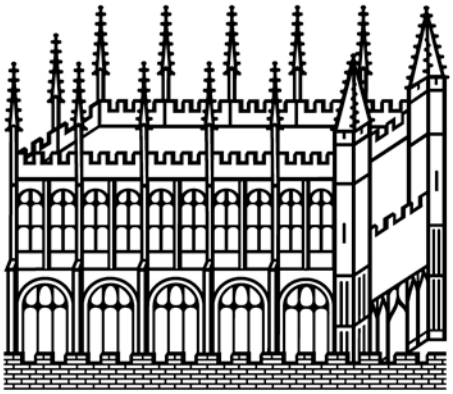

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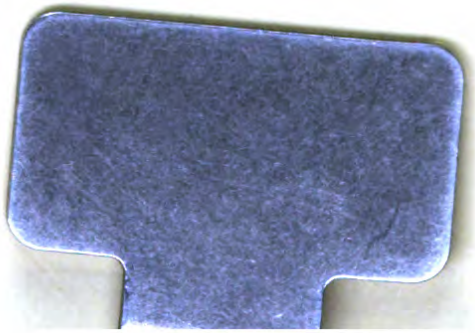

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London: LONGMAN, GREEN, and CO. Paternoster Row.

PHYSICAL ATLAS

OF

GREAT BRITAIN AND IRELAND

WITH

ILLUSTRATIVE LETTERPRESS

BY

WALTER M'LEOD, F.R.G.S., M.C.P., &c.

HEAD MASTER, MODEL SCHOOL, ROYAL MILITARY ASYLUM, CHELSEA:
AUTHOR OF "A CLASS ATLAS OF PHYSICAL GEOGRAPHY;" "HAND ATLAS OF GENERAL GEOGRAPHY;" "ATLAS OF SCRIPTURE GEOGRAPHY;" "LIFE AND TRAVELS OF ST. PAUL," ETC.

LONDON

LONGMAN, GREEN, LONGMAN, AND ROBERTS

1861

LONDON

PRINTED BY SPOTTISWOODE AND CO.

NEW-STREET SQUARE

INTRODUCTION.

ATLASES of almost every country have been published, but no attempt hitherto been made to produce an Atlas specially illustrating the Phys Features of Great Britain and Ireland. A work, however, of this desc tion must be invaluable to those who are directly engaged in the educa of youth, whether they are Teachers in Public or in Private Schools. present publication is an attempt, therefore, to supply the deficiency in educational literature.

In the engraving of the Maps care has been taken to bring out cle and boldly the Mountain Chains, the Courses of Rivers, the Config tion of Counties, and such other points as the Teacher must, in his less on Geography, bring under the notice of his pupils. With respect to colouring of the Physical and County Maps it may be necessary to s that the Highlands are coloured *brown*, and the Lowlands *green*.

The numerals 1, 2, 3, 4, &c., inserted in the Physical Maps of Engl Ireland, and Scotland indicate, in each case, the *counties;* the key to th figures will be found in the letter-press to Maps I., XXIII., and XXV. the County Maps of England and Wales, all of which have been drawn the same scale, the lengths of the principal Rivers are given in brack thus, River Tyne (70 m.); that is, the River Tyne is 70 *miles in len*

In the letter-press descriptive of the Rivers the following plan has been adopted:—The Tributary of a River is printed in italics, with the letters *tr. rt.*, or *tr. lt.* affixed, which respectively mean Tributary *right bank*, and Tributary *left bank*. When a Tributary has a stream of water falling into it, the same is noted by *af. rt.*, or *af. lt.*, which mean respectively, *affluent right bank*, and *affluent left bank*. The *affluent* is, in each case, printed a *little to the right* of the tributary into which it falls.

When a Town does not stand *on*, but *near* a River, the name of such Town is printed in *italics*, with *near* or *nr.* affixed to it; and Towns at the confluence of two streams are also printed in italics.

The method of giving the Towns with the Rivers on which they are situated has been tried successfully by the writer for many years; and lessons on the Rivers of Europe, on this plan, will be found in the "English Journal of Education" for 1851,—the first time it is believed that such a method of treating the River Systems was made known to Teachers, although since then the plan has been adopted by many writers on Geography.

In the letter-press to the Geological Maps of England and Wales the capital letters O. R., M. L., O., and C. denote respectively *Old Red Sandstone, Magnesian Limestone, Oolitic*, and *Cretaceous* Formations; and in the Geological Map of Scotland the capital letters N. R. and C. denote *New Red Sandstone* and *Carboniferous Strata*.

A full explanation of the colouring of the Geological Maps, as well as of the capital letters used, will be found in the Reference placed at the top of each Map.

As the Geography of the British Isles forms an important part of the course of instruction in all Training Colleges, the writer trusts that the Atlas will be of use to those who are annually required to pass an examina-

tion in Map Drawing, as well as in the matters treated of in the letter-pr to the various Maps. In the preparation of the letter-press or the notes the Maps, the writer has to express his obligations to the Authors of works named below.* The writer believes that his scholastic brethren v find these notes useful both for class teaching and for the instruction Pupil Teachers.

ROYAL MILITARY ASYLUM:
August, 1861.

* A New Gazetteer of the British Isles, by James A. Sharp; General Gazetteer, by A. K Johnstone; Geology of England and Wales, by Phillips and Conybeare; and Knight's Eng Cyclopædia.

TABLE OF CONTENTS OF THE LETTERPRESS.

IRELAND.

CLIMATE OF BRITISH ISLES.

MANUFACTURES, ETC., OF BRITISH ISLES.

LIST OF THE MAPS.

ABBREVIATIONS USED IN THE MAPS.

Af. = Affluent.
Arsˡ. = Arsenal.
B. = Ben (Ben More).
B. = Bay.
Bⁿ. = Beacon.
Bʳ. = Brook.
Bʳ. = Bridge (Pately Bʳ).
Buildᵍ. = Building.
Buildˢ. = Buildings.
C. = Cape.
Carⁿ. = Carnarvon.
Co. = County.
Copʳ. = Copper.
Dock Yᵈ. = Dock Yard.
Dⁿ. = Down.
Drⁿ. = Drain.
Forᵗ. = Forest.
Fᵗ. = Fort.
Fʸ. = Fishery.
H. (to mountains)=Hills.
H. (to capes)=Head.
Hˢ. = Hills.
Hᵈ. = Head.
Hʳ. = Harbour.
I. = Isle, or Island.
Iˢ. = Isles, or Islands.
L. = Lake, or Loch, or Lough.
Lit. = Little.
Lᵗ. Ho. = Light-house.
Lᵗ. = Left (left bank of river).
Machʸ. = Machinery.
Mⁿ. = Mountain.
Mountˢ. = Mountains.
Mtʰ. = Mouth.
Nᵗʰ. = North.
P. = Point.
Peninsᵃ. = Peninsula.
Pᵗ. = Point.
R. = River.
Refʸ. = Refinery.
Rᵏ. = Rock.
Rkˢ. = Rocks.
Rᵗ. = Right (right bank of a
Sᵈ. = Sound.
Sl. = Slieve (Slieve Bloom).
Smeltᵍ. = Smelting.
Soᵈ. = Sound.
Stʰ. = South.
Stʳ. = Strait.
Tr. = Tributary.
Unʳ. = Under.
Upʳ. = Upper.
Vale of Wh. (=White) Horse.
W. = Water.
Wh. = White.
Woolⁿ. = Woollen.
Woolnˢ. = Woollens.
Wʳ. = Water.
Yᵈ. = Yard.

PHYSICAL ATLAS OF GREAT BRITAIN AND IRELAND

DESCRIPTIVE LETTERPRESS.

THE BRITISH ISLANDS.

THE British Isles, forming a kind of archipelago off the north-west coast of Europe, consist of Great Britain, Ireland, and the adjacent islands.

Great Britain, which consists of England, Wales, and Scotland, is sometimes divided into North Britain (Scotland), and South Britain (England and Wales).

Great Britain is the largest island in Europe: its greatest length is 608 miles; the width varies considerably. Between the Firths of Forth and Clyde the breadth is 3[illegible] miles; and from the Naze, in Essex, to St David's Head, in Pembrokeshire, the distance is 280 miles.

The longest line that can be drawn *across the island in a slanting direction* is from Lowestoft, Suffolk, to the Land's End, a distance of 364 miles.

The area is about 88,000 sq. miles.

The following table shows the area of the British Isles:—

		Area in square miles.		
1.	England	50,387	57,813 square miles	
	Wales	7,426		
	Isle of Man	280	543	„
	Channel Islands	120		
	Scilly Islands	8		
	Isle of Wight	135		
2.	Scotland	26,014	30,173	„
	Islands of Inverness	1,209		
	„ of Argyle	950		
	„ of Ross and Cromarty	580		
	Orkney Islands	540		
	Shetland do.	880		
3.	Ireland	32,512	32,512	„

MAP I.

ENGLAND AND WALES.

LENGTH, BREADTH, AREA, &c.

THE *length* of England from the Land's End to Berwick is 425 miles.

The *width*, from Lowestoft Ness, Suffolk, to the Land's End is 364 miles; and from the Solway Firth to the river Tyne, about 60 miles.

The *area* of England and Wales is 57,813 sq. miles, of which 50,387 belong to England, and 7426 to Wales.

The length of the *Coast line* is about 2000 miles.

The *Population* of England and Wales, on April 8, 1861, was 20,061,725: and that of the islands in the British Seas, 143,779 persons.

England is divided into 40 counties, and Wales into 12.

Reference to the Counties of England and Wales.

In the Physical Maps of England, &c., the counties are indicated by the numerals 1, 2, 3, 4, 5, &c.

The following are the names of the counties of England and Wales, with the county town of each.

ENGLAND.

Counties.	*County Towns.*
1. Northumberland	*Newcastle.*
2. Durham	*Durham.*
3. Cumberland	*Carlisle.*
4. Westmoreland	*Appleby.*
5. Lancashire	*Lancaster.*
6. Yorkshire	*York.*
7. Nottinghamshire	*Nottingham.*
8. Derbyshire	*Derby.*
9. Cheshire	*Chester.*
10. Shropshire, or Salop	*Shrewsbury.*
11. Staffordshire	*Stafford.*
12. Leicestershire	*Leicester.*
13. Rutland	*Oakham.*
14. Lincolnshire	*Lincoln.*
15. Norfolk	*Norwich.*
16. Suffolk	*Ipswich.*
17. Cambridgeshire	*Cambridge.*
18. Huntingdonhire	*Huntingdon.*
19. Northamptonshire	*Northampton.*
20. Warwickshire	*Warwick.*
21. Worcestershire	*Worcester.*
22. Herefordshire	*Hereford.*
23. Monmouthshire	*Monmouth.*
24. Gloucestershire	*Gloucester.*
25. Oxfordshire	*Oxford.*
26. Buckinghamshire	*Buckingham.*
27. Bedfordshire	*Bedford.*
28. Hertfordshire	*Hertford.*
29. Middlesex	*London.*
30. Essex	*Chelmsford.*
31. Kent	*Maidstone.*
32. Sussex	*Chichester.*
33. Surrey	*Guildford.*
34. Hampshire	*Winchester.*
35. Berkshire	*Reading.*
36. Wiltshire	*Salisbury.*
37. Dorsetshire	*Dorchester.*
38. Somersetshire	*Bath.*
39. Devonshire	*Exeter.*
40. Cornwall	*Bodmin.*

WALES.

Counties.	*County Towns.*
41. Flintshire	*Mold.*
42. Denbighshire	*Denbigh.*
43. Carnarvonshire	*Carnarvon.*
44. Anglesea	*Beaumaris.*
45. Merionethshire	*Dolgelly.*
46. Montgomeryshire	*Montgomery.*
47. Radnorshire	*New Radnor.*
48. Cardiganshire	*Cardigan.*
49. Pembrokeshire	*Pembroke.*
50. Carmarthenshire	*Carmarthen.*
51. Brecknockshire	*Brecon.*
52. Glamorganshire	*Cardiff.*

MOUNTAINS OF ENGLAND.*

The north and west of England, including Wales, is mountainous; all the elevated regions, with a few exceptions, being found *west of the* 2^{d} *meridian.* The other portions of the country consist of plains, table lands, and gently rising hills. The land slopes, as a general rule, to the eastward.

The following are the Principal Ranges of Mountains:—

The *Cheviot Hills* form part of the boundary between Scotland and England. The highest elevation is 2684 ft.

The *Cumbrian Mountains* are found in Cumberland, Westmoreland, and in the northern part of Lancashire, called Furness. The principal summits in this group are the following: *Scaw Fell*, 3166 ft.; *Helvellyn*, 3055 ft.; *Skiddaw*, 3022 ft. in height.

The *Pennine Chain* extends from the Cheviots, southwards, to the district of the Peak, in Derbyshire. The principal peaks are *Crossfell*, Cumberland, 2901 ft.; and *Whernside*, 2384 ft., *Ingleborough*, 2361 ft., and *Pennygant*, 2270 ft., in Yorkshire. This chain is the *watershed* between the rivers flowing *east* and those flowing *west.*

The *Cambrian Group* includes all the Welsh mountains. The principal summits are *Snowdon*, 3571 ft. high; *Cader Idris*, 2914 ft.; and *Plinlimmon*, 2463 ft. *Brecknock Beacon*, 2862 ft., is the mos elevated summit in South Wales.

The *Devonian Range* extends through Corn wall, Devonshire, and part of Somerset shire. *Dartmoor*, in Devonshire, a wil plateau, has an elevation of 1000 fee above the sea. The principal elevation are *Yes Tor*, 2050, ft., *Cawsand Beacon* 1792 ft., and *Rippon Tor*, 1549 ft., o Dartmoor, Devonshire; *Brown Willy* 1368 ft., in Cornwall; and *Dunkerry Beacon*, 1770 ft., on Exmoor, Somerset shire.

The ranges of less importance and of in ferior elevation are the following:—

The *North York Moors* or *Eastern Moor* between the rivers Tees and Derwent.

The *Wolds of Yorkshire* between the Der went and the Humber.

The *Lincolnshire Wolds*, and the *Lincoln shire Heights*, in Lincolnshire.

The *East Anglian Heights*, beginning at th Wash, and running through Norfolk Suffolk, and Cambridgeshire; in th latter county they are called the *Gog magog Hills.*

The *Chiltern Hills*, a continuation of th East Anglian Heights, in Bucks an Oxfordshire.

The *North Downs*, extending from Salisbur Plain, through Hants, Surrey, and Kent

The *South Downs*, extending from Salis

* The *Mountains*, *Plains*, and *Rivers* will be found on the County Maps, III. to XXII.

bury Plain, through Wilts, Hants, and Sussex to Beachy Head.

Leith Hill, in the north Downs, is 993 ft. in height.

Ditchling Beacon, 858 ft. and

Firle Beacon, 820 ft. high, both in the south Downs.

The *Malvern Hills*, in Worcestershire and Herefordshire, 1444 ft. high. form the *watershed* between the S and the Wye.

The *Cotswold Hills*, in Glouceste 1134 ft. high. They form the *wat* between the Severn and the Than

The *Mendip Hills*, in Somersetshire, ft. high.

PLAINS AND VALLEYS.

The following are the principal Plains and Valleys:—

The *Cumbrian Plain* lies along the river Eden, and has the Pennine Range on the one side, and the Cumbrian group on the other.

The *Plain of York*, the largest in England, chiefly in Yorkshire, lies between the York Moors and Wolds on the east, and the Pennine Range on the west.

The *Cheshire Plain* includes Cheshire and the southern part of Lancashire.

The *Central Plain* embraces the midland portions of the country, but chiefly the counties of Leicester, Warwick, and Northampton.

The *Fen District* is chiefly in the counties of Lincoln, Cambridge, and Huntingdon. This district has been drained, and the greater portion is now under cultivation.

The *Eastern Plain* lies between the s the East Anglian Heights, and in the greater portion of the coun Norfolk, Suffolk, and Essex.

The *Weald*, a fertile agricultural once a large forest, lies betwe North and South Downs.

Salisbury Plain is an elevated und tract of open downs in Wiltshire this plain, about 6 miles north of bury, is *Stonehenge.*

The *Valley of the Thames* extends o side of the river.

The *Vale* or *Valley of the Severn* of the land lying along the banks river, and is known in different p various names; as the *Vale of Be* the *Vale of Gloucester*, the *Evesham*, &c.

RIVERS.

The East Coast of England.

Rivers flowing into the North Sea or German Ocean.
From North to South.

Names.	Length.	Direction, &c.	Towns on the
Aln, or Alne .	20	Rises near Alnham, flows east and south-east through Northumberland, and falls into Alnmouth Bay.	Alnwick.

Names.	Length	Direction, &c.	Towns on the Rivers.
Tyne . .	70	Is formed by the union of the North and South Tyne; the former rises in the Cheviots, the latter near Cross Fell, in Cumberland. The North Tyne, the main branch, flows east-south-east through Northumberland, divides Northumberland from Durham, and enters the German Ocean.	Hexham, Newcastle, Gateshead, North and South Shields, Tynemouth.
Wear . .	65	Rises near Kilhope Law, flows east-south-east to Bishop Auckland, then turns north-east, and, by a winding course, enters the North Sea.	Bishop Auckland, Durham, Wear-mouth, Sunderland.
Tees . .	85	Rises in Cumberland, on the slope of Cross Fell, flows first south-east, then north-east, forming, in the first part of its course, the boundary between Durham and Westmoreland, and afterwards the boundary between Durham and Yorkshire.	Barnard Castle, Stockton.
Humber . .	40	*Forms the outlet of the Trent and the Ouse,* and has on the north Yorkshire, and on the south Lincolnshire. *Tributary* on the north, the *Hull.*	Hull, or Kingston on Hull, Gt. Grimsby, *near the mouth.*
Ouse . .	160	Is formed by the junction of the *Swale and Ure,* which unite near Boroughbridge. The Ouse flows south-east through Yorkshire, and falls into the Humber.	*Richmond* on *Swale, Ripon* on the *Ure,* York, Selby, Goole.
Nidd, tr. rt. .		Rises under Great Whernside, flows through Nidderdale, and joins the Ouse.	Ripley, Knaresborough.
Wharfe, tr. rt..	60	Rises under Cam Fell, and flows south-east into the Ouse.	Otley.
Aire, tr. rt. .	70	Rises at Malham Tarn, and flows south-east into the Ouse.	*Bradford,* on a small brook that falls into the *Aire,* Leeds.
Calder, af. rt.		Rises in the Pennine chain, and flows east and north into the Aire.	*Halifax,* near Dewsbury, Wakefield.
Colne, af. rt.		Rises near Holme Moss, and flows north into the Calder.	Huddersfield.
Don, tr. rt. .	50	Rises in the High Moors on the borders of Cheshire, and flows east, south-east, and north-east into the Ouse.	*Sheffield,* at the junction of the *Sheaf* and *Don, Rotherham,* at the junction of *Rother* and *Don,* Doncaster, *Barnsley,* on the *Dearne,* an af. of the Don.
Trent . .	180	Rises in the moorlands of Staffordshire, near the borders of Cheshire, flows south-east, then north-east and north through the counties of Stafford, Derby, Nottingham, and Lincoln, and joins the Ouse to form the Humber. The Trent is connected with all the rivers of central England by canals.	Stoke, Newcastle-under-Lyne, Stone, Rugeley, Burton, Nottingham, *Newark,* where the *Devon* joins the *Trent,* Gainsboro'.

Names.	Length	Direction, &c.	Towns on the
Derwent, tr. lt..	48	Rises in the High Peak of Derbyshire, and flows south-east into the Trent.	Matlock, Derby.
Sow, tr. rt. .	18	Rises in the west of Staffordshire, and flows south-east into the Trent.	Stafford.
Tame, or Teme, tr. rt.	35	Rises near Walsall in the south of Staffordshire, enters Warwickshire, flows north, and falls into the Trent.	*Walsall*, ne *Tame*, *bury, do., B ham*, on t *brook, af. Tame, Ta* where the joins the *T*
Anker, af. rt.	20	Rises in the north-east of Warwickshire, flows north-west, and joins the Tame, at Tamworth.	Nuneaton, *stone*, ne *Anker.*
Soar, tr. rt. .	35	Rises in the south-west of Leicestershire, flows through the county north-east and north-west, and enters the Trent.	Leicester, borough.
Witham . .	75	Rises in the north of Rutlandshire, flows north to Lincoln, then south-west, and falls into the Wash.	Grantham, Boston.
Welland . .	60	Rises in Northamptonshire, near the sources of the Avon and the Nene, flows north-east, separating Northamptonshire from the counties of Leicester, Rutland, and Lincoln, then turns north through the latter county, and falls into the Wash.	Stamford, Sp
Nen, or Nene .	85	Rises in Northamptonshire, near the sources of the Avon and the Welland, flows south to Northampton, then north-east through Northamptonshire and Cambridgeshire, and falls into the Wash.	Northampto *lingborough*, the *Nen*, ingay, rough, Wis
Ouse (Great) .	145	Rises in the south of Northamptonshire, and flows, by a circuitous course, through the counties of Northampton, Buckingham, Bedford, Huntingdon, Cambridge, and Norfolk, into the Wash. The old course of this river has been altered by the new Bedford Canal, which runs in a straight line from the eastern side of Huntingdonshire, through Cambridgeshire, to near Market Downham, in Norfolk.	Buckingham ford, Hunt St. Ives, *King's Lyn* junction of or *Setchy* *Ouse.*
Cam, or *Granta, tr. rt.*	40	Rises in Essex, flows north-east through Cambridgeshire, and falls into the Ouse.	*Saffron Wald* Cambridge.
Lark, tr. rt. .	26	Rises in the west of Suffolk, and flows north-west through Suffolk and Cambridgeshire into the Ouse.	Bury St. Ed
Little Ouse, or *Brandon, tr. rt.*	34	Rises in Norfolk, near the source of the river *Waveney*, and flows west along the borders of Suffolk and Norfolk, into the Great Ouse.	*Thetford*, junction *Thet* and *O*

Names.	Length	Direction, &c.	Towns on the Rivers
Yare, or Yar .	60	Rises to the south of Wymondham, nearly in the middle of Norfolk, flows north and east, and forms, before entering the sea, Breyden Mere or Water. It receives on the left the *Bure* and *Wensum*, and on the right the *Waveney*.	Wymondham, Y mouth.
Wensum, tr. lt.	45	Rises in the north-west of Norfolk, and flows south-east into the Yare, near Norwich.	Norwich.
Waveney, tr. rt.	50	Rises near the source of the Little Ouse, on the borders of Suffolk and Norfolk, flows east-north-east, and joins the Yare. It divides Norfolk from Suffolk.	Bungay, Beccles.
Orwell(including the Gipping).	30	The *Orwell*, in the upper part of its course, is called the *Gipping*. The streams that form the river unite near Stowmarket; it then flows south-east into the *Stour* at Harwich. The *Orwell*, properly speaking, begins at Ipswich; its length is 10 or 12 miles.	Stowmarket, on t *Gipping*. Ipswich.*
Stour . .	55	Has three sources, one in Essex, which is considered the chief, one in Cambridgeshire, and one in Suffolk. These three streams unite near *Haverhill*, on the borders of Suffolk and Essex. The river then flows east between Suffolk and Essex, and enters the German Ocean near Harwich, where it is joined by the Orwell.	Sudbury, Harwic
Colne . .	35	Rises in the north-west of Essex, and flows south-east into the German Ocean.	Halstead, Colches
Blackwater .	46	Rises, under the name of the *Pant*, in the north-west of Essex, and flows east-south-east into the German Ocean.	Braintree, Cogg hall, Maldon.
Chelmer, tr. rt.	35	Rises near Thaxted, in the north-west of Essex, and flows south-east into the Blackwater.	Thaxted, Chelr ford.
The Thames .	215	The Thames, under the name of *Isis*, rises in a spring called the "*Thames Head*," which is about 3 miles south-west of Cirencester; the *true source* of the Thames, however, is the river *Churn*, which rises at a place called the "*Seven Springs*," in the Cotswold Hills, in Gloucestershire, about 3 miles south-east of the town of Cheltenham. The river flows south to near *Cricklade*, then east-north-east past *Lechlade* to *Oxford*, then south-east past *Oxford*, *Abingdon*, and *Wallingford* to *Reading*, then generally in an easterly direction past Gravesend into the German Ocean, by a wide and noble estuary, which, between Foulness Point, in Essex, and the Isle of Sheppey, is about 15 miles in width. The river is navigable for large vessels to Deptford; for vessels of 200 tons	Cricklade, Oxfo Abingdon, W lingford, Henl Great Marl Windsor, Et Hampton, Kin ston, Twickenha Richmond, Bre ford, Fulham, P ney, Chelsea, L don, Deptfo Greenwich, Wo wich, Gravese Sheerness.

* That is, *Gippes-wich*, the town on the Gipping.

Names.	Length	Direction, &c.	Towns on the Rive
The Thames (*continued*).		burden to London Bridge; and for barges as far as Lechlade, in Gloucestershire. The tide ascends to *Teddington**, in Middlesex, about 18 miles above London Bridge. The area of the basin is 6,160 square miles.	
TRIB. ON LEFT BANK. —			
Churn . .		This is regarded as the main source of the Thames; it rises in the "Seven Springs," in Gloucestershire, and joins the *Isis* at Cricklade.	Cirencester.
Lech . .	15	Rises in the Cotswold Hills, in the south-east of Gloucestershire, and joins the Thames below Lechlade.	Lechlade.
Windrush .	30	Rises in the Cotswolds, and flows through the counties of Gloucester and Oxford into the Thames.	Witney.
Cherwell . .	50	Rises in the south-west of Northamptonshire, and flows south into the Thames through the counties of Northampton and Oxford.	Banbury, *Oxf* where the *Che* joins the *Th* (or *Isis*).
Thame . .	30	Rises in Buckinghamshire, and flows south-west into the Thames, through the counties of Buckingham and Oxford.	Aylesbury, Th Dorchester.
Colne . .	30	Rises near Hatfield, in Herts, but the *Ver*, or *Verlain*, which comes from the Chalk Hills on the west of the county, is often regarded as the main stream of the river; the two join near St. Albans, below which place the river is properly called the *Colne*. The river flows south-west and south through Herts, divides Middlesex from Bucks, and falls into the Thames.	St. Albans, Wat Uxbridge, *Sta* near the junc of the *Colne* the *Thames*.
Brent . .	16	Flows south through Middlesex into the Thames.	Brentford.
Lea . .	55	Rises in the Chiltern Hills, in Bedfordshire, flows south-east through Herts, then south, separating Essex from Herts and Middlesex, and falls into the Thames.	Luton, Hert Ware, Walt Abbey, *Black* where the *Lea* the *Thames*.
Stort, af. lt. .	20	Rises in the north-east of Herts, passes along the Essex border, and joins the Lea.	Bishop's Stortfo
Roding . .	30	Rises in the north-west of Essex, and flows south into the Thames.	Barking.
TRIB. ON RIGHT BANK.—*Ock.*	18	Rises in the Vale of the White Horse, Berks, and flows north-east into the Thames.	*Abingdon*, at junction of the and *Thames*.
Kennet, . .	50	Rises near Marlborough Downs, Wiltshire, and flows east through Wilts and Berks into the Thames.	Marlborough, N bury, *Reading*
Wey . .	40	Rises near Alton, in Hampshire, passes north-east through Hants and Surrey into the Thames at *Weybridge*.	Farnham, Go ming, Guildfo

* The *town* to which the *tide* ascends.

Names.	Length	Direction, &c.	Towns on the Rivers.
Mole . .	42	Rises in the north of Sussex, and runs north through Surrey into the Thames at *East Mole-sey*. Its course is subterranean about Boxhill; Milton, therefore, calls it the "Sullen Mole that runneth underground."	*Reigate, near; Dor ing*, on *Pip* broo af. of *Mole*, Le therhead.
Wandle . .	9	Rises near Croydon, in Surrey, and flows north-west into the Thames.	Croydon, *Wand worth*, at junctio of *Wandle* a *Thames*.
Darent . .	18	Rises in the west of Kent, and flows north into the Thames.	Dartford.
Medway . .	60	Rises on the borders of Sussex, near East Grinstead, flows north-east into Kent, where it is joined by the *Eden*, then east-north-east through nearly the middle of Kent, into the mouth of the Thames, at Sheerness.	*Tunbridge*, whe the *Tun* enters t *Medway*. Mai stone, Strood, R chester, Chatha *Sheerness*, at jun tion of the *Medw* and *Thames*.
Stour . .	45	Rises near Hythe, in the south-east of Kent, and runs north-east to the Isle of Thanet, where it divides into two branches, one of which falls into the estuary of the Thames, and the other into Pegwell Bay.	Ashford, Cante bury, Reculv Sandwich.

The South Coast.

Rivers flowing into the English Channel. From East to West.

Names.	Length	Direction, &c.	Towns on the Rivers
Rother . .	30	Rises under the Forest Ridge near Rotherfield, in Sussex, forms, in part of its course, the boundary between Kent and Sussex, and falls into Rye Harbour.	Rye, Winchelsea.
Ouse . .	30	Rises to the north of Lindfield, runs south-east and south through Sussex, and enters the sea at Newhaven.	Lewes, Newhave
Adur . .	20	Has three sources, the chief of which is near Horsham, in the north of Sussex; the united streams enter Shoreham Harbour.	New Shoreham.
Arun . .	41	Rises in St. Leonard's Forest, and flows south into the English Channel.	Horsham, Arund
Rother, tr. rt. .	24	Rises in the east of Hants, flows eastwards, and falls into the Arun.	*Petersfield*, ne Midhurst, *Petwor near*; Chichester
Lavant . .	9	Rises in Carlton Forest, and flows south into Chichester Harbour.	

Names.	Length	Direction, &c.	Towns on the Riv
Itchin . .	22	Rises near Alresford, in Hants, and flows south into Southampton Water.	Winchester, *S ampton*, betv the *Itchin* and
Test, or Anton	29	Rises near Whitchurch, in Hants, flows south-west into Southampton Water.	Andover, W church, Roms
Avon (*Hampshire*).	70	Rises near Devizes, in Wiltshire, flows generally south through Wilts and Hants, and falls into Christchurch Bay.	Salisbury, or Sarum, Ringw *Christchurch*, confluence of and *Stour*.
Wily, or *Wylye*, *tr. rt.*	25	Flows east-south-east into the Avon.	Wilton.
Stour, tr. rt. .	55	Rises near Stourton, in Somersetshire, flows south-east through Dorsetshire and Hants, and joins the Avon at Christchurch.	Sturminster N ton, Bland *Christchurch*.
Allen, af. lt.		Flows south through Dorsetshire, and joins the river Stour.	*Wimborne Mi* at the junctio *Allen* and *Sto*
Frome . .	55	Rises in Dorset Heights, near Beaminster, and flows south-west into Poole Harbour.	Dorchester, *W ham* between *Frome* and *Trent* or *Pi Poole*, on a pe sula on the n side of *Poole bour*.
Brit . .	8	Rises in Dorset Heights, near Beaminster, and flows south into the English Channel.	Bridport.
Lyme . .		Rises at Uplyme, Devonshire, and flows south-east into the English Channel.	Lyme Regis.
Axe . .	20	Rises in the Dorset Heights, and flows south-west through Devonshire into the English Channel.	Axminster.
Otter . .	24	Rises near the Blackdown Hills, in the north-east of Devonshire, and flows south-west into the English Channel.	Honiton.
Ex, or Exe .	55	Rises in Exmoor Forest, flows south-east through Somersetshire and Devonshire into the English Channel.	Tiverton, Ex Exmouth.
Teign . .	30	Rises in Dartmoor Forest, and flows east, south, and east into the English Channel.	Teignmouth.
Dart . .	30	Rises in Dartmoor Forest, and flows south-east into the English Channel.	Totness, D mouth.
Plym . .		Rises in Dartmoor, and flows south into Plymouth Sound.	Plymouth.
Tamar . .	55	Rises in the north-east of Cornwall, and flows south-east between the counties of Cornwall and Devon into Plymouth Sound.	Saltash, Devon
Attery, tr. rt. .	12	Flows eastwards into the Tamar.	Launceston.
Tavey tr. lt. .	26	Rises in Dartmoor, and flows south into the Tamar.	Tavistock.

