	30
31	15 19	15 15	..	..	14 46	14 44	..	..	15 2	15 5	..	..	31

M	JULY.		AUGUST.		SEPT.		OCTOBER.		NOVEMBER.		DECEMBER.		D.
	Noon.	Midn.	Noon.	Midn.	Noon.	Midn.	Noon.	Midn.	Noon.	Midn.	Noon.	Midn.	
1	15 36	15 40	16 8	16 10	16 13	16 10	15 59	15 53	15 23	15 17	15 1	14 57	1
2	15 44	15 48	16 11	16 11	16 7	16 3	15 48	15 42	15 12	15 7	14 54	14 51	2
3	15 52	15 55	16 11	16 11	15 59	15 55	15 36	15 31	15 3	14 59	14 48	14 46	3
4	15 59	16 2	16 11	16 10	15 51	15 47	15 26	15 21	14 55	14 53	14 45	14 44	4
5	16 5	16 8	16 9	16 8	15 43	15 39	15 17	15 12	14 50	14 48	14 44	14 44	5
6	16 10	16 13	16 6	16 4	15 35	15 31	15 8	15 5	14 46	14 45	14 45	14 46	6
7	16 15	16 16	16 1	15 58	15 27	15 23	15 1	14 58	14 44	14 44	14 47	14 48	7
8	16 17	16 18	15 55	15 52	15 19	15 15	14 55	14 53	14 43	14 43	14 50	14 52	8
9	16 18	16 17	15 48	15 44	15 11	15 7	14 51	14 49	14 44	14 45	14 55	14 57	9
10	16 15	16 13	15 40	15 35	15 3	15 0	14 47	14 46	14 46	14 48	15 0	15 4	10
11	16 10	16 7	15 31	15 26	14 57	14 54	14 45	14 44	14 50	14 52	15 7	15 11	11
12	16 2	15 58	15 21	15 16	14 52	14 49	14 44	14 44	14 55	14 59	15 15	15 20	12
13	15 53	15 47	15 12	15 7	14 48	14 47	14 45	14 47	15 2	15 7	15 25	15 30	13
14	15 41	15 35	15 3	14 59	14 46	14 46	14 49	14 51	15 12	15 17	15 35	15 40	14
15	15 29	15 23	14 56	14 53	14 47	14 48	14 54	14 58	15 23	15 30	15 47	15 52	15
16	15 18	15 12	14 51	14 49	14 50	14 52	15 2	15 7	15 37	15 44	15 59	16 0	16
17	15 7	15 3	14 48	14 48	14 56	14 59	15 13	15 19	15 51	15 59	16 12	16 17	17
18	14 59	14 55	14 48	14 49	15 4	15 9	15 26	15 33	16 6	16 14	16 23	16 27	18
19	14 52	14 50	14 51	14 53	15 16	15 21	15 41	15 49	16 21	16 27	16 31	16 34	19
20	14 49	14 48	14 56	15 0	15 28	15 35	15 57	16 4	16 33	16 38	16 37	16 37	20
21	14 48	14 49	15 5	15 9	15 43	15 50	16 12	16 20	16 42	16 44	16 37	16 38	21
22	14 50	14 52	15 15	15 21	15 58	16 5	16 26	16 32	16 46	16 45	16 33	16 39	22
23	14 55	14 58	15 27	15 33	16 12	16 18	16 37	16 41	16 44	16 41	16 25	16 19	23
24	15 2	15 6	15 39	15 46	16 23	16 28	16 44	16 45	16 37	16 31	16 12	16 5	24
25	15 11	15 15	15 52	15 58	16 32	16 34	16 45	16 43	16 25	16 18	15 58	15 50	25
26	15 20	15 26	16 3	16 8	16 35	16 36	16 40	16 36	16 11	16 3	15 43	15 35	26
27	15 31	15 36	16 12	16 16	16 35	16 33	16 31	16 25	15 55	15 47	15 28	15 21	27
28	15 41	15 46	16 19	16 21	16 30	16 26	16 19	16 12	15 39	15 32	15 14	15 9	28
29	15 50	15 54	16 22	16 22	16 21	16 16	16 4	15 57	15 24	15 18	15 3	14 59	29
30	15 58	16 1	16 21	15 20	16 11	16 5	15 50	15 42	15 12	15 6	14 55	14 53	30
31	16 4	16 6	16 18	16 16	..	..	15 36	15 29	..	..	14 49	14 47	31

JANUARY.				FEBRUARY				MARCH.				APRIL.				MAY.				JUNE.				D.
Noon.		Midn.		Noon.		Midn.		Noon.		Midn.		Noon.		Midn.		Noon.		Midn.		Noon.		Midn.		
/	//	/	//	/	//	/	//	/	//	/	//	/	//	/	//	/	//	/	//	/	//	/	//	
/	//	/	//	/	//	/	//	/	//	/	//	/	//	/	//	/	//	/	//	/	//	/	//	
58	1	57	44	55	37	55	22	55	1	54	50	53	58	53	56	54	6	54	12	55	30	55	44	1
57	26	57	6	55	8	54	55	54	40	54	31	53	55	53	57	54	20	54	28	55	58	56	14	2
56	47	56	27	54	43	54	33	54	22	54	15	53	59	54	3	54	38	54	50	56	36	56	47	3
56	7	55	48	54	24	54	17	54	9	54	5	54	9	54	16	55	2	55	17	57	5	57	23	4
55	30	55	14	54	12	54	9	54	2	54	1	54	26	54	37	55	32	55	50	57	42	58	1	5
54	58	54	45	54	8	54	10	54	1	54	4	54	51	55	6	56	9	56	29	58	20	58	39	6
54	33	54	25	54	14	54	21	54	9	54	16	55	24	55	43	56	50	57	13	58	58	59	16	7
54	18	54	14	54	31	54	43	54	26	54	37	56	5	56	28	57	37	58	2	59	39	59	49	8
54	12	54	14	54	58	55	15	54	52	55	9	56	54	57	20	58	27	58	52	60	3	60	15	9
54	18	54	24	55	34	55	56	55	28	55	49	57	48	58	17	59	17	59	41	60	24	60	29	10
54	34	54	45	56	19	56	44	56	13	56	38	58	46	59	14	60	4	60	24	60	31	60	30	11
54	59	55	15	57	10	57	36	57	5	57	33	59	42	60	7	60	41	60	55	60	25	60	15	12
55	33	55	52	58	2	58	28	58	2	58	31	60	31	60	51	61	5	61	11	60	3	59	47	13
56	12	56	33	58	52	59	15	59	0	59	27	61	7	61	19	60	12	61	8	59	27	59	6	14
56	55	57	17	59	36	59	53	59	53	60	16	61	26	61	28	60	59	60	46	58	42	58	17	15
57	38	57	58	60	8	60	19	60	36	60	52	61	25	61	16	60	29	60	8	57	51	57	25	16
58	17	58	34	60	26	60	29	61	3	61	11	61	3	60	46	59	45	59	19	56	59	56	34	17
58	50	59	3	60	29	60	25	61	13	61	10	60	25	60	1	58	51	58	23	56	10	55	48	18
59	14	59	23	60	17	60	7	61	3	60	52	59	35	59	7	57	54	57	25	55	28	55	9	19
59	29	59	32	59	54	59	39	60	36	60	18	58	39	58	10	56	58	56	31	54	53	54	39	20
59	34	59	33	59	23	59	5	59	57	59	33	57	41	57	14	56	6	55	44	54	28	54	19	21
59	31	59	26	58	47	58	28	59	9	58	44	56	47	56	22	55	23	55	4	54	13	54	10	22
59	20	59	13	58	9	57	50	58	18	57	43	55	59	55	38	54	48	54	35	54	8	54	10	23
59	5	58	56	57	32	57	14	57	28	57	5	55	19	55	2	54	23	54	14	54	13	54	18	24
58	47	58	36	56	57	56	40	56	43	56	21	54	47	54	34	54	8	54	3	54	26	54	35	25
51	25	58	13	56	24	56	8	56	2	55	44	54	23	54	14	54	1	0	0	54	45	54	57	26
51	1	57	49	55	54	55	40	55	27	55	12	54	7	54	2	54	2	4	5	55	10	55	24	27
57	35	57	21	55	26	55	13	54	58	54	46	53	58	53	56	54	10	54	16	55	38	55	53	28
57	7	56	53	..	..	..	..	54	35	54	26	53	55	53	56	54	23	54	32	56	9	56	24	29
56	38	56	22	..	..	..	..	54	17	54	11	53	58	54	1	54	23	54	52	56	39	56	54	30
56	6	55	52	..	..	..	..	54	5	54	1	..	..	..	..	55	4	55	16	..	..	..	..	31
JULY.				AUGUST.				SEPT.				OCTOBER.				NOVEMBER				DECEMBER				D.
Noon.		Midn.		Noon.		Midn.		Noon.		Midn.		Noon.		Midn.		Noon.		Midn.		Noon.		Midn.		
/	//	/	//	/	//	/	//	/	//	/	//	/	//	/	//	/	//	/	//	/	//	/	//	
/	//	/	//	/	//	/	//	/	//	/	//	/	//	/	//	/	//	/	//	/	//	/	//	
57	10	57	25	59	7	59	12	59	26	59	15	58	35	58	13	56	21	56	0	55	3	54	47	1
57	39	57	53	59	16	59	18	59	2	58	49	57	52	57	31	55	40	55	23	55	34	54	23	2
58	7	58	20	59	19	59	19	58	35	58	20	57	10	56	50	55	7	54	53	55	14	54	8	3
58	33	58	45	59	17	59	15	58	6	57	51	56	32	56	15	54	41	54	30	55	3	54	0	4
58	56	59	6	59	10	59	5	57	36	57	20	55	53	55	43	54	21	54	14	53	59	53	59	5
59	16	59	24	58	59	58	51	57	5	56	50	55	28	55	15	54	7	54	3	54	1	54	4	6
59	31	59	37	58	42	58	32	56	35	56	20	55	3	54	51	53	59	53	57	54	9	54	14	7
59	40	59	42	58	20	58	8	56	5	55	51	54	41	54	31	53	56	53	57	54	21	54	29	8
59	41	59	39	57	54	57	39	55	37	55	23	54	23	54	16	53	59	54	2	54	38	54	48	9
59	33	59	25	57	23	57	7	55	10	54	57	54	10	54	5	54	6	54	12	54	59	55	11	10
59	15	59	2	56	49	56	32	54	46	54	36	54	1	53	59	54	20	54	29	55	24	55	38	11
58	46	58	29	56	14	55	57	54	27	54	19	53	59	54	0	54	40	54	52	55	54	56	10	12
58	10	57	50	55	40	55	24	54	13	54	9	54	3	54	8	55	7	55	23	56	28	56	47	13
57	28	57	7	55	9	54	55	54	6	54	6	54	16	54	25	55	41	56	1	57	7	57	28	14
56	45	56	23	54	43	54	33	54	8	54	13	54	36	54	50	56	23	56	46	57	50	58	12	15
56	2	55	42	54	24	54	18	54	20	54	29	55	6	55	24	57	11	57	38	58	35	58	58	16
55	24	55	7	54	14	54	13	54	41	54	56	55	45	56	8	58	5	58	33	59	20	59	40	17
54	53	54	40	54	14	54	18	55	12	55	32	56	33	56	59	59	0	59	27	60	0	60	17	18
54	30	54	22	54	24	54	33	55	53	56	16	57	27	57	55	59	53	60	17	60	32	60	43	19
54	17	54	14	54	44	54	58	56	41	57	7	58	25	58	54	60	32	60	57	60	51	60	55	20
54	14	54	17	55	14	55	32	57	31	58	2	59	22	59	49	61	10	61	20	60	54	60	49	21
54	22	54	29	55	52	56	13	58	29	58	55	60	14	60	35	61	24	61	24	60	39	60	25	22
54	39	54	51	56	36	56	59	59	20	59	43	60	54	61	7	61	18	61	7	60	7	59	46	23
55	4	55	20	57	22	57	45	60	3	60	20	61	17	61	21	60	52	60	33	59	23	58	57	24
55	36	55	54	58	8	58	30	60	33	60	42	61	20	61	15	60	10	59	44	59	29	58	1	25
56	12	56	31	58	50	59	7	60	47	60	47	61	4	60	50	59	17	58	48	57	33	57	6	26
56	50	57	9	59	23	59	36	60	44	60	37	60	31	60	10	58	19	57	49	56	39	56	14	27
57	27	57	44	59	46	59	53	60	26	60	12	59	46	59	20	57	21	56	53	55	50	55	29	28
58	1	58	16	59	57	59	58	59	55	59	37	58	53	58	26	56	27	56	3	55	10	54	53	29
58	29	58	41	59	56	59	52	59	17	58	56	57	59	57	33	55	41	55	21	54	39	54	27	30
58	51	59	0	59	45	59	37	..	..	..	..	57	8	56	43	..	..	..	..	54	18	54	11	31

Mean Refraction.

App. Alt.	Refr.	App. Alt.	Refr.	App. Alt.	Refr.	App. Alt.	Refr.	App. Alt.	Refr.
0 0	33 0	5 0	9 54	10 0	5 15	20 0	2 35	34 0	1 24
0 5	32 10	5 5	9 46	10 10	5 10	20 10	2 34	34 30	1 23
0 10	31 22	5 10	9 38	10 20	5 5	20 20	2 32	35 0	1 21
0 15	30 35	5 15	9 30	10 30	5 0	20 30	2 31	35 30	1 20
0 20	29 50	5 20	9 23	10 40	4 56	20 40	2 29	36 0	1 18
0 25	29 6	5 25	9 15	10 50	4 51	20 50	2 28	36 30	1 17
0 30	28 23	5 30	9 8	11 0	4 47	21 0	2 27	37 0	1 16
0 35	27 41	5 35	9 1	11 10	4 43	21 10	2 26	37 30	1 14
0 40	27 0	5 40	8 54	11 20	4 39	21 20	2 25	38 0	1 13
0 45	26 20	5 45	8 47	11 30	4 34	21 30	2 24	38 30	1 11
0 50	25 42	5 50	8 41	11 40	4 31	21 40	2 23	39 0	1 10
0 55	25 5	5 55	8 34	11 50	4 27	21 50	2 21	39 30	1 9
1 0	24 29	6 0	8 28	12 0	4 23	22 0	2 20	40 0	1 8
1 5	23 54	6 5	8 21	12 10	4 20	22 10	2 19	41 0	1 5
1 10	23 20	6 10	8 15	12 20	4 16	22 20	2 18	42 0	1 3
1 15	22 47	6 15	8 9	12 30	4 13	22 30	2 17	43 0	1 1
1 20	22 15	6 20	8 3	12 40	4 9	22 40	2 16	44 0	0 59
1 25	21 44	6 25	7 57	12 50	4 6	22 50	2 15	45 0	0 57
1 30	21 15	6 30	7 51	13 0	4 3	23 0	2 14	46 0	0 55
1 35	20 46	6 35	7 45	13 10	4 0	23 10	2 13	47 0	0 53
1 40	20 18	6 40	7 40	13 20	3 57	23 20	2 12	48 0	0 51
1 45	19 51	6 45	7 35	13 30	3 54	23 30	2 11	49 0	0 49
1 50	19 25	6 50	7 30	13 40	3 51	23 40	2 10	50 0	0 48
1 55	19 0	6 55	7 25	13 50	3 48	23 50	2 9	51 0	0 46
2 0	18 35	7 0	7 20	14 0	3 45	24 0	2 8	52 0	0 44
2 5	18 11	7 5	7 15	14 10	3 43	24 10	2 7	53 0	0 43
2 10	17 48	7 10	7 11	14 20	3 40	24 20	2 6	54 0	0 41
2 15	17 26	7 15	7 6	14 30	3 38	24 30	2 5	55 0	0 40
2 20	17 4	7 20	7 2	14 40	3 35	24 40	2 4	56 0	0 38
2 25	16 44	7 25	6 57	14 50	3 33	24 50	2 3	57 0	0 37
2 30	16 24	7 30	6 53	15 0	3 30	25 0	2 2	58 0	0 35
2 35	16 4	7 35	6 49	15 10	3 28	25 10	2 1	59 0	0 34
2 40	15 45	7 40	6 45	15 20	3 26	25 20	2 0	60 0	0 33
2 45	15 27	7 45	6 41	15 30	3 24	25 30	1 59	61 0	0 32
2 50	15 9	7 50	6 37	15 40	3 21	25 40	1 58	62 0	0 30
2 55	14 52	7 55	6 33	15 50	3 19	25 50	1 57	63 0	0 29
3 0	14 36	8 0	6 29	16 0	3 17	26 0	1 56	64 0	0 28
3 5	14 20	8 5	6 25	16 10	3 15	26 10	1 55	65 0	0 26
3 10	14 4	8 10	6 22	16 20	3 12	26 20	1 55	66 0	0 25
3 15	13 49	8 15	6 18	16 30	3 10	26 30	1 54	67 0	0 24
3 20	13 34	8 20	6 15	16 40	3 8	26 40	1 53	68 0	0 23
3 25	13 20	8 25	6 11	16 50	3 6	26 50	1 52	69 0	0 22
3 30	13 6	8 30	6 8	17 0	3 4	27 0	1 51	70 0	0 21
3 35	12 53	8 35	6 5	17 10	3 3	27 10	1 50	71 0	0 19
3 40	12 40	8 40	6 1	17 20	3 1	27 20	1 49	72 0	0 18
3 45	12 27	8 45	5 58	17 30	2 59	27 30	1 48	73 0	0 17
3 50	12 15	8 50	5 55	17 40	2 57	28 0	1 47	74 0	0 16
3 55	12 3	8 55	5 52	17 50	2 55	28 10	1 46	75 0	0 15
4 0	11 51	9 0	5 48	18 0	2 54	28 20	1 45	76 0	0 14
4 5	11 40	9 5	5 45	18 10	2 52	28 30	1 44	77 0	0 13
4 10	11 29	9 10	5 42	18 20	2 51	28 40	1 42	78 0	0 12
4 15	11 18	9 15	5 39	18 30	2 49	28 50	1 40	79 0	0 11
4 20	11 8	9 20	5 36	18 40	2 47	29 0	1 39	80 0	0 10
4 25	10 58	9 25	5 34	18 50	2 46	29 10	1 37	81 0	0 9
4 30	10 48	9 30	5 31	19 0	2 44	29 20	1 35	82 0	0 8
4 35	10 39	9 35	5 28	19 10	2 43	29 30	1 33	83 0	0 7
4 40	10 29	9 40	5 25	19 20	2 41	29 40	1 31	84 0	0 6
4 45	10 20	9 45	5 23	19 30	2 40	29 50	1 30	85 0	0 4
4 50	10 11	9 50	5 20	19 40	2 38	30 0	1 28	86 0	0 2
4 55	10 2	9 55	5 18	19 50	2 37	30 10	1 26	87 0	0 0

Dip of The Horizon.

Height of the Eye.	Dip of the Horizon.	Height of the Eye.	Dip of the Horizon.
ft.	"	ft.	"
1	0 59	19	4 17
2	1 24	20	4 24
3	1 42	21	4 31
4	1 58	22	4 37
5	2 12	23	4 43
6	2 25	24	4 49
7	2 36	25	4 55
8	2 47	26	5 1
9	2 57	27	5 7
10	3 7	28	5 13
11	3 16	29	5 18
12	3 25	30	5 24
13	3 33	31	5 29
14	3 41	32	5 34
15	3 49	33	5 39
16	3 56	34	5 44
17	4 4	35	5 49
18	4 11	36	5 54

Dip at Different Distances.

Miles.	Height of the Eye in Feet.
	5 10 15 20 25 30
1	11 23 34 45 57 68
2	6 12 17 23 29 34
3	4 8 12 15 19 23
4	3 6 9 12 15 17
5	3 5 7 10 13 16
6	3 4 6 9 12 15
7	3 4 5 8 11 14
8	3 3 4 6 9 12
9	3 3 4 5 8 11
10	3 3 4 5 8 11
11	3 3 4 5 8 11
12	3 3 4 5 8 11
13	3 3 4 5 8 11
14	3 3 4 5 8 11
15	3 3 4 5 8 11
16	3 3 4 5 8 11
17	3 3 4 5 8 11
18	3 3 4 5 8 11
19	3 3 4 5 8 11
20	3 3 4 5 8 11

Table Of Corrections
To be applied to the Rising and Setting of the Sun, Moon, and Planets, when viewed from elevations above the sea level. Subtract from Rising add to Setting.

ft.	s.	ft.	m.s.	ft.	m.s.
5	16	50	0 51	1200	16
10	23	60	0 56	1400	20
15	28	70	1 1	1600	23
20	30	80	1 5	1800	26
30	38	90	1 9	2000	29
40	46	100	1 10	3000	38

**Right Ascensions, and Declinations, and Semi-diurnal Arcs,
FOR LATITUDE 54° 10',
Of the Principal Fixed Stars**

NAMES.	Magni- tude.	Right Ascension. H. M. S.	Annual Variations "	Declination. ° ' "	Annual Variations "	Semi-diurnal Arcs. H. M.
Andromedæ	2	0 1 40	+ 3.08	N 28 22 22	+19.90	9 19
Pegasi (Algenib)	3.2	0 6 32	+ 3.08	14 27 38	+20.03	7 27
Cassiopeæ	Var.	0 33 9	+ 3.36	55 49 26	+19.81	sets not
Ceti	2	0 37 4	+ 3.01	S 18 42 3	+19.82	4 12
Ursæ Minor. (Polaris)	2	1 11 17	+19.77	N 88 36 59	+19.12	sets not
Eridani (Achernar) . .	1	1 32 52	+ 2.23	S 57 53 51	+18.42	rises not
Arietes.	2	1 59 50	+ 3.36	N 22 50 47	+17.23	8 27
Ceti	2.3	2 55 29	+ 3.13	3 34 40	+14.35	6 23
Persei	2	3 15 3	+ 4.25	49 23 45	+13.18	sets not
Tauri	3	3 39 45	+ 3.55	23 42 3	+11.48	8 34
Tauri (Aldebaran) . .	1	4 28 28	+ 3.43	16 14 44	+ 7.63	7 39
Aurigæ (Capella) . . .	1	5 7 5	+ 4.42	45 51 45	+ 4.17	sets not
Orionis (Rigel)	1	5 8 17	+ 2.88	S 8 21 15	+ 4.48	5 17
Tauri	2	5 18 4	+ 3.79	N 28 29 40	+ 3.46	9 21
Orionis	2	5 25 22	+ 3.06	S 0 23 53	+ 2.99	6 1
Leporis	3	5 27 0	+ 2.65	17 55 2	+ 2.89	4 10
Orionis	2	5 29 37	+ 3.04	1 17 15	+ 2.65	5 57
Columbæ	2	5 34 57	+ 2.18	34 8 40	+ 2.19	sets not
Orionis	Var.	5 48 8	+ 3.25	N 27 22 49	+ 1.05	6 45
Argus (Canopus) . . .	1	6 21 4	+ 1.33	S 52 37 32	- 1.83	rises not
Canis Majoris (Sirius)	1	6 39 25	+ 2.64	16 32 24	- 4.65	4 27
Gemini (Castor) . . .	2.1	7 26 18	+ 3.84	N 32 10 15	- 7.44	10 13
Canis Minoris (Proc.)	1	7 32 30	+ 3.14	5 33 22	- 8.90	6 35
Gemini (Pollux) . . .	1.2	7 37 21	+ 3.68	28 20 15	- 8.31	9 20
Hydræ	2	9 21 12	+ 2.95	S 8 5 47	-15.39	6 49
Leonis (Regulus) . . .	1.2	10 1 27	+ 3.20	N 12 36 5	-17.41	7 17
Ursæ Majoris	2	10 55 41	+ 3.77	62 27 7	-19.35	sets not
Leonis	2.3	11 7 11	+ 3.20	21 14 7	-19.67	8 16
Leonis	2	11 42 25	+ 3.06	15 17 55	-20.09	7 34
Ursæ Majoris	2.3	11 46 59	+ 3.19	54 25 3	-20.02	sets not
Crucis	1	12 19 23	+ 3.26	S 62 22 38	-19.93	rises not
Corvi	2.3	12 27 33	+ 3.13	22 40 40	-19.98	3 44
Virginis (Spica) . . .	2	13 18 21	+ 3.15	10 28 55	-18.94	5 5
Centauri	1	13 54 40	+ 4.16	59 44 39	-17.67	rises not
Bootis (Arcturus) . . .	1	14 9 44	+ 2.73	N 19 51 37	-18.91	8 5
Centauri	1	14 30 48	+ 4.03	S 60 17 39	-15.03	rises not
Bootis	2.3	14 39 18	+ 2.62	N 27 37 24	-15.40	9 13
Libræ	2.3	14 43 41	+ 3.30	S 15 29 59	-15.22	4 34
Ursæ Minoris	2	14 51 7	- 0.25	N 74 41 11	-14.76	sets not
Libræ	2	15 10 1	+ 3.22	S 8 54 5	-13.57	5 14
Coronæ Borealis . . .	2	15 29 11	+ 2.54	N 27 9 14	-12.35	9 8
Serpentis	2.3	15 37 52	+ 2.95	6 50 11	-11.61	6 42
Scorpii (Antares) . . .	1.2	16 21 16	+ 3.67	S 26 8 28	- 8.40	3 15
Trianguli Australis . .	2	16 34 56	+ 6.28	68 47 4	- 7.37	rises not
Herculis	Var.	17 8 43	+ 2.73	N 14 32 26	- 4.41	7 29
Draconis	3.2	17 27 30	+ 1.35	52 23 55	- 2.84	sets not
Lyræ (Vega)	1	18 32 32	+ 2.03	38 39 51	+ 3.11	sets not
Lyræ	Var.	18 45 17	+ 2.21	33 12 47	+ 3.90	10 31
Aquilæ	3	19 40 5	+ 2.85	10 17 54	+ 8.47	7 2
Aquilæ (Altair)	1.2	19 44 26	+ 2.93	8 31 37	+ 9.20	6 51
Aquilæ	4	19 48 55	+ 2.95	6 5 2	+ 8.69	6 37
Pavonis	2	20 15 21	+ 4.80	S 57 8 53	+11.12	rises not
Cygni	2.1	20 37 0	+ 2.04	N 44 49 1	+12.68	sets not
Cephei	3	21 15 28	+ 1.44	62 2 6	+15.10	sets not
Aquarii	3	21 24 43	+ 3.16	S 6 8 30	+15.62	5 29
Cephei	3	21 26 58	+ 0.80	N 69 59 24	+15.70	sets not
Aquarii	3	21 59 6	+ 3.08	S 0 57 2	+17.31	5 58
Gruis	2	21 0 2	+ 3.81	47 35 20	+17.18	rises not
Piscium Australis . . .	1.2	22 50 28	+ 3.33	30 18 38	+18.96	2 29
Pegasi (Markab) . . .	2	22 58 17	+ 2.98	N 14 30 23	+19.30	7 27

General Tide Table,

By which the times of High Water may be CORRECTLY FOUND ON ANY Day.
N.B.—Add to the time of High Water in the Liverpool Tide Table in this Almanack,
the Hours and Minutes in the Column opposite the Place required.

ENGLAND.		H.M.			H.M.			H.M.
Alderney Pier. . .	..	7 35	Burrey Harbour..	..	6 50	Eyemouth	..	3 5
Alne River	..	3 35	Cardiff	..	6 50	Leith Pier	..	1 10
Barnstaple Bar ..	..	6 20	Cardigan Bar ..	..	7 50	Montrose	..	2 35
Berwick	..	3 8	Caermarthen Bar	..	7 0	Tay Bar	..	2 35
Blakeney	..	7 40	Carnarvon Bar ..	..	9 50	Wick	..	10 5
Blythe	..	3 35	Denbigh	..	3 5			
Boston	..	8 5	Fisgard Bay	..	7 20			
Bridgewater	..	7 35	Milford Haven..	..	6 35			
Bridlington.. ..	..	5 20	Newport	..	7 35			
Carlisle	..	0 50	Pembroke	..	6 54			
Chatham	..	1 44	Skerries	..	10 35			
Christchurch ..	..	9 40	Smalls and Swansea..	..	6 40			
Dartmouth.. ..	..	6 55	Strumble Head	..	7 5			
Exmouth Bar ..	..	7 15						
Falmouth	..	6 20						
Flamboro' Head ..	..	5 20						
Flatholm	..	7 18						
Fowey	..	6 20						
Gravesend	..	2 20						
Guernsey (Eng.Chan)	..	7 20						
Hartlepool	..	4 35						
Humber River ..	..	6 20						
Ilfracombe	..	6 20						
Ipswich	..	0 50						
Jersey (En. Ch.) ..	..	7 0						
Land's End	..	5 20						
Longships	..	5 20						
Lyme Regis	..	7 20						
Needles Point ..	..	10 35						
Newcastle	..	4 50						
Penzance	..	5 20						
Plymouth Dock..	..	6 20						
Poole	..	9 50						
Ramsgate	..	0 36						
Robin Hood's Bay ..	..	4 35						
Scarborough	..	5 15						
Scilly Islands ..	..	5 0						
Sheerness	..	1 29						
Spithead	..	10 20						
St. Ives	..	5 20						
Tees River	..	4 20						
Torbay	..	6 50						
Tynemouth Bar ..	..	3 40						
Weymouth.. ..	..	7 20						
Whitby	..	4 35						
Wisbeach	..	8 20						
Yarmouth Roads ..	..	9 30						
Yarmouth, Isle Wight	..	10 20						

TIDE TABLES—JANUARY, 1870.

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M	D	Morn			Even			Height.			Morn			Even			Height.			Morn			Even			Height.							
		H.	M.	Ft.	H.	M.	Ft.	H.	M.	Ft.	H.	M.	Ft.	H.	M.	Ft.	H.	M.	Ft.	H.	M.	Ft.	H.	M.	Ft.								
1	1	11	15	11	38	0	29	0	55	9	8	8	1	8	1	36	18	4	4	8	4	33	11	6	2	31	2	55	13	10			
2	2	11	15	11	38	0	29	0	55	9	8	8	1	8	1	36	18	4	4	8	4	33	11	6	2	31	2	55	13	10			
3	3	0	29	0	55	9	8	8	1	38	0	26	18	11	3	9	18	11	5	44	6	8	11	9	9	4	44	5	4	13	11		
4	4	1	15	1	33	9	6	3	31	3	50	18	5	7	18	9	11	5	23	7	23	11	5	9	10	5	23	5	44	13	9		
5	5	1	53	2	13	9	3	4	47	5	7	18	9	11	5	45	18	3	6	4	8	0	11	0	8	6	4	6	24	13	3		
6	6	2	38	2	48	9	0	5	26	5	45	18	3	6	23	17	9	8	8	21	8	39	10	8	2	7	25	7	5	12	7		
7	7	3	8	3	25	8	9	6	4	6	43	7	5	17	5	10	10	2	9	38	10	1	9	3	1	8	10	28	10	49	17	11	
8	8	3	42	3	59	8	6	6	43	7	5	17	5	10	10	2	9	3	8	10	1	9	3	1	6	8	10	28	10	49	17	11	
9	9	4	18	4	40	8	3	7	28	7	53	16	11	1	9	8	3	4	10	27	10	5	4	9	3	9	1	9	31	11	6	6	
10	10	5	5	5	31	8	3	8	22	8	56	16	4	0	1	0	33	9	9	0	33	9	9	0	0	10	5	10	37	10	9	9	
11	11	6	5	6	37	8	2	9	29	10	2	15	6	2	12	2	41	10	1	1	0	36	9	7	7	11	9	11	43	10	10	9	
12	12	7	8	7	32	8	5	10	35	11	9	15	8	3	5	3	27	10	7	2	1	36	9	7	1	0	43	1	10	11	10	6	
13	13	8	13	8	50	8	8	11	43	—	—	—	—	0	12	0	38	16	0	3	5	3	27	10	7	1	35	1	56	12	6	9	
14	14	9	20	9	45	8	8	11	43	—	—	—	—	2	12	2	41	10	1	2	1	36	9	7	1	0	2	19	2	42	13	1	
15	15	10	8	10	38	9	0	0	12	0	38	16	0	3	5	3	27	10	7	3	5	3	27	10	7	1	1	35	1	56	12	6	
16	16	11	0	11	23	9	2	1	0	1	24	16	7	4	1	2	41	10	10	0	1	36	9	7	1	0	2	19	2	42	13	1	
17	17	11	45	—	—	9	4	1	47	2	9	17	3	4	1	5	3	11	3	3	3	44	4	6	13	6	4	24	4	46	14	3	
18	18	0	9	0	33	9	8	2	28	2	51	18	0	5	26	5	48	11	9	4	24	4	46	14	3	4	24	4	46	14	3		
19	19	0	56	1	17	9	10	3	12	3	32	18	8	6	7	6	27	12	0	5	9	5	30	14	5	5	9	5	30	14	5		
20	20	1	38	2	0	9	11	3	52	4	14	19	2	7	30	7	55	12	0	6	39	7	4	14	4	0	8	8	17	8	36	21	1
21	21	2	20	2	43	9	10	4	34	4	56	19	5	8	19	8	42	11	9	9	6	9	30	11	3	9	9	21	21	0	6	720	
22	22	3	6	3	27	9	8	5	19	5	41	19	1	9	6	9	30	11	3	7	29	7	55	13	3	10	9	43	10	7	20	6	
23	23	3	49	4	11	9	4	6	4	6	28	19	1	9	9	10	24	10	9	8	21	8	50	12	9	11	26	11	57	18	10	4	
24	24	4	33	5	2	9	1	6	52	7	17	18	8	9	54	10	24	10	9	9	22	9	59	12	0	10	32	10	57	19	7	3	
25	25	5	38	6	3	8	8	7	45	8	15	18	2	10	51	11	27	10	0	9	22	9	59	12	0	11	26	11	57	18	10	4	
26	26	6	35	7	10	8	6	8	50	9	27	17	8	11	59	—	—	9	8	10	35	11	12	11	6	1	5	1	39	17	2	5	
27	27	7	56	8	32	8	8	11	0	10	45	16	10	0	35	1	19	10	0	11	51	—	—	11	9	2	14	2	52	17	5	1	
28	28	9	8	9	42	8	11	3	1	—	—	—	—	0	28	1	3	12	2	0	28	1	3	12	2	3	29	4	5	18	1	3	
29	29	10	12	10	40	9	1	3	1	0	35	16	7	1	34	2	1	12	9	1	34	2	1	12	9	4	38	5	7	18	11	3	
30	30	11	6	11	30	9	3	5	1	3	31	10	10	2	26	2	49	13	3	2	26	2	49	13	3	5	33	5	57	19	7	10	
31	31	11	51	—	—	9	5	9	1	4	2	16	18	1	4	3	58	4	24	11	3	58	4	24	11	0	6	19	6	39	20	0	

GREENOCK				LONDON				CORK				Sunderland & Shields				Hull & Bridport				Southampton & Portsmouth				
M	D	Morn.	Even.	Height.	M	D	Morn.	Even.	Height.	M	D	Morn.	Even.	Height.	M	D	Morn.	Even.	Height.	M	D	Morn.	Even.	Height.
		H. M.	H. M.	Ft. In.			H. M.	H. M.	Ft. In.			H. M.	H. M.	Ft. In.			H. M.	H. M.	Ft. In.			H. M.	H. M.	Ft. In.
1	1	0 16	0 39	9 7	1	1	2 37	2 59	18 7	1	1	3 52	4 13	13 9	1	1	7 2	7 23	20 3	1	1	0 34	0 49	18 10
2	2	1 2	1 17	9 8	2	2	3 19	3 38	18 10	2	2	4 30	4 47	13 11	2	2	7 39	7 55	20 5	2	2	1 8	1 24	18 9
3	3	1 34	1 51	9 8	3	3	3 54	4 11	18 10	3	3	5 5	5 23	13 10	3	3	8 12	8 29	20 4	3	3	1 40	1 58	18 8
4	4	2 8	2 25	9 6	4	4	4 27	4 43	18 9	4	4	5 39	5 58	13 8	4	4	8 45	9 3	20 1	4	4	2 15	2 31	18 5
5	5	2 42	2 58	9 4	5	5	5 1	5 17	18 8	5	5	6 15	6 32	13 4	5	5	9 19	9 36	19 7	5	5	2 47	3 4	18 2
6	6	3 14	3 29	9 1	6	6	5 33	5 49	18 7	6	6	6 49	7 7	12 11	6	6	9 52	10 10	19 1	6	6	3 21	3 38	17 2
7	7	3 42	3 59	8 10	7	7	6 6	6 24	17 2	7	7	7 26	7 45	12 3	7	7	10 29	10 49	18 2	7	7	3 55	4 15	17 2
8	8	4 16	4 36	8 8	8	8	6 42	7 1	17 1	8	8	8 5	8 27	11 7	8	8	11 10	11 34	17 3	8	8	4 38	5 6	16 8
9	9	4 57	5 26	8 2	9	9	7 22	7 46	16 4	9	9	9 25	9 57	9 2	9	9	—	0 1	16 4	9	9	5 42	6 17	16 4
10	10	5 1	5 38	8 0	10	10	8 16	8 53	15 9	10	10	10 2	10 37	10 6	10	10	0 32	1 8	15 8	10	10	6 53	7 33	16 5
11	11	5 12	5 49	8 2	11	11	9 29	10 6	15 5	11	11	11 13	11 52	10 7	11	11	1 41	2 15	15 10	11	11	8 12	8 47	16 10
12	12	5 30	6 6	8 6	12	12	10 46	11 27	15 7	12	12	—	—	11 2	12	12	2 52	3 32	16 8	12	12	9 20	9 50	17 4
13	13	6 1	6 38	8 10	13	13	—	—	16 0	13	13	1 1	1 31	11 11	13	13	4 4	5 27	19 1	13	13	10 16	10 48	18 2
14	14	6 31	7 4	9 1	14	14	0 33	1 16	10 1	14	14	1 58	2 21	12 11	14	14	5 52	6 15	19 11	14	14	11 5	11 26	18 7
15	15	6 51	8 11	9 6	15	15	1 25	2 10	10 9	15	15	2 45	3 7	13 6	15	15	6 36	6 58	20 8	15	15	11 48	—	18 11
16	16	7 12	8 30	9 10	16	16	2 12	2 33	18 10	16	16	3 27	3 48	14 1	16	16	7 19	7 39	21 6	16	16	—	0 32	19 4
17	17	7 36	9 1	10 1	17	17	2 55	3 16	19 7	17	17	4 10	4 29	14 9	17	17	8 0	8 20	21 11	17	17	0 53	1 16	19 6
18	18	8 1	9 24	10 3	18	18	3 37	3 57	20 1	18	18	5 51	6 11	12 8	18	18	8 38	9 22	22 0	18	18	1 36	1 57	19 7
19	19	8 31	9 48	10 11	19	19	4 18	4 39	20 10	19	19	6 31	6 52	12 7	19	19	9 24	9 46	21 6	19	19	2 19	2 41	19 4
20	20	8 54	10 11	10 19	20	20	5 0	5 22	19 10	20	20	7 14	7 36	12 2	20	20	10 10	10 33	20 5	20	20	3 4	3 25	18 10
21	21	9 18	10 35	10 27	21	21	5 44	6 7	19 8	21	21	8 46	9 5	11 8	21	21	11 0	11 29	19 2	21	21	3 48	4 21	18 10
22	22	9 43	10 59	10 18	22	22	6 28	6 52	18 8	22	22	9 30	9 56	10 10	22	22	11 59	—	17 10	22	22	4 39	5 10	17 5
23	23	10 8	11 23	10 8	23	23	7 18	7 46	17 8	23	23	10 22	10 53	9 11	23	23	0 33	1 15	16 4	23	23	5 49	6 28	16 8
24	24	10 34	11 38	9 59	24	24	8 29	8 58	16 11	24	24	11 32	—	9 4	24	24	1 51	2 32	16 5	24	24	7 12	7 54	16 10
25	25	10 59	12 1	9 11	25	25	9 39	10 23	16 4	25	25	0 6	0 56	9 5	25	25	3 13	3 52	17 2	25	25	8 34	9 10	17 1
26	26	11 17	12 19	8 24	26	26	10 11	10 49	15 1	26	26	1 22	1 51	12 3	26	26	4 26	5 6	18 2	26	26	9 43	10 9	17 2
27	27	11 38	12 39	7 37	27	27	11 8	11 49	15 1	27	27	2 15	2 38	12 11	27	27	5 21	5 45	19 1	27	27	10 86	10 58	18 3
28	28	11 56	12 51	6 50	28	28	0 54	1 19	17 1	28	28	—	—	—	28	28	—	—	—	28	28	—	—	—

TIDE TABLES—MARCH, 1870.

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GREENOCK.		LONDON.		CORK.		Nunderland & SOUTHS.		Hull & BELFRAST.		Morn.		Even.		Portm.		M.	
H.	M.	H.	M.	H.	M.	H.	M.	H.	M.	H.	M.	H.	M.	H.	M.	H.	M.
1	11	36	11	57	9	3	3	4	3	1	1	1	1	1	1	1	1
2	0	39	0	55	9	6	6	2	2	1	1	1	1	1	1	1	1
3	1	12	1	26	9	9	9	5	5	0	0	0	0	0	0	0	0
4	1	41	1	57	9	12	12	8	8	0	0	0	0	0	0	0	0
5	2	13	2	26	9	15	15	11	11	0	0	0	0	0	0	0	0
6	2	39	2	56	9	18	18	14	14	0	0	0	0	0	0	0	0
7	3	13	3	29	9	21	21	17	17	0	0	0	0	0	0	0	0
8	3	42	3	59	9	24	24	20	20	0	0	0	0	0	0	0	0
9	4	18	4	42	8	27	27	23	23	0	0	0	0	0	0	0	0
10	4	510	5	45	8	30	30	26	26	0	0	0	0	0	0	0	0
11	5	10	6	27	8	33	33	29	29	0	0	0	0	0	0	0	0
12	6	27	7	34	8	36	36	32	32	0	0	0	0	0	0	0	0
13	7	52	8	34	8	39	39	35	35	0	0	0	0	0	0	0	0
14	9	11	10	36	8	42	42	38	38	0	0	0	0	0	0	0	0
15	10	10	11	36	8	45	45	41	41	0	0	0	0	0	0	0	0
16	11	4	12	26	8	48	48	44	44	0	0	0	0	0	0	0	0
17	11	48	—	—	—	—	—	—	—	0	0	0	0	0	0	0	0
18	0	13	0	37	10	—	—	—	—	0	0	0	0	0	0	0	0
19	0	59	1	18	10	1	1	—	—	0	0	0	0	0	0	0	0
20	1	41	2	47	10	2	2	1	1	0	0	0	0	0	0	0	0
21	2	26	3	27	9	3	3	1	1	0	0	0	0	0	0	0	0
22	3	9	4	12	8	4	4	1	1	0	0	0	0	0	0	0	0
23	3	49	5	10	8	5	5	1	1	0	0	0	0	0	0	0	0
24	4	36	6	28	8	6	6	1	1	0	0	0	0	0	0	0	0
25	5	44	7	52	8	7	7	1	1	0	0	0	0	0	0	0	0
26	7	10	8	34	8	8	8	1	1	0	0	0	0	0	0	0	0
27	8	34	9	13	8	9	9	1	1	0	0	0	0	0	0	0	0
28	9	44	10	11	8	10	10	1	1	0	0	0	0	0	0	0	0
29	10	32	10	55	9	11	11	1	1	0	0	0	0	0	0	0	0
30	11	13	11	31	9	12	12	1	1	0	0	0	0	0	0	0	0
31	11	48	—	—	—	—	—	—	—	0	0	0	0	0	0	0	0

TIDE TABLE—APRIL, 1870.

GREENOCK			LONDON			CORK			Sunderland & Shields			Hull and Bridport.			Southampton & Portsmouth		
M	D	Even	Height.	Morn	Even	Height.	Morn	Even	Morn	Even	Height.	Morn	Even	Height.	Morn	Even	Height.
		H. M.	Ft. In.	H. M.	H. M.	Ft. In.	H. M.	H. M.	H. M.	H. M.	Ft. In.	H. M.	H. M.	Ft. In.	H. M.	H. M.	Ft. In.
1	1	0 25	9 7	2 34	2 50	18 8	5 25	5 41	3 43	3 58	13 10	6 53	7 8	20 4	11 59	—	18 9
2	2	0 42	9 8	3 5	3 20	18 11	5 54	6 9	4 13	4 26	14 1	7 22	7 34	20 7	0 15	0 29	18 11
3	3	1 13	9 8	3 34	3 49	18 11	6 23	6 37	4 43	4 58	14 0	7 52	8 6	20 6	0 46	1 0	18 10
4	4	1 41	9 6	4 3	4 17	18 9	6 50	7 6	5 13	5 28	13 9	8 21	8 35	20 3	1 15	1 30	18 8
5	5	2 12	9 3	4 32	4 46	18 6	7 22	7 39	5 43	6 0	13 5	8 49	9 5	19 9	1 44	1 59	18 6
6	6	2 41	9 1	5 2	5 16	17 11	7 53	8 13	6 14	6 34	12 10	9 18	9 37	19 0	2 14	2 31	18 1
7	7	3 15	8 9	5 34	5 53	17 4	8 29	8 46	6 54	7 13	12 2	9 57	10 17	18 1	2 50	3 7	17 6
8	8	3 50	8 8	6 11	6 34	16 9	9 7	9 33	7 37	8 6	11 6	10 41	11 11	17 1	3 30	3 54	17 1
9	9	4 45	8 2	7 0	7 32	16 2	10 7	10 38	8 39	9 14	10 10	11 46	—	16 2	4 24	4 56	16 7
10	10	5 54	8 0	8 6	8 46	15 6	11 17	12 0	9 55	10 37	10 6	0 22	1 2	15 8	5 37	6 18	16 4
11	11	7 22	8 0	9 29	10 15	15 6	—	0 47	11 22	—	10 9	0 41	2 24	15 1	7 2	7 44	16 9
12	12	8 43	9 15	10 57	11 35	16 11	1 26	2 41	0 2	0 55	11 10	1 41	3 37	17 7	8 21	8 55	17 3
13	13	9 43	10 10	—	0 7	16 11	2 35	3 21	1 4	1 31	13 0	2 3	4 36	19 3	9 23	9 50	18 2
14	14	10 36	10 57	0 34	0 59	18 2	3 29	3 54	1 55	2 17	14 2	3 4	5 24	20 9	10 15	10 36	18 11
15	15	11 18	11 41	1 22	1 43	19 4	4 15	4 35	2 38	3 0	15 0	4 5	6 8	21 10	10 57	11 19	19 6
16	16	—	—	2 4	2 26	20 6	4 45	5 24	3 19	3 42	15 6	5 46	7 21	22 5	11 42	—	19 10
17	17	0 32	0 57	3 11	3 11	20 6	5 47	6 8	4 4	4 25	15 9	6 28	8 51	22 8	0 4	0 28	20 1
18	18	1 17	1 40	3 33	3 53	20 6	6 27	6 49	5 5	5 10	15 7	7 15	9 34	22 6	0 50	1 12	19 11
19	19	2 4	2 26	4 15	4 50	20 0	7 17	7 37	6 20	6 45	14 0	8 43	9 32	21 10	1 35	1 58	19 6
20	20	2 47	3 10	5 1	5 22	19 2	8 48	9 14	7 12	7 40	12 10	9 24	10 48	20 6	2 19	2 42	18 10
21	21	3 33	3 56	6 37	6 10	18 3	9 40	10 12	8 10	8 43	11 9	10 15	11 16	19 0	3 9	3 35	18 1
22	22	4 20	4 51	7 36	7 13	16 5	10 48	11 30	9 22	10 5	11 1	11 16	12 11	17 6	4 1	4 30	17 3
23	23	5 25	5 6	8 56	8 13	16 5	—	0 11	10 47	11 16	10 9	—	0 29	16 3	5 5	5 46	16 8
24	24	6 47	7 20	10 10	9 40	15 7	0 45	1 28	—	0 3	11 1	1 11	1 51	16 0	6 28	6 56	16 6
25	25	8 5	8 41	11 33	10 58	15 15	2 3	3 10	0 34	1 1	11 1	2 20	3 3	16 7	7 45	8 18	16 9
26	26	9 10	9 37	—	15 11	15 11	2 57	3 19	1 32	1 47	12 6	3 37	4 5	17 7	8 49	9 17	17 3
27	27	10 0	10 21	0 3	0 29	16 7	3 40	4 11	2 14	2 24	13 9	4 36	5 30	18 3	9 40	10 1	17 10
28	28	10 42	10 59	0 50	1 10	17 3	4 17	4 38	2 41	2 57	13 5	5 48	6 5	19 9	10 54	11 40	18 8
29	29	11 16	11 30	1 22	1 46	17 10	4 47	5 6	3 10	3 23	13 8	6 18	7 6	20 1	11 25	—	—
30	30	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Low water Levels at Ordinary Spring Tides.

Low water Levels of Ordinary Spring Tides.

Calculated from the Mean Level of Low water Spring Tides.

Calculated from the Mean Level of Low water Spring Tides.

Calculated from the Mean Level of Low water Spring Tides.

TIDE TABLES—MAY, 1870.

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[illegible]

[illegible]

TIDE TABLES, — JULY, 1870.

