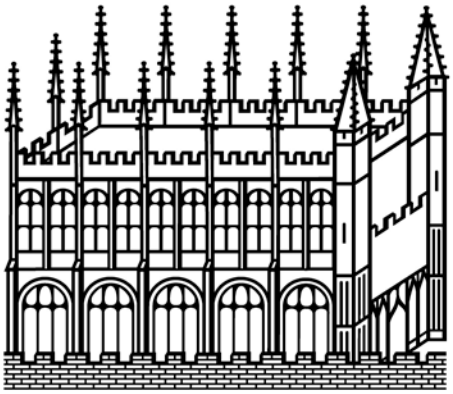


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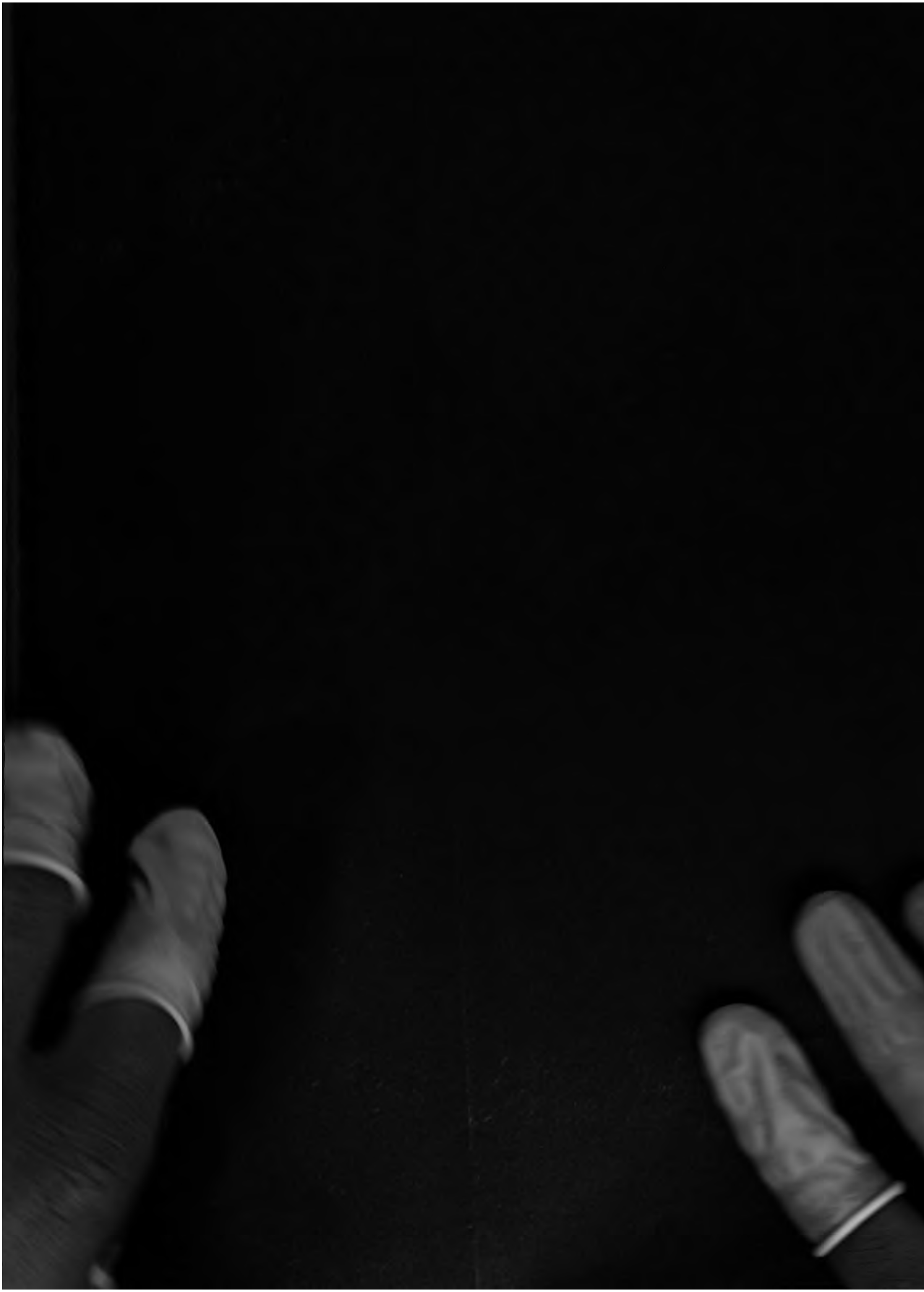


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An epitome of the reports of the medical officers to the Chinese ...


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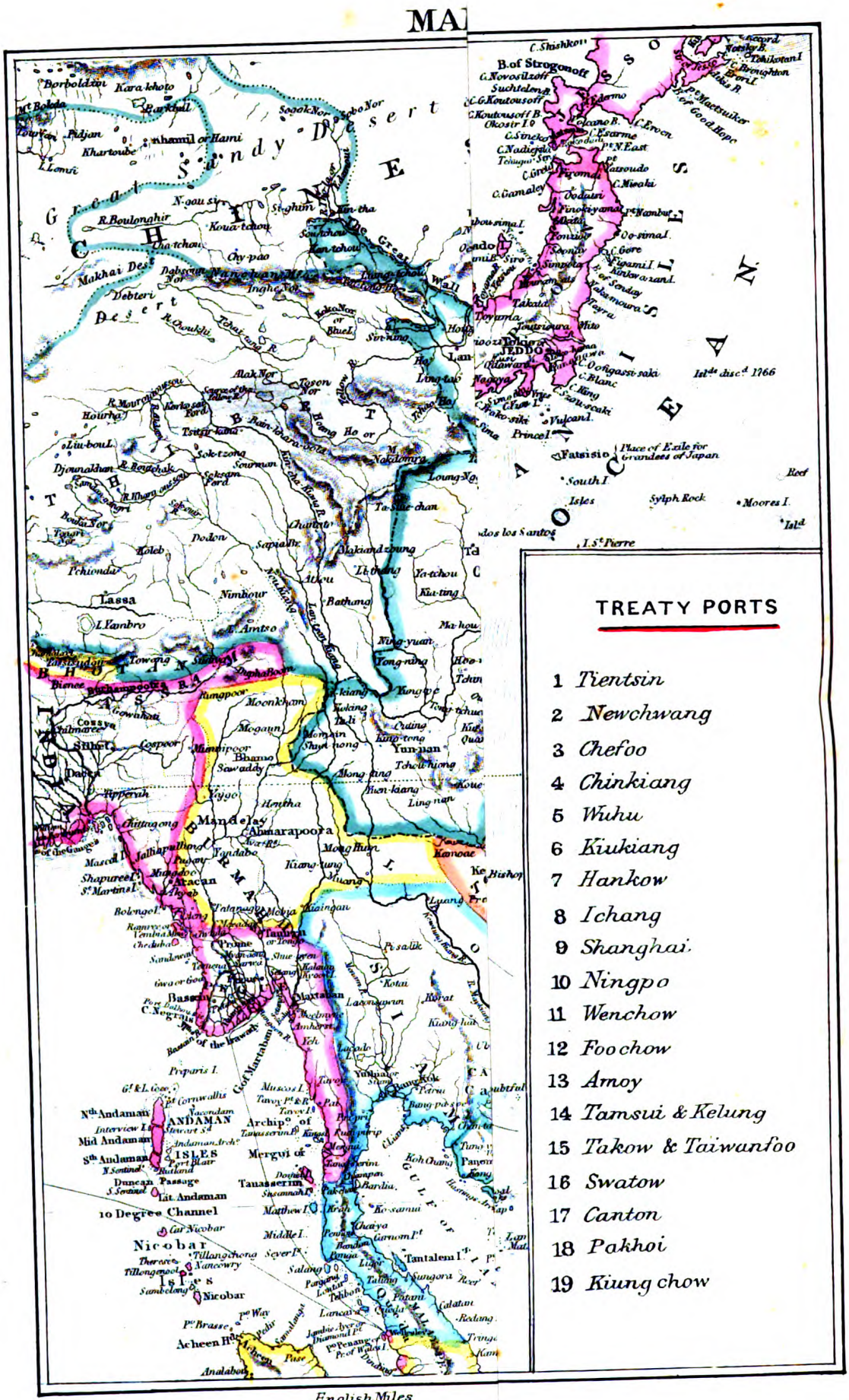



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AN EPITOME OF THE

REPORTS OF THE MEDICAL OFFICERS

TO THE

CHINESE IMPERIAL MARITIME CUSTOMS SERVICE,

FROM 1871 TO 1882.

WITH CHAPTERS ON THE HISTORY OF MEDICINE IN CHINA; MATERIA MEDICA; EPIDEMICS; FAMINE; ETHNOLOGY; AND CHRONOLOGY IN RELATION TO MEDICINE AND PUBLIC HEALTH.

Compiled and Arranged by

SURGEON-GENERAL C. A. GORDON, M.D., C.B.,

Honorary Physician to Her Majesty the Queen,

AUTHOR OF 'CHINA FROM A MEDICAL POINT OF VIEW,' 'OUR TRIP TO BURMAH,' 'EXPERIENCES OF A REGIMENTAL SURGEON IN INDIA,' 'LIFE ON THE GOLD COAST,' 'LESSONS IN HYGIENE AND SURGERY FROM THE FRANCO-PRUSSIAN WAR,' 'ARMY HYGIENE,' 'ARMY SURGEONS AND THEIR WORKS,' 'HYGIENE OF CHOLERA,' 'THE SOLDIER'S HANDBOOK OF SANITATION' 'THE FRENCH AND BRITISH SOLDIER,' ETC., ETC.



LONDON:

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This Volume is Inscribed

TO

SIR ROBERT HART, K.C.M.G.,

INSPECTOR-GENERAL OF CHINESE IMPERIAL MARITIME CUSTOMS,

IN APPRECIATION OF

THE ENLIGHTENED MEASURES INITIATED BY HIM IN DIRECTING THE

PREPARATION OF REPORTS BY MEDICAL OFFICERS

OF THE

CHINESE CUSTOMS SERVICE.

THE following is a list of gentlemen whose able contributions to the Reports of the Customs Service have furnished materials for the present volume, namely:—

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WHITE, R. G., L.S.A., M.R.C.S., Chiukiang.
WONG, Dr. F., Canton.

If in the above list any names have by mistake been omitted, I shall be very sorry. My desire is to give full credit to each and all the medical gentlemen whose reports I have endeavoured to give abstracts of; and with this view I have endeavoured also to give their several names in connection with individual extracts from those documents.

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INTRODUCTORY REMARKS.

THE publication of the Medical Reports, an epitome of which is given in the following pages, was, in the first instance, suggested by Dr. Jamieson, of Shanghai, to Sir Robert Hart, the Inspector-General of Chinese Imperial Maritime Customs; and the instructions, formulated by Dr. Jamieson, relative to the arrangement to be followed in the preparation of those reports, and also for their periodical publication, were embodied by Sir Robert Hart in a circular addressed by him to the Commissioners of Customs at the Treaty Ports, dated Peking, 31st December, 1870, of which the following is a copy, namely:—

'1.—It has been suggested to me that it would be well to take advantage of the circumstances in which the Customs Establishment is placed, to procure information with regard to disease amongst foreigners and natives in China; and I have, in consequence, come to the resolution of publishing half-yearly, in collected form, all that may be obtainable. If carried out to the extent hoped for, the scheme may prove highly useful to the Medical Profession both in China and at home, and to the public generally. I therefore look with confidence to the co-operation of the Customs Medical Officer at your port, and rely on his assisting me in this matter by framing a half-yearly report containing the result of his observations at ..... upon the local peculiarities of disease, and upon diseases rarely or never encountered out of China. The facts brought forward and the opinions expressed will be arranged and published, either with or without the name of the physician responsible for them, just as he may desire.

'2.—The suggestions of the Customs Medical Officers of the various ports as to the points which it would be well to have especially elucidated, will be of great value in the framing of a form which will save trouble to those members of the Medical Profession, whether connected with the Customs or not, who will join in carrying out the plan proposed. Meanwhile I would particularly invite attention to—

'*a*.—The general health of ..... during the period reported on; the death-rate amongst foreigners; and, as far as possible, a classification of the causes of death.

'*b*.—Diseases prevalent at .....

'*c*.—General type of disease; peculiarities and complications encountered; special treatment demanded.

'*d*.—Relation of disease to { Season. / Alteration in local condition—such as drainage, etc. / Alteration in climatic conditions.

'*e*.—Peculiar diseases; especially leprosy.

'*f*.—Epidemics { Absence or presence. / Causes. / Course and treatment. / Fatality.

Other points, of a general or special kind, will naturally suggest themselves to medical men; what I have above called attention to, will serve to fix the general scope of the undertaking. I have committed to Dr. Alex. Jamieson, of Shanghai, the charge of arranging the reports for publication, so that they may be made available in a convenient form.

'3.—Considering the number of places at which the Customs Inspectorate has established offices, the thousands of miles north and south and east and west over which these offices are scattered, the varieties of climate, and the peculiar conditions to which, under such different circumstances, life and health are subjected, I believe the Inspectorate, aided by its Medical Officers, can do good service in the general interest in the direction indicated; and, as already stated, I rely with confidence on the support and assistance of the Medical Officer at each port in the furtherance and perfecting of this scheme. You will hand a copy of this Circular to Dr. ....., and request him, in my name, to hand to you in future, for transmission to myself, half-yearly reports of the kind required, for the half-years ending 31st March and 30th September—that is, for the Winter and Summer seasons.'

The enumeration of the subjects to be noticed is sufficient to indicate the extent of ground to be thus included, and also the importance attached to the several points by the Inspector-General.

The manner in which the instructions have been carried out reflects the highest credit on the Medical Officers and on the Service to which they are attached, whilst to themselves as members of the Medical Profession, the Profession must remain indebted for much, not only of interest, but of real importance, in relation to many scientific questions yet unsettled. To Dr. Jamieson, the able

and talented Editor of the Reports, especial acknowledgment is due, not only for the manner in which he has exercised the office, but also for the many valuable papers he has contributed to the series of Reports.

In compiling the following summary of Reports, in themselves of great value, I have adhered as closely as possible to the language of those documents. With a view also to facilitate reference, I have noted in connection with each paragraph of the Epitome the number and page of the original Report from which it is quoted.

The extent and variety of subjects discussed by the Medical Officers connected with the Imperial Maritime Service of China may be readily estimated by reference to the enumeration contained in the list of Contents of the present volume. It will thus be seen that the Reports submitted by those officers contain not only a survey of matters more purely medical in their nature, but also many which bear upon physical geography, climate, agriculture, commerce, natural history, etc.

It is impossible to go minutely through the Reports in question without arriving at the conclusion that in many respects details contained in them do not support theories which for the time being occupy a good deal of professional attention in England in regard to the etiology of what are called 'zymotic diseases,'—on the contrary, they are in direct opposition to some at least of those theories. This is a point of view the importance of which is manifest alike in its bearings on the causation of the very large class of diseases so designated, and, most important of all, in the treatment of persons suffering from those diseases. In this connection the original observations of Dr. Manson on the apparent connection between the occurrence of intermittent fever and the presence in the blood of the *Filaria sanguinis hominis*, are specially worthy of note. His studies of the life-history of this malaria present some very remarkable features and are of the highest interest.

The remarks quoted in reference to the health-state of foreign residents at the several Treaty Ports are valuable. They are also encouraging to those who are in China, or who contemplate proceeding to that vast country.

The observations by resident Medical Officers in reference to habits of life, exercise, gymnastics, etc., deserve particular attention.

Many of the remarks quoted having reference to the management and treatment of foreign children in China are of much value.

Some items of information given by Medical Officers regarding Chinese theories of medicine are interesting; many others are curious. The remarkable divergence between some of those theories and those which are current among Western nations is no less striking than the approach which in other instances is manifest between them.

An item of very great and suggestive importance is that, among articles of 'Materia Medica,' some of the most generally used at the present day have been so in China from very ancient times.

In other instances articles supposed in that country to have especial and potent properties enjoyed reputations precisely similar in our own country, down to a comparatively recent period.

With a view to carry on, as it were, the lines of investigation indicated in the Reports under notice, I have in some instances extended my analysis to works by other authors. In this way information has been added, and, I trust, the value of the general work enhanced. The chapters on Chinese Obstetrics, Epidemics, Famine, Chronology, etc., have been compiled in this manner.

I regret that, by an oversight, the corrections made by Sir J. D. Hooker and Professor Oliver in the proof-sheets of the article on Chinese Materia Medica were not all submitted in those sent to the printer. 'Experts' will at once detect in that article, as it appears in the present volume, the errors in question. Suffice it, therefore, that their existence is here noticed.

Another source of regret is that not until too late to utilize its valuable materials did I obtain possession of 'Contributions towards the Materia Medica and Natural History of China,' by Frederick Porter Smith, M.B. (Trübner and Co., 1871.) In that volume is contained not only an extensive list of drugs used, but also numerous particulars of the highest interest in regard to many of the articles described. Should it become desirable to reproduce the article on Drugs, which forms a portion of the present volume, I shall hope to repair both the omissions now mentioned.

25, Westbourne Square, London, W.
May, 1884.

EPITOME OF MEDICAL REPORTS.

PART I.

LOCAL CONDITIONS IN RELATION TO PUBLIC HEALTH.

PEKING.

PEKING is situated in latitude 39° 52′ 16″ N., and longitude 116° 28′ 54″ E. With the exception of Kalgan and Newchwang, it is the most northern foreign-occupied place in China. It is divided into two parts: the northern, or Tartar city, the capital properly so termed, because the residence of the Court; and the southern or Chinese city, a walled suburb. The former is surrounded by a high and broad brick wall, in which are nine gates, whence the name sometimes applied to it, The City of the Nine Gates. The capital is situated in the midst of a sandy plain, part of the great alluvial plain of Chihli, having a range of hills to the north, and at a distance of about thirty miles. These hills may be said to separate China from Mongolia. To the west there is also a range of hills, spurs as it were, running south from the northern ranges, and distant from Peking about twelve miles.—(II. 73-76.) Peking.

The plan of the city is well laid out. The great thoroughfares are 120 to 200 feet wide; the lanes broad enough to allow of three carts abreast. The centre of the roadway is raised; on either side are pits from which the road is repaired. These pits are substitutes for drains in the rainy season. The streets are public latrines. Urinals do not exist. Filth and refuse of houses are thrown into the streets. No deodorant is used. Human manure is collected in large heaps outside the city, to be used as such. The men employed in carrying it appear healthy and strong, nor do they suffer from the atmosphere by which they are surrounded. The fuel used in Peking is anthracite coal; but the Chinese object to chimneys. Many deaths occur in consequence by asphyxia from carbonic acid. Among the upper classes the floors and *kangs*, or sleeping-places, are covered with square bricks. Both are heated from without. The construction of the houses is such that in summer they are well ventilated, but in winter not so. They are well lighted, two sides being almost quite composed of doors and windows, the latter consisting formerly of Corean paper, more recently of glass.—(VIII. 32.) Plan of the City.

The plain alluded to is for the most part under cultivation, two crops per annum being produced; thus, marshy land scarcely if at all exists. The ground is drained by means of the roads, which become also the courses of the minor streams. The soil is not very compact or adhesive; hence it rapidly absorbs heat, and also parts with it, a circumstance which to some extent accounts for the extremes between summer and winter temperature. The agricultural products are various and abundant. The ordinary cereals, legumes, Drainage.

and fruits of North China are extensively raised; these include wheat, barley, maize, three kinds of millet, buckwheat, yams, sweet potatoes, beans, various kinds of cabbages, cucumbers, carrots, turnips, radishes, egg plants, onions, celery, parsley, pepper, and spinach. Tobacco and cotton are cultivated. The fruits in the order of their appearance in the market are apricots, cherries, plums, peaches, apples, pears, walnuts, grapes, persimmons (*Dyospyros kaki*), chestnuts, ground-nuts (*Arachis*), etc. Besides these, the jujube (*Zizyphus vulgaris*), the seeds of the lotus (*Nelumbium speciosum*), the salted seeds of the water-lemon, and salted beans are extensively eaten by natives. The principal tree is the *hwai shu* (*Sophora japonica*). Others include the elm, poplar, oak, mulberry, willow, etc.—(II. 73.)

Agricultural Products.

The population of Peking has greatly decreased during the present century. The mortality of this capital has not been affected by population in the same ratio as occurs in Western cities; over-crowding in our sense of the expression is unknown except in the House of Refuge in winter, and there a fearful mortality occurs. The habits of the people generally take them much into the open air; hence their healthiness, surrounded as they are by insanitary conditions. The houses contain no water-closets; the kitchens no drains or sinks; the thoroughfares are receptacles for all kinds of filth; yet the very lowest houses are not destitute of pure air, water, and open spaces around them. Many of the houses, however, are flooded in the rainy season. Adverting to the 'general arrangement of the houses, on the whole they are a credit to the enlightenment of the people.

Population.

With few exceptions extra-mural burial is insisted on; there are, however, no public cemeteries except for eunuchs and for members of foreign nationalities. Every well-to-do family possesses a private burial-ground, and the dead are interred at considerable depths —in this respect different from some places, as Tientsin and Shanghai, where the coffins are simply left on the surface of the owner's ground. In fact, China may be said to be a vast necropolis. The dead are often retained in the family houses for weeks and months, or even years; a system most dangerous in seasons of epidemics, and especially of small-pox, cholera, or diphtheria. The bodies of the poorer classes are in the first place taken to *mosques* outside most of the gates, and thence, after a few days, to a vault in the Foundling Hospital, where they are retained until a considerable number of them has accumulated, when the whole are taken away and buried.—(IV. 29.)

Burial.