Names.	Length	Direction, &c.	Towns on the Riv
Fowey . .	30	Rises near Brown Willy Mount, and flows south into the English Channel.	Lostwithiel, Fo
Fal . .	20	Rises in Tregoss Moor, and flows south into Carrick Road. *Falmouth Bay* is an inlet of Carrick Road, on the west side.	Falmouth, *Pen* at the head of *mouth Creek.*
St. Allen and *Kenwyn, tr. rt.*		Flow south and east into *Truro Creek*, which joins the Fal.	*Truro*, at the ju tion of the *A* and *Kenwyn.*
Loo, Cober, or Hel.	8	Rises in the hills to the west of Penryn, and flows into the English Channel at Loo Pool.	Helston.

The West Coast.

Rivers flowing into the Bristol Channel.

From South to North.

Names.	Length	Direction, &c.	Towns on the Riv
Torridge. .	40	Rises in north-west of Devonshire, and flows first south-east then north-west into the Bristol Channel.	Torrington, B ford.
Taw . .	48	Rises in Dartmoor, and flows north-west into the Bristol Channel.	Barnstaple.
Parret . .	45	Rises in Dorsetshire, and flows north and north-west into Bridgewater Bay.	Bridgewater.
Tone, tr. lt.* .	30	Rises in Brendon Hills, and falls into the Parret.	Taunton.
Yeo, or *Ivel, tr. rt.*	24	Rises in north of Dorsetshire, and flows north-north-west into the Parret.	Yeovil, Ilcheste
Brue . .	30	Rises in the east of Somersetshire, and flows west into Bridgewater Bay.	Bruton, Glas bury.
Severn . .	240	Rises in Montgomeryshire, on the northern side of Plinlimmon, flows east-south-east through Montgomeryshire, Shropshire, Worcestershire, and Gloucestershire, and falls into the Bristol Channel. It is navigable to Welshpool. The tide rises in the estuary of the Severn 42 feet.	Welshpool, Shre bury, Worce Gloucester.
Stour, tr. lt. .	20	Rises in Clent Hills, Worcestershire, and flows south-west into the Severn.	Stourbridge, derminster. *St port*, at junctio *Stour* and *Seve*
Salwarp, tr. lt.		Rises under the Clent Hills, and flows south into the Severn.	Bromsgrove, Dr wich.
Avon (*Upper*, or *Warwickshire*).	96	Rises in the hills in the north-west of Northamptonshire, flows south-west through Warwickshire and Worcestershire, and enters the Severn, near Tewkesbury.	*Naseby*, betwee *Avon* and Rugby, Warw Stratford, sham, Tewkesb

* *Athelney*, where Alfred found refuge, at the junction of the Tone and Parret.

Names.	Length	Direction, &c.	Towns on the Rivers.
Chelt, tr. lt. .	10	Flows west through Gloucestershire into the Severn.	Cheltenham.
Avon (*Lower*, or *Bristol*), *tr. lt.*	65	Rises near Tetbury, in the south-east of Gloucestershire, flows south and west through Wiltshire, enters Somersetshire, divides Somersetshire from Gloucestershire, and enters the estuary of the Severn. It is navigable to Bath.	Bradford, Bath Bristol.
Frome, af. lt.	25	Rises in the Mendip Hills, and flows east and north into the Avon.	Frome.
Teme, tr. rt. .	60	Rises in Kerry Hill, Montgomeryshire, flows east between Radnorshire and Salop, south-east through Worcestershire, and enters the Severn.	*Ludlow*, where th *Corve* joins th *Teme*.
Wye, tr. rt. .	120	Rises in Montgomeryshire, on the south side of Plinlimmon, flows mostly south-east between Radnor and Brecknockshires, passes through Herefordshire, divides the counties of Gloucester and Monmouth, and falls into the estuary of the Severn.	Hereford, Ross *Monmouth*, at th junction of *Mon now* and *Wy* Chepstow.
Lug, af. lt. .	60	Rises in the north of Radnorshire, and flows south-east and south through Herefordshire into the Wye.	Presteign, Morti mer's Cross, Leo minster.
Usk, tr. rt. .	70	Rises under Talsarn Mountain, on the borders of Carmarthen and Brecknockshires, flows through the counties of Brecknock and Monmouth, and falls into the Bristol Channel.	Brecon or Breck nock, Newport.
Taff . .	35	Rises near Brecknock Beacons, and flows south through the counties of Brecknock and Glamorgan, and falls into the Bristol Channel.	Merthyr-Tydfi Llandaff, Cardiff
Tawe . .	36	Rises in the Black Mountains, Brecknockshire, and flows south-west through the county of Glamorgan into Swansea Bay.	Swansea.
Towy . .	65	Rises under Tregaron Mountain, Cardiganshire, passes south, separating the counties of Cardigan and Brecknock, then flows south-west through Carmarthenshire into Carmarthen Bay.	Carmarthen.

Rivers flowing into the Irish Sea.
From South to North.

Names.	Length	Direction, &c.	Towns on the Rivers.
Teify . .	53	Rises in the north-east of Cardiganshire, flows south-west and west through Cardiganshire, separates that county from the counties of Carmarthen and Pembroke, and enters Cardigan Bay.	Lampeter, Cardi gan.
Seiont .		Flows west through Carnarvonshire into the Menai Strait.	Carnarvon.

RIVERS ON THE WEST COAST OF ENGLAND AND WALES.

Names.	Length	Direction, &c.	Towns on the Rive
Conway . .	24	Rises in Llyn Conwy, or Lake Conway, flows east and north, separating the counties of Carnarvon and Denbigh, and flows into the Irish sea.	Conway.
Dee . .	80	Issues out of Lake Bala, in Merionethshire, flows east through the county of Denbigh, then north, separating Denbigh from a part of Flintshire and Cheshire, and falls into the Irish Sea. An artificial channel has been cut from Chester to the estuary. The Dee separates, in parts of its course, Wales from England.	Llangollen, Ches Flint, Holywe
Mersey . .	70	Is formed by the union of the *Thame* and *Goyt*, at Stockport; it flows west, separating Cheshire from Lancashire, and enters the Irish Sea by a wide estuary. The *Thame*, the principal source, rises in Holme Moss, in the north-east of Cheshire, and the *Goyt* rises on the borders of Cheshire and Derbyshire. Some of the sources of the Thame are in Yorkshire.	*Staleybridge, Thame. Asht under-Lyne*, on Stockport, W rington, Liv pool, Birkenhe
Bollen, tr. lt. .	20	Rises in the east of Cheshire, and flows north-west into the Mersey.	Macclesfield.
Weaver, tr. lt.	45	Rises near the southern extremity of Cheshire, flows north-west through the county, and enters the estuary of the Mersey.	Nantwich, Nor wich.
Dane, af. rt.	30	Rises on borders of Cheshire and Derbyshire, and flows west into the Weaver.	Congleton.
Irwell, tr. rt. .	30	Rises in Rosendale Forest, flows south through Lancashire, and enters the Mersey.	Bury, Salford, M chester.
Roch, af. lt.	10	Rises in the east of Lancashire, and runs south-west into the Irwell.	Rochdale.
Croal, af. rt.		Rises in the moors of Lancashire, and flows south-east into the Irwell.	Bolton, or Bolt le-Moors.
Ribble . .	60	Rises in the Yorkshire mountains, near Whernside, flows south-west through Yorkshire and Lancashire, and enters the Irish Sea by a wide shallow estuary.	Clitheroe, Prest
Calder, tr. lt. .		Rises on the Yorkshire borders, and flows north-west into the Ribble.	Burnley.
Darwent, tr. lt.		Rises in the moors of Lancashire, and flows into the Ribble.	Blackburn.
Douglas, tr. lt.	15	Rises also in the moors, and flows north-west into the estuary of the Ribble.	Wigan.
Wire, or Wyre	28	Rises in the moorlands on the Yorkshire border, flows west, south, and north-west into Lancaster Bay.	Fleetwood.
Lune . .	53	Rises in Westmoreland, on the northern slope of Langdale Fells, flows south and south-west through Westmoreland and Lancashire into Lancaster Bay.	Lancaster.

Names.	Length	Direction, &c.	Towns on the Rive
Kent or Ken .	23	Rises in the Cumbrian ridge, and flows south into Morecambe Bay.	Kendal.
Derwent .	42	Rises near Scaw Fell, passes through Borrowdale, Derwent Water, Bassenthwaite Water, and falls into the Irish Sea.	*Keswick*, where *Greta* joins *Derwent*. Wo ington.
Eden . .	80	Rises in the Pennine Chain, on the borders of Westmoreland and Yorkshire, flows north-west through Westmoreland and Cumberland, and falls into the Solway Firth.	Appleby. *Carl* at junction of *dew* and *Eden*.
Eamont, tr. lt.		Runs from Ulleswater into the Eden.	Penrith.

LAKES.

England has few Lakes, and none of them are of any extent. They are principally found in the north-west of England, in the counties of Cumberland, Westmoreland, and Lancashire.

Windermere, or *Winandermere*, between the counties of Westmoreland and Lancaster, is the largest Lake in England. It is about 14 miles long and 1 mile in width.

Ulleswater, between the counties of Cumberland and Westmoreland, is 9 m long, and 1 mile in average width.

Derwent Water, in Cumberland, is 3 m long and $1\frac{1}{2}$ mile in width.

Coniston Water, in Lancashire, is 6 m long and $\frac{3}{4}$ mile wide.

Buttermere, $1\frac{1}{2}$m. by $\frac{1}{4}$m.
Bassenthwaite, 4m. by 1m.
Crummock, 3m. by $\frac{3}{4}$m.
} and sev others Cumberla

Bala Lake, in the county of Merion North Wales, is 4 miles long and $\frac{3}{4}$ wide. The *Dee* issues from this La

MAP II.

REMARKS ON THE SUCCESSION OF THE VARIOUS STRATA OF ROCKS.

The Order of Superposition of the Stratified Rocks, and of the Groups and Systems into whic they are arranged will be seen from the following Table.

			GROUPS.	SYSTEMS.
Fossiliferous Rocks.	Cainozoic Epoch.	Tertiary Strata.	*Modern Deposits.* Clays, Sands, Gravels, Peat-Mosses	Post Tertiary.
			Newer Pliocene or Pleistocene. Drift-boulder, Norwich Crag, Shell Marl, &c. . . .	Upper Tertiary.
			Pliocene. Red Crag, Coralline Crag, &c.	
			Miocene. Bovey Tracey Beds	Middle Tertiary.
			Eocene. Freshwater Beds, Bagshot Sand, London Clay, &c. . .	Lower Tertiary.
	Mesozoic Epoch.	Secondary Strata.	*Upper Cretaceous.* Chalk, Chalk Marl, Upper Green Sand, Gault . .	Cretaceous.
			Lower Cretaceous. Lower Green Sand, Kentish Rag	
			Wealden. Weald Clay, Hastings Sand	Oolitic, or Jurassi
			Upper Oolite. Purbeck Beds, Portland Stone, Kimmeridge Clay . .	
			Middle Oolite. Coral Rag, Oxford Clay	
			Lower Oolite. Cornbrash and Forest Marble, Bradford Clay, Great Oolite, Fuller's Earth, Inferior Oolite	
			Lias. Upper Lias Shale, Marlstone, Lower Lias Clay and Lime	
			Upper New Red Sandstone, or Trias. Variegated Marls, with Salt and Gypsum. Variegated Sandstones and Conglomerate . . .	Triassic.

		GROUPS.	SYSTEM
Fossiliferous Rocks.	Primary Strata.	*Permian.* Magnesian Limestone, Lower New Red Sandstone . .	Permian.
Palæozoic Epoch.	Primary Strata.	Upper Coal Measures. Millstone Grit, Carboniferous Limestone . . . . . Lower Coal Measures.	Carbonifero
Palæozoic Epoch.	Primary Strata.	Devonian, or Old Red Sandstone, divided into Upper, Middle, and Lower.	Devonian
Palæozoic Epoch.	Primary Strata.	*Upper Silurian.* Tilestone, Ludlow Rocks, Wenlock Limestone and Shale *Lower Silurian.* Caradoc Sandstone, Bala beds, Llandeilo Flags . .	Silurian
Palæozoic Epoch.	Primary Strata.	*Upper Cambrian.* Lingula Flags, Festiniog and Tremadoc Slates . .	and Cambrian,
Palæozoic Epoch.	Primary Strata.	*Lower Cambrian.* Longmynd and Bangor Rocks, Llanberris Slates, Harlech Grits	
Azoic, or Hypozoic.		*Metamorphic Rocks.* Gneiss, Quartz Rock, Mica-Schist, Hornblende, Clay Slate, &c.	Metamorph different
Igneous Rocks.		*Igneous Rocks.* Volcanic: Lava, Pumice, Tufa, &c. Trappean: Basalt, Greenstone, Trap-tuffs, &c. Granitic: Granite, Porphyry, Syenite, &c.	

On referring to the table it will be seen that there are *eleven systems*, or, if the Cambrian and Silurian* are taken as *one*, *ten systems*, each of which is subdivided into *groups of rocks*. *Metamorphic Rocks* are of various ages and are so termed from the change or metamorphism produced on the rocks by heat, or chemical agency. The highest System is, for convenience, called *Post-Tertiary*, though the deposits merge insensibly into old Tertiary for
The various systems are also a
into *Epochs* or *Periods*, which
names from the absence, presence,
of the forms of life exhibited
organic remains found in the strata.
the strata which are supposed to
no organic remains are termed
(without life), and *hypozoic* (beneat
because they lie below the stra

* The *Cambrian* rocks are now generally recognised as forming a part of the Silurian

sessing organic remains. The strata containing the oldest organic remains are called *palæozoic* (ancient life); the next are termed *mesozoic* (middle life); and the most recent strata, *cainozoic* (new life). Those rocks that contain organic remains are called *Fossiliferous*, because they contain, less or more, the remains of plants and animals. The *Igneous rocks* which have been formed by the action of intense heat or fire in the interior of the earth, contain no fossil record of plants or animals. These rocks, which are arranged into *Granitic, Trappean, and Volcanic*, in general, "break through the stratified rocks, or spread over them in mountain masses often of no very determinate form — here appearing as walls, filli up rents and chasms, there rising in h conical hills — and in another region flowi irregularly over the surface in streams lava. When such rocks are quarried cut through, they do not present a succe sion of layers or strata, but appear *amorphous* * masses, that is, masses of regular or determinate form."† Hen they are termed *Unstratified Rocks.* T others are called *Stratified*, because th appear to have been formed in layers strata; and as water seems to have be the chief agent in the formation of the rocks, they are also designated *Aqueo Rocks.*

The Etymologies of the various Systems or Formations of Stratified Rocks.

The following are the different systems of Stratified Rocks, with the reasons why they were so called.

1. *Metamorphic* (from *meta*, implying change, and *morphé*, form), so called from the change or metamorphism produced by heat, or chemical agency.
2. *The Cambrian;* because this formation occurs chiefly in North Wales.‡
3. *The Silurian;* from the Silures, a tribe of ancient Britons, who lived in Radnorshire, Salop, and the parts adjoining. In these districts this system of rocks was first studied.
4. *The Devonian;* from Devonshire, in which this system of rocks largely prevails. Also called the *Old Red Sandstone* in contradistinction to the *New Red Sandstone.*
5. *Carboniferous;* from the abundance of coal. From *carbo*, coal, and *fero*, I bear.
6. *Permian;* from Perm, one of the governments of Russia, where these strata are extensively developed.
7. *Triassic (trias*, a triad);‡ from this syste consisting of *three* divisions in German in which country the term was first use
8. *Oolitic;* because the limestones are co posed of small rounded particles like t eggs or roe of a fish. The word com from *ōon*, an egg, and *lithos*, a sto This system is also called *Jurassic*, fr Jura, a chain of mountains separati France from Switzerland, because a gre resemblance exists between the form tions of these mountains and the Ooli group in England.

   Wealden; from the *wealds* or *wolds* Kent and Sussex, where the depos prevail.
9. *Cretaceous*, from *creta*, chalk; becau the well-known mineral, *chalk*, forms leading feature in this system of rock
10. *Tertiary*, from *tertius*, the third; all t regular strata of limestone, marl, cl sand, and gravel above the chalk bei denominated the *Tertiary* system. T groups of this system are:

* *A*, without, and *morphé*, form or shape.
† Page's Introductory Text-Book of Geology.
‡ The ancient name of Wales was *Cambria.*

(1.) The *Eocene*, from *ēōs*, the dawn, and *kainos*, new; so called because a small number of the shells in the formations of this period belong to existing species.

(2.) The *Miocene*, from *meiōn*, less, and *kainos*, new; because this group contains a less number of shells identical with existing species than the group above (Pliocene).

(3.) The *Pliocene*, or *Pleiocene*, from *pleion*, more, and *kainos*, because this group contains of recent than of extinct spec

(4.) The Pleistocene, from *pleistos* and *kainos*, *new*; because the of this group are mostly th species existing at the p time.

11. *Post-Tertiary System*; under this are included all the accumulation have been formed above the drift.

GEOLOGY OF ENGLAND.

1. *Igneous Rocks* occur chiefly in Cornwall, Devonshire, Cumberland, the Isle of Anglesey, and Northumberland. The highest mountain in Great Britain is granitic.
2. *Metamorphic Rocks* are found in the Isle of Man, Wales, Cornwall, and Devonshire; mica, and clay slate being the prevailing rock.
3. *The Silurian*, including the *Cambrian Rocks*, occupy the greater portion of Wales; they also occur in Cumberland and Westmoreland.
4. *The Old Red Sandstone*, or *Devonian* Rocks (O. R.), are largely developed in South Wales, and in the counties of Devon and Cornwall.
5. *The Carboniferous Formations* in which are included the Mountain Limestone and the *Coal Fields*, are distributed over the greater part of the North of England; they also occur in Flintshire, in South Wales, and in Devonshire; there are also detached portions in several of the midland counties. The positions of the *Coal Fields* are given under the head of *Minerals*.
6. *The Magnesian Limestone* (M. L.) lies along the eastern side of the Carboniferous strata, and stretches along the borders of Derbyshire and Notts, through Yorkshire; there is also Magnesian Limestone in Durham, to the east of the coal field in that county.
7. *The New Red Sandstone*, or *Upper New Red Sandstone*, extends over a great portion of England. It lies to the east of the Carboniferous and the Magnesian Limestone formations; stretches from the sea coast in Durham, through Yorkshire and several of the midland counties and occupies the whole of Cheshire. It also passes through Lancashire; is found in Cumberland, along the valley of the Eden; and in Devonshire, in the valley of the Ex.
8. *The Oolitic Formations* (O.), including the *Lias*, occupy a considerable extent of country; they extend from the North Moorlands of Yorkshire, along the eastern border of the New Red Sandstone to Lyme Regis, in Dorsetshire.

   The Wealden Formation, is developed in the counties of Kent and Sussex. "The Wealden seems to occupy the site of an ancient estuary which received the clay and mud of some gigantic river, whose waters occasionally bore down the spoils of land plants and land animals, to be entombed along with those of aquatic origin."*
9. *The Cretaceous Formations* (C.) are largely developed in the south-east and the south of England, and extend from the northern coast of Norfolk to the shores of the English Channel, in Dorsetshire. From Wiltshire they extend eastwards and form the two chains of the North and the South Downs. The Yorkshire and the Lincolnshire Wolds also belong to this formation, as well as the greater portion of the Isle of Wight.
10. *The Tertiary Formations*, including the

* From "Page's Introductory Text-Book of Geology," an admirable elementary work.

Plastic Clay, the *London Clay*, the *Crags* of Norfolk and Suffolk*, &c., occur chiefly on the eastern coast of England. They are found in Yorkshire, Lincolnshire, Norfolk, Suffolk, Middlesex, Berks, Surrey, Ke south of Hants, and portions of jacent counties.

Metals and Minerals of the various Formations.

1. In Europe, the Plutonic † and Metamorphic rocks are the great depôts of metallic ores.
2. In the *Igneous rocks* we find tin. "In Cornwall, the great source of British tin and the most important one in the world, the ore occurs in granite, and also in killas, a partially metamorphic schist." ‡

China Clay, employed in the manufacture of the finest pottery and porcelain, is produced by the decomposition of granite. Many varieties of granite are excellent as building stones; and some of the most important public works of Great Britain and Ireland are of this material.

3. From the *Metamorphic and Silurian* systems we obtain *marble*, *roofing slate*, *writing slate*, and slates for ornamental and other purposes. In the *veins* which traverse these systems are found *lead*, *copper*, *silver*, *gold*, and other metals.

"The Silurian strata," says Mr. Page, "are, along with the other Palæozoic rocks, thought to be the chief repositories of those auriferous veinstones, whose golden metal has ever been the coveted treasure of man, whether savage or civilised."

4. From the *Old Red Sandstone* are obtained *stones for paving*, *flooring*, &c.
5. The *Carboniferous Formations* furnish *coal*, *iron*, *lead*, *zinc*, *lime*, *building stone*, *fire-clay* for fire-bricks, *marble*, &c.
6. From the *Permian System* we *building-stone*, and from the *li* called magnesian, *mortar* used in ing. The magnesian limestone q of Bolsover, in the north-east of shire, supplied the stones for t Houses of Parliament.
7. *New Red Sandstone.*—The mine rived from this formation are – *sa* the salt-springs and deposits c salt; *building stone*; *gypsum*, or s of lime, &c.
8. *Oolitic System.*—The rocks of this tion yield *limestones*, *clays*, *alum*, *earth*, and *sandstones*, used for b and paving.
9. *Cretaceous System.*—The miner tained from this system are *chalk*, used in agriculture and in th *flint*, used in the manufacture of lain, china, and glass.
10. *Tertiary Strata* yield a great va minerals. *Pipe clay* and *potte* are obtained from the London and *gypsum*, or sulphate of lime abundantly in the Paris basin burnt to form a cement, is th known *plaster of Paris*, used by of images, stereotype-founder others. *Alabaster*, a white tran variety of gypsum, is manufactur small statues, ornamental vases, variety of ornaments.

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* "These consist of shelly beds of sand, laminated clay, and yellowish loam, with layers of flinty shingle, reposing on the chalk, and generally covered with a thick bed of gravel."—*Page's Text Book.*

† The *Plutonic*, or *Igneous* Rocks.

‡ Major-General Portlock's "Rudi Treatise on Geology," in Weale's Series.

*Minerals of England with their Localities.**

Coal.—The following are the most important coal-fields of England and Wales.

1. The great northern coal-field, or the *Northumberland* and *Durham*, bounded on the south by the river Tees and extending northwards to Berwick, with the exception of a small interruption near the river Coquet.
2. The *Whitehaven* or *Cumberland* coal-field, in the west of that county and bordering on the shores of the Irish Sea.
3. The *South Lancashire* coal-field extending across the southern part of the county.
4. The *South Yorkshire*, *Nottinghamshire* and *Derbyshire* coal-field extending from the town of Leeds to Derby.
5. The *Leicestershire* coal-field occupying the north-western part of the county.
6. The *North* and *South Staffordshire* coal-fields, the former in the pottery district and the latter stretching from Dudley and Birmingham to the Trent.
7. The *Warwickshire* coal-field around Coventry.
8. The *Shropshire* coal-field, which includes Coalbrook Dale and the Plain of Shrewsbury.
9. The *Forest of Dean* coal-field in the west of Gloucestershire.
10. The *South Gloucestershire* or *Bristol coal-field*, which also extends into Somersetshire.
11. The *South Wales* coal-field, which stretches across the South of Wales from Pontypool to St. Bride's Bay.
12. The *North Wales* or *Flintshire* coal-field, which extends from the estuary of the Dee to the Irish Sea, appearing also in the Isle of Anglesey.

The number of collieries in England and Wales is said to be 2178; and the coal produced annually exceeds 57 millions of tons. The quantities raised in each district, in the year 1859, are given in the following summary †:

Summary of Coal Produce for 1859.

	Tons.
Durham and Northumberland	16,001,125
Cumberland	1,041,890
Yorkshire	8,357,100
Derbyshire, Nottinghamshire, and Leicestershire	5,050,000
Warwickshire	355,750
Staffordshire	6,125,000
Lancashire	10,650,000
Cheshire	700,500
Shropshire	765,750
Gloucestershire, Somersetshire, and Devonshire	1,250,000
North Wales	1,662,000
South Wales	9,600,350

The Coal Trade.—The total quantity of coal and coke exported from the various coal ports of the United Kingdom during the month of April 1861, was of coal 746,116 tons, and of coke 29,227 tons.

During the month 4,385 vessels were engaged in the home, and 2,979 in the foreign trade.‡

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* Except the iron in the greensand and clays, and occasional veins of copper pyrites, *no mineral of any consequence is found east* of a line from Portland, in Dorsetshire, through Leicester to Hartlepool, in the county of Durham, a line which marks the natural division of the purely agricultural and manufacturing districts. — *Sharpe's British Gazetteer.*

† Memoirs of Geological Survey of Great Britain

‡ For full particulars see the note on p. 23.

Iron Ores.—Iron ores are found, for the most part, in connection with coal. The counties in which the iron ore is worked are the following :—

ENGLAND.

Northumberland	*Shropshire*
Durham	*Gloucestershire*
Yorkshire	Northamptonshire
Cumberland	Warwickshire
Lancashire	Somersetshire
Staffordshire	Wiltshire
Derbyshire	Cornwall

WALES.

North.	*South.*
Carnarvonshire	*Glamorganshire*
Flintshire	*Monmouthshire*
Denbighshire	Brecknockshire

The principal counties for the manufacture of *pig-iron* are given above *in italics*.

The largest iron-works in the Kingdom are at *Merthyr Tydfil* in South Wales.

A remarkable bed of iron ore was discovered at *Seend*, Wiltshire, in 1857.

Copper Ores.—Copper ores are most abundant in Cornwall and Devonshire. The quantity raised in these counties, in 1859, amounted to 181,255 tons, the value of which was reckoned to be 1,087,674*l.*

Copper ore is also found in Staffordshire and Carnarvonshire; and Parys mountain, in Anglesey, is rich in copper.

The smelting of copper ore from Cornwall, Anglesey, and from Ireland, is carried on at Swansea, in Glamorganshire, S. Wales.

Lead Ores.—Lead mines are worked in the following counties, &c. :

ENGLAND.

Northumberland	Staffordshire
Durham	Shropshire
Cumberland	Derbyshire
Westmoreland	Devonshire
Yorkshire	Cornwall

WALES.

Denbighshire	Radnorshire
Flintshire	Cardiganshire
Carnarvonshire	Carmarthenshir
Merionethshire	
Montgomeryshire	Isle of Man

The counties that yield the gr amount of lead ore and lead are Du Northumberland, Cumberland (Moor), Derbyshire, Yorkshire, Stafford Cornwall, and Cardiganshire.

Silver.—Lead ores generally contain a quantity of silver. The quant silver extracted from the lead o England amounted in 1859 to 4(oz.; from those of Wales to 84,1(and from those in the Isle of M 56,974 oz.

Tin Ores.—Tin occurs only in Co and Devonshire. In 1859, 10,67 of tin ore were raised in thes counties. The quantity of m tin produced from the ores was tons, and the value of the tin o 807,582*l.*

Zinc Ores.—Zinc ores are found in wall, Devonshire, Derbyshire, S shire, Cumberland, the Isle of Ma in North and South Wales. The qu of ore produced in 1859, was tons.

Plumbago, *graphite*, or *black lead* is only at Borrowdale, near Kesw Cumberland.

Manganese is found chiefly in Devon also in the Mendip Hills, and in wall.

Salt.—The great deposits of *rock s* found in the new red sandst Cheshire and Worcestershire. At *wich*, in Cheshire, the beds o salt are 100 feet in thickne quantity produced annually being 70,000 tons.

At *Droitwich* and *Stoke* in W tershire, at *Middlewich* and *Nor*

in Cheshire, and at *Weston* and *Shirleywich* in Staffordshire, are the principal *brine springs*.

The Worcestershire salt chiefly supplies the London Market. The salt produce of England amounts annually to about 1,430,000 tons.

Alum, used largely in dyeing, in calico printing, in tanning leather, &c. is obtained at Whitby in Yorkshire. This town owes its present position to its alum-mines.

Fuller's Earth is obtained at Reigate, in Surrey; in the parish of Wavendon*, or Wandon, in Bucks; at Duncorn Hill, Gloucestershire; near Bradford in Wiltshire; and in the Isle of Wight.

Petroleum, or *fossil tar*, is obtained at Coalbrook-dale, Shropshire.

Gypsum, or sulphate of lime, used to make plaster moulds for casting, &c., is abundant in Cheshire.

Stone for Building, Slate, &c.

Portland Stone, obtained from the Isle of Portland, and *Bath Stone*, both Oolitic, are largely used in building.

Magnesian Limestones, also used in building, are found in Yorkshire, Durham, Northumberland, Derbyshire, and Nottinghamshire.

Limestones. — The Purbeck marbles, the Devonian limestones, and the Carboniferous limestones, are also used in building.

Marble.—The principal counties for marble are Derbyshire, Devonshire, Cornwall, Staffordshire, and Anglesea. The chief marble manufacture is in Derbyshire. The *black* marbles of Derbyshire are made into vases, pedestals, chimney-pieces, &c.

Granite, *Serpentine*, and *Porphyry* are quarried in Cornwall and Devonshire.

Grindstones are obtained at Gateshead Fell, in Durham, and at Wickersley, in Yorkshire.

Slate is obtained from Cumberland, Westmoreland, Lancashire, the Isle of Man, North Wales, &c. The most considerable slate quarries are those of Penrhyn, near Bangor, North Wales, which are worth 80,000*l.* a year.

Clays.—*Porcelain* and *Pottery* clays are obtained from Cornwall, Devonshire, and Dorsetshire; and *fire-clay* for the manufacture of bricks used for lining smelting furnaces, is found at Stourbridge, in Worcestershire.

Siliceous† *Sands*, used in the manufacture of glass, are obtained from Lynn, on the coast of Norfolk, and from Alum Bay, in the Isle of Wight. At Stone, near Aylesbury, Buckinghamshire, is a bed of sand of excellent quality.

NOTE.

Coal Trade for the Month of April, 1861.

The quantity of coal, coke, and culm‡ exported in April will be seen from the following statement:

Newcastle-upon-Tyne exported 226,829 tons of coal, and 14,704 tons of coke; Shields, 7,416 tons of coal, and 275 tons

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* About two miles from Woburn, Bedfordshire.

† From *silex*, flint.