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D	Morn Even		Height.		Datum — Sill of North Dock Gates.		Height.		Low Water Level of Ordinary Spring Tides.		Height.		Low Water Level of Ordinary Spring Tides.		Calculated from the Mean Level of Low Water Spring Tides.		Height.		Calculated from the Mean Level of Low Water Spring Tides.		Height.		Calculated from the Mean Level of Low Water Spring Tides.	
	H.	M.	H.	M.	H.	M.	H.	M.	H.	M.	H.	M.	H.	M.	H.	M.	H.	M.	H.	M.	H.	M.	H.	M.
1	1 13	1 33	3 30	3 48	5 5	5	6 23	6 42	11 4	4	4 42	5 23	5 44	6	6 23	6 42	11 4	4	4 42	5 23	5 44	6	6 23	6 42
2	1 52	2 14	4 48	5 10	18 4	4	7 45	8 10	11 2	2	5 23	6 04	6 30	5	7 45	8 10	11 2	2	5 23	6 04	6 30	5	7 45	8 10
3	2 34	2 57	5 32	5 55	18 1	1	8 33	8 56	10 11	11	6 54	7 20	12 10	3	8 33	8 56	10 11	11	6 54	7 20	12 10	3	8 33	8 56
4	3 19	3 40	6 19	6 46	17 8	8	9 24	9 51	10 8	8	7 48	8 16	12 5	5	9 24	9 51	10 8	8	7 48	8 16	12 5	5	9 24	9 51
5	4 56	5 26	7 13	7 41	17 5	5	10 17	10 49	10 4	4	8 46	9 21	12 2	2	10 17	10 49	10 4	4	8 46	9 21	12 2	2	10 17	10 49
6	4 56	5 26	7 13	7 41	17 5	5	11 23	11 53	10 0	0	9 56	10 29	11 11	11	11 23	11 53	10 0	0	9 56	10 29	11 11	11	11 23	11 53
7	5 59	6 29	8 13	8 47	17 0	0	—	—	—	—	11	—	—	—	—	—	—	—	—	—	—	—	—	—
8	7 1	7 37	9 21	9 54	17 0	0	1	1 30	10 8	8	—	—	—	—	1	1 30	10 8	8	—	—	—	—	—	—
9	8 7	8 43	10 27	10 54	17 1	1	2	2 35	11 1	1	—	—	—	—	2	2 35	11 1	1	—	—	—	—	—	—
10	9 14	9 45	11 33	—	17 1	1	3	3 40	11 4	4	0 34	1 11	12 0	6	3	3 40	11 4	4	0 34	1 11	12 0	6	3	3 40
11	10 16	10 47	—	—	17 1	1	4	4 43	11 6	6	1 33	2 11	12 1	6	4	4 43	11 6	6	1 33	2 11	12 1	6	4	4 43
12	11 13	11 36	—	—	17 1	1	5	5 46	11 8	8	2 28	3 04	12 1	6	5	5 46	11 8	8	2 28	3 04	12 1	6	5	5 46
13	—	—	—	—	17 1	1	6	6 26	11 11	11	3 16	3 40	12 1	6	6	6 26	11 11	11	3 16	3 40	12 1	6	6	6 26
14	0 31	0 58	1 19	1 38	18 11	11	7	7 53	11 1	1	4 47	5 10	12 1	6	7	7 53	11 1	1	4 47	5 10	12 1	6	7	7 53
15	1 19	1 38	2 0	2 22	18 11	11	8	8 32	11 1	1	5 32	5 54	12 1	6	8	8 32	11 1	1	5 32	5 54	12 1	6	8	8 32
16	2 0	2 22	2 41	3 0	18 11	11	9	9 14	11 1	1	6 15	6 38	12 1	6	9	9 14	11 1	1	6 15	6 38	12 1	6	9	9 14
17	2 41	3 0	3 18	3 37	18 11	11	10	10 42	11 1	1	7 38	8 01	12 1	6	10	10 42	11 1	1	7 38	8 01	12 1	6	10	10 42
18	3 18	3 37	4 15	4 35	18 11	11	11	11 44	11 1	1	8 24	8 49	11 1	6	11	11 44	11 1	1	8 24	8 49	11 1	6	11	11 44
19	3 56	4 14	4 57	5 17	18 11	11	12	12 42	11 1	1	9 14	9 45	11 1	6	12	12 42	11 1	1	9 14	9 45	11 1	6	12	12 42
20	4 35	4 58	5 17	5 35	18 11	11	13	13 42	11 1	1	10 17	10 50	11 1	6	13	13 42	11 1	1	10 17	10 50	11 1	6	13	13 42
21	5 19	5 48	5 36	6 0	18 11	11	14	14 42	11 1	1	11 17	11 50	11 1	6	14	14 42	11 1	1	11 17	11 50	11 1	6	14	14 42
22	6 20	6 49	6 08	6 28	18 11	11	15	15 42	11 1	1	12 17	12 50	11 1	6	15	15 42	11 1	1	12 17	12 50	11 1	6	15	15 42
23	7 21	7 48	6 42	7 15	18 11	11	16	16 42	11 1	1	13 17	13 50	11 1	6	16	16 42	11 1	1	13 17	13 50	11 1	6	16	16 42
24	8 23	8 53	7 44	8 18	18 11	11	17	17 42	11 1	1	14 17	14 50	11 1	6	17	17 42	11 1	1	14 17	14 50	11 1	6	17	17 42
25	9 24	9 52	8 45	9 19	18 11	11	18	18 42	11 1	1	15 17	15 50	11 1	6	18	18 42	11 1	1	15 17	15 50	11 1	6	18	18 42
26	10 19	10 42	9 40	10 16	18 11	11	19	19 42	11 1	1	16 17	16 50	11 1	6	19	19 42	11 1	1	16 17	16 50	11 1	6	19	19 42
27	11 6	11 28	10 47	11 21	18 11	11	20	20 42	11 1	1	17 17	17 50	11 1	6	20	20 42	11 1	1	17 17	17 50	11 1	6	20	20 42
28	11 51	—	—	—	18 11	11	21	21 42	11 1	1	18 17	18 50	11 1	6	21	21 42	11 1	1	18 17	18 50	11 1	6	21	21 42
29	0 13	0 38	1 53	2 15	18 11	11	22	22 42	11 1	1	19 17	19 50	11 1	6	22	22 42	11 1	1	19 17	19 50	11 1	6	22	22 42
30	1 2	1 21	2 36	2 56	18 11	11	23	23 42	11 1	1	20 17	20 50	11 1	6	23	23 42	11 1	1	20 17	20 50	11 1	6	23	23 42
31	1 38	1 58	3 55	4 14	19 1	1	24	24 42	11 1	1	21 17	21 50	11 1	6	24	24 42	11 1	1	21 17	21 50	11 1	6	24	24 42

TIDE TABLES—AUGUST, 1870.

GREENOCK

LONDON

CORK

Sunderland and Shields

Hull and Bridport

Southampton & Portsmouth

M	D	Morn	Even	Height.	Calculated from the Mean Level of Low Water Spring Tides.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																
		H	H	Ft.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	</

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D	Even		Morn		Hull Height.		Even		Morn		Hull Height.		Even		Morn		Even		Morn		Portm. Height.		Datum - Sill of North Dock Gates.	D				
	H	M	H	M	Ft	In	H	M	H	M	Ft	In	H	M	H	M	Ft	In	H	M	Ft	In						
1	3	21	3	44	6	118	11	8	35	9	0	11	5	7	2	7	26	13	8	10	54	11	26	18	1	1		
2	4	58	5	32	7	46	17	5	9	23	9	51	10	7	51	8	20	12	9	10	54	11	26	18	10	2		
3	6	12	6	53	9	216	6	4	10	20	10	55	9	9	8	53	9	29	11	10	—	—	—	—	8	3		
4	7	37	8	19	10	30	16	0	11	36	—	—	9	4	10	10	54	11	2	0	36	1	16	16	8	4		
5	8	57	9	30	11	51	16	1	18	1	1	9	3	11	35	—	11	3	1	56	2	36	16	9	5			
6	10	29	9	9	0	22	16	2	21	0	3	21	10	9	0	14	0	49	11	11	3	16	3	52	17	6		
7	10	56	11	16	2	17	17	3	48	4	14	11	0	7	1	19	1	48	12	8	4	23	4	53	18	7		
8	11	35	11	56	2	2	18	4	34	4	52	11	5	2	2	12	2	37	13	3	5	19	5	45	19	8		
9	—	—	—	—	0	52	1	5	49	5	34	11	8	3	3	33	3	52	13	11	6	42	7	2	20	9		
10	0	35	0	55	2	21	18	6	22	6	6	11	10	4	4	6	4	22	14	1	7	16	7	31	20	10		
11	1	12	1	26	3	13	19	7	56	7	39	11	3	5	5	14	5	28	13	10	8	21	8	35	20	11		
12	1	43	1	56	4	18	18	8	52	7	6	11	7	4	4	40	4	57	14	0	7	48	8	5	20	12		
13	2	11	2	27	5	4	18	9	6	7	39	11	10	5	5	44	6	0	13	6	8	49	9	5	19	13		
14	2	44	2	58	6	18	18	10	7	8	11	10	3	6	17	6	34	13	1	9	21	9	38	19	14	14		
15	3	12	3	25	7	5	17	11	8	26	8	40	10	3	6	52	7	9	12	3	9	55	10	12	18	15		
16	3	40	4	2	8	6	26	12	9	9	20	9	7	7	29	7	52	11	6	10	33	10	57	17	16	16		
17	4	24	4	55	9	7	13	13	9	45	10	17	9	0	8	20	8	51	10	9	11	26	11	58	16	17		
18	5	30	5	11	11	8	21	15	10	53	11	35	8	7	9	30	10	12	10	4	11	—	—	—	—	18		
19	6	53	6	36	11	11	15	16	11	—	—	8	10	4	10	53	11	35	10	5	12	5	12	5	53	16	19	
20	8	18	8	54	11	15	15	16	1	1	41	9	8	—	—	—	0	14	11	1	18	1	18	1	5	6	20	
21	9	27	9	53	0	43	17	2	15	2	47	10	6	0	46	1	17	12	2	2	2	36	3	15	6	21		
22	10	20	10	45	1	31	18	3	12	3	39	11	4	1	40	2	5	13	2	3	3	49	4	21	18	22		
23	11	6	11	24	2	10	19	4	4	4	24	11	9	2	26	2	47	14	1	4	4	45	5	11	19	23		
24	11	47	—	—	3	2	50	20	5	5	5	12	4	3	4	3	24	14	9	5	5	33	5	54	20	24		
25	0	8	0	31	10	4	4	1	25	6	12	6	3	6	12	6	33	21	6	6	11	25	11	44	19	25		
26	0	55	1	16	10	5	5	25	2	7	35	12	8	7	35	4	3	15	3	7	—	—	0	6	19	8	26	
27	1	37	1	59	10	3	3	6	6	47	8	12	11	5	4	25	4	46	15	8	0	28	0	50	20	0	27	
28	2	19	2	41	9	11	4	7	6	29	7	8	12	8	5	51	6	14	14	9	1	10	1	30	19	10	28	
29	3	4	3	23	9	9	5	46	7	8	7	53	12	2	5	5	6	14	14	9	2	36	2	3	19	4	29	
30	—	—	—	—	5	38	19	17	8	17	8	38	11	5	6	37	7	3	13	9	3	—	—	3	0	18	9	30

GREENOCK			LONDON			CORK			Sunderland and Shields.			Hull and Bridport.			Southampton & Portsmouth			
M	D	Height.	M	D	Height.	M	D	Height.	M	D	Height.	M	D	Height.	M	D	Height.	
Calculated from the Mean Level of Low Water Spring Tides.			Calculated from the Mean Level of Low Water Spring Tides.			Calculated from the Mean Level of Low Water Spring Tides.			Low Water Level of Ordinary Spring Tides.			Low Water Level of Ordinary Spring Tides.			Datum—Sill of North Dock Gates.			
Morn	Even	M. Ft. In.	Morn	Even	M. Ft. In.	Morn	Even	M. Ft. In.	Morn	Even	M. Ft. In.	Morn	Even	M. Ft. In.	Morn	Even	M. Ft. In.	
1	3	44	1	3	44	1	3	44	7	29	8	10	32	11	3	23	3	50
2	4	42	2	4	42	2	4	42	8	36	9	11	42	—	4	22	4	57
3	5	56	3	5	56	3	5	56	9	57	10	0	23	1	5	38	5	23
4	7	22	4	7	22	4	7	22	11	28	—	1	48	2	7	10	6	16
5	8	52	5	8	52	5	8	52	0	7	0	3	8	3	8	29	7	52
6	9	47	6	9	47	6	9	47	1	11	1	4	15	4	9	27	8	17
7	10	34	7	10	34	7	10	34	2	55	2	5	1	5	10	13	9	10
8	11	12	8	11	12	8	11	12	3	8	3	5	1	5	10	13	10	32
9	11	46	9	11	46	9	11	46	4	23	4	6	0	5	11	50	11	7
10	0	2	10	0	2	10	0	2	5	38	5	6	16	6	11	24	11	38
11	0	37	11	0	37	11	0	37	6	4	6	7	17	7	11	53	—	—
12	1	9	12	1	9	12	1	9	7	4	7	7	17	7	0	10	0	28
13	1	39	13	1	39	13	1	39	8	38	8	8	18	8	0	43	0	58
14	2	8	14	2	8	14	2	8	9	4	8	9	18	9	1	13	1	28
15	2	39	15	2	39	15	2	39	10	5	9	10	21	10	1	43	1	59
16	3	9	16	3	9	16	3	9	11	11	10	11	21	11	2	14	2	33
17	3	53	17	3	53	17	3	53	12	16	11	12	21	12	2	15	3	13
18	4	52	18	4	52	18	4	52	13	17	12	13	21	13	3	36	4	16
19	6	17	19	6	17	19	6	17	14	8	13	14	21	14	4	36	5	18
20	7	44	20	7	44	20	7	44	15	10	14	15	21	15	5	59	6	44
21	8	56	21	8	56	21	8	56	16	11	15	16	21	16	7	22	8	16
22	9	49	22	9	49	22	9	49	17	11	16	17	21	17	8	32	9	21
23	10	37	23	10	37	23	10	37	18	11	17	18	21	18	9	27	9	50
24	11	20	24	11	20	24	11	20	19	12	18	19	21	19	10	15	10	36
25	—	—	25	—	—	25	—	—	20	12	19	20	21	20	11	55	11	15
26	0	29	26	0	29	26	0	29	21	13	20	21	21	21	11	37	—	—
27	1	15	27	1	15	27	1	15	22	13	21	22	21	22	0	2	0	25
28	1	57	28	1	57	28	1	57	23	14	22	23	21	23	0	48	1	10
29	2	44	29	2	44	29	2	44	24	15	23	24	21	24	1	80	1	55
30	3	39	30	3	39	30	3	39	25	16	24	25	21	25	2	19	2	44
31	4	59	31	4	59	31	4	59	26	17	25	26	21	26	3	9	3	35
									27	18	26	27	21	27	4	4	4	41

TIDE TABLES—NOVEMBER, 1870.

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[illegible]

TIDE TABLES—DECEMBER, 1870.

[illegible]

Descriptive List of Principal Lights—Scotch Coast

Name of Light.	Situation.	No. Light	Appearance.	distance visible	Points of Compass within which visible.	North latitude	West longitude.
INCHKEITH ..	Summit of Island, Fifehire ..	One	Revolving once every minute ..	21—	All round the compass	56° 2'	3° 8'
ISLE OF MAY ..	Isle of May, in Fifehire	Two	Fixed. Bear from each other NN E & SSW $\frac{1}{2}$ W. 250 yards ..	21 & 15	All round compass. The low light only towards the car	56 11	2 33
BELL ROCK ..	A sunk reef 11 $\frac{1}{2}$ miles S. by E $\frac{1}{2}$ E. off Arbroath, Forfarshire ..	One	Revolving, showing alternately a bright & red light every 2 min.	15—	All round the compass	56 26	2 23
GIRDLENESS ..	Girdleness, Kincardineshire ..	Two	Fixed lights, one above the other	19 & 16	NNE to WSW $\frac{1}{2}$ W by E'ward	57 8	2 3
BUCHANNESS ..	Buchanness, Aberdeenshire ..	One	Flashing once every 5 seconds ..	16—	N by E to SW by W by E'ward	57 2	1 46
KINNAIRDHEAD ..	Kinnairdhead, Aberdeenshire ..	One	Fixed ..	15—	White to NNW $\frac{3}{4}$ W. Red N.	57 42	2 1
TARBETNESS ..	Tarbetness, Cromartyshire ..	One	Visible 2 $\frac{1}{2}$ min., then eclipsed $\frac{1}{4}$ a min. To W. of the Ness Fixed	18—	All round the compass	57 51	3 48
DUNNETHEAD ..	On the Head, Caithnesshire ..	One	Fixed ..	23—	From SE $\frac{1}{2}$ E to W by N'ward	58 40	3 22
PENTLAND SKERRIES ..	On the Island ..	Two	Fixed NNE and SSW., 100 feet ..	18 & 16	All round the compass	58 41	2 55
START POINT ..	East point of Sanda Island ..	One	Fixed ..	15—	All round the compass	59 17	2 22
SUMBURGHHEAD ..	On S.W. point of Shetlands ..	One	Fixed ..	21—	NE by E $\frac{1}{2}$ E to NW by N $\frac{1}{2}$ N by S	59 51	1 16
NORTH RONALDSHAY ..	On north point ..	One	Flashing once every 10 seconds ..	18—	All round the compass	59 23	2 24
CAPE WRATH ..	On the Cape, N.W. point of Scotland ..	One	Revolving, showing alternately a bright & red light every 2 min.	23—	From S $\frac{1}{2}$ E to S W by W Northerly	58 37	5 0
ISLAND GLASS ..	E. point of Island, Harris Isle ..	One	Fixed ..	17—	W by S to E N E $\frac{1}{2}$ E by S	57 52	6 33
BARRAHEAD ..	Highest point on Bernera Isle ..	One	Intermittent, continuing in view 2 $\frac{1}{2}$ min., then eclipsed $\frac{1}{4}$ a min.	33—	From N by E to E N E westerly and southerly	56 48	7 38
ARDNAMURCHAN ..	southern point of Hebrides ..	One	Fixed ..	18—	From N E by E $\frac{1}{2}$ E to S W S north'y and west'y	56 44	6 13
LISMORE ..	Ardnamurchan point, Argyle-shire ..	One	Fixed ..	15—	From E to N E by E	56 27	5 36
CRINAN CANAL ..	Monsdale Island ..	One	Fixed, dark 2 $\frac{1}{2}$ point over land	4—	All round the compass	56 5	5 33
RHINS OF ISLAY ..	East side ..	One	Flashing once every 5 seconds ..	17—	From NNE to SE westerly	55 41	6 29
MULL OF CANTYRE ..	Oversay Island, off S.W. point of Islay, Argyleshire ..	One	disappears $\frac{1}{4}$ a mile off Cul point	22—	From N N E $\frac{1}{2}$ E to S by W $\frac{1}{4}$ W westerly	55 19	5 49
SANDA ISLAND ..	South-western headland of Cantyre ..	One	Fixed ..	17—	NW $\frac{1}{2}$ W to SE by E $\frac{1}{2}$ E by SW'ly	54 16	5 35
DEVAR ISLAND ..	Ship Rock ..	One	Fixed, red light ..	15—	N $\frac{1}{2}$ W to E by S by N	55 26	5 32
PLADDA ..	Eastern part ..	Two	Fixed, vertical N. and S. 8 yards apart ..	14 & 17	From S E by E N'ly to S W by W	55 26	5 7
CORSEWALL ..	Pladda Isle, off south east of Arran. county of Bute ..	One	Revolving, showing alternately a bright & red light every 2 min.	15—	From N E by E Northerly to S W	55 0	5 6
MULL OF GALLOWAY ..	W. side of entrance to Loch Ryan, in Wigtonshire ..	One	Intermittent, continuing in view 2 $\frac{1}{4}$ min, then eclipsed half a min	23—	From N E to N W $\frac{1}{4}$ W	54 38	4 51
	Southern extremity of mainland of Scotland, Wigton-shire.	One					

Descriptive List of Lights—1810 to 1810

Name of Light.	Situation.	Latitude North. / Longitude West.	No. of Lights.	Fixed or revolving.	Miles visible in clear weather.	Remarks.
POINT OF AYR	A quarter of a mile SW of the Point	54 25 4 22	One	R	15—	Shewing alternately a bright and red light every 2 min. Visible from S by W N E'y to W by N
Peel Harbour	On Pier and Breakwater	54 13 4 42	Two	F	8—	Pier Head Light Red, Breakwater White
CALF OF MAN	West side of Calf Island	54 3 4 50	Two	R	24&22	Revolving every 2 min. When in one they lead on [the Chicken Rocks.
Port St. Mary	Pier Head	54 4 4 44	One	F	9—	To be kept on the port hand on entering.
Castletown Harbour	New Pier Head	54 5 4 39	One	F	8—	Also a light on Fort Island during herring fishing.
Derbyhaven	Entrance of the harbour	54 5 4 36	One	F	2—	Not visible from Langness Point, but with 3 miles
DOUGLAS	Douglas Head	54 9 4 28	One	F	14—	offing it will be seen N.E. ½ E; and the Calf Light at the same time N N by W ½ W.
Douglas Harbour	North Pier Head	54 10 4 28	Two	F	6—	Bright and Red. Sight Red Light to clear Break-
Ramsey Harbour	South side entrance	54 20 4 23	One	F	4 or 5	Red Light. (water works.
Bahama Bank Light Vessel	A mile of the S.E. tail of the Shoal. Moored in Eleven fathoms.	54 20 4 12	Two	F	10—	A Gong is sounded in foggy weather. "Bahama Bank" is painted on her sides. King William Bank Buoy, E by N ½ N, nine miles.
Principal Lights—West Coast of England						
Lee Scar	On the Rocks	54 52 3 25	One	F	6—	On Piles. Base dries at 6 feet at low water.
Solway Light Vessel	Robin Rigg Channel	54 48 3 32	One	F	6—	Red Light. Moored in 4½ fathoms. A black ball by [day. Tolls a bell in foggy weather.
ST. BEES	St. Bee's Head	54 31 3 38	One	F	25—	Every minute. The fixed light is Red. N W by W ¾ W, and S E by E ¾ E, 340 yards.
WALNEY	S. Point of Walney Island	54 3 3 11	Two	1 R 1 F	13—	Every 30 seconds—Red
Morecombe Bay Light Vessel	In 12 fathoms	53 54 3 31	One	R	10—	Red light. A ball by day, and a M. M. light by night every 20 sec. is shown at the bows when 8 ft. water in Harbour Channel. Bell during fogs
	Between Yeoman and Clark Wharf	54 1 3 0	One	F	5—	On Piles. A bell is tolled in foggy weather.
River Wyre	N.E. elbow of N Wharf Bank	53 57 3 2	One	R	10—	N. & S. 850 ft. Shown while 9 ft water in Channel.
Fleetwood	H. Lt. in Town, L. Lt. Espld.	53 56 3 1	Two	F	13 & 9	Bright 3½ minutes, dark ¼ a minute.
River Ribble	Stanner Point, N. of entrance	53 44 3 1	One	Int	12—	White between the bearings of S E by E ¾ E round by the S to W; and Red from W to W ¾ N.
GREAT ORMSHEAD	North Point, Steep Cliff	53 20 3 52	One	F	24—	Red Light. Painted Red, carries Red Ball. In 25 feet at low water. Crosby Lightship S E ½ S, 24 miles. N W Mark, E by N ½ N, 3½ miles.
Formby Light Vessel	At the elbow of the Crosby and Queen's Channels	53 32 3 11	One	F	8—	Yellow Light. Painted Red, carries Red Ball.
Crosby Light Vessel	N.E. elbow of Gt. Burbo Bank	53 31 3 7	One	F	8—	

Principal Lights—West Coast of England, continued

Name of Light.	Situation.	Latitude North. ° /	Longitude West. ° /	No. of Lights.	Fixed or Revolving.	Miles visible in clear weather.	Remarks.
Black Rock	Rock Point, west side of the entrance to the Mersey.	53 27	3 3	One	R	—14—	Every minute. White twice and Red once every 3rd minute. A Bell is tolled in foggy weather.
Leasowe	On the shore between the Mersey and Dee Rivers.	53 25	3 7	One	F	—15—	Bidston Light open E of Leasowe, and afterward to the west, lead up the Horse Channel.
BIDSTON	Bidston Hill	53 24	3 4	One	F	—23—	Obscured when inward bound, bearing S by W $\frac{1}{2}$ W
Hoylake	Near the Church	53 24	3 11	Two	F	13 & 11	The Upper Light exhibit, from N N W round to the E'ward, the Lower from N round to E'ward.
Liverpool N.W. Light Ship.	W. extreme of 3 and 4 fathoms Tongue, in 6 $\frac{1}{2}$ fathoms	53 27	3 17	One	R	—11—	Black Ball during day. Blue Lt. every 2 hrs. during darkness after 6 p.m. Bell and Gong alt. in logs
AIR	Air Point, at low water mark	53 22	3 19	One	F	—9—	On Piles. A bell is sounded in foggy weather
LYNAS	Point Lynas	53 25	4 17	One	Fl.	—16—	Flashing once every ten seconds.
SKERRIES	Highest Island	53 25	4 36	One	F	—16—	
STACK	South Stack Rock, off N W 53 18 42	53 18	4 42	One	R	—20—	Revolving every 2 min. During foggy weather a smaller Bright Light is occasionally shown, 40 ft. above the sea and 30 yards N. of main Lighthouse
BARDSEY	Bardsey Island	52 45	4 48	One	F	—17—	[sounded in foggy weather
Cardigan Bay Light Vessel	Cardigan Bay	52 22	4 54	One	R	—9—	Red Light. Revolv. every 33 seconds. A Gong is
SOUTH BISHOP	South Bishop Rock	51 51	5 25	One	R	—18—	Revolving every 20 seconds.
SMALLS	Smalls Island	51 43	5 40	One	F	—15—	Erected upon pillars 40 feet high.
ST. ANN'S	St. Ann's Point. Milford Haven	51 41	5 10	Two	F	20 & 18	High Light N by W $\frac{1}{2}$ W 609 feet from Low Light. when in one they lead clear of the Crow and Toes Rocks.
CALDY	Caldy Island, southern part	51 38	4 41	One	F	—20—	
MUMBLES	Mumbles Head	51 34	3 58	One	F	—15—	
NASH.	Nash Point	51 24	3 33	Two	F	19 & 17	High Light S E by E $\frac{1}{2}$ E and N W by W $\frac{1}{2}$ W, 1000 feet from Low Light. The Lights in one lead a cable's length Southward of the Nash Sand.
USK	W. side of entrance to River	51 32	3 0	Two	F	—11—	Red. A Red light is also shown up the River.
FLATHOLM	Flatholm Island, south point	51 23	3 7	One	F	—18—	
LUNDY	On the ridge of Lundy Island	51 10	4 40	Two	1 R 1 F	—31—	The Low Light (fixed) is only visible from the West ward between NNW and WSW. The Revolving Light flashes every two minutes.
TREVOSE HEAD	On north-western part	50 33	5 1	Two	F	20 & 17	The Lower Light is 50 ft. in advance of the high one

Descriptive List of Principal Lights—South and East Coasts of Ireland

Name of Light.	Situation.	Latitude North.	Longitude West.	No. of Lights.	Fixed or Revolving.	Miles visible in clear weather.	Remarks.
FASTNET	Summit of Rock	51 23 9	36	One	R	18—	Attaining its greatest brilliancy every 2 minutes.
KINSALE . . .	South Point of Old Head ..	51 36 8	32	One	F	21—	Red light is shown in a line to the Horse Rock in Courtmacsherry Bay, Bright to seaward.
CORK HARBOUR or Queenstown	Rock Point, E. side of Entrance..	51 48 8	15	Two	R&F	8 & 10	Red. White between the bearings of N.E. by E, and N.E. $\frac{1}{2}$ N. to pass E'wards of Daunt's Rock. A Bell 8 times a minute in foggy weather.
BALLYCOTTIN ..	East Elbow of Spit Bank, in 9 feet..	51 51 8	16	One	F	5—	Red. From NNE $\frac{1}{2}$ E to SE by E $\frac{1}{2}$ E round by E.
MINEHEAD ..	Outer Island, west side of Bay ..	51 49 7	59	One	Fl.	18—	Every 10 secs. From W $\frac{1}{2}$ S round N to E $\frac{1}{2}$ S.
HOOK TOWER ..	South side of Head	52 0 7	35	One	Int.	21—	Bright 50 secs., obscured 10 secs. From E by N [$\frac{1}{2}$ N to W $\frac{3}{4}$ S.
SALTEE'S LIGHT	East side entrance Waterford ..	52 7 6	56	One	F	16—	Carries 2 Balls. Moored in 32 fathoms. During foggy weather a Gong is sounded.
VESEL	Off Conningbeg Rock, the Southern-most of the Saltee Islands ..	52 2 6	40	Two	F	10 & 8	Every 2 min. Twosides Bright, one Red. During foggy weather a Bell is tolled every $\frac{1}{2}$ min. Red Light vis. every 6th minute, and seen 10 miles.
TUSKAR	Tuskar Rock	52 12 6	12	One	R	15—	Every min. $\frac{1}{2}$ Globe over Globe at mainmasthead. One on mainmast, and one on foremast.
ARKLO LT.-VESSEL.	S. end of Arklow Bank, in 25 fms.	52 42 6	0	One	R	10—	10 Seconds bright, 3 seconds dark.
WICKLOW	N. end of Arklow Bank	52 58 6	0	Two	F	9—	Every 20 seconds.
CODLING BANK ..	Wicklow Head.. ..	52 58 6	0	One	Int.	9—	Every min. Carries a Ball. A Gong is sounded during foggy weather.
KISH LIGHT	3 $\frac{1}{2}$ Miles S.E. by S. from S. end	53 19 5	56	One	R	10—	Every $\frac{1}{2}$ min., showing a Bright and Red Light alternately. During foggy weather a Bell is tolled.
VESEL	Off N. Point of Kisk Bank, moored in 10 fathoms	53 18 6	8	One	R	9—	A small Red Light.
Kingstown.. ..	Centre of East Pierhead of Kingstown Harbour	53 20 6	9	One	F	2—	The Lower Light, which is much fainter than the Upper, is exhibited from half-flood to half-ebb. A Ball is hoisted at the same period during the day-time
POOLBEG.. ..	West Pierhead.. ..	53 20 6	9	Two	F	12—	During foggy weather a Bell is tolled.
DUBLIN BAY.	End of N. Wall or N. Quay; Dublin	53 21 6	14	One	F	10—	The Lower from $\frac{1}{2}$ f. to $\frac{1}{2}$ ebb. A Ball is hoisted during the day, in foggs a Bell is tolled every $\frac{1}{2}$ min.
BAILEY	S.E. Point of Howth Island.. ..	53 22 6	3	One	F	16—	Red Light. Every minute, 45 secs. red, and 15 secs. obscured.
CARLINGFORD..	Haulbowline Rock	54 1 6	5	Two	Int.	12—	Every minute and a half.
DUNDRUM BAY	St. John's Point	54 13 5	40	One	R	12—	
SOUTH ROCK ..	On the Rock	54 24 5	25	One	F	16—	
COPELAND.. ..	Small Copeland Island	54 43 5	32	One	F	16—	

MISCELLANEOUS INFORMATION.

Isle of Man Fairs.

JANUARY.—5. St. Mark's, Malew.
FEBRUARY.—2. Greeba—12. Kirk Bride.
 —27. Baldwin.
MARCH.—17. St. John's.—25. Ramsey.
 —28. Peel.
APRIL.—5. Jurby.
MAY.—1. St. John's.—3. Sulby Cladagh.—10. Laxey.—12. St. Mark's.—15. Ballaugh.—26. Kirk Santon.
JUNE.—4. Sulby.—16. Kirk Michael.
JULY.—5. St. John's.—23. Sulby.
AUGUST.—5. Laxey.—12. Ballasalla.—26. Ballaugh.
SEPTEMBER.—29. Ballasalla.
OCTOBER.—10. Michael.—28. Arbory.
NOVEMBER.—1. St. John's.—8. Ramsey.—12. Douglas.—18. St. John's.
DECEMBER.—6. Colby, Kirk Arbory.—11. Kirk Andreas.

Those falling on Saturday, Sunday, or Monday, to be held on the following Tuesday—except the Tynwald Fair, which must be held on the 5th July, unless that day fall on a Sunday.

Cumberland—Abbey-Holme, Tuesday before Whitsunday, Oct. 29.—Alston Moor, last Thursday in May, Friday before 27th Sept., 1st Thur. in Nov.—Arclecdon, Ap. 24, 1st Friday in June, 17 Sep.—Bootle, April 5, 26, August 3, Sept. 24.—Brampton, April 22, 2nd Wed. after Whit. 2nd Wed. after 15th Sept.—Carlisle, Sat. next Whit., Aug. 26, Sep. 16, Sat. nearest 11th Nov.—Cockermouth, Feb. 18, Mon. before Easter, 1st and 3rd Wed. in May, Oct. 10.—Egremont, Feb. 18, 3rd Friday in May, Sept. 13.—Ennerdale, 2nd Tues. in Sept.—Eskdale, 2nd Monday in Sept.—Garrigill, 3rd Friday in May, 1st Friday in Sep.—Gosforth, April 25th, Oct. 18.—Hesket Newmarket, every alternate Fri. from May till Whit., last Thur. in August, 2nd Thur. in Oct.—Ireby, Feb. 21, Oct. 18.—Keswick, 3rd Thursday after 1st May, Oct. 11, Sat. after 29th Oct.—Kirkoswald, Thur. before Whit-Sun., Aug. 5.—Longtown, Thurs. before Whit-Sun., Thursday before Sept. 30.—Nether Wasdale, 1st Mon. in Sept.—Newlands, 1st Fri. in Sep.—Penrith, March 1, April 24, 25, 3rd Tues. in Oct., Tues. after Nov. 11.—Ravenglass, May 6, June 8, Aug. 5.—Roseley Hill, Whit-Mon., and every alter. Mon. till Michael.—Skinburness, June 24.—Threldkeld, 1st Thurs. in Sept.—Uldale, August 22.—Ulpha, Mon. before Easter, July 5.—Whitehaven, Aug. 12.—Wigton, Feb. 20, April 5.—Workington, Wed. before Holy Thursday, Oct. 18.

Cheshire—Altringham, Ap. 22, Aug. 5, Nov. 22.—Budworth, Feb. 13, Ap. 5, Oct. 2.—Congleton, May 12, July 5, Nov. 22.—Chester, Feb. 23, April 27, July 5, Oct. 2, Nov. 24.—Knutsford, Whit-Tues., July 10, Nov. 8.—Macclesfield, May 6, June 22, July 11, Oct. 4, Nov. 11.—Malpas, Ap. 5,

July 25, Dec. 8.—Middlewich, Holy Th., Aug. 6.—Nantwich, Feb. 4, Mar. 15, Sep. 4, Dec. 11.—Northwich, August 2, Dec. 6.—Over, May 16, Sep. 25.—Sandbach, East. Tues., Tues. after Sept. 10.—Stockport, March 4, 25, May 1, Oct. 23.—Tarporley, May 1, last Monday in Aug., Dec. 11.—Winsford, May 8, Nov. 25.

Lancashire—Blackburn, Easter-Mon., May 12, Oct. 17, every fortnight on Wed. from Feb. till Oct.—Bolton-le-moors, 1st Mon. after Jan. 5, and every Monday fortnight till May 12, July 30, 31, Oct. 13, 14.—Burnley, March 6, Easter Eve., May 6, 13, July 10, Oct. 11.—Broughton-in-F., August 1.—Bury, March 5, May 3, 2nd Thursday after Whit-Sun., Sep. 18.—Cartmell, March 22, Whit-Monday, Oct. 24, Nov. 5.—Chorley, March 26, May 5, Aug. 20.—Clithero, March 24, 25, August 1, 2, the 5th Thur. and Fri. after St. Michael's Day.—Conistone, 3rd Saturday in Sept.—Darwen, Holy Thurs., 1st Thurs. in Oct.—Dalton, April 28, June 6, Oct. 23.—Great Harwood, Mar. 3, Aug. 21.—Haslingden, May 8, July 1, Oct. 10.—Hawkshead, Mon. before Holy Thurs., Whit-Mon., Oct. 2.—Inglewhile, Oct. 5.—Kirkham, June 24.—Lancaster, May 1, July 5, Aug. 11, Oct. 10.—Liverpool, July 25, Nov. 11; Horse Fair every alternate Wednesday.—Longridge, May 13, Nov. 6.—Manchester, Whit-Mon., Oct. 1, Nov. 6.—Middleton, Thurs. after March 11, Thurs. after April 15, 2nd Thur. after Sept. 29.—Newburg, June 21.—Newbury, June 21.—Newchurch, April 29, Sept. 30.—Newton, May 17, July 15, and every Mon. fortnight, Aug. 12.—Oldham, May 2.—Ormskirk, Whit-Mon., Sept. 8.—Poulton, Feb. 6, Ap. 13, Nov. 3.—Prescot, June 12, Aug. 24, 25, Nov. 1.—Preston, 1st Satur. after Jan. 6, March 27, Aug. 25, last 10 days, Nov. 7.—Rufford, May 19.—Radcliffe Bridge, April 29, 30, Sept. 21, 22.—Rochdale, May 14, Whit-Tues., Nov. 7.—Ulverstone, March 22, October 27.—Warrington, July 18, Nov. 30, each lasts 10 days; every Wedn. fortnight.—Wigan, Holy Thursday, June 27, Oct. 21.

Irish Fairs—Antrim.

Ahoghill, June 4, Aug. 26, Dec. 5.—Antrim, Jan. 1, May 12, Aug. 1, Nov. 12.—Armoy, Jan. 25, Feb. 25, March 29, May 25, Aug. 16, Nov. 12, Dec. 25.—Ballinagabob, July 26.—Ballinderry, second Monday in Feb., May, Aug., and Nov.—Ballintoy, June 3, Sept. 4, Oct. 14.—Ballicary, 2nd Mon. in Jan., 3rd Mon. in April, Aug. and Nov.—Ballycastle, Easter Tuesday, last Tues. in May, Aug. Oct. and Nov., July 26.—Ballyclare, last Tuesday in Jan., 2nd Tues. in May, July, and Nov. o. s.—Ballymena, July 26, Oct. 21.—Ballamoney, May 5, July 10, October 6.—Ballybarnice, 1st Tues. after 12th Jan. and Feb. Ballynure, May 15, Sept. 4, 2nd Tuesday in Oct. o. s.—Belfast, 1st Wed. in each month, Aug. 12, Nov. 1.—Broughshane, June 17, Sept. 1,

MISCELLANEOUS INFORMATION.

Bushmills, March 28, June 28, August 24, Oct. 21, Dec. 12. Cairnlough, Feb. 10, Easter Mon., June 12, Aug. 10, Oct. 12, Dec. 12. Carnmoney, 1st Tues. May and Nov. o. s. Carrickfurgus, May 12, Nov. 1. Clough, May 5, July 5, Sep. 5, Nov. 22. Frid. before Christmas. Connor, Feb. 1. May 1, Aug. 2. Craigbilly, June 26, Aug. 21. Grumlin, 1st Mon. in month. Cushendale, Feb. 14, March 17, May 14, June 29, Aug. 14, Sep. 29, Nov. 14, Dec. 22. Cashendon, first Wednesday of Feb., April, June, Aug., Oct., and Dec. Der- vock, Jan. 12, Feb. 23, May 16, June 22, Aug. 12, Oct. 27. Drinbar, May 21. Drumadoon, June 9, Nov. 26. Dunlice, Nov. 12. Giant's Causeway, August 13. Glenarm, Jan. 26, May 26, Aug. 30, Oct. 29. Glenavy, 3rd Mon. Feb., May, Aug., and Nov. Kells, Jan. 8, March 1, June 10, Sep. 12. Larne, July 31, Dec. 1. Lisburn, July 21, Oct. 5. Loughgill, 19th of Feb., June, Aug., and Nov. Mosside, Feb. 13, May 21, Nov. 21. Mounthill, July 1, Oct. 1. Newtoncrumlin, Feb. 5, May 11, Aug. 2, Nov. 5. Oldstone, June 13, Oct. 22. Parkgate, Feb. 7, May 7, second Monday in June, Aug. 7, Nov. 4. Portglenone, 1st Tues. in each month, and 2nd Tues. in May, o. s. Randalstown, July 16, Nov. 1. Rasharkan, Nov. 16. Roughfort, 3rd Tues. in May and Nov. o. s. Straid, Sep. 4, Oct. 30. Stranocum, Feb. 10, March 10, April 20, June 16, July 14, Aug. 8, Sep. 28, Nov. 6, Dec. 29. Tallaght, July 7, Nov. 9. Templepatrick, May 11, July 10, last Tuesday in Oct. Troome, Easter Monday, Dec. 4. Tullamore, Nov. 17.

Down.

Annadoyne, May 14, Nov. 8. **Ardmillan**, 1st of Jan., April, July, Oct. **Balloo**, first Wednesday in Jan., Ap., July, & October. **Ballynahinch**, 3rd Thurs. in each month. **Ballywalter**, June 22, Nov. 8. **Banbridge**, Jan. 12, 1st Monday in Feb., March, April, May, July, Sep., October, November, and Dec., June 9, Aug. 26. **Bangor**, Jan. 12, May 1, Aug. 1, Nov. 22. **Carrodore**, 7th of Feb., May, Aug., & Nov. **Castlereagh**, July 5, Oct. 26, Nov. 20. **Castlewellan**, 2nd Mon. in Jan., Mar., Ap., July, Aug., Oct.; 1st Feb., May, June, Sep.; Nov. 13, and Tuesday before Christmas. **Clough**, May 27, July 5, Nov. 22, 3rd Friday in October, and Friday before Christmas. **Comber**, Jan. 5, April 5, June 28, Oct. 19. **Crossgar**, second Wed. in each month. **Donaghadee**, last Wednes. in May, o. s., Aug. 16, Oct. 10, last Wednesday in Nov. o. s. **Donaghmore**, 22nd of June and Oct. **Downpatrick**, 1st Satur. in each month. **Dromara**, 1st Friday in Feb., May, Aug., and Nov., and 1st Friday after 15th March, June, Sep., and Nov. **Dromore**, 1st Sat. in March and Aug., May 12, Oct. 10, and Sat. but one before Christmas. **Dundrum**, 3rd Tues. in every month, Jan. 5, Thurs. before Candlemas day, o. s., May 12, Thursday bef.

Aug. 12, Oc. 10, Dec. 10. **Gilford, 2nd Tues.**
each month, and 21st June and Nov. **Green-**
castle, 12th Jan. & Aug. **Greyabbey, Mar.**
28, June 22, Oct. 29, Dec. 4. **Hillsborough,**
3rd Wed. in each month. **Hiltown, 2nd**
Tuesday in each month. **Hollywood, 1st**
Monday in Feb., May, Aug., and Nov.
Kikeel, 1st Wed. in each month. **Kill-**
leagh, April 10, June 3 and 15, October 11,
Dec. 11. **Killinchy, 1st Wednes. in Feb.,**
May, Aug. and Nov. **Killough, Feb. 15,**
June 5, Aug. 15, Nov. 15. **Kilmere, Feb.**
4, March 14, May 1, June 3, Aug. 5, Sep.
29, Nov. 5, Dec. 16. **Kircubbin, 1st Mon.**
in each month, and 28th of April, May,
Aug. and Nov. **Loughbrickland, Nov.**
12, and 3rd Tues. of remaining months.

Dublin.

Ballbrigginn, 29th April, and September.
Carrickmines, Dec. 6, April 14, June 24,
Oct. 14. Donnybrook, Aug. 26. Field-
stown, Whit Monday. Garyistown, May
15, Aug. 15, Nov. 1. Kilsallaghan, Ascen-
sion day, Sep. 8. Lusk, Easter Monday,
May 4, June 24, July 13, Nov. 25. Naui,
March 10, April 26, May 21, Sep. 28, Oct. 2.
Palmerstown, August 21. Rathfarnham,
July 10. Rush, May 1, Sep. 29. Saggart,
June 15, Oct. 10, Nov. 8. Skerries, April
22, Aug. 10. St. Margarets, July 30 and
31. Swords, March 17, May 9.

Fish Table

The following Table shows the months in which the undermentioned Fish is IN or OUT of Season.

[illegible]

ISLE OF MAN INFORMATION.

Manx Legislature

B. Loch, Esq., C.B.... Lieut.-Governor
Sec. to his Excellency... **J. T. Clucas**
COUNCIL.

on & Rt. Rev. H. Powys, D.D., Lord Bishop
on. James Gell... Attorney-General
on. W. L. Drinkwater, South, Deemster
on. J. C. Stephen, Northern Deemster
idgway Harrison... Water-Bailiff
on. Mark H. Quayle, Clerk of the Rolls
en. Joseph C. Moore... Archdeacon
ichard Jebb... Vicar General
T. Clucas... Clerk of Council

HOUSE OF KEYS.

Douglas.
W. F. Moore, Cronkbourn, Braddan.
W. Dumbell, Belmont... Conchan
J. S. Goldie Taubman, Speaker, Braddan.
Castletown.
John M. Jeffcott... Castletown
Ramsey.
W. B. Christian, Milntown... Lezayre
Peel.
Robert John Moore, Secretary... Peel
Rushen Sheading.
J. J. Waterson... Arbory
W. B. Stevenson... Malew
T. Moore, Great Meadow... Malew
Middle Sheading.
W. Dalrymple, Union Mills... Braddan
J. C. T. Harrison, Ballaughton, Braddan
M. W. Goldie... Conchan
Glenfaba Sheading.
V. E. S. Moore... German
S. Moore, Lhergydhoo... German
John Gell, Kennaa... German
Garff Sheading.
Richard Rowe... Lonan
William Haslam, Ballaglass... Maughold
C. Goldsmith... Maughold
Ayre Sheading.
William Callister, Thornhill... Maughold
E. C. Farrant, Ballakillingan... Lezayre
T. Martin, Smeal... Andreas
Michael Sheading.
John F. Crellin, Orrysdale... Michael
Evan Gell, Whitehouse... Michael
Thomas Craine, Glaick... Ballaugh
Those marked thus * were Members of
the House under the late Constitution.

Constituted Authorities

Samuel Harris, High-Bailiff, Douglas
ohn M. Jeffcott, do., Castletown
Frederick Tellet, do., Ramsey
Robert J. Moore, do., Peel
Registrar of Deeds... S. Harris, Douglas
Deputy do.... S. J. Harris, Douglas
Registrar General of Births and Mar-
riages... S. Harris, Douglas
Deputy Registrars do., C. Cannell, Doug-
las; J. M. Jeffcott, Castletown; **Robert**
J. Moore, Peel; **F. Tellet,** Ramsey.
Episcopal Registrar... Samuel Harris
Archdeacon's Official... T. C. Callow
Archdeacon's Registrar... R. H. L. Brown
Atholl Street, Douglas.

Seneschal... Ridgway Harrison
Regulator of Weights and Measures... F.
L. Gelling, Castletown
Agent for Woods and Forests... F. C.
Skrimshire, Douglas
Tithe Agent... R. Harrison, Douglas
Southern Deemster's Clerk, John Quayle
Northern Deem. do.... D. F. Wilson
Clerk to the Vicar General... R. H.
Brown, Atholl Street, Douglas.
Registrar of J. S. Companies... S. Harris.

Magistrates

The Members of the Council...
The High Bailiff of Castletown... } For the
The High Bailiff of Douglas... } time
The High Bailiff of Ramsey... } being.
The High Bailiff of Peel... }
Mark H. Quayle, C.R.... Castletown
Wm. Watson Christian... Ballacurry
Evan Gell... Whitehouse
Richard Quirk... Rheaby
Cesar Bacon... Seafield
William Callister... Thornhill
Ewan Cameron... Glenfaba House
Clarence Horatio Cary... Beach House
John Frissell Crellin... Orrisdale
Edward Moore Gawne... Kentraugh
Alexander Taubman Goldie... Douglas
Richard Simpson... Onchan
J. G. Bennett... Willaston
P. T. Cunninghame... Castletown
William Farrant... Ballamoar
John Gell... Kennaa
William Haslam... Ballaglass
W. F. Moore... Cronkbourn
J. S. Goldie Taubman... Nunnery
Charles Ready... Douglas
Rev. William Cromie... Douglas
Thomson, M.D.... Michael
W. B. Stevenson... Malew
Edward C. Farrant... Lezayre
William B. Christian... Lezayre
Thomas Moore... Malew
CLERKS—**Jas. Spittall,** Douglas; **Henry**
C. Gill, Castletown; **R. J. Kelly,** Ramsey;
John Kelly, Peel.