In regard to *drains*, Peking, in 1871, stood unrivalled among the cities of the world. Their age, extent, former admirable adaptation, and present ruinous condition, are all alike striking. At the date mentioned, all the main streets had two large sewers, one on each side, built of brick and covered with granite blocks or slabs. These sewers are about five feet high and three feet wide, with branches to all the houses. The water from them enters into the city moat, and thence flows into the Peiho. The water from the wells is collected in tanks, from which the streets are watered; that from drains and ditches is also used for the same purpose. The process takes place about sundown, and then 'the filth from the cesspools and stagnant drains creates a new smell, to which foreign olfactory nerves have never before been subjected.'—(II. 74-5.)

Drains.

The chief water-supply comes from the *Kwĕn-ming* lake, near the Yuen-ming-yuen Gardens, and it is again supplied by springs in the neighbouring hill of Yü-chien, to the west. It is sweet, soft, and pure, and equal if not superior to the water of Loch Katrine. The supply is supplemented by aqueducts from the monasteries of Pi-yün-sze and Wo-fo-sze, where two springs exist, the former being a sulphuretted hydrogen cold spring. In the north-west angle of the city a large water reservoir exists;

Water-supply.

Springs.

and channels extend in different directions. Before the advent of winter the west and south moats are flooded from the same source, with a view of affording a sufficient supply of ice. The east, north, and north-east moats contained a considerable quantity of water, but, except in very wet seasons, the other moats were either dry, or contained filthy streams of sewage and surface-water. Ice-houses stand along the banks. Much ice is consumed during summer by the Chinese, to whom it is sold at the rate of eight pounds for a penny; they also use it for cooling their rooms. In respect to wells, Peking is probably unsurpassed by any city in the world. They exist in almost every lane; and in the great thoroughfares, four, five, or more may be met with within a mile. They are never exhausted. They are usually situated on alternate sides of the streets, and are for the most part surrounded by willows. Almost every house of any consequence also contains one or two wells.—(II. 74.) The wells in the eastern part of the city are mostly brackish, except in the neighbourhood of canals or running streams. The hard water on boiling deposits a large quantity of lime. On the western side the water is softer. The wells are usually about 30 feet deep; water drawn from them in summer is quite cold, and meat suspended in them remains fresh. In winter they never freeze. The Chinese use the sweet water for infusing tea; they wash, or rather wipe, their hands and faces in warm water, and seldom drink that which is cold. Brackish water is used for all cooking purposes. At the wells in the streets man and beast may slake their thirst at any time during day or night. The attention of the Governors of Peking, and of the Emperors of China, from the days of Kublai Khan, A.D. 1280, to Kienlung, who died in 1796, was much occupied with the water-supply; hence the elaborate system of water-courses throughout the city. Since the latter date, however, these have been neglected, and are out of repair; the whole system of water-courses being (in 1871) in ruins and choked up with earth.—(II. 75.)

Moats.

Wells.

Ancient water-supply.

In the Report for the half-year ending March, 1874, the excellence of the water-supply is again adverted to. For infusing tea and for drinking, water is brought from certain famous wells, and sold at a cheap rate. Here, as elsewhere, the Chinese use, almost exclusively, boiled water; and though the water contains a considerable deposit of lime, calculus is not known in Peking, nor do other bad effects arise from its use.—(VIII. 34.)

Calculus rare.

The food of the Chinese in Peking is mixed, but vegetable diet, from its cheapness, prevails. The cow or ox being regarded semi-sacred, because used by the Emperor in sacrifice to the Supreme Being at the Temple of Heaven, little beef is eaten, and the slaughter of cattle is forbidden. Buddhists refrain from eating flesh meat of any kind. The chief animal meat used is mutton and pork; and with regard to the latter, it is observed that, 'If filthy feeding of pigs induced trichinæ, the most disastrous effects would be seen in China, for pig life here (Peking), as elsewhere, is simply revolting.' The Pekingese usually eat two meals daily, composed chiefly or solely of rice, or flour and a little vegetable. The hours are regular and early. They study their health well in relation to food, clothing, season, climate, etc. Heavy dinners, with copious vinous potations, are unknown among them. Raw and salted or vinegared vegetables, unripe fruit, hot water, tea, confections, etc., are freely partaken of by all classes.

Food.

As a rule, the Chinese are sober and temperate; yet those of Peking consume no inconsiderable quantity of spirits. In winter especially, a small quantity of whisky is drunk at each meal. This *samshu* is very coarse, and contains a large quantity of fusel oil. It is believed to give rise to an inveterate form of dyspepsia, named by them *ye ko*, a form of disease in which the œsophagus becomes constricted just below the larynx, all food,

Beverages.

Dyspepsia.

and even water, being rejected from that point. As ordinary beverages, they almost universally use hot water and hot tea during the cold months. In the hot season the beverages are tea and iced drinks, as the *swan mi t'ang*, a kind of acid rice-soup.—(II. 79.)

Tobacco.

Tobacco, unknown in or only in part used towards the close of the last dynasty, A.D. 1368-1644, is now nearly universally used both by men and women. The native tobacco is very mild, and probably few bad effects arise from its use.—(II. 79.)

'Secrets' of Life.

With regard to the habits of life of the native inhabitants of Peking, Dr. Dudgeon says that, 'Leaving opium out of our calculation, we may safely assert that the Chinese, on the whole, in regard to eating and drinking, clothing and habits generally, have found out the secrets of long and healthy life in tropical regions, namely, keeping cool, being moderate in diet, and cultivating tranquil habits of body and mind.'—(II. 80.)

Clothing.

The clothes of the Chinese are generally of the most becoming and simple kinds. A painting or sculpture which exposed anything but the head, and perhaps the hands, would be set down as barbarous and gross. In summer, a long cotton or silk robe is the chief part of the dress. In winter, wadded garments are in use among the poor; among the higher classes furs of various values, according to degrees. They are destitute of shirts, flannels, and anti-cholera bandages. The Chinese put on or take off an additional robe as occasion requires.

They use, in winter, shoes or boots padded with cotton. In summer, they wear straw hats; in winter, tight-fitting wadded caps. Many expose their heads to the sun without hurt.

Baths.

The Pekingese resort much to public baths. Cold bathing is never practised by them; they always bathe in tepid water, and it is to this circumstance, added to their temperate habits and non-use of flannel in summer, that the absence of prickly heat is assigned. The bath, however, generally consists in wiping the surface over with a wet towel. The Chinese dread the effects of water, especially cold water, when freely applied to the surface. It would be positively cruel to think of disarming the beggars of their ingrained dirt and grease by a bath, because in winter they would die from inability to resist the cold. The middle and upper classes have objections also, founded on their theory of the *yang* and *yin*, or the upper or heavenly, and lower or earthly, portions of the body. Many will wash the upper, but refuse to wash the lower, being afraid lest the lower vapour should ascend and injure the upper. The universal habit of shaving the head is a good one among a people inclined to dirty habits of body.

With the exception of that of *soldier*, there is no trade or occupation particularly prejudicial to health. The people indulge in various gymnastics and games.

The people retire early to rest, opium-smokers excepted. They do everything quietly and methodically; they avoid hurry.—(II. 80.)

Mode of Life.

According to the Report to 31st March, 1874, 'the mode of life is quiet and non-exciting. There are no special precautions required in regard to sun and malaria. Ague, until the late rainy seasons, was unknown; sunstroke also is all but unknown. The account given of social life and manners is extremely favourable, and even attractive. There is a hill-retreat at convenient distance, to which foreigners resort in summer; and the general conditions of health are very favourable. The average length of missionary life there has been twenty-five to twenty-six years.'—(VIII. 36.)

Climate.

The term 'climate' is in Chinese expressed by *Fêng-shui*—that is, 'air and water.' Otherwise the local Chinese expression for 'climate' is 'water and earth'; also man is 'in more respects than one the mere expression of the soil on which he lives.' It is considered that the local causes producing and influencing epidemic and endemic diseases are

'endemic atmosphere, water-supply, social habits, solar influences, geological conditions, degree of cultivation of the soil, population, prevailing winds,' etc.—(II. 73.)

At Peking, in 1871, unprecedented rain set in on 6th July. From that date till 12th September, with short intervals, the rainfall continued, the quantity registered during the period being 36 inches. Large portions of the city were submerged to a depth of several feet in some places. Houses were swept away, and in many instances people and animals drowned. In the half-year ending 30th September of that year the hottest days were May 31st, June 5th and 8th, the temperature in all equal, namely, 100° Fahr.; the hottest nights, 22nd July and 3rd August, both 77° Fahr. The three coldest days, April 19th—there having been a fall of half an inch of snow, and also of rain on the previous day—and September 16th and 17th, the temperature 58° Fahr. on each. The coldest nights were those of April 20th, the temperature 32° Fahr.; and of 26th September, 43° Fahr.—(III. 8.) 1871.

From October to February north and north-west winds prevail; from April to the end of September chiefly southerly, varying from south-east to south-west, although at intervals winds from east, north, and north-west occur. The latter is the coldest wind, coming as it does from the highlands of Central Asia, and over the steppes of Siberia and Mongolia. A severe blow from this direction in December will freeze the river in one night.

In spring, dust-storms are of frequent occurrence, although in that period of 1872 they were fewer than usual. In summer, storms of dust, frequently also of thunder and rain, or even hail, are common; these storms believed to originate in the desert of Gobi, and sometimes extending to Peking in the north and Shanghai in the south.

The Peking climate includes the extremes of heat and cold—from 100° Fahr. and above it in summer, to zero and below it in winter. The seasons may be thus divided: Summer and winter, four months each; spring and autumn, two months each. The changes of temperature are great and sudden, yet from the sandy nature of the surrounding plain the weather is generally agreeable and dry, and there being little rain and much sunshine, the climate is for the most part a pleasant one and healthy. The winter season is bracing and dry, the change from winter to spring very sudden. The fall of rain occurs almost exclusively in June, July, August, and September; from November to April hardly any rain falls.—(III. 35-6.)

During the six months from April to September, 1873, the hottest day was June 29th. The thermometer marked 103° Fahr.; a hot wind blew strongly. On the following day the temperature attained a maximum of 102° Fahr., sinking at night to 79° Fahr. From the 14th to 18th July rain fell daily, the quantity in all $4\frac{1}{16}$ inches. From July 29th to August 9th rain fell on every day except two; the amount registered, 10 inches.—(VI. 19.) 1873.

According to the Report to 31st March, 1874, the previous winter was mild; little snow fell. The Chinese predict an unhealthy season when such is the case, and it is a duty of 'the Dragon Throne' to pray for snow. The hot season in ordinary years is described as lasting only six weeks, and during that time the thermometer is seldom above 100° Fahr. in the daytime, while the nights are 20° Fahr. cooler. The intensely cold weather is also of short duration, the thermometer seldom below −3° Fahr. and −5° Fahr. The prevailing wind is from north-west; the sky as a rule bright. There are few dull, foggy, or cloudy days, owing to the dryness of the atmosphere, and the soil permitting little or no evaporation; the heat is never oppressive. During the hottest times a blanket can be used as a covering. Moderately cold weather lasts about four months. Rainfall, except during the last three or four years, which have been unusually wet, never exceeds 26 inches per annum, in this respect resembling Germany.—(VIII. 29-35.) 1874.

From 1st April to 30th September, 1874, the total rainfall for the period was 21 inches; the

number of days on which it rained, 51. In 1873 there were over 34 inches of rain in 55 days. During the half-year now considered, the hottest day was June 21st, the only one on which the thermometer reached 100° Fahr. The hottest night was that of July 23rd, when it stood at 76° Fahr. The winter of 1874, although protracted, was not a severe one. It set in early and very sharp on 23rd November, the thermometer suddenly falling from 34° Fahr. on the previous night and 45° Fahr. by day, to 16° Fahr. at night and 31° Fahr. by day. The upper part of the Peiho became frozen over, and did not again open. This is the earliest closure of the upper reaches of the river that has been recorded in these Reports. The thermometer gradually rose again to 27° Fahr. at night and 49° Fahr. by day until 24th December, when it fell to 10° Fahr. at night and 28° Fahr. by day. During the last five days of December it varied between 3° Fahr. and 7° Fahr. at night, rising to 20° Fahr. during the day.—(IX. 33.)

Adverting to the physical conditions of Peking already stated, the Report for April—September, 1872, has the remarks quoted as follows, namely: 'But the most remarkable thing is

Health.

that with all our filth, dirt, and smells—and people in the West can form no notion of what they are, for they defy description—there is wonderful immunity from fevers. If bad smells alone created fevers, there ought to be no immunity from these diseases in

Scavengers.

Peking. The police or scavengers employed to water the streets ought to be the class most affected, whereas, leaving out the opium-smokers among them, they are the healthiest and most robust of our population. The beggars, a numerous class, sleep in the

Beggars.

streets nearly all the year round, congregate in the very centres of pollution, and even to some extent contest with the dogs priority of claim to the refuse of the dunghills. Still they survive and flourish, and most of them—at least, the strictly professional

Filth.

ones—look fat and sleek. To add to this picture of filth, we boast of no public latrines. The male portion of the inhabitants squat in the streets after dark—very many, too, during the day—and that sometimes in the most crowded thoroughfares. One of our greatest nuisances is the removal of this filth in small barrows through the public streets at all

Manure.

times of the day. It is dried and stored in empty places, either within the city or immediately outside the gates. The most polluted places are generally the mouths of caves and waste places, or tumble-down, unoccupied shops or houses. A favourite place is the ruinous police-stations, which are so numerous in the public thoroughfares. Notwithstanding this revolting description, after an experience of eight years, Dr. Dudgeon was led to believe that the climate is not an unhealthy one.' Then follows a foot-note to this effect: 'The

Western Standard.

sanitary legislation of Western cities is based upon the one idea that disagreeable and offensive odours are necessarily deleterious to health. The condition and mortality of Peking would seem rather to explode this belief. The removal of night-soil may be considered most destructive to health, yet here—there being no system for carrying off sewage or scouring drains—the entire night-soil of the city is transported during the day through the most crowded and sometimes narrow thoroughfares. We are obliged to pass certain localities at all times with closed nostrils, while hundreds of people continually live in and above these open cess-pools, and yet manage to look well and healthy. Many diseases prevail here, as in the West, without the agency of this reputed cause—noxious odours; and the causes exist at all times here without producing such diseases.'—(IV. 41.)

Adverting to a case of *typhoid fever* in his Report to 30th September, 1872, Dr. Dudgeon

Drains and Typhoid.

wrote: 'It is not yet proved that the exhalations of drains, privies, and stagnant water do contain or disseminate this poison (namely, the "poison" of typhoid fever), or that through such exhalations it can be absorbed into the system.'—(VI. 7.)

In the Report on Peking to 31st March, 1874, the medical officer admits that the 'sanitary conditions' of the capital are irremediable; yet the accusation that, as a consequence, it is unhealthy, 'by no means follows.' The system of drainage is several hundred years old: two drains in all the great streets, and one in each lane, which drain into the moat. Many of them are broken down, and others are impervious; but still, although dirty, they fulfil their general object. There is a perpetual stream of pure water running through the moat on all sides of the city. Throughout the city and suburbs, there is only one place known to foreigners the odours of which are particularly offensive. The latrine system may be said to be on the dry-earth method.—(VIII. 30.)

In his Report for the half-year ending September, 1872, the medical officer observes that among the native population the ratio of births and deaths is 1,000 of the former to 800 of the latter. Among the population generally, Dr. Dudgeon considers that the poorer classes breathe purer air and have better food than the corresponding classes in London. With regard to foreigners, the average of 65 missionaries buried in the Portuguese cemetery, from 1810 to 1838, is 50 years; the average length of residence 24 years. The average age of 30 missionaries interred in the French cemetery, from 1707 to 1868, is 60 years; the average length of residence 25 years. In more recent years the rate of mortality among Russians (4·0 per cent.) at Peking is said to be greater than of other foreigners, but the ratio is stated to be in accord with that of St. Petersburg. The British death-rate in Peking is that of England generally. Among French priests, and especially among Sisters of Mercy, the rate of mortality is great and appalling; but, it is added, this is a result of the nature of the work they perform among the poor and the sick. Dr. Dudgeon observes also that, 'although the sanitary condition of the city is so far from satisfactory, it is a matter of congratulation that the foreign population enjoys such an immunity from disease. This is all the more wonderful when we consider that we live in the midst of a large city, and not in a healthy, clean, well-drained concession, apart from Chinese habitations and foul smells.'—(IV. 30-35.)

Births and Deaths.

Adverting to the rate of mortality among the thousand beggars who during winter remain in the Imperial House of Refuge (*Yang chi yuen*), Dr. Dudgeon states that it amounts to 40 to 60 per *month*. In reference to prisons and prisoners, he writes that the mortality is excessive. Prisoners, however committed, let the charge against them be grave or light, or even false and unfounded, or at all events unproven, live, sleep, and perform their functions in one locality. It is specially made disgusting in order to drive them to extremes. Friends and relatives are not admitted with food or money without bribing the porters. Language fails to describe accurately the horrors of a Chinese prison. Suffice it to say that there is ever overwhelming mortality.—(IV. 32.)

Beggars.

During the six months ending September, 1874, the health of the community was excellent. A few cases of dysentery and diarrhœa were considered due to sudden alternations of temperature during the rainy season, these being deemed preventible were due precautions taken as regards diet, clothing, and precautions against such alternations.—(IX. 21.)

Preventible Disease.

In the first of the series of statistical Reports Dr. Dudgeon treated (pp. 114 *et seq.*) of the epidemics of small-pox and diphtheria which had visited Peking during the ten years preceding the end of 1871. In the Report now being considered he discusses the subject of Cholera epidemics at that capital, but for the sake of continuity the points thus adduced will be considered under the latter heading (which *see*). Unfortunately the first number is not forthcoming.

Former Epidemics.

In September and October, 1861, an epidemic of *jaundice* prevailed at Peking and the two provinces westward of Chihli. In 1866 there occurred an epidemic of *measles* in spring; and in 1868 *typhus fever*, which is seldom absent, raged with more than usual virulence.—(IV. 39.)

Jaundice.
Measles.

Diarrhœa, which prevails in summer, is considered to be due in some measure to the use of unripe fruit, or the drinking of warm tea afterwards, which may have more to do with it than either cold water or air. Gravel and calculus are practically unknown. Rabies is extremely rare, though dogs abound, and are never muzzled. In winter neuralgia, rheumatism, anæsthesia, etc., are attributed to the coldness and dampness of the *kangs*, on which the Chinese recline during the day and sleep at night. These affections are most present in spring and autumn, when vicissitudes of temperature are greatest. Among the Budhists enthetic diseases are stated to be very prevalent. Worms, specially tape-worms, are remarkably frequent, so is dyspepsia.—(II. 75-78.)

Diarrhœa.
Calculus.
Rabies.
Neuralgia, etc.
Enthetic.

During the six months ending September, 1871, a Russian lady died of puerperal fever, a British subject from typhus fever. Fever is the most fatal of the ailments to which foreign residents are subject, and, after small-pox, is the most prevalent affection among the Chinese. Numerous cases of low continued fever are seen yearly in summer. Diphtheria, although not epidemic, occurred throughout the six months; there were also numerous cases of ague. Carbuncles, at all times common among the Chinese, were not particularly so.—(III. 7.) Cases of heat apoplexy in the hot season are unknown. During winter frost-bite occasionally attacks the lowest and most unhealthy of the beggar class. Prickly heat is common during summer. Thoracic diseases prevail over abdominal, although from the climate partaking of the character of hot and cold, the diseases peculiar to both are met with. Ague, as already mentioned, is not met with, but various affections of the lungs occur. Mumps and tonsilitis are not uncommon.—(III. 37-42.)

Puerperal,
Typhus,
Low Fever.
Heat and Cold.
Thoracic diseases.

In the spring season of 1871 there was reported to be a considerable tendency, both among foreigners and natives, to erysipelas, mumps, bronchitis, and sore throat generally.—(III. 7.) In that season and autumn, but especially the latter, cases of jaundice occur. Certain diseases of the lungs occur in spring, autumn, and winter. Phthisis, asthma, bronchitis, and hæmoptysis prevail pretty extensively, although the latter affection, in very many cases, is unattended with fatal results. Towards the end of March, and in April, sore throat, mumps, and tonsilitis are not uncommon.—(IV. 39.) As a result of sudden changes of temperature, occasionally experienced during or after rain, diarrhœa and dysentery affect both children and adults.—(VI. 7.) Ague, up till now unknown, prevailed extensively during the summer of 1872; it gave way before the approach of the cold weather in December. Small-pox seems to be seldom absent from the capital. In February, 1873, diphtheria prevailed among the Chinese population. In spring and summer, itch becomes very prevalent, so do other skin diseases, particularly among the lower classes, due in part to season, and in part to personal dirt.—(VI. 11-14.)

Erysipelas, etc.
Bronchitis, etc.
Diarrhœa, etc.
Diphtheria.

During the winter of 1873 and 1874, small-pox 'as usual prevailed.' A few cases of diphtheria also occurred; also of low fever. Ague prevailed 'with great force' till the end of December.—(VIII. 29.) In the spring of 1875, there was 'as usual' a good deal of diphtheria, and, later on, fever; but neither of these diseases attacked foreigners. In spring, openings are made here and there in the drains. The effluvia from these open drains are cited by the Chinese themselves as causes of these affections.—(IX. 22.)

Small-pox.
Diphtheria.

TIENTSIN.

With regard to the British settlement at Tientsin on the right bank of the river Peiho, in latitude 39° 0′ N., longitude 117° 30′ E., the following particulars are contained in the Report before us: Position.

Throughout the winter of 1872-3, the water-supply of Tientsin was all that could be desired. During the other months of the year, the river being full of boats, it contains a certain proportion of sewage matter. Still, it is not polluted to a dangerous extent; and if treated with alum, and carefully filtered, it is both palatable and wholesome.—(V. 24.) Water.