‡ Culm, blind coal, or anthracite, is a non-flaming coal, and yields an intense heat.

of coke; Ayr, 340 tons of coal; Blyth, 11,038 tons of coal; Amble, 5,412 tons of coal; Sunderland, 118,737 tons of coal, and 3,499 tons of coke; Seaham, 4,432 tons of coal; Stockton, 395 tons of coal; Hartlepool and West Hartlepool, 56,656 tons of coal, and 5,650 tons of coke; Hull, 13,916 tons of coal; Goole, 19 tons of coal; Middlesborough, 13,201 tons of coal, and 3,913 tons of coke; Maryport, 3,590 tons of coal; Liverpool, 57,770 tons of coal; Whitehaven, 1,087 tons of coal; Cardiff, 97,777 tons of coal, and 467 tons of coke; Newport, 16,633 tons of coal; Llanelly, 14,513 tons of coal; Swansea, 40,545 tons of coal, and 415 tons of coke; Greenock, 9,386 tons of coal; Alloa, 5,775 tons of coal; Glasgow, 7,791 tons of coal, and 102 tons of coke; Port Glasgow, 2,519 tons of coal; Charlestown, 6,385 tons of coal; Grangemouth, 8,962 tons of coal, and 132 tons of coke; Inverkeithing, 2,660 tons of coal; Borrowstoness, 2,739 tons of coal, and 70 tons of coke; and St. David's, 9,583 tons of coal. The quantity of coal, coke, and culm shipped during the month to different ports in the United Kingdom w coal, 703,589 tons; of coke, 2,821 and of culm, 10,833 tons. Of this qua which is not quite equal to the ship made in the month of March, New shipped 143,436 tons of coal, and tons of culm; Shields, 82 tons of Blyth, 8,604 tons of coal; Amble, 40 of coal; Sunderland, 130,137 tons of Seaham, 54,639 tons of coal; Hart and West Hartlepool, 92,043 tons of and 314 tons of coke; Stockton, 50 t coal; Middlesborough, 10,804 tons of and 356 tons of coke; Goole, 7,187 t coal; Ayr, 8,054 tons of coal; Sw 22,085 tons of coal, and 7,076 tons of Alloa, 804 tons of coal; Borrowst 4,348 tons of coal; Cardiff, 88,048 t coal, and 722 tons of coke; Inverkei 771 tons of coal; Whitehaven, 12,65 of coal; Llanelly, 35,236 tons of coa 3,757 tons of culm; Charlestown, tons of coal; Newport, 53,369 tons of and 132 tons of coke; Maryport, 2 tons of coal, and 3 tons of coke; ar David's 133 tons of coal.

MAPS III. TO XXII.

COUNTIES OF ENGLAND: MOUNTAINS AND RIVERS.

DESCRIPTIVE particulars of the mountains, rivers, lakes, &c. of the counties will be found in the letterpress to Map I., beginning at page 3 and ending at page 14.

The following table shows, at a glance, the principal mountains and rivers of each county; when details are required they will be found on referring to the letterpress. The heights of the most important elevations are given in the map of each county, either in connection with the mountains themselves, or in the sections which are appended to the majority of the County Maps. These sections show the principal elevations and depressions of the country.

In the annexed Table, rivers which do not flow through, but which form the *boundaries of counties* are printed in *italics*.

No. of Map.	Counties.	Mountains, &c.	Principal Rivers.
3	Northumberland	Cheviot Hills	*Tweed*, Alne, Coquet, Tyne.
	Durham	Pennine Range	Wear, *Tees*.
4	Cumberland	Pennine Range, Cumbrian Group.	Eden, Derwent.
	Westmoreland	Cumbrian Group, Pennine Range.	Eden, Kent.
5	Lancashire	Cumbrian Group, Pennine Range.	Lune, Ribble, *Mersey*, Irwell.
5 & 6	Yorkshire	Pennine Range, The Moors, The Wolds.	Ouse, Nidd, Wharfe, Aire, Don, Derwent.
7	Lincolnshire	The Wolds, The Moors, or Lincolnshire Heights.	Trent, Witham, Welland.
8	Derbyshire	The Peak	Derwent, *Dove*, Trent.
	Nottinghamshire	The Wolds	Trent, Idle, *Soar*.
	Leicestershire	Bardon Hill, 800 feet, the highest eminence.	Soar.
	Rutlandshire		*Welland*.
9	Cheshire		*Mersey*, Weaver, *Dee*.
	Staffordshire	Weaver Hills	*Dove*, Trent, Sow.
	Shropshire	Clee Hills, Wenlock Edge, The Wrekin.	Severn.
10	Herefordshire	Black Mountains, or Hatterel Hills, Malvern Hills.	Wye, Lugg.
	Monmouthshire	Black Mountains	*Wye*, Monnow, Usk.
	Worcestershire	Malvern Hills, Clent Hills, Lickey Hills, Bredon Hills.	Severn, Stour, Avon, Teme.
	Gloucestershire	Cotswold Hills	Severn, Avon (Upper and *Lower*), Thames (the Churn). See p. 8.

No. of Map.	Counties.	Mountains, &c.	Principal Rivers.
11	Warwickshire .	Edge Hill	Tame, Avon.
	Northamptonshire.	Naseby Hill	*Welland*, Nen.
	Buckinghamshire .	Chiltern Hills	Ouse, Thame, *Thames.*
	Oxfordshire	Edge Hill, Chiltern Hills . .	*Thames*, Windrush, E lode, Cherwell, Thar
12	Cambridgeshire .	Gog-Magog Hills . . .	Nen, Ouse, Cam.
	Huntingdonshire .		*Nen*, Ouse.
	Bedfordshire .	Chiltern Hills	Ouse, Ivel.
	Hertfordshire .	East Anglian Heights . .	Lea, Colne.
13	Norfolk . .	East Anglian Heights . .	Great Ouse, Wensum, *Waveney.*
	Suffolk . .	East Anglian Heights . .	Orwell, *Stour.*
14	Essex . . .	Langdon Hills	Colne, Blackwater, Che Roding.
	Kent . . .	North Downs, Wealden Heights	*Thames*, Medway, Stou
15	Middlesex . .		*Thames, Colne*, Brent, River, *Lea.*
	Surrey . . .	North Downs	Mole, Wey.
	Sussex . . .	The Forest Ridge, South Downs	Rother, Ouse, Adur, Ar
16	Berkshire . .	The Downs	*Thames*, Ock, Kennet.
	Wiltshire . .	Marlborough Downs . . .	*Thames*, Kennet, Hamps Avon, Lower Avon.
	Hampshire . .	North Downs, South Downs, Portsdown Hill.	Itchin, Test, Avon.
17	Dorsetshire . .	Dorset Heights, Purbeck Heights	Stour, Frome, Brit.
18	Somersetshire .	Mendip Hills, Quantock Hills, Exmoor.	Parret, Tone, Yeo, or Brue, *Avon.*
19	Devonshire . .	Exmoor, Dartmoor, Black Down Hills.	Exe, Teign, Dart, Torri Taw.
20	Cornwall . .	Cornish Heights . . .	*Tamar*, Fowey, Fal.
21	N. Wales .	Cambrian Range, *Snowdon*, in Carnarvon; *Cader Idris*, and *Plinlimmon*, in Merionethshire.	Dee, Clwyd, *Conway*, Se Severn.
22	S. Wales . .	Cambrian Range, *Brecknock Beacon*, and *Forest Fawr*, or *Black Mountains*, in Brecknockshire.	*Teify*, Towy, Tawe, Usk, &c.

MAP XXIII.

SCOTLAND.

LENGTH, BREADTH, AREA, &c.

The *length* from Dunnet Head to the Mull of Galloway is 280 miles.
The *breadth* varies from 30 miles to 175 miles.
The *area* is 30,173 square miles.
The length of the *Coast-line* is about 2500 miles.
The *population* is 3,061,117.

Reference to Counties of Scotland.

Ten Northern Counties.

Counties.	*County Towns.*
1. Orkney and Shetland	*Kirkwall.*
2. Caithness	*Wick and Pulteneytown.*
3. Sutherland	*Dornoch.*
4. Cromarty	*Cromarty.*
5. Ross	*Dingwall.*
6. Inverness	*Inverness.*
7. Nairn	*Nairn.*
8. Elgin or Moray	*Elgin.*
9. Banff	*Banff.*
10. Aberdeen	*Aberdeen.*

Ten Central Counties.

11. Kincardine	*Stonehaven.*
12. Forfar	*Forfar.*
13. Perth	*Perth.*
14. Argyle	*Inverary.*
15. Bute	*Rothesay.*
16. Fife	*Cupar.*
17. Kinross	*Kinross.*
18. Clackmannan	*Clackmannan.*
19. Stirling	*Stirling.*
20. Dumbarton	*Dumbarton.*

Thirteen Southern Counties.

21. Renfrew	*Renfrew.*
22. Lanark	*Lanark.*
23. Linlithgow, or West Lothian	*Linlithgow.*
24. Edinburgh, or Mid Lothian	*Edinburgh.*
25. Haddington, or East Lothian	*Haddington.*
26. Berwick, or Merse	*Greenlaw.*
27. Roxburgh, or Teviotdale	*Jedburgh.*
28. Selkirk	*Selkirk.*
29. Peebles	*Peebles.*
30. Dumfries	*Dumfries.*
31. Kirkcudbright	*Kirkcudbright.*
32. Ayr	*Ayr.*
33. Wigton.	*Wigton.*

MOUNTAINS OF SCOTLAND.

Scotland is physically divided into *Highlands* and *Lowlands*. The Mountains may be described under the following heads:—

The Northern Highlands, in that portion of Scotland which lies north and west of Glenmore. The principal summits are *Ben Attow*, 4000 ft.; *Ben Wyvis*, 3720 ft.; *Ben More*, 3230 ft.; and *Ben Hope* 3039 ft. in height.

The Grampians, divided into *North*, *Central* and *South Grampians*, stretch south-west to north-east from the western

shores of Argyleshire to the German Ocean. The length is about 100 miles. The principal summits in this chain of mountains are the following: *Ben Nevis*, in Invernessshire, the highest mountain in Great Britain, 4408 ft.; *Ben Mac Dhui*, in Aberdeenshire, 4290 ft. in height; *Cairn Gorm*, in Banffshire, 4090 ft.; *Ben Lawers*, in Perthshire, 3945 ft.; *Ben Cruachan*, in Argyleshire, 3670 ft.; *Ben Lomond*, in Stirlingshire, 3195 ft.

The Monagh Lea Mountains stretch north-east from Glenmore, through the counties of Inverness and Elgin.

The Sidlaw Hills extend north-east through Perthshire and Forfarshire. The highest summit, the *Hill of Sidlaw*, is 1400 ft.

The Ochil Hills stretch eastwards from near Stirling to the Firth of Tay, through the counties of Perth, Kinross, and Fife. *Ben Clach*, that is, the stormy mountain, is the highest point (2000 ft.).

Campsie Fells extend through Stirlingshire, from the Forth to the valley of Strathblane.

The Pentland Hills extend from the east of Lanarkshire, in a north-eastern direction, to the vicinity of Edinburgh.

The Lammermuir Hills extend from the southern part of the Pentland Hills, eastward to the sea-coast. They divide in their course the county of Haddington from Berwick.

The Muirfoot Hills are a western con tion of the Lammermuirs.

The Lowther Hills are between the of Lanark and Dumfries, and through Selkirk and Roxburgh Cheviot Hills. The Lowthers fo most elevated portion of that Highland that stretches from th coast of Ayrshire to the north- Berwick. The branch that st south-west from the central grou the water-shed between the c of Ayr and Kirkcudbright; and that goes north-west forms the shed between Ayrshire and L shire. The following are some peaks in the Lowthers, and the lands of Southern Scotland: *Larg*, 2890 ft.; *Queensberry Hil* ft.; *Hart Fell*, 2635 ft.; *Ettric* 2258 ft.

Criffel, in Kirkcudbrightshire, west of the mouth of the river is an isolated mass, 1830 ft. in he

The Cheviots, or *Cheviot Hills*, s Scotland from England, and fo water-shed between the basin Tweed on the one side, and the of the Tyne, the Wansbeck, a Coquet, in Northumberland, other. (See county map.) The summits are *Cheviot Peak*, 2684 *Carter Fell*, 2020 ft.

PLAINS AND VALLEYS.

The Plain of Caithness, on the eastern shores of Caithness.

The Plain of Cromarty, on both sides of the Firth of Cromarty, and northwards to Dornoch Firth.

Glenmore, or the *Great Glen*, extends from Loch Linnhe to the Moray Firth. In this valley are several long narrow lochs joined by canals, by means of which vessels can pass from the Atlanti German Ocean.

Strathmore, that is, the *Great Valley*, t extensive plain in Scotland, stret a north-east direction, from the so end of Loch Lomond to the Ocean, having on its eastern s Ochil and Sidlaw Hills, and on it ern, the Grampians.

The Carse of Gowrie, a fertile and beautiful district, lies along the shores of the Firth of Tay, and to the south and east of the Sidlaw Hills.

The Vale of Eden, in Fifeshire.

The Plain of the Forth and Clyde to the south of the Campsie Hills, and between the rivers Forth and Clyde.

The Vale of the Tyne, in Haddingtonshire.

The Merse, a *Lowland of Berwickshire;* called also *Tweeddale*, or the *Plain Tweed.*

Annandale and *Nithsdale*, are the district through which the rivers Annan an Nith respectively pass.

The Plain of Ayrshire extends from the sea coast eastwards. This plain is bounde by the Lowthers and its branches.

Clydesdale lies along the lower part of th river Clyde.

PRINCIPAL RIVERS OF SCOTLAND.

1. *Rivers on the Northern and Eastern Coasts.*

Names.	Length	Direction, &c.	Towns on the Rivers.
Thurso Water	25	Flows north through Caithness into Thurso Bay.	Thurso.
Wick Water .	7	Flows eastward through Caithness into Wick Bay.	Wick.
Ness . .	8	Forms the outlet of Loch Ness.	Inverness.
Findhorn .	45	Rises in Monagh Lea Mountains, and flows north-east through the counties of Inverness, Nairn, and Elgin.	Findhorn.
Spey . .	96	Rises in Monagh Lea Mountains, flows east by north through the counties of Inverness and Elgin, and divides Elgin from Banff. This is the most rapid of British rivers.	Grantown, Gar mouth.
Doveran or Deveron.	55	Rises in the Grampians, and flows north, east, and north through Aberdeenshire and Banff, and, in a part of its course, forms the boundary between these two counties.	Banff.
Don . .	50	Rises in the Grampians, and flows through Aberdeenshire.	Aberdon or Ol Aberdeen.
Dee . .	87	Rises in the central Grampians, at an elevation of 4,000 feet above the sea, flows through Aberdeenshire, and divides it from Kincardineshire.	Balmoral, Aber deen.
S. Esk . .	45	Rises in the Grampians, passes through Forfarshire, and falls into the harbour of Montrose.	Brechin, Montrose.
Tay . .	110	Rises in the Southern Grampians, on the borders of Perthshire and Argyleshire, and passes through Loch Tay, on the east of Ben Lawers. It flows through Perthshire, and divides Forfarshire from Fifeshire. This is the largest river in Scotland.	Dunkeld, Scone Perth, *Dundee*, o *Firth of Tay.*

Names.	Length	Direction, &c.	Towns on the
Lyon . } *tr.*	28	Flows through Glen Lyon, in Perthshire, and falls into the Tay.	*Taymouth C*
Tummel . } *lt.*	25	Flows from Loch Rannoch, in Perthshire, passes through Loch Tay, and falls into river Tay.	
Isla . . }	30	Rises in Forfarshire, and falls into the Tay.	
Almond . } *tr.*	22	Flows east through Perthshire into the river Tay.	
Earn . } *rt.*	40	Rises in Loch Earn, flows through Strathearn into the Tay.	Comrie, Cri
Eden . .	28	Rises in the Ochil Hills, flows east through Fifeshire to St. Andrew's Bay.	Cupar, *St. A* on Bay of *drews.*
Forth . .	100	Rises near Ben Lomond; has a very winding course, and divides Perthshire, Clackmannanshire and Fifeshire, from Stirlingshire and the Lothians.	Stirling, All
Teith, tr. lt. .	22	Formed by two streams, *one* of which issues from the famous Loch Katrine, in Perthshire, and flows through Loch Venachar; the two streams unite at Callander, whence they flow into the Forth.	Callander, I
Carron, tr. rt. .	14	Flows through Stirlingshire, and falls into the Firth of Forth, near Grangemouth.	Denny, Carr it is *Falki*
Leith Water, tr. rt.	19	Rises in Pentland Hills, flows through Mid Lothian into the Firth of Forth.	Leith, *Edin*
Tyne . .	25	Rises in Muirfoot Hills, flows through Edinburgh and East Lothian into the North Sea.	Haddington *bar, near th of the Tyn*
Tweed . .	96	Rises in the Lowther Hills, and flows through the counties of Peebles and Selkirk; divides Roxburgh from Berwick, Berwick from Northumberland, and falls into the German Ocean at Berwick on Tweed. The Tweed is the second river in Scotland.	Peebles, Kelso, Cold Berwick.
Gala, tr. lt. .	22	Rises in Muirfoot Hills, flows through the counties of Edinburgh and Roxburgh, and falls into the Tweed.	Galashiels.
Ettrick, tr. rt. .	25	Rises in Ettrick Pen, flows through Selkirkshire into the Tweed.	Selkirk.
Teviot, tr. rt. .	35	Rises south-west of Roxburghshire, flows through Teviotdale into the Tweed.	*Hawick*, at j of *Slitrig Teviot.*
Jed, af. rt. .	16	Rises in the Cheviots, and flows through Roxburghshire into the Teviot.	Jedburgh.

2. *Rivers on the Southern Coast.*

Names.	Length	Direction, &c.	Towns on the Rivers.
Annan . .	30	Rises in Hart Fell, in the Lowthers, flows south through Dumfriesshire into the Solway Firth.	Moffat, Annan.
Nith . .	50	Rises in Ayrshire, flows through Dumfriesshire, and separates the latter county from Kirkcudbrightshire.	Dumfries.
Dee . .	40	Rises in the Dee Loch, in the north-west of Kirkcudbrightshire, passes through Loch Ken, and flows south into Kirkcudbright Bay.	Kirkcudbright.
Bladenoch .	25	Rises in the hills between Carrick and Galloway, flows through Wigton in Wigton Bay.	*Wigton*, between the *Bladenoch* and *Cree*.

3. *Rivers on the Western Coast.*

Names.	Length	Direction, &c.	Towns on the Rivers.
Ayr Water .	33	Rises in the Haughshaw Hills and flows westwards into the Firth of Clyde.	Muirkirk, Ayr.
Lugar, tr. lt. .	15	Flows west through Ayrshire into Ayr Water.	Cumnock.
Irvine Water .	22	Rises in the Loudon Hill, north-east of Ayrshire, flows west into the Firth of Clyde.	Irvine.
Kilmarnock Water, tr. rt.	10	Flows south through Ayrshire into Irvine Water.	Kilmarnock.
Clyde . .	98 including Firth 135	Rises under Queensberry Hill, in Lanarkshire, and flows north and west through Lanarkshire, divides Renfrewshire from Dumbartonshire, and falls into the estuary of the Clyde.	Lanark, Glasgow, Port Glasgow, Greenock.
Cart, tr. lt. .	24	Rises in south-east of Renfrewshire, and falls into the Clyde.	Paisley, *Renfrew*, on a point of land between the *Clyde* and *Cart*.
Leven, tr. rt. .	6	Issues from Loch Lomond, and flows south through Dumbartonshire into the river Clyde.	Bonhill, Dumbarton.
Aray, or Ary .		Rises in the South Grampians in Argyleshire, and flows into Loch Fyne.	Inverary.

LAKES OR LOCHS.

The Lakes of Scotland are celebrated for their beauty and their wild grandeur.

Loch Lomond, the largest lake in Scotland, is 24 miles long, 8 wide, and has an area of 45 sq. miles. It lies between Stirlingshire and Dumbartonshire, and is noted for its splendid scenery.

Loch Katrine, in the south-west of Perthshire, is 10 miles long by about 2 miles wide. It discharges its waters into Loch Achray, through the celebrated pass of the Trosachs. Sir Walter Scott first brought the fine scenery of this district into notice, in his "Lady of the Lake."

Loch Tay, in the north-west of Perthshire, discharges itself by the river Tay. It is 15 miles long, and from 1 to 2 in breadth.

Loch Ericht, in the counties of Perth and Inverness, discharges itself by a small stream into Loch Rannoch. It is surrounded by wild and lofty mountains.

Loch Rannoch, in the north-west of Perthshire, discharges itself by the Tummel River into Loch Tummel, through which it passes to the Tay. Loch Rann 10 miles long, by 2 in width.

Loch Ness, in Invernessshire, on th of the Caledonian Canal, is 23 long, and about 1 in width. It feet in depth. It discharges its the river Ness.

Loch Maree, in the west of Rossshir miles long, and from 1 to 3 in It discharges its waters into Loc by a stream of the same name.

Loch Awe, in Argyleshire, is 21 mil and 2 in width. It is surrounded north by mountains of great siz highest being Ben Cruachan. charges itself by the river Aw Loch Etive.

Loch Leven in the county of Kinross oval form, is about 4½ miles long miles in width. The river Leven its waters into the Firth of Forth one of the islands are the ruins o Leven Castle, in which Queen Ma confined, and from which she e before the battle of Langside (1568).

MAP XXIV.

GEOLOGY OF SCOTLAND.

SCOTLAND may be conveniently divided into three regions—*a northern, a central,* and *a southern.*

1. The *northern region* includes the northern and western part of the island, being bounded on the south by a line which we suppose to be drawn from the mouth of the Clyde to Stonehaven, in Kincardineshire.

The *gneiss, mica schist,* and *igneous* rocks are largely developed in this region.

2. The *central region* extends from the line already mentioned to another supposed to be drawn from near Girvan, in Ayrshire, to the south of the county of Haddington.

The *Old Red Sandstone* and the *Carboniferous* strata are the prevailing rocks of this region.

3. The *southern region* extends southwa from the line supposed to be drawn fro the west of Ayrshire to the east of Ha dington, and which formed, as already me tioned, the southern boundary of the ce tral region.

Nearly three-fourths of the surface of th region belong to the *Silurian* system, bei composed chiefly of slaty rocks. Sometim this southern district is said to consist *Cambrian rocks,* but we have included t *Cambrian* among the *Silurian,* "as sufficie evidence has not been obtained for placi them in a zoological order distinct from th of the Silurian."* And the same writ says, "The Cambrian is now considered marked group in the Silurian system."

Detailed Remarks on the Localities of the Formations.

1. *Trap Rocks.*—These rocks are found in the central and southern regions, protruding through the palæozoic strata, and occur chiefly in the following counties: Roxburgh, Ayr, Haddington, Edinburgh, Renfrew, Stirling, Kinross, and Fife. The southern part of Arran, the island of Mull, and the greater part of Skye also consist of trap rocks.

2. *Granite.*—Granite rocks occur chiefly in the northern region; they largely prevail in the island of Arran, in the counti of Aberdeen, Kincardine, and Forfar; a patches are diffused over many other cou ties, such as Sutherland, Argyle, and Kir cudbright. Mount Criffel, an isolated pea in the last named county, forms the cent of the southern granitic range of rocks.

3. The *Metamorphic Rocks,* consisting Lower Silurian rocks metamorphosed in *gneiss, mica* and *chlorite schists, clay sla and limestone,* are widely extended over t

* Major-General Portlock.

northern region. They are found chiefly in the following counties: Argyle, Perth, Forfar, Aberdeen, Banff, Moray, Inverness, Ross, Sutherland, and in the Shetland Isles.

The older or fundamental *gneiss* prevails in the Hebrides and the western part of Sutherlandshire.

4. The *Silurian Rocks* form, as already mentioned, nearly three-fourths of the southern region. These rocks are found in the following counties: Berwick, Roxburgh, Selkirk, Peebles, Lanark, Ayr, Dumfries, Kirkcudbright, and Wigton; they also occur in the counties of Sutherland, Cromarty, and Ross.

5. *Devonian* or *Old Red Sandstone.*—The rocks of this formation are to be found in all the regions; but they occur chiefly in the northern and central. The following are the principal localities; the Orkney Islands, the counties of Caithness, Cromarty, Inverness, Nairn, and Elgin, all in the northern region; the counties of Kincardine, Forfar, Perth, Stirling, Renfrew, Dumbarton, Ayr, Lanark, Peebles, and Haddington, in the central region; and those of Berwick and Roxburgh in the southern region.

6. *Carboniferous System.* — The *Measures*, which constitute economic most important of all the formations i land, are found almost entirely in the region. The counties from which c obtained are the following: Fife, K Clackmannan, Stirling, Dumbarton frew, Ayr, Lanark, Linlithgow, Edi and Haddington. Coal is also obta the east and the north-west of Du shire, and at Brora, in Sutherlands See No. 8.

Carboniferous Limestone prevails counties of Berwick, Roxburgh, Du Haddington, Edinburgh, and Fife.

7. *New Red Sandstone* is found south of Dumfriesshire, along the sh the Solway Firth.

8. *Oolite.*—Rocks of this format which coal was worked, are found at in Sutherlandshire. "The coal f Brora," says Sir Charles Lyell, " the thickest stratum of pure vegetab ter hitherto detected in any secondar in Britain. One seam of coal o quality has been worked three feet half, and there are several feet n pyritous coal resting on it."

Minerals.

Scotland abounds in minerals, the most valuable of which are *coal*, *iron*, and *lead*.

Coal. The principal coal fields are in the centre of Scotland. If a line be drawn from St. Abb's Head, Berwickshire, to Girvan, in Ayrshire, and another from the west of Renfrew, in Renfrewshire, to the coast of Fife, the whole of the important coal fields will be found in the districts bounded by these lines. The richest coal fields are in the shires of Fife, Stirling, Lanark, Renfrew, Linlithgow, and Edinburgh.

Coal is also worked in the c of Haddington, Roxburgh, Ayr, barton, and Kinross.

The most northerly coal fiel Brora, in Sutherlandshire.

The total produce of the coal in 1859 amounted to 10,300,000

Iron Ores.—Ironstone, as well as *lim* is found in great abundance in the shires in the centre of Sc The principal iron works are in shire, Lanarkshire, Renfrewshir Stirlingshire. The chief works

the neighbourhood of Glasgow; and the valley of the Clyde supplies great quantities of ironstone, more especially the *black bands*, first discovered in this district. The largest iron works are at Carron, in Stirlingshire, and Muirkirk, in Ayrshire. Scotland furnishes rather more than one-fourth of all the pig or cast iron manufactured in Great Britain.*

Lead.—Lead mines occur at Wanlockhead, in Dumfriesshire and the Leadhills in Lanarkshire, in the district of the Lowthers. The principal deposits of lead in Scotland are in this locality. The rocks belong to the Silurian system. Lead is also found at Strontian, in Argyleshire; at Dollar, in Clackmannanshire; at Tyndrum, in Perthshire; and in a few other places.

Copper.—Copper ore is worked at Lochtay, in Perthshire, and at Alva, Clackmannanshire; it has also been discovered at Cally, in Kirkcudbrightshire.

Granite.—Granite is quarried in Aberdeenshire, near the city of Aberdeen, and is largely exported, chiefly to London. Around Peterhead the *red granite* prevails; hence generally called *Peterhead Granite.* Granite is also quarried in Kirkcudbrightshire and the Isle of Arran.

Marble.—Marble is found at Blair Gowrie, in Perthshire; at Assynt, in Sutherlandshire; at Ballachulish, in the counties of Argyle and Inverness; in the island of Tiree, one of the Hebrides; and in Iona or Icolmkill.

Slate.—There are slate quarries at Luss, on the west side of Loch Lomond; at Ballachulish; at Aberfoil, in Perthshire; and in other localities; but the most noted slate quarries are in the island of Easdale, off the coast of Argyleshire.

Alum is obtained at Hurlet, near Paisley, Renfrewshire.

Sandstones.—Stone for building is abundant; the principal quarries are around Glasgow and Edinburgh. The sandstone of Craigleith, Edinburgh, is of a superior quality. Sandstone is largely exported from Moray or Elgin.

Gems, or *Scotch Pebbles.*—The topaz is found in the granite detritus of Cairngorm, in Aberdeenshire. Other sorts prized by jewellers, are found in Arran, Aberdeenshire, and other counties.

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* An idea of the trade in pig iron may be obtained from the following statement:—In the week ending the 6th July, 1861, 12,970 tons of pig iron were shipped from the Scottish ports.

MAP XXV.

IRELAND.

LENGTH, BREADTH, AREA, &c.

THE *length* from Malin Head to Mizen Head is 306 miles.

The *breadth* from Carnsore Point, Wexford, to Dunmore Head, Kerry is 175 miles; and from Dublin Bay, to Galway Bay, 110 miles.

The *area* is 32,512 square miles.

The length of *Coast line* is about 2200 miles.

The *population** is 5,764,543.

Reference to Counties in Ireland.

Province of Ulster.

Counties.	*County Towns.*
1. Antrim	*Belfast.*
2. Londonderry	*Londonderry.*
3. Donegal	*Lifford.*
4. Tyrone.	*Omagh.*
5. Fermanagh	*Enniskillen.*
6. Cavan	*Cavan.*
7. Monaghan	*Monaghan.*
8. Armagh	*Armagh.*
9. Down	*Downpatrick.*
Leinster.	
10. Louth	*Dundalk.*
11. East Meath	*Trim.*
12. West Meath	*Mullingar.*
13. Longford	*Longford.*
14. King's County	*Tullamore.*
15. Queen's County	*Maryboro*
16. Kildare	*Athy.*
17. Dublin	*Dublin.*
18. Wicklow	*Wicklow.*
19. Wexford	*Wexford.*
20. Carlow	*Carlow.*
21. Kilkenny	*Kilkenny.*
Munster.	
22. Tipperary	*Tipperary.*
23. Waterford	*Waterford*
24. Cork	*Cork.*
25. Kerry	*Tralee.*
26. Limerick	*Limerick.*
27. Clare	*Ennis.*
Connaught.	
28. Galway	*Galway.*
29. Roscommon	*Roscommo*
30. Leitrim	*Carrick-o non.*
31. Sligo	*Sligo.*
32. Mayo	*Castlebar.*

* There has been a decrease, since 1851, of 787,842 persons.

MOUNTAINS OF IRELAND.

IRELAND is mountainous around the coast; the interior is generally level. Beginning at the north, and taking the mountains in order along the east, south, and west, we have the following distinct groups or systems:

1. *Mountains of Donegal*, chiefly in Donegal.
2. *Mountains of Antrim*, in Antrim. Height of principal summit, *Trostran*, 1810 ft. *Divis*, a mountain west of Belfast, is 1508 ft. in height.
3. *Mourne Mountains*, stretching between Dundrum and Dundalk Bays. *Slieve Donard*, the highest summit, is 2796 ft. in height.
4. *Mountains of Wicklow*, in Wicklow. *Lugnaquilla*, 3039 ft. above the sea, is the principal summit.
5. *Mountains of Kerry*, in Kerry and Cork.

   In this system of Mountains are:

   McGillycuddy's Reeks, the highest point of which is *Carn Tual*, 3404 ft., the most elevated summit in Ireland.

   Mount Brandon, in the Peninsula between Dingle Bay and Tralee Bay, 3126 ft. high, is the second in elevation among the mountains in Ireland.
6. *Mountains of Connemara*, in the west of Galway. The principal summits in this group are *Muilrea*, 2632 ft., and *Twelve Pins*, 2396 ft. in height.
7. *Nephin Beg Mountains*, in Mayo; the highest summit in this range is about 2639 ft. in height.

Besides these groups, there are several ranges of less extent, such as:

Slieve Boughta Mountains, in Galway.

Slieve Bloom Mountains, on the borders of King's County and Queen's County, 1691 ft.

Silver Mine Mountains, in the north west of Tipperary, 2265 ft.

Galty Mountains, on the borders of Limerick and Tipperary, 3005 ft.

Knockmeiledown Mountains, on the borders of Tipperary and Waterford, 2698 ft.

PLAINS.

A great plain occupies the central portion of the island. This plain, called *The Great Central Plain*, extends from Dublin Bay on the east, to Galway Bay and the Mountains of Connemara on the west; and from north to south, it stretches from the borders of Lough Neagh to the river Suir. A great portion of this plain consists of bog-land. The principal bogs are in that part which lies between Dublin Bay on the east, and Galway and Sligo Bays on the west. The *Bog of Allen*, which is the largest, extends, with little interruption, through Kildare, King's County, Meath, and Roscommon. The bogs occupy about two-fifths of the whole surface of the island. From the bogs is obtained turf or peat, which forms the fuel in common use.

LAKES OR LOUGHS.

Lough Neagh, in Ulster, and surrounded by the counties of Antrim, Down, Armagh, Tyrone, and Londonderry, the largest lake in the British Isles, is 17

miles long, 10 miles wide, and has an area of 153 square miles.