Members of Manx Bar

Frederick Tellet, H.B.... Ramsey
Frederick L. Gelling... Castletown
James Quirk... Douglas
William W. Christian... Andreas
William Clague... Peel
Mark H. Quayle, C.R.... Castletown
George Wm. Dumbell... Douglas
J. C. Stephen, Deemster... Ramsey
Edward H. Frizelle... Peel
Robert J. Kelly... Ramsey
Robert J. Moore, H.E.... Peel
Thomas C. Howard... New Zealand
John M. Jeffcott, H.B.... Castletown
Ridgway Harrison, W.B.... Douglas
Samuel Harris, H.B.... Douglas
Edward Callow... Manchester
Charles J. Stewart... Lancashire
John Kelly... Peel

Thomas C. Callow, A. O.	Douglas
James Gell, A. G.	Castletown
Daniel F. Wilson	Ramsey
J. G. M'Hutchin	Castletown
Samuel S. Rogers	Australia
James Spittall	Douglas
Alfred Walter Adams	Douglas
Frederick Call	Australia
A. N. Laughton	Douglas
Thomas A. Corlett	Scotland
Laurence W. Adamson ..	Northumberland
J. C. Tobin Harrison	Douglas
Richard Tuton	Douglas
John Thomas Clucas	Castletown
Richard Sherwood	Douglas
Alured Dumbell	Ramsey
Henry Evans Gelling	Castletown
Jahn C. Lamothe	Ramsey
Claude Cannell, B.A.	Douglas
W. E. S. Moore	Peel
John Quayle	Douglas
John Frederick Gill	Castletown
C. W. Beckwith ..	Douglas
J. J. Gell	Ramsey
G. J. McDonald	Douglas
R. S. Stephen	Douglas
— Nelson	Ramsey
Henry Kellett	Douglas
— Dickinson	Douglas

Notaries Public

R. Harrison, Water Bailiff, *ex officio*.
DOUGLAS.—John Moore, J. C. T. Harrison, James Spittall, T. C. Callow, A. N. Laughton, R. Tuton, Claude Cannell, John Quayle, W. Berey.
CASTLETOWN.—Frederick L. Gelling,
RAMSEY.—Robt. J. Kelly, D. F. Wilson,
J. C. Lamothe, J. J. Gell, R. Teare
PEEL.—J. Kelly.

Commissioners to take Affidavits.

English Court of Chancery & Irish Courts of Queen's Bench, and Common Pleas.—Robt. J. Kelly, Ramsey.

English Courts of Queen's Bench, Exchequer, and Common Pleas—Thomas Cheslyn Callow, Douglas.

English Court of Chancery, Queen's Bench, Common Pleas, Exchequer, and Probate.—Jas. Gell, Castletown; James Spittall, Douglas.

English Court of Probate—L. W. Adamson, Northumberland, Alfred N. Laughton, Douglas.

Irish Court of Chancery..... James Spittall, Douglas.

Coroners

Glenfaba	Henry Kay
Michael	Thomas Clarke
Garff	W. Corteen
Ayre	T. Callow
Middle	G. H. Wood
Rushen	Edward Martin

Revising Advocates under House of Keys Election Act, 1866:—

Glenfaba, Peel, and Michael: John Kelly.
 Ayre, Garff, and Ramsey: A. Dumbell.
 Middle and Douglas: Alfred Nelson Laughton.
 Rushen and Castletown: —

Summers

Sumner-General	John Quayle
Kirk Maughold	John Bridson
— Lonan	Jas. Cannon
— Onchan	George Maley
— Braddan	George Maley
— Marown	T. Christian
— Santon	Wm. Corlett
— Malew	Wm. Corlett
— Arbory	Richard Corrin
— Christ Rushen	W. Thompson
— Patrick	P. Clucas
— German	P. Clucas
— Michael	Edward Cannell
— Andreas	Matthias Carberry
— Bride	Richard Pass
Ballaugh	John Stephen
Jurby	T. Moughtin
Lezayre	John Cain

Officers of Police

Head Constable, Isle of Man.... Capt. Geo. P. Goldie.
 John Sayle, Inspector..... Douglas
 James Martin, Sergeant .. Castletown
 W. Kermode .. do..... Ramsey
 Matthias Collister, do..... Peel
 William Hollinrake .. Mounted Sergeant of Police.

Officers of Customs

PORT DOUGLAS.

Collector R. S. D'Ouseley || Collector's First Clerk | N. W. Walker |
Collector's 2nd Clerk and Assistant Exam- ining Officer	G. A. M'Cammon
Examining Officer	R. J. Wenner
Locker and Weigher....	G. B. Wainman
Out-Door Officers	Wm. Kirkick, John Kelly, J. Sayle and F. Whitely.

CREEK OF PEEL.

Principal Coast Officer G. A. Adams
 Out-Door Officers..... J. Cowley and J. J. Corlett

PORT RAMSEY.

Collector Leslie Lockhart || Examining Officer | Leslie Carnie |
| Out-Door Officers | G. S. Farrington, W. Looney and Thos. Vondy. |

PORT CASTLETOWN.

Collector R. Q. Crilly || Assist. Examining Officer..... | P. Doherty |
| Out-Door Officers.. | W. Bell, T. W. Law- son and T. Champion. |

Vice Consuls

Danish W. F. Moore || Swedish and Norwegian .. | H. B. Nisb |

Customs Brokers & Commission Agents

W. Berey North Quay, Douglas
 Thomas Bawden Douglas
 H. Johnson Douglas
 John Clucas Castletown
 R. Teare Ramsey

Harbour Masters

Douglas { John Clague
 Deputy, Robert Gelling
 Ramsey Charles Teare
 Castletown John Caveen
 Peel J. Gill
 Port St. Mary Thomas Qualtrough

Commissioners of Harbours

R. Quirk, Receiver General
 R. S. D'Ousely | James Corlett
 J. M. Jeffcott | Robert J. Moore
 R. J. Weaver | William Callister
 Thomas Moore. | Robert Corrin
 I. B. Noble.

Agents for Lloyd's

Southern District, William Berey, Douglas
*Also for the Underwriters of Glasgow
 and Liverpool.*
 Northern District. Hugh Brown, Ramsey.

Douglas Town Commissioners.

T. Richards, (Chairman), D. D. Lewin,
 Vice-Chairman), J. Dearden, R. Craine,
 John McGhie, R. Archer, C. Swinnerton,
 F. Sherwood, R. Caley.

J. L. Cartwright, Clerk to Com-
 missioners.

J. Robertson, Out-door Overseer.

D. Callister, Inspector of Cars.

Ramsey Town Commissioners.

John C. Goldsmith, (Chairman) Daniel
 Hughin, (vice-chairman), William Cor-
 rett, R. Teare, D. Christian, J. Brew, J.
 Allow. — Clerk.

Bankers

Bank of Mona, Douglas—(Draw on Pres-
 cott, Grote, & Co., London) — J. K.
 Greig, Manager.

Douglas and Isle of Man Bank—(Draw on
 Glynn, Mills, & Co., London)—Dum-
 bell, Son, & Howard.

Bank for Savings, Atholl-street, Douglas
 —J. Spittall, Secretary

Isle of Man Banking Company (Limited)
 Atholl-street. (Draw on London and
 Westminster Bank, London.)—J. J.
 Carran, Manager.

Lunatic Asylum, Strang.

MANAGING COMMITTEE—Deemster
 Binkwater, Chairman; the Water-bailiff
 Sir-General, Wm. Callister, and Evan
 H.

Chaplain—(Vacant, and Rev. W. Drury
 present acting.)

Medical Superintendent—Joseph Tre-
 les Hingston.

Matron—Miss Frisby.

Steward—A. Clarke.

Treasurer—Thomas C. Callow, Advocate

Receiver of Droits of Admiralty

R. S. D'Ousely Douglas

Law Courts

COMMON LAW.—Douglas, Feb. 8,
 July 5. Castletown, May 10, Oct. 11.
 Ramsey February 15, May 17, July 12,
 October 18.

CHANCERY AND EXCHEQUER.—On the
 first THURSDAY in each month; the
 months of Jan., August, and September
 excepted.

ADMIRALTY, OR WATER-BAILIFF'S.—
 As occasion may require.

DEEMSTERS SUMMARY.—At Castle Rushen
 Douglas, Ramsey, and Peel, fortnightly.

ECCLESIASTICAL.—At Douglas, Cas-
 tletown, Peel, and Ramsey once monthly.

CHAPTER.—Half-yearly, in Spring and
 Autumn.

HIGH BAILIFFS.—At Castletown, Dou-
 glas, Peel, and Ramsey, weekly.

BARON.—In April and October.

PETTY SESSIONS.—Fortnightly.

Isle of Man Post-Office

*†Atholl Street, Douglas. Wm. Isdale
 — Chief Clerk.

SUB-POST-OFFICES & RECEIVING HOUSES.

Duke Street, Douglas G. A. Dean

Pillar Letter Box, Osborne Terrace, Douglas

M.O.O. Shore Road, Douglas, E. G. Smith

Crescent, Douglas Geo. M. Jones

Wall Box, Market Place, Douglas..

Wall Box Ballaughton, near Douglas....

Ballasalla T. Tyson

†CASTLETOWN John Kinvig

Wall Box, the Green, Castletown..

†Port St. Mary William Skillicorn

Union Mills W. Dalrymple

Crosby R. Kelly

St. John's John Garrett

†PEEL John Morrison

Onchan J. Lewin

†Laxey J. Kinley

†RAMSEY John Hampton

Wall Box, Sandy Road, Ramsey ..

Kirk Andreas Wm. Kneale

Sulby J. McWhannell

†Ballaugh W. Teare

Michael J. Cannan

Jurby A. Joughin

St. Mark's P. Mylrea

Foxdale T. Buzzo

Glenmay W. Quayle

Maughold D. Kinrade

Bride Thomas Corlett

†Colby Wall Letter Box

Port Erin R. McComb

†Ballabeg W. Curphey

St. Ann's C. Oates

*Government Insurance & Annuity Office

† Post Office Savings Bank.

LIVERPOOL INFORMATION.

Liverpool Pilot Boat Stations.

NOTICE.—Every Liverpool Pilot Boat while on duty at night will display a single Bright Light at the Masthead.

The Pilot Boats off Point Lynas or on the first western station, having the turn to board, will display a Red and White Flag at the masthead by day; by night, in addition to the masthead Light, she will exhibit a Flare-up Light every 15 minutes.

The two western boats cruise off Point Lynas, and as far to the westward as the Middle Mouse, and to the eastward until Priestholm Island bears S.S.W. With strong easterly winds and cross sea, the first western boat may Cruise under the lee of Cormel Head.

The third western boat Cruises from Point Lynas to the west end of Great Ormshead, bearing S.S.W. by compass, to board any vessel that may pass the first and second boats.

The fourth western boat cruises to the eastward of the eastern limit of third boat's station, until Talargoch Chimney on west end of Bar Land bears S.S.W. by compass.

The fifth, or first Hoylake boat cruises within a radius of five miles from the Northwest Lightship.

The sixth, or second Hoylake boat will board vessels after they pass the line of the Northwest Lightship and Point of Air, when the first boat is not within a reasonable distance, but her *especial duty* is to receive Pilots from vessels outward bound.

Rates of Pilotage.

For all Vessels Trading Foreign.

INWARD.	PER FOOT.
From the length of the west end of the Great Ormshead bearing S. by W., or before Penman Bachan be shut in with the Great Ormshead, at the rate of	9 0
From the eastward of the Great Ormshead, as above... ..	8 0
From the only house now on Great Hilbre Island, bearing S.S.W. by the compass.....	4 0

OUTWARD.

Through either of the channels 4 0

No vessel trading to Foreign Parts, inward or outward bound, is to refuse a Pilot, but, if such vessel has passed the Brazil Buoy in the Rock Channel, or if a Pilot Boat falls in with a vessel in the narrows of the channels in stormy weather, that she cannot board her without imminent danger, the Pilot Boat shall then lead the way, and in either case be entitled to such Pilotage as shall be awarded by the Committee at their next meeting.

For Coasting Vessels, and those trading to and from Ireland the Islands of Faro or Ferro, Jersey, Guernsey, Alderney Sark, and Man.

INWARDS. PER FOOT.

From the length of the Great Ormshead, as above at the rate of... 4 6	
From the eastward of the Great Ormshead, as above..... 4 0	
From the only house now on Great Hilbre Island, &c., as above 2 0	

OUTWARD.

Through either of the channels .. 2 0

No Coasting Vessel to pay for less than eight feet of water, nor any vessel to pay for odd inches under half a foot. No coasting vessel, inward or outward bound, of the burden of one hundred tons or upwards (unless she be in ballast, is to refuse a Pilot, as the master or owner, &c. must pay the full Pilotage, if one is offered. No vessel to be deemed a coaster unless she has been six months in that trade.

EXTRA PAY. PER DAY.

For every day of attendance whilst in the river except the day of going to sea with such ships or vessels as shall be outward bound and the day of returning from sea for such as shall be inward bound .. 5 0	
And if the attendance of a Pilot be required	42 0
Though the Pilot or Boat be not employed a whole day, to be paid for a day.	

CHARGES FOR TRANSPORTING VESSELS FROM DOCK TO DOCK.—From one Dock to another, £1; from Liverpool to Garston, £2, and vice versa.

Pilots' Rules and Regulations.

Any person acting as pilot without a license, to forfeit £20.

Pilots refusing to conduct or assist ships in distress, to forfeit £10 and license.

Masters of vessels forcibly taking Pilots beyond the limits of port, to forfeit not more than £20 nor less than £5.

Vessels liable to compulsory Pilotage are to display a signal for a Pilot on coming within the western limits of the stations—say, off the Middle Mouse—under a penalty of £5, and if refusing the first Pilot, or any Pilot that offers his services, is liable to a penalty of double Pilotage for every such offence.

Rewards for pilots assisting ships in distress to be settled by the Committee.

Compensation to be made to Pilots for taking vessels out of port which have been forced back, to be fixed by the Committee.

When in stormy weather a vessel cannot be boarded with Pilots' small boats, the vessel should be steered with the wind on the quarter, the yards braced by; then the large boat will steer under the ship's lee quarter and a Pilot will jump on board.

Life Boats.

All masters and others, entering or quitting the port, and requiring the assistance of the Life Boat are requested to assist the Distress Signal, in order that they may be dispatched to their assistance as soon as possible. Vessels around on the banks, and not hoisting the Distress Signal, will be supposed not to require the assistance of the Life Boats.

Life Boat Stations.

At Liverpool on the North Landing stage, two boats; the key kept at the Marine Surveyor's office, Custom house, and at the Life Boat Master's house, Downall street. New Brighton, two Boats the keys left at the Life Boat Master's house. Hoylake, one boat; the key kept

at the Lower Hoylake Light-house. Point of Ayre, two boats; the key kept at the Master's house. Formby, one boat; the key kept at the Life Boat House by the keeper. Hilbre Island, one boat.

Bidston Hill Signals.

SIGNALS OF DISTRESS.—For vessels in distress or on shore in the Rock Channel or about Hoyle—coming in; on the oblique pole to the southward of the light-house—for every ship, a ball with a flag half-mast; for every snow, a cone broad end up and a flag half-mast; for every brig or small vessel, a cone small end up and a flag half-mast. Going out, the same as above, but a broad pendant instead of a flag.

N.B.—For vessels in distress to the southward, when on shore to the main, the ball or cone to be put on the outside of the flag or pendant; but if on shore on Hoyle Bank, then the ball or cone to be put on the inside of the flag or pendant.

In Formby Channel.—The same signals to the northward of the Lighthouse.

Pilot Boats.

0. NAMES.

MASTERS AND SECOND MASTERS.

1. Queen (schooner)—Peter Dickinson, 23, Lower Mersey View, North Shore; Edward F. Callister, 37, Erskine Street, Liverpool.
2. Leader (schooner)—Samuel Jones, 30, Church Terrace, Church Road, Tranmere; John Morris, 4, Caledonia Street.
3. Duke (schooner)—Thomas Parry, 24, Everton Village; William Harris, 74, South Chester Street.
4. Auspicious (cutter)—John Shepherd, 38, Wesley Street; Mark N. Bridge, 3, Holland Place, Edge Hill.
5. Victoria & Albert (schooner)—Isaac Williams, Middle Lane, Wallasey, Cheshire; John Daniels, 54, Chester Street, Toxteth Park.
6. Pioneer (schooner)—John Williams, 56, Netherfield Road, North; John Price, 10, Everton Valley.
7. Lancashire Witch (schooner)—William Rowlands, 28, Great Mersey Street; Richard Edwards, Gorton Villa, Olive Mount, Tranmere.
8. Pride of Liverpool (schooner)—Charles Christie, 19, Upper Warwick Street; William J. McCrochen, Robson Street, Everton.
9. Guide (schooner)—Thomas Davies, 3, Rose Brae, Woodside; John Pritchard, 126, Hamilton Street, Everton.
10. Criterion (schooner)—James Wilson, 14, Melville Place; John Jones, 24, Pine Street.
11. Mersey (cutter)—Robert Williams, 22, Fitz-Clarence Street, Everton; John Scott, Byron Street, Toxteth Park.
12. Perseverance (schooner)—John Tunstall, 164, Grove Street; George F. Burrows, 38, Avon Street, Lodge Lane.

Superintendent of Pilotage—Robert P. J. Simpson, office, Prince's Pier.
The Pilotage Committee meet for the transaction of business every Monday at 12 o'clock, at the Committee Rooms, south end of Prince's Dock.

Mersey Docks and Harbour Board.

OFFICERS.

- | | |
|--|---|
| Mr. A. T. Squarey, Solicitor.—Office, Dock Office. | Surveyor. Office, Dock Office. |
| Mr. George Fosbery Lyster, Engineer of the Docks, &c.—Office, south side of Coburg Dock. | Mr. M. A. Sweny, Assistant Marine Surveyor. |
| Mr. John Harrison, Secretary. | Mr. Francis O. Simpson, R.N., Water-Bailiff.—Office, George's Pier. |
| — Treasurer. | Mr. Robert H. Williams, Receiver of Duties on Tonnage. |
| Mr. Graham H. Mills, R.N., Marine Sur- | Mr. George Jones, Receiver of Duties on |

Goods inwards.

Mr. William McComb, Receiver of Duties on Goods Outwards.

Mr. James Halsall, Receiver of Duties on Goods Coastwise. [at Runcorn.

Mr. George H. Taylor, Receiver of Duties
Mr. Thomas Hanlon, Superintendent of

Mr. Thomas Hodgson, Harbour Master.—Office, George's Dock Passage.

Mr. Wm. Foyl, North Assistant Harbour Master.—Office, Sandon Graving Dock.

Mr. Henry M. Liardet, South Assistant Harbour Master.—Office, South end of Wapping Dock.

Captain James Hookey, R.N., Birkenhead Assistant Harbour Master.—Office, Morpeth Dock Entrance.

Dock Masters.

Canada & Half-tide Josh Woods
Huskisson & Sandon.... George Corfield
Wellington, Half-tide & Bramley-

Moore..... Owen Pritchard
Salisbury, Nelson, Collingwood,
& Stanley..... John T. Gould
Clarence Half-tide, Clarence, &

Trafalgar..... James Sanders
Waterloo & Victoria.... Edward Edwards
Prince's Half-tide and Prince's

Dock George A. Bond
George's John Williams
Canning & Half-tide, Albert and
Salthouse Docks & Wapping

Basin George Wilson
King's & Wapping Joseph Curry
Queen's & Half-tide George Palmer
Coburg Shadrach Williams
Brunswick Vacant
Toxteth & Harrington.... Francis Atkins

BIRKENHEAD.

Morpeth & Egerton Docks.... S. Stokes
Alfred Dock, East Float, &c.

T. J. Shepherd

The Dock Master's offices are at the entrances of the respective docks.

Dock and Basin Signals.

All vessels are allowed to enter the Docks when signals are not hoisted at the respective pier heads. All owners, masters, and consignees are, however, recommended to register their vessels as expeditiously as possible, in order the better to secure their right of turn to accommodation at the Dock Quays.

DOCK SIGNALS.

CANADA — Flag on S. pier of the Canada Basin.

HUSKISSON — Flag on N. Pier of Sandon Basin entrance.

SANDON—Flag on N. side of gateway.

WELLINGTON AND HALF-TIDE—Flag on S. pier of Sandon Basin entrance.

NELSON AND BRAMLEY-MOORE—Flag N. pier of the Salisbury Dock entrance.

SALISBURY, COLLINGWOOD, AND STANLEY—Flag on S. pier of Salisbury Dock entrance.

CLARENCE AND HALF TIDE—Flag on N. pier of Clarence Half-tide entrance.

TRAFALGAR—Flag on S pier of Clarence Half-tide Dock entrance.

Albert Dock Warehouses.

Mr. W. D. Turner, Superintendent of Stanley Dock Warehouses.

Mr. Thomas R. Gouthwaite, Superintendent of Wapping Warehouses.

Mr. W. H. Sloman, Superintendent of Birkenhead Warehouses.

WATERLOO AND VICTORIA—Flag on N. pier of Prince's Half-tide entrance.

PRINCE'S NORTH ENTRANCE—Flag on S. pier of Prince's Half-tide entrance.

PRINCE'S SOUTH ENTRANCE—Flag on N. pier of George's Basin entrance.

GEORGE'S—Flag on S. pier of George's Basin entrance.

CANNING AND HALF-TIDE—Flag on N. pier of Canning Half-tide entrance.

ALBERT AND SALTHOUSE—Flag on S. pier of Canning Half-tide entrance.

KING'S—Flag on N. pier of Queen's Half-tide entrance.

WAPPING — Flag on N. end of the King's Parade.

QUEEN'S—Flag on S. pier of Queen's Half-tide entrance.

COBURG—Flag on S. pier of entrance.

BRUNSWICK—Flag on S. side entrance.

TOXTETH—Flag on N. side of entrance.

HARRINGTON—Flag S. side of entrance.

BASIN SIGNALS.

SANDON—Ball on N. side.

GEORGE'S—Ball on S. pier of entrance.

Abstract of Dock Laws.

Goods, causing obstruction on the dock quay, may be removed by the Trustees at expense of owners.

Such a quantity of cargo or ballast to be kept on board each vessel as to enable it to be safely removed, penalty, £50.

Harbour and Dock Masters may remove vessels in Dock, or from one dock to another, at owners expense: penalty for obstructing them, disobeying their orders or using abusive or offensive language to them, £10.

Vessels on which dues, &c., are owing may be detained until such are paid.

Shipowners have a lien for freight and all other lawful claims on goods discharged into dock warehouses.

Manifests of all goods imported or exported to be delivered at the Dock Office within 14 days after the discharge inwards or clearance outwards: penalty, £20.

Collector, &c., not to receive entry of any vessel until the dock and light duties are paid: penalty, £20.

No ballast to be thrown into the docks penalty £50.

After ballast is discharged to be carted away as the trustees of the docks shall appoint: penalty, £5.

Vessels not to come into dock under sail: penalty £5.

Persons wilfully and maliciously damaging the docks, &c., adjudged guilty of felony.

Water-bailiff empowered to remove vessels lying in the river: penalty for obstructing him, £10.

Persons firing cannon, &c., within the port (except signals of distress) to forfeit £10 for every offence.

CUMBERLAND INFORMATION.

Members of Parliament, &c.

WHITEHAVEN.—G. A. C. Bentinck, Esq., 48, Charles-st., Berkley-square, London.

COCKERMOUTH.—Isaac Fletcher, Esq., Tarnbank.

EASTERN DIVISION.—William Nicholson Hodgson, Esq., 33, Duke-st., St. James', London, S.W.; Hon. Chas. G. W. Howard, Narworth Castle; 56, Park Street, Grosvenor-square, London.

WESTERN DIVISION.—H. Lowther, Esq., 21, Milton Crescent, London. Hon. Percy Wyndham, 44, Belgrave-square.

CARLISLE.—Sir Wilfred Lawson, Bart., Reform Club, London; E. Potter, Esq., Manchester Reform Club, London. Lord Lieutenant.. Col. H. Lowther, M.P. Clerk of the Peace T. D. Hodgson, Esq. County Treasurer.. Mr. Dobson, Carlisle. Gov. of Gaol.. Mr. T. H. Redin, Carlisle.

County Coroners.

Wm. Carrick, Esq., Wigton.

W. Lumb, junr., Esq., Whitehaven.

Dr. Bell, Cockermouth.

J. P. Myers, Esq., Broughton, Furness.

Quarterly Sessions.

Easter, in the first week after 31st March.

Midsummer, first week after 24th June.

Michaelmas, first week after 11th October.

Christmas, first week after 28th December.

The Easter, Midsummer, Michaelmas, and Christmas Sessions for Cumberland are held at Carlisle.

Bankers.

WHITEHAVEN.—The Whitehaven Joint Stock Banking Company, Peter Cameron, Manager.—London Joint Stock Bank, 5, Prince's Street.

Bank of Whitehaven, G. W. Brown, Manager. — London and Westminster Bank, 41, Lothbury, London.

Cumberland Union Branch Bank, W. Houlgate, Agent — Barclay, Bevan, & Co. 54, Lombard Street, London.

Saving's Bank—Open Saturday's from 6 to 8 p.m.—J. F. Loves, Sec.

WORKINGTON. — Cumberland Union Branch Bank, R. S. Thompson, Agent.—Barclay, Bevan, & Co., 54, Lombard st.

Bank of Whitehaven Branch, Henry Bowes, Agent.—London and Westminster Bank, 41, Lothbury.

Carlisle City and District Bank, David Tweddle, Agent.—Glyn & Co., 67, Lombard street, London.

MARYPORT.—Branch of the Cumberland Union Banking Company, Joseph Thompson, Agent. — Barclay, Bevan, & Co., 54, Lombard-street.

Carlisle City and District Bank, Joseph H. Wood, Agent.—Glyn & Co., Lombard Street.

COCKERMOUTH. — Branch of the Cumberland Union Banking Company, T. H. Tandy, Agent.—Barclay, Bevan, & Co., 54, Lombard-street.

Carlisle City and District Bank, J. H. Watson, Agent.—Glyn & Co., 67, Lombard-street.

WHITEHAVEN & WEST CUMBERLAND BENEFIT LAND AND BUILDING SOCIETY.—Public Office, Lowther-street; open on Saturdays from six to eight, p.m.

The Whitehaven and Furness Junction Railway.

Trains leave Bransty Station three times daily (Sunday excepted) for Bootle, Ulverston, Broughton, Fleetwood, Preston, Manchester, Liverpool, &c. This is the nearest route to Preston, Manchester, Liverpool, &c.—(See *West Cumberland Railway Guide*.)

The Whitehaven and Maryport Junction Railway.

Trains leave Bransty Station four times daily (Sunday excepted) for Workington, Maryport, Wigton, Carlisle, and Cockermouth; three times daily for Edinburgh, London, Birmingham, Liverpool, Manchester, Preston, Newcastle, York, and Darlington.—(See *West Cumberland Railway Guide*.)

The Whitehaven, Cleator, and Egremont Railway.

Trains leave Whitehaven three times daily (Sunday excepted) for Cleator-Moore, Frizington, Woodend, and Egremont.—(See *West Cumberland Railway Guide*.)

Steamers and Traders.

LIVERPOOL.—The Whitehaven Steam Navigation Owners' powerful and commodious first-class steamers sail regularly

with passengers and goods—Fares: Cabin 7s., Deck, 4s. Passengers are conveyed, in connection with the Railway Companies, between Newcastle, 18s. 3d. and 9s. 1d., Carlisle, Dalston, and Wigton, to Liverpool, at a through fare, cabin, 10s. deck, 5s. Passengers by the Railway arrive at Whitehaven by the last train before the steamer's sailing, and those from Liverpool being forwarded by first train after the vessel's arrival in Whitehaven.—Fares: cabin and first-class, 10s. deck and third-class, 5s. Agents: Carlisle, Edward Jobling; Liverpool: Fisher, Wilson, & Co; Whitehaven: J. & J. Hodgson.

BELFAST.—The Whitehaven Steam Navigation Owners' steamers sail regularly with passengers and goods.—Fares: cabin, 10s., deck, 3s. Passengers are conveyed in connection with the Railway Companies, between Carlisle, Dalston, and Wigton to Belfast, at a through fare. Those from Carlisle, &c., arriving in Whitehaven by the last train before the steamer's sailing, and those from Belfast being forwarded by first train after the vessel's arrival in Whitehaven.—Fares: cabin and first-class, 12s., deck and third-class, 6s. Agents—Belfast, R. Henderson, & Son, Donegal Quay; Carlisle, Edward Jobling; Whitehaven, J. & J. Hodgson.

DUBLIN.—The North British Steam Packet Company's first-class fast sailing Steamers sail between Silloth and Dublin twice a week, calling off Whitehaven (in summer season) to land and embark passengers. Fares from Whitehaven to Dublin, first cabin, 15s., second cabin, 6s. Agents for Whitehaven, J. & J. Hodgson, 36, King-street.

DOUGLAS (Isle of Man).—The North British Steam Packet Company's first-class fast sailing steamers sail between Silloth and Douglas twice a week during summer months, calling off Whitehaven (in summer season) to land and embark passengers. Fares from Whitehaven to Douglas first cabin, 6s. 6d.; second cabin, 3s. 6d. Agents for Whitehaven, J. & J. Hodgson, 36, King-street.

RAMSEY (Isle of Man).—The Isle of Man Company's Steam ship "Mona's Isle" sails between Ramsey and Whitehaven once a week, with goods and passengers to Douglas. Fares, saloon, 6s.; fore cabin, 3s. Agents for Whitehaven, George Nelson, Ship-Broker, West Strand.

LONDON.—The Whitehaven Steam Navigation in connection with the Belfast Screw Steam Company, sail a vessel once a week. Agents: Belfast, Robert Henderson, & Son, London, Ogilby Moore & Co., Ingram Court, Fenchurch-street; Whitehaven, J. & J. Hodgson.

DUNDRUM.—The 'Lady Alice Kenlis,' and 'Lady Alice Hill,' Screw Steamers, sail regularly between Dundrum and Whitehaven. Agents—Charles Fisher, & Co., 36, King-street, Whitehaven.

LIVERPOOL.—The North British Steam Packet Company's first-class fast sailing Steamers sail between Silloth and Liverpool twice weekly calling off Whitehaven in the summer months. Fares: Carlisle and Liverpool first cabin, 10s.; second cabin, 5s. Silloth and Liverpool first cabin, 7s.; second cabin, 3s. 6d. Whitehaven and Liverpool first cabin, 7s.; second cabin, 3s. 6d. Agent for Whitehaven, J. & J. Hodgson, 36, King-street.

Carriers

Leave Whitehaven for Harrington, Workington, Cockermouth, Keswick, and Egremont, every Tuesday, Thursday, and Saturday; for Wigton every Wednesday; and for Gosforth every Tuesday, Thursday and Saturday.

Rates for the Steam Tugs.

Vessels employed in the Coal or Coasting Trade shall pay every voyage on clearing for sea one half-penny per Ton Register. Vessels arriving from a foreign port, or from a discharging port, one penny per Ton Register.

Vessels engaged in the Coal or Coasting trade pay an additional half penny per ton when they require the use of the Steam Tug Outwards, and the same inwards.

No vessel towed out for less than 1s.

Foreign vessels as above, one penny per ton.

That the limits for towing vessels into and out of the harbour for one half-penny and one penny per ton respectively, be as follows, viz.: say a line drawn from St. Bee's Head to Mickleham Pit, on the Hill north of Parton, and two lines intersecting the above, from Redness Point and Tom Hurd Rock, bearing N.W. by N. and S.E. by compass.

If the vessel first in turn be not afloat or not ready for the Tug Boat, then she is to take the first that is.

Vessels wanting the use of a Steam Tug are to hoist the Union Jack on the Main Top Gallant Masthead by day, and Two Bright Lights, one above the other, in a conspicuous part of the ship by night.

Harbour Boat Rates.

A Boat is stationed at the Old Quay Watch House, to attend on vessels entering the Port, and also to give assistance to those outward bound. Charges are as follows:—

	s	d
Vessels of 120 tons and upwards	4	0
Vessels from 100 to 120	3	9
Vessels from 80 to 100	3	0
Vessels from 60 to 80	2	6
Vessels from 40 to 60	2	0
Vessels from 20 to 40	1	6
Vessels less than 20	1	0

FOREIGN LADEN VESSELS.

Under 120 tons	4 0
Above 120 tons	6 0

The Harbour Boat to be paid as above by all vessels entering the Port; but if not employed by those leaving it, no charge to be demanded.

Rates for the Gridiron.

Every vessel previous to going on must be entered at the Harbour Office, and payment made according to the established rates, for which she may remain on four tides, counting the tide going on and the tide coming off.

		s	d	s	d
Vessels not exceed. 50 tons		5	0	1	0
About 50 and not ex. 100		7	0	2	6
.. 100.....	150	10	0	3	4
.. 150.....	200	15	0	5	0
.. 200.....	250	20	0	6	4
.. 250.....	300	25	0	8	4

Rates for Patent Slip.

Three farthings per Register Ton each day (Sundays excepted) during the time the vessel is on the slip, and 2s. 6d. extra for opening the slip gates.

Post Office, Whitehaven.—WILLIAM B. GIBSON, POSTMASTER.

Arrivals.—*Week Days*—London and all parts, 8 50 a.m.; 8 40 p.m., *Sundays*—London and all parts, 10 35.

Despatches.—*Week Days*—Local parts, 9 20 a.m.; North Mail, 2 50 p.m.; London and all parts, 6 20 p.m. *Sundays*—North Mail, 7 50 a.m.; Local parts, 11 30 a.m. London and all parts, 5 p.m.

The letter box is closed 15 minutes before each despatch. Letters bearing one additional stamp will be forwarded for the ten minutes. The deliveries by letter carriers commence during the week days at 9 25 a.m.; and 9 5 p.m.; and on Sundays at 12 45.

POST OFFICES IN CONNECTION WITH THE WHITEHAVEN POST OFFICE.

Those marked thus † are empowered to grant and pay Money Orders.

OFFICES.	ARRIVAL.	DESPATCH.	RECEIVER.
Sandwith	10 20 a.m.	4 55 p.m.	A. Leeson
† St. Bees	7 15 .	8 58 a.m.	J. Burnyeat.
Ditto	11 15 ..	4 10 p.m.	Ditto
Parton	10 20 ..	4 50 ..	E. Lightfoot
Distington	12 0 ..	3 20 ..	E. Lawrence
Hensingham	9 30 ..	5 26 ..	H. Sewell
Cleator Lane End	9 51 ..	5 5 ..	C. McGinn
Cleator	10 41 ..	4 5 ..	J. Harkness
Cleator Moor	10 30 ..	3 20 ..	E. Litt
Arlecdon	1 15 p.m.	2 0 ..	J. James
Egremont	10 2 a.m.	4 54 ..	James Welsh
Beckermont	10 24 ..	4 32 ..	M. Gilliot
Calderbridge	10 35 ..	4 21 ..	W. Mossop
Fosforth	10 50 ..	4 6 ..	P. Mossop
Holm Rook	11 12 ..	3 44 ..	J. Birkett
Eskdale	12 30 p.m.	9 30 a.m.	J. Porter
Vasdale	1 41 ..	5 10 p.m.	M. Pharoah
Ravenglass	11 31 ..	3 25 ..	R. Askew

MERSEY DOCKS AND HARBOUR.

Tabular Statement, showing the Area of Water, Quay Space, Width of Entrance, and Depth of Sill for each Dock, also the length of Graving Docks. &c.

The Old Dock contains an area of 3 acres 1890 yds., and 557 lineal yds. quay space
Its Passage do 675 do., 90 do.

The Old Dock Sill is the Datum to which all levels refer, which is preserved on a Tide Gauge on the west side of the Centre Pier of the entrances to the Canning Half-tide Dock.

LIVERPOOL DOCKS.	Width of Entrance.		Sill under Old Dock Datum.		Coping at Hollow Quoins abv Datm		Water Area.		Quay Space.	
	Ft	In	Ft	In	Ft	In	Acr.	Yd.	Line	Yds.
North Carrier's Dock... West Passage	40	0	6	0	27	0	2	3423		641
South ditto West Passage	40	0	6	0	27	0	1	4515		615
Canada Half-tide Dock.....	..	..	..	..	..	..	3	4380		468
West Entrance	60	0	7	9	28	0				
Northern West Lock Entrance (110 ft.)	32	0	6	0	28	0				
Southern West Lock Entrance (110 ft.)	20	0	6	0	28	0				
North Lock Passage (76 ft.)..	20	0	3	0	27	0				
South Passage	80	0	7	9	28	0				
Canada Dock	..	..	..	..	..	..	17	4043		1272
South Passages East	50	0	6	6	29	0				
West	80	0	6	6	29	0				
Canada Lock (498 ft.)	100	0	7	9	28	0	1	3479		487
Huskisson Dock	..	..	..	..	..	..	14	3451		1029
Huskisson Branch Dock	..	..	..	..	..	..	7	592		910
Huskisson East Lock (338 ft.).....	80	0	6	6	38	0	0	4682		343
Huskisson West Lock	45	0	6	0	26	0	0	3650		330
Sandon Dock West Entrance	70	0	6	6	30	11	10	100		867
Wellington Half-tide Dock, East Entr.	70	0	6	9	30	9	3	813		400
West Entrance	50	0	6	6	28	0				
Wellington Dock West Passage	70	0	6	6	31	0	7	4120		820
Bramley-Moore Dock .. North Passage	60	0	6	0	26	0	9	3106		935
South Passage	60	0	6	0	26	0				
Nelson Dock South Passage	60	0	6	6	26	0	7	4786		803
Stanley Dock..... West Passage	51	0	5	8	29	0	7	120		753
Collingwood Dock West Passage	60	0	6	9	26	0	5	244		553
Salisbury Dock	..	..	..	..	..	..	3	2146		400
West Entrances North	60	0	6	11	26	0				
South	50	0	6	11	26	0				
Canal Lock	18	0	5	2	26	0				
Clarence Graving North Passage	45	0	4	9	26	0	1	1056		291
Dock Basin South Passage	45	0	4	6	26	6				
Clarence Half tide Dock... West Entr.	50	0	4	0	26	8	4	1794		635
Clarence Dock West Passage	47	0	5	2	26	0	6	273		914
Trafalgar Lock N. and S. Passages	45	0	5	7	23	10	0	2937		256
Trafalgar Dock South Passage	45	0	5	11	26	5	5	4546		764
Victoria Dock South Passage	50	0	5	6	26	0	5	3559		755
Corn Warehouse Dock .. South Passage	60	0	3	0	22	6	2	3375		506
Waterloo Dock South Passage	60	0	3	0	22	6	3	2146		533
Half-tide Dock (West Entrances) North	65	0	3	0	31	0	5	3705		535
(Lock 110 ft.) Middle	32	0	8	0	31	0				
South	65	0	8	0	31	0				
Prince's Dock .. North Passage	60	0	3	0	26	0	10	174		1078
(Lock 178 ft... South Passage	44	11	4	6	28	2				
George's Dock & Passage.. North Entr.	41	11	4	6	24	6	5	2593		1001
South Passage	40	1	4	6	24	5				
Manchester Dock West Entrance	32	10	0	3†	23	3	1	595		339
Manchester Lock, (86 ft.) .. West Entr.	33	8	3	6	24	3	0	315		57
Canning Dock West Passage	45	0	6	1	26	2	4	376		585
Canning Half-tide Basin	..	..	..	..	..	..	2	2688		429
Two West Entrances .. each	45	0	6	3	28	3				
Albert Dock North Passage	45	0	6	4	26	0	7	3542		885
East Passage	45	0	6	0	26	0				

† The Sill of the Manchester Dock is 3 inches above Old Dock Datum.

LIVERPOOL DOCKS.	Width of Entrance.		Sill under Old Dock Datum.		Coping at Hollow Quoins above Sill.	Water Area.		Quay Space.	
	Ft.	In.	Ft.	In.		Acr.	Yd.	Mile	Yd.
Salthouse Dock North Passage	45	0	6	0	26 0	6	2019		784
Napping Basin West Passage	40	0	6	0	25 0	1	3151		454
North and South Passages .. each	50	0	6	0	26 0				
Napping Dock West Passage	50	0	6	0	26 0	5	499		815
South Passage	60	0	6	0	26 0				
King's Dock..... South Passage	42	0	5	0	26 1	7	38.6		875
Basin to Queen's Dock	..	..	..	..	..	3	3542		445
West Entrances North	70	0	6	9	31 0				
South	50	0	6	9	31 0				
Queen's Dock West Passage	50	0	6	0	26 0	10	1564		1214
South Passage	60	0	6	6	28 9				
Coburg Dock..... West Entrance	70	1	6	0	30 6	8	26		1053
Brunswick Dock North Passage	60	0	6	6	27 0	12	3010		1086
Brunswick half-tide Dock, .. East Pass.	42	0	5	6	26 0	1	3388		491
West Entrance	45	0	6	0	26 6				
Toxteth Dock..... West Entrance	40	0	5	0	26 0	1	469		393
Harrington Dock..... West Entrance	29	9	1	2	23 1	0	3740		315
Herculaneum Half-tide Dock—									
West Entrances..... North	80	0	8	0	31 0	3	3000		93
South	60	0	8	0	31 0				
Total Water Area and Quay Space of Liverpool Dock						235	3148	16	1062

LIVERPOOL BASINS.	Width of Entrance.		Height of Piers above Datum		Coping at Hollow Quoins above Sill.	Water Area.		Quay Space.	
			Ft.	In.		Acr.	Yd.	Mile	Yd.
Canada Basin	250	0	32	0	.. ..	6	4528		546
Sandon Basin	200	0	31	0	.. ..	6	904		702
Seacombe Basin	52	0	24	10	.. ..	0	1805		188
George's Basin	147	0	25	0	.. ..	3	1852		455
George's Ferry Basin	70	0	23	8	.. ..	0	1344		160
Manchester Basin	36	0	22	2	.. ..	0	2568		288
South Ferry Basin	60	0	30	6	.. ..	0	2927		205
Harrington Basin	40	0	23	3	.. ..	0	3917		308
Total Water Area and Quay Space of the Liverpool Basins.....						19	485	1	1092
Do.	do.	do.	do.	do.	Docks	235	3148	16	1062
Total						254	3633	18	394

BIRKENHEAD DOCKS.		Sill under Datum.		Coping at Hollow Quoins above Sill.	Water Area.		Quay Space.	
		Ft.	In.		Acr.	Yd.	Mile	Yd.
Wallasey Pool..... Western Float	.. ..	..	..	.. ..	52	319	2	210
Ditto..... Eastern Ditto	.. ..	..	..	.. ..	59	3786	1	1506
Ditto Passage	100	0	7	6	26	6		
Ditto, Basin near Canada Works, West	50	0	..	..	..	..	1	2554
Ditto, ditto East	50	0	..	..	..	..	1	84
Ditto, Railway Company's Basin.....	..	..	..	..	..	..	0	606
East Entrances to East Float—								
From Egerton Dock	70	0	7	0	25	0		
Lock of Low Water Basin, (288 feet) ..	50	0	..	..	..	..	0	1333
Inner Sill of Lock	..	..	9	0	26	0		
Outer Sill of ditto	..	..	12	0	26	0		
Two Sluicing Passages, each..	30	0	..	..	..	..		
Inner Sills of ditto.....	..	..	7	8	26	0		
Outer Sills of ditto.....	..	..	18	6	26	0		
South Lock of Intermediate Dock, } (274 feet)	50	0	..	..	..	..	0	1522
Inner Sill of Lock	..	..	9	0	26	0		
Outer Sill of ditto	..	..	12	0	26	0		
Middle Lock of Inter. Dock, (198 ft.) ..	30	0	..	..	..	..	0	667
Inner Sill of ditto	..	..	9	0	26	0		
Outer Sill of ditto	..	..	12	0	26	0		

TABULAR STATEMENT, Continued.

BIRKENHEAD DOCKS, Continued.	Width of Entrance.		Sill under Datum.		Coping at Hollow Quoins above Sill		Water Area.		Quay Space.	
	Ft.	In.	Ft.	In.	Ft.	In.	Acr	Yds.	Mile	Yd.
North Passage of Intermediate Dock..	100	0	9	0	26	0				0 362
Egerton Dock	.	.	..	..	..	..	3	4011		0 754
Morpeth Dock	70	0	5	3	25	0	11	522		0 1299
West Passage	50	0	5	0	25	0				
East Entrance	50	0	5	0	25	0				
Morpeth Lock, (398 feet).....	85	0	12	0	26	0	0	3777		0 441
Intermediate Dock	..	..	..	..	..	..	8	2922		0 482
South Lock of ditto, (398 feet) ..	50	0	12	0	26	0	0	2222		0 391
Middle Lock of ditto, (198 feet)..	30	0	12	0	26	0	0	667		0 377
North Lock of ditto, (348 feet) ..	100	0	12	0	26	0	0	3888		0 332
Total Water Area and Quay Space of the Birkenhead Docks ..							140	4680		7 838

BIRKENHEAD BASINS.		Width of Entrance.	Height of Piers above Datum.			
Morpeth Basin	300	0	25 6	S. Side	7 2954	0 752
" "	"	"	31 0	N. Side		
Low Water Basin	300	0	26 0	" "	14 0	0 1500
North Basin	500	0	31 0	" "	4 2405	0 156
Total Water Area and Quay Space of the Birkenhead Basins					26 520	1 908
Ditto do do Docks.....					140 4680	7 858
Total					167 360	9 006

TOTAL AREA OF THE LIVERPOOL AND BIRKENHEAD
DOCKS AND BASINS.

Total Water Area and Quay Space of the L'pool Docks and Basins	254 3633	18 394
Total Water Area and Quay Space of the Birkenhead Docks and Basins	167 360	9 006
Total	421 3993	27 400

LIVERPOOL GRAVING DOCKS.		Width of Entrance.		Sill under Old Dock Datum.		Coping at Hollow Quoins above Sill		Length at Bottom.		Total Length at Bottom.	
	Ft	In	Ft	In	Ft	In	Lineal Ft.	Lineal Ft.			
Canada Lock and Graving Dock	100	0	7	9	28	0	588				
Huskisson Lock and Graving Dock....	80	0	6	6	38	0	395				
Sandon Graving Docks, No. 1—East ..	60	0	3	6	26	0		565			
No. 2— ..	70	0	3	6	26	0		565			
No. 3— ..	60	0	3	6	26	0		565			
No. 4— ..	70	0	3	6	26	0		565			
No. 5— ..	45	0	3	6	26	0		565			
No. 6— West	45	0	3	6	26	0	565				
Clarence Graving Docks—										3350	
No. 1—Outer Gates	45	0	3	0	26	6	451				
No. 1—Inner Gates	45	0	0	6	18	0	289				
No. 2—Outer Gates	45	0	3	0	26	6	454				
No. 2—Inner Gates	32	10	0	6	18	0	286				
Canning Graving Docks No. 1....	35	9		†	23	3	436			1480	
No. 2....	35	9	0	0½	23	3½	482				
Queen's Graving Docks No. 1....	42	0	1	8½	27	7½	465			918	
No. 2....	70	1	3	6	27	5	467				
Brunswick Graving Docks .. No. 1....	42	0	2	6	26	6	460			932	
No. 2....	42	0	2	6	26	6	462				

GRAVING DOCKS, Continued.	Width of Entrance.		Sill under Old Dock Datum.		Coping at Hollow Quoins above Sill		Length at Bottom.		Total Length at Bottom.	
	Ft.	In.	Ft.	In.	Ft.	In.	Lineal Yd		Lineal Yd	
Herculaneum Graving Docks—										
No. 1—West	60	0	4	0	26	0	758	6		
No. 2—East	60	0	4	0	26	0	753	0		
									1511	6
Total measure at Bottom									10136	6

BIRKENHEAD GRAVING DOCKS.									
No. 1, Western Float	..	..	..	..	..	..	..	..	
No. 2, Ditto	50	0	7	9	25	0	750		
No. 3, Ditto	85	0	7	9	25	0	750		
									1500
Morpeth Lock as a Graving Dock	85	0	12	0	26	0			468
Total measure at Bottom.....									1968
Ditto of the Liverpool Graving Docks									10136
Total									12104

LIVERPOOL AND BIRKENHEAD GRIDIRONS.						Breadth		Length	
LIVERPOOL.						Ft.	n.	Ft.	In.
Clarence Graving { Blocks South End 2ft 2in. below Datum }						25	6	313	6
Dock Basin { Ditto North End 0 3 ditto }									
King's Pier, Blocks level of Old Dock Sill						26	0	509	0
Total Length of Liverpool Gridirons						..	..	822	6
BIRKENHEAD.									
Morpeth Basin, Blocks South End 1ft. 8in. above Datum						36	3	228	3
Ditto ,, North End 1 1½ below Datum									
Total Length of Gridirons at Liverpool and Birkenhead						..	..	1050	9

LIVERPOOL CORPORATION DOCKS.		Width of Entrance.		Level of Sill.		Level of Coping above Sill.		Water Area.	
		Ft.	In.	Ft.	In.	Ft.	In.	Acre.	Yd
River Craft Dock, Lock, & Eagle Basin		..	..	..	..	..	..		
Outer Gates	30	0	0	3	..	25	4	1	3416
Inner Gates.....	30	0	1	3	..	25	10		
Duke of Bridgewater's Dock—									
Outer Gates.....	40	0	..	..	4	6	25	2	1336
Middle Gates	28	10	0	6	..	..	22		
Inner Gates....	40	0	..	..	6	0	25		

The calculations of the heights of water for the Liverpool Tide Table were originally constructed from the level of the old Dock. The datum is now precisely the same, notwithstanding the removal of the gates, the Register being scrupulously preserved near the same spot, on the eastern wall of the Canning Dock. TIDES.—The average level of Low-water of Spring Tides is 8 ft. 9 in. below the old Dock Sill; the average level of Low-water of Neap Tides is 1 ft. 9 in. below the old Dock Sill. At Low-water of a 21 ft. Tide there is only 1 ft. 6 in. of water on the Bar of the Rock Channel. To find the quantity of water in the Rock Channel, add 11 ft. to the height of any Tide specified in the Tide Table.

MISCELLANEOUS INFORMATION.

Eclipses 1869.