Many of the places of public resort are on the river-bank, and the filth from the foreign and native shipping passes the foreign concession, contaminating the water-supply. The settlements are so close to the native city that the water has no time to get purified. It therefore requires to be manipulated in various ways, passed through filters, allowed to settle, or boiled, or the organic matter is precipitated by chemical agents, alum being in most common use.—(VIII. 34.)

The first notice in regard to the health history of Tientsin, which occurs in the Reports before us, has reference to the half-yearly period ending 31st March, 1873. During that period the health of the foreign community was very good. One child died of diphtheria, the first case of the kind seen among foreigners, although the disease is occasionally but rarely seen among the Chinese inhabitants. In 1871-2, the settlement was inundated. During the winter, 1872-73, the health of the foreign community was not as a consequence affected, although the native Chinese suffered from remittent and intermittent types of fever. The immunity from these enjoyed by foreigners is assigned to the circumstance that their settlement was elevated and well drained.—(V. 23.) For the half-year ending 30th September of the latter year, the health of the foreign community continued good; so also that of the shipping. This also notwithstanding a very hot and rainy season, with a fresh inundation of the surrounding country.—(VI. 52.) During the half-year ending 30th September, 1874, the health of the foreign community still was good, notwithstanding the swampy and generally unhealthy state of the surrounding country.—(VIII. 40.) In that ending 31st March, 1876, the health of the foreign community was good.—(XI. 47.) To 30th September of the same year that community 'as usual' enjoyed good health; but on board the men-of-war in the river dysentery and remittent fever prevailed severely.—(XII. 48.) From April to September, 1878, notwithstanding a very mild and dry hot season, the health of the community was not at all good.—(XIV. 66.) In the months of October, November, and December, 1878, the residents, both native and foreign, suffered severely from various forms of disease, notably typhus fever, small-pox, and affections of the lungs. The general health of the settlement improved considerably after the heavy continual rains; dysentery, diarrhœa, and ague became less frequent in recurrence. This improvement was, by Dr. Irwin, considered due to improvement to the marshy, grave-dotted plain at the back of the settlement being inundated, and the numerous large pits therein filled with water.—(VII. 33-35.) During the year ending 31st March, 1880, the health of foreigners was particularly good. Considerable improvements were made in the course of that year in the state of the roads and drainage connected with the settlement.—(XIX. 5.) Health. Diphtheria. Fevers.

According to the Report to 30th September, 1873, three cases of dysentery occurred at Tientsin during the six-monthly period referred to. As on previous occasions, that place was

remarkably free from enthetic disease. Intermittent and remittent fever occurred, the latter having appeared only since the date of the inundations in 1871.—(VI. 52.) Intermittent fever of the quotidian type was very prevalent during the six months ending 30th September, 1874. With the exception of a few, the cases of it were very amenable to treatment.—(VIII. 40.) In the half-year ending 31st March, 1876, a severe form of diphtheria prevailed among the native community.—(XI. 47.) In that succeeding, namely to 30th September of the same year, dysentery affected sailors; remittent fever, chiefly children. Some cases of diphtheria also occurred.—(XII. 48.) From April to September, 1877, cases of remittent fever, dysentery, and bowel derangement were very frequent; choleraic diarrhœa, chronic diarrhœa, and mesenteric disease occurred among children. In spring and early summer, typhus, typhoid, and relapsing fevers raged among the native population; in August and September, cholera of a fatal type.—(XIV. 66.) In the three last months of the year 1878, typhus fever and small-pox prevailed, natives and foreigners suffering alike. The causes of typhus were not far to seek: a famine-stricken population of refugees from the neighbouring provinces, their physical condition the worst possible, scarcity of food, insufficient clothing, overcrowding, dirt, very rigorous winter, and mental depression. It is believed that of 80,000 refugees who sought shelter during the previous winter, barely 10,000 were alive at the end of May. The streets were filled with sick and starving; the bodies of the dead lay sometimes for two days before they were buried by order of the authorities. In the river Peiho bodies were constantly floating down. During March, 1879, most of the children in the settlement suffered from an epidemic catarrhal fever with croupy symptoms.—(XVII. 33.) In the autumn months of that year, diarrhœa, dysentery, and intermittent fever were the most prevalent diseases. During the months of October, November, and December, whooping-cough attacked some children. Throughout the year ending 31st March, 1880, entozoa of different species, more especially tænia and lumbrici, were present, the former in foreigners, the latter in natives.—(XIX. 5.)

Diseases.

NEWCHWANG.

The geographical position of Newchwang is latitude 40° 35′ N., longitude 122° E. Unfortunately the first portion of the Report on this settlement by Dr. Watson is not available. From the second portion the following particulars are taken: Besides the advantages of a seaside resort at Kai-chu, more particularly detailed under the head of *Climate*, there are numerous inland places which would repay a month's residence to persons at Newchwang, or to those coming from southern ports in search of health. One such place is situated on the terraced sides of C'hien-shan, on which are erected several Buddhist and Taoist monasteries. It is distant about 80 to 90 miles from the Treaty Port. For many miles immediately around Newchwang, the country is very uninteresting. It is beyond these limits that it becomes full of beauty, and endowed with a genial summer temperature.—(III. 10-15.)

Topography.

Kai-chu.

In the Report, not now available, Dr. Watson mentioned the unsatisfactory state of the drainage, and generally faulty construction of the houses in this settlement. According to that to 30th September, 1874, little or nothing had, up to that date, been done to rectify the former state of matters concerning drainage. In regard to the houses, however, several new and healthy ones had been erected, raised from the ground, and with results beneficial to the health of their occupants.—(VIII. 9-10.)

Sanitation.

During the summer of 1878, diarrhœa among the foreign residents was considered to be due to impure water. Almost all the drinking water is obtained from surface ponds, and is frequently used without being either boiled or filtered. Situated as this settlement is on the bank of a great river, it would be matter of little difficulty to obtain ample supplies of pure water if the foreign community was a large one; but as the Chinese will not undertake the necessary work for their own benefit, it is impossible for the few foreigners to do so. They have to content themselves, therefore, by taking water from the ponds above referred to, or by sending a few miles into the country, where good springs are to be found, or by using the water from the river.—(XVII. 8.)

Water.

The people of the province of Newchwang are true Chinese, notwithstanding that a considerable number of Manchu villages are scattered over it. The chief occupations of the people are agriculture and trades connected therewith. Some also are employed as sailors, others as carters or waggon-men. They are sober and industrious; they marry young. They are physically well developed and powerful; are capable of great endurance. There are few beggars; their food is extremely simple, cheap, and nourishing. The great majority live principally on millet, a grain which seems to possess all the essential elements of nutrition. It is simply boiled in water, and is very often eaten alone; or is mixed with vegetables, mutton, fowl, bacon, or fish. The rich eat rice in place of millet. Beef is not much eaten, but vegetables, such as cabbage, carrots, turnips, etc., are held in great repute by rich and poor alike. All who can afford to do so drink a rather coarse spirit manufactured from millet (shamshu); they take it sparingly, and it is seldom that an intoxicated native is seen. Tobacco is smoked by men, women, and children.—(III. 12.) Opium-smoking, although far from general, is on the increase. Dr. Watson notices the severity of injury the Chinese can sustain, and subsequently recover from, with a fair degree of health and strength; a circumstance considered due to the simple diet of the common people, and to the phlegmatic temperament of the race.—(XII. 32.)

The People.

Food.

In the months of April and May, 1871, the weather was more than usually boisterous, and it was a rare occurrence at Newchwang for the residents to enjoy a day of perfectly calm weather. The spring was in other respects pleasant. The summer months were remarkably cool, and by the middle of September warm clothing had to be worn; stoves also had to be set up—that is, a month before the usual time for so doing. During the months of June, July, and first half of September, on a few occasions the temperature in the shade and out of doors stood at or about 92° Fahr., notwithstanding their general coolness. Within doors the maximum registered was 86° Fahr. Dr. Watson writes: 'The climate of the summer months is in this province very healthy. Such a climate in a pleasant country would be a boon to foreigners in China, oppressed by the trying summers of the southern ports. From Kai-chu, distant 30 miles from Newchwang to Tower Hill, there is a long line of sandy beach, interrupted occasionally by massive rocks, worn by the sea into caves and boulders. At a bungalow, built upon one of these rocks facing the sea, and 100 feet above its level, the day temperature from July to September was 84° Fahr., the night temperature 74° Fahr. At Kai-chu good sea-bathing is to be had. Hills in the neighbourhood may easily be climbed; their sides are wooded; villages are dotted at intervals, and in places handsome plantations. During the months from June to September, both inclusive, the climate at the Kai-chu beach is not surpassed by any in the world. The exceptional dryness is moderated by the sea breeze and occasional showers. The air never feels damp for more than a few hours at a time, and that at long intervals. The

Climate.

Kai-chu.

morning air is exhilarating; the cool evenings soothe and refresh the weak; sleep requires no wooing; it is followed by increased strength and energy.—(III. 10-14)

At Newchwang the month of October is in many respects the healthiest and pleasantest of the year. The other five months of the half-year ending 31st March, 1872, constituted the winter season. During the period thus embraced the winter was more than usually cold, dry, and dusty, men and animals suffering severely from drought, horses and mules especially. In the month of January, 1872, the temperature fell every night below zero, descending on the 22nd to −14° Fahr. During the winter great dust-storms were very frequent, the river opposite the settlement was frozen over on 29th December, and the ice broke up on the 12th March. The prevailing winds were N.E. and N.W. On 31st March a few masses of ice still floated down the river, although already the sun was powerful.—(III. 16-18.) The summer of 1872 was unusually hot. For three weeks the mercury was often as high as 88° Fahr., and on two occasions 95° Fahr. The winter having been remarkably cold, the high temperature of the half-year immediately following was deemed noteworthy. Rain fell on thirty-eight days, the quantity above the average. The prevailing winds were less boisterous than they usually are in the same period of the year.—(IV. 27.) The summers of 1873 and 1874 were distinguished by an unusual quantity of rain, although the number of rainy days was not greater than in the average of years. This great and sometimes sudden rainfall inundated the neighbouring country. When winter came the water was frozen in the earth, and thus remained till spring. The severe frost of winter rends the ground into fissures, some of which extend to three and four feet beneath the surface. Thus, with the heat and rains of spring and summer, the district from the foreign settlement to the mountain-range became one great swamp. As a result of these conditions, the natives who farmed the plain alluded to suffered severely; the rich were impoverished; the poor reduced to destitution; great sickness prevailed—and those who had not food helped themselves as best they could. During the summer of 1874, comparatively few Chinese starved; many had insufficient food, and a depressed state of health prevailed, due in part to the unhealthy condition of the country, and in part to insufficient and bad food. There was, however, no increase of mortality in the latter season; but in the preceding winter many deaths occurred from cold and hunger.—(VIII. 7.)

In his Report for the two years ended 30th September, 1876, Dr. Watson wrote: 'The period now under review has witnessed a return of the climate with which we have usually associated this region.' That is, the summers have been, as formerly, dry, the winds strong and frequent, the skies clear, the air bracing; while the general result has been that the natural stimulating character of the climate has replaced the depressing influences which he pointed out as characteristic of the summers of 1873 and 1874. The summers of 1875 and 1876 were remarkable for excessive drought. The winter of 1875, he witnessed a heavier fall of snow than is common; the air was rendered somewhat less irritant than is usual, in consequence of the dust caused by the great cart traffic being thus laid.—(XII. 28.)

During the summer of 1877, the climate was mild, the atmosphere less clear and bracing than usual, the rainfall small in quantity, if more frequent than is generally the case. The season was favourable to vegetable life, and in an unusual degree to foreigners, as instead of continued glare, the sky was often shrouded by clouds. The winter and summer temperature was each exceptional during the year ending March, 1878. In the former the cold was less severe; in the latter there was less heat than in ordinary years. Ice first appeared in the river on 21st November; on 17th December it was completely frozen over, and on 23rd horses and carts were borne by it safely. On 10th March it began to break up.—(XV. 28-32.)

Adverting to the peculiarities of the climate of this settlement, Dr. Watson writes: 'It is

somewhat remarkable that in a climate such as this neighbourhood enjoys, where we have in summer for two months very hot weather, and in winter five months of great cold, and in both seasons sudden changes of temperature, neuralgia should, comparatively speaking, be rare. This immunity is partly explained by the dryness of the air, and by the fact that foreigners who venture to settle so far north are, as a rule, of robust constitutions.'—(XVII. 10.) During the year ending 31st March, 1880, the climate was an average one. The first half of spring extremely boisterous; the latter half, and the whole of summer, pleasantly free from gales, 'and from those strong winds, little less than gales, which rendered animal and vegetable life in April, and some days in May, a hard fight.' There was more than the usual amount of rain; the crops were good. The winter was mild, although one or two days were exceptionally cold. It is often remarked by delicate residents how much better they bear the cold of this somewhat Arctic region than that of Shanghai.—(XIX. 1.) During the year ended 31st March, 1881, the climate was drier, spring less boisterous, the advent of autumn earlier, winter more sudden in its occurrence, and colder than in some recent years. The summer rainfall was less than usual, but no increase of sickness occurred in consequence. The highest temperature registered, namely 91° Fahr., was on the 4th of August; the lowest, 9° Fahr., on the 18th January. On 31st of March the river was still crowded with floating ice.—(XXI. 37-41.)

Health.

During the half-year ending 30th September, 1871, the Chinese population enjoyed an immunity from contagious fevers. In other respects they were tolerably healthy, although they suffered to some extent from respiratory ailments, due, in a less degree than among foreigners, to the exceptionally boisterous character of the spring. A great deal of poverty during the previous winter, and failure of trade during summer, also aided in the causation of disease.—(III. 12-17.) During the succeeding winter the health of the foreign community was fairly good. In the half-year ending 30th September, 1872, the warm summer, if the cause of an increased amount of sickness among foreigners, did not similarly affect the Chinese. The latter 'enjoyed an immunity from disease which, considering their indifference to healthy conditions, is very remarkable.'—(IV. 28.) The summer of 1873 and 1874 having been unusually rainy, and agricultural produce scarce, the native population suffered from rheumatism, ague, and various forms of dyspepsia. The state of drainage of the settlement remained unsatisfactory; much stagnant water existed, and to these conditions the medical officer assigned the prevalence of malarial disease. Improved residences for foreigners were being erected; and as an example of the benefit to health accruing therefrom, a case is mentioned in which an attack of ague ceased immediately on removal of its subject from an inferior house to a good one. In the winter between those years, the health of the foreign community was good, there being only the ordinary cases of acute bronchitis, catarrh, etc. The Chinese, except such as were badly housed, as before enjoyed good health.—(VIII. 7-9.)

In the two years ended September, 1876, although the summer heat on both occasions was unusually great, it was, as a rule, better borne by the residents than during some which were distinctly milder. The general health of foreigners and well-to-do Chinese was quite up to the average.—(XII. 28.) During the year ending 31st March, 1878, the health of foreigners and Chinese was less satisfactory than it had been in former years. As a consequence of the still prevailing distress among the native population, unburied bodies lay along the streets and roads. The drains which intersect the town were filled during the dry season with refuse; they were not cleaned by the light rains which subsequently fell, the result being extreme offensiveness from decomposing matters. The winter climate is a good one to persons who are in robust health; it is, however, trying to those whose health is impaired, particularly such as have a tendency

to pulmonary or cardiac ailments. Among the Roman Catholic 'Sisters' the rates of sickness and mortality were great. Among the causes were assigned the habits of that religious community, including privation, cold, short and interrupted rest, besides their attendance upon sick Chinese residing in insanitary houses. They were thus more heavily affected by any depressing cause in action than lay members of the community. Although in the month of October they moved into improved quarters, with improved hygienic conditions, yet in December several cases of fever, some with the character of typhus, occurred among them. No sooner were they settled in their new house, the weather at the time being changeable, cold, and damp, than nearly all of them suffered from pulmonary catarrh, while two of the most delicate of their number were prostrated with inflammation of the lungs and rheumatic fever.—(XV. 28-30.) During the year ending March, 1879, neither in the winter nor summer months was there much sickness among the foreign residents. The year was a prosperous one, and the mass of the people had abundance of employment and of the requirements for life. The recent years of scarcity had, however, produced a large number of beggars, and a large number of native female children were allowed to die on the streets. A number of cases of suicide by women occurred, the means employed for the purpose being opium. But the people, as a whole, were well off, and eminently free from serious sickness; they were well fed, moderately worked, and living as they do in a simple life in a good climate, they were healthy.—(XVII. 8.)

Sisters.

During the year ending 31st March, 1880, the crops were abundant; the people had a sufficiency of food, and they were free from serious disease. The general health of the foreign community was good. In the twelve months no case of serious illness occurred in 'the little colony of Roman Catholic Sisters (ten in number) who for several years back have laboured at this port.' Several of them were on the sick-list, but all the cases were of a chronic character, and were referable to constitutional weakness or over-work.—(XIX. 1-3.) The summer of 1880 was healthy alike to Chinese and foreigners; only in young children some cases of diarrhœa occurred. The succeeding winter was very unhealthy as regards the latter, almost every foreign resident having suffered, some severely. Among the Chinese there was only the ordinary amount of sickness. The Chinese are crowded together, and depend upon rain as a means of clearing their drains and removing their filth; the European community live in large compounds, in comfortable houses far apart from each other, have no drains, and all noxious matters removed at short intervals. 'Our circumstances, as compared with the Chinese in a sanitary point of view, are extremely good, and yet our little settlement had a much higher percentage of sickness than the native town during winter. This is the opposite of what, in the past, has been our experience in summer or winter. During the cholera epidemic hundreds of Chinese died, while no foreign resident suffered from the disease. Small-pox and other fevers have in the past been common among the Chinese and unknown among the European community. This year the tables are turned, and from what cause Dr. Watson cannot discover. We had an epidemic of quinsy, and a considerable number of cases of measles, besides individual cases of scarlet fever and typhus.'—(XXI. 37.)

During the spring months of 1871, inflamed throats (tonsilitis), bronchitis, and pulmonic affections prevailed, especially among children and young persons. These affections prevailed to an unusual extent in April and May, in consequence of the high winds and dust. Relapses also were frequent in the attacks so long as the boisterous weather continued. In the summer months dysentery and diarrhœa were of frequent occurrence. The other most prevalent diseases were rheumatic affections, neuralgia, etc. Among the natives many cases of scrofula and of sluggish ulcers were met with. Diseases of nutrition also were very

Diseases.

frequent. During the winter following, granular inflammation of the eyelids was very frequent, being attributed to the extreme prevalence of dust during that period. The throat affection already noticed continued also to prevail during the winter of that year, and the larger portion of the foreign community suffered more or less severely from catarrh.—(III. 10.) Dr. Watson considers that the winter climate of this place is unsuited for patients suffering from organic disease of the heart and lungs.—(V. 47.) In the month of April, 1872, a solitary case of measles occurred in the Custom House. A case of small-pox on board ship from Shanghai entered the harbour. During the summer of that year, diarrhœa, colic, and dysentery were the most prevalent diseases, the two former being of unusual severity.—(IV. 27.) In the winter of 1873, children suffered more than usual from diarrhœa; adults from rheumatism and neuralgia. Many of the poor died in the streets from cold and hunger. Foreign residents subscribed to meet the condition to which many natives were reduced. Shortly afterwards a Chinese guild opened soup-kitchens, and at these places, during three months, 1,500 persons had one meal of boiled millet daily, 'and it was remarkable how healthy these men and women looked after their restricted diet.' In the summer of 1874, intermittent fever appeared for the first time among foreigners. The first case occurred in June, and was followed by other cases, the type of disease being almost universally tertian. Many persons suffered also from obscure nervous complaints, general *malaise*, with enlargement of the liver and impaired digestion, all considered to be due to malaria.—(VIII. 7.)

In the summers of 1875 and 1876, isolated cases of cholera, measles, and scarlet fever occurred among the foreign community; 'Chinese measles' was very common. In the native town severe diarrhœa and cholera were reported to have appeared.—(XII. 28.) During the year ending March, 1878, there was a great deal of low fever of no very distinct type, diarrhœa, and many ailments due to the absence of proper food among the Chinese. During the month of July, 1877, a large number of natives suffered from diarrhœa. On the 26th of that month cholera appeared. The disease continued to increase till the end of August, after which it decreased, and by the middle of October had quite disappeared. Among the Roman Catholic 'Sisters' several cases of fever occurred during winter, this notwithstanding that they were living in improved quarters as compared with those they previously occupied. Dr. Watson gives particulars in regard to their manner of life, and the predisposition to illness incidental thereto.—(XV. 28-32.) In the summer of 1878, simple diarrhœa prevailed among the foreign residents, it being considered due to water of inferior quality.—(XVII. 8.) During the year ending 31st March, 1880, the Chinese in the native town suffered slightly from small-pox, more severely at a large trading port some 30 miles farther up the river. A somewhat larger number of cases of febricula and of typhus-like fever also occurred among them.—(XIX. 1.)

Sisters.

CHEFOO.

The Port of Chefoo (Yentai) is situated in lat. 37° 35′ 56″ N., and long. 121° 22′ 35″ E. A series of picturesque hills take the form of an amphitheatre, commencing in the east at Knob Point, circling towards the south, and dipping westward to the sea. A sandy spit, 4 or 5 miles in length, connects that range with the 'Chefoo Bluff.' Thus the bay is due to the bluff on the north, the sandy spit on the west, the shore on which stands the town being on the south. Behind the foreign settlement, a gorgeously cultivated plateau extends to the base of the hills, forming a vista at once pleasing to the eye and

Topography.

suggestive of health to the spectator. At a little distance from the settlement there are sulphurous springs, regarding which *see* 'Mineral Waters.'—(III. 37-41.)