Lough Derg.—This lake is in the south-east of the county of Donegal, and is 6 miles in length by 4 miles in breadth. It is noted as the resort of thousands of devotees to a shrine of St. Patrick's.

Lough Erne.—There are two lakes, the upper and the lower lake, connected by the river Erne. The area of the upper lake is 9453 acres, and that of the lower 27,645 acres; or the area of the two is about 57 square miles.

Lough Allen, in the county of Leitrim, the first of the great expansions of the river Shannon, is about 9 miles long by 3½ miles in width.

Lough Ree.—This lake is also formed by an expansion of the Shannon. Length 16 miles; width 5 miles.

Lough Derg.—This lake, also on the Shannon, is on the borders of Tipperary, Clare, and Galway. Length al miles; width 2 miles.

Lough Conn, in the county of Ma miles long by 4 miles wide.

Lough Mask.—This lake is in the Mayo and in the north of G its length is 12 miles, and va width from 2 to 4 miles. Are 40 square miles.

Lough Corrib, in the county of Ga of an irregular form. It is 2 long, from 1 to 6 in width, an area of about 67 square This lake receives the waters o Mask by an underground strea ing through a natural limestone

The Lakes of Killarney, in Kerry, of an upper, middle, and lowe The lower lake is the largest 5 miles long, by 2½ to 3 m width. These lakes are no their romantic scenery.

THE RIVERS OF IRELAND.

1.—*Rivers on the Northern Coast.*

Names.	Length	Direction, &c.	Towns on the
Foyle . .	80	The principal stream rises in the mountains in the eastern part of Tyrone; it flows west, and then north, and falls into Lough Foyle, about 4 miles below Londonderry.	Omagh, S Lifford, derry.
Bann . .	90	Rises in the Mourne Mountains, in the county of Down, runs north and north-west, passes through Lough Neagh, and, under the name of the Lower Bann, runs north by west into the Atlantic Ocean. It divides in its course Antrim from Londonderry.	Portadown, raine.
Six Mile Water	18	Rises in the mountains of Antrim, and falls into Lough Neagh.	Antrim.
Blackwater.	50	Flows through Tyrone, separates Tyrone from Armagh, and falls into Lough Neagh.	Charlemont.
Callan, tr. rt. .	10	Flows through Armagh, and falls into the river *Blackwater*.	Armagh.

2.—*Rivers on the Eastern Coast.*

Names.	Length	Direction, &c.	Towns on the Rivers.
Lagan . .	42	Rises in the county of Down, and falls into Belfast Lough. It separates, during a part of its course, the counties of Antrim and Down.	Lisburn, Belfast, *Carrickfergus*, on Belfast Lough.
Newry . .		Flows through Down into Carlingford Lough.	Newry.
Boyne . .	65	Rises in the Bog of Allen, in the county of Kildare, takes a general north-east direction, passes through East Meath, and falls into the sea below Drogheda.	Trim, Drogheda.
Liffey . .	50	Rises in the Wicklow mountains, and flows, with a winding course, through the counties of Kildare and Dublin.	Dublin, *Kingstown*, Port of Dublin, on Dublin Bay.
Vartrey, or Leitrim.		Flows through Wicklow county.	Wicklow.
Slaney . .	55	Rises in the Wicklow mountains, flows south and east through the counties of Wicklow, Carlow, and Wexford, and enters Wexford harbour.	Wexford.

3.—*Rivers on the Southern Coast.*

Names.	Length	Direction, &c.	Towns on the Rivers.
Barrow . .	100	Rises in Slieve Bloom Mountains, in Queen's County, flows east and south through the counties of Kildare and Carlow, separates Carlow from Kilkenny, and enters Waterford harbour.	Athy, Carlow, New Ross.
Nore, tr. rt. .	70	Rises in Slieve Bloom Mountains, and flows through Queen's county and Kilkenny.	Abbeyleix, Kilkenny, Thomastown.
Suir, tr. rt. .	100	Rises in the mountains in the north of Tipperary, runs south and east, divides Tipperary and Kilkenny from the county of Waterford, and falls into Waterford harbour.	Cahir, Clonmel, Carrick, Waterford.
Blackwater .	90	Rises in the mountains of Kerry, flows east through the county of Cork, south through Waterford, and empties itself into Youghal harbour.	Mallow, Fermoy, Lismore, Youghal.
Lee . .	50	Rises in a lake on the western borders of the county of Cork, flows east through the county, and falls into Cork harbour.	Cork, *Queenstown*, on Cork Harbour.
Bandon . .	40	Flows east through the county of Cork, and falls into Kinsale harbour.	Bandon, Kinsale.

4.—*Rivers on the Western Coast.*

Names.	Length	Direction, &c.	Towns on the
Lee . .	10	Flows through Kerry into Tralee Bay.	Tralee.
Shannon .	224	Rises in the north-west of the county of Cavan, flows south-west, passes through Lough Allen, takes a general direction to the south and west, and falls into the Atlantic Ocean. It forms, in its course, Loughs Allen, Ree, and Dearg; and, by the aid of some artificial cuts to avoid the rapids, is navigable to Lough Allen, a distance of 218 miles from its mouth. This is the longest river in the British Isles.	Carrick, A Killaloe, rick, Kilru
Suck, tr. rt. .	60	Rises in the borders of Roscommon and Mayo, flows south, and separates Roscommon from Galway.	Ballinasloe.
Fergus, tr. rt. .		Flows south-east through the county of Clare.	Ennis, Clare
Galway River	6	Issues out of Lough Corrib, and falls into Galway Bay.	Galway.
Moy . .	40	Flows through the county of Mayo, separates Mayo from Sligo, and falls into Killala Bay.	Ballina.
Garrogue, or Sligo River.		Issues from Lough Gill, in the county of Sligo, and falls into Sligo Bay.	Sligo.
Erne . .	80	Rises in a lake in the county of Longford, flows north and west through Cavan and Fermanagh into Donegal Bay. In its course it passes through two lakes, viz., Upper and Lower Lough Erne.	Enniskillen, shannon.

MAP. XXVI.

GEOLOGY OF IRELAND.

IRELAND is essentially a palæozoic country; all the rocks, with the exception of some in the provinces of Ulster, Leinster, and Connaught, being Primary or Palæozoic.

1. *Trap Rocks* prevail in Antrim, in the north-east of the island.

   Basaltic columns extend for several miles along the northern coast of Antrim, and form the extraordinary promontory called the *Giants' Causeway.*
2. *Granite* is found in Donegal, in Down, in the counties of Wicklow, Carlow and Wexford, and in Galway. The Mourne Mountains in Down, and the Wicklow Mountains are granitic.
3. *Metamorphic Rocks* occur chiefly in the counties of Donegal, Londonderry, Tyrone, and Down in the north; and in the west, in the counties of Galway and Mayo.
4. *Silurian Rocks* are found in the counties of Down, Armagh, Monaghan, Cavan, and Louth, in the north-east; in Kildare, Wicklow, Wexford, and Waterford in the south-east; in Kerry and Galway on the west; and detached portions occur in the counties of Tipperary and Clare.
5. *The Old Red Sandstone* occupies the greater portion of the county of Cork; extensive patches are also found in the counties of Waterford, Tipperary, Kerry, Limerick, Galway, Mayo, and Tyrone, and smaller patches in other counties.
6. *Carboniferous System.* Limestone forms the surface rock of nearly two-thirds of the country. The great *limestone plain* occupies, with little interruption, the centre of the island, and extends from between the Boyne and Dublin Bay, on the eastern side, to Galway Bay on the west; and from the counties of Sligo and Fermanagh on the north, to the confines of Waterford and Cork, in the south.

   A patch of limestone also stretches between the sea and the old red sandstone in the county of Cork.

   The older rocks, already named, are found *along the coasts, and surrounding the carboniferous rocks.*

   On the west of Galway and Mayo, for instance, the granitic and metamorphic rocks interpose between the Atlantic and the great limestone plain, except near Clew Bay, where the limestone reaches the sea.

   The *Coal Formations* overlie the limestone plain; "but, there is probably no country in the world, where the carboniferous system is so rich in rocks and so poor in coal as Ireland. The great fields of combustible matter which rest on the carboniferous limestone as a basis, and which are so productive in England and Scotland, never existed in Ireland, or, if so, were swept away by destructive agencies." *

   The following are the principal coal-fields; fuller particulars will be found under the head of minerals:

1. *The Coal Field of Antrim* } *The Ulster Coal Field.*
2. *" of Tyrone* } *The Ulster Coal Field.*
3. *" of Cavan* } *The Ulster Coal Field.*
4. *The Leinster Coal Field.*
5. *The Great Munster do.*
6. *The Connaught do.*

* The English at Home.

7. *The New Red Sandstone* occurs in the eastern part of the counties of Londonderry and Tyrone, and on the shores of Belfast Lough, in Down and A Near Carrickfergus an extensiv mine was discovered in 1852.

Minerals.

The principal minerals are *coal*, *iron*, *copper* and *lead*.

Coal.—Coal, as has been already noticed, occurs in many parts of Ireland. The following are the localities:

1. *Ulster Coal Field.*
   County of Antrim, near Ballycastle.
   „ Tyrone, at Coal Island and Dungannon.
   „ Cavan.
2. *Connaught Coal Field.*
   County of Leitrim, Sligo, Roscommon } *Lough Allen District.*
3. *Leinster Coal Field.*
   County of Kilkenny, Carlow, Queen's County } *Castlecomar District.*
4. *Munster Coal Field.*
   County of Tipperary, *Slieve Ardagh district.*
   „ Cork, *Kanturk district.*
   „ Limerick, *Limerick district.*

The best coal for domestic purposes, is found in the county of Tyrone, in the Ulster coal-field.

Iron Ore.—Iron ores occur in all the coal districts. The best ores are found at Ballycastle, in Antrim; round Lough Allen; at Arigna, in Leitrim; and in Kilkenny; the mines are, however, but little worked.

Copper.—Copper ore is distributed throughout the clay districts.

The names and positions of the principal mines are the following:—

Vale of Avoca	County of Wicklow.
Lackamore	„ Tipperary.
Bearhaven, or Allihies	„ Cork.
Knockmahon	„ Waterford.

The copper ore is sent to Swansea, in South Wales, to be smelted.

Lead.—Lead is extensively diffused of lead are found in the granite a slate of the counties of Mayo, (*Newtownards*), and Wicklow (*ure*). A little lead is also wo Waterford, Armagh, and Galway Ballycorus and Clontarf in the co Dublin.

Silver.—Silver is found in connecti lead ore.

Gold.—A few gold grains are found county of Wicklow, in the Avoca.

Zinc is found in the county of Clare

Granite.—This mineral is abund many parts of the country. Th itic districts have been already n

Slate.—Slate for paving is quar Valentia, in the county of Ke Killaloe, in Clare; at Westport, in and at Glenpatrick, near Gur Waterford.

Marble.—Black marble is quar Ennis, in the county of Clare, Kilkenny.

Serpentine occurs in Connemara

Marble of a fine grain, and of colours, near Donegal.

Veined marble near Cork, Y and Bantry, in the county of

Limestone.—Limestone occurs in abundance. The position of th stone plain has already been not

Salt.—Salt is found in the new re stone at Duncone, near Carrick county of Antrim.

Other minerals, such as *gypsum*, *antimony*, *nickel*, *alum*, *potter's* an *clay*, are found in various parts country.

MAP XXVII.

CLIMATE OF THE BRITISH ISLES.

1. The term *climate* is used to express the combination of temperature and moisture which prevails in any particular region.

The sun is the great agent in diffusing heat over the surface of the globe. Whenever the sun is above the horizon of any place, that place is receiving heat; when below, parting with it, by the process of radiation.

2. Climate is determined by a variety of causes, the chief of which are: 1. The latitude of the country; that is, its geographical position with reference to the equator. 2. Elevation of land above the sea-level. 3. The proximity to, or remoteness of a country from the sea, and the cold and warm currents of the ocean. 4. The slope of a country, or the aspect it presents to the sun's course. 5. The position and direction of mountain chains. 6. The nature of the soil. 7. The degree of cultivation and improvement at which the country has arrived. 8. The prevalent winds. 9. The annual quantity of rain that falls in a country.

3. On examining the *Climatological Map* of the British Isles, it will be seen that the countries are crossed by a variety of *curved lines*, to each of which *figures* are attached. These lines, called *Isotherms* *, denote th mean temperature of Winter and Summer the former being shown by *fine black* line and the latter by *dotted* lines. The figur placed at the extremities of these *isotherm* give the mean temperature in degrees Fahrenheit. The mean winter and summ temperature of certain cities and towns also indicated by *small figures*, placed b neath, or to the right of the places. Thu *Dublin*: W. 39·0, S. 59·0. These le ters and figures show that the *mean wint temperature* of Dublin is 39 degrees, a the *mean summer temperature* 59 degrees.

4. The *mean temperature* of a day is foun in several ways. Sometimes the mean tem perature is obtained from *three observatio* of the thermometer daily, viz. at 9 A.M 3 P.M., and 9 P.M.; or from what is calle the *maxima* and *minima* results,—term applied to the *greatest* and *least* temperatu during the day as indicated by *maximum* an *minimum* thermometers. In the latter ca there are only *two observations* daily. comparison of the results obtained by bo methods shows a remarkable agreement ‡ thus,—

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* *Isothermal lines*, that is *lines of equal heat*, were first used by Humboldt. These lines were drawn on a map through those places which had the same, or nearly the same, *mean annual temperature*. Thus, if we suppose a person to journey from London to those places in the northern hemisphere which have the mean annual temperature of London, he would not travel along its parallel of latitude, 51½°, but proceed north-west through Ireland to lat. 55½°, descending north-west towards New York, lat. 40½°; and in the contrary direction, he would travel south-east to Vienna, lat. 48°, and the mouth of the Danub lat. 44°. [a]

Professor Dove adopted a different arrang ment; instead of lines of mean annual temper ture, he uses *isothermal lines*, or *isotherms for t months*,—an arrangement now generally adopte by writers on the distribution of temperature.

† The winter months are December, Januar and February; the summer, June, July, and Augus

‡ Drew's Practical Meteorology.

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[a] See M'Leod's Class Atlas of Physical Geography.

	°
" Mean temperature from three observations daily during three years	50·3
Mean temperature from the maxima and minima	50·4

The mean of the daily temperatures for the month gives the mean temperature for each month; and the mean of each month divided by twelve gives the mean temperature for the year. The following is an illustration for the year 1850.

		°
January.	Mean temperature from maxima and minima	33·8
February	„	43·8
March	„	38·7
April	„	48·6
May	„	52·5
June	„	59·2
July	„	62·1
August	„	60·2
September	„	55·5
October	„	46·2
November	„	46·7
December	„	42·0
	12	589·3
Mean for the year	. . . .	49·1

5. The climate of the British Isles, when compared with other countries of the same latitude, is mild and salubrious. This is owing to the lands being surrounded on all sides by the ocean, and to the influence of the Gulf Stream, a branch of which flows not far from the western shores. The ocean preserves a much more uniform temperature than the land, hence islands and maritime districts have *milder climates* than inland regions under the same parallel of latitude, the currents from the ocean tempering their summer heat, and moderating their winter cold.

London, therefore, though situated in a higher latitude, enjoys a milder winter and cooler summer than Paris; and at Dublin, the *mean annual temperature* is 49°·05, that of Warsaw, in the same latitu 44°·15; thus it is nearly 5° colder at saw than at Dublin.

No country having so high a latitud so high a mean temperature. " Edinburgh, Moscow, and Nain in Lab are situated nearly on the same pa but while the mean temperature of burgh is 47°·13, at Moscow it is 40 at Nain 27°·8. Hence it appears th British Isles possess a mean temperat 7° higher than corresponding latitud the eastern, and 20° higher than sponding latitudes on the western cont The winter temperature is still mor similar, being at Edinburgh 38°·45, at cow 15°·2, and at Nain 3°·7. Our is therefore 23° Fahrenheit warmer t Moscow, and 35° warmer than in th responding latitude of the eastern s North America." *

6. The *isotherms* of winter, as w seen, take nearly a *vertical* direction, the summer isotherms pass from e west. The *mildest winters*, therefore, on the western parts of the British Is and the *warmest summers* in the sout the western coasts of both Great Britai Ireland are, consequently, warmer tha eastern.

The lowest average of winter temper about 35° or 36°, is found on the e side of Great Britain, embracing the co which extend along the shores of the Sea from Essex to the north of Scot but the southern part of Scotland, an eastern coasts of England, are the c portions of Great Britain. The tem ture of the coldest month, as we pr westwards, increases and attains its mum on the west coast of Ireland, the mildest winters occur, and whe

* Mackay's Manual of Modern Geography.

and frost are scarcely known at the sea level.

In general, July is our hottest month and January the coldest, while the mean temperature of April and October corresponds to the annual mean. The highest average of summer temperature is experienced in the south and south-west of England.

7. The *range of temperature* in the British Isles is very small; the difference between the hottest and coldest months being only about 24°, while at Paris it is 30°, at Berlin 38°, at St. Petersburg 55°, and in Italy 32½°. Hence the inhabitants of these islands are exempt from those violent extremes, which are so injurious to health and to animal and vegetable life.

The climate of Scotland is generally colder and more humid than that of England; but, owing to the proximity of the sea, the winters are so mild that the harbours and lochs on the coast are never frozen.

The climate of Ireland differs from that of England chiefly with respect to the degree of humidity. The air is generally moist, and the annual number of rainy days, 208 in the year, exceeds that of any other country in Europe. The winters are not so rigorous as in England, the summers are cooler, and the mildness and extreme humidity of the climate are the causes of the freshness and the verdure of the island, which has been denominated the "green" or the "emerald isle."

8. The *prevailing winds are westerly*:— under this term being included the *westerly*, *north-west*, *west*, and *south-west* winds. The easterly winds, taken in the same extended sense, prevail in March, April, and May.

The number of days during which westerly and easterly winds blow in a year in different parts, may be seen from the annexed table:

Places.	*Westerly.*	*Easterly.*	*Years of Observation.*
Dumfries	227	137	9
Hawkshill (near Edinburgh)	229	155	8
Lancaster	216	149	7
Liverpool	190	175	51
London	233	132	10

9. The *average fall of rain* over the whole of the British Islands is about 3[illegible] inches*, or a depth of two feet and a half of water if evenly distributed over the surface. More rain falls on the western coast of Great Britain and Ireland than on the eastern; and in the west of Ireland the number of rainy days during the year amounts to 208.

The average quantity of rain that falls annually at a few localities is given below:—

Jersey and Guernsey	31 inches
Cornwall and Devon	30 to 40 „
Isle of Wight	30 „
York	24 „
Durham	24 „
East Coast of England	27 „
London	24 „
Norwich	25 „
Cambridge	25 „
West Coast of England	30 „
Bristol	30 „
Liverpool	35 „
Manchester	36 „
Seathwaite (Borrowdale)	143 „
West Coast of Ireland	47 „
East ditto.	29 „

* "The average annual rain fall over the *whole globe* has been roughly estimated at sixty inches, or five feet in depth,—between the tropics, ninety-six, and in the temperate zones, thirty-five; that is to say, thirty-seven for the northern hemisphere, and thirty-three for the southern."—*Encyclopædia Britannica.*

Cotidal Lines.

The light curved lines crossing the ocean, in Map XXVII., are *Cotidal lines*, and the Roman numerals attached indicate the hour of high water at new and full moon. A cotidal line, therefore, may be regarded as representing the crest of the tidal wave at a given hour.

The first cotidal line in the map is that of IV o'clock; it shows the form which the tidal wave of the spring-tide takes in its course from the southward at that hour, being curved or restrained, by its approach to the British Islands.

As an explanation of these lines take the following:—

"The V o'clock tidal high water line sweeps round the west and south coasts of Ir runs to the Scilly Islands, thence to Point, and keeping along the shore, the Devonshire coast and crosses the nel to the French coast."*

In the English Channel the VII tidal high water line starts from Po Bill across the Channel to Cape La H the X o'clock tidal line causes high off the shore from Culver Cliff, east Isle of Wight, to Beachy Head and D ness Point; thence across the Channel Havre, in France. The central port this cotidal line extends up Channel east as the line joining Boulogn Folkestone.

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* From Haughton's Tides and Tidal Currents.

MAP XXVIII.

PRINCIPAL MANUFACTURES OF ENGLAND.

Textile Fabrics.

Towns.

Cotton.—Manchester and Salford, Preston, Blackburn, Bolton, Bury, Oldham, Ashton, Wigan, and other towns in *Lancashire.*
Stockport and Macclesfield, in *Cheshire.*
Carlisle, in *Cumberland.*
Belper, in *Derbyshire.*

Wool.—Leeds, Bradford, Huddersfield, Halifax, Wakefield, and other places in *Yorkshire.*
Stroud, in *Gloucestershire.*
Bradford and Trowbridge, in *Wiltshire.*
Witney, in *Oxfordshire.*
Kendal, in *Westmoreland.*

Silk, including *Ribbons.* — Coventry, in *Warwickshire.*
Manchester, in *Lancashire.*
Macclesfield, in *Cheshire.*
Derby, in *Derbyshire.*
Spitalfields and Bethnal Green, *London.*

Wool and Silk.—Norwich.

Linen.—Leeds, Barnsley, Ripon, Knaresborough, in *Yorkshire.*

Flax.—Bridport and Beaminster, in *Dorsetshire*, for twine, fishing nets, sail-canvas, &c.
Warrington, in *Lancashire*, for sail-cloth for the use of the navy.
On the river Nidd, in *Yorkshire*, are the principal flax mills.

Hosiery, including *Stockings* and *Socks.* Nottingham, in *Nottinghamshire.*
Leicester, Loughborough, and Hinckley, in *Leicestershire.*

Flannels.—Welshpool, in *Montgomeryshire;* Wrexham, in *Denbighshire;* and other places in Wales.

Blankets.—Witney, in *Oxfordshire.*
Dewsbury, in *Yorkshire. Shoddy*, a cloth made from old woollen rags, is one of the principal manufactures of this town.
Frome, in *Somersetshire.*
Calne and Melksham, in *Wiltshire.*

Carpets. — Kidderminster, in *Worcestershire.*
Axminster, in *Devonshire.*
Wilton, in *Wiltshire.*
Cirencester, in *Gloucestershire.*

Lace.—Derby, in *Derbyshire.*
Nottingham, in *Nottinghamshire.*
Leicester, in *Leicestershire.*
Honiton, in *Devonshire.*

Gloves.—Nottingham and Leicester, for *cotton* and *silk gloves.*
Worcester, in *Worcestershire;* Woodstock, in *Oxfordshire;* Yeovil, in *Somersetshire ;* Ludlow, in *Shropshire;* and London, for *kid* and *leather gloves.*

Leather, Glass, Earthenware, Porcelain, &c.

Shoes.—Northampton, Wellingborough, and Kettering, in *Northamptonshire;* London.

Leather Slippers.—Bicester, in *Oxfordshire.*

Tanning.—Bermondsey, in London.

Paper.—High Wycombe, in *Buckinghamshire.*
Maidstone and Dartford, in *Kent.*
Watford, in *Hertfordshire.*
Godalming, in *Surrey.*

Plate Glass.—Newcastle, in *Northumberland.*
South Shields, in *Durham.*
St. Helens, in *Lancashire.*
Birmingham, in *Warwickshire.*
Blackwall, a suburb of London, in *Middlesex.*

Window, Sheet, and *Bottle Glas*
mingham.
Bristol, in *Gloucestershire.*
Stourbridge and Dudley, in *W*
shire.
Liverpool and Warrington, in *Lo*

Chinaware.— London.
Worcester, in *Worcestershire.*
Derby, in *Derbyshire.*
Colebrook Dale, in *Shropshire.*

Earthenware.—In the north-west
fordshire, in a district cal
Potteries." The chief to
Burslem, Stoke-upon-Trent,
Shelton, Tunstall.

Stoneware.—*Lambeth,* forming th
west portion of London, in t
of *Surrey.*

Iron and Hardware Manufactures.

Iron Founding.—The great foundry establishments for wrought iron goods, as bridges, steam-ships, cannon, &c., are at
Merthyr-Tydfil, in *Glamorganshire.*
Colebrook Dale, in *Shropshire.*
Butterley, in *Derbyshire.*
Rotherham and Low Moor, in *Yorkshire.*

Engines and *Machinery.*—*Soho Works,* at Birmingham, *Warwickshire.*
Manchester, in *Lancashire.*
Newcastle, in *Northumberland.*
Greenwich, in *Kent.*

Brass Founding.—Birmingham is the great seat; the articles made consist of handles for locks, candlesticks, lamps, chandeliers, bedsteads, fenders, &c.

Plated Goods, Plate, Jewellery.—Birmingham, London, Sheffield. Besides plated goods,—finger rings, wedding rings, pencil cases, goods of solid gold and silver are also made at these places.

Hardware, &c.—The principal t
hardware are
Birmingham, in *Warwickshire*
Dudley, Wolverhampton, Wal
Bilston, in *Staffordshire.*

Printers' Type.—London and She

Cutlery.—Sheffield.

Nails.—Bromsgrove and Dudley,
cestershire.
Birmingham, where about 50
iron are weekly cut up in
and each ton of iron furnish
1,000,000 nails. The annua
is reckoned at *twenty-six*
millions.

Needles.—Redditch, in *Worcesters*
its neighbourhood. The n
needles produced weekly is
seventy millions.

Pins.—Warrington, in *Lancashire*
Gloucester, in *Gloucestershire.*
Birmingham, and other pla

Pens (*Steel*) are made in London and Sheffield, but chiefly in Birmingham. A *thousand million* steel pens are supposed to be made every year.

Clocks and Watches.—At Coventry, *Warwickshire.*
Liverpool, in *Lancashire.*
Clerkenwell, in *Middlesex.*

Miscellaneous Objects of Industry.

Hats.—Bristol, in *Gloucestershire.*
Oldham and Liverpool, in *Lancashire.*
Atherstone, in *Warwickshire.*
Newcastle-under-Lyme and Rugeley, in *Staffordshire.*
Bermondsey and other parts of London; and in Manchester and Birmingham.

Straw Hats.—Luton, Dunstable, and other places in *Bedfordshire.* *Straw Plait* made in Bedfordshire, Hertfordshi Buckinghamshire, and Northampto shire.

Bath Brick, largely used for cleaning a polishing metal goods, is manuf tured at Bridgewater, Somersetshi from the tidal deposit of the ri Parret.

Rottenstone is found rather abundantly n Bakewell, in *Derbyshire.*

PORTS OF ENGLAND AND WALES.

Ports on the East Coast.

From North to South.

Berwick, on the Tweed.
Tynemouth, at the mouth of the Tyne.
N. and S. Shields, on the Tyne.
Newcastle, on do
Sunderland, on the river Wear.
Stockton, on the Tees.
Whitby, at the mouth of the Esk.
Hull, on the river Hull, a trib. of the Humber.
Great Grimsby, on the Humber.
Boston, on the Witham.
Wisbeach, on the Nen.
Lynn, at the mouth of the Nar or Satchy.
Yarmouth, at the mouth of the Yare.
Lowestoft, on the coast of Suffolk.
Harwich, on a point of land at the conf ence of the Stour and Orwell.
Colchester, on the river Colne.
Maldon, on the river Blackwater.
London, on the Thames.
Chatham, on the Medway.
Sheerness, on the Medway.
Margate, Isle of Thanet, north coast.
Ramsgate, do east coast.
Deal, on the coast of Kent.
Dover, on do
Folkestone, on do

Ports on the South Coast.

From West to East.

Rye, on the river Rother.
Newhaven, on the river Ouse.
Shoreham, on the river Adur.
Portsmouth, on Portsmouth Harbour.
Southampton, near the mouth of the Itch on Southampton Water.
Cowes, at the mouth of the Medina riv Isle of Wight.

Poole, on Poole Harbour.
Weymouth, at the mouth of the Wye.
Bridport, on the river Brit.
Lyme Regis, on the river Lyme.
Teignmouth, at the mouth of the Teign.
Dartmouth, at the mouth of the Dart.
Plymouth, at the mouth of the Plym.
Falmouth, at the mouth of the Fal.
Penzance, on Mount's Bay.

Ports on the West Coast.

From South to North.

St. Ives, on St. Ives Bay.
Bideford, Devonshire, on the Torridge.
Barnstaple, on the Taw.
Ilfracombe, on the Bristol Channel.
Bridgewater, on the river Parret.
Bristol, on the Lower Avon.
Gloucester, on the Severn.
Chepstow, on the Wye.
Newport, on the Usk.
Cardiff, on the Taff.
Swansea, on the Tawe.
Milford, on Milford Haven.
Cardigan, on the Teify.
Carnarvon, on Menai Strait, at the n
of the Seiont.
Holyhead, Isle of Anglesea.
Beaumaris, on the Menai Strait.
Chester, on the Dee.
Birkenhead, on the Mersey.
Liverpool, on the Mersey.
Preston, on the Ribble.
Fleetwood, at the mouth of the Wyre.
Lancaster, on the Lune.
Whitehaven, on the coast of Cumberla
Workington, on the Derwent.
Carlisle, on the Eden.

MAP. XXIX.

MANUFACTURES, ETC.—IRELAND.

THE staple manufacture of Ireland is *linen.*

Linen.—Belfast in the county of *Antrim.*
Newry, in *Down.*
Downpatrick, in *Down.*
Coleraine, in *Londonderry.*
Omagh, in *Tyrone.*
Dublin, in *Dublin.*
Cotton.—Belfast, in *Antrim.*
Kildare, in *Kildare.*
Portlaw, in *Waterford.*
Tullamore, in *King's County.*
Newry, in *Down.*
Limerick, in *Limerick.*
Poplins.—Dublin, in *Dublin.*
Bandon, in *Cork.*
Blankets.—Kilkenny, in *Kilkenny*
Flannels.—Wicklow, in *Wicklow.*
Woollen Goods.—Mountmellick, in *Queen's County.*
Roscommon, in *Roscommon.*
Abbeyleix, in *Queen's County.*
Kilkenny, in *Kilkenny.*
Hosiery.—Balbriggan, in *Dublin.*
Gloves.—Limerick, in *Limerick.*
Cork, in *Cork.*
Lace.—Belfast, in *Antrim.*
Cork, in *Cork.*
Limerick, in *Limerick.*
Kells, in *Meath.*
Paper.—Navan, in *Meath.*
Galway, in *Galway.*
Cutlery.—Enniskillen, in *Fermanagh.*
Glass.—Dublin, in *Dublin.*
Belfast, in *Antrim.*
Londonderry, in *Londonderry.*
Cork, in *Cork.*
Waterford, in *Waterford.*
Whisky.—Dublin, in *Dublin.*
Cork, in *Cork.*
Clonmel, in *Tipperary.*
Sligo, in *Sligo.*
Ballyshannon, in *Donegal.*
Ale.—Drogheda, in *Louth.*
Porter.—Dublin.
Ship-building.—Cork, in *Cork.*

Besides the above-named manufactur the following form important articles trade :—

Bacon and *Hams*, on an extensive scale, a
Belfast, in *Antrim.*
Limerick, in *Limerick.*
Clonmel, in *Tipperary.*
Waterford, in *Waterford.*

The principal provision markets a those of Cork, Belfast, Waterford, a Newry.

Grain, Flour and Corn.—Tralee, in *Ker*
Drogheda, in *Louth.*
Omagh, in *Tyrone.*

Cheese is made in large quantities in *Quee County.*

Butter forms an important article of expo to England, the East and West Indi and Portugal. The best butter is ma at Carlow, in *Carlow* county.

PRINCIPAL TRADING PORTS.

1. *North Coast.*

Londonderry, on the river Foyle.
Coleraine, on the river Bann.