In the course of this year there will be four Eclipses of the Sun, and two of the Moon; and will occur as follows:—

FIRST. A total Eclipse of the Moon on the 17th January, partly visible here; the middle of the Eclipse will take place at 2h. 46m., afternoon; the Moon will rise, slightly eclipsed, at 4h. 26m., and the last contact with the shadow 4h. 36m.

SECOND. A partial Eclipse of the Sun on the 31st January, beginning on the Earth at 1h. 45m. afternoon, and ending at 5h. 8m. evening; visible only in the Antarctic Ocean, around the South Pole.

THIRD.—A partial Eclipse of the Sun on the 28th June, beginning on the Earth at 9h. 53m. evening, and ending at 1h. 40m. morning, 29th June, visible in New Zealand, part of Australia, and the Southern Ocean.

FOURTH. A total Eclipse of the Moon on the 12th July, visible here; the first contact with the Earth's shadow at 8h. 45m. evening; first total phase at 9h. 44m; end of total phase, 11h. 24m.; last contact with the shadow, 12h. 24m.

FIFTH.—A very small eclipse of the Sun on the 28th July, beginning on the earth at 10h. 22m. morning, and ending at 11h. 42m.; greatest eclipse, 0.078 in lat. 69°20' N.; longitude, 171°14' E; invisible here.

SIXTH. A total Eclipse of the Sun on the 22nd December, visible here as a partial Eclipse; and at the places underneath will appear as following, all Greenwich time.

Greenwich	.. 11h. 8m. morn.	0h. 25m. noon	1h. 42m. aft.	0.808	vertex to W.	85°
Liverpool	.. 11h. 4m. —	0h. 20m. —	1h. 36m. —	0.804	—	84°
Douglas	 11h. 3m. —	0h. 18m. —	1h. 33m. —	0.796	—	83°
Dublin	 10h. 59m. —	0h. 15m. —	1h. 31m. —	0.812	—	80°
Edinburgh	.. 11h. 6m. —	0h. 19m. —	1h. 34m. —	0.788	—	86°

This Eclipse will be visible to nearly all Europe, the greatest part of Africa, the North Atlantic, and a small part of the United States of America.

Chronological Notes.

Lunar Cycle or Golden Number.....	9	Septuagesima Sunday	February 13
Epact.....	28	Lent begins	March 2
Solar Cycle.....	3	Easter Day	April 17
Dominical Letter.....	35	Ascension Day	May 26
Roman Indiction.....	13	Trinity Sunday	June 12
Julian Period....	6583	Advent Sunday.....	November 27

Quarters of the Year.

Spring Quarter commences 20th March at 7h 32m, evening—☉ enters ♈	Autumnal Quarter commen. 23rd Sept. at 6h 9m, morning—☉ enters ♏
Summer Quarter commences 21st June at 3h 56m, evening—☉ enters ♊	Winter Quarter commences 22nd Dec. at 0h 13m, morning—☉ enters ♐

The Revolutions, Distances, &c., of the Planets

Names.	Periodical Revolution.					Mean distance from Sun.		Diameter.	Time of Rotation upon their Axis.				Inclination of Axis to Ecliptic.	Hourly motion in their Orbits.
	Yrs	d	h	m	s	English miles.	Eng. miles		d	h	m	s	° ' "	Miles.
Sun.....							887,076		25	7	48	0	.....	.....
Mercury..	0	87	23	15	44	36,890,000	2,950		1	0	5	28	.....	111,256
Venus ..	0	224	16	49	8	68,770,000	7,900		0	23	21	8	.....	81,398
Earth	1	0	5	48	48	95,298,260	7,912		0	23	56	4	23 28 0	75,222
Moon	0	27	7	43	5	95,268,260	2,160		27	7	43	5	1 43 0	2,335
Mars	1	321	22	18	27	145,205,000	4,500		1	0	37	20	28 42 0	56,121
Jupiter ..	11	315	14	39	2	495,917,000	88,780		0	9	55	21	3 22 0	30,358
Saturn ..	29	164	7	21	50	909,026,000	77,230		0	10	16	1	30 0 0	22,351
Uranus ..	83	294	8	39	0	1,828,071,000	35,000		.....	.....	.....	.....	.....	15,846

Table of Wages and Expences

TO WHICH A WITNESS ATTENDING THE MANX COURTS, AS UNDER, IS ENTITLED.

PARISHES.	Patrick.	German.	Michael.	Ballaugh.	Jurby.	Andreas.	Bride.	Lezayre.	Maughhold.	Lonan.	Onchan.	Braddan.	Marown.	St. Ann.	Arbory.	Malew.	Rushen.
Castletown	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.
Gentleman	3 0 1	6 6	0 7	6 9	0 10	6 10	6 7	6 6	0 4	6 3	0 1	6 3	0 4	6 4	6 7	6 9	0 9
Tradesman	2 6 3	0 3	6 4	0 4	6 5	0 5	6 4	6 5	0 4	6 3	0 3	6 3	0 2	6 3	0 2	6 3	0 3
Tradeswoman . . .	2 0 2	6 3	0 3	6 4	0 4	6 5	0 4	6 5	0 4	6 3	0 3	6 3	0 2	6 3	0 2	6 3	0 3
Labourer	1 8 2	0 2	4 2	8 3	0 3	4 3	8 3	0 3	4 2	8 2	0 2	4 2	8 2	0 2	4 1	8 1	4 2
Douglas	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.
Gentleman	7 6 6	0 7	6 9	0 10	6 10	6 7	6 6	0 4	6 3	0 1	6 3	0 4	6 4	6 7	6 9	0 9	0 9
Tradesman	3 0 3	6 4	0 4	6 5	0 5	6 4	6 3	0 3	6 3	0 2	6 2	0 3	6 3	0 3	6 4	0 3	6 4
Tradeswoman . . .	3 6 3	0 3	6 4	0 4	6 5	0 4	6 3	0 3	6 2	0 1	6 2	0 2	6 3	0 2	6 3	0 3	6 4
Labourer	2 8 2	4 2	8 3	0 3	4 3	8 2	4 2	8 2	0 1	8 1	4 1	8 2	0 2	8 2	4 3	8 2	4 3
Ramsey	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.
Gentleman	9 0 7	6 6	0 4	6 6	0 4	6 4	6 3	0 1	6 3	0 1	6 6	0 7	6 7	6 12	0 10	6 13	6
Tradesman	4 6 4	0 3	6 3	0 3	6 3	0 3	6 2	0 2	6 2	0 2	6 3	0 3	6 4	0 4	6 5	6 5	6
Tradeswoman . . .	4 0 3	6 3	0 2	6 3	0 2	6 2	6 2	0 1	6 2	0 2	6 3	0 3	6 3	6 5	0 4	6 5	6
Labourer	3 0 2	8 2	4 2	0 2	4 2	0 2	0 1	8 1	4 1	8 2	0 2	4 2	8 2	4 3	8 3	4 4	0

A Tradesman attending to give evidence respecting matters connected with his trade, to be allowed, at the discretion of the Court, any sum not exceeding 10s. 6d.; a professional Gentleman any sum not exceeding 21s. 0d.

General Marketing Table

	2d.	2½d.	3d.	3½d.	4d.	4½d.	5d.	5½d.	6½d.	7d.	7½d.	8d.	8½d.	9d.	9½d.	10d.	10½d.	11d.	11½d.	
N	s	d	s	d	s	d	s	d	s	d	s	d	s	d	s	d	s	d	s	d
20	4	0	5	0	6	0	7	0	8	0	9	0	10	0	11	0	12	0	13	0
40	8	0	10	1	2	1	4	1	6	1	8	1	10	2	2	4	2	6	2	8
60	12	0	15	1	9	2	2	3	2	6	2	9	3	3	6	3	9	4	4	4
80	16	0	18	2	0	2	4	2	8	3	0	3	4	4	4	8	5	5	5	5
100	20	0	22	2	6	2	11	3	4	2	4	7	5	5	10	6	6	8	7	7
120	24	0	26	3	0	3	6	4	5	0	5	6	6	6	7	8	8	9	9	9
140	28	0	30	3	6	4	1	4	8	5	10	6	7	7	8	8	9	10	10	10
160	32	0	34	4	0	4	8	5	4	6	0	6	8	7	4	8	8	9	4	10
180	36	0	38	4	6	5	3	6	0	6	8	7	4	8	8	9	4	10	4	10
200	40	0	42	5	0	5	0	6	8	7	6	8	3	9	9	10	6	11	5	12
220	44	0	46	5	6	5	6	8	4	9	2	10	11	11	12	10	13	6	13	6
240	48	0	50	6	0	6	0	8	9	10	10	11	13	12	12	13	7	14	7	14
260	52	0	54	6	6	6	5	7	4	8	3	9	14	13	13	14	8	15	8	15
280	56	0	58	7	0	7	0	8	9	10	10	11	14	13	13	14	9	16	9	16
300	60	0	62	7	6	8	9	10	11	11	12	13	15	14	14	15	10	17	10	17
320	64	0	66	8	0	9	4	10	8	12	10	13	16	15	15	16	11	18	11	18
340	68	0	70	8	6	9	11	12	9	14	11	15	17	16	16	17	12	19	12	19
360	72	0	74	9	0	10	12	13	10	16	12	16	18	17	17	18	13	20	13	20
380	76	0	78	9	6	11	13	14	11	17	13	17	19	18	18	19	14	21	14	21
400	80	0	82	10	0	11	14	15	12	18	14	18	20	19	19	20	15	22	15	22
420	84	0	86	10	6	12	14	16	13	19	15	19	21	20	20	21	16	23	16	23
440	88	0	90	11	0	12	15	17	14	20	16	20	22	21	21	22	17	24	17	24
460	92	0	94	11	6	13	15	18	15	21	17	21	23	22	22	23	18	25	18	25
480	96	0	98	12	0	14	16	19	16	22	18	22	24	23	23	24	19	26	19	26
500	100	0	100	12	6	14	17	20	17	23	19	23	25	24	24	25	20	27	20	27

Even numbers only are given in the above Table to make it more comprehensive.—For example, required the value of 17 yards of calico, at 8d. per yard. By referring to the Table, you will find 16 yards to be 10s. 8d., and by adding the price of the odd yards will give you the correct amount.

Table to calculate Wages, &c

Year	Per M.	P.W.	P.D.	Year	P.	M.	P.	W.	P.	D.
£	£	s	d	£	£	s	d	£	s	d
1	0	1	8	0	1	5	0	5	9	0
2	0	3	4	0	1	6	8	0	6	13
3	0	5	0	1	1	8	4	0	6	26
4	0	6	8	1	1	10	0	0	6	40
5	0	8	4	1	1	11	8	0	7	33
6	0	10	0	2	2	13	4	0	7	8
7	0	11	8	2	2	10	0	11	6	1
8	0	13	4	3	3	6	8	0	15	4
9	0	15	0	3	5	4	3	4	0	17
10	0	16	8	3	6	0	5	0	1	3
11	0	18	4	4	7	0	5	16	8	1
12	1	0	4	4	8	6	13	4	1	10
13	1	1	8	4	9	7	10	0	1	14
14	1	3	4	5	10	8	6	8	1	18

If the Wages be Guineas instead of Pounds, for each Guinea add One Penny to each Month, or One Farthing to each Week.

RULE FOR CALCULATING INTEREST, at 5 per cent.
—Multiply the Pounds by the Days, and divide the Product by 365. The Quotient gives the interest at 5 per cent. in Shillings.

Weights

BY WHICH GRAIN, ETC., ARE SOLD.

ISLE OF MAN.

	lbs.	lbs.
WHEAT, per bushel of 64, or boll of 256		
BARLEY, per bushel of 50, or boll of 200		
OATS, per bushel of 40, or boll of 240		
BEANS or PEAS, per bushel of 60, or boll of 240		
POTATOES, per stone of 14, or boll of 448		

LIVERPOOL.

WHEAT, per bushel	70
BARLEY	60
OATS	45
BEANS, per 480 lbs. and	564
INDIAN CORN	480
FLOUR, per sack	280
FLOUR, per barrel	196
OATMEAL, per load	240
POTATOES, per measure	90

MARINERS' GUIDE
TO THE
Principal Ports and Harbours
IN THE
BRISTOL AND ST. GEORGE'S
CHANNELS,
THE IRISH SEA,
AND THE NORTH CHANNEL;
CONTAINING A SERIES OF CLEAR AND CONCISE
SAILING DIRECTIONS
FOR THE
WEST COASTS OF ENGLAND, WALES, AND
SCOTLAND, THE ISLE OF MAN,
AND THE
EAST, SOUTH-EAST, NORTH-EAST, AND
NORTH-WEST COASTS OF IRELAND;
WITH
Tables of the Magnetic Bearings and Distances
OF DIFFERENT
HEADLANDS, HARBOURS, AND LIGHTS
ON THOSE COASTS.

* * * The Bearings and Courses in these Directions are those by compass,
and the Distances are nautical miles, of 60 to a degree.

ISLE OF MAN.

The **ISLE OF MAN** lies in a N.E. by E. and S.W. by W. direction, and is about 30 miles in length and 11 in breadth. The Northernmost Point of Ayre is in lat. 54 deg. 27 min. N., and long. 4 deg. 20 min. W. The

Calf Island,

At the S.W. is in lat. 54 deg. 27 min. N., and long. 4 deg. 50 min. W. On this Island are two Lighthouses, 187 yards distant from each other, bearing N.E. $\frac{1}{2}$ E. and S.W. $\frac{1}{2}$ W. The *higher* Light bears from the dangerous sunken rocks called the *Chickens* N.E. $\frac{1}{2}$ E., distant about a mile and a quarter: when the Lights are in one they lead on to the Chickens. These Lights are **DOUBLY** revolving, without color, making their revolution in 2 minutes, and becoming gradually fainter during that time, until, at a distance, they appear totally obscured. At their brightest period they may be seen seven leagues off, resembling a planet. Between the Chickens and Calf is a passage about a mile broad, through which the tide sets from the W., round the Calf Point *very strong* outside of the Eye Rock, and also through the passage between the Island and S.W. Point of Man. There has been erected in the Sound of the Calf, on the "Thusla Rock," a tall iron basket topped Perch, painted red. In the Sound of the Calf the stream runs W. 2 hours before high water on the shore, and continues 6, *i.e.*, 2 hours before it ebbs on shore. Two and a half miles to the east is

Port St. Mary,

where there is good anchorage behind the Pier, which has been lately very much improved, but a dangerous rock called Carrick, lies about $\frac{3}{4}$ of a mile S.S.E. $\frac{1}{2}$ E. from the Village. This harbour has about 9 or 10 feet water at neap tides, and 14, 15, 18, &c., at spring tides. In running for it, keep Scarlet Head to the South of Castletown, a good sail's breadth open, to avoid the Carrick Rock. On entering, take the quay as close as circumstances will admit. A light is exhibited throughout the year, on the port hand on entering the harbour. Five miles E. from the Chickens and $2\frac{1}{4}$ from Port St. Mary, is Scarlet Head, the westernmost point of

Castletown Bay.

The bottom towards the entrance is generally rocky, and there are three shoals or rocks dry at low water, the largest of which, Lheeahrio, is a quarter of a mile

long and 500 feet wide, and is marked on the east end by a large Black Buoy. A red stationary light, to be kept on the port hand on entering, is erected on the new pierhead, which lies 80 yards outside the old pierhead, in a S.S.E. direction therefrom. The Buoy on Lheeahrio Rock is placed in five fathoms at low water, having Langness Point, by compass, bearing S. $\frac{3}{4}$ E., and the lighthouse on the pierhead, N. $\frac{3}{4}$ E. On entering the Bay, be careful to leave the Buoy on the *port* hand, and in working into the Bay from the Westward, you must not bring the Buoy to the Southward of E.S.E.; nor open Spanish Head to the Northward of the Stack of Scarlet until Eastward of the Buoy, or until the lighthouse on the pierhead bears N. $\frac{1}{2}$ E., then steer for the harbour. The anchorage is sheltered from N.W. round by N. to S.S.E., the marks for which are, Spanish Head just open to the Southward of the Stack of Scarlet; the Steeple of Castletown Chapel in line with the Eastern part of a Gap in the Mountain bearing N. by W., and King William's College N.E. by N., where there are nine fathoms at low water, spring tides, and safe anchorage.

Langness Point,

An isthmus running out from the main land, 2 miles to the S.W., has a turret on the point to identify its situation. There are sunken rocks all about it, and the tide sets like a race upon the Point from the Chickens, at the rate (spring tides) of 6 miles an hour, and runs E.N.E. from 2 to 5 or 6 miles from the land, diminishing in strength to Maughold Head. To avoid the inset between the Chickens and Langness Point, it is advisable for strangers on no account to come within 3 or 4 miles of the land. On the E. side is

Derbyhaven,

Affording anchorage for large merchant ships, and sheltered from all winds except E. to S.E. The best anchorage is on the N. side of St. Michael's Island, in 3 or 4 fathoms, the castle (or fort) on it bearing S.E. by S. Small vessels may run further up. There is a Light at the entrance of the harbour, which is lighted only during the herring fishing season. The stream, or rather eddy, along the E. side of Langness runs 10 hours S., from 2 hours of flood to the last of ebb on the shore. About 3 miles to the E. of Derbyhaven is St. Ann's Head, from which to

Douglas Head.

It is about 2 miles, upon which a Light-house has been erected, the light from which is Stationary, and appears like a star of the first magnitude at the distance of 14 miles. The bearings of the light are as follows:—from Clay Head, W. by S. $\frac{1}{2}$ S., 4 miles; from Langness Point, E. by N. $7\frac{1}{2}$ miles. The light will not be visible from Langness Point: but with an offing of 3 miles from that point, the light will be seen bearing N.E. $\frac{1}{2}$ E., and the Cal lights at the same time bearing N.W. by W. $\frac{1}{4}$ W. Vessels running for Douglas, between E. by N. $\frac{1}{2}$ N. to W. by S. $\frac{1}{2}$ S., will see the light at 5 miles distance. Blowing fresh from the W. and bound for the bay, a vessel should keep pretty close to Douglas Head, or she will be thrown to leeward of St. Mary's Rock, by the strong and variable gusts off the high land to the S.W., where she will be exposed and in bad anchorage. On the rock a tower has been erected, the appearance of which in the night is like a square-rigged sloop under sail. An Iron Promenade Pier has been erected about the centre of the bay, from the end of which, at night, a Blue Light is exhibited. Anchor in the bay between St. Mary's and the S. shore, 3 or 4 cables E. of the pierhead, where there are two lights, white and red, exhibited throughout the year. To avoid the sunken part of Breakwater, vessels from S. or W. must sight the Red light before rounding up for road or harbour. To enter the harbour, keep close to the pierhead. Four miles E.N.E. from Douglas head is

Clay Head,

Round which is Laxey bay, where there is good anchorage in 6 fathoms depth. From Clay Head to Maughold Head the course is N.E. $\frac{1}{2}$ E. 7 miles, and round the latter to

Ramsey,

N.W. N'y, $2\frac{1}{2}$ miles. To the E.S.E. of the town is Port Lewaigne, and a short distance to the N.W. of it lies a little rock called the Carrick, which covers at $\frac{1}{2}$ flood. There is excellent anchorage and shelter from 1 to $1\frac{1}{2}$ miles opposite the town, as the bottom is good stiff clay; but there is generally a heavy sea and hard riding in it with winds from S. to E.N.E., to all of which it is open. The harbour, which is a dry one, will admit vessels drawing 17 or 18 feet water at spring tides, and 11 or 12 feet at neap tides. There is a light-house on the quay, a stationary light, of a Red colour, is exhibited throughout the year. In the bay the stream runs nine hours N. and 3 hours S. beginning at 2 hours' flood. There are three banks off this bay that deserve notice. The BAHAMA BANK, or RIG, bears N.E. 2 leagues from Ramsey town, and is about 6 miles in length, from S.S.E. to N.N.W., with only 6 feet depth of water at the S. end, differing in other parts from 9 to 12 feet,

and is rather more than $\frac{1}{2}$ a mile broad. The BAHAMA FLOATING LIGHT, exhibiting two bright fixed lights, is moored a mile off the S.E. tail of the shoal, in 11 fathoms low water, spring tides, and with the following compass bearings. — King William's Bank Buoy, E. by N. $\frac{1}{2}$ N. 9 miles; Point of Ayre lighthouse, N. by W. $\frac{1}{2}$ W.; Maughold Head, W. by S.; Clay Head, S.W. by W. $\frac{1}{4}$ W. WHITEHOUSE BANK, so called from its composition, lies S.S.E. $1\frac{1}{2}$ miles from the extreme Point of Ayre, with a good passage between them; it bears N.N.E. from Maughold head, and is $\frac{1}{2}$ a mile in length N. and S., and a $\frac{1}{2}$ in breadth E. and W., with 6 feet at low water-spring tides. POINT OF AYRE BANK is a ridge extending $\frac{1}{2}$ a mile from the Point to the distance of 1 mile E., and thence circularly to the S. and E., always with a considerable ripple, nearly in a line with the Bahama Bank. KING WILLIAM'S BANK is 8 miles in length from S.E. to N.W., and a $\frac{1}{2}$ mile broad; the N.W. end is E. $6\frac{1}{2}$ miles from the Point of Ayre, and N.E. 11 miles from Maughold Head, from which the S.E. end bears E.N.E. $\frac{1}{2}$ E., $13\frac{1}{2}$ miles, and from the Point of Ayre, E.S.E. 12 miles distant. The least depth of water on it is 18 feet. A Green Buoy, marked "wreck," is moored on the wreck of a vessel which lies about 4 miles N.E. ward off Ramsey, in the fairway of vessels coasting along the E. side of the Island. The Buoy is moored about 10 fathoms to the E. ward on outside of the wreck in 6 fathoms low water-spring tides. The following are the bearings from the buoy:—Point of Ayre lighthouse, N.; lighthouse on Ramsey Pier, S.W. $\frac{1}{2}$ W.; Maughold Head, S. $\frac{1}{2}$ W. Another Green Buoy marked "wreck," is moored on the wreck of a second vessel in Ramsey bay, about 4 miles N. Eastward of Maughold Head, in the way of vessels coasting along the E. side of the Island. The Buoy is moored about 10 fathoms to the Eastward on outside of the wreck in $6\frac{1}{2}$ fathoms. The following is the bearings from the buoy:—Ramsey Mill, N.W. by W.; Maughold Head, S.W. The

Point of Ayre Lighthouse

Bears N.N.E. $\frac{1}{2}$ E. from Maughold Head, distant 8 miles, and the lantern is 106 feet above the sea, from the shore of which it stands about $\frac{1}{4}$ of a mile inland. It is revolving, showing alternately a bright and red coloured light, becoming from a star-like appearance gradually stronger until the attainment of the utmost brilliancy every two minutes. The light of the common colour is to be seen 4 or 5 leagues off: but the red one is not distinct at so great a distance. Maughold Head prevents the light being seen by a navigator S. of it, as does Rue point when he is W. of it. N. by W. $\frac{1}{4}$ W. $1\frac{1}{2}$ miles from the Pt. of Ayre is STRUNAKILI

BANK, bearing from Jurby Point E. by N. 5 miles; it is $1\frac{1}{2}$ miles long E.S.E. and W. N.W., and nearly $\frac{1}{2}$ a mile broad. There are 3 fathoms on the shoalest end, but the sea breaks and the tide sets strong upon it; keeping within $1\frac{1}{2}$ miles of the land will clear the whole.—From the Point of Ayre to Jurby is 7 miles to the W. and hence to the Peel Pierhead Light. S.W. $\frac{1}{2}$ W. 11 miles; 4 miles from Jurby W. $\frac{1}{2}$ N. and about 3 miles from the land abreast, is a **BLIND ROCK**, and from

Peel Pierhead Light,

N.E. by E. 9 miles. This light (Red) is stationary, is exhibited throughout the night, and is visible at a distance of eight miles in clear weather. The harbour at Peel is a dry one. Between Jurby and Peel, off Ballabui, lies a shoal $1\frac{1}{2}$ miles from the land, and $3\frac{1}{2}$ miles N.E. $\frac{1}{2}$ E. from the light. A vessel may ride in the bay with the Castle bearing from S.S.W. to S.W. in 6 or 7 fathoms' depth of water. On entering the Harbour, keep the point of the Jetty close on board on the starboard hand and run in, keeping the light on the pierhead on the port hand. A white light is exhibited from the end of the breakwater. The Mull of Galloway light adds to the convenience of this Harbour, being visible from the Castle, and only distant N. by E. 26 miles. The Peel Light is about 100 yards S.S.W. from the N.E. point of the Castle. The streams of flood that come to the E. from along the S. coast, and along the N. coast of Ireland, meet about a mile W. of Contrary Head, so called from this circumstance, and there divide into two branches, one of which runs N.E. to the Point of Ayre, and on to Maughold Head, the other S.W. to the Calf; one proceeding round the Calf at 6, the other round the Point of Ayre at 4 miles an hour, meeting off Maughold Head. From Contrary Head to abreast the Calf Lights the course is S.W. 10 miles; and $4\frac{1}{2}$ miles from the W. end of that Isle is

Port Erin,

a sheltered little creek, surrounded by very high land, easy of access, and affording shelter against all E. winds. A breakwater is being built from the S. shore. At the entrance, between the headlands, there is a depth of about 15 fathoms water; here the tide runs very strong at the rate of 6 miles an hour. Keep the Calf Lights well open when passing Langness Point.

TIDES.—On the full and change days, it is high water on the shore at Peel at 10h. 45m.; in the Calf Sound, 10h. 57m.; at Douglas, 10h. 45m.; at Ramsey, 10h.; and at the Point of Ayre, 10h. In the Isle of Man, spring tides rise 18 or 20 feet perpendicular; neap tides 9 or 10.

Magnetic Bearings & Distances,

FROM THE HEADLANDS OR HARBOURS
IN THIS ISLAND, TO OTHER HEADLANDS
OR HARBOURS IN THE CHANNEL.

FROM DOUGLAS HEAD TO MILES.

St. Bees Light	E. by N. 42
Ravenglass	E. by S. 40
Lancaster Channel	S.E. $\frac{1}{2}$ E. 54
Liverpool Floating Light	S. by E. 59
Chester Bar	S. by E. 60
Great Ormshead	S. $\frac{1}{2}$ W. 54
Skerries Light	S.W. by S. 46
Langness Point	S.W. by W. 8

FROM THE POINT OF AYRE TO

Maughold Head	S.S.W. $\frac{1}{2}$ W. 8
St. Bees Light	E.S.E. $\frac{1}{2}$ E. 26
Whitehaven	E.S.E. $\frac{1}{2}$ E. 28
Maryport	E. $\frac{1}{2}$ N. 37
Ross Light, Kirkcudbright	N.E. $\frac{1}{2}$ E. 24
Burrow Head	N.N.E. 16
Mull of Galloway	N.W. by N. $\frac{1}{2}$ N. 21
Copeland Light, Belfast	N.W. $\frac{1}{2}$ N. 44
Liverpool Floating Light	S. $\frac{1}{2}$ E. 70

FROM MAUGHOLD HEAD TO

Skerries Light	S.W. $\frac{1}{2}$ S. 56
Great Ormshead	S. by W. 60
Liverpool Floating Light	S. $\frac{1}{2}$ E. 63
Lancaster Channel	S.E. $\frac{1}{2}$ S. 50
St Bees Head	E. 27
Ravenglass	E.S.E. 32
Whitehaven	E. $\frac{1}{2}$ N. 31

FROM THE CALF OF MAN TO MILES.

Langness	E.S.E. $\frac{1}{2}$ S. 7
Mull of Galloway	N.N.E. 38
Copeland Light	N. $\frac{1}{2}$ W. 48
South Rock Light	N. by W. $\frac{1}{2}$ W. 31
Strangford Lough	N.N.W. $\frac{1}{2}$ W. 31
Carlingford Lough	W.N.W. 45
Drogheda	W. $\frac{1}{2}$ N. 55
Howth Head	W.S.W. $\frac{1}{2}$ W. 60
Kish L'ship, Dublin Bay	W.S.W. $\frac{1}{2}$ W. 60
Holyhead	S.S.W. 41
Great Ormshead	S. by E. 54
Liverpool Floating Light	S.S.E. $\frac{1}{2}$ E. 65
Skerries Light	S. by W. $\frac{1}{2}$ W. 38
Point Lynas	S. $\frac{1}{2}$ E. 42

FROM PEEL TO

Mull of Galloway Light	N. by E. 26
Copeland Light	N.N.W. $\frac{1}{2}$ N. 40
Strangford Lough	N.W. $\frac{1}{2}$ W. 29
Maidens Light	N. by W. $\frac{1}{2}$ W. 57

Free Harbours

No tolls are exigible on vessels entering any of the Harbours in the Isle of Man.

Abstract of the Bye-Laws for regulating the Harbours.

1. Any vessel, through mismanagement, injuring the quays, &c., such injury to be repaired, under penalty of double the value of the damage.
2. No chain cables to be used for mooring vessels, under penalty of £2.
3. No ballast to be discharged without a port sail, under penalty of £2.
4. Vessels heaving ballast or stones into the harbours, penalty £2 per ton.
5. That no person heave stones, dung, &c., into the harbours, under the penalty of £2; and if not removed when ordered, a further penalty of £2.

6. Masters of vessels not obeying Harbour Masters in mooring vessels, penalty £2: all expenses incurred by the Harbour Master in mooring vessels to be paid by master or owners of said vessel. Any person obstructing Harbour Master in executing his duty, penalty £5.

7. No person to make a fire on the quays without permission, penalty £3.

8. No clog fenders to be used, under penalty of £1, unless hung lengthways.

9. Any person throwing off ends or cutting hawsers, besides paying the damage to the owners, to forfeit £5.

10. That all gunpowder be landed immediately after arrival, under penalty of £10 for every 24 hours it remains on board; and no fire or light to be kept on board while such gunpowder remains in the vessel, further penalty £20.

11. Any dock made for repairing vessels in harbour to be filled up in 24 hours after removal of the vessel, under penalty of £5 for every 24 hours it lies open.

12. No vessel to unload ballast at night under penalty of £10.

13. That no timber, iron, &c. (unless for repairing vessels) be left on the quays longer than two days, on penalty, for every day longer than the said two days, after notice given by the Pier Master, of £1.

14. That no vessel be allowed to take ballast from another, penalty £1, unless by leave of the Harbour Commissioners.

15. Ballast not to lie on the quay longer than 24 hours, under penalty of 5s. per day.

16. All vessels unloading merchandize to have preference of berth in turn.

17. Vessels taking in goods to have any unoccupied berth, but to give it up on the arrival of a loaded vessel.

18. & 19. One person at least to be on board every vessel when afloat, in harbour or bay, under penalty of £2.

20. & 21. No person to act as pilot without commission, under penalty of £10. No vessel compelled to take a pilot.

22. Proprietors of lime-kilns to screen their lights, if liable to be mistaken for harbour lights, under penalty of £5.

23. Persons firing on pier, &c., (except on days of public rejoicing,) penalty 10s.

24. Boats plying for passengers without licence, penalty £2: and owners to be accountable for breach of harbour laws by any of the crew.

25. No person to erect stalls on the quays to cure fish, or deface the quays, &c. under penalty of £2 for every offence.

26. No person to enforce higher rates for pilotage than as follows, which include attendance of boat and four men:

Vessels of 40 Tons ~~~~~ £0 5 0

Vessels above 40 and under 60 ~ 0 7 0

Vessels above 60 and under 100 ~ 0 13 0

Vessels 100 Tons and larger ~~~ 1 0 0

27. Vessels must allow ropes or warps of other vessels to be made fast to them, under penalty of £2.

28. All vessels in harbour must keep in their jib and mizen booms, under penalty of £2.

29. No lumber to remain on the quays or steps, under penalty of £1.

30. No conveyance having wheels shod with iron, allowed on Douglas pier, under penalty of £2.

WEST COAST OF ENGLAND.

RIVER RIBBLE TO SOUTHERNESS LIGHT.

The River Ribble.—PORT OF PRESTON.—The entrance to the River Ribble and Port of Preston is indicated by a large buoy at sea called *Nelson*, which should be observed by vessels bound for the river. It is a large Black Buoy with a Cage-Ball at the top, stands 26 feet out of the water, and may be seen in clear weather 10 miles. *Nelson of Preston* is painted upon it. Having observed the Nelson Buoy, the entrance to the River may be made by the North Channel or the Gut. The entrance to the North Channel is north-eastward, and to the Gut south-eastward of Nelson Buoy. The North Channel is buoyed by 10 buoys, numbered 1 to 10, and marked with the letter N.: the Gut by 5 buoys with cages on the top. The buoys are placed in the deepest parts of the Channels. The Gut joins the North Channel at No. 8 buoy, nearly opposite Lytham Lighthouse. The outer buoys of

both Channels are placed in 3 fms. water, and from them the other buoys can be seen. From No. 10 buoy to the commencement of the stone embankments, about three miles east of the town of Lytham, the Channel is marked by perches and small buoys placed upon the north side, and from thence to Preston by perches placed on the stone embankments on both sides of the Channel. Between buoys four and six in the North Channel vessels drawing 14 feet of water may lie at anchor afloat at low water. A lighthouse has been erected N.E. of Stanner Point, N. side of entrance, showing an Intermittent light, 3½ min. bright, ½ min. dark. The light is visible to mariners all round from the Blackpool to the Southport shores, and is situate in lat. 53° 41' 38" and lon. 3° 1' 17", and is 81 feet 8 inches above the mean water of the sea. On the north shore of the Ribble, and 3 miles east of the lighthouse,

is the town of Lytham, before which there is a small tide light on the end of the new Pier which extends from the beach to the channel. Here also is a dock, where vessels can lie in safety. Vessels drawing 12 to 14 feet can go up to Preston Quays at spring tides. The quays are connected by a branch with the railways leading to Manchester, Bolton, Blackburn, Bury, Accrington, and the various other manufacturing towns of Lancashire and Yorkshire, and the Wigan and Burnley coalfields. Mr. W. Allsup's two Steam Tug Boats ply upon the river for the purpose of towing vessels to and from Preston, and at present, when required, tow vessels at the following rates per reg. ton:—No. 1 buoy to Preston and back, 1s. 4d.; No. 1 buoy to Preston, or Preston to No. 1 buoy, 1s.; No. 1 buoy to Lytham, or Lytham to No. 1 buoy, 6d.; Lytham to Preston and back, 8d.; Lytham to Preston, or Preston to Lytham, 6d. Masters of vessels requiring a Pilot or tug-boat, and not meeting with one outside the channels, should signal in sight of the lighthouse. A Pilot will also, if required, go to any port to conduct vessels into the river on a letter being addressed to Captain Whalley, Harbour Master, Lytham, Lancashire.—By applying to the Admiralty agent, J. D. Potter, 38, Poultry, London, a Chart of the Entrance to the Ribble, published in 1860, can be had for 1s. 6d.

Morecambe Bay.—In sailing towards this bay from the southward, which is about 8 leagues from Formby Point, keep full 4 miles from the shore, on account of the flat shoal water, known by the name of "Shell Wharf." It begins nearly abreast of the "Red Banks," and extends to the south side of Lune Deep. The western edge of these grounds is steep to, and there are on some parts of the Shell Wharf not more than 6 and 9 feet at low water. The entrance to Morecambe Bay is known by the name of Lune Deep, and is $2\frac{1}{2}$ miles wide at the west end. On the southern side is the Point of Rossall, and on the northern side is the Island of Walney; on the former is a conspicuous beacon or landmark, and on the latter a lighthouse, which bear from each other nearly north and south, distant 8 miles. The Point of Rossall is lowland, and the beacon, when seen at the distance of about 5 miles, has the appearance of a vessel under sail. Morecambe Bay is encumbered with numerous large sandbanks, many of which dry at low water, and some at half ebb. The general directions to the mariner, if bound to Lancaster, will be to attend particularly to his soundings, taking care to get into the deep water of

the Lune Deep, and to remain there until he obtains a pilot. When in 24 and 25 fathoms, you will perceive the ends of the rock weeds floating, and the water of a darker blue than when you are over any of the banks. A light vessel is moored off the entrance of Morecambe Bay, in 12 fathoms at low water spring tides, with the following compass bearings:—St. Bee's Head Light, N. by E. $\frac{1}{2}$ E., distant 36 miles; Walney Light, E. by N., distant $14\frac{1}{2}$ miles; foot of Wyre Light, E. by S. $\frac{1}{2}$ S., distant $16\frac{1}{2}$ miles; Blackpool Church, S. E. $\frac{1}{4}$ E., distant $17\frac{1}{2}$ miles; Calf of Man Light, N. W. by N., distant 49 miles; Liverpool N. W. Lightship, S. by W., distant 25 miles.

The River Wyre—The following are the directions for entering the Port of Fleetwood.—On coming from sea, keep the westernmost part of Walney Island to the eastward of Blackcombe until Rossall Landmark bears S. E.; here you are entering the deep water of Lune, where you will have 28 fathoms at low water. The shoals to be avoided on approaching Wyre are Shell Wharf, North Wharf, and King's Scar Ridge. A large red buoy is laid down nearly on the point of the Ridge, to which a good berth should be given; it also marks the southern side of the Lune deep. A black perch is placed on North Wharf, about three-quarters of a mile S. E. by S. from the King's Scar Buoy. On the north side of Lune deep a black buoy, with globe on the top, and marked "Danger Patch," is placed a few fathoms westward of a shoal patch bearing that name. Between these buoys is the Lune Deep or Channel, the course up which is E. $\frac{1}{2}$ N. Rossall Landmark is a large wooden structure (of a conical shape) built on the shore of Rossall Point, and denotes the southern limit of Morecambe Bay. Walney Island, on which is a revolving light, is the northern limit. Shell Wharf extends to the westward of Rossall Landmark and North Wharf upwards of three miles. If in hazy weather you fall in with lowland, and not knowing whether it is Walney or Rossall land, your lead, which should never be neglected, will at once inform you; for 4 or 5 miles off Walney you will have 8 or 10 fathoms, but at the same distance off Rossall only 4 or 5 fathoms. After passing the Danger Patch and King's Scar buoys, you will observe the Fairway Buoy to Fleetwood channel. It is a round red buoy, and lies half-a-mile N. W. from the Screw Pile or Fleetwood Lighthouse. To enter the channel leave the Fairway Buoy on the starboard hand, giving the lighthouse a good berth on the starboard hand and running up for the No. 2 black buoy on the Little Ford, leaving that buoy on

the port hand. You will now have come up with the red buoy guarding the north end of the Big Ford, leave that on the starboard hand; then leaving all the black buoys, which mark the eastern side of the channel, on the port hand, and the red buoys and perches (the latter having red globes on the top) on the starboard hand, round close to the Steep Breast, on the edge of which stands the Lower Shore Lighthouse, and where the tides run very strong: you then enter the Harbour. There are large red buoys for mooring ships to. Sail between the buoys and the shore, letting go your anchor when you reach the upper part of the Canshe Hole; but be careful not to foul the moorings of the buoys, as they run in various directions across the harbour. Strangers visiting this port should always hoist signal for a pilot, several of whom are constantly on the look out. There are two pilot cutters (numbered 1 and 2) with pilots for any of the ports in the bay, and are generally cruising off the bay. The Screw Pile or Fleetwood Light is a Fixed Bright Light, seen 8 or 10 miles in clear weather. There are also two Fixed Shore Lights, lighted from half-flood to half-ebb. By day a black ball hoisted on a pole at the Screw Pile Light and Lower Shore Lighthouses, denotes the same interval of tide. A bell, tolling three strokes per minute in foggy weather, is sounded from the Screw Pile Lighthouse, and may be heard at the distance of two miles. There is good anchorage off North Wharf, anywhere between the King's Scar Buoy and the Lighthouse, in such water as the state of the tides and a vessel may require. There is now at low water spring tides, six feet of water from sea into the harbour, by the buoyed channels, keeping the best of the deep. The powerful steam tug "Wyre," belonging to the port, tows vessels in and out of the harbour at moderate rates.

The River Lune.—SUNDERLAND, GLASSON, and LANCASTER.—Sunderland Harbour is at the mouth of the River Lune, and is dry. Large vessels may go in after half flood, and lie on clean ground below the houses, and with neap tides, ships of 12 feet water may ride afloat in the pool, off the westernmost houses in the village. It is not safe riding in the pool with spring tides, because of the rapidity of the stream, which runs there about $4\frac{1}{2}$ miles an hour when strongest. The channel leading into Sunderland is buoyed, and there is a Lighthouse on the south side, over against the point of Sunderland. Bernard's Wharf, the westernmost bank, begins to dry at half-ebb. At the easternmost buoy there is a patch of sand that dries with spring

tides only. To come up with the outer or westernmost buoy of the channel of Lune River, take half-flood, and stand no nearer the North Wharf Bank than 8 fathoms water; or keep Lancaster Church Steeple a small sail's breadth open to the southward of the Bluff End of Highfield or Lawson's Wood—a long hill under the same high land, which terminates in a remarkable bluff point, a little to the northward of the Church Steeple. This mark will bring you to the outermost buoy, clear of North Wharf and Bernard's Wharf: or, when this mark cannot be seen, keep the westernmost part of Walney Island to the eastward of Blackcombe, until the Landmark bears about S.E. In this situation you are entering the deep water of the Lune, where you will have 28 fathoms at low water, and the outermost buoy bearing about east from you: and should you be forced in by strong gales, or night coming on with a flood tide, that you cannot keep an offing, you may by observing these directions bring your vessel to an anchor to the southward of the buoy.—If in dark hazy weather you should fall in with low land, bearing E.N.E., &c., and not know whether it is Walney or Rossall land, your lead will at once inform you; for at the distance of 4 or 5 miles from Walney, in that direction you will have 8 or 10 fathoms water, but at that bearing and distance from Rossall, only 4 or 5 fms. —*To avoid the Shoals on the north side of the Bay:*—Near low water come no further in, with a vessel of considerable draft of water, than where Walney Lighthouse is open to the eastward of the highest part of Blackcombe, when the Landmark bears S.E., as you are here to the westward of the Stony Patches on the north side of the Lune, where you may safely stand off and on for a pilot.—*To avoid the Shoals on the south side of the Bay:*—Shell Wharf extends W. by N. to W. by S. from the Landmark, therefore you must take care about low water to keep the Landmark to the southward of E.S.E., and when you steer for the buoy at the proper time of the tide, and having fallen into the deep water of the Lune, by observing the foregoing directions, you must allow for North Scar and North Wharf, a high bank, which runs out two miles northward of the Landmark, and covers about half-flood. About high water you may venture in the day time to stand over any part of the bay from Pile of Foudry to the outermost buoy in the Lune; but in the night or thick weather, keep further out to the westward taking care to have the lead constantly going, and watch every opportunity to take the bearings of the marks before mentioned, until you obtain a pilot.—The *First*, or Outermost Buoy, lies in $6\frac{1}{2}$ fathoms at

low water, neap tides, pass on the south side of the Buoy, with Pile Castle bearing N.N.W. $\frac{1}{2}$ N.; Lighthouse on Walney, N.W. by N. $\frac{1}{2}$ N.; North end of North Wharf, W. by S.; Landmark on Rossall Point, S.W.; Foot of Wyre Lighthouse, S.W. by W.; Lancaster Church Steeple, a little open with Highfield, E. by N.; Second Buoy, E.S.E. $\frac{1}{2}$ S. If too early for the tide, or too late in the evening to proceed up the river, you have good anchorage one cable's length to the westward of the second buoy, under Bernard's Wharf, where you will have 3 fathoms at low water, and little current; but you must not proceed up the river with a vessel of considerable water draft until after half-flood. The Second Buoy lies in 3 fathoms, with outermost buoy bearing W.N. $\frac{1}{2}$ W.; Third Buoy, E.S.E. The Third Buoy lies in 11 feet, with the second Buoy bearing W.N.W., Fourth Buoy, E. by S. The Fourth Buoy lies in 2 feet, with Third Buoy bearing N. by W.; Fifth Buoy E. The Fifth, or innermost Buoy, lies in 3 feet, with Fourth Buoy bearing W. by S.; Lighthouse on Abbey Scar, E. by S. Keep the Upper and Lower Lighthouses in a line, and guard against the flood tide setting strong to the southward, up Cocker. Soon after you have passed the Lower Lighthouse, keep Basil Barn a little open to the southward of Overton Chapel which will take you clear of Thornbush Fishery and Town's Skear, to Sunderland, where you may obtain a pilot. The deepest water is on the south side of all the Buoys, and the river Buoys are placed on the north side of the channel—GLASSON is about 5 miles before you reach Lancaster. Upon the pier is a harbour light, shown at tide time. The tide flows at the dock gates the same time as at Liverpool, adding two inches to every foot of water at Liverpool, will give the height at Glasson. Every vessel going into the dock must clew up her sails and (if the wind be any way to the northward) let go an anchor before coming into the Dock Gut, to prevent her anchor bill running through her bows and destroying the works. If the wind be from the westward, and a flowing tide, she may safely touch on the west side, and be veered alongside the pierhead, by a line from the westward; but on no pretence whatever is any vessel to attempt going in under ever so easy sail, as several serious losses have already been sustained thereby; and no steam-vessels is to make use of her paddle wheels either in going in or out of dock, but to let off steam before they go in. Masters of vessels offending in these particulars are liable to a penalty of £5, besides having to repair the damage.—From Glasson to LANCASTER the channel is irregular, variable, and shallow; the shall-

lowest parts of it having no more than 7 feet water at high water with neap tides, and 12 or 14 at high water with spring tides. Pilots legally appointed to conduct vessels to and from the quays at Lancaster, may be obtained at Snatchems, near Sunderland.

Morecambe Harbour.—This harbour is situate at the terminus of the Midland, and London and North Western Railways. A new stone pier has recently been constructed, and superior accommodation provided for the transshipment of passengers and cargoes between the railway trains and vessels. The dues levied in respect of lights and buoys are 2d. per ton on vessels from ports in the United Kingdom, and 3d. per ton on vessels from ports beyond, but when such dues have been paid three times in one year by any vessel, they are then reduced to 1d. per ton on the same vessel for the remainder of the year. There are no other dues or port charges on vessels.—The sailing directions for Fleetwood or Lancaster must still be adhered to until the Light at Foot of Wyre bears South one mile distant, then, if flood-tide, haul up N.E. by N., and, if ebb, N.E., this course leads to the entrance of the Channel to Morecambe Harbour, which is defined by No. 1 Red on the Starboard, and No. 1 Black buoys on the Port hand, moored as hereinafter described:—A NEW LIGHTSHIP has been substituted for the Screw Pile Lighthouse, formerly on Clark's Wharf, and is now moored in Mid-channel, about three-quarters of a mile Eastwards of No. 1 Black Buoy, in four fathoms low water of ordinary Spring tides; the Compass bearings of this Light ship are as follows: To Walney Light, N.W. $\frac{1}{2}$ W. distance $6\frac{1}{2}$ miles; Wyre Light S.W. by S. distance $4\frac{1}{2}$ miles; Morecambe Harbour Pierhead Light, E. $\frac{1}{2}$ N., distance $5\frac{1}{2}$ miles. The Ship is painted Red with "Morecambe" in large white letters on her sides, has one Mast with Circular Beacon and exhibits a RED LIGHT from Sunset to Sunrise, visible all round the horizon in clear weather $5\frac{1}{2}$ miles; when there is 8 feet of water in the Channel up to the Harbour, a Black Ball will be hoisted on the Flag-staff aft by day and a White Light shown on the bluff of the Bows at night. During Foggy Weather or Snow, a bell will be struck three times every minute. N.B.—The Light ship is moored with a single anchor, and in rough weather will ride with 100 fathoms of chain out. Masters of Vessels running in or out of the channel are therefore requested to give the ship a sufficiently wide berth. Seven Buoys define the Channel leading to Morecambe Harbour, viz.:—No. 1 Red buoy on the Western Point of Clark's Wharf Spit, the compass bearings from

which are:—To Foot of Wyre Light, S. W. by S $\frac{1}{4}$ S.; to Walney Light, N.W. $\frac{1}{4}$ N.; to New Light Ship, N.E. $\frac{1}{2}$ E.; to No. 1 Black Buoy, N.E. by N. $\frac{1}{4}$ N. No. 1 *Black Buoy* on the Western Point of Yeoman's Wharf Spit, the compass bearings from which are:—To foot of Wyre Light, S.W. by S. $\frac{1}{4}$ S.; to Walney Light, N.W. $\frac{1}{4}$ W.; to New Light Ship, E. by N. $\frac{1}{4}$ N.; to No. 1, Red Buoy, S.W. by S. $\frac{1}{4}$ S. N.B.—These two Buoys define the Mouth of the Channel; they are about one Sea mile apart, and have a depth of about 9 feet between them at dead Low Water Spring Tides. From New Lightship to No. 2 Red Buoy on the North side of Clark's Wharf, the compass bearings are E. $\frac{1}{2}$ N. No. 2, *Red Buoy* to No. 3 Red Perch Buoy, N.E. by E. From New Lightship to No. 2 Black Buoy on the South side of Yeoman's Wharf, the compass bearings are N.E. by E. $\frac{1}{4}$ E. No. 2 *Black Buoy* to No. 3 Red Perch Buoy, E. $\frac{1}{2}$ N. No. 3 *Red Perch Buoy* has a circular Cage on the top, is placed on the Western Point of Low Scare, and may be passed on either hand. Vessels approaching the Harbour at Low Water should anchor below this Buoy, where there is excellent holding ground in a depth of not less than 5 fathoms at dead Low Water of Spring Tides, and remain there until a Black Ball, by day, is exhibited at the end of the Pier, and at night until Half Flood, when their will be depth of 8 feet in a clear course between the No. 4 Buoys up to the harbour. The compass bearings from the Red Perch Buoys are:—To No. 4 Red and No. 4 Black Buoys, E. $\frac{3}{4}$ S. No. 4 *Red Buoy* is on the end of Old Scare, and No. 4 *Black Buoy* is on the end of Stone Scare. The Lighthouse on the Stone Pier exhibits a White Light from Sunset to Sunrise; in day time a Ball is hoisted when there is 8 feet of water between the No. 4 Red and Black Buoys. The Pier Heads are distinguished at night by four Gas Lamps coloured Green to the West and Red to the North. Two Red Lamps about one third up the Pier, when brought into one will lead between the No. 4 Red and Black Buoys.