In the Report for the year ending March, 1872, the medical officer records the absence of drainage. He writes: 'At the same time I must confess that this condition appears to exercise no injurious influence over the sanitary state.' This absence of injurious result may be accounted for by the great porosity of the soil; secondly, by the prevalence of high winds, acting as 'diluents;' and thirdly, by the refuse matter being collected for agricultural purposes.—(III. 40.) In 1873, Drs. Carmichael and Myers 'had to call the attention of householders to the unhealthy condition of their premises, but their suggestions did not always meet with the response they could have desired.' Yet the community at Chefoo was not less advanced in sanitary practice than other communities in China.—(VIII. 50.) According to the Report for the half-year ending 31st March, 1878, conservancy was ignored by most of the householders. Were this better attended to, the reporter believes Chefoo would be much resorted to as a sanatorium.—(XV. 20.)

Conservancy.

In March, 1872, the water-supply was very unsatisfactory. Nearly all the plain surrounding the town is one great graveyard, through which the water must percolate into the wells; and besides this, the extremely filthy and objectionable habits of the natives lead to still further contamination of the water by matters in themselves most objectionable. And yet it is stated that persons long resident here appear to suffer but little inconvenience from this state of affairs, although in the case of crews of ships using the water, they almost immediately became attacked by diarrhœa, although the affection itself is not in such an emergency either severe or of long duration.—(III. 41.)

Water.

In 1872, the climate of Chefoo was described as mild and agreeable, moderately dry, with sufficient ozone to render it nearly perfect. The temperature is not excessive in summer; in winter the cold is severe, but its severity does not appear to injure even delicate persons. During the latter season there are few atmospheric changes; and this, added to the dryness of the air, adds to the advantages of the climate. In early spring, feverish catarrh, similar to influenza, prevailed; but from May till November the climate was extolled as being tonic and bracing—to invalids suffering from hepatic or renal affections, dyspeptic attacks, or loss of tone, the climate is considered to be peculiarly advantageous. As a sanitary resort few places in the world can enter into competition with this favoured port, which, as a residence for the Western foreigner, Dr. Myers defies any other country, remote from the land of his nativity, to present a locality possessing such a happy blending of all the climatic conditions essential to the preservation of health and vigour.—(III. 37-42.) The temperature during the summer of 1872 was milder than that of the same season of the preceding year. The weather during the winter was variable, the changes sudden.—(V. 15.) In the early part of summer there was a large influx of visitors from the south, affected with malarious remittent fever, and intestinal catarrh. The former speedily yielded to change of climate, but the latter was not so easily controlled, frequently requiring a protracted residence and great care before improvement was observed. Dr. Myers noted the rapid convalescence from fevers, intestinal and hepatic affections among patients who came to Chefoo early in the season. Later on, in consequence of the frequent rains, the change was not found to be so great or so beneficial. But patients, apparently seriously ill, who resort to this place before July, make surprisingly rapid recoveries, which the medical officers attribute to the direct influence of the climate. They add, that these remarks have more especially reference to patients from Shanghai.—(VIII. 50.) During the summer of 1876 great heat prevailed, accompanied by drought. Cereal crops completely failed; those of

Climate.

Sanitary Resort.

sweet potatoes were plentiful. In some districts good crops promised, but these were consumed by locusts; a caterpillar also destroyed much of the *sorghum*. The coldest day was 25th January. The highest temperature, namely 103° Fahr., on the 11th and 30th of July. On 1st of May the temperature rose rapidly to 90° Fahr. It was 101° Fahr. on the 29th, and 100° Fahr. 6th July. On the 31st August it was 100° Fahr. Except during August and September, the rainfall was insignificant. There was no heavy fall of snow during the winter. Some days upon which neither rain nor snow fell were cloudy or stormy, but for the most part they were clear, bright, and dry, such as are only met with elsewhere in places like Central Asia or in certain districts on the Pacific coast of America. Rain or snow fell on 35 days, leaving 330 days of 'fine weather.'—(XII. 42.) During the winter of 1877-78, the unusual occurrence took place of the harbour being, at different periods, completely icebound. The floes extended for miles in an almost unbroken mass. But as soon as a breeze arose from the north or east, large masses were driven shoreward. January and February were the coldest months; on 19 days in the former the thermometer stood below 20° Fahr.; but, there being an absence of much wind, the cold was not severely felt.—(XV. 17.) In the summer of 1878, an unusual amount of rain fell. During April, May, June, and September, the temperature was much the same as the corresponding period of the previous year; but the months of July and August were several degrees warmer, having exceeded 90° Fahr. on 19 days in these two months. In July, hot and oppressive winds from the south at times prevailed; during their continuance the temperature rose to 103° Fahr., but speedily subsided to 88° Fahr. Thunderstorms were of frequent occurrence, and served to moderate the temperature.—(XVI. 14.) In the winter of 1878-79, frequent violent storms occurred, attended by a number of disasters to ships in harbour and along the adjoining coast.—(XVII. 14.) The summer of the latter year was unusually rainy. High temperature occurred for a few days now and then, but the settlement was never without a delicious breeze, rendering the sensations cool, even with the thermometer at 95° Fahr.—(XVIII. 71.) In the half-year ending 31st March, 1880, the winter season was comparatively mild. In the latter part of it, or early spring, many persons remarked a wonderful development of electricity in the air. During the operation of dressing the hair, in some instances, sparks of electricity were visible; 'but it has not yet been determined if an electrical condition of the atmosphere has any effect upon health or disease.' The seasons of winter and spring were both clear and bracing.—(XIX. 31.) The summer of 1880 was moderated in its temperature by refreshing sea breezes; thus the season was tolerably cool. The beneficial effect of the climate was well exemplified in the case of visitors from other places, some of whom, worn out by malarious diseases, recovered health after a sojourn of a few weeks at this place.—(XXI. 42.) The winter of 1880-81, though prolonged, was mild, but with frequent storms. In the six months ending 30th September, 1881, the temperature was considerably higher than it had been in the corresponding period of the previous year.—(XXII. 11.)

During the year ending 31st March, 1872, the general health was most favourable, both as regards constant residents and visitors. There being no marshes near this place, ague is not met with among the native inhabitants.—(III. 38.) In that ending March, 1873, the health standard was also favourable.—(V. 16.) In consequence of the reputation for healthiness this station obtains, a considerable number of persons suffering from various diseases resort to it as a sanatorium.—(V. 18.) During the remaining portion of that year the state of public health continued good. In reference to the charges for insurance of life at this port, Drs. Carmichael and Myers wrote: 'The risk of life here is quite as small as, if not less than, that seen anywhere at home; and it would seem high time that theory, based

Health.

Life Insurance.

on erroneous hypotheses, should give way to fact discovered by actual experience.'—(VII. 18.) During the year ending 30th September, 1875, the health of the community was unusually good. Fever, dysentery, and diarrhœa, so common in the south, are seldom found here. The great heat of the summer did not therefore affect injuriously the public health.—(XI. 2.) In the winter of 1875-76, there was little sickness among the residents. Although, during the summer of the latter year, there was great mortality among the Chinese, resulting from scarcity of food, there was an absence of cholera and malignant fever.—(XII. 43.)

During the half-year ending 31st March, 1878, notwithstanding the severity of cold, the health of the foreign community was generally good. Epidemic diseases were altogether absent, and no disease occurred that could be attributed to cold. Serious cases of disease, however, were not unfrequent.—(XV. 17.) In that ending 30th September, 1878, the health of the community was particularly good. No case of remittent or intermittent fever occurred, and, in fact, the place is said to enjoy immunity from these forms of fever.—(XVI. 14.)

The summer of 1879 was healthy, notwithstanding that the rainfall was excessive.—(XVIII. 71.) During the half-year ending 31st March, 1880, the health of the foreign community was exceptionally good; there was a complete absence of serious affections. Among the natives the health conditions were less satisfactory, several zymotic affections having prevailed among them. —(XIX. 31.) Throughout the year April, 1880—March, 1881, the health of the community, foreign and native, was remarkably good.—(XXI. 42.) During the half-year ending 30th September, 1881, there was a considerable increase in the prevalence of illness, and a very high death-rate. The diseases treated during June and July were chiefly intestinal.—(XXII. 11.)

Of the diseases prevalent among the natives about Chefoo the principal are dyspepsia, affections of the skin and eyes, and winter cough. Dysentery is occasionally met with in summer.

Diseases.

Ague is unknown in the immediate neighbourhood, but to the south and west of the province, where great plains allow the rains of summer to settle down in the soil, it is not uncommon. Some cases of leprosy have been observed. In the summer of 1871 an epidemic of whooping-cough prevailed, the disease having been imported from Shanghai.—(III. 40.) Enthetic diseases are rife. In the course of the winter 1872-73 some cases of diphtheria occurred on board ship in the Bay. During the entire year ending 31st March, 1873, a considerable number of cases of intermittent fever were treated; but in all the patients arrived from other ports, more especially from Japan, Amoy, Swatow, and Shanghai. Diarrhœa and dysentery were among the other prevalent diseases. There was no epidemic of any kind.—(V. 16-18.) Throughout that

First Case of Scarlatina.

year a case of scarlatina—said to be the first recorded in China—came under notice, variola, varicella, and rubeola—the latter often of a malignant type, and with diphtheritic affections of the larynx—being known to prevail generally.—(VII. 19.) In the month of June, 1874, a mild type of intermittent fever prevailed among the residents, chiefly affecting children. It took place at the commencement of the rainy season, and was unusual. It was limited to families living in cottages without ventilation under the floors, and in badly constructed dwellings where all the sanitary surroundings were notoriously injurious. In the shipping in the Bay the average number of cases of disease occurred, including the various forms of venereal dysentery and diarrhœa. Gangrene from cold is frequently met with among the crews of Siamese vessels, and more particularly in persons who are weak and anæmic. In these it occurs as early as the month of October. Among European seamen this form of disease has not been met with. During the autumn and spring months a peculiar kind of laryngeal catarrh is so prevalent among children that scarcely a child under three years of age escapes attack.—(VIII. 50-56.) In the winter of 1875-76 a case of scarlatina occurred on board H.M.S. *Kestrel*, its chief interest

being the fact that that disease is rare in this part of China. In the summer of the latter year dysentery of local origin broke out among the adult European residents. It was of malarious type, and many of the cases were severe, although recovery took place in all. The outbreak of the disease unprecedented here occurred immediately after the first rainfall, and while the temperature was at its maximum. Dr. Carmichael has not seen a single case of enteric fever at Chefoo, either in a native or foreigner. He notices, however, that numerous forms of malarious fever after certain duration assume the continued form; and he gives details of a case of 'remittent fever with enteric symptoms.' During a practice of fourteen years at Chefoo, he has only met with two cases of primary pneumonia in Europeans there.—(XII. 43-47.) Early in the winter of 1877-78 a case of enteric fever was imported. During that winter several cases of bronchitis occurred, the patients being young children.—(XV. 18-20.) In the six months ending 30th September, 1878, two cases of typhus fever occurred. No case of either remittent or intermittent fever happened either then or in the six months preceding; in fact, Chefoo again enjoyed immunity from these fevers. Among residents there were not many cases of diarrhœa; the number of cases among visitors and shipping was large. In some instances the affection was attributed to bad water; in others to the use of putrid food purchased at auction and issued to sailors.—(XVI. 15.) In the six months ending 31st March, 1879, cases of frost-bite occurred in the persons of some Japanese sailors who were wrecked upon the adjoining coast. A few cases of diphtheria, small-pox, and scarlatina took place in the settlement itself.—(XVII. 16.) In the summer half of that year two cases of pneumonia occurred. Affections of the digestive system were those which most prevailed; of these, one there was diarrhœa, chiefly among visitors and the shipping.—(XVIII. 71.) During the half-year ending 31st March, 1881, although measles prevailed in adjacent villages, yet only one case occurred in Chefoo. In the vicinity also, the young suffered from whooping-cough, illustrating, as stated, the relation existing between these diseases, the one sometimes preceding, sometimes following the other. Soon after measles had subsided, the natives suffered from inflammatory sore throat. In some instances the exudation of false membrane simulated diphtheria, the skin-temperature marking 103° or 104° Fahr. Some families lost two and three members by this disease.—(XIV. 32.)

CHINKIANG.

This city is situated on the south bank of the Yangtze Kiang, in lat. 32° 12′ 50″ N., long. 119° 26′ 41 E. It has an estimated population of 150,000, which by immigration is rapidly on the increase. Of native productions the greater number are of inferior quality, the best part being silk fabrics which are largely exported. Devastated by invaders in the last rebellion, Chinkiang has but slowly recovered, and still shows indications of how it suffered. The surrounding low country is principally devoted to the cultivation of wheat and rice in successive crops, the hills to the raising of stock. The foreign community in 1876 only numbered about forty persons, these residing chiefly in the British Concession, which, small at best, had suffered severely in the two preceding years from the encroachment of the river. A new bund had been erected, but its efficiency had yet to be tested. To the south and east of the city are extensive hills, 200 to 1,000 feet high. In these, the foreigners had caused paths to be cut, and one may wander for many miles amid striking and beautiful scenery. Pheasant, deer, pigs, and other game abound, and to indulgence in the chase is attributed 'the unusually good health of this community, which is most singularly free from disorders dependent on excess in food and sedentary habits.'—(XI. 13.)

Topography.

Conservancy.

In 1876 the requirements of hygiene around the city were ignored. 'Even the dead fail to receive decent burial, but are frequently left, encased in poorly constructed boxes, to the slow process of natural decay, to breed further disease and death.'—(XII. 26.)

The spring rains of 1877 were unusually heavy and protracted. House and compound walls were covered with a low form of vegetation. The system of drainage was of the worst order—house drains converted into reservoirs, with no outlet for slops, garbage, and excrement. The state of the main sewer is particularly objected to. The relation of drainage to disease was exemplified at the Customs establishment during the summer months by a somewhat startling list of typhoid affections among the native staff.—(XIV. 62, 63.)

Water.

According to the Report to September, 1877, the major part of the water-supply for the foreign and native communities was procured at a point but a few yards removed from the mouth of the main sewer, and which is a favourite rendezvous for native boats. These causes render the water there procured a source of disease hardly to be appreciated after long years of immunity, but nevertheless dangerous.—(XIV. 63.)

Climate.

In the seven months from September, 1875, to March, 1876, the maximum temperature from 89° Fahr. in the former month, down to 43° Fahr. in January, then rose to 76° at the end of the period. The range of minimum temperature similarly was from 61° Fahr. in September to 18° Fahr. in January, then upwards to 36° in March.—(XI. 11.) In the succeeding six months of 1876 the actual maximum, 95° Fahr., was reached in July. In August and September it was 90° Fahr. in both. The minimum, 44° Fahr. in April, rose to 74° Fahr. in August, then fell to 58° Fahr. in September.—(XII. 26.) During the year ending 30th September, 1878, the rapidity and extent of thermometrical changes were unusually great. These changes were attended also by heavy snowfalls, rain, and thunder-storms; the extremes of temperature greater than in any like period of time in reference to which meteorological records are available.—(XVI. 20.)

In the year ending March, 1880, the heat of summer was more distressing from its duration than from its intensity. The temperature on several days in July and August reached 98° Fahr. —(XIX. 6.) The characteristics of the climate during the year ending 31st December, 1880, are given as follows: First part of January, fine; from 10th to 24th, sun and rain at intervals; latter part of the month, fine. First part of February, mostly rainy, with disagreeable weather; snow on 4th and 20th; latter part fine, with a few dull and rainy days. March, very fine, with only a few rainy days; on 18th, a thunder-storm and heavy showers. April, beautiful weather, with occasional heavy rain; on 23rd, strong gale from N.W. May, beautiful weather; only a few foggy and rainy days, and occasional thunder-storms accompanied by light showers; on 30th, a gale from the N.W. June, beautiful weather; latter part of the month, thunder-storms and heavy showers. July, fine, with occasional thunder-storms and heavy showers. August, beautiful weather, with occasional light showers. September, fine, with a few rainy days. October, very fine and clear weather; on 23rd, strong gale from N.E. November, very fine and clear weather, with occasional windy days; 7th and 23rd, gale from N.W.; 28th, heavy fall of snow. December, fine, with occasional cold and windy days; on 14th, 16th, and 19th, snow; on 18th, strong gale from N.E.—(XXI. 98.)

Health.

In the seven months from September, 1875, to March, 1876, the health of the foreign community was reported as good, yet 'scarcely an individual of it but has been affected with some form of disease more or less grave; but all cases have readily yielded to treatment, doubtless due to the exceptional healthy surroundings.'—(XI. 11.) Small-pox was epidemic in the city and suburbs. From April to September, 1876, the health of the community

was fairly good. This circumstance was in no way due to any regard paid to the most obvious hygienic requirements: namely, the removal of bad drains, stagnant pools, and the system of conveying night-soil, and 'various other nuisances.' The diseases most frequently met with have included such as were zymotic, cutaneous, and intestinal. Decayed vegetables and fish are obtained from Shanghai; these, together with Ningpo oysters, crabs, and other imported eatables, induce diarrhœa and dysentery. No death during the period occurred among foreigners. It was not till June that the annual epidemic of small-pox disappeared. A case of 'typhoid' fever in a native is recorded.—(XII. 26, 27.) In the year ending September, 1877, the health of the foreign community was not good, and among the natives also sickness prevailed to a greater extent than usual. This arose from a combination of causes, including a prolonged rainy season, bad drainage, bad water, financial disaster, and improper food. The diseases which most prevailed during the six months were typhoid, remittent, and intermittent fever, dysentery, diarrhœa, pneumonia, bronchitis, and affections of the liver. Entozoa of various species are very prevalent, lumbrici being the most common. Small-pox, as usual, prevailed to a great extent in winter; not, however, amounting to an epidemic. Erysipelas was epidemic during the summer months.—(XIV. 62-64.) In the year ending September, 1878, malarious fevers were more prevalent during the summer than in previous years, and were more obstinate to treatment. With their exception Dr. Platt 'failed to note, either among foreigners or natives, any unusual form of disease which might be attributed to climatic influence.' Nor has the amount of sickness been excessive. There has been no epidemic, and small-pox, so constantly met with here during winter and early spring of former years, was rarely seen. The health of foreigners was good, and no death occurred among them. A peculiar form of ecthyma was observed among salt-workers.—(XVI. 20.) During the year ended March, 1880, the health of the community was good, considering the protracted heat of summer, which proved most trying to some of the oldest residents of the port. No deaths occurred in the foreign community. Intermittent fever was prevalent to an unusual degree among the natives at the close of summer and in autumn. Two cases of typical typhoid fever were reported as occurring among them; also several cases of malignant disease.—(XIX. 6, 7.) In the year ending March, 1881, the health of the community was unusually bad, and especially bad during the last nine months of that year. Considering the cool weather that prevailed during summer, the reverse of this might have been expected. There was an unusual number of lung cases, as well as some of small-pox and typhus fever. Among other diseases recorded were remittent fever, dysentery, and diarrhœa.—(XXI. 98, 99.)

WUHU.

THIS city, situated on the Yangtze, in lat. 31° 19′ 12″ N., long. 118° 23′ E. (approximate), has a population of about 40,000. The houses of foreigners are for the most part situated on the river bank, on alluvial soil; in summer, when the river is high, it percolates through this light sandy deposit; thus, during the later part of spring, in summer, and early autumn, the basements are damp, 'and perhaps malarious.' Few of the houses of foreigners possess upper stories. The hills in near proximity to the town present very eligible sites for houses of improved construction and arrangement.—(XX. 22.)

Topography.

In the six months ending September, 1880, the maximum temperature, 88° Fahr., was attained in May; the lowest maximum, 79° Fahr., in April. The lowest minimum, 41° Fahr., in April; the highest minimum, 71° Fahr., in July.—(XX. 23.)

Climate.

According to the Report quoted from, the general health of the natives does not indicate an unhealthy condition of the situation. At the hospital established for them the applicants were few, and, except five or six cases of intermittent fever and dysentery, chiefly suffered from eye disease, cutaneous affections, or slight injuries. The health of the foreign community was hardly satisfactory. From time to time some suffered from general *malaise*, gastric disturbance, accompanied in some cases by diarrhœa, in others by constipation; the axillary temperature 1·5° to 3° Fahr. above the normal, the rise most marked in the afternoon. These symptoms of slight and latent forms of malarial fever continue from two to six days, then pass off under the use of quinine. The cause of these attacks is not to be found in the habits or mode of living, and although the climate is in most cases blamed, it is far from being unhealthy.

Health.

KIUKIANG.

In reference to this settlement the following are the particulars that have been obtained from the Reports now available:

In the Lü-shan hills, a range about 5,000 feet high, 9 miles south of Kiukiang, is a pleasant summer retreat in one of the gorges that intersect these picturesque mountains, which may be regarded as the sanatorium of both Hankow and Kiukiang. The little bungalow there was in 1876-77 owned by a company, but great consideration was given by its members to the requirements of invalids, to whom, especially during hot summers, such a retreat is of priceless value.—(XIII. 1.)

Lü-shan.

The subsoil of native houses in Kiukiang is generally sloppy or damp, always undrained, and seldom boarded over with any proper flooring, so that there is a constant ascent of damp vapours and unwholesome exhalations.—(II. 62.)

Sanitation.

The dietary of the poorer classes of Chinese residents consists mostly of rice and vegetables, with a little fish or bean-curd—seldom flesh meat.—(II. 62.) It is little fitted to maintain bodily vigour, especially when persons have to work hard and labour indoors, as tailors, watchmakers, brasiers, etc. As the Chinese are proverbially a quietly moving race, fractures are rare among them.—(XIII. 4.)

Food.

Habits.