2. *East Coast.*

Belfast, on the Lagan.
Donaghadee, in Down, a packet station.
Dundalk, in Louth, on Dundalk Bay.
Drogheda, on the Boyne.
Dublin, on the Liffey. Only small vessels can go up to Dublin.
Kingstown, on Dublin Bay, is the port of Dublin.
Wexford, on the river Slaney.

3. *South Coast.*

Waterford, on the river Suir.
Dungarvan, on an inlet of the sea, in cou of Waterford.
Youghal, on the river Blackwater.
Cork, on the river Lee.

4. *West Coast.*

Tralee, on the river Lee.
Limerick, on the Shannon.
Galway, on Galway Bay. This is a pa station for vessels to and from Ame
Sligo, on the river Garrogue.

MAP XXX.

MANUFACTURES, ETC.—SCOTLAND.

THE principal manufactures, trades, &c. consist of *cotton, linen, woollen, machinery, iron founding, distillation of whisky*, &c.

Cotton, chiefly in the west.	Glasgow, Govan, Blantyre, Cambuslang, New Lanark, &c.	*Lanarkshire.*
	Paisley, Renfrew, Johnstone, and other places	*Renfrewshire.*
	Perth	*Perthshire.*
	Kilsyth	*Stirlingshire.*
Linen (coarse), as sail-cloth, Russia sheeting, &c.	Dundee, Arbroath, Forfar, Montrose	*Forfarshire.*
Linen (fine), as damasks, table linen.	Dunfermline, Kirkcaldy, Dysart	*Fifeshire.*
	Aberdeen	*Aberdeenshire.*
Muslin embroidery	Glasgow	*Lanarkshire.*
	Kilmarnock	*Ayrshire.*
Woollen manufactures.		
Plaids, tweeds	Galashiels	*Selkirkshire.*
Blankets	Hawick	*Roxburghshire.*
Tartans	Stirling, Bannockburn	*Stirlingshire.*
Scotch bonnets	Kilmarnock	*Ayrshire.*
Hose	Dumfries	*Dumfriesshire.*
	Hawick	*Roxburghshire.*
	Selkirk	*Selkirkshire.*
Cloth	Aberdeen	*Aberdeenshire.*
Shawls	Paisley	*Renfrewshire.*
	Kilmarnock	*Ayrshire.*
	Galashiels	*Selkirkshire.*
Carpets	Stirling	*Stirlingshire.*
	St. Ninians	*Ditto.*
	Kilmarnock	*Ayrshire.*
Silk	Glasgow	*Lanarkshire.*
	Paisley	*Renfrewshire.*
	Edinburgh	*Midlothian.*

Iron manufactures.		
Machinery : as steam engines.	Glasgow	*Lanarkshire.*
Iron ships	Glasgow	*Ditto.*
Stoves, grates, fenders, cannon, anchors, &c.	Carron	*Stirlingshire.*
Nails	St. Ninians	*Ditto.*
	Muirkirk	*Ayrshire.*
Iron foundries	Paisley, Johnstone	*Renfrewshire.*
	Clyde, Shotts, Gartsherrie, Airdrie, Wishaw	*Lanarkshire.*
	Alloa, Newtonshaw, Devonside	*Clackmannanshire.*
	Muirkirk	*Ayrshire.*
Print works	Campsie, Denny, Strathblane	*Stirlingshire.*
	East Kilpatrick (parish)	*Stirling and Dumba*
	Dumbarton, Cardross, West Kilpatrick (parish)	*Dumbartonshire.*
Paper	Denny	*Stirlingshire.*
	East and West Kilpatricks	*Stirlingshire and bartonshire.*
	Pennycuick	*Midlothian.*
	There are extensive paper-mills on the Esk and Water of Leith	*Ditto.*
	Govan	*Lanarkshire.*
Ship-building	Glasgow, Govan	*Lanarkshire.*
	Greenock	*Renfrewshire.*
	Saltcoats	*Ayrshire.*
	Dumbarton	*Dumbartonshire.*
	Aberdeen	*Aberdeenshire.*
Glass	Glasgow	*Lanarkshire.*
	Dumbarton	*Dumbartonshire.*
	Alloa	*Clackmannanshire.*
	Leith	*Midlothian.*
Shoes	Selkirk *	*Selkirkshire.*
Whisky	Glenlivet	*Banffshire.*
	Campbeltown	*Argyleshire.*
	Islay (island)	*Ditto.*
	Ben Nevis	*Inverness-shire.*
Ale	Edinburgh	*Midlothian.*
	Alloa	*Clackmannanshire.*

* "The shoes are made by the 'sutors,' a name still given to the burgesses, who qualify by '[illegible] the birse,' a brush of hog's bristles, which is passed from mouth to mouth."

PRINCIPAL TRADING PORTS.

1. *On the East Coast.*

Inverness, on the river Ness.
Peterhead, in Aberdeenshire.
Aberdeen, on the river Dee.
Montrose, at the mouth of the S. Esk.
Dundee, on the estuary of the Tay.
Kirkcaldy, on the Firth of Forth.
Leith, on Leith Water, which falls into Firth of Forth.
Dunbar, on the N. E. of Haddingtonshire.
Berwick, on the river Tweed.

2. *South Coast.*

Dumfries, on the river Nith.
Kirkcudbright, on the river Dee.
Wigton, on Wigton Bay, near the mouth of the Bladenoch river.

3. *West Coast.*

Portpatrick, on the coast of Wigtonshire.
Stranraer, at the head of Loch Ryan.
Girvan, at the mouth of the river Girva
Ayr, on the river Ayr.
Irvine, on the river Irvine.
Saltcoats, on the Firth of Clyde.
Ardrossan, on the Firth of Clyde.
Greenock, Port Glasgow, Glasgow, } on the river Clyde.
Inverary, at the mouth of the river A near the head of Loch Fyne.
Oban, on the Bay of Oban, west of Argy shire.

4. *Ports on Islands.*

Stornoway, on the island of Le (Hebrides)
Kirkwall, on the north-east side of island Pomona.
Stromness, near the south west angle Pomona.
Lerwick, on the sound of Bressay, in Ma land, one of the Shetland islands.

THE END.

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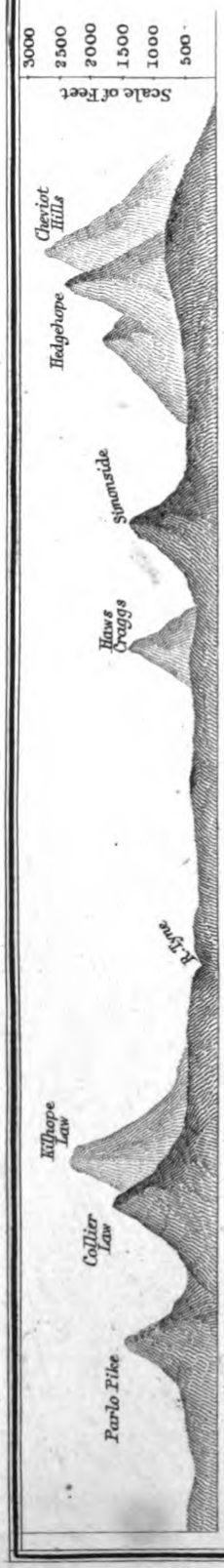
PHYSICAL MAP
of
ENGLAND
&WALES
SCOTLAND
North Channel
IRISH SEA
NORTH SEA
ENGLISH CHANNEL
St. George's Channel
Cardigan Bay
Bristol Channel
Isle of Man
Snea Fell
Calf of Man
Dundrum B.
Belfast L.
L. Larne
L. Strangford
Mull of Galloway
Luce Bay
Burrow Hd.
Wigton B.
Solway Firth
Berwick
Holy I. or Lindisfarn
Fern Is.
North Sunderland Pt.
Cheviot Hills
R. Tweed
R. Till
R. Alne
R. Coquet
R. Wansbeck
R. Tyne
S. Tyne
Newcastle
Souter Pt.
Sunderland
R. Derwent
Weardale
R. Wear
Hartlepool & Pt.
R. Tees
Cross Fell
R. Eden
Skiddaw
Cumbrian Mountains
Helvellyn
Ulles-water
St. Bees Hd.
Windermere
Coniston L.
Duddon R.
Walney I.
Morecambe B.
Rossall Pt.
Whernside
Ingleborough
Pen-y-gant
Swaledale
R. Swale
R. Yore or Ure
York Moors
R. Rye
R. Nidd
R. Wharfe
R. Aire
R. Calder
York
R. Derwent
R. Ouse
York Wolds
Hull
Flamborough Hd.
Bridlington Bay
Spurn Head
R. Humber
Pendle Hill
R. Ribble
Preston
Leeds
Lancashire Moors
Bolton
Manchester
R. Dearn
R. Don
Sheffield
High Peak
Formby Pt.
R. Mersey
Liverpool
Pt. of Aire
R. Dee
Delamere Forest
R. Dane
Chester
R. Idle
R. Trent
Lincoln
Lincolnshire Wolds
Ancholme R.
R. Witham
Sherwood Forest
The Wash
Nottingham
Staffordshire Moorlands
Weaver Hill
Stoke upon Trent
Needwood Forest
Cannock Chase
R. Soar
R. Wreak
R. Glen
Leicester
R. Welland
Central Plain
Wrekin
Wolverhampton
Birmingham
R. Severn
Clent Hills
Lickey Hills
R. Avon
Worcester
V. of Evesham
Malvern Hills
Edge Hills
R. Teme
R. Lug
R. Nen
Isle of Ely
R. Ouse
R. Cam
Bedford R.
Lit. Ouse
R. Lark
East Anglian Heights
R. Nor
Norwich
R. Stour
R. Colne
Brentwood Forest
R. Thame
Chiltern Hills
R. Lea
R. Roding
Hainault Forest
Essex Heights
Mersea I.
Foul Ness
Shoebury Ness
Langdon Hs.
Canvey I.
Thames
I. of Sheppey
E. Swale
LONDON
Windsor Forest
Bagshot Heath
Hogs Back
North Downs
R. Medway
R. Mole
Weald
Wealden Heights
Leith Hill
R. Rother
R. Arun
R. Ouse
Brighton
South Downs
Portsmouth
Hayling I.
Selsey Bill
Pevensey B.
Beachy Head
Hastings
Dungeness
Strait of
Holyhead B.
Holy I.
Anglesey
Linas Hd.
Gt. Ormes Hd.
Menai Str.
Snowdon
Dee Vale
Bala L.
Berwyn Hills
Braich-y-Pwll
Bardsey I.
Cader Idris
R. Dovey
Plinlimmon
R. Severn
Radnor Forest
Cerri Hills
R. Teify
Strumble Hd.
St. Davids Hd.
St. Brides B.
Skomer I.
Skokham I.
St. Annes Hd.
Milford Haven
St. Govens Hd.
Caermarthen B.
Worms Hd.
Penns. of Gower
Swansea B.
Epynt Hills
Brecknock Beacon
Black Moun. or Forest Fawr
R. Towy
R. Usk
R. Wye
R. Neath
R. Taf
Merthyr Tydfil
V. of Glamorgan
Flatholm
Steepholm
Bristol
Bath
Cotswold Hills
V. of Berkeley
Cleeve Hill
R. Thames
R. Windrush
R. Coln
R. Cherwell
V. of White Horse
Marlborough Downs
R. Kennet
Inkpen Beacon
Salisbury Plain
Mendip Hills
Quantock Hills
Polden Hills
R. Brue
R. Axe
R. Parret
R. Yeo
Exmoor
Lundy I.
Baggy Hd.
Barnstaple B.
Hartland Pt.
Blackdown Hill
V. of Blackmore
Cranborne Chase
New Forest
Southampton
Southampton Water
The Solent
Spithead
The Needles
Culver Cliff
St. Catherines Pt.
Dorset Heights
R. Stour
R. Frome
Purbeck Heights
Portland & Bill
Weymouth B.
St. Albans Hd.
Durlestone Hd.
R. Taw
R. Torridge
R. Exe
R. Otter
R. Axe
Cawsand Beacon
Dartmoor
Tor Bay
Berry Head
Start Pt.
Prawle Pt.
Bolt Hd.
Plymouth
Plymouth Sd.
Eddystone
Trevose Hd.
Cornish Heights
R. Tamar
Hensbarrow
Falmouth

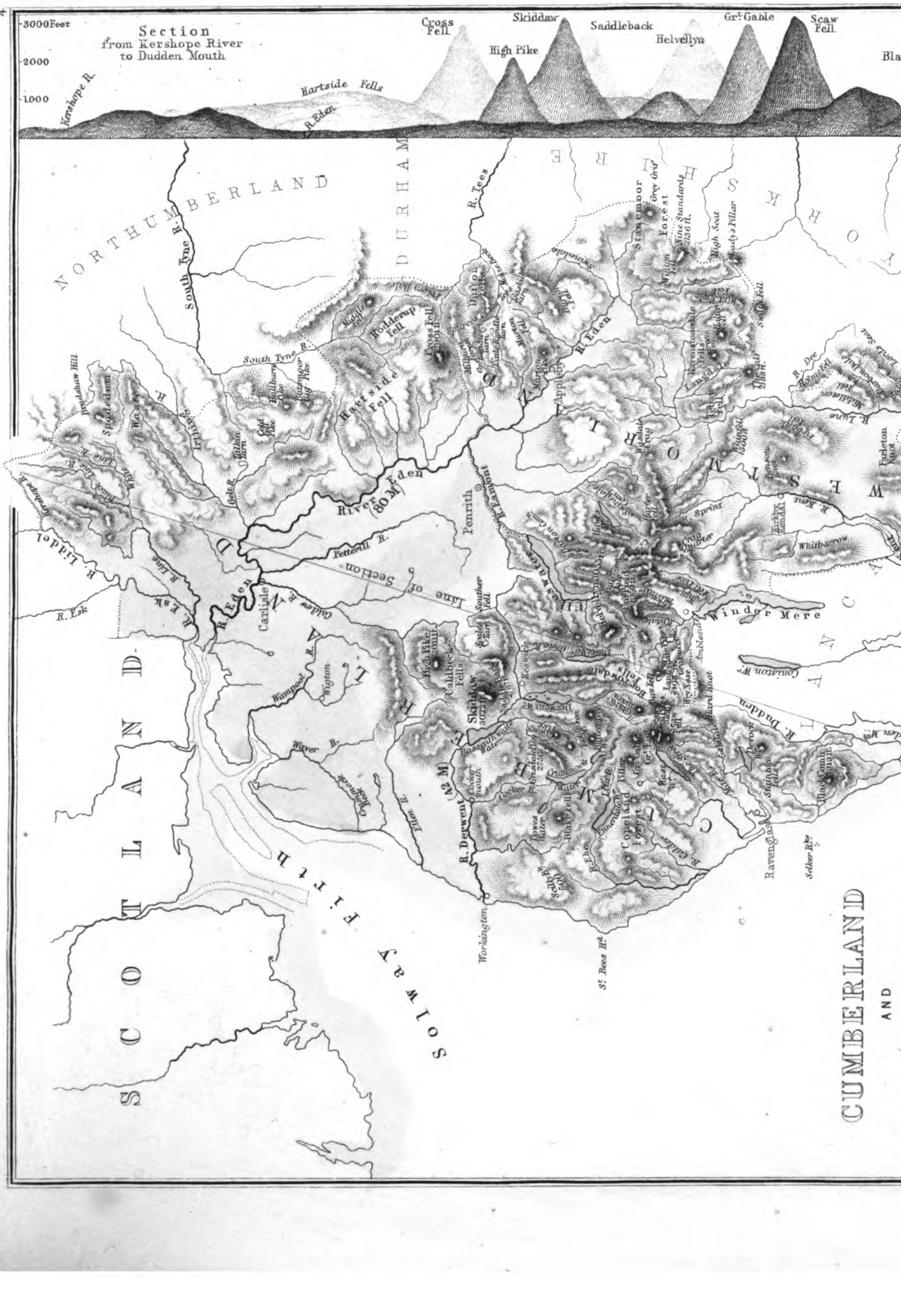
GEOLOGICAL MAP
of
ENGLAND
& WALES
Reference
Tertiary Formations coloured
Secondary d°
Cretaceous shaded thus
Wealden
Oolitic & Lias
Upper New Red Sandstone
Palæozoic or Primary coloured
Magnesian Limestone
Carboniferous
Coal Fields
Old Red Sandstone shaded thus
Silurian
Metamorphic Rocks
Igneous Rocks Traps
Granite
SCOTLAND
IRELAND
North Channel
IRISH SEA
St George's Channel
Cardigan Bay
Bristol Channel
ENGLISH CHANNEL
NORTH SEA
The Wash
Berwick
Holy I.
Newcastle
Sunderland
Hartlepool
Solway Firth
Belfast L.
Mull of Galloway
Isle of Man
Snea Fell
Calf of Man
Dundrum B.
Cumbrian Mountains
Skiddaw
Windermere
Walney I.
Morecambe B.
Rossall Pt.
Preston
Liverpool
Manchester
Leeds
York
Flamborough Hd.
Bridlington Bay
Hull
Spurn Head
Humber
Lincoln
Chester
Anglesey
Holyhead B.
Menai Str.
Snowdon
Bardsey I.
Wrekin
Wolverhampton
Birmingham
Nottingham
Leicester
Worcester
Malvern Hills
St Davids Hd.
St Brides B.
Milford Haven
Bristol
Bath
Salisbury Plain
LONDON
R. Thames
New Forest
I. of Wight
The Needles
Portland I. & Bill
Exmoor
Lundy I.
Barnstaple B.
Hartland Pt.
Dartmoor
Tor Bay
Berry Head
Start Pt.
Eddystone Lt. Ho.
Trevose Hd.
Falmouth
Hastings
Pevensey B.
Beachy Head
Selsey Bill
Brighton
Mersea I.
Foul Ness

NORTHUMBERLAND AND DURHAM



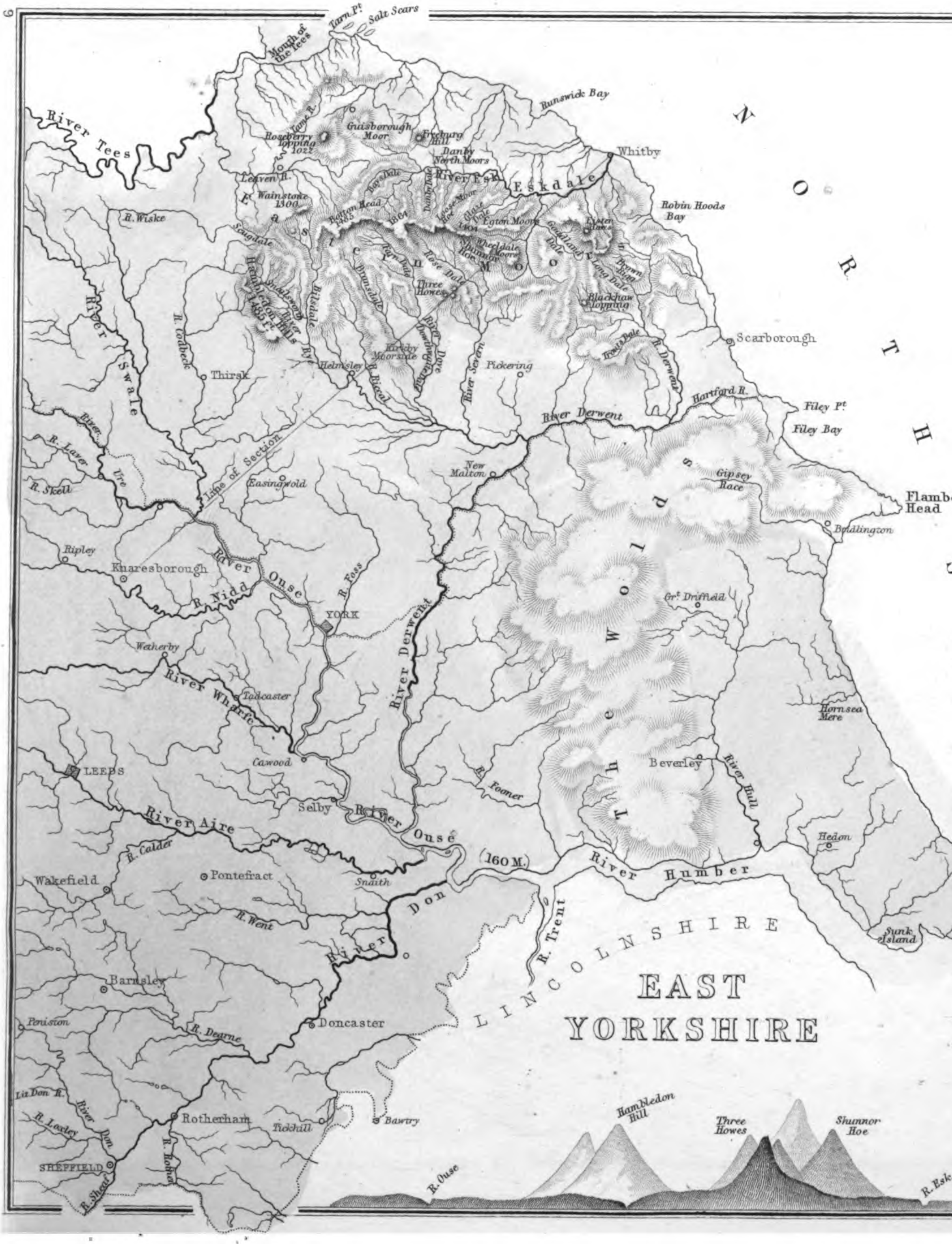
Note

All the County Maps in this Atlas being drawn on the same Scale, the above measurement applies to the whole.

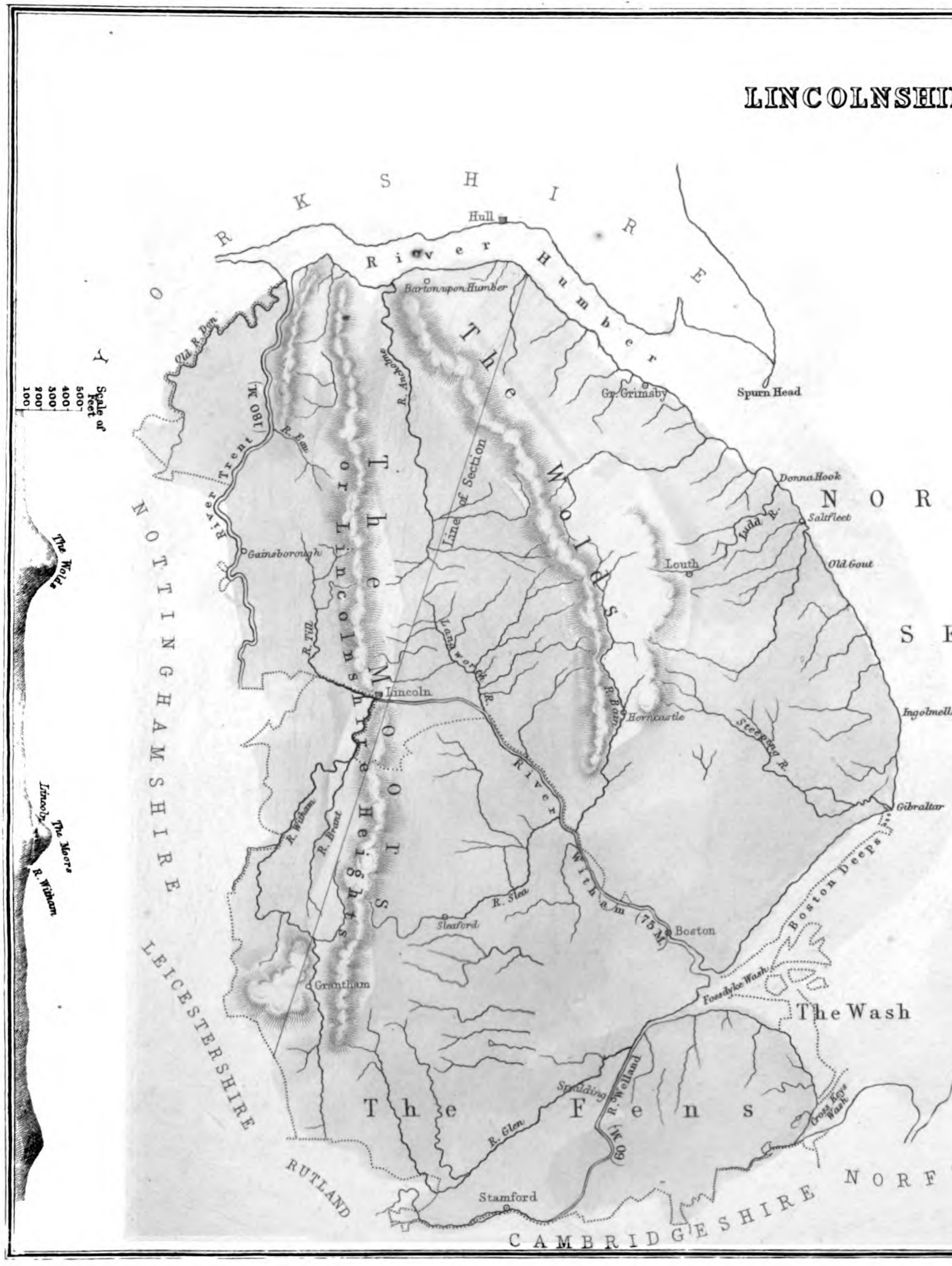


4
Section from Kershope River to Dudden Mouth
3000 Feet
2000
1000
Kershope R.
Hartside Fells
R. Eden
Cross Fell
High Pike
Skiddaw
Saddleback
Helvellyn
Grt. Gable
Scaw Fell
NORTHUMBERLAND
DURHAM
YORKSHIRE
WESTMORLAND
CUMBERLAND
LANCASHIRE
SCOTLAND
Solway Firth
River Eden (80 M.)
R. Derwent (42 M.)
Line of Section
Carlisle
Penrith
Appleby
Wigton
Workington
Ravenglass
St. Bees Hd.
Winder Mere
Coniston Wr.
R. Esk
R. Liddel
R. Tees
South Tyne R.
R. Duddon
R. Lune
R. Eamont
Petterill R.
Caldew R.
Wampool R.
Waver R.
Ellen R.
Hartside Fell
Stanemoor Forest
CUMBERLAND
AND

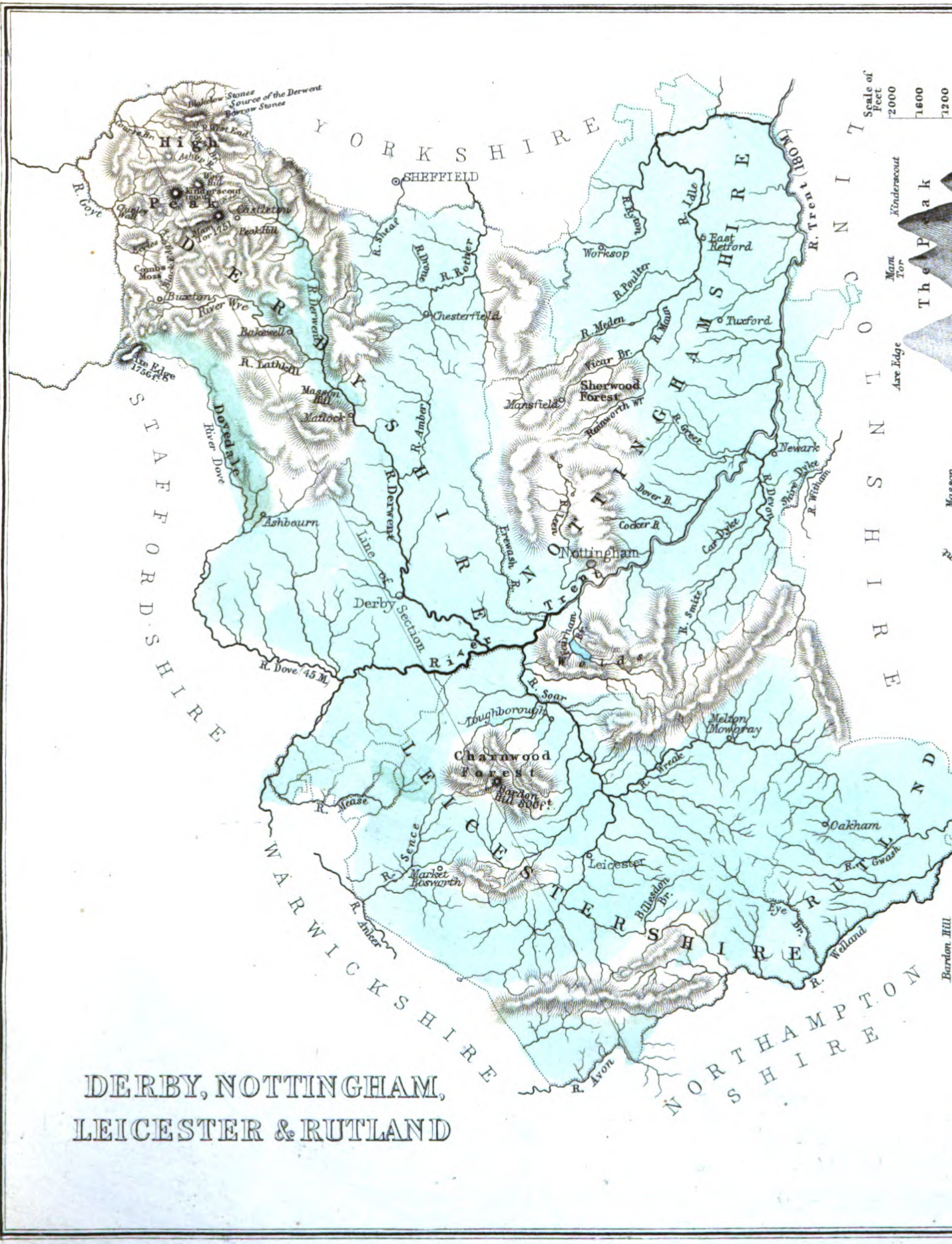

LANCASHIRE
AND
WEST YORKSHIRE
Scale of Feet
2500
2000
1500
1000
500
Pendle Hill
Penyghent
Wharnside
Shunner Fell
Water Crag
Mickle Fell
I R I S H S E A
W E S T M O R L A N D
L A N C A S H I R E
C H E S H I R E
Morecambe Bay
Lancaster Bay
Furness Fells
Low Furness
Walney Isle
Foulney I.
Pile I.
Dalton
Ulverston
Cartmell
Winder Mere
River Duddon
R. Leven
R. Kent
R. Lune (53 M.)
Lancaster
Fleetwood
Rossall Pt.
Pilling Moss
Garstang
Poulton
The Fylde Country
(Peat Mosses)
Kirkham
Preston
River Ribble
River Ribble (60 M.)
R. Darwent
Blackburn
Burnley
Clitheroe
Pendle Hill 1803
Bolland Forest
R. Hodder
R. Wyre
R. Lostock
R. Yarrow
Chorley
High Moor
Rivington Pike
Bolton
River Douglas
Ormskirk
Wigan
Billinge Beacon 633
Leigh
R. Alt
Newton
St. Helens
Prescot
LIVERPOOL
Warrington
River Mersey
River Mersey (70 M.)
Stockport
MANCHESTER
River Irwell
R. Medlock
Ashton
R. Tame
Staley Bridge
Oldham
Middleton
Rochdale
River Roch
Blackstone Edge
Stand Edge
Brandwood Moor
Knoll Moor
Rossendale Forest
Black Hambledon 1246 ft.
Boulsworth Hill 1689 ft.
Colne
Keighley
Skipton
Bolton Abbey
Simons Seat
Gouthwaite Moor
Halifax
Ingleborough 2361
Penyghent 2270
Wharnside 2384
Malham Tarn
R. Aire runs underground
Settle
River Aire
Line of Section
Langstrothdale Chace
Hooton Fell
R. Greta
R. Wenning
Dent Crag or County Stone
R. Dee
Wensley Dale
River Ure
River Swale
Swale Dale
Shunner Fell 2350
High Seat
Ladys Pillar
Lund Fell
Nine Standards 2136
Water Crag 2192
Grey Grit
Stanemoor Forest
Cowther Hill
Hope Moor
Lune Forest
River Tees
Snowdown
Askrigg
Dodd Fell
Grey Friar
Old Man
Dow Crag
Gates W.
Beacon Tarn
Carmell