Pile of Foudry.—Pile of Foudry is a harbour near the south end of Walney Island, where large merchant ships may ride in good shelter near the west or south-west side of Roe Island, in from 3 to 5 fathoms water. Small vessels commonly lie aground in the bight, on the east side of Pile of Foudry Island, about a cable's length from High Water mark, when the house bears S. by W. In the anchorage near Roe Island the streams of flood meet; one from the north, the other from the south, and make it troublesome to keep the anchor clear. The stream here runs about 3 miles an hour

when strongest. On the south end of Walney Island is a stone lighthouse, exhibiting a revolving light 70 feet above high water, flashing every minute, visible in clear weather 3 or 4 leagues; there is also a small Fixed Light of a red colour. $2\frac{1}{4}$ miles W. by S of this light lays the Fairway buoy for Pile Harbour, marked "Helpsford" in white letters on black ground. On the north side of this channel is Walney Island, which is low land, and on the south side are several sandbanks or stony ledges; the most dangerous of these is the Stony Patch, which lies to the westward of all the others, distant from the lighthouse on Haw's Point about four miles; to clear it to the westward, bring the Old Castle on Pile Island just open to the eastward of the lighthouse. The lead should be kept constantly going, and if coming from the southward, bring Blackcombe Hill on with the north end of Walney Island, and keep them so until Walney Lighthouse comes E.N.E., and the ruin upon Foula Island touches Haw's Point. The Helpsford Sand is on the S.E. side of Walney, within a mile of the shore, to clear which, you must bring the dwelling-house near the lighthouse a sail's breadth open of the southernmost sandhills, or the lighthouse just clear of the eastern chimney of the same house, bearing N.E. by E.; then, as you advance, bring the ruin of the house on Foula, before mentioned, on with Haw's Point, and these marks will lead you in. Upon the bar is 15 feet water at 2 hours' flood, and the rise of tide is sometimes $29\frac{1}{2}$ feet. The strength of the flood tide is $2\frac{1}{4}$ knots an hour, and the ebb nearly the same. In leading to the anchorage with a flood tide, and the wind scant, you may stand along the southern part of Walney about a mile from the shore, and have regular soundings. In dark weather, should you fall in with land bearing E.N.E., and uncertain whether it is Walney Island or the land adjacent to Rossall Point, then you must be guided by your lead, for at the distance of 5 miles from the former are 7 and 8 fathoms, but at the same distance from Rossall there are only 4 or 5 fathoms; allowance must be made for the rise and fall of the tides, making high water full and change at 11 o'clock. In running for the Pile of Foudry anchorage at half flood, give Haw's Point a berth of half a cable's length, and keep off Pile Castle Point a similar distance, then, should your vessel draw 10 feet water, anchor in the bight below the house on Pile Island, or near to Roe Island, in 5 fathoms, with the lighthouse open to the starboard of Pile Castle. The breadth of the anchorage above Roe Island is nearly 2 cables. Here the ground holds well; as the tide ebbs you become quite landlocked and may shorten your cable, to enable

you to swing clear of either side at low water in 3 fathoms.—Vessels bound from Pile to Barrow should leave Roe Island Pier Lighthouse on the starboard hand, when they will fall in with the Fairway Buoy for Barrow, painted red with perch. A strong flashing light from the Iron Works lately erected at Hindpool, $1\frac{1}{2}$ miles north of Barrow, may be seen bearing from Walney Island Light N. $\frac{1}{2}$ W. : Hilp's Ford N.N.E. $\frac{1}{2}$ N. : Cockspeak Scar, E., and may be seen 15 miles seaward.

Ravenglass is a dry harbour, where three rivulets, the Esk, Mite, and Orte, unite about 12 miles to the southward of St. Bee's Head. There is a buoy placed a little within the mouth of the channel, in the middle, near the Fish Weir, which marks the entry. At this buoy, and in most parts of the channel, the depth is 3 fathoms at high water, with neap tides. The best part for vessels to lie aground on is, half a cable's length from the west end of the town of Ravenglass, on the south side of a perch which stands on the point of a sand there. At this anchorage, in the mouth of the river Esk, and also at the meeting of the other rivers, there are 3 fathoms at high water with spring tides, and 10 ft. with neaps. To sail into Ravenglass Harbour, take 4 hours of flood, keep above a mile from the coast to avoid Selker and Drig rocks (till Ravenglass town bears E.N.E.): steer in that course till you see the buoy bearing east, and then steer right for it, keeping within a ship's length off it on either hand; when you are just past the buoy, steer E.N.E., or keep Ravenglass a sail's breadth open to the north of your stern, till you are about half a mile from the east end of the sandy hillocks; hook the small bay, which begins there; keep near a cable's length from the point at the end of the small bay, and anchor half a cable's length from the west end of the town, or off the perch, in the meeting of the three rivers. When the buoy in the entrance bears E., it is also in a line with the south shoulder of Newton Knot Hill, which is a small hill half a mile south of Ravenglass. The tide flows here, full and change; at 11 o'clock; and off the bar runs at follows: the last half flood and the first half ebb set northward, at the rate of 2 miles per hour, spring tides; and the last half-ebb and first half flood southward at the same rate. There is a foot of water more on the Bar than shown in the Liverpool Tide Table in this Almanack.

St. Bee's Head.—To the northward of Ravenglass harbour, distant 13 miles, is St. Bee's Head. On its summit is a Lighthouse, the light from which is *stationary*, appearing like a bright star at the distance of 6 or 7 leagues in clear weather. From the entrance of Formby Channel to this Head, the course and distance are N. by E.

20 leagues. In sailing along from Walney Island to St. Bee's Head, keep 2 or 3 miles from the shore, and you will clear every danger. Vessels in moderate weather may stop a tide anywhere along the coast, for the stream seldom runs more than a mile an hour.

Whitehaven—About 3 miles E.N.E. from St. Bee's Head is the town of Whitehaven: the harbour is dry, and divided into basins by strong quays, which break off the sea. Within the second basin is the best place for vessels drawing above 10 feet water. Here you will find 18 to 22 feet water spring tides, and 12 to 14 neap. The Harbour Lights are upon the outer and inner Pierheads. The inner Light is *stationary*, of a red colour, and is lighted while there are 9 feet water between the Pierheads. The outer Light *revolves*, is lighted all night, and is seen at a distance of 3 or 4 leagues in clear weather. The light appears in its brightest state once every 2 min., and gradually becomes less luminous, till eclipsed. In the day a Flag is hoisted on a pole at the top of the old Lighthouse, while there are 9 feet water in the harbour, on entering which, keep both lights on the starboard hand.—A blue light is shown from a lighthouse on the end of the north pier, which has been extended 352 yards.

Harrington Harbour is 4 miles northward of Whitehaven. A lighthouse was erected in 1818 by the late H. Curwen, Esq., with Argand burners, visible 10 miles, and is exhibited while there are 8 feet of water in the harbour—in the day a RED DRUM, at the inner end of the pier, during the same interval of tide.

Workington is 2 or 3 miles north-eastward of Port Harrington. A red ball is hoisted upon a pole on St. John's pier when there are 8 feet of water in the harbour; and at night a light is exhibited on the pierhead, which answers a like purpose, and can be seen in clear weather at about 3 leagues from any point seaward. The channel into this port is along the south shore, its entrance bearing from St. John's pier nearly E by S. by compass. It is formed by red buoys on the south side and black buoys and perches on the north side, the deepest water being midway between. The outer perch has a cask upon it painted black, which must be kept on the port side in entering. Steer in between the perches and red buoys, giving the outer end of St. John's pierhead a berth of about 50 feet on the starboard side. After passing St. John's pier a perch with a white board upon it is the leading mark for the channel by day, and by night, the southernmost of the blast furnaces on the north side kept right a-head, until an inner light which is on a wooden pier

bears about S.E. $\frac{1}{2}$ S.; then steer S.E. $\frac{1}{2}$ E. for the entrance to the harbour, keeping the light upon the wooden pier on the starboard side, and passing a perch with a small black cask upon it by about 10 feet on the port side, when the harbour boat will be in attendance.

Maryport, situate about 5 miles N.E. off Workington, is easy of access, free from sandbanks, and has a capacious dock, in which vessels are kept constantly afloat, as well as its original tidal harbour and basin. Depth of water in ordinary spring tides, 21 ft. 6 in.; neap tides, 13 ft. 6 in., or by adding 3 feet to the water shewn in Holden's Liverpool, and the Manx tide tables, a near approximation for each tide will be obtained. A fixed bright light is exhibited on the outer pier-head all night, and another on the inner stone pier, whilst there are 8 feet in the harbour; both lights are on the starboard side in entering, and are visible at sea from E.N.E. to W.S.W., the former at a distance of 15 miles, and the latter 10 miles. A Red Ball near the inner lighthouse denotes 8 feet in the day time. The Jetty on the south side is distinguished by a Red light, and the north tongue by a Green one. Steam Tugs are in readiness every tide, and when required by vessels at night, two lights must be shown one above the other; or by day a union jack at the main. There is good anchorage in stiff clay, about $\frac{1}{2}$ miles off shore, the outer lighthouse bearing S.E.

Solway Frith—The entrance to Solway Frith may be considered to commence abreast of Workington, on the English, and at Abbey Head on the Scottish shore the distance between which is 5 leagues. On the eastern side of the Frith of Solway, about ten miles northwards from Maryport is

Port Silloth.—This place is daily increasing in importance, being connected by railway with Carlisle, Newcastle, and Edinburgh, the rails of which are laid on the quays. It contains a wet dock, with entrance gates 60 feet wide, and a jetty from the dock entrance 1000 feet outwards to low water mark. The dock is fitted up with Hydraulic Machinery, by which vessels are discharged and loaded with the greatest possible dispatch. The dock sill is 3 feet 6 inches above low water mark, and by adding 5 feet to the Liverpool tide table in this Almanack, the depth over the sill will be given for high water. A Yellow light is shown in the lighthouse at the outer end of the jetty from sunset to sunrise; except during the time the gates are open, when the Yellow Light is discontinued and a Green light is exhibited in its place. A Red Ball is hoisted on a pole at the lighthouse during the time gates are open by day. In Silloth Bay (between Lee Scar light

and the jetty) there is excellent anchorage in from 4 to 6 fathoms at low water, clay bottom. There is a good anchorage in Catherine Hole, a little above the fairway buoy. It is high water here, full and change, 11h. 35m.; spring tides rise 26 feet, and neaps 20 feet. The fairway course, from about a mile off Workington to the Lightship at the entrance of channel is N.E. $\frac{1}{2}$ N., and to avoid the tail of Robin Spit, care should be taken not to bring the vessel to the eastward of E.N.E. on which bearing the Lee Scar light and lightship will be in one. This light vessel is in the middle of the channel, in 5 fathoms at low water, and exhibits a Fixed Red light, at 25 feet above the water, visible 6 miles. From it Maryport outer light bears S. by W. $\frac{1}{4}$ W., $4\frac{1}{2}$ miles; Southernness lighthouse, N. $\frac{1}{4}$ E. $5\frac{1}{2}$ miles; and Lee Scar light, E.N.E. 6 miles. It has a Black Ball at the mast-head during the day, and in fogs a bell is tolled. Having passed the lightship continue the same course N.E. $\frac{1}{2}$ N., which will lead up mid-channel to the turn buoys B 2 red, and B 2 black where the Cott red light will be two ship's length open North of Lee Scar light, bearing E. by N. $\frac{1}{4}$ N. which course may be taken up after a quarter's flood, but when running up at or near low water, soon after rounding the red buoy B 2, haul in East until the two shore lights are in one, bearing E. by N. $\frac{1}{4}$ N., which course will lead up the fairway to Lee Scar. On passing the lighthouse, keep a good cable's length to the northward of it. Silloth Dock is about half a mile above Lee Scar. When following the proceeding instruction, it is necessary to bear in mind that the large nun buoy, painted black and red, and marked "Fairway," is in the fairway track, from seaward about two miles outside of the lightship, and is passible on either side, thence to Silloth, the black nun buoy should be kept on the port, and the red can buoys on the starboard hand. The black and white striped buoy off Beckfoot is in mid channel, and may be passed on either side. The shoalest part of the channel, in which there are $2\frac{1}{2}$ fathoms at low water, is a little below the perch buoy, D 1; thence up to Silloth the depths are from 3 to 5 fathoms. At Lee Scar there is a tide gauge indicating in large figures the depth of water in Dock Entrance Channel. A bell is tolled in the lighthouse during a fog. A steam tug is in attendance to tow vessels in or out of dock on reasonable terms. Branch pilots may be had (if required) off Maryport; charge 1s. 9d. per foot to Silloth. The harbour expenses are (including buoy and light charges): Coasting vessels, 6d.; vessels to or from foreign ports, 7d. per register ton.

Port Carlisle, a dry harbour, 10 or 11 miles up the Frith from Silloth bay. The navigation to this port is now entirely closed by the Solway Junction viaduct.

Annan.—Vessels bound up the Frith to Annan should alter course for North channel at Striped Buoy, and haul up N.E. by E. for buoy N 1, from which N. by E. $\frac{1}{4}$ E. leads to N 2, from which North leads up to N 3, thence N.E. $\frac{3}{4}$ E. leads up to Perch Buoy in Powfoot Channel; afterwards follow the buoys up which are placed mid channel. At Annan Foot there is a bright tide-light, and two perches on the western side of the entrance, the light is shown from half-flood to half-ebb. A bell is tolled at tide-time during fogs. Buoy and light charges to Annan, 3d. per registered ton. Branch Pilots may be had off Maryport; charge 3s. 6d. per foot.

Magnetic Bearings and Distances

FOR THE WEST COAST OF ENGLAND.
WESTERLY VARIATION 25 TO 26 DEGREES.

BUOY NELSON, OFF PRESTON (Lat. 53 43 N., Long. 3 11 14 W.) MILES.

To Beaumaris entrance.... W. by S. 39

To Dundalk Bar..... N.W. by W. 112
Douglas Head Light N.N.W. $\frac{3}{4}$ W. 50
Ross Light, Kirkcudbright.... N. 71

WYRE LIGHT, FLEETWOOD (Lat. 53 57 14 N., Long. 3 1 46 W.)

To Great Orms Head... S.W. by W. $\frac{3}{4}$ W. 45
Dundalk Bar.... N.W. by W. $\frac{3}{4}$ W. 112

WYRE LIGHT, FLEETWOOD MILES.

To Wicklow Head Light W. $\frac{1}{4}$ S. 118
Calf of Man L'ts. N.W. by W. $\frac{1}{4}$ W. 65
Walney Light N. by W. $\frac{1}{4}$ W. 8

WALNEY LIGHT (Lat. 54 2 56 N., Long. 3 10 32.)

To Wyre Light S. by E. $\frac{1}{4}$ E. 8
N.W. L'tship, L'pool. . S.W. by S. 35
Kish Lightship W. $\frac{1}{4}$ N. 104
Calf of Man N.W. by W. $\frac{3}{4}$ W. 57

ST. BEES' HEAD (Lat. 54 30 50 N., Long. 3 18 W.) MILES.

To N.W. L'tship, L'pool S. by W. $\frac{1}{4}$ W. 65
Tuskar Rock Light S.W. by W. $\frac{1}{4}$ W. 102
Douglas Head Light .. W. by S. 49
WHITEHAVEN (Lat. 54 33 N., Long. 3 26 2 W.)

To Beaumaris entrance .. S.W. $\frac{3}{4}$ S. 76
Skerries Light .. S.W. $\frac{3}{4}$ W. 65
Bahama Lightship W. by S. 24 $\frac{1}{2}$

WEST COAST OF SCOTLAND.

SOUTHERNESS LIGHT TO THE MULL OF CANTYRE.

Southernness Light, at the west side of Solway Frith, is chiefly useful as a direction to the harbour of Dumfries. It shows a fixed bright light, from N.E. seaward to W., which can be seen at the distance of 11 miles in clear weather.

Little Ross Island—A Lighthouse has been erected upon this Island, which lies off the entrance of Kirkcudbright bay and harbour. It bears a fixed and flashing light, producing 12 bright flashes in a minute, visible from N. by E. to N.W. by W. Southerly, at the distance of 6 leagues.

Kirkcudbright is formed by the Points Balmae and Torrs to the E., and the Island of Little Ross to the W. There are two Towers on Little Ross bearing S.W. from each other, which being kept in one lead over the Bar in the best water to the First Perch on the S.E. shore; thence running N.E. about 300 yards, passing a Red Buoy on the point of the bank on the larboard hand; thence

N.N.W. passing the Perch on the point of St. Mary's Isle on the starboard hand; thence direct to the lower Fish-house, where is a Pool a vessel can ride afloat at spring ebbs. Abreast and above the upper Fish-house there is excellent lying on soft mud, moored to rings on the rocks, and no stream of tide. On the bar of Kirkcudbright River there are about 7 feet water at half-flood. Vessels running for this place, and not having water over the Bar, will find good anchorage in the Ross Roads in from 1 to 3 fathoms at low water, in good clay ground. Should the wind be Southerly, blowing hard, a vessel should bring up on the W. side of the beach just as the sound begins to open, the closer to the beach the better, as it is very steep to and quite out of the sea. At half-tide she can trip and run up the lake to the Lake of Fish-house, or waiting 4 hours' flood may run up for the Perch off St. Mary's, and proceed to Fish-house or the town. The coast from Kirkcudbright to Belcarey Bay

nd River Urr is a bold rocky shore, with either beach nor harbour.

Belcarey Bay, about 8 miles to the S. of Abbey Head, is formed by the Highlands of Aairds to the W., and Heston Island to the E.; entrance $\frac{1}{2}$ a mile wide. The Heston Island is also high, and high in the middle: this is an excellent place, and too little known. Vessels running or it should keep close past the Aairds, and keep close up till they come above the first salmon weir opposite the large house in the bight, when they may go as far in as water will admit, as it is all clean ground, and quite landlocked from all weathers. The tide sets strong E. and W. past all these places, till a vessel comes within the points mentioned.

Wigton Bay lies to the westward of Kirkcudbright Bay, and has a spacious entrance, with several places where vessels may stop in moderate weather, or when the wind blows off the shore. The river channel at the north-west or upper end of the bay, leading to the town of Wigton, is intricate, and only fit for small vessels who know the place. Vessels may stop with good anchorage in 7 or 8 fathoms water, about a mile to the northward of Stein Head, and half a mile from the shore, where the bottom is clean sand.

Garlieston.—This is a safe and sheltered dry harbour in the north-west corner of Wigton Bay, with a convenient quay, against which small vessels lie on an even and soft bottom. The outer bay has shelter from W. winds, and good anchorage between Criggleton Point and Eagerness Point. There is a small shipyard, and a town with good supplies at Garlieston. When desired a light is shown from the pier-head, which has been recently extended 250 feet, and where are at springs, 18 to 20 feet, and 11 to 12, neaps. From the pier-head the Ross Light bears S.E. by E. In taking the harbour, keep the perch off the breakwater on the larboard hand. Port charges, 1d. per ton; harbour boat, 3s. to 6s.

Whitehorn.—To the southward of Stein Head and near Burrow Head is Whitehorn Island, between which and the coast is Whitehorn harbour, in which vessels drawing 12 feet water cannot be neaped above twice a year at the quay. It is well sheltered from all winds. The only danger is the Screen's Reef, a rocky ledge, marked by a perch extending from the west point, upon which the tide sets very strong. Going into the harbour from the west, if Stein Head be kept open of Kairnharra Hill it will clear the rocks on the west side.

Glenluce Bay.—To the westward of Burrow Head is the bay of Luce, within which and near to the Mull of Galloway lie the Scar Rocks, always above water. There are no shoals near them; but off the Little Scar are two or three rocks, which the sea sometimes washes over. In moderate weather, with W. and S.W. winds, vessels may stop anywhere on the west side of the bay of Luce.

Mull of Galloway.—On the Southern point of the Mull of Galloway, a Lighthouse has been erected, and bears, by compass, from the largest of the Scar Rocks, W. $\frac{1}{2}$ N., 6 miles; from Burrow Head, W. by N. $\frac{1}{4}$ N., 18 miles. The light is intermittent, $2\frac{1}{2}$ minutes bright, then eclipsed $\frac{1}{2}$ a minute; is visible seaward 23 miles from N. E. to N. W. $\frac{1}{4}$ W.; but the high lands of Dramore shut the light from the view of the mariner in coasting along the Port Patrick shores. After rounding the Mull, which is a rocky shore, you will soon reach

Cromack Point, about 4 miles from which is

Port Nessie Harbour, fit only for small craft; but a vessel drawing not more than 6 or 7 feet, may find shelter from N. or N. W. winds, by running aground near the pier head. Seven and a half miles further is

Port Patrick, a small and dry harbour open to the westward. Small vessels must go in at high water, and run aground on the N. side of the creek, or within the pier, so as to be out of the reach of the sea, in case the wind should blow from the W. or South-westward.

Point Corsewall is about 14 miles to the northward of Port Patrick, and is the north-west point of entrance to Loch Ryan: between are some rocks, but they lie close in shore, and are mostly above water. On the rocks off Laggan Point, called Ebbstone Rocks, which dry at low water, is a red beacon consisting of a pyramid of iron pillars, 40 feet high, with a cylindrical open cage on the top. From it Corsewall Lighthouse bears N.E. by E.; the highest point of Ailsa Craig, N.E. $\frac{1}{2}$ N.; and Laggan Point, S.S.E. $\frac{1}{4}$ E. On Corsewall stands a Lighthouse, exhibiting a white and red light alternately; these lights revolve, and attain their greatest brilliancy every 2 minutes. They may be seen, like a star of the first magnitude, at the distance of 5 or 6 leagues, and are visible from N.E. by E. northerly, to S.W.

Loch Ryan is capacious, of easy access, well sheltered, with good holding

ground, and depth sufficient for large vessels. The only danger to be avoided is the Scar, a tongue of sand on the western side of the Loch, and about 3 miles up the harbour, which extends 1½ miles south-eastward from Kirkholm Point. There is a large red Nun Buoy on the S. end of the Scar, which distinctly shows its position. The best anchorage is about half a mile to the southward of Cairn Point in 6 or 7 fathoms. On this point is a tower, exhibiting a fixed light of the natural appearance, serving to lead to the anchorage. Opposite the Lighthouse Tower is a small red buoy to mark the eastern edge of the Scar. Fourteen miles N.N.E. from Loch Ryan is the

Craig of Ailsa, a rock 940 feet high, with deep water all round it, serving as a beacon to guide ships to the entrance of the Clyde.

The **Frith of Clyde** makes a fine open entry to several rivers, having no danger more than a quarter of a mile from the shore, excepting the Brist Rock, which lies three quarters of a mile W.½S. from Turnberry Point; it dries at half-ebb, and is about half a mile from shore.

Ayr.—Ten miles from Turnberry Point is the town of Ayr, with a lofty spire seen from a considerable distance. There is a commodious harbour fit for vessels drawing 12 to 14 feet water. The bar, at low water, has from 4 to 6 feet water over it, and with spring tides at high water there are from 13 to 15 feet, and with neap from 11 to 12 feet over it; with fresh southerly winds there will be a foot more, for S. and S.W. winds raise the tides in all the rivers of the Frith of Clyde, and N. and N.E. winds have a contrary effect. On the north side of the harbour is a lighthouse exhibiting two lights; the upper bright, having a star like appearance, and the lower red. There is also tide-light red, shown when 8 feet of water is on the bar. The distance between the lights is 850 feet; and they bear from one another S.E. by E. ¼ E., and N.W. by W. ¼ W., and are leading lights for entering the harbour, and when kept in one lead over the bar in the deepest water. The upper or bright light may be seen 12 miles, the red 9 miles, and the tide light 4 miles off. Vessels drawing 7 feet water may make directly for the bar so soon as the tide lamp is lighted. A flag is hoisted in day time at half flood, and continues to be so until half-ebb. About a cable's length S.W. of the south pier lies St. Nicholas Rock, which dries with spring tides only; you will avoid it by keeping the two red buoys on the starboard hand coming into the harbour, the breakwater

being on the port hand. There is an iron steam tug for towing vessels in and out; and the bar and harbour are being further deepened by means of a powerful dredging machine.

Troon Harbour has an extensive pier and breakwater, with 4000 feet of quayage room and an average depth of 12 feet at low water; at the outer pier the rise and fall of the tide is from 8 to 11 feet. About 1 mile S.S.W. of Troon Pier is the Lady Isle, a large patch of rock with a large and small Beacon on it. These Beacons are not leading marks, and there is plenty of water inside the Isle. At the distance of half a mile N.E. from the pier, is a half-tide shoal, on which is a red buoy. Here are exhibited two lights: one, on the inner end of the pier, intermittent, 40 seconds bright and 20 obscured; the other on the pierhead, red. They bear from each other N.E. ¼ N. and S.W. ¼ S. 350 yards; and are visible, respectively, 9 and 6 miles. This harbour is perfectly safe, and may be run for in any weather by vessels of moderate draught of water, as there are no dangers but what are to be seen, and pilots are always in attendance. An extensive open wet dock or basin, 400 feet long by 300 wide, with 20 feet at low water, and capable of admitting the largest ships or steamboats, adds to the importance of this port. A branch of the Glasgow and Ayr Railway comes down to the harbour, as does also the railway of the Duke of Portland from Kilmarnock. There is also an extensive ship-yard, with one of the finest graving docks in the west of Scotland, capable of receiving ships of the largest size. The magnetic bearing and nautic distances are as follows:—From Troon Pierhead to Ayr Harbour, S. by W. 5 miles; Dunure Point S.W., 9 miles; Beacon on Lady Isle, W. by S. 2¼ miles.

Irvine.—Four miles and a half from Troon are the town and harbour of Irvine; and nearly midway is Lappock Rock, upon which was erected, in 1843, a beacon about 40 feet above the level of the sea bearing S.W. Southerly, distant about 2 miles from Irvine Bar. There are now from 12 to 13½ feet water on the bar at high water spring tides; ordinary tides, 12 feet; and at low water 4 feet. There is a red warping buoy placed in the fairway of the river, about two cables' length from the bar perch, which perch must be kept on the starboard hand on going in. There are also pawls all the way up the river on both sides. Vessels running in should keep the middle of the river, and run right up till they come to the end of the stone quay, where they can either beach or anchor. There is a steam tug for vessels frequenting this harbour.

—At about a mile to the N.N.W. of Saltcoats are the spacious wet dock and harbour of Ardrossan, in which 100 sail of coasters can lie with ease. The pier and breakwater completely shelter the harbour from southerly and westerly winds; and Horse Isle, with the other rocks, protect it from the N.W. The greatest depth at low water in the Inner Tidal Harbour is 10 feet, and in the Outer Harbour 18 feet. The entrance lock to the wet dock is 160 feet long and 40 feet wide; and at average tides there is a depth of 18 feet over the sill of the lock. The railway trains come alongside all the berths in the wet dock and harbour. There are a graving dock and patent slip attached to the wet dock. —In place of the two previously existing harbour lights, a new lighthouse, exhibiting a red light, has been erected at the extremity of the Breakwater. This light illuminates an arc of from 15° to 20° in the direction of the open channel leading into the harbour, and bears from the middle of this channel E. and by N., on which bearing it is brightest. A vessel running for the harbour should steer the usual course from Pladda towards Cumbray Light, and when about 14 miles past the former, and 7 miles from the latter light, the Ardrossan Light will be seen, in favourable states of the weather, on the starboard, at the distance of about 5 miles, and bearing E. by N. In running into the harbour the light should never be closed; but the vessel must be kept within the illuminated space, in which there is nowhere less than 22 feet at low water. A black buoy marks the north side of the channel by day, which is on the west Grinan Rock, and there is a perch on the Grinan Rock, both to be kept on the port hand in entering.

THE River Clyde is remarkable for the ease and safety with which it may be navigated. It is provided with numerous well sheltered harbours, and spacious arms of the sea, of easy access, and capable of containing the largest fleets. In approaching it, there are neither rocks nor shoals, nor rapid tides to be feared. Ailsa is a high mountainous rock in the mouth of it, conspicuous at more than 10 leagues' distance, and serves as a remarkable beacon to direct ships to it; there are 4 Lighthouses to direct mariners farther up, and to good shelter in the night; and there is hardly one opening to be seen but what a stranger, without chart or pilot, might safely venture to run for in the day time, and find good anchorage within it. On coming up the S. or St. George's Channel, and passing Ailsa Rock at 2 miles distance, the course by compass for Cumbray Head is N.N.E. $\frac{1}{2}$ E. nearly, and will carry you clear of Holy Island,

which forms the harbour of Lamlash. If at night, the Lights will be seen on Pladda, a small low island off the S.E. of Arran Isle. The distance between Ailsa Rock and Pladda Lights is about 11 miles, and from Pladda Lights to the Light on Cumbray Island 18 $\frac{1}{2}$. There are very large Furnaces of Iron Works between Troon and Ardrossan, which shew for a long distance at night, and might mislead a stranger, unless aware of what they are. It would, however, be advisable for strangers to keep between the Rock Ailsa and the Island of Arran, till daylight. When coming in the NORTH Channel, particularly during the winter months, with a N.W. gale, ships should never run to leeward of Arran during the night, but as soon as they pass the Island of Sanda, inside the Mull of Cantyre, they should haul by the wind, on the port tack, with the ship under easy sail, standing two hours each way. By this you keep in smooth water, and when daylight comes, can act according to circumstances. Should you run to the leeward of Arran, the wind, which was N.W., will be found at N.W. by N., and sometimes N.N.W., blowing heavy, with very heavy gusts. Keeping to windward, should the gale increase or continue long, you have Loch Ryan under your command; its entrance about 17 miles S. $\frac{1}{2}$ W. from Ailsa; but once getting to leeward you can never regain your ground. On approaching the Cumbray Islands, 3 entrances appear before you: the middle one is the main ship channel. In clear weather you cannot mistake the Cumbray Island, being distinguished by an old Light Tower on its highest part, a little to the southward of the present Lighthouse, which is low down on the hill side. There is a good ship channel to the eastward of the Cumbray Island, but strangers should never attempt it without a pilot. The part of the Island of Cumbray on which the Light stands is bold and steep close to. Opposite to it lies the Island of Bute, the nearest point of which is Garroch Head, distant about three miles. Entering between these two headlands, with the Cumbray Light on your starboard hand, when in mid-channel your course to the light on the Point of Clough is N.E. $\frac{1}{2}$ E., 12 or 13 miles. In proceeding on this course, a little more than half-distance, you will see a Revolving Light on your port hand, situated on the Point of Toward, which forms the starboard side of the entrance of Rothsay Bay. The Clough light stands on a bold shore. On the opposite side is the town of Dunoon, off which lies a ledge of half-tide rocks called Gantocks. The position of these rocks is marked by a large stone obelisk, which can be seen from a considerable distance. The river afterwards inclines a little to

the eastward, until you get opposite to Gourrock, in a small bay on your starboard side. Opposite the middle of this bay is good anchorage; and here it is advisable to anchor till a pilot comes on board. The mark, the centre of the bay with the Clough light on with Kempuck.

Greenock, which is the chief port for large vessels on the Clyde, has three fine basins adjacent to each other. They are known as the west, the east, and the Victoria harbours. Between the piers, at the entrance of the west harbour, there are about 10 feet at high water, spring tides, and 10m 10 to 12 feet at low water; alongside the quays is a depth of from 17 to 19 feet. The east harbour contains about the same depth of water, but is more spacious; on the quay is a crane capable of raising 50 tons. The custom house stands between these two basins. On the eastern side of the east basin is the Victoria harbour, opened in 1851. It has an area of 6 acres, is 563 feet long, and 458 feet wide, with a uniform depth of 26 feet at high water, and 14 feet at low water spring tides. On the quay is a large crane of 70 tons lift; there are also 2 steam cranes of 15 tons lift, for loading coals. Connected with the east and west harbours are graving docks, the width of their respective entrances being 31 and 38 feet. There are two lines of rails all round the Victoria and East Harbours, in connection with the Caledonian Railway. A large coal shoot has been erected at the East Harbour, from which a great quantity of coals are shipped daily. A small light is placed on the quay, in front of the custom-house, as a guide to the shipping, and lights of a red colour are exhibited at the several entrances of the port. In the roadstead are warping buoys; but in order to avoid the shoal off the Custom house, care must be taken to anchor as close as possible *outside* the line of buoys. The best anchorage for small vessels is off Albert Quay, in 4 fathoms water. About a mile N.N.W. of the Custom-house are two fixed red lights, visible at the distance of two leagues; when in one, bearing W.S.W. $\frac{1}{2}$ W., they lead to the anchorage below the "Tail of the Bank,"—**COCKLE BANK** reaches from the east end of the town of Greenock to the *Old Castle of Newark* at Port Glasgow. A new harbour is now building to the N.W. of Mr Scott's Building Yard, for the discharge of timber laden vessels, the depth of water at spring tides to be 27 feet, with a large space for storing deals.

Port Glasgow.—The channel from Greenock to Port Glasgow is narrow and intricate as far as Garville Point, and should not be attempted without a pilot;

about a $\frac{1}{4}$ of a mile N. from Garville Point is a buoy on the south edge of the Cockle Bank. Keep that buoy on the port hand, and run about a cable's length from it. Near the E. side of Garville Point is a beacon, which pass on the starboard hand, keeping not less than two ships' length from it, nor more than half a cable, to avoid the Cockle Bank. Between this last-mentioned beacon and Inch Green is first a buoy and then a beacon; keep both on the starboard side, sailing at the distances before directed. There is also a beacon near the quay of Port Glasgow, which you must pass at 2 ships' length on the starboard side, and enter the harbour about high water. At the quay there is water for small craft only. At low water it is dry, and with spring tides is capable of containing vessels that draw 10 and 11 feet water; the ground is soft and easy to lie on, and a good place for graving ships' bottoms is made here. A light is exhibited on the pier to direct the steamers; and at the entrance of the harbour is a light of a red colour on the west quay. About four miles from Port Glasgow is

Dumbarton Harbour, at the mouth of the river Leven. Vessels drawing from 13 to 14 feet may go in at high water. At low water there are from 5 to 7 feet water over the bar, and at high water, spring tides, from 14 to 16 feet. If pilots cannot be had, the following directions may be useful. Weigh anchor and sail from Port Glasgow at half flood; keep a cable's length from shore at the Old Castle of Newark; from thence steer eastward between Audoch and Dumbarton Castle, about two miles, until you come abreast of Finlayston; then steer south-eastward for the western buoy off Dumbarton Castle; there anchor until it is high water. Leave that buoy to port, and the other on the starboard, and stand in for the entry, keeping that side close until you have passed the Castle.

Between Port Glasgow and Bowling Bay are three Lights; at Auchenclochy, the Garmoyle Floating Light, and the third about a mile above Dumbarton; all to be left on the starboard hand in going up the river.

Glasgow.—On the lower or western extremity of Broomielaw Quay, and port hand going up the river, a light, of star-like appearance, is placed for the direction of shipping.

Isle of Bute.—To the westward of the Isles of Cumbray is the Isle of Bute, on the eastern side of which, directly opposite Great Cumbray, is Killichattan Bay, where vessels may anchor in from 11 to 16 fathoms. To the northward is the Bay of Rothsay, the ground good and clean, and well sheltered: you may anchor in any part on the E. side of the Bay, but the most convenient place is two cables,

length N. of the pier-head, in order to be clear of the track of the numerous steamers plying from the pierhead to all parts of the Clyde.

Kyles of Bute.—The channels between Bute and the Main are termed the Kyles of Bute: their access is easy, and well sheltered, the bottom is extraordinarily good, and the depth sufficient for the largest ships. They are distinguished by the names of the East and West Kyles.

Island of Arran lies to the southward: at its S. E. extremity lies the ISLAND OF PLADDA, upon which a LIGHTHOUSE is erected, 3 miles north-easterly of which is the ISLAND OF LAMLAH. This island lies right in the front of the bay and forms a good and well-sheltered anchorage: the N. side of it is shallow about 2 cables' length from the shore, but the best parts to ride in are off the houses in Holy Island, in 9 or 10 fathoms, or about 2 cables' length E. by N. or E. N. E. from the pier at the town of Lam-lash. A red buoy (called Ferguson's) is placed on a rock, with 14 fathoms water in the south entrance to Lam-lash. You can go either side; but the island side is best. At the north entrance on the mainland side is Hamilton's Rock, for which, in thick weather, a good look-out should be kept, though it is scarce a $\frac{1}{4}$ of a mile from the shore and never quite covers. The lighthouse on Pladda exhibits two bright fixed lights, and may be seen from S. E. by E. northerly, to S. W. by W.; the upper at 17 and lower at 14 miles distance. At the northern extremity of Arran Island is

Loch Ranza, the ground in which is very good, and water sufficient for large ships, but the place being narrow renders it fit for small vessels only. On the east side of the entrance there is a rocky ledge, dry at low water, which extends near one-third over to the opposite side; to avoid this ledge, keep in the middle of the channel. Anchor abreast of the houses of Ballino, in 5 or 6 fathoms water, nearest the E. side of the Bay, about a cable's length north of the Old Castle, which stands quite at the bottom of the Bay.

Loch Fyne.—After passing Ard-lamont Point, the entrance opens to the Northward, and is about 7 miles from Skipness Point, forming an arm of the sea running in northwardly then eastwardly for a distance of 35 miles. The water in the middle is too deep for vessels to anchor. The east side from Skate Island to Kilfinan Bay is rocky, but do not extend far from shore, and they are mostly above water, so can be seen; but deep water close to them. There is good anchorage in Kilbrennan Bay, and from there to the Spit of Otter Ferry, which is a shoal about two cables' length from

shore, having a beacon on North Point. On the west side of the Loch, about 6 miles from Skipness Point, is the little harbour of EAST TARBET, well sheltered and good bottom, much frequented by steamers and small vessels; but the entrance narrow. From there, passing northward, you leave Barmore Island on the left, giving it a berth of a cables' length or so. to avoid some half-tide rocks off its N. E. end, and from there to Invermel Bay the coast is bold. Off the Church at Invermel there is a shoal about 2 cables' length from shore, with only 8 feet water on it. From thence to Ardrishaig Point the coast is clear up to the Pier Head, on which there is a Lighthouse showing a fixed light. There is good anchorage on the north side of the Pierhead, and on the opposite side, north of Ilan Yone, in a line from the Pier, and about half a-mile distant, there is a shoal near mid-channel, marked by a white buoy, and having only about 4 feet of water over it at low water. The shoal can be passed on either side: but the west side is the best. It is foul ground from Ilan Yone to Silver Craig. Abreast of the beacon on Otter Shoal, which you pass on the right, the channel is narrow, but clear, with strong tides. Sailing up Upper Loch Fyne the south side is clear to the head, and is the side used by sailing vessels. On the north side, passing the narrows at Otter about one mile, you open Gaerloch, a fine safe bay, much used by fishing vessels, having good anchorage in 3 fathoms water, but only narrow. Passing on you come to Minard Point, behind which there is good anchorage. Opposite Minard Castle, there is a shoal in the middle of the Lough, marked by a beacon on each end, the middle dries at low water. You can go on either side, but the west is the safest. Nearly abreast of Castle Lachlan is Paddy's Rock, keep the south side. Following the north shore, the whole coast round Furnace Point to Inverary is clear. South of the Pier of Inverary is a shoal called the Otter, to which a berth of 2 cables' length from the shore must be given. Anchor north of the Pier, and nearly opposite the large bridge, in a line with Inverary Castle, in 8 or 9 fathoms water. From Inverary to the head of the Loch is clear, and very deep water, so that it is safe sailing up at any time.

Campbeltown Harbour lies about 11 miles south westward of Point Cart-radle; it is large, well sheltered, the ground good, and there is very little to be feared in sailing into it. On coming from the S. or S. E., you will first see the Island of Devar and the *blind* sound to the south-west of it, through which is a view of the town. On Otter Buoy the north-east point of Devar Island, is a light-

house, from which is exhibited a bright light every half minute; it is visible from N. $\frac{1}{4}$ W. to E. by S. by the N., and may be seen in clear weather about 15 miles. This light is a good light for clearing Paterson's Rock; if kept in sight, it will lead about 3 miles to the eastward of it. In standing in for Cambeltown at night, be careful to keep to the eastward until the light upon Devar Island is fairly open; then stand for it, keeping it on the port hand, and steering about one or two cables' length from the point of the Island, until you open the harbour; then haul up W. $\frac{1}{4}$ N., or W. by N., still keeping about the same distance from the shore. When abreast of the western end

of Devar, a black buoy will be observed on Mulbeg Bank, about 60 fathoms from the Island; this must be passed on the port hand. Steering half a point more northerly, you will next pass on your starboard hand, a red buoy, placed nearly opposite a sandbank, which is always dry, except with spring tides: On this bank is a beacon, painted black. There is also another beacon, painted red, on Trench Flat. Hence the red light on the north pier will be seen, and soon after, on passing Trench Point, the green light shown from Dolintober Quay. Now steer W.N.W., or N.W. by W., and you may come to an anchor in any part of the loch—observing, however, to give the west shore a berth of two cables' length. In the Loch, inside the beacons, the deepest water is on the north side; a stranger should, however, keep the lead going, if working in, and put about the first shoal cast, as the bank is steep on both sides. The harbour has a depth of water of from 5 to 10 fathoms. Masters of vessels turning in with a west wind at night, must be careful not to shut the light on the Island when standing south, but tack as soon as it becomes obscured by the high land of the Island for in that case they are close to the South Bank, and the water shoals at once; but by keeping the light E. by S. they will go clear. At night, however, it will be better to anchor at Black Rock, on the north side, about a quarter of a mile E.N.E. from the red buoy, or when Devar light bears about S.E. in 4 or 5 fathoms water, good holding ground, and well sheltered, being within Macrinian's Point, which forms the north entrance to the harbour.

Sanda Island.—About 9 miles south of the Island Devar is the Island of Sanda, a dangerous Island, being surrounded by ledges of Rocks. There are several ledges of rocks about the east and west ends extending about a cable's length from shore; and near Gluinmore, which is always above water, there are several rocks that dry at low water, also off the east end around Island Illanagurach. In

the sound, between Illanagurach and Sanda, is the anchorage, a kind of harbour fit only for small vessels in summer time or in moderate weather. It is protected by the reefs in the sound—the reef to the west, on which there is a beacon, pointing out the anchorage. Anchor when Fair Head is shut up on the end of Sanda in about 10 feet water, close to the houses, off an old quay. Round Gluinmore and Island Illanagurach are reefs and sunken rocks with deep water. On the ship rock of Sanda, in lat. $54^{\circ} 16' 30''$ N., and lon. $5^{\circ} 34' 55''$ W., a lighthouse, exhibiting a fixed red light, has been erected. It is visible from N.W. $\frac{1}{4}$ W. to S.E. by E. $\frac{1}{4}$ E. by south-westerly, and may be seen at the distance of 5 leagues. It bears by compass from Piadda Light, W by S $\frac{1}{4}$ W, 18 miles; from Ailsa Craig, N.W. by W. $\frac{1}{4}$ W. 16 miles; from Corsewall Light, N. by W. $\frac{1}{4}$ W. 22 miles; from the Maiden's Rocks Lights, N.E. $\frac{1}{4}$ N. $21\frac{1}{2}$ miles; from N'most Point of Rathlin Island, S.E. by E. $\frac{1}{4}$ E., 21 miles; and from S'most Point of the Mull of the Cantyre, S.E. $\frac{3}{4}$ E., 6 miles. From Sanda Light, E. by S., distant $1\frac{1}{2}$ miles, is the Paterson's Rock buoy, pointing out a dangerous rock, uncovered at low water. When the Mull Head of Cantyre is seen to the southward of Sanda, you are to the southward of this rock; when the Mull Head is to the northward of Sanda, you are to the northward of it. When Gluinmore Rock appears to the west end of Illanagurach you are to the eastward; and when Gluinmore Rock appears to the east end of Illanagurach, you will be to the westward of Paterson's Rock. A Bell Buoy is erected on Paterson's Rock. In sailing east along the south end of Sanda keep the light in sight and you will pass south of the rock: the light is shut when you are in a line with the rock, and when the light is seen over the hill on east end you are within the rock.—Tides.—High water inshore 9, mid-channel 10 30, a.m.

Tides.—The stream of flood within a mile of the Mull Head runs southward, and turns sooner than at a greater distance from the land, so that a vessel keeping near the west coast of Cantyre, will have the benefit of the stream 2 hours before one above a mile from the land.

Magnetic Bearings & Distances

FOR THE WEST COAST OF SCOTLAND.
WESTERLY VARIATION, 25 TO 26 DEGREES.

ROSS, OFF KIRKCUDBRIGHT, (Lat. $45^{\circ} 46'$ N., Long. $4^{\circ} 5' 1''$ W.) Miles

To Maryport	SE by E	20
St. Bees' Head Light ..	S by E $\frac{1}{4}$ E	$21\frac{1}{2}$
Rossall Landmark	S $\frac{1}{4}$ E	$61\frac{1}{2}$
Buoy Nelson, off Preston	S	71
N.W. Lightship, Liverpool ..	S $\frac{1}{4}$ W	83

Beaumaris entrance	SSW	85	CUMBRAY LIGHT, (Lat. 55 43 16 N., Long.	
Bahama Lightship. I. M. ...	SW by S	26	4 58 W.)	
MULL OF GALLOWAY (Lat. 54 38 9 N.,			To Ardrossan	S $\frac{1}{2}$ E 6
Long. 4 51 20 W.)			Ayr Harbour	S $\frac{1}{2}$ E 12
To Beggar Scar Rock	E $\frac{1}{2}$ S	6	Heads of Ayr	S by W 18 $\frac{1}{2}$
St. Bees' Head Light	SE $\frac{1}{2}$ E	43	Turnberry Point	SSW 23
Point of Ayre, I. M.	SE by S $\frac{1}{2}$ S	21	Loch Ryan entrance	SW by S 42
Bardsey Island Light	SSW $\frac{1}{2}$ W	113	Corsewall Light	SW $\frac{3}{4}$ S 42
Smalls Light	SW $\frac{3}{4}$ S	180	Ailsa Rock	SW $\frac{1}{2}$ S 29 $\frac{1}{2}$
Tuskar Rock Light	SW	153	Copeland Light	SW 64
POINT OF CORSEWALL (Lat. 55 0 29 N.,			PLADDA ISLAND LIGHT, (Lat. 55 26 N.,	
Long. 5 9 28 W.)			Long. 5 7 6 W.)	
To Larne Loch Light	W $\frac{1}{2}$ N	24	To Cumbray Light, from 1 mile	
Fair Head	NW $\frac{1}{2}$ N	37	North of Pladda Light	NE 19
Mull of Cantyre	NNW	30	Irvine Harbour	E by N 18
Sanda Light	N by W $\frac{1}{2}$ W	26	Troon do	E 16
Pladda Light	NE by N $\frac{1}{2}$ N	25	Ayr do	E by S $\frac{1}{2}$ S 16
Ailsa Rock	NE by N	14 $\frac{1}{2}$	Turnberry Point	SE by S 11
Cumbray Light	NE $\frac{3}{4}$ N	43	Loch Ryan entrance	SSW 24 $\frac{1}{2}$
Ardrossan Harbour	NE	40	Ailsa Rock	SW by S $\frac{1}{2}$ S 11
TROON (Lat. 55 33 N., Long. 4 41 W.)			Corsewall Light	SW by S $\frac{1}{2}$ S 25
To Heads of Ayr	SW $\frac{1}{2}$ S	8	Copeland Light	SW 45
Corsewall Light	SW $\frac{3}{4}$ W	36	Belfast Lock entrance	SW $\frac{3}{4}$ W 43
Copeland Light	SW by W	58	Larne Loch Light	SW by W $\frac{1}{2}$ W 42
Ailsa Rock	SW $\frac{3}{4}$ W	22 $\frac{1}{2}$	Maidens Lights	SW by W $\frac{1}{2}$ W 36
Larne Loch Light	WSW	56	MULL OF CANTYRE, (Lat. 55 19 N., Long.	
Maidens Lights	W by S $\frac{1}{2}$ S	55	4 49 W.)	
Pladda Light	W	16	To Sanda Light	SE by E $\frac{1}{2}$ E 5
ARDROSSAN (Lat. 55 38 37 N., Long. 4 49			Ailsa Rock	SE $\frac{1}{2}$ E 24
28 W.)			Corsewall Light	SSE 30
To Troon	S by E	7 $\frac{1}{2}$	Calf of Man	S $\frac{1}{2}$ W 84
Ayr Harbour	S	11 $\frac{1}{2}$	Maidens Lights	SSW 24
Heads of Ayr	S by W $\frac{1}{2}$ W	13	Fair Head	W $\frac{1}{2}$ S 13
Loch Ryan	SW $\frac{1}{2}$ S	38	Inisterhul Light	NW by W 49
Corsewall Light	SW	40	Loch Ryan entrance	SE by S $\frac{1}{2}$ S 31
Ailsa Rock	SW $\frac{1}{2}$ W	26	Larne Loch do	SW by S $\frac{1}{2}$ S 28
Copeland Light	SW $\frac{1}{2}$ W	61	Rathlin Island, N. end..	W by N $\frac{1}{2}$ N 13
Pladda Light	SW by W $\frac{1}{2}$ W	17	Sound of Islay, E. end ..	N by E $\frac{1}{2}$ E 28

MULL OF CANTYRE TO THE NORTH END OF SCOTLAND.