The following thermometrical observations were taken within doors, in a fireless room with a northern aspect, at 8 a.m.:—1871, January, 35°. February 35°; considerable falls of snow, and hard frost towards the middle of the month. March, 45°; rain for ten days, with one storm of thunder and lightning; river risen 16 feet by the 20th of the month. April, 59°; rain, 11 days; one tempest; 3 thunder-storms; thermometer stood at 74° several days. May, 70°. June, 81½°; heavy rain, 4 days; 9 days of storm or breeze from N.E.; 9 days oppressively close and hot. July, 87°; 2 hurricanes; 4 breezy days; 4 days of thunder and lightning; 94° and 97° recorded on several days. August, 86°; 3 days of high wind; 5 of heavy rain. September, 80°; 2 days of rain; 8 of fine N.E. breezes. October, 68°; 3 days rain; 9 of fine E. breezes. November, 55°; 2 days rain; 2 of fine N.E. breezes; on 14th a storm from the N.W., accompanied by a heavy fall of snow; it was felt in Shanghai precisely 24 hours after. December, 44°; fall of snow on the 1st; high N.W. winds, 2 days; sharp frost; thermometer at 38° on 3 days.—(IV. 43.)

Climate.

In 1872, January, 39⅓°; falls of snow towards middle and end of month; high winds on 20th and 21st; ice in bedrooms on 22nd to 24th. February, 40°; thaws and heavy rains; little frost or snow throughout the month. March, 55½°; fall of snow on 3rd and 4th; the hills again dusted with snow on the 29th; heavy rains and sultry weather; temperature averaging 60° from the

10th; the magnolia, peach, cherry, mezereon, fairy columbine, and star of Bethlehem blossoming as early as the 15th of the month; on the 21st, heavy storm of thunder and lightning out of a clear sky; on the 25th and 26th, a furious tempest from the south, with scorching heat; afterwards wind from the N.E. April, 65⅔°; it rained on 17 days; thunder and lightning on 4 days; high winds, variable, 4 days. May, 73½°; rain, 10 days; thunder and lightning, 2 days. June, 78°; highest registered thermometer within doors, 86°; rain for 15 days successively from the middle of the month; water over the bund on the 22nd. July, 88°; first, several terrific storms of thunder and lightning, and then raging hurricanes, the night temperature varying but slightly from that of the day. August, 88°; the temperature was frequently 94° and 96° in the shade in the afternoon; 3 days of rain; 3 of high wind; on the 20th the chastened mellow light of autumnal mornings first remarked. September, 79°; fresh N.E. breezes during 10 days. October, 69°; N.E. breezes till 15th, then N.W. till 27th, then again N.E.; sudden alternations of temperature within a range of 10° or 12°. November, 56°; high N.E. breezes for 10 days; hoar-frost on the mountains, 2 days; no rain; mornings and evenings chilly, even severely cold; mid-day heat equal to that of an English summer. December, 44°; mild weather, with the mercury above 50° during the first half of the month.

In 1871 no fewer than 2,456 cases of disease and injury among the native Chinese were treated at the Kiukiang Dispensary. Dr. Shearer gives the following particulars in regard to the diseases so observed: 'The prevailing affection of the skin was scabies. In reference to disease of the teeth, decay is less common among the Chinese than among Europeans, probably on account of the simple nature of their dietary. Dysenteric diarrhœa and dysentery are usually mild; there is also less prostration in cases of these diseases in natives than in Europeans. Some of them occurred in opium-smokers who had recently given up the practice. As indicating the connection between dysentery and ague, and the dependence of both on malaria, the occurrence of both diseases in different members of the same family, but under the same conditions, is noticed. Thirty-three cases of pulmonary consumption were treated. Many were due to poor living and damp houses. One man, aged 48, had been consumptive for thirty years, expectorating blood in large quantities every two or three years, yet performing his work. His son died at the age of 20, of consumption. The diseases of the nervous system included apoplexy, delirium tremens, paralysis, convulsions, and acute mania. The forms of disease affecting the eyes were numerous. Intermittent fever and its sequelæ were of frequent occurrence; some were recorded in which that form passed into severe remittent, with continuous febrile action and slight remissions, but without distinguishable chills. The practice of opium-smoking was considered protective against intermittent fever; several examples of the disease occurred in persons who had recently broken off the habit, and *two* (only) in opium-smokers. Among the sequelæ of intermittent fever are enumerated, anæmia, anasarca, chlorosis—the correct treatment for which, according to the Chinese themselves, is "the wearing of a solid ring of silver round the neck." Other sequelæ include ague-cake, with or without ascites. Venereal diseases in severe form, primary and consecutive, prevail extensively among the people. On this occasion, only two cases of small-pox were recorded.'—(II. 61-66.) The summer of 1872 was long and trying, though not unhealthy as regards foreign residents. The autumn was remarkable for an epidemic of malarious fever of most malignant character among the natives in the districts of Lin-kiang and Suy-chow, south of the Poyang lake. Also, during autumn, diarrhœa, dysentery, cholera, fever, and intermittent fever occurred, but nothing more than common.—(IV. 44.)

Diseases.

Epidemic Malarial Fever.

During the ten months ending 31st March, 1875, in the foreign community, numbering nearly

sixty individuals, there was little sickness, and the cases as a rule were of no great gravity. Dysentery yielded to the ipecacuanha treatment. In the autumn of 1874 an epidemic of boils prevailed.—(IX. 1.) During the year ending 31st March, 1876, the health of the community was good; no epidemic prevailed, and disease was generally mild in type. Here, as elsewhere in China, diarrhœa in children during dentition is of frequent occurrence.—(XI. 14.) In the year from 1st April, 1876, to 31st March, 1877, although the summer season was unusually mild, diarrhœa, dysentery, and malarial fevers were of frequent occurrence. This increase in their prevalence was considered to be due to 'peculiarity' of the season, 'and to a flood, which, for ten weeks, partially deluged the Concession and the low-lying districts in the neighbourhood.' The actual temperature during the greater part of the time from June to September was, on an average, little over 83° Fahr. With a view to counteract the miasma arising from the submerged ground, quicklime was spread over it; but according to the Report, 'it was at this particular time that sickness was more prevalent than at any other period during the year.' Quinine was given as a prophylactic. In the latter half of the year, the community was remarkably free from sickness, and no death among foreigners occurred during the entire year.—(XIII. 1.) Throughout the year ending 31st March, 1878, the health of the foreign community was exceptionally good.—(XVII. 1.) In the summer of 1878, a flood, lasting from 21st July to 17th September, overflowed the low-lying country adjacent to Kiukiang for many miles in nearly every direction. This flood deprived most of the people of nearly all their worldly substance, reducing them to a state of destitution. Typhus fever occurred, of which a few died. Further mortality was probably averted by relief furnished by the native authorities, who dealt out daily issues of rice and other necessaries. Among foreign residents an unusual amount of sickness prevailed, for which Dr. Jardine was unable to account satisfactorily. Possibly it was accounted for by the unusual duration of close sultry weather, combined with the depressing influence of the flood. One case of typhoid fever occurred after a lapse of five years.—(XVII. 2, 3.)

In the year ending 31st March, 1880, the health of the community was very good.—(XIX. 9.) In that ending 31st March, 1881, the health of the community was fairly good. In the early part of the previous summer the weather was exceedingly temperate, and little sickness occurred. In autumn, remittent and intermittent fever, both unusually severe and obstinate, affected a large proportion of the community; those who suffered most severely from these diseases were such as were in the habit of bathing in the evenings in the lakes after the water had begun to subside over the flooded districts. In winter, catarrhs were frequent. In the neighbouring districts sickness was unusually prevalent. It has been often remarked that unusually mild summers have been accompanied or followed by an increase in sickness. At a hospital opened by the Catholic Mission of Kiukiang malarial fever far exceeded any other diseases. Many cases of their sequelæ were also treated. Cutaneous diseases ranked next, due in no small measure to the filthy habits and indigent circumstances of the people. Eye diseases ranked first in regard to numbers. Dysentery was very prevalent during the autumn. Only three cases of leprosy were met with.—(XXI. 48, 49.) In the year ending 31st March, 1882, the health was good; there was no epidemic. In April and May bronchial catarrh and diarrhœa prevailed; in June intermittent fever, which readily yielded to treatment. In July and August cases of sunstroke and cerebral congestion occurred; in September cases of dysentery and severe remittent. In December a case of typhoid fever was treated. In the country around Kiukiang much sickness prevailed among the Chinese during the summer and autumn. In June a fatal epidemic of what was considered to be remittent fever prevailed at a village 30 li east of Kiukiang. Only two cases of elephantiasis were treated during the year.—(XXIII. 38.)

HANKOW.

THE geographical position of Hankow is lat. 31° N., long. 112° 10′ E. The city (1871) stands on a strip of mixed and silicious sand lying at the junction of the river Han with the Yang-tze-kiang. At different seasons the level of the town in relation to the river ranges from 2 to 4 feet during autumn up to 40 to 50 feet in winter. Since the opening of this port in 1861 the town has been three times submerged, namely in 1866, 1869, and 1870. After each of these occasions, vacant spaces being covered with vegetable decomposing debris, fever and cachexia occurred. Some low-lying parts of the town remain swampy after overflows; it is accordingly proposed to drain them. The English settlement adjoins, but is apart from, the portion of the native city which stretches along the Yang-tze. The benefit of this separation is particularly seen in the limitation of small-pox, which has been repeatedly and severely epidemic among the Chinese in the city without having attacked a single foreigner residing in the Concession. On the other hand, while foreigners lived in the city not a year passed without a sprinkling of that disease amongst them.—(II. 44, 45.) The condition of the site is thus adverted to in the Report on the settlement for the half-year ending March, 1881. According to Dr. Begg, it 'is a flat, just below the Chinese town and the entrance of the Han river into the Yang-tze. A part of the ground had formerly been used as a burying-ground. Along the bund the river-water is saturated with animal impurities; yet this water is used by the community, the only means of purifying it being alum.—(XXI. 44.)

Topography.

Heaps of filth are accumulated in the native streets and houses; in the absence of drains and scavengers, these remain until washed away by inundations of the river, which from time to time occur. Adverting to the method in use here, as elsewhere in China, of retaining soil-matters in pits until they have reached an advanced stage of decomposition, Dr. Reid writes: 'It is possible that even if the excrement originally contained the germs of zymotic diseases, they would pass through their stage of existence before the pollution is thrown into the air. It is only by some change which has taken place during this preparation of the sewage that we can explain the usual freedom from enteric affections of the labourers who apply it to the fields, and dwell in the midst of the effluvia.'—(II. 44.) According to the Report for the half-year to March, 1872, drains 3 or 4 feet deep and 2 in width run along the centre or sides of streets. They have no sufficient fall, and thus speedily become blocked up with mud and refuse. Between the latrines of private houses and the main drains there are usually small closed channels, so that regurgitation both ways of gases must of necessity take place. The latrines are numerous. They are constructed without regard to cleanliness. Their contents are allowed to accumulate for three or four weeks, and then they are carried to the jetties in uncovered buckets, occasionally during the day, but more generally at night. While this process is going on, the neighbourhood is saturated with odours of the most intense description. Notwithstanding the apparent undesirableness of the locality, in some cases private dwellings, and even restaurants doing a thriving business, may be seen attached to the latrines, and only separated by a wooden partition insufficient to oppose the entrance of polluted air. During the rise and fall of the river the subsoil becomes saturated, then gradually dried. Yet there is an absence of enteric fever. (III. 43, 44.) According to the Report for the year ended 30th September, 1877, 'with the disappearance of marshy ground near the settlement there is a good prospect of the diminution or disappearance of malarial fever during years free from a general inundation.'—(XIV. 79.) In 1881 steps continued to be taken to raise the whole Concession above the usual flood-level. Adverting to this subject, Dr. Begg wrote: 'To raise it—with the exception of the ground

Conservancy.

underneath the houses—converting it thus into a fever-trap. Not content with a perfect surface drainage, they introduced that which is dangerous at its best and deadly at its worst, namely a system of drainage—a system of drainage without a fall, or three feet of fall divided over the system; drains whose outlet for many months of the year is below the level of the surrounding water; drains made of porous bricks, without ventilation, except for the communications with houses and streets.'—(XXI. 41.)

Agriculture.

At a short distance behind, a wall stretches between the two rivers, and in that direction encloses both the city and a considerable piece of land, divided into vegetable gardens. These plots are watered at all hours of the day with a rich liquid manure, consisting of the night-soil of the city population; and according to Dr. Reid's Report, 'this effectual, profitable, but most disagreeable method of utilizing the night-soil seems here devoid of special evil consequences to health, notwithstanding that those engaged in the culture of the vegetables constantly respire a highly impure atmosphere.'—(II. 44.)

Water.

The water-supply is drawn (1871) from the muddy river. Before being used for drinking purposes it is precipitated with alum, then heated and filtered. These precautions are needful, because of contamination by the refuse of the city above, and of the enormous boat population living on the Han. 'Notwithstanding these precautions, dysentery in autumn affects both natives and foreigners.'—(II. 45.)

Habits, etc.

In 1871, the European population of Hankow, although somewhat fluctuating, usually averaged 110 adults, and from 10 to 20 children. All were in easy circumstances, and engaged in indoor occupations. According to Dr. Reid, although the temperature of the air is but little below that of the body during the summer season, and exercise can only be taken on a limited scale, a considerable amount of heat-producing and reparative material may daily be consumed with wonderful impunity.—(II. 45, 46.) Adverting to the prevalence of leprosy among the poorer classes of Chinese from the neighbouring districts, and to the circumstance that the disease is attributed to their state of poverty and hardship, he writes: 'In their better days the ordinary diet of the labouring classes consists of a pound and a half of green or preserved vegetables prepared with a little oil, and a somewhat less quantity of inferior rice daily. Fish is only occasionally partaken of, and then in very small quantity. Pork and beef are tasted only once or twice a year. The winter clothing and houses are on a par with the diet; the former made of cotton cloth, affording a thin and insufficient protection; the latter, a congeries of filthy mud cabins with accumulations of excrement in close proximity.'—(II. 55.)

Food, etc.

Climate.

Throughout the year ended 30th September, 1871, the thermometer ranged from a few degrees below freezing-point to 96° Fahr. in the shade in summer. The hot season begins in May, and ends early in September; the day temperature seldom under 88° Fahr. or over 94° Fahr. Often days and nights occur in which the atmosphere is still, the nights more oppressive than the day. September is the most trying month of the year, its temperature variable, chilly breezes at night. During it malarial fevers prevail among the natives, and occasionally also affect foreigners.—(II. 45.) In the summer of 1874, the temperature of May ranged from 91° to 94° as a maximum; so also in June, July, and August. In September the maximum was 100° up to 11th; on that day it fell to 66°, and the severity of summer ceased. —(VIII. 48.) The frequent variations in the temperature of the air constitute a characteristic of the climate. The year ended 30th September, 1876, was characterized by comparative coolness and dryness of the summer, and the unusual prevalence of breezes at night.—(XII. 14.)

In 1871 it was recorded that malarial fevers, which prevail in September and October, affect

alike natives and foreigners. Those that occur after overflows of the Yang-tze-kiang also follow this rule. Dysentery usually infests the native city in autumn. Since 1865 a very large proportion of the mortality among foreigners at this place has been caused by that disease; three-fourths of the mortality by it occurred among the minority who had to reside in the native city, and children were the most severely affected. In sporadic form it occurs annually at Hankow in May, rarely becoming epidemic before autumn. In 1871, however, instead of that disease, chest affections and fevers prevailed. Here, little tendency exists towards serious hepatic or splenic complications of dysentery as in India; an 'enormous percentage of mortality' among children was noted, chiefly occurring during dentition.—(II. 45, 46.) Beyond those from climatic causes, whooping-cough in spring and an unusual frequency of continued and remittent fever in autumn were the only epidemics recorded. In the treatment of the fever belladonna was given, with the result that a *scarlatinoid* eruption, succeeded by general anasarca, quickly followed; these ceased on the drug being discontinued. The cases of fever were for the most part among foreigners, of no great severity. A case adynamic in type occurred, and proved fatal in a young woman; she was occupied in a nursery on a ground-floor, and close to a foul drain; in May she had an attack of fever; during June and July it reappeared as an intermittent. In August quinine was prescribed, but without benefit. Diseases.

In the six months ending March, 1872, no epidemic febrile disease occurred. In February, with a rise of from 20° to 30° in the maximum temperature, a prevalence occurred of malarious diseases chiefly of the intermittent and remittent type. The absence of any type of exanthematous fever was hardly to be anticipated, knowing the filthy condition of the houses and streets, density of population and poverty. Small-pox was extremely rare.—(III. 43.) In the six months ending September, 1872, a large proportion of the fever cases were brought from the country districts, the majority malarial.—(IV. 72.) In the half-year ending March, 1873, parotitis was the only epidemic disease observed; its type was mild.—(V. 31.) Insolation is of rare occurrence among foreigners at this port. In the summer of 1873 two cases occurred, both on board H.M.S. *Ringdove*. Neither of the men had been exposed to the sun. In one the attack began towards midnight, in the other shortly after daybreak. Temperature of the air at the time max. 85°, min. 84°, wet bulb 81°; vacuum solar thermometer, 161° at noon, 158° at 4 p.m.—(VI. 33.) During the summer of 1874, fever, ague, and dysentery occurred among the natives. In some cases fever and dysentery were combined in the same subject; in one case the fever was complicated with pneumonia. Other diseases more or less prevalent were rheumatism, dyspepsia, 'malaroid' disorders, bronchitis, phthisis, conjunctivitis, ulcers, and scabies.—(VIII. 43.) In the six months from April to September, 1875, the general health of the community was characterized by the prevalence of 'malaroid' disorders, assigned to heavy rainfall in June, and overflow of the river in July. Suppurative hepatitis and dysentery were endemic, and were the chief causes of serious illness among the foreign residents. On 6th of August, three cases of sunstroke occurred. At 4 p.m. on that day, the maximum thermometer was 96°, wet bulb 85°; black bulb in the sun 152°, min. on the grass 95° Fahr.—(X. 46, 47.) The summer season of 1876 was comparatively cool, the atmosphere dry; yet it was by no means a healthier season than usual. Malarial diseases prevailed, due, it was believed, to filthy ponds and inundated tracts near the settlement. Dr. Reid writes: 'Although a marshy district and wet decaying organic matter are not the only necessary factors in the production of malaria, which is occasionally met with in a dry soil, and even in mountainous regions at a height of several thousand feet, yet there is often a causative relationship between them.' A few cases of rötheln were met with in spring, but the disease did not assume an epidemic form; small-pox prevailed as such.—(XII. 14, 15.) During

the year ending 30th September, 1877, no examples of severe malarial fever were met with among foreign residents, a decrease in these diseases considered to be due to local improvements. Small-pox was moderately prevalent in the neighbouring cities during the winter and spring months. —(XIV. 79.) In the year ended September, 1878, a number of cases of cholera occurred, in the first instance among the workmen engaged in the brick manufactories; the disease then spread among the natives residing in the convent. The health of the crews of the shipping was satisfactory. A few cases of dysentery and of malarious fevers among the foreign residents. —(XVI. 23.) According to the Report for the half-year to March, 1881, the health of the foreign community, 'in spite of the unhealthy situation of the Concession, will compare favourably with that of any port in China.' Dr. Begg remarks on the difficulty there is in treating medical cases in Chinamen, even in hospital. 'Their houses, mode of life, diet, dirt, ignorance, and prejudice, are all arrayed against us.' Of those who applied as out-patients not more than 50 per cent. returned a second time. The relation between their sexes gave 20 per cent. of females, 80 of males. The diseases which most prevailed included remittent and intermittent fever, dysentery, dysenteric diarrhœa, and simple diarrhœa. Among the Chinese, several cases occurred of a fever which 'ran the typical course of typhoid.' Parasitic skin diseases, syphilis, and ophthalmia in aggravated forms among them were due in great measure to dirt.—(XXI. 44-46.)

ICHANG.

Ichang is situated in lat. 30° 14′ 25″ N., long. 111° 18′ 34″ E. It lies on the north bank of the Yang-tze, about 1,000 miles from the sea. The foreign population number 17 persons, including ladies and children. They all live in native houses. The Concession is bounded by the river in front; at the back is a piece of ground in which formerly the Chinese buried their dead. The city side rises considerably from the river. Any decomposed vegetable matter from rice-fields which lie at a considerable distance to the back of the concession is thrown in a northerly direction. The settlement, however, is liable to inundations. Such catastrophes are expected every ten years; but at the date of the Report to September, 1880, ten whole years had elapsed without a flood of this kind. On the hills and in the valleys on the opposite side of the river pleasant walks may be had, although the roads are bad.—(XX. 18, 19.)

Topography.

According to the Report to September, 1880, the sanitary conditions were most deplorably neglected, and yet the foreign residents enjoyed comparatively good health in it. Efficient drainage is utterly uncared for by the Chinese, and no precautions whatever are taken to prevent obnoxious smells or clear away rubbish from the mouths of drains. Privies are numerous; they are emptied once a week, when their contents have had ample time to undergo putrefaction. The farmers carry away the soil.—(XX. 18.)

Conservancy.

The summer of 1880 was less hot than that of 1879. The two hottest days in that of 1880 were 4th July and 2nd of August, on both of which the temperature was 91° Fahr. Considerable rainfall served to keep the atmosphere cool without inconvenience otherwise. The heat had no bad effect on the residents. In the surrounding country the air is bracing, and only three miles up the river is the commencement of the gorges of the Yang-tze, where a complete change is experienced by the visitor.—(XX. 19.)

Climate.

The health of the foreign residents during two years prior and up to September, 1880, was upon the whole very good. This is more especially noted, as all foreigners live in native houses, and the majority of them inside the city wall in localities where it is hardly possible for them to escape the effluvia caused by the inefficiency of sanitary arrangements.

Health.

Ichang has the name of being unhealthy, but Dr. McFarlane is decidedly of opinion that, on the contrary, the place is healthy.—(XX. 18, 19.)