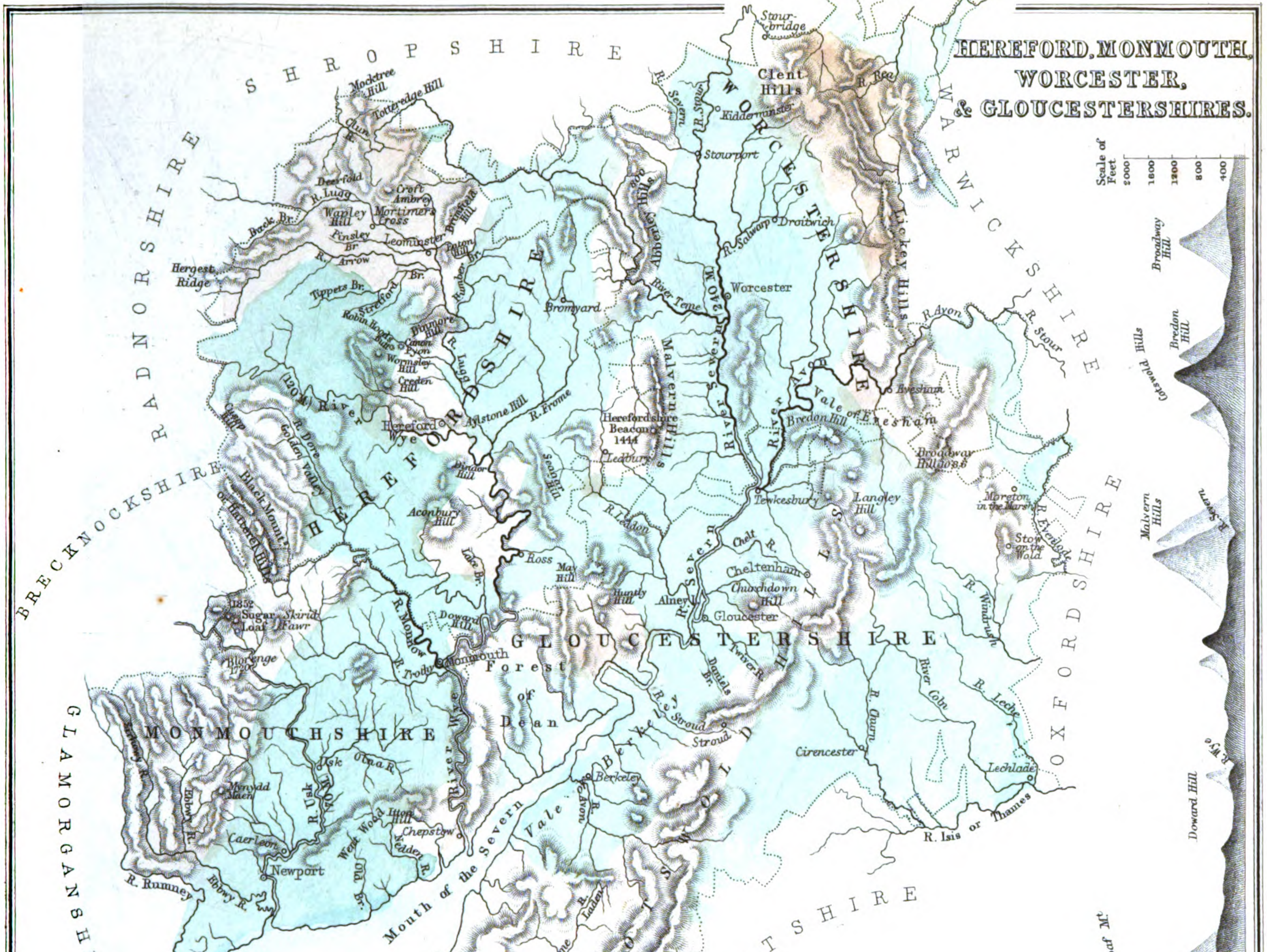
EAST YORKSHIRE
LINCOLNSHIRE
NORTH
River Tees
Mouth of the Tees
Tarn Pt
Salt Scars
Runswick Bay
Whitby
Robin Hoods Bay
Scarborough
Filey Pt
Filey Bay
Flamb Head
Bridlington
Gipsey Race
Gr. Driffield
Hornsea Mere
Beverley
River Hull
Hedon
Sunk Island
River Humber
R. Trent
160 M.
Guisborough Moor
Roseberry Topping 1022
Freeburg Hill
Danby North Moors
River Esk
Eskdale
Leaven R.
Wainstone 1300
Egton Moors
East Moors
Three Howes
Blackhaw Topping
Troutsdale
R. Derwent
Hartford R.
Pickering
River Seven
Kirkby Moorside
Helmsley
R. Riccal
Bilsdale
Rye
Hambleton Hills 1485 Ft.
R. Codbeck
Thirsk
R. Wiske
River Swale
River Ure
R. Laver
R. Skell
Line of Section
Easingwold
New Malton
River Derwent
The Wolds
Ripley
Knaresborough
R. Nidd
River Ouse
R. Foss
YORK
Wetherby
River Wharfe
Tadcaster
Cawood
Selby
R. Fooner
LEEDS
River Aire
R. Calder
Wakefield
Pontefract
Snaith
R. Went
River Don
Barnsley
Penniston
R. Dearne
Doncaster
Lit. Don R.
R. Loxley
SHEFFIELD
R. Sheaf
R. Rother
Rotherham
Tickhill
Bawtry
Hambleton Hill
Three Howes
Shunnor Hoe
R. Ouse
R. Esk

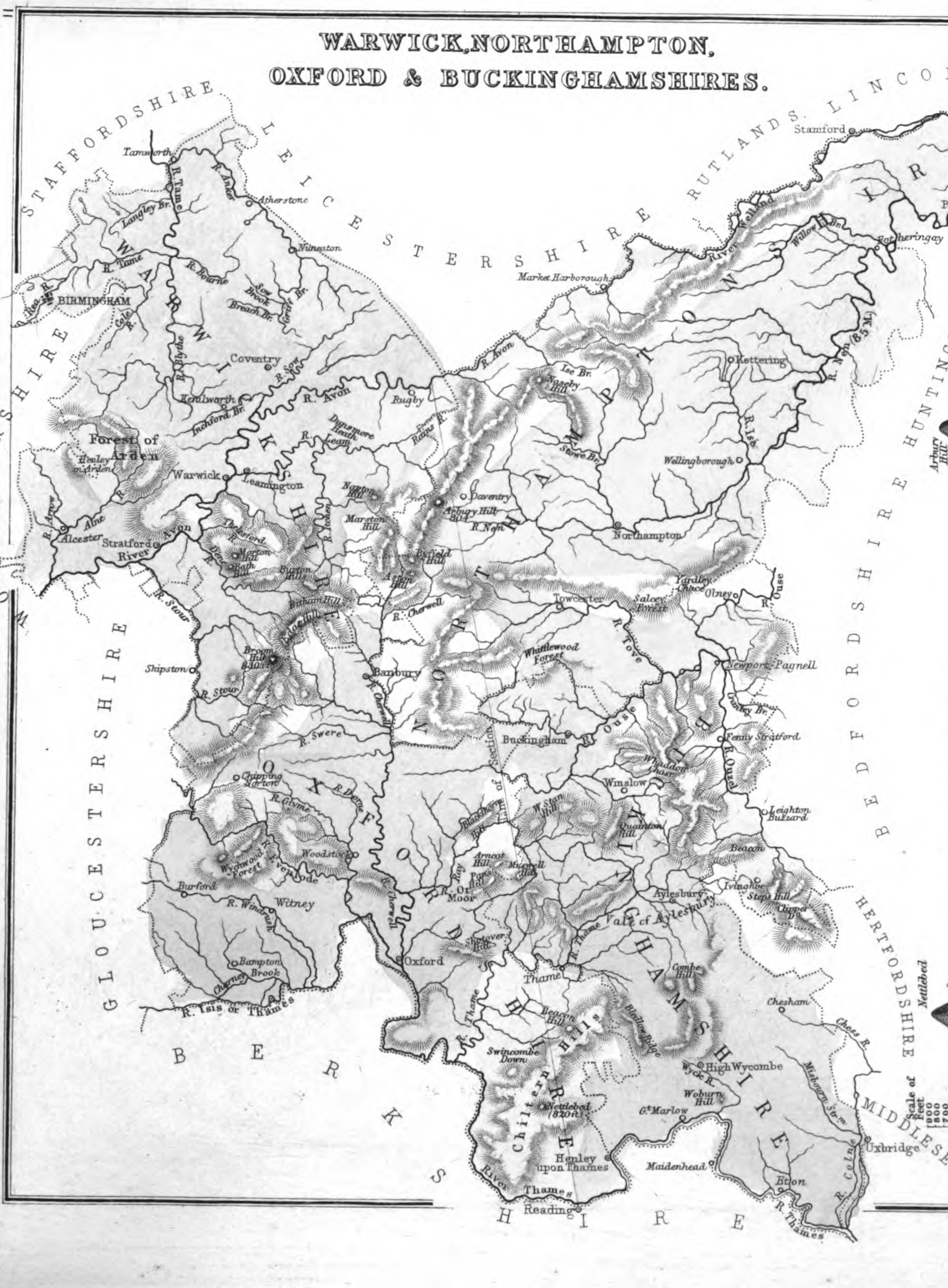


LINCOLNSHI
YORKSHIRE
River Humber
Hull
Barton upon Humber
The Wolds
Gr. Grimsby
Spurn Head
Donna Hook
Saltfleet
Judd R.
Louth
Old Gout
Ingolmell
Gibraltar
Old R. Don
River Trent (180 M.)
R. Eau
R. Ancholme
Line of Section
The Heights or Lincolnshire Heights
The Moors
Gainsborough
R. Till
Lincoln
Langworth R.
R. Bain
Horncastle
Steeping R.
River Witham (75 M.)
Boston
Boston Deeps
R. Witham
R. Brant
R. Slea
Sleaford
Grantham
Fossdyke Wash
The Wash
Cross Keys Wash
Spalding
R. Welland (60 M.)
R. Glen
The Fens
Stamford
NOTTINGHAMSHIRE
LEICESTERSHIRE
RUTLAND
CAMBRIDGESHIRE
NORF
NOR
S
Scale of Feet
500
400
300
200
100
The Wolds
Lincoln
The Moors
R. Witham

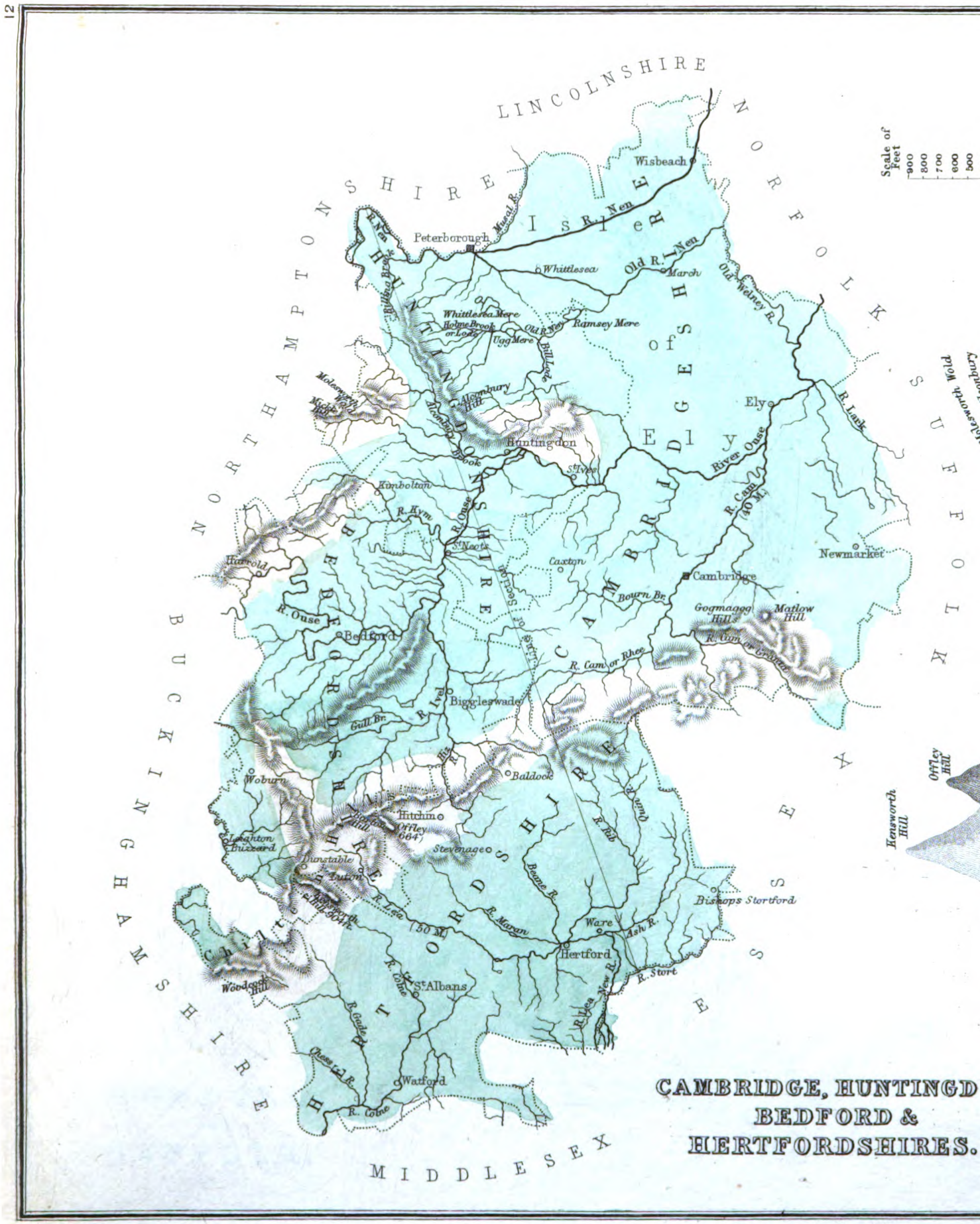

DERBY, NOTTINGHAM, LEICESTER & RUTLAND
YORKSHIRE
SHEFFIELD
STAFFORDSHIRE
WARWICKSHIRE
LINCOLNSHIRE
NORTHAMPTONSHIRE
High Peak
DERBYSHIRE
NOTTINGHAMSHIRE
LEICESTERSHIRE
RUTLAND
Scale of Feet
2000
1600
1200
Blackdew Stones
Source of the Derwent
Barrow Stones
Kinderscout
Castleton
Peakhill
Buxton
River Wye
Bakewell
R. Lathkill
Ax Edge
1756 F.S.
Masson Hill
Matlock
Dovedale
River Dove
Ashbourn
R. Derwent
R. Amber
R. Ivonbrook
R. Shear
R. Rother
R. Erewash
Chesterfield
Worksop
R. Idle
East Retford
R. Trent (BOM)
R. Poulter
R. Meden
R. Maun
Tuxford
Vicar Br.
Sherwood Forest
Mansfield
Rainworth Wr
R. Greet
Newark
Dover B.
Cocker B.
Nottingham
Car Dyke
R. Witham
R. Trent
Line of Section
Derby
R. Dove 45 M.
R. Soar
Loughborough
R. Smite
Melton Mowbray
Charnwood Forest
Bardon Hill 909 F.
R. Wreake
R. Mease
R. Sence
Market Bosworth
Leicester
Oakham
R. Gwash
Billesdon Br.
Eye Br.
R. Welland
R. Avon
Bardon Hill
Mam Tor
The Peak
Kinderscout
Ax Edge

CHESHIRE, SHROPSHI
& STAFFORDSHIR
LANCASHIRE
DERBYSH
CHESHIRE
SHROPSHIRE
STAFFORDSHIRE
WALES
WORCESTERSH.
HEREFORDSH.
WARWICK
LIVERPOOL
CHESTER
SHREWSBURY
New Brighton
Birkenhead
Bidston Hill
Mt. Kirby
Thurstaston Hill
Heswell Hill
The Ender
R. Mersey
R. Dee
R. Weaver
R. Gowy
Warrington
Runcorn
Northwich
Winsham Br.
Sinderland Br.
R. Mersey (70 M.)
Altringham
Stockport
Stalybridge
R. Etherow
R. Bollin
R. Dean
Peover Eye
Macclesfield
Macclesfield Forest
Cheeks Hill
Crow Br.
R. Dane
R. Croco
Congleton
Congleton Edge
R. Wheelock
Back Forest
Longnor
R. Dove
R. Manifold
Leek
R. Churnet
Weaver Hills
Cheadle
Tean Brook
Uttoxeter
Tarporley
Ash Br.
Peckforton Hill
Crewe
Nantwich
Malpas
R. Dee (90 M.)
R. Ceiriog
Shell Br.
Ellesmere Town & Mere
Wem
Market Drayton
R. Tern
Oswestry
R. Morda
Llanymynech Hill
R. Vyrnwy
R. Severn
R. Perry
Marton Pool
Fennymere Pool
R. Roden
Newcastle
Stoke
R. Trent
Stone
Meese Br.
Eccleshall
R. Sow
Stafford
R. Meass
Aqualate Mere
Strine R.
R. Blythe
Abbots Bromley
Coulter Hills
Burton on Trent
Rugeley
Cannock Chase
R. Penk
Shore Hill
Lichfield
R. Tame
Tamworth
Raddle Br.
Meole Br.
Cound Br.
The Wrekin (1320 ft.)
Shiffnal
Aston Hill
Marton Hill
Red Br.
Stapeley Hill
Shelve Hill
Stiper Stones
Caer Caradoc
Cardington Hill
Wenlock
Wenlock Edge
R. Worf
Bridgenorth
Abbots Castle Hill
Wolverhampton
Walsall
Wednesbury
Dudley
Timmins Hill
Birmingham
Heath Mynd
Bishops Castle
The Long Mynd
R. Onny
Clun Forest
Black Mtn
R. Clun
Hoptons Hill
Stow Hill
R. Teme
Clun R.
Ludlow
Corve R.
Corve Dale
Brown Clee Hill 1806 ft
Titterstone Hill
Tinkers Hill
Borle Br.
R. Stour
R. Severn


HEREFORD, MONMOUTH, WORCESTER, & GLOUCESTERSHIRES.
Scale of Feet
2000
1600
1200
800
400
Broadway Hill
Bredon Hill
Cotswold Hills
Malvern Hills
R. Severn
Doward Hill
R. Wye
SHROPSHIRE
RADNORSHIRE
BRECKNOCKSHIRE
GLAMORGANSH
WARWICKSHIRE
OXFORDSHIRE
WORCESTERSHIRE
HEREFORDSHIRE
GLOUCESTERSHIRE
MONMOUTHSHIRE
Clent Hills
Stourbridge
Kidderminster
Stourport
Droitwich
Worcester
Lickey Hills
R. Rea
R. Stour
R. Avon
Evesham
Vale of Evesham
Bredon Hill
Broadway Hill 1086
Malvern Hills
Herefordshire Beacon 1444
Ledbury
Abberley Hills
River Teme
River Severn
Bromyard
Mocktree Hill
Totteredge Hill
Clun R.
Deerfold
R. Lugg
Croft Ambrey
Wapley Hill
Mortimers Cross
Pinsley Br.
Leominster
R. Arrow
Hergest Ridge
Tippets Br.
Robin Hoods Butts
Dinmore Hill
Canon Pyon
Wormsley Hill
Credenhill
Hereford
Aylstone Hill
R. Frome
Golden Valley
R. Dore
Black Mount. or Hatterel Hills
Cusop Hill
Aconbury Hill
Dinedor Hill
Ross
May Hill
Huntly Hill
Alney
Gloucester
Cheltenham
Churchdown Hill
Tewkesbury
Langley Hill
Moreton in the Marsh
Stow on the Wold
R. Evenlode
R. Windrush
River Coln
R. Leche
R. Churn
Cirencester
Lechlade
R. Isis or Thames
Forest of Dean
Doward Hill
Monmouth
R. Monnow
R. Trothy
River Wye
Sugar Loaf 1852
Skirrid Fawr
Blorenge 1720
R. Usk
Usk
Olwy R.
Mynydd Maen
Caerleon
Newport
Chepstow
Wentwood
Ebbw R.
R. Rumney
Mouth of the Severn
Vale of Berkeley
Berkeley
R. Avon
R. Stroud
Stroud
Daniels Br.
Twiver R.
Cotswold Hills

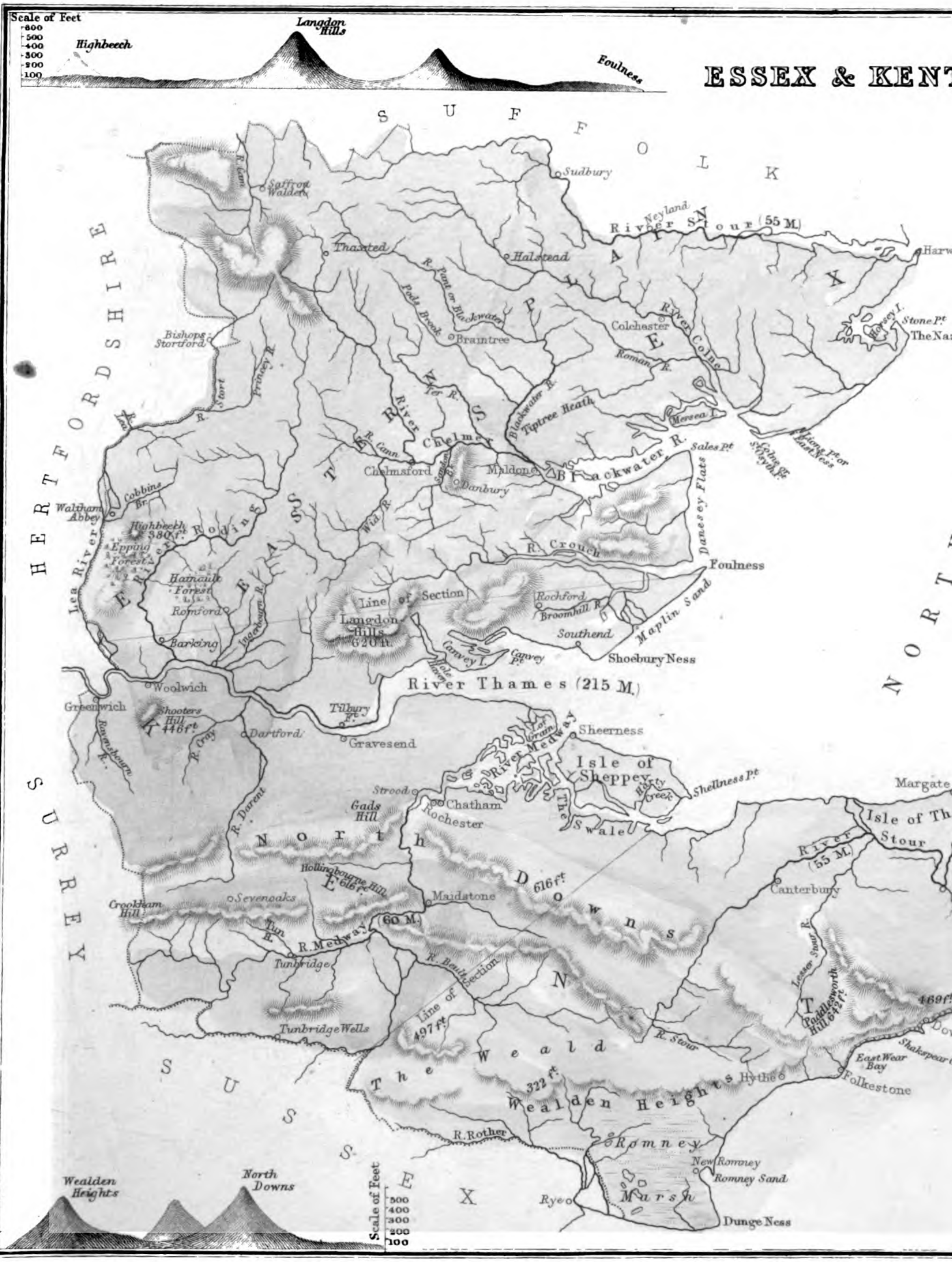


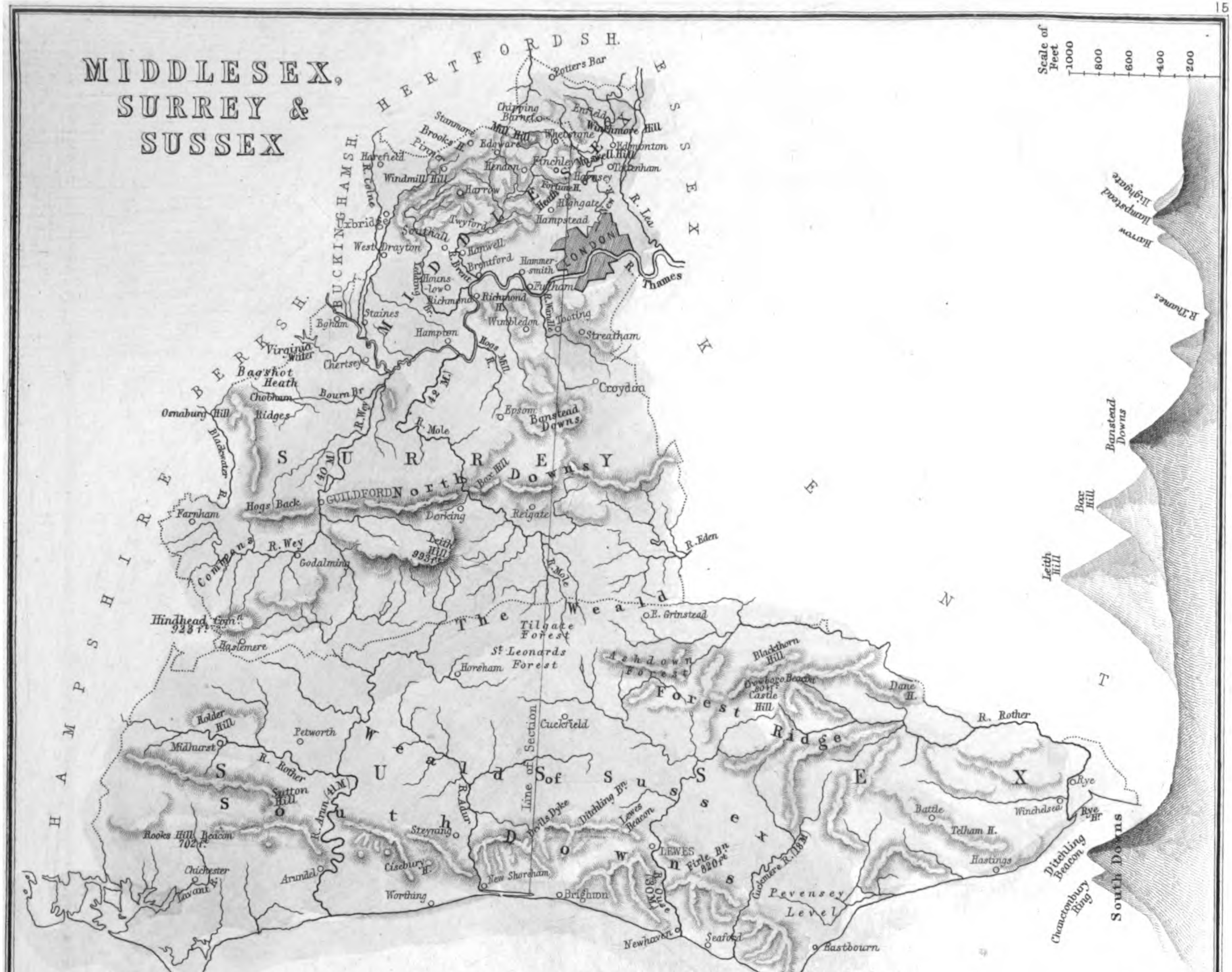
WARWICK, NORTHAMPTON, OXFORD & BUCKINGHAMSHIRES.
STAFFORDSHIRE
LEICESTERSHIRE
RUTLANDS.
WORCESTERSHIRE
GLOUCESTERSHIRE
BERKSHIRE
BEDFORDSHIRE
HERTFORDSHIRE
WARWICKSHIRE
NORTHAMPTONSHIRE
OXFORDSHIRE
BUCKINGHAMSHIRE
Tamworth
R. Tame
R. Anker
Atherstone
Langley Br.
Nuneaton
R. Tame
R. Bourne
BIRMINGHAM
Sow Brook
Breach Br.
Coventry
R. Blythe
R. Sow
Kenilworth
R. Avon
Rugby
Forest of Arden
Henley in Arden
Warwick
Leamington
Dunsmore Heath
Naseby Hill
Ise Br.
Kettering
Wellingborough
Daventry
Arbury Hill 804
R. Nen
Northampton
Alcester
Stratford
Avon River
Alne
R. Arrow
R. Stour
Shipston
Broom Hill 840 ft.
R. Stour
Banbury
R. Cherwell
Towcester
Whittlewood Forest
Salcey Forest
Yardley Chace
Olney
R. Ouse
Newport Pagnell
Buckingham
Fenny Stratford
Whaddon Chase
Winslow
Leighton Buzzard
R. Swere
Chipping Norton
R. Glyme
Woodstock
Wychwood Forest
Burford
R. Windrush
Witney
Ot Moor
Quainton Hill
Aylesbury
Vale of Aylesbury
Ivinghoe
Beacon
Oxford
Shotover Hill
Thame
R. Thame
Bampton
Cherney Brook
R. Isis or Thames
Combe Hill
Chesham
Beacon Hill
Swincombe Down
Chiltern Hills
Nettlebed (820 ft.)
High Wycombe
Wycombe R.
Woburn Hill
Gt. Marlow
Henley upon Thames
Maidenhead
River Thames
Reading
Eton
R. Colne
Uxbridge
R. Thames
Stamford
Market Harborough
River Welland
Fotheringay
Section

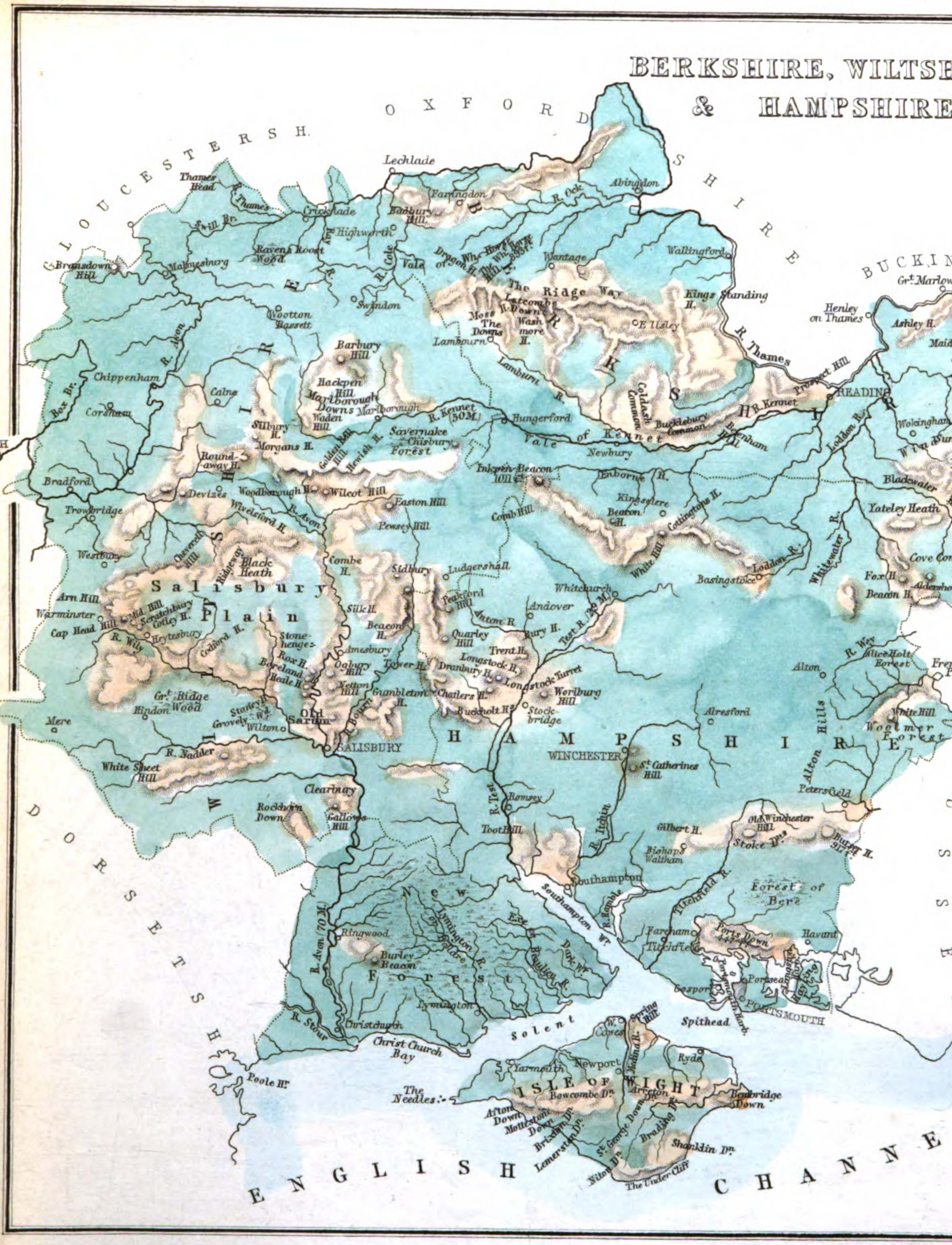


CAMBRIDGE, HUNTINGD BEDFORD & HERTFORDSHIRES.