The **Mull of Cantyre** is a high rocky promontory, running to the southward, and approaching within 11 miles of the coast of Ireland. On its southwestern extremity is a lighthouse, which exhibits a fixed bright light, visible 22 miles in clear weather, from N.N.E. $\frac{1}{2}$ E. to S. by W. $\frac{1}{4}$ W. by W. Off Dunimore Head, which is about 5 miles to the northward of the lighthouse, is a rock, lying about a cable's length from the shore, which dries at half-ebb. A rocky shoal, with 3 or 4 feet on it at low water, lies further north, about a quarter of a mile off Usid Point, at the Saltpans: on this shoal the sea always swells, and breaks in the calmest weather.

West Loch Tarbit, on the main of Cantyre; the bay of which is well sheltered, and the depth of water for a mile up sufficient for the largest ships; but the ground, being of soft mud, does not hold well with hard gales, except there is a full cable out. The common places of anchorage are, for large ships, off Ardfarik, in the mouth of the loch: and for small vessels, on the east side of Ilanagalligan. On the S. side of Ilan Trayn are several rocks

above $\frac{1}{2}$ a cable's length from the island, or $\frac{1}{4}$ from it, and $\frac{2}{3}$ from the starboard side of the entry. There is also a sandbank extending from the E. point of Corran, nearly $\frac{1}{2}$ over to the N. side of the loch; to avoid which, keep nearest to the N. side, or keep the easternmost extremity of Ilan Trayn in a line with the W. end of the highest hill in Gia Island. About 3 miles up the loch off Duneturik, nearest to the N. shore is a small blind rock, having 5 feet water over it. Keep the middle of the Loch and you will avoid it.

Loch Achastil is a fine harbour, and fit for ships of any size; the ground good, and only one rock, about midway, within it, covered only with spring tides. Ships may anchor in any part of this loch above Castle Swein. The danger to be avoided in sailing towards Achastil is a small rock on the N. side of the two Mackcarmack Islands, which dries with spring-tides only.

Jura Island.—To the westward is the Island of Jura; on the S.E. side of which is Loch Daguall, with good anchorage, well sheltered, and water enough for a merchant ship. This anchorage is very convenient for vessels bound to the south-

ward. You will anchor near the middle of the bay, when Gia Island is just shut in by the N point of the entry, and the northernmost Pap of Jura bears N.W. $\frac{1}{2}$ W. In running either in or out, stand not too near the sides, for on the N.N.E. and N. W. side of the bay it shoals nearly 2 cables length from shore.

Sound of Islay is the common track for shipping to and from the N. A Lighthouse has been erected on Rhudha Mhail Point showing a Fixed Light, visible 15 miles. It shows RED from about N.N.E. $\frac{1}{2}$ E. W'y, to about N. $\frac{1}{4}$ W.; MASKED W'y, from about N. $\frac{1}{4}$ W. to about NbyW $\frac{3}{4}$ W. and from about NbyW $\frac{3}{4}$ W round S'y and E'y to about NNE $\frac{1}{2}$ E it will show WHITE, excepting where intercepted by the land. When proceeding into, or through Islay Sound, this light kept in view clears the Black Rock and other shoals at the south entrance. A Lighthouse is also erected on MacArthur's Head, on East side of Islay, and South entrance to the Sound, showing a Fixed Light, visible 17 miles. It shows WHITE up the Sound till it bears S. $\frac{1}{2}$ W.; RED towards Jura from S $\frac{1}{2}$ W till it bears about W; and WHITE from about W. round by the S., or until obscured by the south side of Islay. A tide or a night is the longest any vessel should stop here except in Macdougall's Bay, where one cable may be made fast to a ring or rock on the shore. In entering Islay Sound from the southward, you are to bring Glashilan Island to bear N., or to keep within a cable's length or two from the Islay shore, and you will clear the Skerch-ray Rock, which lies on the starboard side W. of the small Island of Frochilan.

Loch Tarbet is filled with small rocks, especially on its southern side, it is therefore hazardous to enter. The anchorage is $\frac{1}{4}$ of a mile above Guinmore, but the best and safest place is near the mouth of the Loch in Glenaberig Bay. This is easy of access, and has 3 and 4 fathoms water. Keep a cable's length from the point in passing, and anchor the same distance eastward of it. About a mile eastward of this anchorage is a cluster of small rocks above water; on the E. side of these a ship may ride safe in five fathoms water, keeping $\frac{1}{2}$ cables' length from them in going up.

Loch Indaal.—Having rounded the Mull of Kinho, which is the south-western part of Islay, you will open Loch Indaal. This may be said to be the only place in Islay where vessels in winter time can ride in safety. Here small vessels drawing 9 or 10 feet of water may ride, and be well sheltered; larger ships, drawing 15 feet, must ride with the mouth of the loch open, and will therefore not be so safe when the wind blows from the W. or S. W. But the best anchorage is at the further end of the loch called Kilirn Bay,

when Bomore House bears S.S.E., lying somewhat nearer to the S. than to the N. side of the harbour, in 3 fathoms, sandy ground. Larger ships anchor more to the westward bringing Bomore House S. E. by E. in 4 fathoms. At the entrance to this harbour are 2 spits of sand; one on the S. side, which never dries, extending from Atturach Point northwards; the other running from the opposite side southward, which dries gradually. These two spits of sand almost enclose the harbour. In the channel between their two points are 2 and 2 $\frac{1}{2}$ fathoms, low water, spring tides.

Rhins of Islay Light, on the northern side of the entrance to Loch Indaal, upon the small Island of Oversa, bearing by compass from the Mull of Kinho, N. by W. $\frac{3}{4}$ W., distant 10 miles; and from the STATIONARY LIGHT of the Mull of Cantyre, N. by W. $\frac{3}{4}$ W., 33 miles. From the north eastern extremity of the Island of Rachlin, N. $\frac{1}{4}$ E., distant 25 miles. From the REVOLVING Light of Innistrabal, E. distant 28 miles. From the Revolving Light, producing a bright flash once in every minute, on the Rock of Skerryvore, distant from Hynish Point, in Tyree, W. S.W. $\frac{1}{2}$ W., 10 $\frac{1}{2}$ miles, it bears S. $\frac{1}{4}$ W., distant 44 miles. From the Rocks of Dunheertach, lying 11 miles S. W. from Icolmkill, it bears S. S. W., distant 28 miles; and from Tranvore Head, S.W. by S., distant 6 $\frac{1}{2}$ miles. It will be known to mariners as a STATIONARY and a FLASHING LIGHT. To a distant observer it appears like a star of the first magnitude, producing a bright flash of light every 5 seconds without those intervals of total darkness which characterize other Revolving Lights upon the coast. In clear weather it will be visible at the distance of 6 leagues, and is open from N.N.E. to S.E. (westerly); half a mile off Cull Point it disappears.

Oronsa and Colinsa Islands.—Oronsa is much the smaller island, and is nearly 4 miles to the northward of Ruinanishag Point, in Islay. Off its southern sides are several Rocks, one of which extends W.S.W. from Gudimel, a small Island on the S. E. part of Oronsa. This rock dries at half ebb. There is a shoal also about a $\frac{1}{2}$ mile to the southward of the middle of the rock, on which are 6 feet at low water. At the S. W. point of Oronsa is Ilana Roan; one mile S. W. of which are 2 or 3 rocks, which dry with Spring tides only, and some shoals on which the sea always break. A leading mark to go to the southward of these dangers is Ruvaal Point in Islay, on with the S. end of Beninore Hill in Jura. Sail not nearer to Colinsa than till Ruvaal Point bears on the middle of the hill. To the W. of Colinsa are several Rocks and Shoals, lying a mile out from Ardskinish Point, some are above, some below, and

others dry only at low water; you will avoid the whole of them by keeping about 2 miles from the shore, or one mile from those rocks you see above water. There is no anchorage on the W. side of Colinsa, and but indifferent on the east side.

The **Gulf of Coryvreckan**, which is formed by the N. end of Jura, and the Island Scarba, is distinguished by a violent breaking sea with whirlpools, partly occasioned by an excessively rapid stream running over a steep rock, at the N. side of the Sound, near the W. Point of Scarba. On the Jura side of the Gulf the sea rages and forms whirlpools, both with ebb and flood: but the waves do not rise so high as on the Scarbo side of the Gulf.

The **Sound of Mull Lighthouse** is situated on a small rock called Runa Gall, on the south shore of the Sound of Mull, Argyleshire, about one mile northwards from Tobermory. The Tower is about 50 yards within the high water mark of spring tides, and is connected with the shore by a bridge of two spans. The Light is an azimuthal condensing Light, and shows a **FIXED RED LIGHT** northwards out to sea; a **FIXED GREEN LIGHT** towards the New Rocks, the Red Rocks, and the Stirks Rocks, in the Sound of Mull; a **FIXED WHITE LIGHT** southwards into the Sound of Mull. The Light is exhibited from a tower of masonry about 55 feet above high water of spring tides, and may be seen in clear weather at the distance of about twelve nautical miles.

Adnamurchan Point.—A Lighthouse, exhibiting a Fixed Light of the natural appearance, has been erected on this point: and bears by compass from Caillach Head, N.E. $\frac{3}{4}$ E., distant 7 miles; from the Cairns of Coll, S.S.E., 8 miles; from Kana Head, S. $\frac{1}{4}$ E., 30 miles; from Scour of Eigg, S.W. by S. $\frac{3}{4}$ W., 11 miles; from Bo Askadil Rock, W.S.W., 7 miles. It is visible 18 miles in clear weather.

Ushenish Lighthouse is situated on the most easterly head land on the eastern side of the Island of South Uist, one of the Hebrides, in the county of Inverness. The Light is a dioptric first-class **FIXED RED LIGHT**, and is exhibited from a tower of masonry erected on the headland. The Light is about 176 feet above high water of spring tides, and may be seen in clear weather at the distance of about 18 nautical miles.

Island Glass Light, situate on the eastern side of Glass, and on the western side of the channel between Skye and the Long Island. The Light is **STATIONARY**, appearing like a star of the first magnitude at the distance of 5 or 6 leagues from W. by S. to E.N.E. $\frac{1}{4}$ E. by the S.

Skergriatick Rock.—A Beacon, painted black, has been erected on this rock, situate on the Minsh. It consists

of a Frame-work of iron, surmounted by a cylindric cage, and rising to about 30 feet above high water spring tides. There are steps leading from the rock to the cage in which shipwrecked mariners may find a temporary shelter. This Beacon bears by compass from Skernamule Beacon N. N. W., distant 3 miles; from Dunvegan Head, in Skye, N.E. $\frac{3}{4}$ E., 18 miles; from Island Glass Lighthouse, S.E. by S. $\frac{3}{4}$ S., 7 $\frac{1}{2}$ miles; from the Greater Galtimore (one of the Shiant Islands), S.W. $\frac{1}{4}$ S., 8 miles. There is foul ground nearly all the way from Skergriatick Rock to Fiadhuan Island, from which the beacon lies 2 $\frac{1}{2}$ miles to the N. by E.

Loch Terriden.—In entering Loch Terriden avoid Runawagh Point, its southern entrance, a little way of which point is a rock under water, which dries at spring tides. Excepting this rock, there is no danger in sailing into or up this Loch; for Skerintram Rock, which lies on the north side, is always above water, with deep water all round. Here therefore the access is easy, the ground good and so well sheltered, that several hundreds of the largest ships may ride with safety in all weathers. Its entry is 2 $\frac{1}{2}$ miles wide, the Loch running in S. by E. $\frac{1}{2}$ E. to abreast of Loch Shieldag, then S.E. by E. to the furthest end. The best place for anchorage is in Loch Shieldag, between the two narrows, on the S. side of the Basin, or anywhere above the second Narrow, which is what may properly be called Loch Terriden.

Loch Gerloch.—About 4 mile further N. is Loch Gerloch, a large and well sheltered harbour, the ground in all parts clean, holding well, and capable of containing a fleet of the largest ships; its entrance is between Coupachar Point and Longa Island; distant from each other nearly two miles. There are no dangers either in or near it; and when it does not blow hard from the W. or S.W. ships may ride in any part, particularly on the E. side of Island Longa. In winter the best anchorage is between Flowerdale and the Island of Horisdale, in from 9 to 20 fathoms water. Small vessels may ride on the W. side of the Island, S. E. of a rock above water.

Loch Yew.—From Longa Island to Ru Rhea the bearing and distance are N. E. $\frac{1}{2}$ N. 3 $\frac{1}{2}$ leagues. Five miles to the eastward is Loch Yew, a place large and well sheltered, forming a bay of easy access, a moderate depth of water, and having good holding anchorage, where whole fleets may ride in the greatest safety at all times. The entrance to Loch Yew is a mile wide, and nearly off its western point lies the small Island of Frua, with 2 or 3 islets to the eastward of it; there is also a little rock off the northern point of Fura; keep therefore

at a distance in passing it, and the channel in is free from danger. In the middle of the bay is Yew Island, at the northern point of which are some rocks above water. The best places to ride are on the E. side of the Island Yew, or on the E. side of the bay off Tunag, and off Inveraspadaie at the opposite side of the Loch.

Loch More or Great Loch Brim.

—To the northward of Loch Beg, are several Islands, lying before Loch More, or Great Loch Brim. Loch More is a great and safe branch of the sea, capable of accommodating the largest fleets, and having no rocks or dangers within it, except a small ledge on the E. side of Ullapool extending above a cable's length from that shore, which is avoided by keeping $\frac{1}{2}$ from the Ullapool side. You may anchor in this bay in 14 or 15 fathoms water above a cable's length from the shore, or anywhere above Logie Point, in from 13 to 24 fathoms. Should you, in entering or sailing from this Loch, go between the larboard point, or Ru Handerrick, and the Carniskere Islands, remember to give the former a berth on account of a rock called Nucla, which lies nearly a cable's length from the shore, and dries about half ebb.

Loch Kylecough is nearly 7 miles E.S.E. $\frac{1}{2}$ E. from Ru Stoir, and $3\frac{1}{2}$ miles in the same direction from Ouldenay Island. This is a large and well sheltered branch of the sea, the approach to which is safe, and the anchorage good; but for some miles within the Loch the water is too deep for ordinary vessels, being from 30 to 50 fathoms, unless you carry an anchor on shore. Above the Island Ranich where the contracted channel commences again to widen, ships may anchor anywhere, the stream in the narrowest part running not more than 1 mile an hour.—The only rock necessary to notice, lies near the Island Carraway, off the larboard side of entrance; it bears W.S.W. from it and dries at low water; keep Runachusan Point in Ouldenay Island on with the extremity of Ru Stoir, and you will clear this rock to the Southward. At the N. side of the entrance to Loch Kylecough is Loch Shark, and N. E. of Shark lies Loch Calaway.

Loch Inshard.—One league to the eastward of Lusford is Loch Inshard, the last bay before you round Cape Wrath. In sailing in, great caution must be observed, as there is a rock lying right at the entrance, which appears at spring ebbs only. Within the Loch you will be well sheltered, your depth moderate, and your ground good. Sail up until you are landlocked, and anchor near the north or east side. To the north west of Loch Ardcar are some Islands, close to the main, called Ilanarone; and nearly N.N.

E. of these 4 miles, is Balag Island, having a small rock above water, at both the N. and S. extremities. This Island lies about a mile from Ru Wochel. Near the latter is a rock above water, close to the land. From hence to Cape Wrath the coast is high and rocky. Off Cape Wrath are said to lie several rocks under water, called the Stags. Vessels in sailing round this headland should always give it a good berth, of $1\frac{1}{2}$ or 2 miles, and steering E'ward, they will reach the Pentland Frith.

Isle Oronsay Lighthouse is situated on a low point at the south-east end of the Island of Oronsay, Inverness-shire, in the Sound of Skye, also called Sound of Sleat. The Light is an azimuthal condensing Light, and shows a **FIXED WHITE LIGHT**, from a tower of masonry about 58 feet above high water of spring tides. The Light may be seen in clear weather about 12 nautic miles.

Kyleakin Lighthouse is situated on a point of rock which covers at high water spring tides, and projects from the west end of Eilan Dool, or Gillea Island, in Ross-shire, at the western entrance of "The Narrows," leading to Loch Alsh. The tower is about fifty-three yards within the high water mark of spring tides, and is connected with the Island by a bridge of five spans. The Light is an azimuthal condensing Light, and shows a **FIXED WHITE LIGHT** in the fairway of the Sound of Loch Alsh, and a **FIXED WHITE LIGHT** in the fairway leading to the Sound of Applecross, and which White Light extends southwards to Pabba Island. From thence it shows a **FIXED RED LIGHT**, extending eastwards along the shore of Skye to the south of the fairway of Loch Alsh. It also shows a **FIXED RED LIGHT** to the north-eastwards of the fairway to the Sound of Applecross. To the north of the fairway of Loch Alsh the Light is not shown. It is exhibited from a tower of masonry about 53 feet above high water of spring tides, and may be seen in clear weather at the distance of about eleven nautic miles.

Rona Lighthouse is situated on the northern end of the Island of Rona, in Inverness-shire, between the west coast of Ross-shire and the Island of Skye. The Light is a catadioptric second-class heliophotal **FLASHING WHITE LIGHT**, showing a flash **EVERY TWELVE SECONDS**. It is exhibited from a tower of masonry erected on a peak at the north-east point of the Island. It is elevated about 222 feet above high water of spring tides, and may be seen in clear weather at the distance of about twenty nautic miles.

Cape Wrath Lighthouse, erected on the Cape, forming the north-western extremity of the main land of Scotland, in lat. 58 deg. 37 min. N., and in lon. 5 deg.

W., bears from Hoy Head in Orkney, W. $\frac{3}{4}$ N., distant 50 miles; from the Butt of the Lewis, E. by S. $\frac{1}{4}$ S., 41 miles; from the rocks called the Stags off the Cape, S. W. by W. $\frac{1}{4}$ W., about 1 mile; from the sunken Rock called the Nun, S.S.W. $\frac{3}{4}$ W., distant 15 miles; and from the Islands of Stack and Skerry, W.S.W., the former 35 $\frac{1}{4}$ and the latter 38 miles distant. It is known to mariners as a REVOLVING LIGHT, of the natural appearance, changing with one tinged red, which attain their most luminous effect every two minutes, and become, to a distant observer, totally eclipsed for a short time. The light is visible from S. $\frac{1}{4}$ E. to S. W. by W. by the N., at the distance of 23 miles.

Dunnethead Light, on the Northern extremity of the mainland of Scotland, in lat. 58 deg. 40 min. N., bears by compass from the N. end of the Island of Stroma, in Pentland Frith, W.N.W., distant 7 $\frac{1}{2}$ miles; from Hoy Head, leading to Hoy Sound, S.S.W., distant 13 miles; from the Stack and Skerry, S. by E. $\frac{3}{4}$ E. distant thirty-three miles; and from Cape Wrath, in Sutherlandshire, S.E. by E. $\frac{3}{4}$ E., distant 54 miles. In reference to these bearings, the light will be visible to the mariner in a northerly direction from S.E. $\frac{1}{4}$ E. to W. by northward. The Light is STATIONARY, and being elevated 346 feet above the medium level of the sea, will be seen like a star of the first magnitude, at the distance of from 7 to 8 leagues, and at lesser distances according to the weather.

Magnetic Bearings & Distances FOR THE NORTH AND EAST COASTS OF SCOTLAND.

CAPE WRATH (Lat. 58 37 30 N., Long. 5 W.) MILES.

To Ru Store SW by W $\frac{1}{4}$ W 26 $\frac{1}{2}$
Loch Maddy entrance ... W by S 92
Glass Island Light ... W by S $\frac{1}{4}$ S 70
Chicken Head W $\frac{3}{4}$ S 47
Tolsta Head W $\frac{1}{2}$ N 39
To Nun Rock NNE $\frac{3}{4}$ E 15
Hoy Mouth, Stromness ... E $\frac{3}{4}$ S 61
Holburn Head SE by E $\frac{1}{4}$ E 51

DUNNET HEAD (Lat. 58 40 16 N., Long. 3 22 20 W.)

To Thurso Bar SW by W $\frac{1}{4}$ W 5
Holburn Head..... W by S 5
Hoy Head..... NNE 13
Swona, South end of E by S 10
Pentland Skerries ESE 14
SULE SKERRIE (Lat. 59 3 N., Long. 4 13 W.)

To Dunnet Head SSE 33
Strathy Head S by W 28
Sumburgh Head, Shetland..... E 100
Westra Frith..... E by S 40
HOY MOUTH, STROMNESS (Lat. 59 3 N., Long. 3 23 W.)

To Scrabster Roads..... SW $\frac{1}{4}$ S 17
Strathy Head W by S $\frac{1}{4}$ S 23

Lock Erobol W 45

Cape Wrath W $\frac{3}{4}$ N 59

DENNESNESS LIGHT, NORTH RONALDSEA (Lat. 59 23 N., Long. 2 23 W.) MILES

To Foul Island..... NE 45

Pappa Island, Shetland .. NE $\frac{1}{4}$ E 60

Sumburgh Light, Shetland E $\frac{3}{4}$ N 46

Fair Island E by S 28

START POINT IN SANDA ISLAND (Lat. 59 16 39 N., Long. 2 22 25 W.)

To Foul Island..... NE $\frac{1}{4}$ N 50

Fair Isle E 30

Noss Head .. SW $\frac{1}{4}$ W 50

Copinsha Island SW $\frac{1}{4}$ W 22

SUMBURGH HEAD, SHETLAND (Lat. 59 51 N., Long. 1 16 W.)

To Noss Island NE by E 20

Bucanness Light SW by S 140

Fair Isle SW by W 21

Start Point, Sanda I. W by S $\frac{1}{4}$ S 48

Foul Island..... NW by N $\frac{1}{2}$ N 28

NOSS HEAD (Lat. 58 28 38 N., Long. 3 3 5 W.)

To Duncansby NE by N 10

Pentland Skerries Lights ... NE 12 $\frac{1}{2}$

Fair Isle ENE 78

Sumburgh Head.. NE by E $\frac{1}{2}$ E 96

TARBETNESS LIGHT (Lat. 57 51 N., Long. 3 48 W.)

To Troup Head..... SE $\frac{1}{4}$ E 48

Cowsey Point SE by S $\frac{1}{4}$ S 18

Burgh Head S $\frac{3}{4}$ W 13

Mairn SW $\frac{1}{4}$ S 16

KINARD'S HEAD (Lat. 57 42 N., Long. 2 1 W.)

To Rattry Brigs SE by S $\frac{3}{4}$ S 8

Helmsdale NW by N 60

Noss Head..... N by W 61

Duncansby Head... N $\frac{1}{2}$ W 67

Copinsha Island ... N by E 77

BUCANNESS LIGHT (Lat. 57 28 15 N., Long. 1 46 11 W.)

To Peterhead, S.H..... NNE 2 $\frac{1}{2}$

Rattry Brigs NNE 9

Sumburgh Head.... NE by N 140

Bell Rock .. SW 66

St. Abb's Head SW $\frac{3}{4}$ S 95

Girdleness Light..... SW $\frac{1}{2}$ W 25

THE GIRDLENESS (Lat. 57 8 15 N., Long. 2 3 2 W.) MILES.

To Bucanness NE $\frac{1}{4}$ E 25

St. Abb's Head SSW 72

Bell Rock SW $\frac{1}{4}$ S 42

Flamborough Head S $\frac{1}{2}$ W 193

MONTROSE (Lat. 56 42 N., Long. 2 27 W.)

To St. Abb's Head..... S by W $\frac{1}{2}$ W 48

Bell Rock.. SSW 11

May Island SW by S 30

Flamborough Head S 174

Longstone Light, Ferns... S $\frac{1}{2}$ W 70

BELL ROCK (Lat. 56 26 3 N., Long. 2 23 6 W.)

To Montrose entrance NNE 11

Girdleness Lights..... NE $\frac{1}{4}$ N 42

Bucanness Light NE 66

Flamborough Head..... S $\frac{1}{4}$ E 158

Buttonness NW $\frac{1}{2}$ W 13

Arbroath N by W $\frac{1}{2}$ W 7

Dumbar Harbour.....	SW $\frac{1}{2}$ S	27
St. Abb's Head	S. by W. $\frac{1}{2}$ W	32
Fifeness.....	SW by W $\frac{2}{3}$ W	11 $\frac{1}{2}$
MAY ISLAND (Lat. 56 11 8 N., Long. 2 33 20 W.)		
To Fifeness.....	N $\frac{3}{4}$ E	5
Arbroath	NE by N $\frac{3}{4}$ N	21
Bell Rock ..	NE $\frac{3}{4}$ E	16
St. Abb's Head	S $\frac{3}{4}$ E	21
Inchkeith	W $\frac{1}{2}$ N	22
INCHKEITH (Lat. 56 2 N., Long. 3 8 W.)		
To Kirkaldy.....	N by E $\frac{1}{2}$ E	6
Elieness	E by N $\frac{1}{2}$ N	14
Fidra Island.....	E by S $\frac{1}{4}$ S	12 $\frac{1}{2}$

Fisherow	S $\frac{1}{4}$ E	6
Colm Island	NNW	7
Garvy Island..	W by N $\frac{3}{4}$ N	9
May Island.....	E $\frac{1}{2}$ S	22
ST. ABB'S HEAD (Lat. 55 55 N., Long. 2 9 W.)		
To Buttonness	N	37
Bell Rock Light.....	N by E $\frac{1}{2}$ E	32
Aberdeen, Girdleness	NNE	73
Bucanness Light	NE $\frac{2}{3}$ N	95
Bass Rock	NW by N	11
Elieness	NW by N $\frac{3}{4}$ N	25 $\frac{1}{2}$
May Island	N by W	20

EAST COAST OF IRELAND.

POINT CARNSORE TO LOCH CARLINGFORD.

Point Carnsore is the S.E. point or extremity of Ireland, and lies about 42 leagues from Cape Cornwall, bearing N. by E. $\frac{1}{2}$ E.; from the Small's Light N. by W. $\frac{1}{2}$ W., distant 37 miles. Nearly E. by S. from Carnsore Point, distant 6 miles, lies the **TUSKAR**, a very remarkable rock 20 feet above the level of the sea at high water, upon which stands a lighthouse similar to that on the Eddystone, elevated 81 feet from its base. The light revolves every two minutes, showing two faces bright, and one red. The red light is visible 10 miles, and the bright 15 miles. During foggy weather a bell is tolled every half minute. This rock bears from the Small's Lighthouse N. $\frac{1}{2}$ W., distant 33 miles. Ships coming from the westward and bound for St. George's Channel, should endeavour to see this rock before they shape their course to the northward.

Long Bank.—Three buoys are placed on this bank. One on the N. end, Conical buoy, Coloured Red, with Staff and Globe, and lettered "*Long Bank, No. 1*" One on the S. end, Conical buoy, coloured Red, and lettered "*Long Bank, No. 3*." An additional Red (Can) buoy has been placed equi distant from the N. and S. buoys, and lettered "*Long Bank, No. 2*."

Blackwater Bank, is a narrow sandbank running nearly in the direction of the coast at the distance of from 3 to 4 miles. A Black Conical buoy, surmounted by a Staff and Globe, lettered "*Blackwater No. 1*," marks the N. end; and a Black Conical buoy, lettered "*Blackwater No. 4*," marks the S. end. There are two intermediate Can buoys coloured Black, and marked respectively "*Blackwater No. 2*," and "*Blackwater No. 3*." Moored off the north end in 18 fathoms, at low water, spring tides is a Light Vessel, which exhibits a Fixed Light. The Light is shown from the mainmast, and in clear weather can be seen at a distance of 10 miles. The vessel has three masts, and carries two Globes at the

main-mast-head; is painted black, with a White Stripe, having the word "*Black Water*," in white letters on her sides; A gong is sounded in foggy weather.

Wexford Harbour, is capacious and sufficiently sheltered, but is obstructed by a bar extending across it, over which there are at times but 7 feet water. Buoys are laid in the deepest water across the bar; but to enter this harbour a pilot is necessary. On or about the 1st May, 1868, a Light-vessel will be placed near the *Lucifer Shoals*, on the coast of Wexford, and will show a *Fixed Red light*, and her position will be about midway between Tusker Rock Lighthouse, and the Blackwater Bank Light-vessel; she will carry three masts, with a globe at the main-mast-head. Her hull will be painted similar to the other Light-vessels, but with the words "*Lucifer Shoals*" in white letters on her sides.

Arklow Bank, is a narrow sandbank off Arklow Bay, about two leagues from the land, and nearly 11 miles long from N.E. by N. to S.W. by S. and from half to three-quarter of a mile broad; the shallowest part is near the N. end where the least water is 4 feet; the S. end has from 6 feet to 3 fms. on it, and except at slack water, you will perceive its ripple; near to its East side are from 13 to 20 fathoms; approach it no nearer than 30 fms. The marks for its southern end are Arklow Rock N.W. by N. distant 7 miles, and in one with the northern declivity of the Copper Ore mountains; and the Great Sugar Loaf open to the eastward of the Ballynacarrig Hills, and also of Mizen Head, bearing about N. by E. There is also a Conical buoy, coloured red, placed to mark the south end, with the words "*Arklow Bank No. 5*" on it. The marks for its northern end are the top of Carrig Mc Keilly just open to the N'ward of Maughry Point, bearing N. W. $\frac{3}{4}$ N., and the Great Sugar Loaf open to the eastward of Wicklow Head, N. $\frac{1}{2}$ W.

Wicklow Head bearing N. $\frac{1}{4}$ W. clears it. There is also a buoy placed to mark the north end, coloured red, surmounted by a staff and globe with the words "*Arklow Bank No. 1*" on it. Three Can Buoys coloured red, have been placed at equal distances from each other, between the North and South buoys, and marked respectively "*Arklow Bank No. 2*," "*Arklow Bank No. 3*," and "*Arklow Bank No. 4*." Two Light Vessels are now placed on this bank, one on the North and one on the South part. **Arklow Bank North Light Vessel** is placed about $3\frac{1}{2}$ miles S. E. by E. $\frac{1}{2}$ E. from the North end of the bank, and exhibits two fixed bright lights, one on the mainmast 38 feet above the level of the sea, and the other on the foremast 22 feet above the level of sea; she carries three masts, with a globe on the foremast and a globe on the mainmast head. Her hull is painted Black, with a White Stripe, and the words "*Arklow Bank North*," in white letters on her sides. **Arklow Bank South light vessel** has been shifted about two miles S.S.E. $\frac{1}{4}$ E. from her former position, and now exhibits a bright revolving light every minute; she carries three masts, with a half globe over a globe at her mainmast-head. Her hull is painted Black, with a White Stripe, and the words "*Arklow Bank South*," in white letters on her sides.

On **Wicklow Head** is a light house showing an intermittent bright light alternately, 10 seconds bright and 3 seconds dark.

Wicklow Harbour, fit for small craft only, there being only 9 feet in the entrance at low water, spring tides, and 6 at neap tides. To make its entrance better, a new channel has been opened; this is formed by 2 Piers about half a furlong to the westward of the Old Bar, and there the depth is 12 and 14 feet.

The **Wicklow Banks** are 2 narrow patches of sand, lying about 5 miles E. from Wicklow Head. The southern patch called the **India Bank**, is about one mile long, N.N.E. $\frac{1}{2}$ E. and S.S.W. $\frac{1}{2}$ W., and half of a mile broad. On its middle are 2 fathoms, on its S.W. end $3\frac{1}{2}$ fathoms; at its S.W. extremity is a conical buoy coloured black and white in horizontal bands and moored in five fathoms low water from which Wicklow Head light bears W. by S. 5 miles.

The **South Ridge** lies at the N. end of the India Bank, it is $1\frac{1}{2}$ miles long and half a mile broad, with $3\frac{1}{4}$ to 5 fms. water on it. Its direction is N.N.E. $\frac{1}{2}$ E., and S.S.W. $\frac{1}{2}$ W., and its N.W. end is nearly $5\frac{1}{2}$ miles S.E. by E. from Six Mile Point.

The **Codling Bank**.—The south end of this bank lies N.E. by E., 3 miles from the South Ridge; it then runs N. by E. 3 miles, and turns suddenly to W. by N. or 2 miles, then curving round to the

S.E. till it joins the south point. In the middle of the bank, which is 2 miles broad are from $3\frac{1}{4}$ to 5 fathoms. The Great Sugar Loaf open north of the Gap N.W. $\frac{3}{4}$ N., leads between the Codling, and the South Ridge. A Can Buoy, coloured black and white, in vertical stripes is moored on this bank. A light vessel is placed about $3\frac{1}{2}$ miles S.E. by S. from the south end of Codling Bank, from which is exhibited a Red quick Revolving Light, showing its greatest brilliancy every 20 seconds, has three masts, and carries a Globe with a half Globe underneath at her mainmast-head. Her hull is painted black, with a white stripe, and the words *Codling Bank* in white letters on her sides.

The **Bray Bank** lies N.N.E. $\frac{1}{2}$ E. and S.S.W. $\frac{1}{2}$ W.; is 2 miles long and $\frac{1}{2}$ a mile broad, with twelve feet on it. In the Channel, between the N.W. end of the Codling and the South end of the Bray, which is half a mile wide, there are 9 fms. gravelly ground. Carrickgollogan Hill, two degrees open north of Bray Head, N.W. $\frac{1}{4}$ N., clears the Codling to the northward. This mark will lead across the bay in 3 fathoms at low water. The south hummock of the Little Sugar Loaf in one with Windgate Hill, W.N.W. $\frac{1}{2}$ W. leads between the Bray and the Kish Banks in $3\frac{1}{4}$ fathoms.

The **Kish** is a long narrow sand, stretching N. by E. $\frac{1}{2}$ E.; and S. by W. $\frac{1}{2}$ W., about $6\frac{1}{2}$ miles, and is from $\frac{1}{2}$ to $\frac{3}{4}$ of a mile broad; on its southern extremity is a conical buoy coloured black, and lettered "*Kish Bank, No. 3*;" on its northern extremity is placed a conical buoy, coloured black, surmounted by a staff and Globe, and lettered "*Kish Bank, No. 1*;" an additional Can Buoy coloured black, and lettered "*Kish Bank, No. 2*" has been placed midway between north and south buoys. On the Kish are from 9 feet to 3 fathoms, the latter depth being near its northern end. Three-quarters of a mile from the northern extremity of the Kish, a Floating Light Vessel is moored, with the following mark and bearing:—Ireland's Eye a little open of Howth Head, and Dublin Lighthouse, N.W. $\frac{1}{2}$ W., distance $7\frac{1}{2}$ miles. This vessel exhibits a White Revolving Light, which attains its greatest brilliancy once in every minute. At 3 miles to the southward of the light-vessel are only $7\frac{1}{2}$ feet water; at this spot the Great Sugar Loaf Hill appears on the saddle of Bray Head, bearing W. $\frac{1}{2}$ S., and Ireland's eye just open, and shut with the Head of Howth, N. $\frac{1}{4}$ W.

Bennett's Bank.—The S. end of this bank lies about 1 mile East of the Kish Lighthouse and 5 miles S.E. from Howth Head Lighthouse; it is about $2\frac{1}{2}$ miles in length, and has from 6 to $4\frac{1}{2}$

fathoms on it; at half mile southward are 12 to 14 fathoms.

The **Burford Bank**, at the entrance to Dublin Bay, is narrow, and runs in a N.N.E. $\frac{1}{4}$ E, and S.S.W. $\frac{1}{4}$ W. direction being about $1\frac{1}{2}$ mile long, but not a $\frac{1}{4}$ of a mile broad. Nelson's Pillar kept open to the southward of the Pigeon-house on Dublin Quay, will lead clear of its southern extremity in $4\frac{1}{2}$ and 5 fathoms water. There is a shallow part of this bank over which there is not more than 12 feet at low water. This lies with Malpas Obelisk in one with signal station, and Sutton Tower just open of Sheep's Hole Point. On all other points of the bank are from 3 to 4 fathoms. The mark to clear to the eastward of it, is Ireland's eye open to the Nose of Howth. Upon each end of this bank is a buoy; that on the southern end is a conical buoy, coloured red, surmounted by a staff and globe, and that on the northern chequered black and white.

Sailing for Dublin Bay from the Southward.—From the Tuskar to Wicklow Head the bearing and distance are N.E. $\frac{3}{4}$ N. nearly $46\frac{1}{2}$ miles, but to pass to the eastward of the Arklow Bank the course is N.E., observing to make due allowance thereon for the set of the tide, whether flood or ebb. When Wicklow Head Lights bear N. by W. you will be clear of the Arklow Bank; then to sail within the Wicklow or India Banks bring the Great Sugar Loaf Hill well open of Wicklow Head, bearing N. by W. or Wicklow Lights in one; either of these will lead between the Arklow and India Banks, and when within 2 miles of the shore, a N. by E. $\frac{3}{4}$ E. course will carry you past Moulditch Bank and Dalkey Island. In working up between the banks and the shore with a flood tide and northerly wind, do not stand further from the land than four miles; for the tide with little wind may drift you upon the banks: while near the shore the stream commonly makes to the southward $1\frac{1}{2}$ hours before high water.

Stopping Places.—In moderate weather vessels may stop almost any where within the banks between Wicklow and Dublin, except off the Giant's Bed, where lies the Moulditch Bank; the best part, with westerly winds, is between Bray Bank and the main from $\frac{1}{2}$ to 2 miles from the shore. Here is very little stream of tide, and the violence of the sea is considerably broken by the banks.

In **Killiney Bay** vessels may anchor in 5 or 6 fathoms, sheltered from W.N.W. to N.N.E. winds.

Dublin Bay.—There is good anchorage in the mouth of Dublin Bay when the wind does not blow hard from the E. and S.E.; with these winds a great sea sets in when it blows hard, so that vessels are

obliged to run for some place of safety; with north-easterly winds, vessels run for Kingstown harbour, which lies on the S. side of Dublin Bay, and is enclosed by two large piers; on the head of the eastern of which is a lighthouse shewing a revolving light, presenting white and red faces alternately, and attaining their greatest brilliancy at intervals of thirty seconds. During foggy weather a bell is tolled. There is also a fixed red light on the west pier-head. The entrance to this harbour faces the N.E., and has 4 fathoms water; within, from 4 to $2\frac{1}{2}$ fathoms at low water. When going in, leave the revolving light on the port hand, and round it close to. **BAILEY LIGHT**, exhibited from the S. E. point of Howth Peninsula, is stationary, and is visible at a distance of fifteen miles. About a mile to W.S.W. of the Bailey lighthouse lies the Rosebeg Bank, which is easily distinguished in blowing weather by the sea breaking over it: and on which are from $2\frac{1}{2}$ to 3 fathoms water. The Revenue Barrack on with the Poolbeg Lighthouse, bearing N.W. by W. $\frac{3}{4}$ W., leads clear to the southward of it.

Dublin Harbour lies between two banks, the North and South Bull, and is sheltered on the south side by a wall on piles, carried eastward about 3 miles into the bay. At the end of the south wall is Poolbeg Lighthouse showing a fixed light all night, and a lower light from half-flood to half ebb: a ball is hoisted during the same period in the day. A bar lies across the entrance, on which are 12 feet at low water. Between the bar and lighthouse are 14 to 27 feet. A red buoy is moored on the bar, in 9 feet at low water: it lies a mile E.S.E. $\frac{1}{4}$ E. from the lighthouse. Pass about a cable's length to the southward of this buoy, observing the before-mentioned mark and you will carry 12 feet over the bar at low water. On the north side of the channel, and bearing E. 3-10th's of a mile from the lighthouse, is a white buoy, moored in 9 feet at low water, between which and the lighthouse are from 14 to 27 feet. The south bar buoy (black) lies S. $\frac{1}{4}$ W. 4-10th's of a mile from the lighthouse on the southern extremity of the south bar patches, which commence about $\frac{1}{2}$ a mile S.E. from the lighthouse, extending in that direction nearly $\frac{1}{2}$ a mile; then turning to the westward about the same distance, when they terminate where the black buoy is placed. On these patches are only from 4 to 5 feet low water. At 6-10th's of a mile within the lighthouse a white buoy is placed, which must be passed to the northward. The channel is regularly buoyed on the north side with black buoys, and on the south with red buoys from the Pigeon House to Ring's end. Between Pool Beg and the Pigeon

House, there are several places where vessels may anchor, in from 16 to 20 feet at low water, the channel having been greatly improved by means of powerful steam dredges. Ships in general, with suitable draughts of water sail over the bar to the north of the east buoy. This is called the East Channel, and the mark for it is the Church of Irishtown just open to the northward of the lighthouse. This mark will lead you about a cable's length to the southward of the east buoy in no less depth than 15 feet at half-flood. So soon as you are over the bar, the depth will increase to 18 and 20 feet. Keep about mid-channel between the Spit Buoy and the lighthouse, and when about $\frac{1}{2}$ a mile within the latter you may anchor in 15 or 16 feet at low water. This is called Poolbeg, and although a tolerably good place in summer, it is not so good in winter time; it is then best to go a mile further up, so as to take the ground about half-ebb, or to lie along the wall or along the quay above Ring's End. To sail in through the West Channel, you must pass to the southward of the South Bar Buoy; when the lighthouse bears N.E. $\frac{1}{4}$ N., and on with Baldoyle Chapel or the ruins of Kilbarrack Church, steer for it in that direction, giving it a berth on your larboard hand, as you haul round to the westward. When coming from the southward, keep Sandy Cove Tower on with the eastern extreme of the pier at Kingstown, S. $\frac{1}{4}$ E., until you bring the lighthouse on the above bearing. This will lead you in the best water, and well to the westward of the south bar buoy. In the channel are only 6 feet at low water, spring tides. The tide flows at the lighthouse, on full and change days, 11 hours 12 minutes, and rises 12 feet on springs. Vessels coming from the northward, bound for Dublin, must give the Hill of Howth a berth, to avoid the bank called Rosebeg. To avoid it on the east side, bring the eastern extreme of Howth open of the Bailey, or the Bailey Light N.E. $\frac{1}{4}$ N., and on the south side, Poolbeg Lighthouse, N.W. by W. $\frac{3}{4}$ W.

Ireland's Eye is a small island, $1\frac{1}{2}$ miles to the north of Howth Head; on its eastern side is anchorage in 6 fathoms; on its north in 7; but the best is on the west side in about 4 fathoms, with the Stack open to the southward of the height, and from whence it is easy to run for the pier of Howth in case of necessity.

Howth Harbour, which is at present being deepened and improved, to the S. of Ireland's Eye half a mile. There are two piers; on the easternmost of which there is a lighthouse exhibiting a fixed red light to seaward 45 ft. high, on the west side of the entrance and towards the end of the west pier there is 7 feet of

water at low water spring tides, (rise of tides 13 feet at springs), and alongside the eastern pier there is 4 to 5 ft. at low water spring tides. The centre of the Harbour, from three-quarter cable length inside the jetty is a Rock, that dries at low water and should be avoided. Entering the Harbour from the eastward keep Howth Church, W. $\frac{3}{4}$ S., open S. of the lighthouse to clear the rocks off Ireland's Eye; and entering from the northward keep the Martello tower between the Pier heads S. $\frac{1}{2}$ W. Give the eastern pier a wide berth to avoid the loose stones under it that dry at low water. The tolls levied are: On all boats above 5 tons is 10s. per year; and 5s. from 1st of September to 31st of December. Vessels employed in fishing 1s. 3d. per ton. On small boats plying for hire, an annual licence of 2s. 6d. Vessels engaged in trade, if occupying a berth at the quays for a period exceeding ten days to pay a charge of $\frac{1}{2}$ d. per ton register for each day exceeding such period.

Harbour of the Skerries.—This Harbour may be easily known by Rockabill and St. Patrick's Islands; the former is a remarkable rock, always above water, and steep to all around, having from 9 to 18 fathoms close to it, and on the summit of which a Lighthouse is erected exhibiting a FLASHING light every 12 seconds, and can be seen 18 miles. The flash is white between N. $\frac{1}{2}$ W. and S.W. by S.; red between the same bearings round westward or towards the land. It lies 4 miles E. by S. of the Skerries, and about $2\frac{1}{2}$ miles from St. Patrick's Island. To sail in, after you have rounded St. Patrick's Island, steer N. W. by W. until all the town of Skerries appears open of the pier-head; you will then be clear of the Cross and may round into the road, where you will have 4 or 5 fms. of water. Here the riding is safe, unless it come to blow hard from the E. or N.E.; but if you intend going up to the pier, stop about a cable's length from the pier-head, in 3 fms. until the tide serves.

Balbriggan Harbour is sheltered from the east by a Pier, on the S. side of the Bay, which runs northward. Within the Pier Head, at high spring-tides, are 12 feet water, and with neap-tides, 9 or 10. On the pier, S. side of entrance, is a white lighthouse, exhibiting a fixed light, visible at the distance of 10 miles, between W.S.W. and S.S.E. $\frac{1}{4}$ E.

Drogheda Bar lies $27\frac{1}{2}$ miles N. of Dublin, about 10 miles N. of Skerries, and 7 miles from Balbriggan, the river running due E. and W. Formerly the river from the Maiden Tower to the Bar had a tendency to run N.E., but an annual outlay of nearly £6000 a-year in its improvements has contributed to give the entrance to the river an E. and W. direction,

thereby enabling vessels to take the bar with much more safety than heretofore. The parallel walls at the mouth of the river having been extended within the last few years 1800 lineal yards seaward, and now nearly reaching the bar, has caused the water in the river adjacent to the bar to be comparatively smooth in the severest weather. These walls have also had the effect of deepening the channel, and directing its course in a more southerly direction, thereby making the bar much easier of access in bad weather. The continual dredging of the river has removed the banks and shoals which previously existed, leaving the navigable channel of a uniform depth, not less than from 18 ft 6 in. to 19 ft. at high water of ordinary spring tides. The water on the bar at spring tides from 18 to 22 feet, with from 15 to 16 feet at neaps. There is an excellent tug boat in attendance on vessels requiring her assistance, with a number of experienced licensed pilots always looking out for vessels bound for this port. There are fifty sailing vessels, with five first-class paddle-steamers, having in the whole a registered tonnage of 7327 tons trading to this port, exclusive of other vessels which frequent this place with occasional cargoes. Four lighthouses are placed at the entrance of the river, and a number of stone towers built on the N. side, with wooden perches for landmarks on the S. side; the centre between them denoting the channel. The relative bearings of the E. and W. Lights will be occasionally changed, as the sandbanks alter their places. The present entrance of the river, keeping these two lights in one, is W. $\frac{1}{4}$ S., until you come abreast of the large Stone Pillar on the north side, then steer N.W. $\frac{1}{4}$ W. for the North Red Light. There has lately been placed at the East end of the North Wall a large Wooden Perch, with Cage and Barrel placed on the top of it, and must be kept about 100 feet on the starboard side in coming in. Ships drawing 10 $\frac{1}{2}$ ft. should have at least 4 hours' flood tide in bad weather before taking the bar.