According to Dr. McFarlane, the native Chinese will undergo any amount of pain, and drink medicine *ad libitum*, if permitted to go home from the Dispensary. He hopes to be able in a year or two to overcome their prejudices against the foreigners. Skin and eye diseases are the most prevalent. Ague cases are numerous, but no other form of fever appears to affect the natives of Ichang. There is a reported absence of epidemic disease and of elephantiasis, and a scarcity of morbid growths among the natives. The last epidemic of cholera in these parts was in 1850.—(XX. 20.)

Diseases.

SHANGHAI.

The geographical position of Shanghai is lat. 31° 14′ 32″ N., long. 121° 29′ 8″ E. The settlement occupies a point of land at the junction of the Woosung and Wongpoo, both rapid rivers. The surrounding country for many miles in every direction is purely alluvial, intersected by numerous creeks, and studded with towns and villages chiefly inhabited by agricultural population. The soil is extremely prolific, and except when actually frozen, is under constant cultivation. Rice is grown in considerable quantity. From the middle of April onwards the numerous natural swamps are supplemented by deeply irrigated fields. A very large extent of land close to the foreign settlement is thus periodically submerged, a condition highly unfavourable to health, and intensifying the action of these causes which, on the deltas of all great rivers, tend to produce disease. The Shanghai district is therefore to be qualified as 'malarious,' the convenient term 'malaria' being used to designate the mass of describable and indescribable conditions which prevail in the neighbourhood of marshy lands, especially when these are subjected to powerful heat. During the spring, summer, and autumn months the fields are plentifully manured with night-soil, more or less diluted, which has been preserved in vats until it has attained a stage of maturation judged of by some standard known to the Chinese themselves. 'At first this would appear to introduce a very hurtful ingredient into our breathing air, and there is sufficient evidence that the atmosphere is filled with pungent particles from the ground so treated. But whether it be that the process of maturation is fatal to the life of those germs upon which epidemic disease is said to depend, or that their large dilution with pure air renders them inconsiderable (a supposition which the reporter considers quite untenable), or that the original material neither contains nor develops disease germs at all, the fact is that disease can never be traced to this cause alone.' Dr. Jamieson continues: 'It is well to add that no authentic case of disease arising from the adoption of sewage irrigation has been observed in the neighbourhood of the farms so treated. The fluid sinks rapidly beneath the surface, and is filtered through the soil, the roots of the growing plants appropriating the organic materials while the water drains away.' This description is to a considerable extent applicable to the plan of manuring in vogue in China generally.—(II. 33.)

Topography.

Country.

Malaria.

Manure.

The flatness of the site of the settlement renders efficient drainage all but impossible. No night-soil reaches the drains, as it is retained in vessels, and careful scavenging reduces to a minimum matters to be removed by drains. Filth and vegetable refuse left in unfrequented spots are carried by rains into the drains, and the constant traffic along the narrow streets renders the quantity of refuse matter very considerable. The quantity of refuse and offensive matter from boats and shipping which finds its way along canals and water-

Conservancy.

courses is great. Certain reclamations of land on the banks of the river were in progress. The certificate of the health officer was declared sufficient to authorize the forcible removal of noxious accumulations, and the purification of unwholesome dwellings, drains, cesspools, etc.—(II. 34, 35.) The Report for the half-year ending 31st March, 1872, contains an enumeration of improvements in progress in regard to sites and construction of houses, drainage and state of roads.—(III. 78.) Progressive improvement in the sanitary condition of the settlements and suburbs was reported to March, 1873.—(V. 50.) In the Report to September, 1875, the remark occurs that five years ago Dr. Barton observed that foreigners in China owe much of their immunity from disease to the primitive system of water-closet accommodation which is in vogue; that they thus escape all the dangerous and often deadly gases which rise from imperfectly flushed drains, and the risks of domestic water pollution incidental to European houses to which water is laid on, and in which there are more or less 'scientifically' devised closets.—(X. 57.) According to the Report to March, 1879: 'In all matters affecting the health of the settlements, with the exception of a provision for good water, the Municipal Councils are working vigorously; roads widened; drainage extended; streets and alleys cleansed; creeks as far as possible kept clean; roads kept in good order; public gardens improved; trees planted on the bunds and along roadsides; hospitals subsidized, etc.'—(XVII. 18.)

In the Report on the settlement to 30th September, 1871, the following remarks occur:

Water.

Whatever does escape—that is, of the contents of pent-up sewers—is carried into the river. Into the river, through the drains, comes the drainage from up-country villages and fields. The shipping in the stream contributes its refuse; the ditches of the native city are washed out at each time of spring-tides, filth of all kinds swelling the list of river impurities. The Municipal Council having submitted various examples to Professor Frankland, it was proved by analysis that instead of being exceptionally bad, the water-supply, in spite of all that must mingle with it, is exceptionally good. Dr. Jamieson observes that, whether generally contaminated or not, the river is liable to contamination on an alarming scale, should any disease such as typhoid, dysentery, or cholera break out on board the ships, or an accident happen to the heavy-laden manure boats. According to the Report for the half-year to 31st March, 1872, the prevalence of dysentery and of 'enteric' fever is considered to be connected with the water-supply, that for drinking and washing purposes being obtained from the river. Even a case of suppurative hepatitis was assigned to the water-supply of this settlement.—(II. 34, 84.) According to the Report to March, 1873, 'water-coolies fill their buckets impartially at all states of the tide, and as frequently as not take their supply out of the drain-mouths. Nearly the entire water-supply is derived from the river, the Soochow creek, and the Yang-king-pang. Little, if any, night-soil finds its way into the sewers, but much putrefying matter is necessarily washed into them by every heavy shower of rain. From foreign ships and native boats, however, a considerable amount of fæcal contamination of the river-water takes place; and this water is drunk after simple filtration, and the addition of alum to it. In reference to this subject, 'two points are important—that dilution is no measure of safety, and that it is of the essence of organic germs, even when most sparsely diffused, to multiply indefinitely.'—(V. 50.) In the Report to 30th September, 1873, it is observed that nothing short of precipitation and filtration, followed by boiling and a second filtration, can render the creek-water fit for domestic use. Without the most sedulous care on the part of foreign residents on the Bubbling Well Road, the water used in their houses for drinking and cooking purposes must be extremely impure.—(VI. 55.) In the Report to 31st March, 1874, it is stated that typhoid fever and dysentery continued to be endemic at that place, and that 'there *appears*

to be good reason for *assuming* that the water used in the settlement is a main cause of both.' Dr. Jamieson wrote: 'It is a just subject for astonishment that while the members of the Shanghai community doubtless accept the received doctrine of the non-specificity of dysentery, and the well-supported doctrine of the non-specificity of typhoid, they make no effort to provide what in all civilized countries is regarded as the most fundamental hygienic arrangement.' He then advocates the formation of a waterworks company, and in the meantime recommends the use of filters.—(VII. 34.)

In the Report on that settlement to September, 1874, the medical officer recurs to the subject of water. He alluded to the question 'at issue' as to whether water not specifically contaminated can produce 'enteric' fever. He replied that 'we never know enough of the diseases prevailing among the Chinese around us to enable us to assert that the water drawn from the creeks is not, *probably*, so contaminated.' He adds, 'Experience in India is decisive as regards the *spontaneous* origin of typhoid, but it appears *probable* that the disease arises there among young soldiers from causes more purely climatic than those which produce it at Shanghai.'—(VIII. 17.)

In the Report for October, 1874, to March, 1875, the medical officer wrote: 'The most elaborate system of filtration will remove only the inorganic suspended matters and grosser organic impurities held in suspension. As regards all substances dissolved, and all minute organisms, water leaves the best filtering beds in the same condition in which it entered them. Ordinary Shanghai drinking-water is reported to be, after filtration, unobjectionable from a chemical point of view, but swarming with bacteria and vibrios, and therefore to be regarded as suspicious, if not dangerous. The unobjectionable character of the water after filtration, so far as regards dissolved impurities, is further attested by a most competent analytical chemist.' Dr. Jamieson, having examined the water of Shanghai, writes: 'From the very small amount of nitrogenous matter present, he concludes that the water in the Woosung below the settlements at high water consists almost entirely of water from the Yang-tze, and, from the small proportion of lime and magnesium salts present, that sea-water must be completely absent.' He considers the water taken at high water from the Woosung, and at some distance below the settlements, to be well suited, after thorough filtration, for general use for drinking, washing, or other purposes; while Parkes says that 'it is uncertain how far boiling will destroy the poisons of specific diseases,' and quotes Lex to the effect that some bacteria move rapidly at a temperature of 260° Fahr. On the other hand, Bastian says: 'It has been established that living protoplasm is entirely destroyed by sudden exposure to a temperature of 140° Fahr. when in the moist state, irrespective of the fluid in which it may be immersed.' Dr. Jamieson states, with regard to the Shanghai water, that 'the simple precaution, therefore, of boiling all the filtered water, either by itself or mixed with wine or spirits, renders the consumer absolutely safe. The two processes should invariably be combined: first filtration, and then boiling.' He says: 'The advantage of boiling water before drinking it was well understood in ancient times. Herodotus, writing about 450 years before the Christian era, of a period a century earlier, says (i. 188): "The great king, when he is on a campaign, is supplied from home with provisions well prepared, and with cattle. Moreover, he carries with him water from the river Choaspes, which flows past Susa, whereof alone, and of none other, does he drink. And with this Choaspes water, *previously boiled* and stored in silver vessels, many four-wheeled mule-carts are laden, which follow him whithersoever he marches." Even boiled water, however, should be drunk not later than 24 hours after boiling. It cannot be too distinctly understood that dangerous qualities of water are not obviated by the addition of wine or spirits.'—(IX. 7, 9.) In 1878, Dr. Jamieson wrote that 'the water supplied by

the two private companies established here is reported by competent analysts to be unobjectionable in every way.'—(XV. 6.)

Habits.

The habits of the lowest class of residents resemble those of the corresponding class in all seaport towns. At this place the evils of those habits are increased by the violence of solar and malarial influences. These are uncontrollable, but habits of individuals are in their own keeping. The better classes of residents are careful as regards diet and shelter. They sleep on the second floor, and among them imprudence in eating and drinking is the exception. Heavy drinking is not common, although certain American drinks were better abolished.—(II. 41.)

In summer, when exercise cannot be taken, there continues to be constant exhaustion of vital energy, due to extreme heat, and this demands sustaining food. During hot weather, so-called 'respiratory' articles of food are avoided; but the need for blood-renewing food is undiminished, and in some instances increases. The loss of fluid by perspiration, though partly balanced by elimination from the kidneys, demands a large amount of drink, and doubts are expressed as to whether the quantity of alcohol that most people take is really hurtful. It is certain that occasional stimulation is necessary, and it is within the experience of everyone that when exhausted by any kind of work, with the thermometer at 90° or upwards, food, the sight of which excites loathing, is, after a glass of sherry and iced water or a little brandy and water, eaten with relish and easily digested. Although alcohol, pure or in the form of claret or brandy, does not lower the bodily temperature, it does, in moderate quantity, stimulate the heart's action and promote appetite without impairing digestion. It may enable work to be done which otherwise could not be performed. But each person must be a law to himself.—(II. 42.)

According to the Report, April—September, 1872, the cases of death by heat apoplexy, with hardly an exception, were due to drink-poisoning. The medical officer writes that at Hong Kew a mixture sold to foreigners under the name of 'gin' contains sulphuric acid, kerosene oil, and *bang*; also that 'Hong Kew gin is an excellent blistering fluid for horses.' He advocates the institution at Shanghai of a temperance establishment, in which light amusements and reading shall be provided.—(IV. 103.) In that to March, 1873, it is stated that trips into the country are from time to time organized; all kinds of athletic exercises practised by the majority of male adult foreigners; the rules of living not notoriously lax, yet there is hardly an individual who has not after a longer or shorter interval, but never a very long one, some residuum of undefinable seediness which disappears only after a change of climate.—(V. 52.)

Alcoholic Drinks.

Dr. Jamieson further writes: 'Incidentally, reference is frequently made to the evil effects of excess, but little has as yet been written regarding the value of alcohol, in the various forms of distilled spirits, wines, and malt liquors, considered as food and as medicine.' He does not refer to the use of wine in continued fevers, where it forms the largest part of routine medication. Undiluted spirits he considers to be unequivocably bad; spirits in a diluted state stimulate the mucous membrane of the stomach and augment its secretion. Hence the appetizing and peptic effect of a minute quantity of brandy much diluted with iced-water, taken shortly before eating in cases of atonic dyspepsia. On the other hand, when swallowed undiluted, spirits arrest the secretion of the gastric mucous membrane, giving rise to true inflammatory congestion.—(V. 56.)

Climate.

July, August, and September are the hottest months of the year. The thermometer in the shade then occasionally registers above 100° Fahr.; it is frequently 96° Fahr., and seldom falls below 90° Fahr. in the forenoon, or 80° Fahr. at night.—(II. 41.)

The Report for the half-year ending 31st March, 1872, contains a series of tables showing the

variations of temperature and of rainfall from between 1867 to that date. According to the reporter, it was not possible to collect under any general law the sequences observed between atmospheric conditions and the development of certain diseases. He, however, urged the establishment of stations for observations of this nature.—(III. 77.) In that to 30th September of the same year, the reporter observes that during summer, in the town itself, the *heat* was considerably more severely felt than it was in the country immediately outside, yet that the thermometer-reading was the same in both localities. A portion of this difference was due to the custom of the Chinese of covering-in the streets with matting, a measure which is believed to be protective against evils that would accrue from direct exposure to the heat of the sun. In the ease with which this measure can be carried out lies an advantage of narrow streets, such as are those of Chinese towns in general. As an illustration of this, it is stated that very few, if any, Chinese die from the direct effects of the sun. For some days in every summer the temperature at Shanghai rises to or above 100° Fahr.; 'yet we have never to chronicle results at all similar to those which follow a like high temperature in other parts of the world.'—(IV. 93.)

According to the Report to September, 1873, the hot season is a short one, and by many foreigners can be avoided by a migration to Cheefoo, or by taking short sea-trips. The reporter observes that those who remain in Shanghai may tide over many dangers by a judicious use of quinine and stimulants, over and above the ordinary precautions dictated by common-sense. No general caution is of more importance than that of immediate attention to bowel derangement. It is remarked that during the half-year the maximum temperature, 96° Fahr., occurred in July.—(VI. 54-56.)

From October, 1873, to March, 1874, the maximum, 76·5° Fahr., occurred in the former month; the minimum, 32°, in December.—(VII. 33.) From April to September, 1874, the maximum temperature, 94·5° Fahr., occurred on the 5th of June. Rainfall was under the average. Although temperature was not very high, the air was laden with moisture and with ground-exhalations. To this much of serious illness was assigned, and the rate of mortality was above the average.—(VIII. 16.)

The early part of October, 1874, was wet; November, as is usual there, was clear and cold; December cold. During the first quarter of 1875, the days were damp and chilly; but, except on one or two occasions, the temperature did not fall much below 30° Fahr. Light rain was of frequent occurrence, and the second and third weeks of March were continuously wet. The outskirts of the settlement are constantly becoming more desirable, and it should be the object of everybody who possesses a suburban villa to plant as many trees as possible in his neighbourhood. Trees cool the air by protecting the ground from the direct rays of the sun, by evaporating fluids elaborated by the trees themselves, and by cooling the strata of air in immediate contact with them. In the same Report Dr. Jamieson writes: 'That the summer temperature experienced there is not of itself the cause of serious disease is manifest from the fact that our hottest summers are not those which prove the most unhealthy. At Bagdad the mercury often reaches 120° Fahr. in the shade, and in June, 1850, at a place a little south of Bagdad, it often reached 124° Fahr.; yet the Arabs living under these conditions are healthy and warlike.' With reference to Shanghai, he observes that 'the periods at which we suffer most are the spring and fall, when the weather is changeable and uncertain. The dependence of disease upon change of season was observed at the time of Herodotus: "After the Lybians, the Egyptians are the healthiest of all men, on account, as it seems to me, of the seasons, inasmuch as they are not variable. For diseases attack people

Heat and Disease.

especially during changes, and most particularly during changes of weather"' (ii. 77).—(IX. 6-12.)

The month of April, 1875, was throughout cold and dry; so was the first part of May, with the exception of one or two very hot days. From the third week of May to the end of June, the weather was continuously wet, with a low temperature. Severe heat began with July and continued for nearly two weeks, when the temperature suddenly fell and the wind changed from west to south. The temperature quickly rose again, and continued high, day and night, till the end of the month. Throughout August, heavy rains with moderate temperature prevailed; September was cool and dry.—(X. 55.) According to the Report for the six months April—September, 1877, no satisfactory connection could be traced between the meteorological record and the disease record. In the months of June, July, and August, the amount of ozone was small; but the smallest monthly maximum was in September, at which time cholera prevailed. It was believed by the older residents of the place that the summers have of late years become milder than formerly, and the observation is to some extent corroborated by meteorological records. It is considered, however, that newly-arrived foreigners continue, as they have always done, to suffer more from the effects of climate than they do in subsequent years. The summer of that year was characterized by sudden alternations of heat and cold, with frequent rains. It was described as essentially treacherous; and both sickness and mortality were unusually high.—(XIV. 37.) In reference to the climatic characteristics of Shanghai—from observations (1877-78) there appears to exist in the upper strata of the atmosphere a strong air-current flowing almost exactly eastward. During 1877 this current was very constant. By some meteorologists it is considered to be a bifurcation of the return trade-wind which blows usually from S.W. to N.E. The winter of 1877-78 at Shanghai was the most severe that had recurred since 1861-62. It does not appear, however, that mortality was swelled by its severity. In the early part of 1877 a new hospital was established on the bank of the Soochow creek. All arrangements connected with it, and as regards the sisters in attendance, were placed on a satisfactory footing.—(XV. 2.)

During the summer of 1878, the temperature was never very high, nor were the nights remarkably hot; yet old residents were unanimous in considering that season as one of the most trying in their experience.—(XVI. 31.) In the six months ending 30th September, 1879, the season was unusually hot. On 15th of August the temperature was at its highest point, namely 99° Fahr. in the shade; from 10th to that date, at no time under 80° Fahr. Cases of heat apoplexy were then of somewhat frequent occurrence.—(XVIII. 81.) In 1880, the temperature during the summer was unusually mild; no night sufficiently hot to prevent sleep in a well-ventilated apartment. To this circumstance was attributed the absence of all affections depending upon excessive heat, and also the low death-rate of the period.—(XX. 33.) The latter half of October was dry and windy; the lowest temperature 42·8° Fahr. at 6 a.m. on the 26th. November and December were dry, clear, and cold; the mean daily temperature during nine days of the latter month, below 32° Fahr.; the average temperature during the entire month, 37·76° Fahr. The latter half of January, 1881, and all February, with the exception of three days, were cold and tempestuous. On these three days the thermometer indicated respectively, 62·8° Fahr., 70·7° Fahr., and 78·25° Fahr. March was wet, windy, and cold, until the last week, when the temperature oscillated about 60° Fahr.—(XXI. 80.) The summer season of 1881 was distinguished by its violent and constantly recurring atmospheric disturbances. Every month was stormy, and from May to September typhoons prevailed there and upon the China coast generally. April was unusually rainy, and the weather did not clear up

permanently during the entire season. The range of temperature was very wide, cold nights being succeeded by hot days; the atmosphere was laden with moisture; the rainfall 37 inches, taking place on 77 days; highest point attained by the temperature, 97° Fahr., namely on 25th July.—(XXII. 51.)

In the six months ending September, 1871, it is recorded that the European and other foreign members of the police force were remarkably healthy. They were kept in barracks during the heat of the day when practicable; on duty they were guarded as much as possible from the sun. In barracks they were provided with punkahs, and had unlimited supply of ice. They could obtain coffee and other beverages at any hour during the night.—(II. 38.) Health.

According to the Report for the half-year ending 31st March, 1872, there may be, and is in fact, little alteration in the death-rate as roughly estimated from year to year, but there is a marked diminution in the amount of general 'seediness' arising from more or less slight hepatic derangement, or absorption of malarial poison. The malignant 'Shanghai fever' has almost completely disappeared; intermittents and neuralgia are becoming slowly less prevalent. The general health of the population, and of the several classes of foreign residents, was favourable. In the same Report, the medical officer observes that the reputation of that settlement for healthiness has undergone many changes. At one time it was regarded as the sanatorium of China, but after a few years' residence there was declared to be more dangerous than at any other port in the East; and this evil reputation, never very just, still, at that date, clung to the station. Yet the return of causes of death among foreign residents shows that in the majority of cases the climate pure and simple cannot be charged with the event. He further remarks that a number of diseases which prevail in England are at Shanghai unrepresented; among them, diphtheria, croup, scarlet fever, true measles, laryngitis. 'Without, therefore, attempting to assert that Shanghai is the best place of residence in the world, we may say, at least, that, presuming ordinary care to be taken during the heat of summer, nobody diminishes his chance of life by leaving England and removing to this port.'—(III. 78-86.) In the summer of 1872, the diminution of 'malignant remittent fever' noticed in a previous Report gave way to 'many instances of the disease.' During the six months ending 30th September, the health of the Customs staff was good. Among the children in the Eurasian school, such of them as were strumous when taken into that institution rapidly improved in health therein. Among children the mortality was comparatively large. The English portion of the police force suffered comparatively little from illness, a circumstance due to the care taken in selecting the men. In the French portion of the same force, out of a strength of 47 men, 19 were ill during the period. There can be little doubt that the more than tropical heat of summer interferes with the growth and development of adolescents. Dr. Jamieson alludes to the imprudence of retaining children here for a longer time than is absolutely unavoidable, and of sending out young men who are still growing to encounter the constant work of a Shanghai office and the vicissitudes of a Shanghai climate. Although people may keep well for an indefinite period, should they once become seriously ill it is almost impossible for them to convalesce here. After the severer forms of periodic or continued fever, a trip to Japan or to some other port is not only desirable, but absolutely indispensable. It is impossible that Shanghai can ever be a desirable residence for children or youths.—(IV. 94-105.)