NORFOLK AND SUFFOLK.

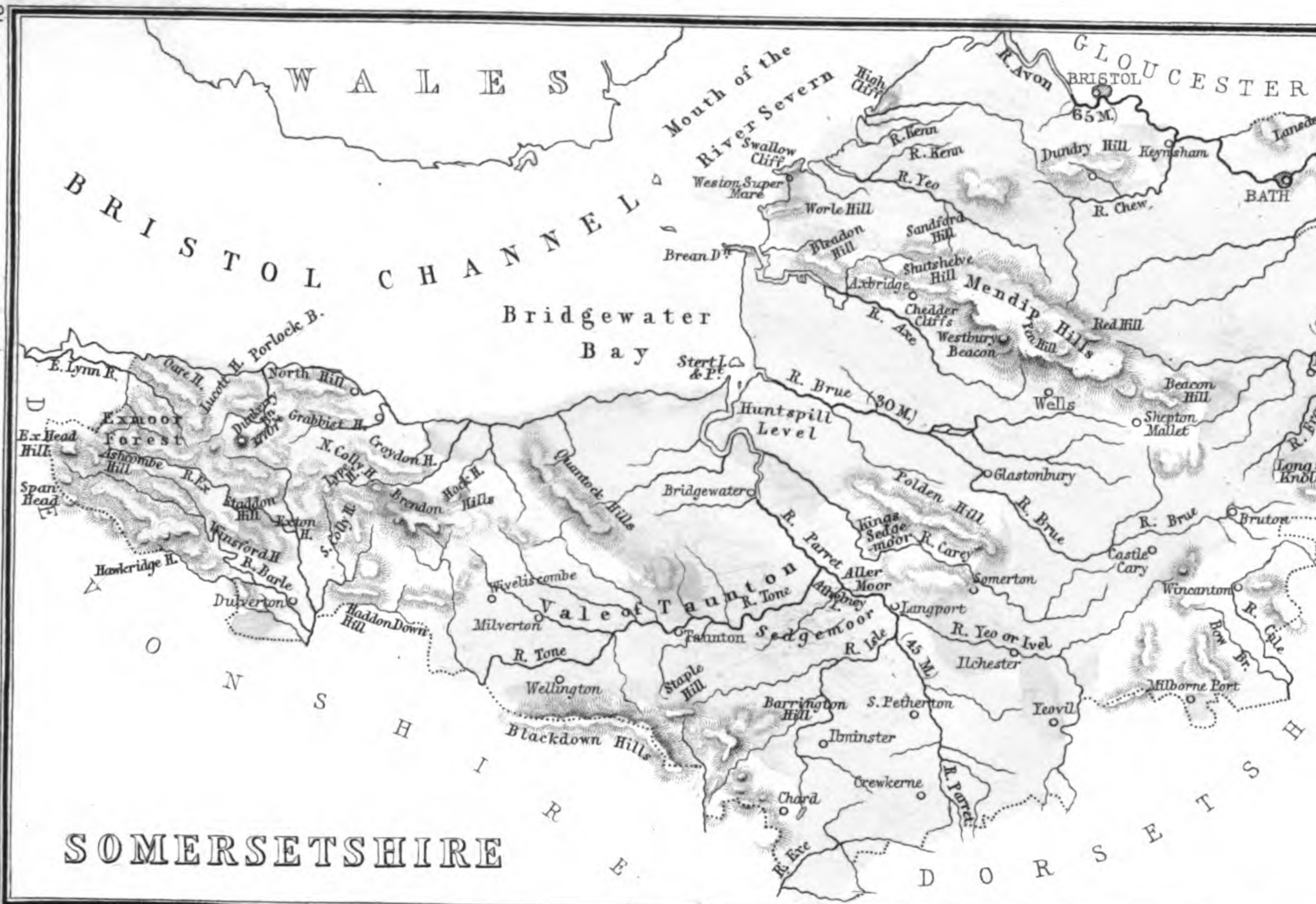

ESSEX & KENT
Scale of Feet
600
500
400
300
200
100
Highbeech
Langdon Hills
Foulness
SUFFOLK
HERTFORDSHIRE
ESSEX
KENT
SURREY
SUSSEX
Saffron Walden
Sudbury
River Stour (55 M.)
Neyland
Harw
Thaxted
Halstead
R. Cam
R. Pant or Blackwater
Pods Brook
Braintree
Colchester
River Colne
Roman R.
Stone Pt
Bishops Stortford
Stort R.
Ter R.
Blackwater R.
Tiptree Heath
Mersea I.
River Chelmer
R. Cann
Chelmsford
Maldon
Danbury
Blackwater R.
Sales Pt
Waltham Abbey
Cobbins Br.
Highbeech 380 ft.
Epping Forest
River Roding
Wid R.
Dansey Flats
R. Crouch
Foulness
Lea River
Hainault Forest
Romford
Line of Section
Langdon Hills 620 ft.
Rochford
Broomhill R.
Maplin Sand
Southend
Barking
Ingerbourn R.
Canvey I.
Shoebury Ness
River Thames (215 M.)
Woolwich
Greenwich
Shooters Hill 446 ft.
Tilbury Ft.
Dartford
Gravesend
R. Cray
Ravensbourne R.
Isle of Grain
River Medway
Sheerness
Isle of Sheppey
Shellness Pt
Margate
Strood
Chatham
Rochester
Gads Hill
The Swale
R. Darent
North Downs
Isle of Th
River Stour (55 M.)
Canterbury
Hollingbourne Hill 616 ft.
616 ft.
Maidstone
Crockham Hill
Sevenoaks
(60 M.)
R. Medway
Tunbridge
R. Beult
Line of Section
Lesser Stour R.
Paddlesworth Hill 642 ft.
469 ft.
Tunbridge Wells
497 ft.
The Weald
R. Stour
East Wear Bay
Hythe
Folkestone
322 ft.
Wealden Heights
R. Rother
Romney Marsh
New Romney
Romney Sand
Rye
Dunge Ness
Wealden Heights
North Downs
Scale of Feet
500
400
300
200
100


MIDDLESEX,
SURREY &
SUSSEX
HERTFORDSH.
ESSEX
BUCKINGHAMSH.
BERKSH.
HAMPSHIRE
KENT
MIDDLESEX
SURREY
SUSSEX
Potters Bar
Chipping Barnet
Enfield
Winchmore Hill
Edmonton
Tottenham
Stanmore
Mill Hill
Whetstone
Brooks H.
Pinner
Edgware
Hendon
Finchley
Muswell Hill
Harefield
Windmill Hill
Harrow
Fortune H.
Hornsey
Highgate
Hampstead
R. Colne
R. Lea
Uxbridge
Southall
Twyford
LONDON
R. Thames
West Drayton
Hanwell
Brentford
Hammersmith
Fulham
R. Brent
Hounslow
Richmond
Teddington
Staines
Egham
Wimbledon
Tooting
Streatham
R. Wandle
Hampton
Virginia Water
Chertsey
Hogs Mill R.
(42 M.)
Bagshot Heath
Bourn Br.
Chobham Ridges
Croydon
Epsom
Banstead Downs
Omnabury Hill
R. Mole
R. Wey
Blackwater R.
(40 M.)
North Downs
Box Hill
GUILDFORD
Hogs Back
Farnham
Dorking
Reigate
Leith Hill 993 ft.
R. Wey
Commons
Godalming
R. Eden
R. Mole
The Weald
E. Grinstead
Hindhead Comn. 923 ft.
Tilgate Forest
Haslemere
St. Leonards Forest
Horeham
Ashdown Forest
Blackthorn Hill
Crowboro Beacon 804 ft.
Castle Hill
Forest Ridge
Dane H.
R. Rother
Cuckfield
Rolder Hill
Petworth
Midhurst
Weald of Sussex
R. Rother
Sutton Hill
Line of Section
R. Arun (41 M.)
R. Adur
Devils Dyke
Ditchling Bn.
Lewes Beacon
South Downs
Rye
Battle
Winchelsea
Rye Hr.
Telham H.
Rooks Hill Beacon 702 ft.
Steyning
LEWES
Firle Bn. 820 ft.
Cuckmere R. (18 M.)
Hastings
Chichester
Lavant R.
Arundel
Cisbury H.
New Shoreham
Brighton
Pevensey Level
R. Ouse (30 M.)
Worthing
Newhaven
Seaford
Eastbourn
Scale of Feet
1000
800
600
400
200
Highgate
Hampstead
Harrow
R. Thames
Banstead Downs
Box Hill
Leith Hill
South Downs
Ditchling Beacon
Chanctonbury Ring

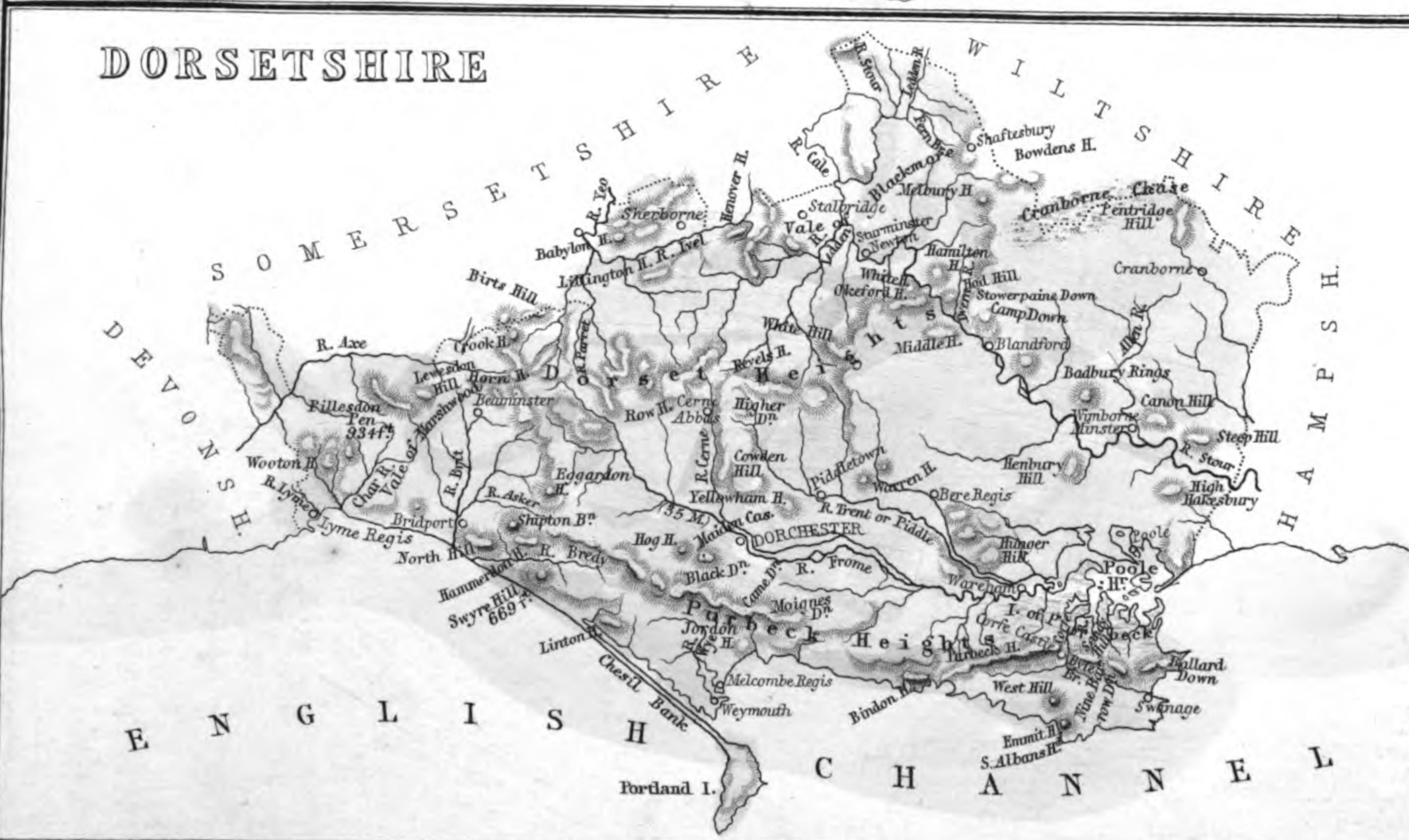


BERKSHIRE, WILTSE
& HAMPSHIRE
OXFORD
GLOUCESTERSH.
SHIRE
BUCKIN
DORSETSHI
ENGLISH CHANNE
Lechlade
Thames Head
Abingdon
Wallingford
Wantage
Highworth
Cricklade
Malmesbury
Swindon
Wootton Bassett
Chippenham
Corsham
Calne
Marlborough
Hungerford
Newbury
Lambourn
Kings Standing
Henley on Thames
READING
Vale of Kennet
Savernake Forest
Devizes
Bradford
Trowbridge
Westbury
Warminster
Salisbury Plain
Pewsey Hill
Easton Hill
Ludgershall
Andover
Whitchurch
Basingstoke
Kingsclere
Inkpen Beacon
Stonehenge
Amesbury
Old Sarum
SALISBURY
Wilton
Mere
Stockbridge
WINCHESTER
St. Catherines Hill
Alresford
Alton
Romsey
Southampton
Bishops Waltham
Fareham
Titchfield
Havant
Gosport
PORTSMOUTH
Spithead
Ringwood
Burley Beacon
New Forest
Lymington
Christchurch
Christ Church Bay
Poole Hr.
Solent
Southampton Wr.
Forest of Bere
Ports Down
ISLE OF WIGHT
Newport
Yarmouth
Ryde
W. Cowes
The Needles
Arreton
Bowcombe Dn.
Shanklin Dn.
Brading
Bembridge Down
The Under Cliff
H A M P S H I R E
R. Thames
R. Kennet
R. Avon
R. Test
R. Itchin
R. Stour

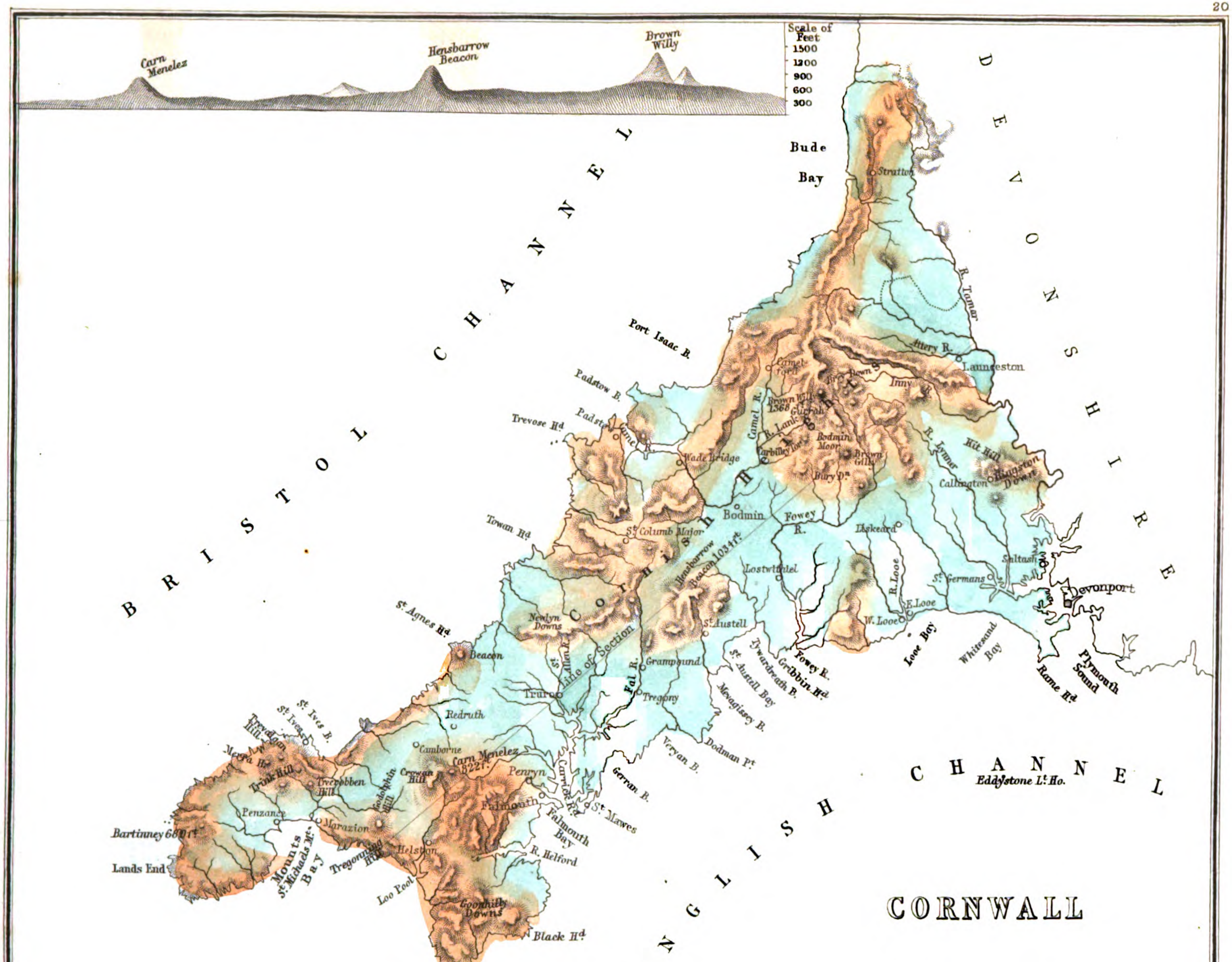
18


SOMERSETSHIRE
WALES
BRISTOL CHANNEL
Mouth of the River Severn
GLOUCESTER
BRISTOL
R. Avon
(65 M.)
High Cliff
Swallow Cliff
Weston Super Mare
R. Kenn
R. Yeo
Dundry Hill
Keynsham
BATH
R. Chew
Worle Hill
Bleadon Hill
Sandford Hill
Brean Dn.
Shutshelve Hill
Axbridge
Mendip Hills
Cheddar Cliffs
R. Axe
Westbury Beacon
Red Hill
Bridgewater Bay
Stert I. & Pt.
R. Brue
(30 M.)
Wells
Beacon Hill
Shepton Mallet
Huntspill Level
E. Lynn R.
Porlock B.
Oare H.
Lucott H.
North Hill
Exmoor Forest
Grabbist H.
Croydon H.
Ex Head Hill
Ashcombe Hill
Span Head
R. Ex
Haddon Hill
Brendon Hills
Quantock Hills
Bridgewater
Glastonbury
Polden Hill
R. Brue
Bruton
Winsford H.
R. Barle
Hawkridge H.
Dulverton
Kings Sedge moor
R. Carey
R. Parret
Aller Moor
Castle Cary
Somerton
Wivelis combe
Vale of Taunton
R. Tone
Taunton
Langport
Wincanton
Milverton
Haddon Down Hill
Sedgemoor
R. Yeo or Ivel
R. Isle
(45 M.)
Ilchester
R. Tone
Wellington
Staple Hill
Barrington Hill
S. Petherton
Yeovil
Milborne Port
Blackdown Hills
Ilminster
Crewkerne
R. Parret
Chard
R. Exe
DEVONSHIRE
DORSETSH

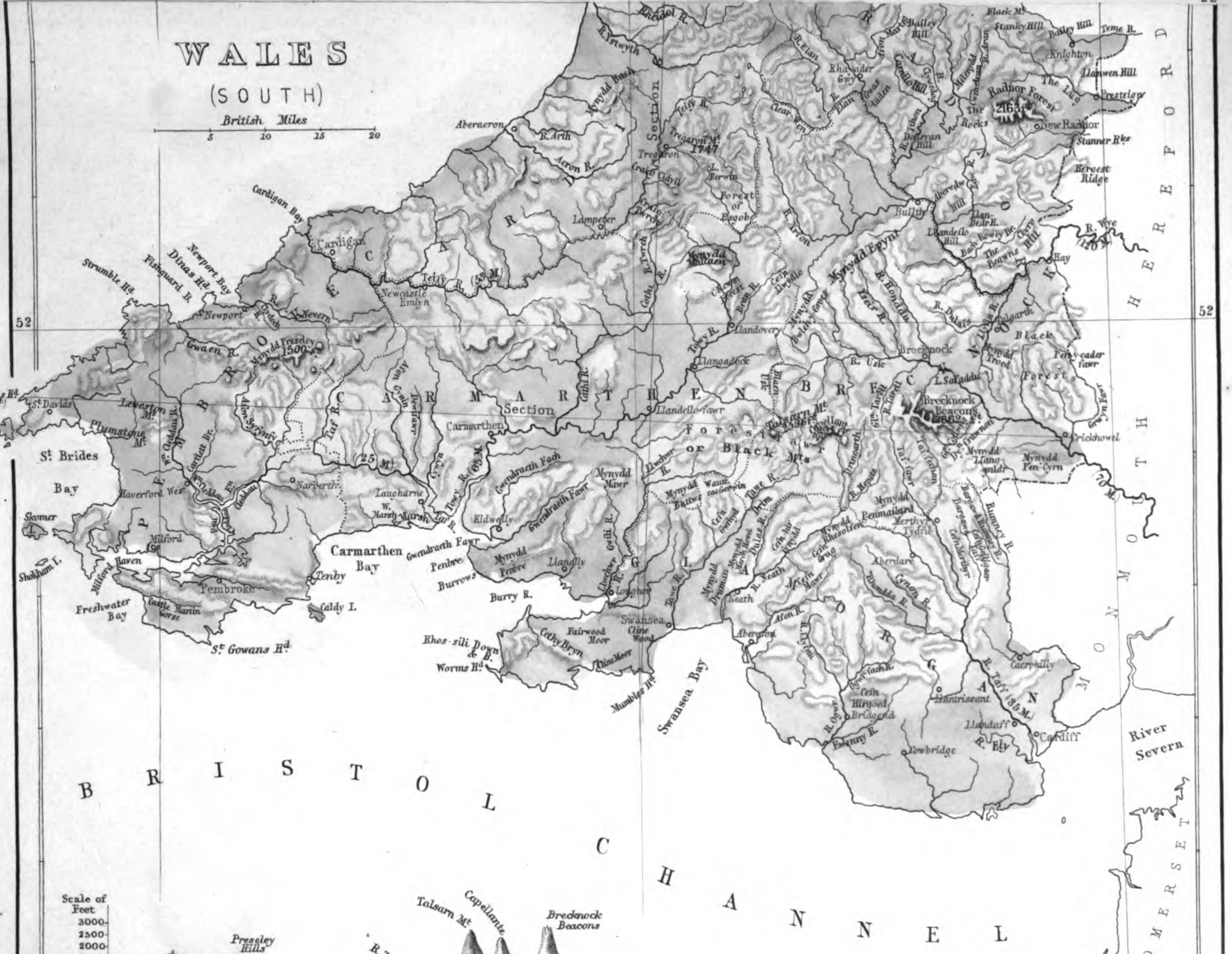
17


DORSETSHIRE
SOMERSETSHIRE
WILTSHIRE
HAMPSH.
DEVONSH.
R. Stour
Shaftesbury
Bowdens H.
R. Cale
Blackmore
Melbury H.
Cranborne Chase
Pentridge Hill
Stalbridge
Sherborne
Hanover H.
Babylon H.
R. Yeo
Vale
Sturminster Newton
Lillington H.
R. Ivel
Hamilton H.
Cranborne
Birts Hill
Whitell
Okeford H.
Hod Hill
Stowerpaine Down
Camp Down
R. Axe
Crook H.
Middle H.
Blandford
Lewsdon Hill
Horn H.
Dorset Heights
Badbury Rings
Pillesdon Pen 934 ft.
Beaminster
Row H.
Cerne Abbas
Higher Dn.
Wimborne Minster
Canon Hill
Steep Hill
R. Stour
Wooton H.
Char H.
Vale of Marshwood
R. Brit
Eggardon H.
Cowden Hill
Piddletown
Warren H.
Henbury Hill
R. Lyme
R. Asker
Yellowham H.
Bere Regis
High Hakesbury
Lyme Regis
Bridport
Shipton Bn.
(35 M.)
Maiden Cas.
DORCHESTER
R. Trent or Piddle
North Hill
R. Bredy
Hog H.
R. Frome
Hunger Hill
Poole
Poole Hr.
Hammerdon H.
Black Dn.
Wareham
Swyre Hill 669 ft.
Moignes Dn.
I. of P.
Purbeck Heights
Corfe Castle
Linton H.
Jordon H.
Purbeck H.
Ballard Down
Chesil Bank
Melcombe Regis
Bindon H.
West Hill
Weymouth
Swanage
Emmit H.
S. Albans Hd.
Portland I.
ENGLISH CHANNEL

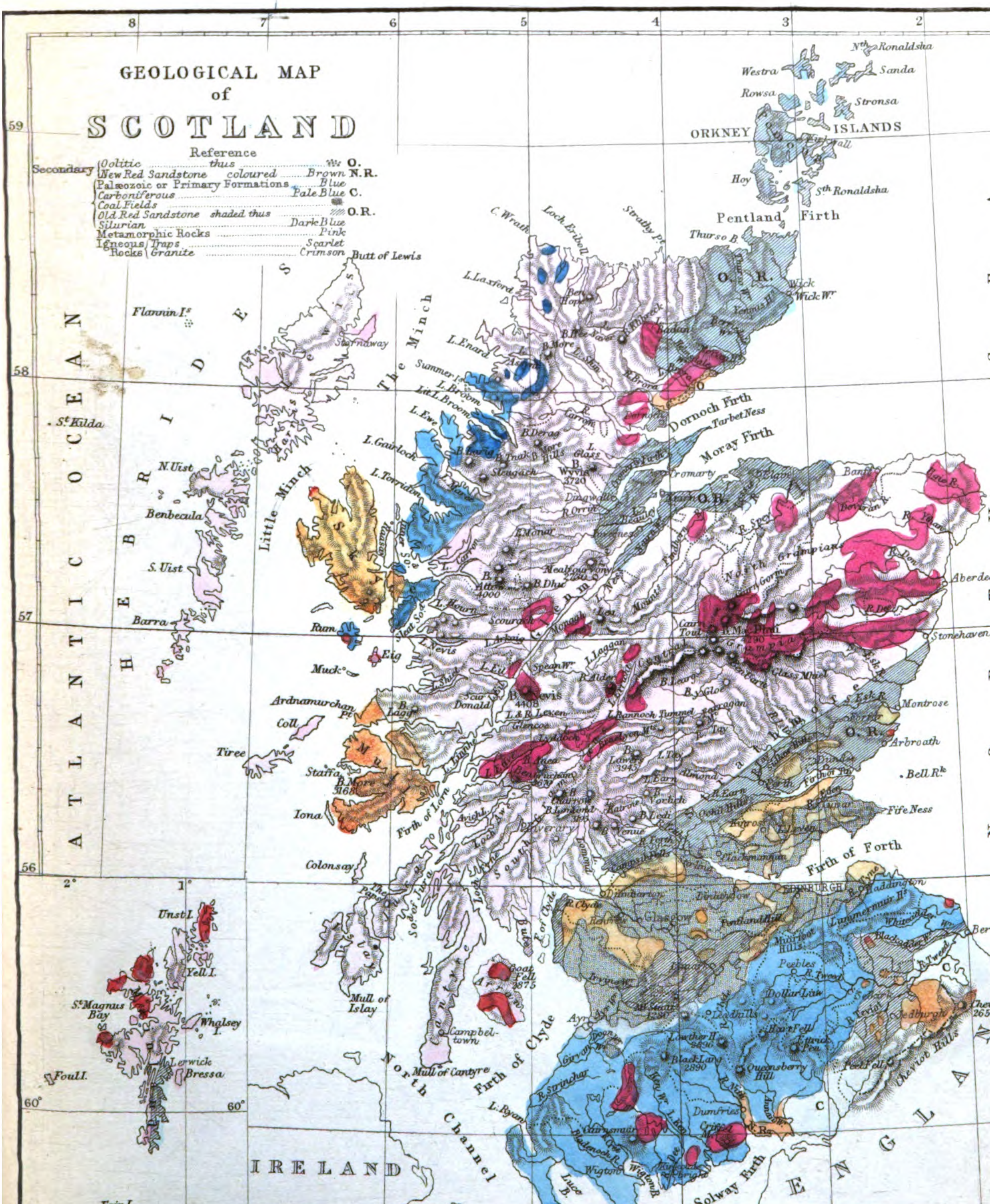

DEVONSHIRE
BRISTOL CHANNEL
Lundy I.
Barnstaple or Bideford Bay
Hartland P.
Baggy Pt.
Ilfracombe
Hangman Hill
Combe Martin
Dare Oak H.
Exmoor
SOMERSETSHIRE
R. Ex (55 M.)
Dunns Br.
R. Barle
Bratton Down
Northmolton Ridge
Molland Down
Anstey's H.
Barnstaple
Beacon Hill
R. Taw
South Molton
R. Mole
Yeo R.
Blastridge Hill
R. Taw (48 M.)
Bideford
R. Torridge
Torrington
Hartland
Bampton
Little Dart R.
Chulmleigh
Tiverton
Collumpton
R. Ex
Black Down Hills
Hackpen H.
Castle Hill
Black Dn.
R. Otter
Combe Rawleigh Hill
Honiton
Yart R.
R. Axe
Axminster
Hawksdown Hill
Beer Hd.
Gittesham Hill
Ottery St. Mary
Beacon Hill
Salcombe H.
Peak H.
Sidmouth
Rockbere Hill
Aylesbere Hill
Ottery H.
Black Hill
Woodbury Hill
Topsham
Exmouth
EXETER
Culm R.
Section
Crediton
R. Taw
Okement R.
Hatherleigh
Broad Bury
Waytord Wr.
R. Carey
Holsworthy
R. Tamar (55 M.)
Waldon R.
R. Torridge
Okehampton
Black Dn.
Cawsand Beacon 1792 ft.
Watern Tor
Yes Tor
Longstone H.
Thistle Br.
Lew Water
Lyd R.
Fur Tor
E. Dart R.
Okement H.
Hartland Hill
Meripit Hill
Black Stannon Hill Down
Dartmoor Forest
Cocks H.
Gt. Mis Tor
R. Tavy
Nth. Hessary Tor
W. Dart R.
Hamilton Down
Hey Tor
Rippon Tor 1549 ft.
Buckland Bn.
Answell Rk.
R. Teign (30 M.)
Gt. Haldon
Little Haldon
Teignmouth
Tavistock
R. Tamar
Morwell Down
Walkcombe R.
Holne Ridge 1785 ft.
Ashburton
Ringmoor Dn.
Shell Tor
Pen Beacon
Ugborough Beacon
Crown Hill Down
R. Plym
Western Br.
Avon R.
R. Dart (30 M.)
Totness
Milber Down
West Hill
Torquay
Hopes Nose
Tor Bay
Berry Hd.
Furland Hill
Dartmouth
Black Down
Modbury
Kingsbridge
R. Yealm
R. Erme
Plymouth
Devonport
Rame Hd.
Bigbury B.
Bolt Tail
Start B.
CORNWALL
ENGLISH CHANNEL
Blackdown Hills
R. Axe
Rippon Tor
Cawsand Beacon
Yes Tor
Shell Tor
Pen Beacon
Dartmoor