Dundalk—Sailing N. you will pass Clogher Head and reach Dunany Point, off which, about a mile E. of high water mark, lies a small rock, drying with low water spring tides. The first buoy is in 6 fathoms at low water, about four miles from Dunany, bearing from it N. by E., keeping Clogher Head well open, and bearing from Cooley Point W. by N., distant about four miles. The second and third buoys bears N.N.W. $\frac{1}{4}$ N. from the first buoy. The second buoy is in 3 $\frac{1}{2}$ fathoms at low water; and the third is on the bar, on which there are, at low water springs 3, and at low water neaps 6 feet. The depth on the bar at high water springs, varies from 24 to 18 feet; and

neaps, from 16 to 13 feet. These depths continue up to Soldier's Point, whence, to the quays, the depth is at high water springs 19 feet; and neaps 13 feet. A lighthouse, on screw piles has been erected at the entrance of the Harbour Channel. The Light is a Fixed Light, varied by Flashes, giving a flash once in every 15 seconds: its focal point 33 feet over the level of the sea, at high water; and in clear weather it is visible at the distance of about 9 miles. To seaward the Light appears of the natural colour. Bright, between the bearings of W. by N. and N. $\frac{1}{4}$ W.; it is masked in the direction of the Dunany Reefs between the bearings of N. $\frac{1}{4}$ W. and N. by E. $\frac{1}{4}$ E.; it is coloured Red towards the west side of Dundalk Bay; and shows Bright towards the Harbour Channel, northerly. The Lighthouse is borne on screw piles of red colour, braced into an open framing below the dwelling, which is of octagonal form, and coloured white: over this the lighthouse has a dome-formed top. It stands within the entrance of the channel, in lat. 53° 58' 40" N., and lon. 6° 18' W.; and bears from Castle Rocks off Cooley Point, N.W. $\frac{1}{4}$ W., distant 5 $\frac{1}{2}$ nautic miles; from Dundalk Patch (rocky shoal), N. by W. $\frac{1}{4}$ W., distant 6 $\frac{1}{2}$ nautic miles; from Dunany Reefs, eastward of Dunany Point, N. $\frac{1}{4}$ W. distant 6 $\frac{1}{2}$ nautic miles. When vessels bound to Dundalk come between Cooley Point and Clogher Head, they are required to hoist a signal for a pilot. A large bell has been placed on the roof of the lighthouse which strikes six times per minute in foggy weather. All vessel entering the Port to keep the lighthouse on the starboard hand. Masters of vessels are cautioned to give the beacons and perches a sufficient berth. Vessels wanting the use of the Steam Tug are requested to hoist by day an Ensign at the Fore-top-gallant mast head, by night, Two Lights, one above the other. Masters of vessels necessitated to enter the harbour without being able to obtain a pilot, should observe that after passing the lighthouse, the first and second lights are white, the third light is green; these three lights to be kept on the port hand; the fourth light is red, to be kept on the starboard hand; the fifth light is bright, to be kept on the port hand; the sixth light, placed on the Rock Beacon, is red, which is to be kept on the starboard hand; all the lights from thence to the Quays are white, and are to be kept also on the starboard hand. On entering the channel in daylight the black beacons and all perches with black ball signals on top are to be kept on the port hand, and all the red beacons and perches with red conical signals on top to be kept on the starboard hand. The Commissioners for improving the Port and Harbour of Dundalk are erecting a Guide

Wall from the North Bull towards the Bar, running in a direct line to, and ending 300 feet to seaward of the lighthouse; this end is marked by a red buoy, and the wall bears from it N. by W. $\frac{1}{2}$ W., said buoy to be kept on the starboard hand. Three Jetties have been constructed on the West side of the Channel, the river ends of which are marked by the first three lights on entering the channel. Two Jetties are also in course of construction on the East side of the Channel, the river end of the first is marked by a perch with red conical signal on top; the river end of the second is also marked with a similar perch, which carries the first red light on entering the Channel. The Dundalk Harbour Commissioners have had built, at a cost of £3,000 a new and powerful Iron Steam Tug boat for the accommodation of vessels trading to this port.

DUNANY AND IMOGENE ROCKS DUNDALK BAY.—A Black Conical Buoy, surmounted by a staff and ball, has been placed in $3\frac{1}{2}$ fathoms, at low water, spring tides, to mark the position of the Imogene Rocks, which lie about a mile and three quarters S.S.E. off Cooley Point, north side of entrance to Dundalk Bay, and with the following marks and compass bearings:—Dundalk High Chimney, open of Rathcor Point, N.W. $\frac{1}{2}$ W.; Cooley Point, N.N.W. $\frac{1}{2}$ W.; Carlingford Lighthouse, N.E. $\frac{1}{2}$ N.—A red conical buoy, surmounted by a staff and ball, has been placed in 4 fathoms, low water, spring tides, on the outside of the Dunany Reefs, which lie off Dunany Point, south side of entrance to Dundalk Bay, and with the following marks and compass bearings—Clogher Head, S. W. $\frac{3}{4}$ S.; Dunany Church, W. $\frac{1}{2}$ S.; Dundalk High Chimney, N. by W. $\frac{1}{2}$ W.; Tipping Mountain on with a saddle in the distance, N. $\frac{1}{2}$ W.

Loch Carlingford lies two leagues to the eastward of Dundalk Harbour entrance, and forms a large well sheltered bay, the ground good, and water sufficient for the largest ships; but there are several rocks and dangers which must be attended to. Its entrance is between Ballagan and Cranfield Points, which bear from each other nearly E. by N. and W. by S., distant $2\frac{1}{2}$ miles. The channel is straight and its direction is 23 degrees west of magnetic north, and its length 1,500 feet. It is marked, at its outer entrance, by a Red Keel Buoy on the north or Cranfield side, and a Black Keel Buoy on the south or Ballagan side; said Buoys being moored with 11 fathoms chain, each at 225 feet from the centre line of said channel. The inner end of said channel is similarly marked by Red and Black Keel Buoys, similarly moored, and at the same distance from the centre line. These Keel Buoys carry a Circular Open Cage on top, and are marked C. Bar, Nos. 1, 2, 3, 4. To enter Carlingford Lough by this

channel keep Haulbowline and Greenore Lights in one until in the centre between the lines of the Red and Black Buoys; then keep midway between them, or within 150 feet of centre line either way until abreast of Haulbowline Lighthouse and then steer for Greenore. Tolls are levied on vessels as follows: For every vessel entering Carlingford Lough without delivering or loading cargo there, per registered ton 3d.; for every vessel entering or leaving Carlingford Lough, and delivering or loading cargo there, if coming from or going to any port in the United Kingdom or the Isle of Man, per registered ton, 6d.; if coming from or going to any port other than a port in the United Kingdom or the Isle of Man, per registered ton, 9d. Exemptions—All sailing vessels under 75 tons and all steam vessels under 100 tons exempt altogether; all vessels under 1000 tons exempt if they enter or leave between half-flood and the next half-ebb tide; all sailing vessels of and under one hundred and fifty tons and all steam vessels of and under two hundred tons delivering or loading cargo at the town or the river of Newry north of old Narrow Water Castle. The Helly Hunter, upon which a large Red Buoy has been placed, is a rocky shoal lying to the eastward of the entrance of the loch and stretching about 1 mile S.W. and N.E.; its western end dries with extraordinary low tides only, and on the other parts the least water is 6 feet. To avoid the Helly Hunter, as you sail to Carlingford from the E. or S., do not bring Mount Culy to the westward of W. $\frac{1}{2}$ N. until the Blockhouse comes on with the top of Foy Mountain, bearing N.W. $\frac{1}{2}$ N. Then steer for the N. end of Block House or Haulbowline Island, giving the Point of Cranfield and the Island a berth of a cable's length each from the high water mark. Between the W. side of Blockhouse Island and Ballagan Point are several rocks and shoals, and consequently this passage must not be attempted.

Carlingford Loch Light, situate on Greenore Point, on the larboard side in going up Carlingford Loch, revolves, is of the natural appearance, attains its greatest magnitude every 45 secs., and is visible at a distance of 9 miles.

Carlingford Lights are shown from a tower erected on Haulbowline Rock, which lies upon the bar $\frac{1}{2}$ a mile W. by N. from Cranfield Point, on the larboard side of the entrance to the Loch. The upper is a fixed light, and the lower revolving. The higher light is shown throughout the night, and may be seen like a star of the first magnitude, at the distance of 15 miles. The lower light, having also a starlike appearance, is exhibited from half-flood to half-ebb. In the day during the same period, a ball is hoisted; and in foggy weather, a bell is tolled every half-minute.

NORTH-EAST AND NORTH-WEST COASTS OF IRELAND.

LOCH CARLINGFORD TO SLIGO BAY.

Annalong.—A small dry harbour, with excellent shelter for coasters after passing a narrow but easy entrance.

Newcastle.—A dry harbour, surrounded by a quay and sea-wall, affording good shelter for coasters, with an even bottom, and very easy access between the two pierheads.

Dundrum Harbour.—The entrance to Dundrum Harbour (a dry one) lies $2\frac{1}{2}$ miles eastward off Newcastle at the mountain foot. The Marquis of Downshire, has built a long two storied House, close to the western side of the entrance, the light colour of which is a useful guide for vessels endeavouring to make the harbour in thick weather. In the middle of the entrance channel a black buoy is laid down in 14 feet, low water spring tides. It may be picked up by keeping the old castle that stands above the town a sail's breadth in on the west point that forms the entrance. Steering north from this, you will arrive at a smaller buoy lying in the middle of the river; then by steering N.W. by W. you will come up with the first perch on the banks to the west, having on it a small barrel—give this a berth of half a cable's length on your larboard hand; after which by changing your course N. by E. you reach the second perch, having a triangle on it: allow this the same berth as the first. The third perch has a round black top. From the second perch, from which you have the town and pier open, steer N.N.W. up the river until abreast of the red topped perch, to which give a berth of half a cable's length on your starboard hand, and then keep for the pier end.

St. John's Point.—On this Point in lat. $54^{\circ} 13' 10''$ N., and lon. $5^{\circ} 39' 50''$ W. is erected a tower, shewing an inter-mitting light, *Red* appearing of its full brightness during 45 secs. and ob. 15 secs. The light bears from Newcastle pier, (Dundrum bay) E. by S. $\frac{1}{2}$ S., $7\frac{1}{2}$ miles, and from the Calf of Man revolving lights N.W. $\frac{1}{2}$ W., 33 miles, and can be seen seaward from W. by N. $\frac{1}{2}$ N. to E. $\frac{1}{2}$ N. The light kept open will lead clear of Gun's Island and of the St. Patrick's rock, off the entrance of Strangford Lough.

Killough, half a league East of St. John's Point, has a good roadstead in off-shore winds, and, within, offers to coasters a safe dry harbour, with a muddy bottom. Killough Pier is built from the West side, and, between it and a smaller Pier on the East side, called Coney Island, lies the entrance to the port. Outside the entrance of the bay an Iron Perch marks

the Water Rock, which is covered only at high water: to avoid it, bring a remarkable two-storied house, with white front and slate roof, (called Cotter's House, and situated inside the harbour,) one-third inboard from the West Pier-head, until you have passed the Perch; then keep more to the Eastward till you bring the House over to the extreme end of the Pier. Two cables N.N.E. $\frac{1}{2}$ E. from the Perch is the Little Plate Rock, and half a cable N. from this is the Big Plate, both covered except at spring ebbs; and, consequently, when there is water to enter the harbour, there is also water over these rocks. The Garter, on which is an Iron Perch, is a ledge of foul ground which runs off from the western side of the bay, under the Old Mill Stump. There is also a spit of rough stones, called Craine's Point, extending S. W., a short distance from Coney Island; but by keeping Cotter's House midway between the two Pier-ends, when you come within two cables length of them, you avoid this spit. The best anchorage in the Bay is within the Water and Plate Rocks, in from about 5 to 7 fathoms, with shelter from all but southerly winds.

Ardglass Harbour, $2\frac{1}{2}$ miles E. of St. John's Point, is easily known by several old Castles and a rising town on the W. side of the bay. You can anchor at the mouth of the bay, between Ringfad and Fennick Points, in from 6 to 10 fathoms water, but if the wind blows on shore, a small vessel may shelter inside the pier, under the middle castle in from $1\frac{1}{2}$ to $2\frac{1}{2}$ fathoms water, with a warp to the quay, or run aground on the beach. A temporary red light is shown from the inner shore of harbour, 2 cables length from entrance N. by W.

Loch Strangford lies N.E. at the distance of 60 miles from the Hill of Howth, and nearly E.N.E. $\frac{1}{2}$ E. 28 miles from Loch Carlingford. The stream at the entrance is very rapid, and when the tide is ebbing and wind strong at S., S.E., or E., the sea is short and broken, which gives the bar across the river the appearance of a ridge of sunken rocks; but there are not less than 4 fathoms at low water on any part of the bar, and it is quite free from rocks. Few places afford such safety to wind-bound vessels as this Loch, ships having at all times of tide abundance of water, not only on the bar, but also in the two principal roadsteads, *Ballyhenry* on the east, after passing Portaferry, and *Audley's Road* on the west side of the river, after passing Strangford. A small pillar or obelisk, lately built on the outer point of Gun's Isle is a guide to vessels

from the southward, for making the square headed Iron Perch on rock Patrick. This rock covers at half-flood. It is $\frac{3}{4}$ of a mile outside Kildare Point, and has deep water on both sides, but it is best to leave it on the port hand, and steer for the Northern Bar or entrance, giving it a wide berth to the Gortar Perch, which marks the south end of the Reef of Rock Angus, on account of the western set of flood tide at this spot. On Rock Angus itself, stands a stone tower, to be left on the port hand. The starboard side or opposite side of the entrance is marked by the Perch on Pladdy Lug, which must not be approached nearer than 25 fathoms, on account of small outlying rocks. Off the north entrance and in a direct line with Kilclief Castle and Ballyculter Church spire (which when brought in one, are the marks for vessels from the N. and E.) is a black fairway Buoy, lately placed there by the Ballast Board. It should be rounded on the starboard hand, as there are several Pladdies between it and Ballyquintin Point. Having passed the Tower on Rock Angus $1\frac{1}{2}$ mile, come to anchor if you are late for the tide, opposite a White Beacon on the south shore, called Cross Roads, where you can stop a tide until you can get to Ballyhenry, or Audley's Road, 2 miles further, and just beyond Strangford and Portaferry towns. A short half a mile above Cross Roads the mid-channel is marked by a tall Red and White Pillar on the W. side, and a short white Beacon on the E. side of the Lough. The "Hole" of Strangford is a perfectly sheltered anchorage between the town and Swan Island, and there are 2 Quays opposite the Customhouse, with berths alongside them, and a little Bay with an even beach and smooth water for vessels desirous of taking the ground. There is also at PORTAFERRY (opposite) a good quay with berths and a smooth beach along the shore, under the town. A Horse Ferry plies between the two towns. There is a red pillar Beacon on the outer end of Swan Island which marks the entrance into the "Hole" of Strangford. On hoisting a signal, experienced pilots may be had.

South Rock Light is erected on the South Rock, about 2 leagues northward from the entrance to Loch Strangford. The light revolves, attaining its greatest lustre every $1\frac{1}{2}$ minutes, and is visible at a distance of 12 miles. A reef of rocks called the Ridge, extends $1\frac{1}{2}$ miles to the E. of the lighthouse, on the extremity of which is a red Buoy, which bears about S. by E. from the North Rock Beacon. The North Rock, about a mile N. by W. of the Lighthouse, is marked by a solid Beacon, like a small church spire, erected in 1856. The Butter Pladdy, about $1\frac{1}{2}$ miles S. W. of the lighthouse, is marked

by a Black Buoy, to be left on their outer hand by vessels taking the "Sound of the Light"—a channel much frequented by coasters and now well marked, between the lighthouse and the North Rock Beacon. Sailing along the Downshire shore from the Copeland to the North and South Rock, the South Light should be kept outside of Burr Isle, or the Black-head of the Gabbans, in Isle Magee, a sail's breadth outside of Donaghadee shore, or the Copeland Light North to clear Sculmartin Rock that lies N. $\frac{1}{2}$ E. $3\frac{1}{2}$ miles from Burr Isle, and S. E. 1 mile from the town of Ballywater. To the northward of Sculmartin, on which is an Iron Perch, lie Ballawater Rocks, which stretch out about $\frac{1}{2}$ a mile, commencing at Ballyferris Point, and runs S. 2 miles. the S. end is seldom covered, the middle is covered at half-tide, the N. end seldom bare. Vessels of 60 and 70 tons frequently go in to discharge; and there is good shelter from all but N. E. winds, though the space is small, because after building the Quay, the Board of Works never cleared away the loose stones inside it. Six and a half miles N. of Ballywater is

Donaghadee.—This harbour has been greatly improved, and there is now a depth of 10 feet water at low water, spring tides, in the improved portion of the harbour, which extends along the S. pier, from 100 feet west of the western craine to the black buoy, and thence to the N. Pier head. From the S. E. pier head a light is shown, red to seaward from N. by E. $\frac{1}{2}$ E. to S. $\frac{1}{2}$ E., and bright towards the harbour and the entrance of Belfast Bay. Sailing in from the S'ward keep above half a cable's length from the shore until the harbour is open, then run in and let go your anchors inside the pier head. No buoys are allowed to anchors on account of the steam-packets. Mariners must be on their guard not to lose sight of the red part of the light in sailing N. or S. of Donaghadee. About a mile north of Donaghadee is Foreland Point, from whence extends a ledge of rocks to the E., with an Iron Perch on it, and outside of that again is a large black buoy, which should not be rounded too close, particularly at low water. Deputy rock, on which is a red buoy, lies half way between Donaghadee and Copeland, and has about 8ft. at low water. The proper course through the sound is between the Foreland and Deputy boys: but there is a channel on the E. side of the latter, keeping $\frac{1}{2}$ from the Copeland, as a shelf of foul ground runs out after passing the Deputy. Cairn Point, at N. W. end of Copeland, must have a good berth on the starboard hand, to avoid a rock called Gordon's Bush, that lies a cable's length S. of it, and is seldom bare at low water. These are all to be feared in the Sound of Donaghadee.

Copeland Island lies $2\frac{1}{2}$ miles N.E. $\frac{1}{2}$ N. from Donaghadee, and 1 mile to the E'ward of Nout Head. E.N.E. 1 mile from Copeland, are the Cross and Mew Islands, between which is a narrow channel not navigable. On the Cross Island is the Copeland Light. Between these small islands and the Copeland is the outer sound. On the E. side of the Copeland, near the S. point, is a ledge of rocks extending above two cables length to the E'ward; there is also a ledge extending from the Mew Island to the W'ward, between these is the channel. Half-way between the sound of Copeland and Cross Island, is a small rock called the Pladdins, over which are, with common spring tides 3 or 4 feet water; it bears S. $\frac{1}{2}$ W. off the light. To avoid this rock on the east side, bring the lighthouse N. by W.; on the south side, bring the S. W. house in Donaghadee in sight with the S. end of Copeland Island. In this sound the currents are strong, and as there are no buoys, is to be avoided by strangers.

Belfast.—The entrance to Belfast Lough is immediately to the N. of Copeland Light, and lies between said Light and Black Head; the latter bearing from the former N.N.W., distant about eight miles. At the larboard side of the entrance, about a mile to the W. of Orloch Point, is a rocky ledge called the Briggs, stretching out $\frac{3}{4}$ of a mile, and upon which is a red Buoy. About 6 miles to the W. of the Briggs is Grey Point, and, in a sort of bight between them, is the town and harbour of Bangor, which has about the same depth of water at the quay as is to be found at Carrickfergus, and, as an addition, a wooden wharf for the accommodation of steamers has been attached to the back of the stone pier, at which 7 feet will be found at ordinary low water. Two miles further W. from Grey Point, a small ridge of rocks runs out from the shore rather more than a $\frac{1}{4}$ of a mile, on which is a buoy to be kept on the port-hand. On the opposite side of the Lough, and bearing W. by N. $\frac{3}{4}$ N. from Orloch Point, distant 9 miles, is the town of Carrickfergus, where there is a pier, having, with spring tides, 10 feet water and with neaps 7 feet. As a guide to the entrance of this harbour at night, a red Light is shown 2 hours before and 2 hours after high water: this light to be brought immediately over a street lamp in Governor's place—the red light showing about 2 feet above the white light, and from a vessel coming in due north. Outside the old castle and pier at Carrickfergus there has been erected a wooden jetty, where there is 5 feet at low water, and the Lough steamers call, weather permitting, during the summer season. From end of Pier a Red light is exhibited. Off this town to the S. and W. is a bank running out $1\frac{1}{2}$ miles from the shore, and extending

N. $1\frac{1}{2}$ miles; the least water over it is 7 feet. Extending a mile from the shore on the S. side of the Lough, and opposite the village of Hollywood is Hollywood Bank, on which is a Lighthouse built on screw piles, which shows a pale red light, visible 8 miles in clear weather. Between the Hollywood and middle bank is the commencement of the pool of Garmoyle, which extends from abreast the large red buoy on the starboard hand, having from 3 to 4 fms. at low water. From Garmoyle the channel up to Belfast is now nearly straight, having above 10 feet at low water, spring tides; it is well buoyed—red on the larboard, and black on the starboard hand going up the quays. There is also a green light on Hollywood Bank, with three more of the same colour towards Belfast, all of which are to be left on the port side when going up. There is also a red light S.W. of the stone beacon to be left on the starboard side. Large ships usually anchor off the town of Carrickfergus, near the middle of the Lough. Many vessels frequent this anchorage, which is marked on all the Admiralty Charts of the Lough, and Masters of ships pronounce it excellent. Vessels drawing not more than 16 feet water may anchor higher up in the Folly Roads—between Carrick bank and abreast of White Abbey; smaller vessels in Whitehouse Roads. Large vessels drawing 18 feet water, intending to reach the quays, may anchor in Garmoyle. A large pilot cutter is constantly under weigh during the daytime, at night also, (weather permitting) and generally boards vessels bound to Belfast abreast of Grey Point. The Briggs of Kilroot, now a perch on them, lie on the north side of the Loch, and stretch almost from Kilroot Point to White Head, and about a quarter of a mile from the shore to avoid which keep Black Head open with the White Head, and a vessel will be clear of all danger.—The Admiralty Chart of 1856, as surveyed and reported on by R. Hoskin, Master R.N., states:—Belfast Lough is an admirable refuge harbour. Above Grey Point ships may ride securely against all winds.

Loch Larn.—A lighthouse is erected on Farres Point, on the larboard hand, going into this spacious Loch, opposite which are the Maiden or Hulin Rocks. Sailing into Larn from the S.E. pass Muck Island, Brown's Point and Bay, give Barr's Point a berth near half a mile, as a ridge of rocks runs off above quarter of a mile; give Farres Point (on which is the lighthouse,) a berth of half a cable's length: run for Corran Point on Larn side, on which stands the ruin of an old castle, giving the Isle Magee side a large berth, as a long shoal runs out from it very near half-way across to the steam-packet's wooden wharf, opposite the salt

ans, and continue to near the Point of tacknow, round which is Yellow Stone loads, sheltered from all sea, and little tide. There is a long flat runs out from N.W. side of the entrance, which, when covered, is so deceitful to strangers, that they should open the mouth of the Loch vell; keep no more than two cables' length from the lighthouse, run up past the wooden wharf, giving it a berth on the starboard hand. Anchor $\frac{3}{4}$ of a cable's length from Isle Magee shore. Small vessels from above the wharf should run up abreast of Corran Point in 2 fathoms, keeping one third from Corran shore, and two-thirds from the Island. Large vessels should come to further out, about one third from Corran side. There are no rocks in Larn Loch and should a vessel run too far, she will only go on soft sand or mud. A stranger going in, in the night, should take his soundings from Isle Magee shore; but going to the Yellow Stone Road should take a pilot. Vessels may run in without anchors or cables—there are no rocks or shoals to interrupt them, coming from the southward, except Barr's Point before mentioned, and Hunter's Rock. Four miles of the mouth of Larn Loch, and 4 miles N. $\frac{1}{2}$ W. from Knee or Muck Island, the Sound of Muck appears open, and Corran Castle on with Larn Lighthouse.

Maiden, or Hulin Rocks Light

Two lighthouses marked with broad red and white belts, are erected on the Maiden or Hulin Rocks. These rocks bear by compass from the Mull of Cantyre Light, S.S.W., distant 24 miles; from Sanda Island, S.S.W. $\frac{1}{2}$ W., 18 $\frac{1}{2}$ miles; from Ailsa W.S.W., 23 miles; from Copeland Island light, N. $\frac{1}{2}$ E., 16 $\frac{1}{2}$ miles, and from the eastern extremity of Rachlin Island, S. by E., distant 20 and a half miles. The lights are distant from each other 320 fathoms, and bear N.W. by W. and S.E. by E. The mariner in passing should give them a wide berth, there being a number of sunken rocks extending upwards of 3 miles N. and 1 $\frac{1}{2}$ miles S. of them.

Ballicastle Harbour.—Opposite Church Bay on the Irish coast, is Ballicastle Harbour, formed at the mouth of a small rivulet near the town affording shelter for small vessels drawing 7 feet water, for at high water there are 9 or 10 feet between the pier heads, with spring tides, and 8 feet with neaps. In summer ships may ride near the W. side of the bay in 9 or 10 fathoms water the glass-house bearing S.S.W., Sheep Island being shut in with Kinbane Head, and Clare House bearing on the top of the cliff near it; but it will not be prudent to lie long here. Should the wind blow from the N. or N.W., and a swell begin to set in, weigh anchor, and rounding Tor Point, hi nden, Cushindaal, or Larn.

The **Skerries** lie W. by N. 5 miles from Bengore Head, and about a mile from the shore; on the south side of the largest of these Islands, where it appears lowest, a vessel may anchor in 6 or 7 fathoms water, a little more than a cable's length from shore. In sailing into this anchorage be careful of the Stirks on the east side, and of the Kers on the west side: they lie a little to the southward of a cluster of rocks about half-a-mile westward of the Skerries, and dry at four hours ebb.

Port Rush is much improved by a pier and quay; there are from 8 to 24 feet within the harbour, while off the mouth of the port a vessel may anchor in 6 to 8 fathoms, on a bottom of sand. On entering the harbour you must give the North Pier a berth of at least 15 yards, to clear the stones which have been placed to break off the swell, which are covered at $\frac{3}{4}$ flood.

Loch Foyle is a capacious harbour where the largest ships may ride in safety in all weathers; but the best place for large ships is on the N. side, 3 or 4 miles within the entrance, in from 5 to 8 fathoms water: but vessels of 11 or 12 feet draught will ride easiest between Quigley's Point and Ture, in from 2 $\frac{1}{2}$ to 3 fathoms. The danger to be avoided is the Tuns Bank, which lies on the S. side of the entrance, having a channel between it and the land, on the N. side $\frac{3}{4}$ of a mile wide. To sail into Loch Foyle, wait for flood tide, or a brisk leading wind to stem the ebb, which runs at the rate of 3 $\frac{1}{2}$ knots in the entrance: keep Glengad Head 2 or 3 ships' length open off Inishoan Head, until the mouth of Derry River at Kilmore Point is a little open of Magilligan's Point; then steer for the entrance, keeping $\frac{1}{2}$ of a mile from the N. shore, and you will pass between it and the Tuns Bank: when you are within Magilligan's Point, you may keep at a greater distance from shore, and run up to the anchorage. On Donagree Point, a little to the S. of Inishoan Head, are two lighthouses, bearing from each other E. and W., distant 153 yards. The lights are fixed, visible 13 miles, and when in one lead clear of the Tuns Bank.

Inistrahul Island, on the N. E. part of which a lighthouse stands, is 6 miles N. $\frac{1}{2}$ E. from Glenegad Head, and 4 miles from the nearest shore. The light makes a revolution every two minutes.

Loch Swilly.—The entrance of this Loch lies 7 miles W. by S. from Malin Head, and is about 3 $\frac{1}{2}$ miles wide, from shore to shore. Fannet Point is a low point at the W. side of the entrance; it is distinguished by a lighthouse which displays a steady light, which, when seen from sea, appears of a deep red colour but from within the Loch, bright. This

is a safe harbour for vessels of any size, but the best anchorages are off Burncranah House, 2 or 3 cables' length from shore, in from 4 to 8 fathoms, or between the Island Inch and Rathmullin, rather nearer to the latter, in from 5 to 8 fathoms.

Mulroy Harbour is known at a distance by Tory Island, Horn Head, and Rosgull Hill; it has water sufficient for the largest ships; but a part of the channel is narrow and difficult. Strangers should always take a pilot.

Sheephaven & Downing Bays.—Few vessels like to run for Sheephaven as many get on shore, yet some are compelled, not being aware of the excellent anchorage at Downing Bay, which lies on the E. side, at the bottom of Sheephaven. The bay is formed by points called Downing and Morlach. Close under Morlach Point is the anchorage, in from 4 to 6 fathoms. In running for it from Hornhead, the course will be S.E. by S., distant six miles, care being taken to give a berth to two half-tide rocks about a cable's length N.N.W. from Downing; when the sea breaks on them, which it generally does, they may be approached as most convenient; there are no other dangers.

Tory Island, the east end of which lies $7\frac{1}{4}$ miles N.W. from Horn Head, has no good anchorage on its S. side; but in the summer season, with S. winds, a vessel may stop on the north side in 18 or 20 fathoms, within half a mile of the shore. On its N.W. end is a lighthouse, exhibiting a steady bright light, visible from seaward 16 miles all round; but when passing to the S.E. of the Island, is shut in behind the heights between N.W. by N. and N.W. $\frac{1}{2}$ W.

Rathlin-O-Birne.—This island lies 2 miles S.W. $\frac{1}{4}$ W. from Malin More Head,

and is about $\frac{1}{2}$ a mile long and $\frac{1}{2}$ of a mile wide. A lighthouse has been erected upon it, in N. lat. $54^{\circ} 40'$ and W. long. $8^{\circ} 50'$ exhibiting a flashing light, at an interval of 20 seconds, visible at a distance of 16 miles, but red towards the mainland and sound, eastward of that island.

Donegal Harbour is on the E. side of the peninsula, called the Hassens, or Green Islands, 2 miles below the Town of Donegal, where small vessels may ride in 2 or 3 fathoms water at about a cable's length from shore. To sail in, take half-flood, and keep about $\frac{1}{2}$ a mile from the shore on the larboard or N. side, until you are near the Black Rock; then steer E. $\frac{1}{2}$ N. until you are a cable's length past it: you may then steer directly for the Green Islands, giving the north shore a berth of about two cables' length.

Sligo Bay is to the southward of the point of Raugly, and at the N.E. side of the bay is the entrance to Sligo Harbour; S. by E. $\frac{1}{2}$ E. from Raugly point is Black Rock, covered at high water, on which is a fixed bright light, shewing from S.W. seaward to S. E. by S. and seen at a distance of 13 miles. To sail in, keep about 2 cables' length to the northward of the lighthouse, in order to avoid the shoal water on the N. side of the rock. The only place where a vessel will lie afloat at all times of the tide, is Oyster Island Harbour, but the bottom is rocky, and does not hold well. On this Island are two fixed lights, bearing N.N.W. $\frac{3}{4}$ W. and S.S.E. $\frac{3}{4}$ E., 165 yards from each other. After passing the bar, the lights in one clear the Bun Gar Bank, and lead to the entrance of the harbour, or up to the Metal Man Beacon.

SOUTH-EAST COAST OF IRELAND.

WATERFORD TO BALTIMORE.

Waterford Harbour.—From Great Saltee Island to Hook Point, on which Waterford Lighthouse is erected, the bearing and distance are, W.N.W. 13 miles; and from the Longship Lighthouse off the Land's end, N. $\frac{1}{2}$ E. 43 leagues. When coming from the S. or the E. for Waterford, bring Sleanaman Mount a remarkable mountain inland, to bear N. E. until you see Hook Lighthouse on the E. side of the entrance of Waterford Harbour, from which a bright and steady light is exhibited. Go not nearer Hook Point than about 2 cables' length, to avoid falling into irregular streams of tide that run near it. Having passed the Hook, and intending to proceed for the anchorage at Passage, take a flood tide or a leading wind, and steer for Credan Head, giving it a berth of at least $\frac{1}{2}$ a cable's length.

From Credan Head steer N. E. by N. for Duncannon Fort, carefully avoiding the sand banks which extend from both shores. That on the starboard side begins at Bluff Head, extends more than half a mile from the shore, and terminates at Duncannon Fort. Between Bluff Head and Duncannon Fort is Ballistraw Bay. The sand on the other side, called Drumroe Bank, extends more than a mile from shore, and narrows the passage abreast Duncannon fort to about a quarter of a mile. Two lights in Duncannon Fort, one above the other, are exhibited to direct vessels to that point. On the flat, or what is known as "the bar," 14 feet of water can be had on the lowest spring tides. This shallow lies nearly midway between Credan Head and Duncannon, extends for about a mile in length, and is

composed of hard sand; the course by compass over it is from N. N. E. $\frac{1}{2}$ E. to N. N. E. $\frac{1}{4}$ E. Another lighthouse, having a fixed bright light, is erected N. N. E. $\frac{1}{4}$ E. from Duncannon Fort lighthouse, distant half a mile. These two lights kept in a line, will lead in the best channel across the bar between the eastern and middle buoys. When above the lights keep near the eastern side, steering about N. $\frac{1}{4}$ W. for the church of Ballinak, until the new lighthouse at the point of the Spit of Passage comes on with the town of Passage; you may then steer upward N. W. by N. in mid-channel. Abreast of this new light house are 10 or 11 fathoms. The usual anchorage is about a mile above Passage Town, in 5 or 6 fathoms. Two or 3 miles above Passage is very good anchorage, and there the stream is much weaker than at Passage. In proceeding for this place, avoid a spit of sand called the Seede Bank, which stretches off about W. S. W. from Buttermilk Castle, extending about half-way over to the opposite side; the least water on it is 9 feet. Avoid also a small rock which dries at low water, and has fourteen feet over it at high water, which lies about half a cables' length from shore, on the south side of Check Point. In proceeding about low water, keep in the middle between the two points, or rather nearest to Buttermilk Point; if the flood-tide be running, keep in the rough part of the stream, and you will clear the shoal. Vessels drawing 20 or 22 feet water may go up to Waterford, where there are 2 fathoms at low water, a ship's length from the quay. The safest channel to Waterford is on the north side of little Island: the channel on the other side is deeper, but it is narrower, and subject to eddy-tides, which make it dangerous. Pilots may always be had at the entrance of the harbour. A lighthouse has been erected upon seven iron piles, at the Point of the Spit of Passage, seven miles within the entrance of Waterford Harbour, a fixed Red light will be shown from the lighthouse every night from sunset to sunrise.

Dungarvan Bay.—A lighthouse has been erected on Ballinacourty Point, on the northern side of Dungarvan Bay, with the following marks and compass bearings:—Helvick Head, S. $\frac{1}{4}$ W., $1\frac{1}{2}$ miles; Carrickapane Rock, S. S. E., 9 cables' length; and Whitehouse Spit, W. by N., $3\frac{1}{2}$ cables' length. It shows a fixed bright light, visible between the bearings of W. and S. E. $\frac{3}{4}$ S.; green, bearing from W. to N. W. by W.; and red in the direction of Carrickapane Rock. Its white appearance can be seen at the distance of about 10 miles in clear weather.—The intermittent light on Mine Head, S. W. by W., 4 miles from Helvick Head, marks the approach from the westward to Dungarvan Bay,

and can be seen further eastward than the range of Dungarvan light. A vessel in the entrance of Dungarvan Bay must keep clear of the red colour of the light to avoid Carrickapane Rock; and on the northern side of the bay keep to the southward of the green light to avoid Carricknagaddy, and the rocks which extend half a mile eastward of Ballinacourty Point.

Youghall Harbour lies about 13 miles W. S. W. from the entrance to Dungarvon. During high water, spring tides, ships drawing fully 17 feet may go in, and ride off the middle of the town. Across the mouth of the harbour is a bar, which extends above a mile south from the entrance, and has 6 to 9 feet on it at low water. Except when the wind blows from the south, south-east or south-west, there is always smooth water on this bar; 14 to 15 feet water are on it at high water, neap tides. When Cable Island bears W. S. W. you are on the outer edge of the bar. When sailing for Youghall Bay from the southward, keep Knockmeldown Mountain N. by E. To anchor when waiting to go over the bar, the best places are on the S. side of the bar, the harbour mouth bearing N. N. E., in 3 or 4 fathoms: or on the north side of Cable Island, in 3 to 6 fathoms, about 2 cables' length from the shore. From a tower on the west side and within the entrance, is shown a fixed bright light, open to the harbour, and seaward to S. W. by S., and may be seen at a distance of 6 miles.

Cork Harbour.—From a tower on Roche Point, at the east side of the entrance, is shown a red light, revolving every minute, and visible at the distance of 12 miles. From it Cork Head bears S. W. by W. about 4 miles. A fixed white light is also exhibited, visible between the bearings of N. E. by E. and N. E. $\frac{1}{2}$ N., to pass eastward of the Daunt's Rock. From the Longship lighthouse off the Land's End to the entrance of Cork Harbour is 46 leagues N. by W. $\frac{1}{2}$ W. Coming from the southward, and bound to this harbour, keep Knockmeldown Hill about N. E. by E., until you see the Old Head of Kinsale, a bluff point of land with a lighthouse on it. From this Head the entrance of Cork harbour lies E. $\frac{3}{4}$ N., distant about 5 leagues. When off the harbour, Roche Tower with its lighthouse is remarkable. A little without the point, on E. side of entrance, lie the Stag Rocks. There is clean ground in a moderate depth without the harbour's mouth, where ships may, with a northerly wind, wait the flood or daylight. A red buoy is placed on the edge of the bank off Fort Camden; another red buoy about a mile further in, to the northward of the entrance to Cross Haven; a third of the same colour, off the east side of Spike

Island; and a red buoy on the eastern extremity of East Haulbowline Bank. Each of these buoys is numbered. There are also several black buoys on the side opposite, on the edge of the mud flat: they lie in 4 fathoms, and are likewise numbered. Having passed the narrows, which is about 450 fathoms over, the channel continues that width on a N. by E. and N. E. direction, between the red buoys on W. and black buoys on E. side, to the anchorage off Spike Island, on sandy ground; thence it leads upwards, narrowing round the beacons on the northern side of the Spit extending E. S. E. from Haulbowline Island, close in to Queenstown on the north shore. At the entrance of the passage to Queenstown is a black and white buoy; and at about 160 fms. to the S. W. of this, in 2½ fms., is the Lower Spit Buoy, red. The Upper Spit Buoy, red, lies in 9 feet, N. W. by W. ½ a mile from the Lower Spit Buoy. Here the tide runs 2 or 3 knots; It is high water on the full and change at half past 4, and the tide rises from 9 to 13 feet. Large ships going in at or near low water must be careful to avoid the Harbour Rock, which lies a little within the Stag Rocks, on the east side. On it are two iron trunk buoys about 1½ cables' length apart: one on the eastern chequered red and white with beacon; the other on the western edge chequered black and white. It has fifteen feet on it at low water spring tides. About half a mile N. by E. ½ E. from the Harbour Rock lies the S. end of the Turbot Bank, extending thence N. W., and which has on its shoalest part, the north end, 18 feet low water average springs. The middle of this bank lies with a remarkable dark stone building, on the precipitous part of Kenly Cove, bearing W. S. W., and touching the projecting part of the land south-eastward of Temple Breedy Church. It has on it two iron trunk buoys about a cable's length apart: one on the east, chequered red and white, with beacon; the other on the west side, chequered black and white. In order to avoid the shoals on the east side, keep within two cables' length of the eastern shore; or bring the lower part of the white wall, which stands to the S'ward of the Fort upon Dog's Nose, on, or under the west bastion of that Fort. There are buoys placed in nearly mid-channel inside of Dog's Nose, marking a fairway, which is bounded on the east by black buoys marking the shoals on the eastern side, and on the west by a line of fairway buoys coloured black with white tops, which extend as far as Queenstown. To go to the westward of Harbour Rock and Turbot Bank, keep the fort on Dog's Nose open to the westward of the lower part of the white wall above-mentioned, or when

without the harbour, bring and keep a village which appears upon a hill on Great Island, over some pine trees, touching the point of Dog's Nose, bearing N. 21 degrees E. which will lead clear of all dangers on that side. To go between the shoals, keep the flag-staff in the fort of Dog's Nose, on, or over the lower part of the white wall. To avoid the Harbour Rock on the S. side, keep the Crow Rock on with Poor Head. The Turbot Bank may be avoided by keeping nearer to the E. than to the W. side of the entrance. Between the Harbour Rock and the east point are 5 to 6 fathoms; between the Harbour Rock and Turbot Bank are 6 to 7 fathoms; and between the bank and the western shore are 5 and 6 fathoms at low water. About a mile E. by N. from Haulbowline Island, extends the Spike Sand, which begins to dry on the north side at half ebb, and shelters the anchorage at Queenstown. On the east elbow of this bank a lighthouse has been erected on screw piles, in 9 feet: it exhibits a fixed Red light, visible from N. N. E. ½ E. to S. E. by E. ½ E., round by eastward, and a distance of 8 miles. Masters of vessels are cautioned not to cross the bank between the lighthouse and Haulbowline Island, and to give the lighthouse and detached beacon pillar sufficient berth in passing. In going from Dog's Nose for the anchorage off Queenstown, keep Dog's Nose Point S. by W. ¾ W.; or steer for the easternmost part of the fort on the N. shore, between the black and red buoys to avoid a flat which extends in some parts a mile from the E. shore, and also a rock that lies to the westward of Cork Beg, which appears at half-ebb, with a beacon on it. The best place for large ships to anchor is off the garrison, in from 8 to 5 fathoms. Merchant ships may ride off the town of Queenstown in smoother water and less tide, they may also go further up the harbour of Passage, and ride any where between the first houses and Ronan's Point. In proceeding from Queenstown to Passage, do not approach nearer than half a cable's length to the south side of Black Point; and give the W. side of it a berth of about a cable's length, to avoid a sand which extends from that shore, and dries at low water. You may go westward from Haulbowline Island, until you see Ronan's Point in the channel of Passage; then steer N'ward along the W. side of the channel, for the anchorage. Vessels drawing sixteen feet may, with spring tides, go up to the city of Cork, and lie at the quays with nine feet at low water, average tides. Between Passage and Horse Head is a spit of sand, of 6 feet water, extending above a cable's length eastward from the Clay Cliff: you will avoid the extremity of this spit by

keeping Dunkettle House on with a grove of trees which stand on the top of a hill above the House. The point of this spit lies with Belveley Castle and Ronan's Point in one; and vessels which anchor near it, should have the Castle fairly without Ronan's Point, or wholly shut in with it. In a small creek called Cross Haven, within the entrance of Cork Harbour, and on the west side, opposite Dog's Nose, vessels may ride in 10 or 12 feet.

Kinsale Harbour.—A new lighthouse has been erected on the Rocky Point at the S. end of the old head, distant half a mile S.S.W. $\frac{1}{2}$ W. from the old lighthouse, bearing from Bulman's Rock S.W. $\frac{1}{2}$ W. $4\frac{1}{2}$ miles. This light is a fixed bright light, similar to that heretofore shown from the old lighthouse, and is visible from N.E. $\frac{1}{4}$ N. seaward to W. by N., and at the distance of 21 miles. In sailing towards the harbour from the southward, keep Knockmeldown Hill N. E. by E. until you see the Old Head of

Kinsale: after making that, which is about $3\frac{1}{2}$ miles S.W. by S. from the entrance of the harbour, run in until the old lighthouse on it bears W.N.W. about 3 miles; then run in N.W. by W. until the old lighthouse bears S.W. by S.; and then steer N.E. by N. until you are abreast of the lower cove, where you may anchor in 6 fathoms. The only danger near Kinsale Harbour is Bulman Rock, which lies about a cable's length S.S.W. $\frac{1}{2}$ W. from Hangman's Point on the E. side of the entrance, and has 4 feet on it at low water. This rock is buoyed, and may be passed on either side, but the channel on its W. side is the safest for ships coming in or going out.

Baltimore Harbour lies about $5\frac{1}{2}$ miles to the north eastward of Cape Clear, and is very convenient for ships bound either eastward or westward. Small vessels may ride 2 or 3 cable lengths N.N.W. of Baltimore Town, in 10 or 11 feet at low water, sheltered from all winds.

BRISTOL CHANNEL.

LIGHT VESSELS AND BUOYS.

Light Vessels are moored, and Buoys laid in this Channel as follows:—

Light Vessels.

A LIGHT VESSEL, exhibiting a bright light, which revolves every minute, and is visible 10 miles, lies near the English and Welsh Grounds, on the south side of the Bristol Channel, and in lat. 51 deg. 26 min. N., and long. 2 deg. 58 min. W. This vessel is painted red, carries a ball during the day, has the words *English and Welsh Grounds* upon her sides, and is moored on the northern edge of the sand in 6 fathoms low water, spring tides, about 10 miles from King Road, with the high land at Minehead on with Flat-holm Light Tower, W. by S.; the Usk Light Tower, N. by E. $\frac{1}{2}$ E.; a remarkable Peak on the distant land (See me or See-me-not), on with St. Thomas' Head, S. $\frac{1}{2}$ W. A gong is sounded in foggy weather.

Off the west end of the Skerweather Sand there is a **LIGHT SHIP** placed to prevent the stranger from passing into the dangers of Swansea Bay. It exhibits a Red Revolving light, shewing a flash every 20 seconds, at an elevation of 38 feet above the level of the sea. It is intended to show half a globe above the usual globe. Calculations for bearings and distances can be ascertained sufficiently accurate, by judging that of the West Skeawweather Buoy.—The light is regarded as being very obscure, and this is accounted for by the lowness of

the north shore, which conveys a mist over the Swansea Bay. It is, however, very serviceable, and is relied on when entering the Bay.

A LIGHT VESSEL, bearing a bright light, which revolves every minute, and is visible 10 miles, lies off the western end of the Helwick Shoals, and in lat. 51 deg. 31 min. N., and long. 4 deg. 24 min. W. This vessel is painted red, shows a ball in the daytime, has the word *Helwicks* upon her sides, and is moored in 17 fathoms, low water, with Oxwich Point, E. by S. $\frac{3}{4}$ S.; Worm's Head, N. E. by E. $\frac{3}{4}$ E.; Caldy Lighthouse, N.N.W. $\frac{3}{4}$ W.; Lundy Island, S.W. $\frac{3}{4}$ W., 22 miles. During foggy weather a gong is sounded.

Near the western end of the One Fathom Bank lies a **LIGHT VESSEL**, exhibiting a quick revolving bright light every 15 secs., at an elevation of 38 feet above the water, and for the purpose of distinction a fixed red light will also be shown from a pedestal abaft at an elevation of 14 feet. It is moored in 8 fathoms, with Nash High lighthouse, nearly midway between the low lighthouse and St. Donat's White Mark, (rather nearer the latter), N.W.; Barry Church, in line with the easternmost Cliff of Cold Knap Point, N.N.E. $\frac{1}{2}$ E.; Penarth Church, in line with the east end of a clump of trees N.E. by E. $\frac{1}{4}$ E.; Nash high lighthouse, N.W., 10 6-10 miles; Breaksea Bnoy, N.W. $\frac{3}{4}$ N., 5 miles; Barry Church, N. N.E. $\frac{1}{2}$ E., 3 7-10 miles; Flat-holm lighthouse, E, 7 1-10 miles; One Fathom

Bank Buoy, E. by S., 2 2-10 miles; West Culver Buoy, S.S.W., 3 5-10 miles.

A Red Light will be shown from the Tower of the Nash High lighthouse on a bearing from S. 46° E. to S. 57° E., the Southern limit of which will cut $2\frac{1}{2}$ cables south of the Breaksea Buoy. A Red light will also be shown on and after this date from the Low lighthouse at Burnham, between the bearings of N. 81° W. and N. 86° W., the Northern edge of which will cut the Gore (in its present position) and the Little Gore Buoys. And a Red light from the same lighthouse will be shown up the River between the bearings of S. 1° W. and S. 10° W.

CARDIGAN BAY LIGHT VESSEL lies in 26 fathoms, low water, spring tides, one Red revolving light, shewing a flash every 30 seconds, 25 feet above the level of the sea, South Bishop Lighthouse, S.W. by W., $36\frac{1}{2}$ miles; Strumble Head, S.W. $\frac{1}{4}$ S., $21\frac{1}{2}$ miles; Kenmaes Head, S. $\frac{1}{4}$ W., $16\frac{1}{2}$ miles; Causeway Buoy, E. by N. $\frac{3}{4}$ N., 25 miles; Bardsey Lighthouse, N. E. by N., 23 miles.

Buoys.

MORTE STONE, Red, Staff and Globe, lies in 9 fathoms low water, spring tides, $1\frac{1}{2}$ cable's length to the N.W. of the Ledge; Bull Point, E. $\frac{1}{4}$ S., $1\frac{1}{2}$ miles; Morte Point, S.E. $\frac{1}{4}$ S., $\frac{1}{2}$ mile; Baggy Point S.W. by S., 2 7-10 miles; Hartland Point, W. by S. $\frac{3}{4}$ S., 14 4-10 miles; Lundy Lighthouse, W. by N. $\frac{3}{4}$ N. 16 miles. This Buoy warns mariners of a dangerous and rocky locality over which the tide sweeps at a terrific rate.

SAND RIDGE, Red, lies in 4 fathoms low water spring tides, with the Valley of Rocks Hotel, midway between Linton church and a conspicuous house on a hill westward, bearing S.W.; Hurtstone, apparently a cable's length outside the Foreland, S. E. by E. $\frac{1}{4}$ E.; Rillage bearing W. by N. $\frac{1}{4}$ N., 10 miles.

GORE, Black, lies in 18 feet, Burnham High Light its length open northward of Low Light, bearing E. by S. $\frac{3}{4}$ S.; Flatholms Island, its apparent length open west of Steepholms; the Lighthouse, N. E. by N., 9 miles; Sand Point appearing open of Brean Down Point, N. E. by E. $\frac{1}{2}$ E.

WEST CULVER Red, and White in horizontal bands, with staff and diamond, lies in 4 fathoms, with Swallow Cliff, a little open of the South of Steepholme Island, E. $\frac{1}{4}$ N.; Willet's Tower, well open to the Westward of West Quantocks Wood, S.S.W. $\frac{1}{4}$ W. Westerly; East Culver Buoy, E. $\frac{1}{4}$ S., 5 miles.

EAST CULVER, Red and White in horizontal bands, with staff and triangle, lies in $6\frac{1}{2}$ fathoms, with Penarth Head, on with Lavernock Point, N.N.E. $\frac{1}{4}$ E.; Black Nose Point, just open Southward

of Steepholm Island, E. by N. $\frac{1}{4}$ N.; Flatholm Lighthouse, N.E. $\frac{1}{4}$ E.; Burnham Church Tower, S.E. by S.

HONEYCOMB, Red, lies in 5 fathoms, about 35 fathoms N.W. of the Rock, with Weston-super-mare Church on with W. end of Piggot's Summer House, S.E. $\frac{3}{4}$ E.; Kewstock Church about a ship's length open N. of Breanbeck Island, E. by S. $\frac{1}{4}$ S.; Brean Down Point, S. W.; Swallow Cliff Point, N.E. by E. $\frac{1}{4}$ E.; Flatholm Lighthouse, N.W. $\frac{1}{4}$ W., 4 miles.