In his Report to March, 1873, he writes 'that the risk to life is not inordinately great in Shanghai. We have no periodical epidemic, such as those of typhus and small-pox. Nor is the climate so fatal to child-life as that of India; indeed, in some respects, children in Shanghai

would seem to be more favourably situated than children in Europe.'—(V. 54.) In the half-year ending 30th September, 1873, no serious case, except one of hepatic abscess, occurred in the Customs staff.—(VI. 58.) In the last three months of 1873, there was an unusual amount of sickness, apparently due to frequent and sudden changes of temperature.—(VII. 34.) In the six months from April to September, 1874, the health of the Customs staff was fairly good. -(VIII. 17.) According to the Report to March, 1874, much disease, severe in type, prevailed among Chinese and foreigners. The Customs staff, however, upon the whole, were tolerably healthy. Adverting to the general subject of health, Dr. Jamieson writes: 'The ratio of deaths between 20 and 30 to the total number of deaths is here far larger than in Europe. The ratio of deaths from diseases of the heart and great vessels to the number of deaths from all causes is here higher than in Europe; but very many of the diseases which are annually fatal in Europe to large numbers of men at the ages chiefly represented here are unknown. The health reputation of a place such as Shanghai very much depends upon the inhabitants themselves.'—(IX. 7-11.) In the half-year ending 30th September, 1875, the health of the Customs staff was fairly good. On the subject of personal hygiene, Dr. Jamieson recommends that as clothing, light, somewhat loosely-textured flannels are the coolest for summer wear. He accords credit for good work to the Temperance Society in operation at that settlement. He is much mistaken if the energetic good works of the Temperance Society there established do not, year after year, tell more and more upon the condition as regards health, not only of sailors visiting the port, but of that large and constantly increasing body of Europeans who pick up an honest livelihood somehow.—(X. 55-61.) From October, 1875, to March, 1876, notwithstanding that considerable sickness prevailed in other communities, the health of the Customs staff remained good.—(XI. 50.)

Temperance Society.

In the Report to 30th September, 1876, Dr. Jamieson writes: 'Experience in Shanghai is tolerably uniform as to the excellent condition of health preserved by old residents who take good care of themselves, who avoid excesses, and who have been lucky enough to escape malarious fever. Even among those who in their earlier days suffered from periodic fevers, there are many who appear to have outlived their susceptibility to them. There are many foreign residents who have lived twenty years and upwards in China, and of them the majority would compare favourably for strength and endurance with a like number of the same age taken from the desks of London offices.' He observes that men belonging to ships fresh from European and American ports are often found in hospital suffering from advanced heart disease, aortic aneurism, chronic disease of the kidneys, or who are in the last stage of phthisis. He remarks on the necessity of carefully inspecting seamen when first shipped, as intended by the framers of the Merchant Shipping Bill of 1876.—(XIII. 3, 8.) In the Report to March, 1878, a comparison was drawn between the rates of sickness and mortality at this place and in India. In 1876 the ratio of deaths among English troops in India was equal to 15·32 per 1,000; among officers to 14·8. These figures are believed to contrast favourably with Shanghai. In India the mortality among soldiers' children for that year was 55·38 per thousand; of those under one year 215. At Shanghai the mortality among children was inconsiderable.—(XV. 4.) The summer of 1878 was unusually unhealthy, not so much, however, as regards residents on shore as the classes on board ship.—(XVI. 31.) During the six months ending March, 1879, the health of the foreign residents was good; they suffered comparatively little from endemic diseases, and their children were absolutely free from some of the diseases that are most fatal among children in Europe and America.—(XVII. 20.)

During the six months ending September, 1871, the diseases which most prevailed among

foreign residents were thus enumerated: *a*, those assigned to climatic causes, hepatitis, and dysentery; *b*, to local causes, typhoid, and small-pox; *c*, to the action of the sun and personal habits, typhus, sunstroke, delirium tremens, meningitis. Hepatitis was distributed evenly through five months, May being excluded. In each month from April to July there was a case of typhoid. Diarrhœa and dysentery occurred throughout the period. Typhus occurred in May, August, and September; intermittent, remittent, and 'bilious' fevers in each month from May to September, both inclusive. Small-pox disappeared in May. Disease in August appeared to be more fatal than in the other months. The prevailing type of disease was periodic, and this extends to diseases presumably not of malarious origin. Shanghai is one of the homes of remittents and intermittents, a violent type of the former being known as 'Shanghai fever.' Hepatitis and dysentery combined are of frequent occurrence. During the six months under notice no epidemic disease of importance occurred. Whooping-cough, as to the occurrence of which previously no record occurs, was imported from Hankow in April, and ran through several families. Fung-sha, a cutaneous epidemic, prevailed this year. It affected large numbers of natives and foreigners, including adults as well as children. It prevailed chiefly during the months of September and October. The relation between high temperature, April to September, and increased mortality is indicated. In the winter of 1871-72 no epidemic prevailed.—(II. 37-41.) A few cases of fung-sha occurred in October and November. Some cases of phthisis were imported, but the disease seldom, if ever, originates here, and such cases as arrived from elsewhere benefited by residence at the settlement. Dysentery is endemic.—(III. 79.)

Diseases.

In his Report to 30th September, 1872, Dr. Jamieson hopes that means may be adopted whereby the results of private practice may be laid before the profession. He records the occurrence of that malignant type of remittent fever indicated respectively as 'mixed' or 'Shanghai' fever. Typhoid and typhus fever occurred, but *dengue*, prevalent at Amoy in August and September, was not observed here. Dysentery was not represented in April or May; no case of chronic diarrhœa appeared during July, August, or September; acute diarrhœa was admitted only in July and August; typhoid only in August and September; intermittent fever was absent in May, June, and September, and, 'curiously enough, the four cases of typhus occurred in May and June before the onset of hot weather.'—(IV. 92, 94, 100.) In discussing this subject the medical officer alludes also to the question of rise or fall of the temperature of the body in accordance with that of the atmosphere. In reference to certain reports on the subject, he states that his observations show that his own temperature under the tongue was during the hottest part of that summer 99·4° Fahr. to 99·8° Fahr.; during mild and cool weather it was persistently 99·2° Fahr. Venereal diseases of various kinds and severity were somewhat prevalent. Variola is never altogether absent from the native quarters. One case of small-pox occurred among the police in April, another in July. The diseases which occurred among members of the Customs staff were bilious diarrhœa, febricula from exposure to the sun, intermittent fever, neuralgia, and boils.—(IV. 101, 105.)

According to the Report to 31st March, 1873, the amount of brain disease encountered in Shanghai has lately assumed formidable proportions, and threatens to rival in importance diseases of the circulatory system. Dysentery within the last two years has become less frequent and less fatal; typhoid is rising in importance; hepatic abscess not uncommon. Other diseases enumerated include malarial fevers, phthisis, heart disease, small-pox, etc. During the period thus included an epidemic of a mild form of measles attacked the children in the Eurasian school. The reporter has never seen scarlet fever in China. Only one case of diphtheria has been seen at this place. Whooping-cough, which has appeared only within the last few years, is usually of a

mild type.—(V. 53, 55.) In the Report to 3rd September, 1873, allusion is made to the 'alarming frequency and fatality of diseases of the circulatory system among foreigners in China.' Dysentery and typhoid fever are here constantly lying in wait for the unwary. 'Safety lies on the side of assuming that both may arise without the implantation of a specific poison derived from a previous case of the disease.' Severe inflammatory diarrhœa is often produced without ascertainable cause other than a sudden fall of temperature, especially with a high proportion of aqueous vapour in the atmosphere.—(VI. 55, 56.) During the six months ending 31st March, 1874, acute dysentery, acute diarrhœa, remittent and intermittent fevers, typhoid and rheumatism, were of frequent occurrence, while minor ailments, such as neuralgia, lumbago, catarrh, sore throat, etc., were daily brought under observation. Small-pox did not appear till 29th of December, and then only one case occurred, namely in a child arrived from Chefoo. Several cases of abscess of the liver occurred, in one instance the affection being consecutive to acute dysentery. A few deaths from typhoid and a few from small-pox occurred. Whooping-cough attacked several children, but hardly as an epidemic. A true epidemic of varicella passed over the settlement in February.—(VII. 34.)

During the summer of 1874, malarial fever and dysenteric diarrhœa prevailed, the latter especially among children after the beginning of June. No epidemic of small-pox or chicken-pox occurred, nor was there any actual epidemic in any form; yet nearly all the foreign residents suffered from some degree of gastric derangement. Remittent fever of a typhoid character prevailed, often associated with hepatic congestion.—(VIII. 16.) In October, 1874, disease of very serious character was rife. It was so also in the first half of November, but could not be attributed to meteorological conditions. In the first months of 1875, bronchitis, neuralgia, conjunctivitis, rheumatic affections, coughs, and sore throats were common. Malarial fevers, dysentery, and diarrhœa occurred, and among the native Chinese small-pox was very prevalent.—(IX. 7.) From April to September, 1875, small-pox and measles prevailed. During the entire period fever, periodic, and a few typhoid in type, diarrhœa, dysentery, rheumatism, hepatic congestion, neuralgia, boils, and colds, made up the sick-lists of the settlements. In the month of August a severe and often fatal form of bowel affection with vomiting and cramps occurred among the natives, suggesting the possible outbreak of cholera.—(X. 55.) From October, 1875, to March, 1876, cholera and measles occurred as epidemics; malarial fevers prevailed: there was an increase in *typhoid*. Throughout the winter bronchial and intestinal catarrh, dyspepsia, hepatic congestion, rheumatism, and neuralgia were common.—(XI. 50.) During the six months ending 30th September, 1876, the prevailing diseases were dysentery, and diarrhœa, remittent and intermittent fever, febricula (commonly due to excess and exposure to the sun).—(XII. 2.) During the half-year ending 31st March, 1877, the prevailing diseases were malarial fevers, chest affections, small-pox, dysentery, and diarrhœa. During the month of October several cases of sun *malaise* occurred, but the affection was usually linked to some error in diet. Among children there was an epidemic of what would have been *mumps* if the glandular swelling had been attended by fever, which it was not.—(XIII. 44.) The winter season of 1877-78 was the most severe that had occurred since 1861-62. Mortality did not appear, however, to increase in consequence. The first case of small-pox for the season occurred on 8th of December; a very few happened from that date till 8th of February.—(XV. 2.) In the six months ending September, 1878, the only noteworthy occurrence was a brief and slight visitation of cholera.—(XVI. 32.) In February and March, 1879, an epidemic of chicken-pox, chiefly affecting children of foreigners, 'rushed through the settlement.'—(XVII. 21.) With regard to the six months ending 30th September, 1879, it is stated that except absolutely preventible diseases, as alcoholism and sun-

stroke, the rate of mortality 'for the most trying months of a most trying year was far from alarming.'—(XVIII. 82.) In 1880 small-pox prevailed among the shipping as late as the month of May. Severe cases of measles were observed, but the disease did not become epidemic. As usual, during the continuance of hot weather mortality among natives, vaguely described as regards its cause, occurred.—(XX. 33, 34.) During the half-year ending 30th September, 1881, the mortality was unusually high. Of the diseases by which it was chiefly caused, those of the nervous, circulatory, respiratory, digestive, and urinary systems were but remotely, if at all, influenced by climatic conditions. Reference is also made to 'that extremely acute and fatal form of gastro-enteritis which is known as cholera, and which now invariably presents itself here during late summer and early autumn.' Diphtheria, enteric fever, and dysentery were also among the fatal diseases.—(XXII. 53.)

NINGPO.

Situated in lat. 29° 51′ N., long. 121° 32′ E.; on the banks of a river, 12 miles from the sea. It is surrounded by an alluvial plain, nearly encircled by hills. This plain has a diameter of 20 to 30 miles. It is intersected everywhere by canals and irrigating ditches for the cultivation of rice, for which the fields are kept flooded with water from June to the end of October.—(XX. 30.) Topography.

In the Report to 31st March, 1874, reference is made to 'the enthusiasm of Mr. Alabaster in furthering drainage and the formation of a bund, both of which are greatly wanted. They will be of great benefit in a sanitary point of view to the settlement.' —(VII. 25.) In the year ending 31st March, 1878, the sanitary arrangements had undergone a great improvement compared to what they had been in previous years.—(XV. 21.) Conservancy.

In the half-year ending 31st March, 1873, the highest temperature, 70·17°, occurred in the month of October; the lowest maximum, 42·24° Fahr., in January. The maximum of the lowest monthly readings, 65·04° in October; the actual minimum, 36·08° in January.—(V. 25.) In the year ending 31st March, 1876, the greatest rainfall took place during the months of May, July, August, and September of 1875, and January, February, and March of 1876. April, October, November, and December of 1875 were very dry and fine months. In the whole twelve months the absolute maximum monthly temperature, namely 98° Fahr., occurred in July; the lowest maximum, 49° Fahr., in January. The highest minimum, 70° Fahr., in August; the absolute minimum, 22° Fahr., in January.—(XI. 28.) The winter of 1877-78 was long and severe; snow remained for a great number of consecutive days, and all canals and ponds were frozen over. The lowest temperature was 18° Fahr., namely on 8th January, at 4 a.m.; the greatest heat in the shade that month 66° Fahr., at 4 p.m. of 26th.—(XV. 21.) The summer of 1880 was cool and moist. For the four months from June to September, the thermometer showed a mean maximum of 81·2°, and a mean minimum of 75·3°. Rain fell on 53 days during the period. Wind was generally from the south. In July and September winds were variable; in August, from the north.—(XX. 30.) In 1881, the mean maximum temperature of the four months, June to September, was 81·3°; the minimum, 72·7°. Sea-breezes prevailed in June; they gave place to land winds in July, but returned in August and September. During these four months rain fell on 36 days.—(XXII. 13.) Climate.

In the Report for the half-year ending March, 1873, Dr. Mackenzie wrote that 'not-

withstanding the imperfect drainage of the settlement, and the great changeableness of the weather, there was remarkably little sickness during the winter months. The diseases most prevalent were diarrhœa and dyspepsia, both of mild type. A few cases of intermittent fever occurred, one of dysentery, and two deaths by enteric fever.—(V. 25.) The year ending 31st March, 1874, was healthy as regards foreign residents. Diarrhœa and dyspepsia were the most frequent diseases, but within June and July some cases of dysentery occurred on board ships in harbour. In the months of December and January an epidemic of scarlatina and measles of a virulent type raged among the Chinese in the city, many of the ill-fed and closely-packed natives falling victims. A little later on several foreigners were attacked, but all recovered. In August, apprehensions were entertained of an invasion of cholera from Siam; that disease, however, did not break out. The Sisters of Charity admitted some Chinese suffering from frost-bite in winter, that season being a very severe one.'—(VII. 24, 25.) In the year ending 31st March, 1876, the health of the foreign community was very good. 'As usual,' the predominating complaints were diarrhœa and dyspepsia, the former in June, July, and August, the latter throughout the year. Several cases of vomiting and purging from eating shell-fish. A few cases of dysentery. Only one case of small-pox.—(XI. 27.) During the year ending 31st March, 1877, the health of the foreign residents was remarkably good. This was in a great measure due to the coolness of the summer of 1876. Intermittent fever was less prevalent than it had been during the previous year. No cases of syphilis came under observation, and but few of gonorrhœa.—(XIII. 46.) In the six months ending September, 1877, the health of both foreigners and natives continued remarkably good, due again to the coolness of summer. Diarrhœa, as usual, prevailed most in June, July, and August. In the early part of May, several cases of heat *malaise* occurred. Up to the end of September, cholera had not visited Ningpo, although many cases of that disease occurred both to the south and north of the settlement.—(XIV. 65.) In the six months ending March, 1878, the foreign community had little to complain of as regards ill-health. In October and November, 1877, several cases of diarrhœa and of dyspepsia came under notice. In winter, bronchitis was severe; gonorrhœa more prevalent than usual, but no case of syphilis.—(XV. 21.) In the year ending 31st March, 1879, the health of foreigners compared favourably with past years, but among the natives the death-rate was larger than usual, owing to an epidemic of cholera. Of prevailing diseases, diarrhœa heads the list; rheumatic cases were more numerous than usual; intermittent fever not so frequent, although most complaints exhibited an intermittent character. Gonorrhœa was not prevalent. An epidemic of cholera and an outbreak of cattle disease were contemporaneous. This epizoötic appears to have been at its height in September and October.—(XVII. 6.) In his Report on this settlement for the eighteen months ending 30th September, 1880, Dr. Henderson remarks upon the absence of the habitual deposit of urates in the urine of the community, as compared with its frequency in Chefoo. Among the prevalent malarial disorders are neuralgia, recurrent diarrhœa, enlargement of the liver and spleen, anæmia with *sub-normal* temperature, and fever, remittent and intermittent. During the above hot season, few patients had escaped fever. That which prevailed among foreigners was of the remittent type. During the heavy rains of June, when vegetable growth was active, and the minimum amount of waste matter was in the surrounding paddy-fields, there were no cases of fever among the foreigners. In July, three cases occurred; in August, eight; and from then the numbers rapidly increased, until in the middle of October nearly the whole community was affected. In October, fever became also very prevalent among the natives, prostrating them in such numbers as to cause difficulty in regard to gathering in the crops.—

Health and Diseases.

(XV. 27, 30, 31.) The hot season of 1881 was described as having 'been extremely healthy for such a locality as Ningpo.' In June and July, the usual malarial fever appeared, but in August and September there was little of it. Diarrhœa existed through these months, but chiefly in July. The excellent health of the community was assigned in part to the prevalence of sea breezes throughout the season, and partly to the low temperature of the season.—(XXII. 13.)

WENCHOW.

Wenchow is situated in lat. 28° 1′ 30″ N., and long. 120° 38′ 28·50″ E. It lies on the south bank of the Ou-kiang, which flows between long ranges of hills N. and S. down to the sea. The city appears to have been arranged with due regard to 'sanitary laws:' streets regularly laid out and paved; their roadways sloping on either side towards gutters, and these in turn communicating with canals which run through the city. At intervals along the streets are latrines and urinals, their contents emptied in the early morning—either destroyed by fire or utilized for the fields. The canals are periodically dredged; the people well-to-do; population not excessive in proportion to occupied area. There are numerous joss-houses, each surrounded by large open spaces; thus the general purity of the air is improved. Throughout the city there are many well-raised houses, their windows of glass, their floors raised. The city is enclosed by a circle of small hills, along the summits of which the walls run. The ground within these is considerably elevated above the river, hence inundation or flooding is unknown. On the plain extending from the base of the large hills forming the south side of the valley, up to the walls of the city, rice is largely cultivated, irrigation taking place from the canals already noticed. Shut out as these fields and canals are from the city by means of the wall, no injurious effects take place. The chief article of foreign trade is tea; for import, piece goods, opium, oil, etc.—(XV. 38-43.) Further information in reference to Wenchow occurs in the Report on that place for the half-year ending 30th September, 1881, thus: 'Wenchow is a departmental city, containing a population of 80,000 to 90,000, with tributary districts swelling that number to 500,000. It is situated 15 miles from the sea, on the right bank of the Pungsha, or Ou river. In the neighbourhood of the city, and extending far inland, what were once marshes now constitute a chief portion of the land. This paludal region is begirt, except seaward, with pine-clad hills, and is now a fertile rice country.'—(XX. 14.)

Topography.

Sanitary Laws.

Interments do not take place within the city, except in few instances. Decomposing animal or vegetable matter is not to be met with. The perfect system of drainage obviated many of the disadvantages of the wet season.—(XV. 39.)

Conservancy.

The people are careful as to the water they drink. They draw their supply from wells dug in places as remote as possible from habitations. These are further secured by encircling walls closely cemented, so as to keep out the surface drainage. This is used for potable purposes, canal water being used for washing.—(XV. 39.)

Water.

In 1877-78, the newly-arrived Europeans experienced inconvenience from the want of beef. That sold in the market for Chinese consumption was of the most objectionable kind, being generally procured from the carcases of animals that had died of disease, or had been slaughtered in anticipation of the event. This state of things speedily changed for the better, good beef, and occasionally mutton, having been obtained. In the cooler weather goat-mutton was obtainable. Geese, ducks, and vegetable were plentiful. Pigs are carefully kept in sties, and are well fed and cared for.—(XV. 40.)

Food, etc.

The year ending March, 1878, was exceptionally wet. All over the south of China, wet weather scarcely ceased from June of last year to January of this. The summer heat was pleasantly tempered by sea-breezes.—(XV. 39.) According to the Report, April—September, 1881, it has a greater number of rainy days than any port in the Chinese Empire, '*malgré* the deforestization, which here, as in the United States, does not seem to have had any hygrometric effect.' It has a rainy season extending from the middle of May to September. During the other months of the year rainy days are of frequent occurrence. Yet, 'for foreigners, it is probably the healthiest part of China. Its summer heat is mitigated by the rains and sea-breezes, and in winter it seldom descends to freezing. A northern invalid may here inhale an admirable alterative, while invalids from the south may here escape the blasts of higher latitudes. In fine, Wenchow possesses the climate of Nice without a *mistral*.' Unfortunately, this port has no suitable accommodation for patients. The vegetation of the place unites that of the warmer and colder zones. The peculiar kind of orange, the Wenchow bitter orange, flourishes here. It is a delicious stomachic. The bitter principle is contained in the membrane which subdivides the pulp; the pulp itself is sweet. But the region is subject to floods from the mountains and cyclones from the ocean, storms that lay waste fields and induce famine and pestilence. Dr. MacGowan gives an enumeration of storms, floods, droughts, and famines from A.D. 291 to 1858. In the Report for the half-year April—September, 1881, he states, in a note dated January, 1882, that 'the year just closed was remarkable for the extraordinary number of typhoons, cyclones, and fogs which prevailed at that place and elsewhere on the coast of China.' Coincident with the exceptional season has been an unusual number of epidemics in Kiangsu and northern Chêhkiang—autumnal diseases being rife, children chiefly suffering; while about the beginning of December puerperal fever raged in Soochow. Many cases were incurable, and within ten days 'several tens' of recently-delivered women succumbed to the prevailing epidemic.—(XXII. 14-50.)