Carn Menelez
Hensbarrow Beacon
Brown Willy
Scale of Feet
1500
1200
900
600
300
Bude Bay
DEVONSHIRE
BRISTOL CHANNEL
ENGLISH CHANNEL
Port Isaac B.
Padstow B.
Padstow
Trevose Hd.
Towan Hd.
St. Agnes Hd.
Beacon
Stratton
R. Tamar
Attery R.
Launceston
Inny
Camelford
Brown Willy 1368
Camel R.
R. Lank
Bodmin Moor
Brown Gilly
Bury Dn.
R. Lynher
Kit Hill
Hingston Down
Callington
Wade Bridge
St. Columb Major
Bodmin
Fowey R.
Liskeard
Saltash
St. Germans
Devonport
Plymouth Sound
Rame Hd.
Whitesand Bay
Looe Bay
R. Looe
E. Looe
W. Looe
Lostwithiel
Fowey R.
Gribbin Hd.
Tywardreath B.
St. Austell Bay
St. Austell
Mevagissey B.
Hensbarrow Beacon 1034 ft.
Cornish Heights
Line of Section
Newlyn Downs
St. Allen R.
Fal R.
Grampound
Tregony
Truro
Dodman Pt.
Veryan B.
Gerran B.
St. Mawes
Carrick Rd.
Falmouth Bay
Falmouth
Penryn
R. Helford
Redruth
Camborne
Carn Menelez 822 ft.
Crowan Hill
Godolphin Hill
Tregonning Hill
Helston
Loo Pool
Goonhilly Downs
Black Hd.
Marazion
Mounts Bay
St. Michaels Mt.
Trecrobben Hill
Penzance
St. Ives
St. Ives B.
Trevalgan Hill
Mevra Hd.
Trink Hill
Bartinney 689 ft.
Lands End
Eddystone Lt. Ho.
CORNWALL

21
IRISH SEA
Liverpool Bay
LANCASHIRE
CHESHIRE
SHROPSHIRE
R. Mersey (70M)
Mth. of R. Dee
FLINT
DENBIGH
CARNARVON
ANGLESEA
MERIONETH
MONTGOMERY
CARNARVON BAY
CARDIGAN
WALES
Holy Id.
Holyhead
Holyhead Mt.
The Skerries
Amlwch
Beaumaris
Puffin I.
Menai Strait (17 M.)
Gt. Ormes Hd. 676 ft.
Llandudno
Conway
Bangor
Carnarvon
Snowdon 3571 ft.
Moel Siabod 2878 ft.
Mynydd Hiraethog
Denbigh
St. Asaph
Rhyddlan
Holywell
Flint
Mold
Ruthin
Caergwrle
Wrexham
Holt
Llangollen
Corwen
Bala
Bala L.
Arenig
Moelwyn 2390
Tremadoc
Criccieth
Pwllheli
Nevin
Bardsey I.
St. Tudwals Is.
Porth Nigel or Hells Mouth
Harlech
Barmouth
R. Maw
Dolgelly
Cader Idris 2914 ft.
Aran Fowddwy 2955 ft.
Dinas Mowddwy
Machynlleth
Llanfyllin
Llanrhaiadr-yn-Mochnant
Montgomery
Corndon Hill
Newtown
R. Severn
R. Dee
R. Conway
R. Clwyd
Berwyn Mts.
Scale of Feet
4000
3500
3000
2500
2000
1500
1000
500
Gt. Ormes Hd.
R. Conway
Carnd. Llewelyn
C. Dafydd
Moel Siabod
Snowdon
Moelwyn
Rhinog fawr
Cader Idris
Plinlimmon
Tregaron Mt.
Forest Fawr
Talsarn Mt.
Capellante


WALES
(SOUTH)
British Miles
5 10 15 20
BRISTOL CHANNEL
Cardigan Bay
St Brides Bay
Carmarthen Bay
Swansea Bay
River Severn
Newport Bay
Fishguard B.
Strumble Hd.
St Davids Hd. (100 ft)
Ramsey I.
Skomer I.
Freshwater Bay
St Gowans Hd.
Caldy I.
Worms Hd.
Mumbles Hd.
Aberaeron
Cardigan
Newcastle Emlyn
Lampeter
Tregaron
Carmarthen
Llandovery
Llangadock
Llandeilo-fawr
Brecknock
Builth
Hay
Crickhowel
New Radnor
Knighton
Presteign
Haverford West
Milford
Pembroke
Tenby
Narberth
Laugharne
Kidwelly
Llanelly
Swansea
Neath
Aberavon
Bridgend
Cowbridge
Llantrissant
Llandaff
Cardiff
Caerphilly
Merthyr Tydfil
Aberdare
Radnor Forest
Forest Fawr or Black Mts
Brecknock Beacons
Mynydd Presely 1500 ft
Tregaron Mt 1747
Section
Scale of Feet
3000
2500
2000
Presely Hills
Talsarn Mt
Capellante
Brecknock Beacons
52
H E R E F O R D
M O N M O U T H
S O M E R S E T


PHYSICAL MAP
of
SCOTLAND
ORKNEY ISLANDS
Westra
Sanda
Rowsa
Stronsa
Hoy
Sth Ronaldsha
Pentland Firth
C. Wrath
Loch Eriboll
Butt of Lewis
Flannin Is.
The Minch
L. Laxford
L. Enard
Summer Is.
L. Broom
L. Ewe
L. Gairloch
L. Torridon
Little Minch
St. Kilda
N. Uist
Benbecula
S. Uist
Barra
Rum
Eig
Muck
Ardnamurchan Pt.
Coll
Tiree
Staffa
Iona
Colonsay
Firth of Lorn
ATLANTIC OCEAN
HEBRIDES
Dornoch Firth
Tarbet Ness
Moray Firth
Cromarty
Dingwall
Inverness
Elgin
Banff
Grampians
B. Macdhui 4296
B. Nevis 4406
B. Wyvis 3720
Glen More
Montrose
Arbroath
Dundee
Perth
Firth of Tay
Bell Rk.
Fife Ness
Cupar
Firth of Forth
EDINBURGH
Linlithgow
Glasgow
Renfrew
Dumbarton
Stirling
Lanark
Peebles
Pentland Hills
Firth of Clyde
Mull of Cantyre
Campbeltown
Mull of Islay
Irvine Wr.
Ayr
Girvan Wr.
Black Larg 2890
Dumfries
Criffel
Wigton
Kirkcudbright
Solway Firth
Luce B.
Mull of Galloway
L. Ryan
North Channel
IRELAND
ENGLAND
Unst I.
Yell I.
St. Magnus Bay
Whalsey I.
Bressa
Foul I.
Fair I.


GEOLOGICAL MAP
of
SCOTLAND
Reference
Secondary Oolitic thus O.
New Red Sandstone coloured Brown N.R.
Palæozoic or Primary Formations Blue
Carboniferous Pale Blue C.
Coal Fields
Old Red Sandstone shaded thus O.R.
Silurian Dark Blue
Metamorphic Rocks Pink
Igneous Traps Scarlet
Rocks Granite Crimson
ATLANTIC OCEAN
HEBRIDES
ORKNEY ISLANDS
Westra
Rowsa
Hoy
Sanda
Stronsa
Sth Ronaldsha
Pentland Firth
Thurso B.
Wick
C. Wrath
Loch Eriboll
Strathy Pt
Butt of Lewis
Flannin Is
St Kilda
N. Uist
Benbecula
S. Uist
Barra
Little Minch
The Minch
L. Laxford
L. Enard
L. Ewe
L. Gairloch
L. Torridon
Dornoch Firth
Tarbet Ness
Moray Firth
Cromarty
Banff
Aberdeen
Stonehaven
Montrose
Arbroath
Bell Rk
Fife Ness
Firth of Forth
EDINBURGH
Glasgow
Pentland Hills
Peebles
Dumfries
Solway Firth
Ayr
Girvan
Wigton
Campbeltown
Mull of Cantyre
Mull of Islay
Mull Galloway
North Channel
Firth of Clyde
Firth of Lorn
Rum
Eig
Muck
Coll
Tiree
Staffa
Iona
Colonsay
Ardnamurchan Pt
B. Nevis 4406
Glencoe
Grampians
Unst I.
Yell I.
St Magnus Bay
Whalsey I.
Lerwick
Bressa
Foul I.
Fair I.
IRELAND
ENGLAND
Jedburgh
Cheviot Hills
Lammermuir Hs
Queensberry Hill
Black Larg 2890
Goat Fell 2875
Moray Firth
59
58
57
56
60°
2°
1°
8
7
6
5
4
3
2


PHYSICAL MAP
of
IRELAND
ATLANTIC OCEAN
North Channel
ST GEORGES CHANNEL
Great or Central Plain
Tory I.
Rathlin I.
Giants Causeway
Arran I.
Coleraine
Londonderry
L. Foyle
L. Swilly
Sperrin Mts
R. Moyola
L. Neagh
Belfast
Divis 1508
R. Finn
Donegal
Telin Hd
Donegal B.
L. Derg
Blackwater R.
Armagh
Monaghan
R. Bann
Downpatrick
Mourne Mts
Donard 2796
Dundalk
Dundalk B.
Carlingford L.
Broad Haven
Killala B.
Sligo B.
Sligo
Ballina
Blacksod B.
Croghan 2222
Achill I.
Clare I.
Clew B.
Croagh Patrick
Innisturk
Innisbofin
L. Carra
L. Mask
L. Corrib
Connemara
Slyne Hd.
Galway
Galway Bay
Gorumna I.
Is of Arran
Carrick on Shannon
L. Oughter
Cavan
Annalee R.
L. Gowna
L. Shelin
R. Camlin
Longford
L. Ramor
R. Boyne
Drogheda
Trim
Tara Hill
Lambay I.
DUBLIN
Hill of Howth
Dublin B.
R. Liffey
L. Owel
Mullingar
L. Ennel
Athlone
Roscommon
R. Suck
R. Shannon
R. Brosna
Tullamore
Bog of Allen
Kildare
Maryborough
Slieve Bloom Mts
Wicklow
Carlow
Ovoca R.
R. Owenavorragh
Kilkenny
R. Barrow
Nore
Wexford
Wexford Hr.
Carnsore Pt.
Saltee
Hook Pt.
Waterford
Waterford Hr.
Tipperary
Clonmel
Galty Mts
3008
Knockmeledown Mts
Dungarvan
Dungarvan Hr.
R. Blackwater
Nagles Mts
R. Bride
Youghal Hr.
Cork
R. Lee
Cork Hr.
R. Bandon
Kinsale
Old Hd of Kinsale
Galley Hd.
C. Clear
Long Id. Bay
Dunmanus B.
Bantry Bay
Kenmare R.
Killarney
The Paps
Boggra Mt.
Dingle B.
Slievemish
Tralee
Tralee Bay
Brandon Mt.
Brandon 3126
Loop Hd.
R. Shannon
Limerick
R. Maigue
Camoge R.
Ennis
Sl. Callan
Arra Mts
Silver Mine Mts
Loughrea
Slieve Baughta
St. George
10
9
8
7
6
55
54
53
52


GEOLOGICAL MAP
of
IRELAND
Reference
Secondary New Red Sandstone coloured Brown N.R.
Palæozoic or Primary Formations Blue
Carboniferous Pale Blue
Coal Fields
Old Red Sandstone shaded thus O.R.
Silurian Dark Blue
Metamorphic Rocks Pink
Igneous Traps Scarlet
Rocks Granite Crimson
ATLANTIC OCEAN
ST GEORGE'S CHANNEL
North Channel
Tory I.
Arran I.
Giants Causeway
Rathlin I.
Londonderry
Lifford
Sperrin Mts
Donegal B.
Donegal
Telin Hd
Broad Haven
Killala B.
Sligo B.
Sligo
Monaghan
Armagh
L. Neagh
Belfast
Downpatrick
Dundalk B.
Achill I.
Clew B.
Clare I.
Innisturk
Innisbofin
Croagh Patrick Mt
L. Mask
L. Carra
Roscommon
Longford
Cavan
Carrick on Shannon
Drogheda
Tara Hill
L. Owel
Mullingar
L. Ennel
Athlone
Great Central Plain
DUBLIN
Dublin B.
Hill of Howth
Lambay I.
Bog of Allen
Tullamore
Kildare
Maryborough
Wicklow
Avoca R.
Galway
Galway Bay
Slyne Hd
Gorumna I.
Is of Arran
Loughrea
St. Callan
Ennis
Loop Hd
R. Shannon
Limerick
Tipperary
Kilkenny
Clonmel
Waterford
Wexford
Wexford Hr
Carnsore Pt
Saltee Is
Tralee Bay
Dingle B.
Valentia I.
Killarney
Kenmare R.
Bantry Bay
Cork
Cork Hr
Youghal Hr
Waterford Hr
Old Hd of Kinsale
C. Clear
O. R.
55
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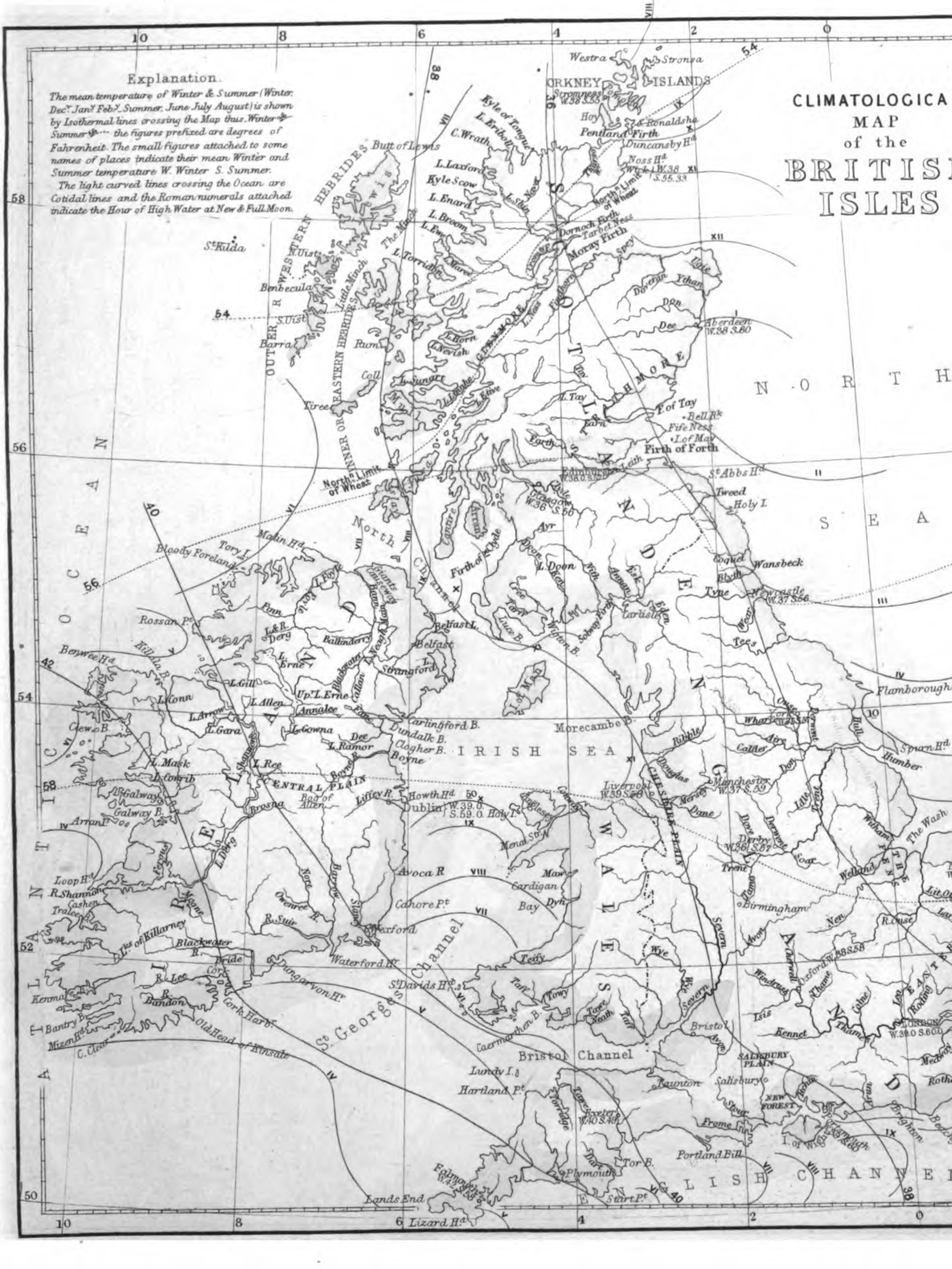
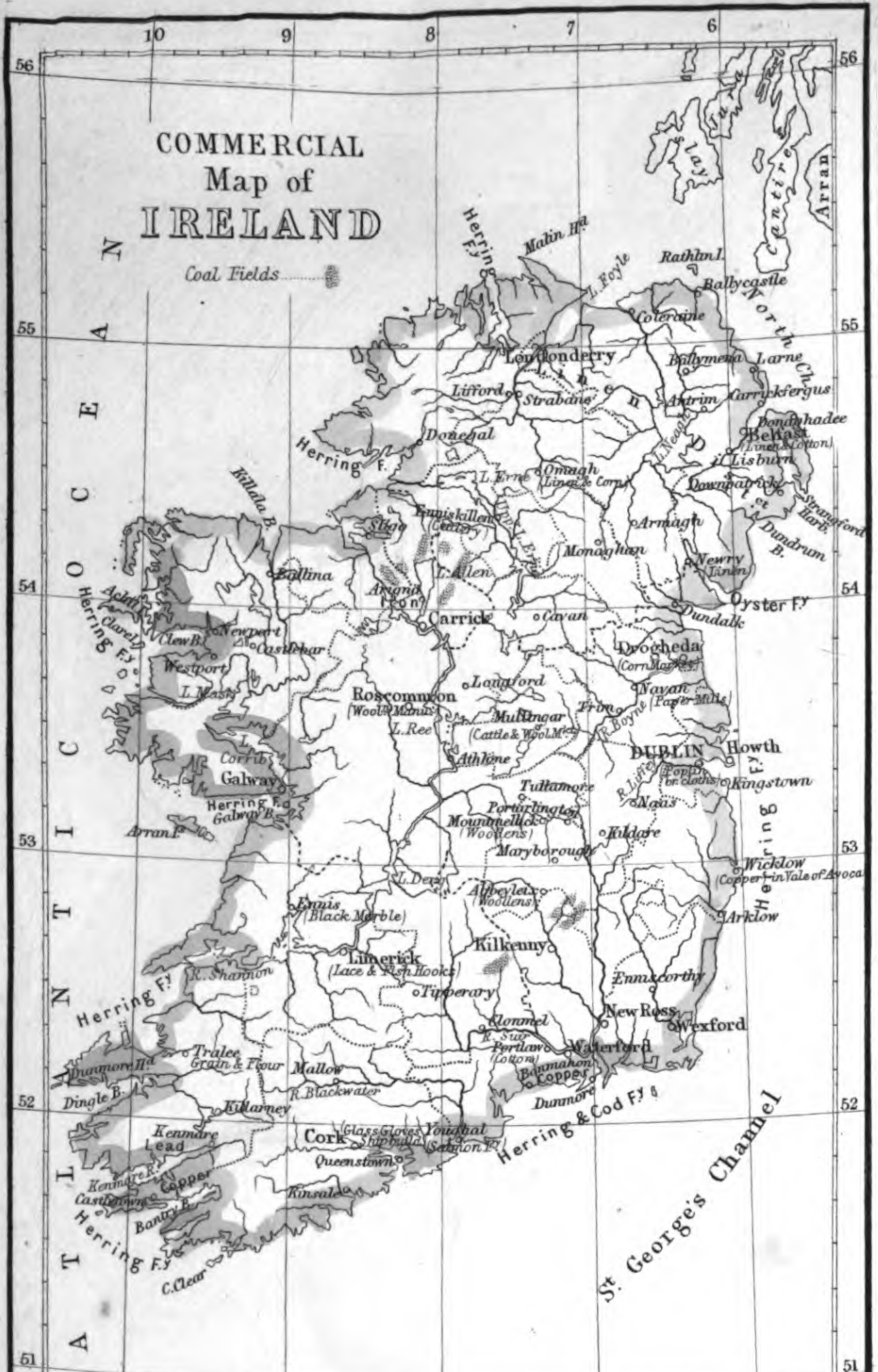
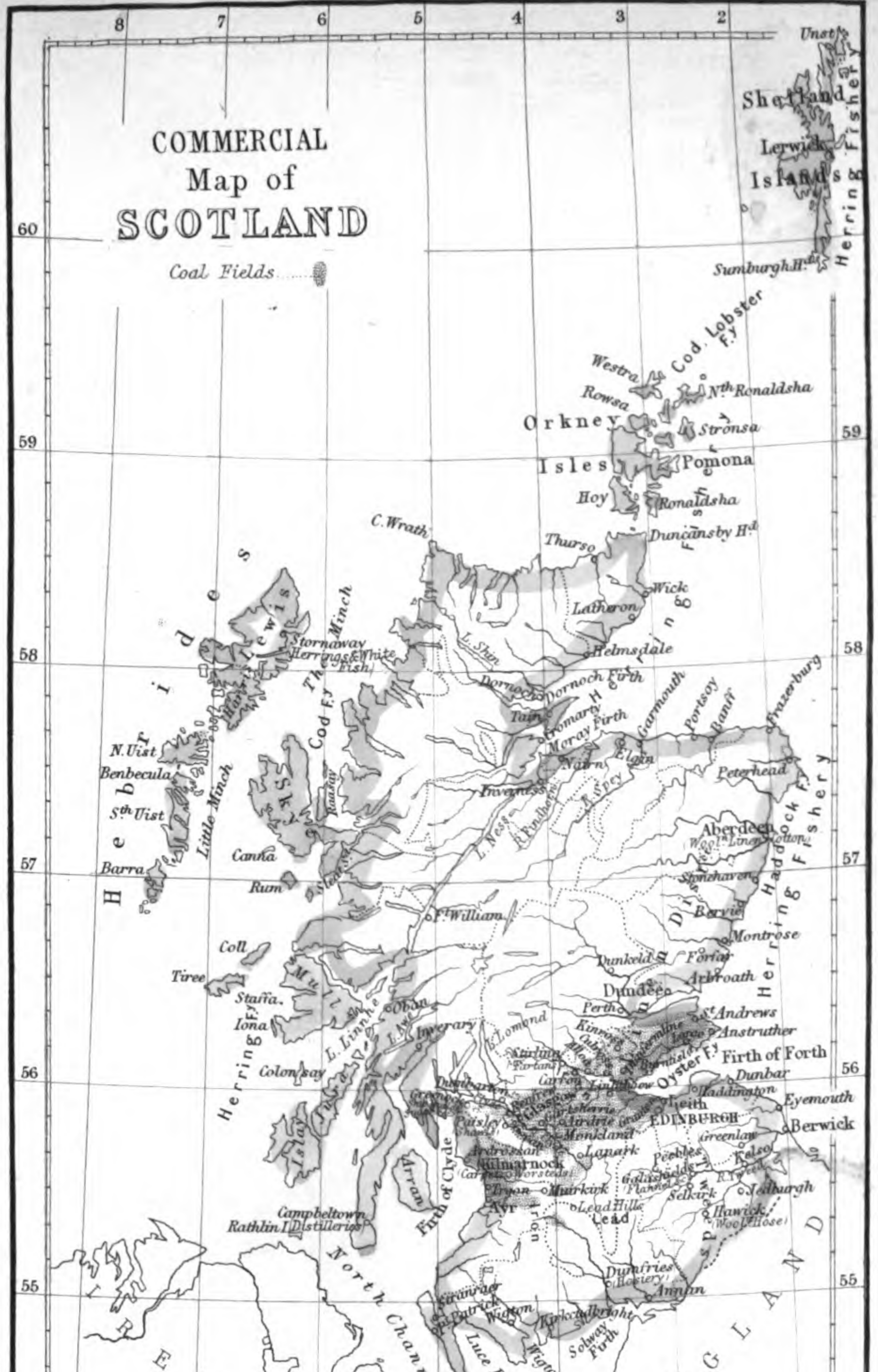

CLIMATOLOGICA
MAP
of the
BRITIS
ISLES
Explanation.
The mean temperature of Winter & Summer (Winter Decr. Janr. Feby. Summer, June July August) is shown by Isothermal lines crossing the Map thus. Winter — Summer ---- the figures prefixed are degrees of Fahrenheit. The small figures attached to some names of places indicate their mean Winter and Summer temperature W. Winter S. Summer.
The light curved lines crossing the Ocean are Cotidal lines and the Roman numerals attached indicate the Hour of High Water at New & Full Moon.
ATLANTIC OCEAN
NORTH SEA
IRISH SEA
ENGLISH CHANNEL
St. George's Channel
Bristol Channel
North Channel
ORKNEY ISLANDS
OUTER OR WESTERN HEBRIDES
INNER OR EASTERN HEBRIDES
SCOTLAND
IRELAND
ENGLAND
WALES
CENTRAL PLAIN
CHESHIRE PLAIN
SALISBURY PLAIN
NEW FOREST
Northn. Limit of Wheat
Moray Firth
Firth of Forth
Firth of Clyde
Pentland Firth
Aberdeen
Edinburgh
Glasgow
Newcastle
Liverpool
Manchester
Birmingham
Dublin
Belfast
Bristol
Plymouth
London
Morecambe B.
Lands End
Lizard Hd.
St. Kilda
Lundy I.
Portland Bill
Flamborough


COMMERCIAL MAP
of
ENGLAND & WAL
Showing the Localities of th
PRINCIPAL MANUFACTURES
MINES, FISHERIES &c.
Coal Fields
SCOTLAND
IRELAND
North Channel
IRISH SEA
St. Georges Channel
Cardigan Bay
Bristol Channel
ENGLISH CHANNEL
NORT
SE
Mackerel Fishery
Herring Fy.
Pilchard Fishery
Oyster Fy.
Solway Firth
Morecambe B.
I. of Man
Anglesey
Liverpool
Manchester
Leeds
Sheffield
Birmingham
Nottingham
Derby
Leicester
Coventry
Northampton
Oxford
Gloucester
Bristol
Swansea
Exeter
Southampton
Portsmouth
Reading
LONDON
Cambridge
Newcastle
Sunderland
Hartlepool
York
Hull
Lincoln
Carlisle
Kendal
Lancaster
Preston
Chester
Shrewsbury
Worcester
Hereford
Cardigan
Aberystwith
Bangor
Caernarvon
Douglas
Bath
Salisbury
Winchester
Lewes
Hastings
Brighton
Weymouth
I. of Wight
Plymouth
Lands End
Start Pt.
Tor B.
Lundy I.
Barnstaple
Taunton
Bridgewater
Cheltenham
Stratford
Warwick
Stafford
Lichfield
Walsall
Wolverhampton
Kidderminster
Stockport
Macclesfield
Halifax
Bradford
Rochdale
Blackburn
Wigan
Oldham
Barnsley
Doncaster
Gainsborough
Grantham
Boston
Peterborough
Huntingdon
Bedford
Luton
St. Albans
Hertford
Colchester
Chelmsford
Romford
Croydon
Maidstone
Guildford
Windsor
Wells
Kings Lynn
Wisbeach
Thetford
Ely
Whitby
Scarborough
Flamborough Hd.
Spurn Hd.
R. Humber
The Wash
Hornsea
Beverley
Selby
Ripon
Thirsk
Darlington
Stockton
Richmond
Appleby
Penrith
Keswick
Whitehaven
Alnwick
Holy I.
Tynemouth
Hexham
Allendale
Swansea
Cardiff
Merthyr Tydfil
Monmouth
Chepstow
Newport
Brecknock
Carmarthen
Tenby
Pembroke
Milford H.
St. Davids
Haverford West
Harlech
Dolgelly
Barmouth
Llangollen
Oswestry
Welshpool
Montgomery
Newtown
Llanidloes
Ludlow
Presteign
Leominster
New Radnor
Builth
Lampeter
Devizes
Frome
Trowbridge
Warminster
Westbury
Melksham
Calne
Marlborough
Newbury
Basingstoke
Andover
Farnham
Dorchester
Poole
Yeovil
Axminster
Honiton
Tiverton
Bideford
Launceston
Tavistock
Bodmin
Padstow
Truro
Redruth
Falmouth
Fowey
St. Austell
Mevagissey
St. Ives
Eddystone Lt. Ho.
Bill of Portland
Cowes
Newport
Lymington
Chichester
Worthing
Horsham
Petworth
Reigate
Tonbridge
Rye
Stroud
Gravesend
Sheerness
Rochester
Sudbury
Saffron Walden
Haverhill
Newmarket
Bury St. Edmunds
Norwich
Wymondham
Woburn
Dunstable
Aylesbury
Woodstock
Witney
Abingdon
Henley
Marlow
Uxbridge
Buckingham
Towcester
Wellingborough
Oundle
Oakham
Melton Mowbray
Loughborough
Hinckley
Burton
Stoke
Nantwich
Congleton
Bakewell
Glossop
Mansfield
Louth
Horncastle
Lincoln
G. Grimsby
Goole
Howden
Knaresborough
Pately Br.
Ripley
New Malton
Clitheroe
Fleetwood
Ormskirk
Bury
Bolton
Warrington
Runcorn
Northwich
Birkenhead
Holywell
Flint
Mold
Denbigh
Wrexham
Conway
Beaumaris
Gt. Ormes Hd.
Menai Str.
Braich-y-pwll
Walney I.
Ramsay
Wigton
Wigton B.
Luce B.
Workington
Ambleside
Alston Moor
Durham
Sunderland
Copper
Lead
Tin
Manganese
Zinc
Wool
Coal
Alum
Lobster Fy.


COMMERCIAL
Map of
IRELAND
Coal Fields
ATLANTIC OCEAN
St. George's Channel
North Ch.
DUBLIN
Belfast
Londonderry
Cork
Limerick
Galway
Waterford
Wexford
Kilkenny
Herring & Cod Fy
Herring Fy
Oyster Fy


COMMERCIAL
Map of
SCOTLAND
Coal Fields
Shetland Islands
Orkney Isles
Hebrides
EDINBURGH
Aberdeen
Dundee
Inverness
Firth of Forth
Firth of Clyde
North Channel
Herring Fishery
Cod Lobster Fy
Cod Fy