NEW PATCH, Red and White in chequers, lies in 9 feet, with the high land of Minehead just open Southward of the South end of Flatholm Island, W. $\frac{3}{4}$ S.; Flatholm Light, W. $\frac{1}{4}$ S. S'ly., $\frac{1}{2}$ mile; Grounds Light E. by N N'ly. 6 5-10 miles; Cardiff Church Tower, and the two Glass House Chimnies at Cardiff, apparently at equal distances, the Church Tower being the Eastern object, N. $\frac{1}{4}$ E.; Hayes' Windmill over the East end of Sully Island, N.W. $\frac{1}{4}$ W.; Penarth Church, N. $\frac{1}{2}$ W.

WOLVES, Red, lies in 5 fathoms, half a cable's length westward of the rocks, with Hayes' Windmill on with the West end of Sully Island, N.W.; Breaksea Buoy bears W.N.W. W'ly., 10 miles; Penarth Head, N. by E. $\frac{1}{4}$ E.; Flatholm Lighthouse, S.E. $\frac{1}{4}$ S. The Wolves are a dangerous cluster of rocks: the tides both ebb and flow, set directly on them, therefore great caution is requisite.

SOUTH WEST PATCH, Red and White, in horizontal bands, with staff and triangle, lies in 4 fathoms, with Worle Mill in a line with the western side of Middlehope Beach, S. $\frac{1}{4}$ E.; Monkstone Beacon W. $\frac{1}{4}$ S., 4 miles; Flatholm Lighthouse, W. by S. $\frac{3}{4}$ S.; Usk Lighthouse, N.N.E. $\frac{1}{4}$ E. N'ly.; Grounds Light Vessel, S.E. by E. $\frac{3}{4}$ E. The Buoy, formerly called the Spit, protects one of the quickest sands in the Channel, and, like many other dangers, the tides set directly on them. The old passage between this sand and the Welsh Hook is now filled up, and rendered unnavigable.

WELSH HOOK, Red and White in chequers lies in 5 fathoms, low water spring tides, with Aust Head a ship's length open southward of Denny Island, E. by N. $\frac{1}{4}$ N.; Usk Lighthouse, N.N.W., 6 miles; See-me and See-me-not on with Clevedon Old Church, S.S.W. $\frac{1}{4}$ W.; Grounds Light-vessel, W.S'ly., $3\frac{1}{2}$ miles.

RANNEY FLOATING BEACON, placed on the S.S.W. part of Ranie Spit, lies in $3\frac{1}{2}$ fathoms low water spring tides. Sailors' Home at Cardiff, just open off Penarth Head, N. by E. $\frac{1}{4}$ E.; the Western part of Brean Down on with Flatholms Island at low water; the Lighthouse, S. by E.; Ball Point, W. $\frac{1}{4}$ N.; the highest part of Sully Island, W. $\frac{1}{4}$ S.

WEST CARDIFF, Black with staff and

globe, lies in $4\frac{1}{2}$ fathoms with the Monkstone Beacon in line with Clevedon New Church, E. by S. $\frac{1}{2}$ S.; Ground light, E. $\frac{1}{2}$ S., $6\frac{3}{4}$ miles; Cardiff Hook buoy, S.W. $\frac{1}{2}$ W., 27-10 miles; Usk lighthouse, N.E. by E. $\frac{1}{4}$ E., $9\frac{1}{2}$ miles; the Eastern side of Steephholm, just open West of Flatholm, at high water, the lighthouse S.E'y.; Sully Island open a ship's length Southward of Ball Point W. $\frac{1}{4}$ S.; Penarth Church, N.

EAST CARDIFF, Black, lies in 6 fathoms, low water spring tides; Hook Buoy S. W. by W. $\frac{1}{2}$ W., 1 mile; Monkstone Beacon on with S.E. end of Steepholm, S.S.W. $\frac{1}{2}$ W.; Penarth Church, W. $\frac{1}{4}$ S.; Usk Lighthouse, E.N.E.

CARDIFF HOOK, Black, lies in 2 fathoms, with Cardiff Church Tower its apparent length open Eastward of a conspicuous clump of Trees, N.N.W. $\frac{1}{2}$ W.; Grounds Light, S.E. by E. $\frac{1}{4}$ E., $5\frac{1}{2}$ miles; Peterstone Church Tower apparently midway between the Spire of Newport New Church and the Tower of the Old Church, N.E. $\frac{1}{2}$ E.; the Usk Light Tower, N.E. by E. $\frac{3}{4}$ E.

A Can Buoy, coloured black, and marked "Middle Cardiff," is placed in Cardiff Roads, in 4 fathoms, with a large Red Brick House, open of Penarth Head, N.N.W.; the east end of Steepholm in line with the east end of the dwellings at Flatholm lighthouse, S. by E. $\frac{1}{4}$ E.; West Cardiff Buoy, S.W. $\frac{1}{2}$ S. 9-10 mile; Cardiff Hook Buoy, N.E. by E. $\frac{1}{2}$ E. 12-10 mile.

A Spiral Buoy, coloured red and white, in chequers, and marked "Cardiff Spit," is placed in 3 fathoms, with Llandough Church Tower, its width open South of the South Pier Head at Penarth Dock, N.W. $\frac{1}{4}$ W.; The Peak of Sully Island $\frac{1}{2}$ from the South end of the Island towards Lavernock Point, W. $\frac{3}{4}$ S.; Monkstone Beacon, S. by W. $\frac{1}{4}$ W., 11-10 mile; West Cardiff Buoy, W. by S., 19-10 mile.

A Can Buoy, coloured red and white in vertical stripes, and marked "Middle Hook," lies in $4\frac{1}{2}$ fathoms, with the Hotel near Avon lighthouse, its width open of Posset Point, E. by S.; a large tree on high land, in line with Salt-house, S. by E. $\frac{1}{2}$ E.; Welsh Hook Buoy, E. by S., 26-10 miles, English and Welsh Grounds Light Ship, W.S.W., 25-10 miles; S.W. Patch Buoy, W. $\frac{1}{2}$ N., 3 miles.

BREAKSEA, Red and white in chequers, with Beacon, lies in 5 fathoms, about one cable's length from low water mark, and $\frac{1}{2}$ a cable's length without the rocks, with the Nash Low Light Tower apparently midway between the High Light Tower and the White Beacon upon St. Donant's Cliff, N. W. $\frac{1}{2}$ W.; One fathom Bank Buoy, S.E. $7\frac{1}{2}$ miles; Evans' Farm House,

apparently midway between a large Yellow Dwelling House and Limpert House, the latter being the Eastern object, N.N.E. $\frac{1}{2}$ E.; Brereton Windmill, N.N.W. $\frac{1}{2}$ W.

COCKBURN SHOAL, red and white chequered, lies in 4 fathoms, about 20 fathoms S.E. from the shoal with the Avon Lighthouse one-third between Penpole House and Miles' House, S.E.; high water mark of Black Nose Point on with Portishead Point, W. $\frac{1}{2}$ S.

WEST USK, Red and white, in chequers, dries at low water; a farm house at St. Brides in line with a bluff tree on the western land, N. W. by W. $\frac{1}{2}$ W.; Usk Lighthouse, N. by W. $\frac{1}{4}$ W.; Windbound Point, N. by E. $\frac{1}{4}$ E.

EAST USK, Red, dries at low water; a clump of tiles on Stone Hill just open westward of Windbound Point, N.N.W. $\frac{1}{2}$ W.; West Usk Buoy in line with Peterstone Church W. $\frac{1}{2}$ N.

EAST NASH, Red and White Bands, lies in $4\frac{1}{2}$ fathom with Groes' House (yellow) twice its apparent width open Westward of the Tower upon Dunraven Promontory, N.; the North side of the Nash High Light Tower on with the South side of the Low Light Tower, S. E. by E. $\frac{1}{4}$ E.; Nash Swatchway Buoy, N. W. $\frac{1}{4}$ W., $4\frac{1}{2}$ miles; Tusker Beacon, N.N.W. $\frac{1}{2}$ W. $4\frac{3}{4}$ miles: the fair channel course from the Mumbles to this buoy inside the sands, with the Mumbles Light Tower N. N. W. $\frac{3}{4}$ W., and the Nash Low Light Tower S. S. E. $\frac{3}{4}$ E.

WEST NASH, Red and White horizontal bands with staff and diamonds, lies in 9 fathoms, with Newton Down Windmill on with the centre of the Breakwater at Porth Cawl, N.E. by E. $\frac{1}{2}$ E.; Nash High Light Tower, S.E. $\frac{1}{4}$ E., $7\frac{1}{2}$ miles; the Nash Low Light Tower, S.E. $\frac{1}{4}$ E.; East Skerweather Buoy, N. by E., 26-10th miles; West Skerweather, N.W. $\frac{1}{2}$ N., $6\frac{1}{2}$ miles; Mumbles Light Tower, N.N.W. Nash Swatchway Buoy, right between the Lighthouses, S.E. by E. S'y., 2 miles; Tuskar Beacon, E. by S., 3 miles.

EAST SKERWEATHER, Red and White horizontal bands, lies in 6 fms., with a conspicuous Shaft on the summit of the highest Hill, open eastward of Constantinople Cottages, the apparent length of them, N.N.E. $\frac{1}{2}$ E.; Margam Trees, on with the west end of a long stone wall terminating near the Beach E. $\frac{1}{2}$ N.; the Windmill inland of Cwm Mawr on with Dunraven Point, S.E. $\frac{1}{4}$ E.; Kemfig Church $2\frac{1}{2}$ points open westward of the Scar House, N.E. by E. $\frac{1}{4}$ E.; Nash Low Light Tower, S.E. $\frac{1}{4}$ S., 9 miles; Mumbles Light Tower, N.N.W. $\frac{1}{2}$ W.; West Nash Buoy, S. by W., 24-10 miles; West Skerweather Buoy, N.W. by W. $\frac{1}{2}$ W., 5 miles; Mixon

Buoy, N.N.W. $\frac{1}{2}$ W., 9 miles; Tuskar Beacon, S.E. $\frac{1}{4}$ E., 4 miles.

WEST SKERWEATHER, Red and White horizontal bands, lies in $4\frac{1}{2}$ fathoms, with Constantinople Cottages on with the mouth of Aberafon Harbour, E.N.E. Northerly; Margam Trees open southward of Sker House three times their apparent width E. by S.; Nash High Light Tower, S.E., Easterly, 14 miles; Mumbles Light Tower, N., Easterly, 6 miles; East Skerweather Buoy, S.E. by E. $\frac{1}{4}$ E., 5 miles.

INNER GREEN GROUNDS BUOY, Black and White vertical stripes, lies in $3\frac{1}{2}$ fathoms, about one and a half cable's length from 5 feet on the S.E. end of the Shoal, with Kilvey Old Mill, $\frac{1}{2}$ distant from the Inn (a large brick house), towards Tennant's Look-out House, N.N.E. $\frac{1}{2}$ E.; Swansea East Pier Head, N. by E. $\frac{3}{4}$ E., 2 3 10 miles; Mumbles Lighthouse, W. $\frac{1}{2}$ N.; Woodland Castle, N.W. N'rly.

OUTER GREEN GROUNDS, Black and White chequered, lies in $2\frac{1}{2}$ fathoms, with the Tut between the two Houses on the Mumbles Point, W. $\frac{1}{2}$ N.; Woodland Castle, N. N.W. $\frac{3}{4}$ W.; Swansea Pier and Lighthouse, N.E. by N.; Kilvey Old Mill, N.E. $\frac{1}{4}$ N.; Green Grounds Buoy, E.

MIXON, Black, with Bell, lies in 10 fathoms, with Porth Einion Point on with Oxwich Point, W. by N. $\frac{1}{2}$ N.; Kilvey Old Mill Tower on with Swansea East Pier Head, N. E. $\frac{1}{2}$ E.; Mumbles Light Tower, N. E. $\frac{1}{2}$ N.; West Skerweather Buoy, S. $\frac{1}{2}$ E., $5\frac{1}{2}$ miles.

WEST HELWICK, Red and White Horizontal Bands, with staff and diamonds lies in 6 fathoms, and is surrounded by 11, 14, and 15 fathoms. Worms Head, bears N.E. by E. $\frac{1}{4}$ E.; Helwick Light Vessel, W. by N. $\frac{1}{4}$ N.; West Scar, S.E. $\frac{1}{4}$ S.

HELWICK SWATCHWAY, Red and White striped, lies in $4\frac{1}{2}$ fathoms, with Burry Holmes appearing in the centre of Worms Sound, N.N.E. N'rly; Oxwich Point on with Porth Einion Point, E. by S. $\frac{1}{4}$ S., Easterly; East Helwick Buoy, E.

by S. $\frac{1}{2}$ S., $3\frac{1}{2}$ miles; Worms Head, N., 2 4-10 miles; West Helwick Buoy, W. by N. $\frac{3}{4}$ N., $2\frac{1}{2}$ miles.

EAST HELWICK Red and White Horizontal Bands, lies in $2\frac{1}{2}$ fathoms, with Rhossily Point open westward of Tears Point the supposed breadth of a ship, N. W. $\frac{1}{2}$ N.; a White Building upon the high land, apparently midway between two White Cottages below that building, N.N.E. $\frac{1}{2}$ E.; Helwick Swatchway Buoy, W. by N. $\frac{3}{4}$ N., $3\frac{1}{2}$ miles; West Skerweather Buoy, S.E. $\frac{1}{2}$ E. S'rly., $12\frac{1}{2}$ miles; Mixon Buoy, E. by S. $\frac{1}{4}$ S., $9\frac{1}{2}$ miles; Worms Head, N. W. $\frac{1}{2}$ N., 5 miles. —

TUSKER AND MONKSTONE.—A mast with a large red ball attached is erected as a beacon upon each of these rocks. From the Tusker Beacon, Porth Cawl Point, N. $\frac{1}{2}$ W., is $1\frac{1}{2}$ miles; Mumbles Lighthouse, N. W. by N. 13 miles; Nash Low Light Tower, S. S. E. $\frac{1}{2}$ E., $5\frac{1}{2}$ miles; East Skerweather Buoy, N. W. $\frac{1}{2}$ W., 4 miles; East Nash Buoy, S.S.E. $\frac{1}{4}$ E., 5 miles; West Nash Buoy, W. $\frac{1}{2}$ miles.

BEACON ON THE WOLF ROCK.—This Beacon consists of an artificial cone, bearing a mast having a large ball upon its summit at an elevation of 36 feet above the level of the sea at high water; the mariners are to observe that spring tides rise at this station 19 feet, and that at low water of those tides, the rock is uncovered to the height of 15 feet. St. Michael's Mount open of Lemorn Cove leads $2\frac{1}{2}$ miles to the Eastward of it; Longships Lighthouse touching Cape Cornwall leads $1\frac{1}{2}$ miles Westward of it. The Bearings and Distances of the under-mentioned objects from this Beacon, are as follows, viz.:—Longships Lighthouse, N. E. $\frac{1}{4}$ N., $7\frac{1}{2}$ miles; Scilly Lighthouse, W. by N. $\frac{1}{2}$ N., 21 miles; Rundlestone Rock, which covers at half-flood, E. by N. $\frac{1}{2}$ N., 7 miles; Seven Stones Light-vessel, N.N.W. $\frac{1}{4}$ W., Westerly, $12\frac{1}{2}$ miles; Lizard Lighthouses, E. S. E., 23 miles.

Notice—Buoys in the Bristol Channel.

The **TRINITY HOUSE**, London, has given notice that the following additional buoys have been laid in the Bristol Channel:—

Chapel.—A can buoy, painted red and white in vertical stripes, and marked Chapel, has been placed to the eastward of the Chapel Rock in $5\frac{1}{2}$ fathoms.

Kenfig.—A conical black buoy, marked Kenfig, has been placed in the Shoal to the N.E. of the Hugo Bank in $3\frac{1}{2}$ fms.

Fairy.—A chequered black and white can buoy, marked Fairy, has been placed to the northward of the Fairy rock in 4 fathoms.

South Hugo.—A chequered black and white buoy, marked South Hugo, has been placed at the south end of the Hugo bank in 5 fathoms.

North Scarweather.—A black can buoy, marked North Scarweather, has

been placed on the north side of the Scarweather middle in $5\frac{1}{2}$ fathoms.

S.W. Nash.—A can buoy, painted red and white in vertical stripes, and marked S.W. Nash, has been placed in $7\frac{1}{2}$ fathoms.

S.E. Nash.—A chequered red and white can buoy, marked S.E. Nash, has been placed in $7\frac{1}{2}$ fathoms.

Newcome.—A can buoy, painted red and white in vertical stripes, and marked Newcome has been placed on the west end of the Newcome shoal in $3\frac{1}{2}$ fathoms.

Firefly.—A red conical buoy, marked Firefly, has been placed to the northward of the Firefly rock in 5 fathoms.

Flatness.—A red can buoy, marked Flatness, has been placed to the northward of the Flatness rocks in 3 fathoms.

The Hugo bank and the Nash Swatchway buoys have been removed.

WEST COASTS OF ENGLAND AND WALES.

SMALLS LIGHT TO THE PORT OF LIVERPOOL.

Smalls Light is placed on Smalls Rocks, lying off St. David's Head in Pembrokeshire, and bearing from St. Ann's Point, N.W. by W., distant 18 miles. This light is stationary, appearing like a star of the first magnitude, at the distance of 13 miles. To avoid these rocks, keep above a mile from the highest on all sides, and do not attempt to pass inside of them without a good chart and ample directions, or a pilot; with these there is excellent anchorage to be found in St. Bride's Bay in 8 or 9 fathoms.

South Bishop Light.—The Bishop and Clerks are a number of dangerous rocks, with great overfalls, lying north-west of Ramsey Island, at the distance of $2\frac{1}{2}$ miles. On the southernmost, called the South Bishop, is a lighthouse, exhibiting a revolving light, visible in all directions, and appearing with great brilliancy at intervals of 20 seconds, whereby it will be readily distinguished from the Smalls and other lights in its vicinity; it can be seen at the distance of 18 miles. This light is the principal guide the mariner has to enable him to know his exact situation, when sailing near this dangerous part of the coast of Wales. The light must be always passed to the westward, and when to the northward of it never bring it to the westward of south, until you are $3\frac{1}{2}$ or 4 miles from it, particularly on a flood-tide, in moderate weather, for then you have the tide nearly on the beam, which runs rapidly through amongst the islands; at spring tides nearly 5 knots,

and causes several overfalls. The passages between the rocks must not be attempted by strangers.

From St. David's Head to Strumble Head the course is E. N. E. $\frac{1}{2}$ E., distant $10\frac{1}{2}$ miles; between them at the distance of $5\frac{1}{2}$ miles from the former, is Abercastle Island, lying close to the land. In sailing from St. David's Head to Cardigan Bay you must give the shore a good berth, for several rocks under water lie scattered about, some of which are nearly a mile from shore; they are called the Sledges, and are 2 miles eastward of St. David's Head.

Fishgard Bay.—Three miles to the eastward of Strumble Head you open Fishgard Bay, having good anchorage with any wind, except from the N. to the E., the ground holding well. The best anchorage will be to the southward of the Crow Rock, which is always above water, in 4 or 5 fathoms, the rock bearing N. by E. $\frac{1}{2}$ E., distance $\frac{1}{4}$ to $\frac{1}{2}$ a mile. This bay is more desirable for vessels seeking shelter in gales from S. and W. than Studwall's Road, which is $5\frac{1}{2}$ miles to the leeward, as it is well sheltered from these gales, which Studwall's Road is not, and the bay affords a more ready outlet to the S. or N. than any place in the neighbourhood.

Newport Bay opens when you are 6 or 7 miles distant from Strumble Head.—The bar and channel to Newport lie about $\frac{1}{2}$ a cables length from the shore, directly below the village of Newport. On the bar are 13 feet water with spring tides, and 7 or 8 at neaps. When a vessel is

over the bar, she will be sheltered from all winds.

Cardigan Bay.—The Buoy on the Causeway in Cardigan Bay has been moved, and now lies near the extremity of the Causeway Reef, in 5 fathoms at low water springs, with the following marks and compass bearings; Slandebrog Mill in line with the east side of West Island at St. Studwall, N. by E.; Penkilan Head, N. by W.; Bardsey Lighthouse, N. W. $\frac{1}{2}$ W. A LIGHT VESSEL in this Bay—see page 102.

Cardigan Harbour is adapted for vessels drawing about 15 feet. In the channel over the bar, which is liable to shift, are 14 feet water with spring tides, and 8 or 9 with neap; but in Cardigan Road a ship may stop, in moderate weather, almost any part without the bar, about two cables' length from the shore, in 6 fathoms water.

Aberystwith Harbour is fit for vessels which draw 15 feet. There are land-marks to lead you over the bar, one of which is moored on wheels, as the bar shifts. When any vessel is seen off the place in the evening, there are lights put upon the marks, which must be brought in one, to direct you over the bar.

Aberdovey is about 3 leagues to the northward and eastward of Aberystwith, and 6 miles to the south of the Diamond Beacon on Beach Head. This harbour has a shifting bar about a cable's length broad, and about half that in and out. The Trinity Board have placed a large Black Buoy at the entrance, outside, and a Red one inside the bar. A good look-out should be kept for a small Buoy between the Black and Red Buoys, which makes the angle of the passage if any. These Buoys are all placed in the fairway. Vessels may come to anchor half a mile above the Red Buoy, and which is about the same distance below the town, where from 12 to 15 sail, drawing from 12 to 15 feet water may ride in safety and in good holding ground.

Barmouth Bay may be known at a distance by the highest mountain on that coast; it has two tops—the southmost is highest; and when seen from the westward, is in a line with the N. side of the entrance of Barmouth. From the N. side of the Bay, and about 1 mile from the main, shoal called the Causeway, extends W. by S. 3 leagues: at low water there is not more than 2 or 3 feet water all along the edge of it, where at a cable's length the compass is so affected by magnetism, as to vary 90 degrees, and, as you approach nearer, quite reverse the points.

Studwall's Road affords excellent anchorage for the largest ships, sheltered from all winds except from E. to S. E. by E. It is easily known by two Islands that

lie off the point, and there is no danger except a small rock about $\frac{1}{4}$ of a mile eastward of the Islands, between which there is a good passage, as well as between the westernmost and the main, at a cable and a half's length from them.

Bardsey Island is separated from the mainland by a channel more than a mile and a half wide, having from 15 to 25 fathoms in it. On the S.W. part of this Island is a Lighthouse exhibiting a bright fixed light, visible seaward from E. $\frac{3}{4}$ S. to N.E. $\frac{1}{4}$ E., and at a distance of 17 miles; but masked between the bearings of N. 50 deg. E. to S. 70 deg. E. If in a gale of wind from the W.N.W. vessels should be unable to weather Bardsey Island, this light will point out a secure asylum in Studwall's Road, enabling them to preserve a proper position until daylight, when they can proceed to the anchorage therein. Vessels bound to Studwall's Road, or lying-to for daylight, must not bring the light to bear to the westward of W.N.W.; and if they lose sight of the light when it bears from them nearly in that direction, they will be too far to the northward, and in danger of getting embayed in Hell's Mouth.

Carnarvon.—From Brauchypool Head the shore lies nearly E. N. E. to Carnarvon Bar, and from thence nearly N. by W. $\frac{1}{2}$ W. to Holyhead Island, forming Carnarvon Bay. Vessels going in are to leave the outer or Black Buoy on the port hand, the Red Buoys on the starboard hand, and the Perch beacon on the port hand. The black and white chequer buoy is placed in mid-channel. Nun buoys painted green, denoting sunken rocks, are placed off Llanddwyn Point. This Point may be distinguished in the daytime by two white towers (a large and a small one), and during the night by a fixed red light, visible in clear weather about five miles to seaward, between the bearings (from Llanddwyn by compass) of N.W. by N., and S.W. by W.; and which is intended solely as a leading light for the entrance to the Menai Straits. The bar should not be attempted until daylight, nor by vessels drawing more than 10 feet before half flood. During gales from W. to N., vessels may find shelter on the S.E. side of Llanddwyn Point. The proper anchorage is about a quarter of a mile from the shore, with the small tower a little open to the northward of the large tower. In running in give a good berth to the sunken rocks (the green buoys indicating which are placed to seaward), but it is much preferable for strangers to heave to outside sufficiently to windward and make signals for Pilot, four of whom are stationed at Llanddwyn, with a lifeboat, and Marryatt's code of signals. Vessels wishing to communicate will be answered from the large tower.

South Stack Light.—Off the N.W. point of Holyhead Island is the South Stack Rock, upon which is a lighthouse, bearing a brilliant light, which revolves every 2 minutes, whereby it will be readily distinguishable from the light on the Skerries, which is a stationary light, and bears from the light on the South Stack N.E. $\frac{1}{2}$ E., distant 8 miles, and may be seen through a great part of Carnarvon Bay. During foggy weather, a smaller bright light, revolving in $1\frac{1}{2}$ minutes, is occasionally shown, about 40 feet above the sea, and 30 yards north of the main lighthouse. Any vessel making either of these two great lights, can find no difficulty in navigating round the head, or into the harbour of Holyhead, if the wind permits; and no directions that could be given would serve equal to that of having the two lights in sight, as will be the case in the situation above mentioned.

Holyhead Refuge Harbour is chiefly formed by an immense breakwater the heel resting on Soldier's Point, from whence it projects N.E. by E. nearly one and a half cables' length, then E.S.E. about 5 cables' length, and then E.N.E. to its end, which is marked by a red light, visible at a distance of 8 or 9 miles. The end of the breakwater is N.N.E., one mile from the Old Harbour Light.—To sail into Holyhead Refuge Harbour, give the end of the breakwater a good berth, as a strong tide sets to the westward nine hours out of the twelve, and strikes hard upon it. Having rounded the breakwater, steer to the W.S.W., between it and the outer Platters, leaving all the chequered buoys on the port hand, and anchor well in, close to the beach. There are passages between the Platters and Salt Island: but these should never be attempted by strangers. Vessels should have both anchors ready for letting go, with 50 or 60 fathoms of chain ranged according to the weather, and should be careful to anchor well up, or they will have to shift berth. Vessels disabled or without ground-tackle, may be laid on a beaching slope at the head of the harbour which has been prepared for the purpose.

Old Harbour of Holyhead.—A wooden pier extends from the Old Harbour lighthouse in a direction E. by S.; at its eastern end is a bright light of the sixth order, supported on iron pillars superseding that formerly exhibited from the stone lighthouse. All vessels bearing up for Holyhead Harbour should be prepared with both bower anchors ready to let go, and the end of a good warp for a boat to take to one of the dolphins, moored along the passage for that purpose. The course round the pier, up the harbour, is W. by N., then W.N.W.; therefore, with the wind at N., and to the westward of that point, a press of sail

should be carried, especially after-sail; run the jetty close on board, and neither start tack nor sheet till the vessel is well inside the lighthouse and the packets' moorings, than act as circumstances may require. Rise of water at spring tides 17 feet; depth of water at the entrance, at low water, spring tides, about 12 feet. Holyhead Harbour being a tide harbour, and frequently with many anchors down in the way, vessels drawing 12 feet should not run in until about two hours' flood, and those of a heavy draught should, if possible, keep off until four hours' flood, in tempestuous weather no vessel should run for the harbour at night time. There is no occasion to use this as a harbour of shelter now the new harbour is established. All vessels anchoring outside must keep a light up during the night.

Holyhead Harbour Lights, situate on the starboard hand in entering the harbour, are stationary. The higher fixed white light formerly shown from the Light Tower on the old Pier Head of the Old Harbour is discontinued, and a fixed white light, at an elevation of 20 ft. above high water, shown from the structure above named on the end of the wooden pier which now forms the entrance to the harbour. The small red light is still exhibited from the Light Tower on the Old Pier Head of the Old Harbour, between the bearings of S.S.W. $\frac{1}{2}$ W. and S.W. The former bearing clears the end of the breakwater, and the latter all danger on the east side of the bay. A red light is shown from the mast 84 yds. from the eastern extremity of the new breakwater off the New Harbour at an elevation of forty feet above the level of high water. A gong is sounded in foggy weather. At night vessels should not steer in for the New Harbour until the small red light in the Old Harbour is seen, and in entering or leaving the harbour they should not approach the breakwater light nearer than $\frac{1}{2}$ of a cable.

FOG SIGNAL STATION.—On the North Stack Point is a fog gun of large size, battery attendants' residence, magazine and flag-staff, all painted white. For the greater security of vessels navigating in the vicinity of Holyhead, and of Her Majesty's packets in particular, the above gun is fired during foggy weather once every half hour; except from 10.45 a.m., and the same time p.m., when for three hours, or till the arrival of the day and night mail packets, it is fired every quarter of an hour, Greenwich time being observed.

The Skerries is a cluster of islets and rocks $1\frac{3}{5}$ miles to the N. ward of Carmel Point, occupying a space of about half a mile. Upon the centre and highest islet of the group is a lighthouse 54 feet high, showing a fixed bright light

at 117 feet above the level of high water, visible 16 miles. The position of this lighthouse is lat. $53^{\circ} 25' 18''$ N. and long. $4^{\circ} 36' 21''$ W. A short distance all round the Islands is deep water, except on the northern side of the group, where is a dangerous rock $2\frac{3}{4}$ fathoms, called the African, lying with the lighthouse in one with Pengarn Hill bearing S.S.E. Upon this rock there is a great overfall when the tide is running either way. Between the Skerries islets and Carmel Point is a dangerous ledge of rocks, drying with spring tides only, called the East Platters. Close to all round are 8 to 16 fathoms, and there is a strong rippling when the sea is heavy. You may sail between the rocks and the Skerries by bringing the South Stack Bridge over the North Stack and between them and Carmel Point by bringing the South Stack and North Stack in one. The Beacon on the West Mouse Rock in one with the Middle Mouse, also clears it on the south side.

Point Lynas lies S.E. by E. $\frac{1}{4}$ E. of the eastern point of Amlwch Bay, distant $1\frac{1}{4}$ mile, and is situate in lat. $53^{\circ} 25' N.$, and long. $4^{\circ} 17' W.$ It is a bold conspicuous point of land both from the eastward and westward. A lighthouse is erected on the high pitch of the point, and is a castellated building, with a white basement. It exhibits a flashing light, which becomes instantaneously obscured at intervals of 10 seconds, and remains obscured 2 seconds only, so that it is readily distinguishable from the Skerries and other lights in the vicinity. From Lynas lighthouse to Great Orms Head, S.E., 16 miles; N.W. Lightship, Liverpool, E.S.E., 37 miles; Calf of Man, N. $\frac{1}{4}$ W. 42 miles; Buoy Nelson, of Preston, E., 41 miles; St. Bee's Head, N.E., 70 miles.

Port of Amlwch, Anglesea—In the day time, when the Breakwater balks are down, a Ball is fixed on a pole at the easternmost point of the harbour. When too many vessels lie at the entrance of the harbour, a Red Light will be shown, and when the entrance is clear a white light.

To Sail into Beaumaris Harbour. THROUGH THE SOUND IN LOW WATER.—Steer in for Table Land, till the W. end of Puffin Island comes open with the E. end of Penmaenmawr Hill. These marks will clear the Dinmora Bank on your starboard hand. You then have the sound fairly open: but to avoid the rocks off Trwyndu Point, keep more to the Perch on your left: and when Beaumaris comes open off Trwyndu Point, haul up for the red buoy off Penman, keeping it on your starboard hand, and off the red buoy of the Causeway on your left. Anchor in 4 fathoms off Penman red buoy, clean and good holding ground, well sheltered from a north westerly wind; but if one hour's flood, you will carry 15 feet over the flats

off Penryn Point. Steer for the black buoy on the Spit of the Levan Sand, abreast of Friar's House, where anchor in 5 fathoms low water spring tides, or at half flood steer for the town, keeping the red buoy on Watch House Point on your starboard hand, in 6 or 7 fathoms. Keep that depth of water until the Church at Beaumaris bears N. N. E. by compass when you may anchor in 9 fathoms at that time of tide. Thence you will see Bangor Pool, which is above ferry Point. But if any of the buoys should be missing as you steer up, keep the Church Tower and Lodge Hill in one.—Opposite the Friar's House, in mid-channel, is a sand-bank, marked by a red and white chequered buoy; in sailing up to Beaumaris, keep this buoy on the starboard hand.

To Sail out of Beaumaris Harbour, FROM THE ANCHORAGE OFF THE TOWN.—Weigh at high water, and drop down to Friar's Road. Give the black Buoy off the Spit a berth on your starboard hand, and the red buoy off Penman on your port. At half ebb take the eastern passage, keeping off the red buoy off the Causeway on your port hand. From the latter steer for the east end of Puffin Island on your port hand, keeping off it half a cable's length, and the black buoy off the Dutchman's Spit the same distance on your starboard hand.

Menai Lighthouse is erected at the north-eastern entrance of the Menai Straits. The light is STATIONARY and of a RED colour, visible from N.W. $\frac{3}{4}$ W. seaward, to S.W. $\frac{1}{4}$ W. excepting that by the intervention of Puffin Island the light will be eclipsed to vessels upon the bearing from it of E. by N. $\frac{1}{4}$ N., to E. $\frac{1}{4}$ S. A ledge of rocks extending under water from the base of the lighthouse nearly 50 yards, it is advisable not to approach the building within that distance.

Conway Harbour.—there are two channels leading into this harbour—the west and north. For the west channel, steer from the N.W. black buoy to the second black buoy, leaving them on your port hand; keep the red buoy off Penmaenbach, the chequered red and white buoy, the two red buoys, and the perch, on your starboard hand; haul up, and steer for the quay, keeping close to Deganwy Point on the port hand. The entrance to the north channel is marked with a black perched buoy; the second, third, and fourth are all black, and moored in the best of the channel. Vessels drawing from 10 to 12 feet may lash alongside the quay, on mud and sand, dry at low water.

To Sail from Point Lynas to the Great Ormshead.—The course from Point Lynas to the Great Ormshead is S.E. per compass, from whence keep the Ormshead as the line is drawn on the

chart, till Rhyland Castle and St. Asaph Church are in one; then haul in till the south mark on Helbre and Bidstone Light-house come in one. Steer forward on that line, which is the deepest water along the shore. It will also clear the Middle Patch on the left, which is dry at low water, spring tides. Buoys are placed here; red on the starboard, and black on the port hand coming in. Give the Point of Ayr Lighthouse a berth of a mile on the starboard hand; and when it bears W. haul up S.S.E. for mid-channel. At that time the rippling of the tide on the edge of the Salisbury Bank will be very perceptible, as well as on the Welsh side. Continue that course, in mid channel, till the Grange Mill bears N.E. by E. by compass, then haul quick for Dawpool, and keep that bearing till Burton Mill comes over the town of Parkgate. That course clears the south end of Salisbury Bank, and the Bagilt Flats on your right. As you advance keep the lead going, and borrow on the Haswell Church side of the shore. It will carry you clear to Bear-house Pool, where anchor till you obtain a pilot. The leading mark for passing at high water across the Salisbury Bank to Hoyle Lake is Helbre Eye on with the Grange Mill.

Chester Bar is a narrow sandbank between 3 and 4 miles in length, stretching rather circularly from S.E. to N.W.; its south end is near to Nant House, and is called the Middle Patch, sometimes drying, the middle of it is called Earwick, and dry at low water; but much the greater part of it never dries, having from 3 to 6 feet water over it at all times. To clear the Earwick to the eastward, bring Nant House and the barn above it in one. To sail over CHESTER BAR in a ship drawing 12 feet, take half flood; and when Craig Disart Hill bears S.S.E., which with Middle Hill and Comb Hill form an equilateral triangle, keep the two Ormsheads shut below, and a little open above; by this you will avoid all danger on the southward. To avoid the banks and shallows on the north side, open the Ormsheads below near a ship's length, but not more. If a vessel comes to Chester Bar before half-flood, and is apprehensive of not having sufficient water to cross it, she may sail between the Middle Patch and the Earwick, keeping the Ormsheads a little open below; and when Craig Disart Hill and Middle Hill are in a line, steer N.E. by E. until you deepen your water to 4 or 5 fathoms, and sail along Hoyle Sand for the Point of Ayr; giving that point a berth of half-a-mile. To avoid that part of Hoyle

which is opposite to Ayr, keep Bidston Windmill to the south of Helbre Summer-house; this will carry you through the Swashway toward Hoyle Lake. But the mark which leads clear of the north part of the Hoyle Sand, and directly into Hoyle Lake, is the Point of Ayr Lighthouse open to the northward of Helbre Island.

The River Dee.—Vessels may stop a tide about a mile to the eastward of the Point of Ayr, upon which a lighthouse is erected. The tide runs, when strongest, $3\frac{1}{2}$ miles an hour; and when the tide and wind are contrary to each other, make a rough sea here. At this place, which is called Wild Road, you can anchor in 5 or 6 fathoms; or you may proceed higher up to the anchorage off Linacre Creek, where, in 6 or 7 fathoms, you will be much better sheltered than in Wild Road from north-westerly winds, and ride on ground that holds well. To sail from Wild Road to Dawpool, a distance of near 6 miles, bring the southernmost house of Dawpool, which stands below a clay cliff, exactly in a line with the barn having a white end, standing on the top of the cliff, but the barn must not be brought on either side of the house, anchor about 2 cables' length from high water mark in $3\frac{1}{2}$ or 4 fathoms at low water. Here the stream runs 5 miles an hour when strongest. At Parkgate, which is more than 4 miles up the river, vessels must lie aground on the beach; for though there are $2\frac{1}{2}$ fathoms in the channel off the town, and 3 fathoms above it, yet the stream is so strong, and the ground so indifferent, that a vessel would drag its anchor. Take the ground about 2 hours before high water, below the houses of Parkgate. Vessels in making their passage to Parkgate must use the utmost caution to avoid the Salisbury Bank, a dangerous shoal, and lying in the direction of the river. The channel now to Parkgate is opened into a swashway by Bagilt and Flint; Four red buoys are placed on the edge of the Mostyn and Bagilt Banks, and two black ones on the Salisbury Bank, the former of these are to be left on the starboard side, the latter on the port. A black buoy lies on the SELDOM SEEN ROCKS in the channel between the Salisbury Bank and the Lime Wharf. There are three small islands or rocks, called the Helbre Islands, lying to the southward of the Hoyle Sands. Two wooden beacons or marks, distant from each other 1 mile, and called the Eye Beacon and Helbre Beach Mark, are placed inshore of Helbre Islands. They are used as leading marks for Helbre Swash.

BAY AND HARBOUR OF LIVERPOOL.

In the vicinity, and to the northward and westward of the Rivers Dee and Mersey, lie the banks which form the several channels to Liverpool, viz., the Hoyle Banks, the Burbo Sands and Flats, the Jordan Bank, Taylor's Bank, Formby Spit, &c. The principal channels are, the Horse and Rock Channels, the Victoria Channel, the Queen's Channel, and the Crosby or Main Channel.

The principal lights and sea-marks of Liverpool Bay are as follow:—

GREAT ORMSHEAD.—A first order Dioptric Fixed Light is exhibited from a new Lighthouse, situate on the Northern most point of the Great Ormshead, at an elevation of about 325 feet above the mean sea level. It appears as a bright fixed Light when seen from any direction between the bearings NW by W $\frac{1}{2}$ W. round by the North to East, and as a RED Light from East to E. $\frac{3}{4}$ S. By this arrangement the light will be found to mask suddenly when standing into Beaumaris Bay, if brought to bear to the Eastward of S.E. by E. $\frac{3}{4}$ E., warning of the approach to shoal water; when to the eastward of Ormshead, the change of colour from bright to Red arises upon the line of bearing of the N.W. Light Ship and the Fairway Bell Beacon, off the entrance to the Queen's Channel, in Liverpool Bay, and the Red Light will finally disappear if brought to bear to the northward of W. $\frac{3}{4}$ N., warning of the approach to the northern edge of West and East Hoyle; if the Red Light be kept in sight, those banks cannot be approached nearer than one mile.

The NORTH-WEST LIGHT SHIP lies in a position indicated by the transition of the Ormshead Light from Bright to Red, and by masking or unmasking of the Upper Holylake Light on a bearing of S. by E. $\frac{3}{4}$ E. nearly. She is painted BLACK with a WHITE RIBAND, and lies off the West extreme of Three and Four Fathom Tongue, in $6\frac{1}{2}$ fathoms at low water, and exhibits a powerful bright Revolving Light, appearing once in every minute. The following bearings mark her position, viz.:—Ormshead Light, west, 20 miles; Queen's Channel Bell Beacon, East, $3\frac{3}{4}$ miles; Formby Light Ship, E. $\frac{3}{4}$ S., 6 miles; N.W. Buoy of East Hoyle, S.S.E. $4\frac{1}{2}$ miles; Helbre Swash Fairway Buoy, S. by E., $4\frac{1}{4}$ miles.

THE HORSE CHANNEL—BELL BEACON, (in the form of a Square Pyramid, of open lattice work, painted RED, and marked in white letters "HORSE CHANNEL, SE $\frac{1}{4}$ S.") is moored in the fair-way to the Horse Channel. This Beacon occupies the position formerly held by the N. W. Lightship; the marks for it are, the Beacon in the Eye, and Helbre Beach Mark in one,

S. $\frac{3}{4}$ E. (nearly). Bidston Lighthouse open Eastward of Leasowe Lighthouse, S.E. $\frac{1}{4}$ S.

The FORMBY LIGHT VESSEL, at the elbow of the Crosby and Queen's Channels, moored in 25 feet at low water, shows one Red light visible 8 miles; a red ball is exhibited on foremast head during the day. Her hull is painted red. In foggy weather a bell is tolled. Crosby Lightship, S. E. $\frac{1}{4}$ S., $2\frac{1}{2}$ miles; N. W. Mark, E. by N. $\frac{1}{4}$ N., $3\frac{7}{8}$ miles; Buoy Q. Fy. (bell beacon), N.W. by W. $\frac{1}{2}$ W., $2\frac{3}{4}$ miles.

The CROSBY LIGHTHOUSE, situated to the north-eastward of Crosby Point, shows a fixed Bright light, elevated 96 ft. above the level of the sea at half-tide, and visible between the bearings of S.S. E. $\frac{1}{4}$ E. and E., which limits indicate respectively when a ship is westward of Formby Spit, or to the southward of Crosby Lightship.

About a mile and a quarter to the north-eastward of Crosby Lighthouse is the FORMBY OLD LIGHTHOUSE, the light from which has been discontinued. Near the latter, on the strand, is a beacon, formerly used as a leading mark for Victoria Channel; further to the northward is the Life Boat House; and near it just round Formby Point, is the North-west Mark. This mark in one with another on Mad Wharf, bearing S. E. by E. $\frac{1}{4}$ E., is the leading direction for entering the Old Formby Channel.

The CROSBY LIGHT VESSEL, at the north-east elbow of the Great Burbo Bank, is moored in 44 feet at low water, shows a single bright light, visible 8 miles and carries a red ball at the foremast-head in the daytime. Her hull is painted red. From hence the fairway course up the Mersey is S. by E. $\frac{1}{4}$ E. In sailing through Crosby Channel during ebb-tide, to avoid the indraught through the gullies in Great Burbo Bank, vessels should be kept well to the eastward of a line drawn between the Rock Lighthouse and Crosby Lightship.

On the south side of Liverpool Bay, on the peninsula separating the Mersey from the Dec, are many objects used as sea-marks, several of which will have been seen before arriving at the North-west Light Vessel. Off the west end of the peninsula are the islets, called the Great and Little Helbre, near which are placed the two Helbre Beacons. On the mainland, within two miles S.E. by S. of the Helbre Islets, are the village and church of Kirby, to the east of which is Grange Hill, surmounted by a beacon, in the form of a pillar, at 173 feet above half-flood. Within two miles S. S. E. from Kirby, is Irby Hill, with its mill and wood.

About a mile and a quarter north of Kirby, near the shore, is the Holylake

Hotel, and within half a mile E.N.E. from this are the new Hoylake Lighthouses. The new Upper and Lower Hoylake Lighthouses stand 400 yards apart, and bear from each other SW by S. Southerly, and N.E. by N. Northerly; when in one they lead midway between the Dove Spit buoy (R. 1 Red Can) and the Spencer's Spit Bell Beacon marking the elbow of the Horse and Rock Channels. Upper Hoylake masks, if standing to the westward and unmasks, if standing to the eastward, when bearing from it N. by W. $\frac{3}{4}$ W. on a line which strikes the N. W. Lightship, and passes just to the eastward of the N.W. buoy of East Hoyle, H 1 Red Can with perch. Lower Hoylake Light masks, if standing to the westward and unmasks, if standing to the eastward, when bearing from it N. $\frac{1}{4}$ W. on a line indicating the Fairway course in the Horse Channel, between East Hole and the Six and the Four feet Flats. (N.B.—The brilliancy of the new lights is such that, in clear weather, a gleam of light is faintly perceptible even to the westward of the lines of masking. When coming from the westward the faint appearance may, at such times, be useful in giving warning of the approaching unmasking, but cannot be mistaken for the unmasking which takes place suddenly, and at once opens a brilliant light.) At a mile to the eastward of the lower light are the Dove beacons, erected as a mark for the eastern passage into Hoylake, the interior channel of communication between Helbre Swash, and the Horse Channel, which is now nearly choked up, and is frequented only by fishing boats.

The next conspicuous object is the Leasowe Lighthouse, which is white; its light brilliant and fixed, 110 feet above the level of half-tide, is seen 5 leagues off and suddenly masks on the bearing of S.W. $\frac{1}{4}$ S. when off West Wharf Buoy, (R. 3. Red). This is succeeded inland by the Bidston Lighthouse, upon the summit of Bidston Hill, with its church

and mill, and the new Liverpool observatory. This lighthouse is of stone, of a dark colour. It shows a brilliant fixed light at 224 feet above the level of half-tide, which can be seen 23 miles off. This light masks on the bearing of S. by W. $\frac{1}{4}$ W. when abreast of East Wharf Buoy, (R. 4, Red). The lights of Leasowe and Bidston are called the Sea Lights, and are specially important for the navigation of the Horse and Rock Channels. At three-quarters of a mile eastward from the Leasowe Light is Leasowe Castle, and $2\frac{1}{2}$ miles further east is the Black Rock Lighthouse, standing upon the reef, so called, at the entrance of the Mersey.

THE BLACK ROCK LIGHTHOUSE is built on the rocks off New Brighton, on the west side of the entrance of the River Mersey, and is a handsome round tower of Anglesea limestone. It is surrounded by water at nearly half-tide. The height of the building, from the lantern to the base, is 75 feet, and the whole height above the level of the sea is 88 feet. The light revolves, appearing twice bright and once of a red colour, each at intervals of a minute, the whole revolution being completed in 3 minutes. The light in clear weather can be seen about 5 leagues off. A bright fixed light from a lower chamber is also shown down the Rock Channel and up the River while 11 feet water remains in the Gut, and a black ball denotes the same by day. Three bells toll in succession in foggy weather; and a blue flag is used to summon the life-boats when distress appears.

Garston Dock.—This Dock, which is 4 miles south of the Liverpool Docks, and on the same side of the river, is free from the Liverpool dock rates, vessels entering it being only liable for the harbour and light dues. The channel from Liverpool is buoyed with four red and four black nun buoys.

NOTICE TO MARINERS.

DOUGLAS BAY.—The harbour Commissioners of the Isle of Man hereby Give NOTICE that on and after 5th December, 1868, a GREEN LIGHT will be exhibited from Sunset to Sunrise, at the outer end of the New LANDING PIER WORKS in Douglas Bay. The Light will be 25 feet above the level of high water of ordinary Spring Tides, and will be visible at a distance of three miles in clear weather.

B. C. BROWNE, Resident Engineer.

Douglas, 25th November, 1868.

DOUGLAS, ISLE OF MAN.—The Directors of the Iron Pier Company, Limited, hereby Give NOTICE, that on and after the 11th of October next, a BLUE LIGHT will be exhibited from Sunset to Sunrise, at the outer end of the IRON PROMENADE PIER in Douglas Bay, on the East Coast of the Isle of Man. The Light will be 20 feet above the level of high water, and be visible throughout an arc of 120 degrees.

By Order, W. ISDALE, Secretary.

Douglas, 23rd September, 1869.

PORT ERIN HARBOUR.—The Harbour, Commissioners of the Isle of Man hereby Give NOTICE, that on and after 25th August next, a GREEN LIGHT will be exhibited from Sunset to Sunrise at the outer end of the NEW BREAKWATER WORKS IN PORT ERIN BAY, on the West Coast of the Isle of Man. The Light will be 25 feet above the level of high water of ordinary Spring Tides, and will be visible at a distance of about three miles in clear weather. Vessels entering will keep the Light on the Starboard hand.

By Order,

THOS. QUALTROUGH, Harbour Master.

Port Erin, 28th July, 1869.

LIVERPOOL SHIPWRECK & HUMANE SOCIETY.

(Instituted 1839.)

OBJECTS.

1.—To save human life, particularly in case of shipwreck, in the neighbourhood of Liverpool.

2.—To reward persons instrumental in rescuing human life from danger, and to relieve the widows and families of those who may perish in the attempt to save others.

3.—The providing relief for the immediate necessities of the unfortunate sufferers wrecked on the shores contiguous to Liverpool.

ROBERT P. J. SIMPSON, Esq.,

Secretary and Treasurer,

South End of Prince's Dock.



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