Climate.

In 1877-78, the great depression and languor complained of so much in most up-river places was felt here to a very limited extent, if at all. On the contrary, thanks to the sea-breezes, residents often experience an exhilarating and bracing effect of the climate. General good health prevailed among the foreign community. The Chinese were 'shy of coming under foreign treatment, and entertain most peculiar and contradictory notions as to its capabilities.' Ague from country districts occasionally appeared. Eye diseases were common. Small-pox was not remarkably prevalent. Vaccination was not practised. Cholera prevailed for ten or fourteen days in August, 1877; opium-smokers, when attacked, almost certainly died. Elephantiasis cases are not numerous. Skin diseases are very general, scabies most of all. Enthetic diseases very plentiful.—(XV. 39, 40.) In August, 1878, a slight recurrence of cholera took place. Among the natives 'the utter absence of all treatment undoubtedly tended to swell the mortality rate.' During the year ending March, 1879, the health of the foreign community, numbering only 26 persons, was generally very good.—(XVIII. 60.) The physique of the inhabitants compares unfavourably with those of other portions of the Chinese Empire. They are described as of delicate frame, insignificant physiognomy, and small-brained. Fewer attain to 70 years of age than in adjoining departments, and, as in southern Chêhkiang generally, it is seldom that scholars succeed at the provincial examinations. The religious orders are credited with contributing greatly to the perpetuation and dissemination of a contagious disorder. They are largely addicted to the use of opium. Situated as Wenchow is on a reclaimed marsh, reticulated by canals, it is the abode of intermittent fever. That disease prevails in every spring and autumn, especially affecting new-comers. Cholera has repeatedly visited the locality.—(XXII. 22.)

Health and Disease.

Physique.

FOOCHOW.

Foochow, the capital of the province of Fukien, is situated on the left bank of the river Min, in lat. 25° 58′ 22 N., and long. 119° 27′ 40″ E. According to the classification o regions as zones of vegetation, that of Foochow is sub-tropical. Along the Yung-fu branch of the Min, and on the main river to Shin-kao, the scenery is very beautiful, and often grand. The hills vary in height from 100 to 3,000 feet, and run parallel with the river. The general geological structure is conglomerate; that of the highlands mostly of granite. No marshes exist. The lowlands are rich alluvial plains in the highest state of cultivation, and yield two crops of rice and one of barley a year. The valley of the Min is one of the most fertile parts of China. The richness of the soil is maintained by careful manuring, and by means of the rich alluvial deposits from the creeks, these being spread over it. The fields are 'watered' with night-soil, a practice which gives rise to very offensive odours; but the men and women employed in the process appear smiling and robust, nor can the reporter learn that they take any harm from their unsavoury occupation.—(VII. 7.) Topography.

According to the Report on that place for the year ending 31st March, 1881, the foreign settlement, distant 25 miles from the mouth of the river Min, is planted on hilly ground on the right bank of the north branch of that stream, and on the north side of the island of Nantai. The valley of the Min is intersected by numerous canals and creeks. During the rainy season the Min overflows its banks, and then covers the country like a lake. For eight months of the year the plain, manured with night-soil, is almost devoted to two crops of rice. In some parts, during the cold weather, a crop of barley, wheat, or beans is raised; the remainder, more or less swampy, is left at rest. The hill on which the foreign settlement stands is about 100 feet above the level of the plain; on one side it is skirted by the river; otherwise, except on its western aspect, it is bounded by rice-fields. Its position is lat. 26° 5′ N., long. 119° 20′ E. On the river, a little above the settlement, several thousands of boat population find an anchorage. The city, which is walled, contains about 500,000 inhabitants. It is remarkably dirty; streets narrow and filthy, except when washed by heavy rains. They are paved with granite. Along the centre of each is a narrow drain, which receives *everything*. Night-soil is scrupulously collected, and applied to fields and growing crops. In the summer season, when the country is clothed in vegetation, beautiful views in all directions may be obtained from the settlement. For those suffering from enervation and the cramped conditions of settlement life, there are at all seasons excellent retreats. On the prominent headlands where the Min joins the sea at Sharp Peak, those depressed by summer heats may enjoy refreshing sea-breezes and cool nights. During the cooler months there is every facility for excursions up the main river and its branches. There, mountain scenery of great beauty and grandeur abounds. Bamboo, many varieties of coniferæ, ferns, and all sorts of flowering shrubs and plants adorn the slopes, and dispersed over the mountains are many varieties of game. Lately the community of Foochow has acquired a piece of land as a recreation-ground.—(XXI. 50-52.)

The monastery of Kushan is situated in the midst of lovely scenery at an elevation of about 1,400 feet above the level of the sea. The air at that place feels fresh, balmy, and 'light,' and one never experiences the languor and depression of the lower grounds. 'If only tolerable accommodation were to be had, few pleasanter places could be desired by those who are fortunate enough to be able to leave the river during the hottest months; and it has always been matter of surprise that an intelligent and influential community like that of Kushan.

Foochow has not long ago established a sanatorium on a mountain within such easy reach of the settlement.' In 1874 the only quarters available at Kushan were confined and dirty. The houses were wood and plaster structures built on piles, the foundations occupied by rubbish and filth. Yet so much was the locality appreciated that these objectionable rooms were engaged every year long before the hot weather had set in.—(VIII. 63, 64.) In 1875, Dr. Somerville wrote: 'New rooms are being built for next season, and the nuisances indicated removed.' He urged the advisability of making further additions and improvements in connection with the accommodation at that place. He points out that the difference in temperature at Kushan and Foochow is 7° Fahr. in favour of the former.—(X. 36, 35.) In 1881 Dr. Rennie observed that the mountain on the side of which the monastery stands is itself 3,000 feet in height.—(XXI. 52.)

Sanitation.

In his Report from October, 1872, to March, 1873, the writer says: 'Our creeks differ only in degree (in the worst parts of the city they do not differ at all) from the San-t'sung described by Dr. Wong (at Canton). There is nothing like drainage, and the traffic in night-soil, the formation of manure-pits and the watering of the fields with liquid manure, obtain here as elsewhere; in short, we have all the generally recognised factors of zymotic disease, with a high temperature to favour the fermentative and putrefactive processes. Yet we enjoy a high standard of health, and there has been no epidemic affecting foreigners at this port for at least eleven years.'—(V. 41.)

Water.

In reference to the prevalence of diarrhœa on board ship at Foochow in the summer months, Dr. Somerville writes: 'What is the cause of it?' He adds, 'It certainly is *not* the water. Ships carry water from Hong Kong, from Shanghai, and from home,' and he observes no difference in the number of cases. He had not noticed fewer cases of diarrhœa in vessels using condensed water only. Gunboats use condensed water alone, and they have much diarrhœa. The residents at Foochow have drunk the water of the river for years without injury. Dr. Somerville thinks 'there is a growing opinion in the profession, especially entertained by those who have much experience in tropical and sub-tropical countries, that water containing organic matter has been too heavily blamed as the cause of disease.' He quotes from Morehead that 'unsuitable food, impure water included, may excite dysentery; but it is not a common cause ("Disease in India," p. 575). In the journals of David Livingstone he observes only two instances in which disease was traced to the water used.'—(X. 43.) The Report to March, 1881, states that water is obtained from wells, and from the adjoining river; from either source it is of doubtful purity. Here, as elsewhere, the Chinese seldom drink water 'that has not been cooked.'—(XXI. 51.)

Habits.

With regard to habits and modes of life of the several classes at Foochow, foreigners (1871) were considered to be the better of generous diet and a fair amount of stimulants at meals. Light claret was stated to be the best beverage. Malt liquor did well with some persons, but disagreed with others. No general rule can be laid down; each must judge for himself. In the hot season, *smoking*, except in extreme moderation, is injurious. In cases of great bodily or mental anxiety a cigar, however, to the smoker is invaluable.—(II. 29.) The Report to March, 1881, states in reference to the natives that the staple articles of their diet are rice, sweet potatoes, salt-fish, and pickled cabbage. Wheaten flour, pork, goat, and beef, are luxuries of the rich.—(XXI. 51.)

Climate.

The summer of 1871 was described as having been extremely mild. The actual temperature was noted as being moderate; yet the sensation of heat was great. The relief obtained from the sea-breeze in the day, and from the land-wind down the river at night, was very great. The feeling of heat has very little connection with the heat as

indicated by the thermometer. In close, muggy weather, when there is little cutaneous evaporation, one feels exceedingly hot and uncomfortable, although according to the thermometer the temperature is very moderate. This is particularly noticeable at Foochow. With the exception of the rainy season, namely May and a portion of June, a sea-breeze as a rule sets in about noon; relief is then obtained from the heat and stillness of the forenoon. The thermometer, however, does not fall, but rises till about 3 p.m., when it attains its diurnal maximum, and the result is not altered by placing the instrument in the wind. The daily range of the thermometer is only about 3° Fahr., the minimum being about 8 or 9 o'clock a.m. During the night the thermometer alters little, although the comfort obtained from the land-breeze down the river at night is great indeed.—(II. 24, 25.) In the Report to September, 1872, Dr. Somerville says of the *climate* of China that a mummy hand obtained in Egypt decomposed during the first rainy season it was in China, although it had withstood a rainy season of ten months in Scotland. The circumstance accounts for the absence of any mention of the process of embalming being practised in China.—(IV. 56.)

Of the six months April—September, 1874, it is recorded that although in the hottest part of summer the sensation of heat was often excessive during the day, the nights were usually tolerably cool and comfortable. The medical officer writes: 'May is the rainy month of the season here. We have usually some rain in February, but as a rule the great rainy season may be said to commence about the end of April, to last all May, and to go into the first week of June. With regard to the nature of the climate at Foochow, from 15th July to 15th October, he observes that Sir J. Ranald Martin's description of the rainy season in India applies, *mutatis mutandis*, equally to Foochow at this time. From the 15th July to 15th October, and as the rains advance, we live in an atmosphere having all the properties of a vapour bath, and in certain states of the wind from the south-east, we experience many of the inconveniences ascribed by Hennen to the sirocco of the Mediterranean, which, without affecting the thermometer or barometer in any remarkable degree, yet inflicts on the delicately sensitive human frame a feeling of indescribable languor and oppression, with an exhausting perspiration, much like what we suffer from in Bengal during the latter portion of the rainy season. The mind seems to partake in the general relaxation, being unfitted for vigorous or sustained effort.' About the end of August, northerly and easterly winds generally prevail, and continue more or less regularly until the beginning of October, when the north-east monsoon sets in, and the hot season is over.—(VIII. 56.)

In the Report from October, 1874, to March, 1875, Dr. Somerville states that the mean actual temperature for the whole preceding year, as obtained from actual observations, namely 68·8° Fahr., was the exact temperature of the isothermal line that cuts this district according to the deductions on purely theoretical grounds by Dové. During the half-year, the highest temperature in the shade occurred on 3rd October, namely 31·2° Fahr.; the lowest on 16th January, namely 38·1° Fahr.; the highest temperature in the sun on 3rd October, namely, 155·2° Fahr.; the lowest on 13th January, namely 51·4° Fahr. The range in the shade for six months was thus, 56·1° Fahr.; for the year, 62·5° Fahr.; similarly in the sun, 103·8° Fahr., and 114·8° Fahr. The greatest difference between the dry and wet bulbs took place on 17th November, when the former indicated 69·9° Fahr., the latter 55·3° Fahr.; difference, 14·6° Fahr. The least difference on 5th October, when they indicated respectively 75·1° and 74·9°; difference, 2°. The range for the six months, 14·6° Fahr.; for the year, 17·3°. From 1st October to 31st March, rain fell on 43 days; the total amount, 9·962 inches. From 1st April preceding to 30th September, it fell on 72 days; total amount, 27·627 inches. Thus for the entire year rain fell

on 115 days; the amount 37·589 inches. The months of November and December were dry. During the six months ending March, the north-east monsoon prevailed; dry, bracing, having 'tonic properties,' and rendering the climate of the locality 'delightful.'—(IX. 45-50.) Further: 'It is impossible to describe the feeling of exhilaration experienced on the advent of the north-east monsoon. The languor and irritability of summer disappear, and are succeeded by a feeling of buoyancy and cheerfulness.'—(XI. 39.)

The general characteristics of the summer half of 1875 were a very high day temperature during June, July, and part of August; a high night temperature, particularly in July; high humidity in April; moderate rainfall throughout the period.—(X. 32.) According to the Report to March, 1876, the period of north-east monsoon extends from the end of September or early in October to March or the middle of April; the rainy season from the middle of April to May and the first week of June. The south-west monsoon from the beginning of June to the middle of September. In the rainy season and south-west monsoon diarrhœa, dysentery, and heat *malaise* are present.—(XI. 38.) The summer season of 1877 had a general low temperature throughout; cool nights, much humidity, and sudden and great variations.—(XIV. 83.) The Report to March says: 'The climate is moist and enervating; rainfall and thunder-storms scattered over the year, but most abundant in spring and early summer. During summer southerly breezes reach the settlement from seaward, but there is a great absence of wind-storms. The hot months include June till the end of September; during that time the thermometer in the shade is seldom above 96° Fahr. or below 70° Fahr. The coldest months are December to the end of February; thermometer seldom below 40° Fahr., and with a mean of 53° Fahr. Frost is rare. Sudden and great changes of temperature occur at all seasons, but more frequently in spring than in autumn. Every year in mid-winter there are some hot days when the thermometer in the shade rises to 80° Fahr.'—(XXI. 51.)

Health.

In 1871, until the months of August and September, there were few serious cases at all. The anchorage, from the physical formation of the country and the presence of a sea-breeze throughout the hot season, is in general healthy, and this year has been unusually so.—(II. 24.) In the Report for the six months ended 31st March, 1873, Dr. Somerville attributes much of the health enjoyed at this port to the long cold season; this gives the residents the opportunity of taking exercise in many forms, and they take full advantage of it. He does not, however, recommend strong muscular exercise during summer, or anything like over-training at any season; on the contrary, even when cool weather sets in, great caution should be observed in passing from the mild exercise appropriate to summer to the more severe form of exertion found beneficial in winter. He does not think that high training ought to be attempted in China at all.—(V. 43.) From October, 1873, to March, 1874, the health of the anchorage was good, as also of the Customs staff. The reporter observes that as a result of the series of reports now being considered an insurance office has been established in China, taking insurance on lives at home rates. He states that for 1872 the death-rate in Victoria, Hong Kong, was 3·19 per cent.; in 1873 it was only 1·94, or more than a fifth below that of London.—(VII. 13.)

Exercise.

Although the winter climate is grateful to the healthy, the months of September and October are trying to the sick, particularly in serious cases of illness occurring late in summer. Chronic dysentery assumes a bad form, and remittent fever is more severe during these two months than at any other period of the year. According to Dr. Somerville, healthy (foreign) children are easily reared here. They are pale, and often fretful in the hot weather, but with the occurrence of the north-east monsoon they soon recover colour and activity. The same remark applies, *mutatis*

mutandis, to ladies.—(IX. 50.) From April to September, 1875, the immunity from serious disease enjoyed by the foreign population was assigned to the moderate degree of humidity of the air during the period, and to the long bracing winter that follows the advent of the north-east monsoon. The physical conformation of the country—hilly, with good natural drainage—has also much to do with it. He expresses his belief that the Merchant Shipping Act of 1867 has done much towards ameliorating the condition of seamen in matters of health and comfort; that it has reduced the prevalence of scurvy among them by 80 per cent.—(X. 32, 40.) Notwithstanding that the summer of 1877 was unusually cool, it was particularly trying to health, not so much in regard to fatality by disease as to its prevalence.—(XIV. 83.)

According to the Report for 1879, the death-rate of foreigners was not higher than that of the healthiest district of England. The diseases of ladies and children were 'largely unavoidable, because essentially climatic, but the diseases of men were in a great part not so.' The oldest male residents are its healthiest, because those for the most part guard sedulously against the sun, atmospheric changes, and the temptations of the table.—(XVIII. 65.) According to the Report to March, 1881, the natives have not the healthy appearance of those living in the mountains, or of those on the sea-coast. Their temperament is more irritable, and, though industrious, they have not the push or enterprise of their brethren in the southern part of the province. For foreign residents, living in houses in every way suited to the climate, having abundance of every variety of good and cheap food, and having every facility for obtaining moderate exercise, the climate need not be considered unhealthy. Those of them who observe moderation in all things, who avoid violent exercise as much as intemperance in eating and drinking, seem to enjoy excellent health. Those who lead inactive lives suffer from nervous ailments, and are much more affected by climatic influences than those who choose the middle course. The busy season of the year falling in the hot months, by enforcing active and regular habits doubtless renders climatic disease among male residents less frequent. The benefit derived from active habits may be illustrated in the case of natives, by comparing the active, healthy, robust women from the country with the indolent, withered-looking women of the city and suburbs. —(XXI. 51, 52.) In the half-year ended March, 1882, as, indeed, for the whole year up to that date, the health of the community was exceptionally good. In that Report, Dr. Stewart writes, in reference to the *health of children* at that place: Delicate children of two years of age and under have stood forward prominently during the past half-year in health. He does not know anything which strikes him more forcibly than the health of very young children now as compared with ten years ago and earlier. Then no summer could be got over without a certain quota of them falling victims to severe dysentery, varied by infantile cholera. Now, dysenteries occur, but of a comparatively slight character, while the deadly infantile cholera is non-existent. Mothers, too, have rebelled against the old dogma of never attempting to bring up a child by hand or bottle, and thus far with entire impunity. It seems to him as if he had almost dipped into a new world. He has no doubt that there is a wave in disease, and that residents at Foochow are just now on the top of the wave. No one can prophesy when or how soon they shall be in the hollow. That they shall be some time, and that all the old types and virulences of disease in some degree will appear, he does not question. He is of opinion that the greater attention now paid by adults to diet has helped to ward off and modify disease. The comparatively pure milk, better prepared food and tinned milk than used formerly to be had, have done a great deal for children. —(XXIII. 35, 36.)

According to the Report to September, 1871, boils are very prevalent during the hot season, and all classes of the community are liable to them. Small-pox is epidemic among the Chinese

in spring, and sometimes also in the winter months; whooping-cough in autumn. Intermittent fever is common, although the formation of the land at Foochow is not such as accords with the theory of causation of that disease. It is not uncommon to find a resident on the top of a hill in a paroxysm of ague. Dyspepsia is of everyday occurrence. Dysentery is not common among the residents, although often imported. Intestinal worms are the greatest pest of children at this port. Among them lumbrici most prevail; among adults, tænia. The greater number of diseases put on the asthenic form. Diarrhœa is very common in the hot season; typhoid fever is rare; disease of the liver nearly in all cases imported. Rheumatism is common, particularly among seamen. So are enthetic diseases.—(II. 26-30.) Cases are by no means uncommon where the liver and spleen are found extensively diseased after death, without the presence during life of any other symptoms than those of functional disorder. Mixed fevers are rare at this port.—(IV. 60.) During the half-year from October, 1872, to March, 1873, the prevailing diseases were unimportant, except those of the heart, and typhoid fever. Dr. Somerville is of opinion that the chief mortality takes place by dysentery and diseases of the liver; that the actual death-rate at this port is low, and that there is a remarkable freedom from zymotic diseases. From April to September, 1874, there was an immunity from serious disease.—(V. 38-46.) The diseases which most prevailed were diarrhœa, *heat malaise*, 'intestinal catarrh,' the latter assigned to the heat and moisture of the season. It prevailed chiefly during the hot months, and more especially in May and June. It affected equally residents on shore and the shipping population.—(VIII. 62.)

Diseases.

Although the summer of 1875 was unusually hot, disease was not appreciably increased thereby, except in the case of 'intestinal catarrh' and heat *malaise*. Dr. Somerville's experience tends towards the general conclusion arrived at by other observers, that a high degree of temperature alone does not necessarily produce wide-spread disease of a serious nature. He describes heat *malaise* as a protean malady, giddiness being its most common symptom. Next to it in frequency are intestinal catarrh, diarrhœa, and dysentery. Most of the cases of diarrhœa afloat occur during night in men who sleep on deck, and who doubtless casting off covering, have the wind impinge upon the abdomen. As a preventive, flannel rollers are recommended to be worn. Dysentery has become less frequent in late years.— (X. 32-43.) In the Report to March, 1876, a remark occurs as to the unfrequency of malarial diseases during the hot season. Zymotic diseases have hardly an existence here. Of the deaths that have occurred during the last fourteen years the most part have been caused by dysentery, the cases in the majority of instances imported.—(XI. 38, 39.) The summer of 1877 was an unhealthy one. Cholera, a few sporadic cases of which occur every year, was on this occasion sporadic. Cases of heat *malaise* were fewer than in the preceding summer. Cases of remittent and intermittent fever were few, and all imported.—(XIV. 85.) In 1879, the principal diseases which prevailed were malarial, typhoid, and rheumatic, along with proctitis and cholera. Diarrhœa, dysentery, and hepatitis also have occurred. The ostensible causes of ague are the surrounding paddy-fields; of rheumatism, the damp and variable atmosphere of the place. Diphtheria, croup, bronchitis, and pneumonia occur. Typhus fever used to be rather frequent, especially in one Missionary compound; but of late it has given way to remittent. Next to ague, rheumatism is stated to be the most frequent disease. Cholera, endemic always, recurs as an epidemic every ten or eleven years. Proctitis appears in several instances nearly every summer. The disease is aggravated by the extension of the inflammation into the colon. Children are frequently its subjects. The occurrence of Foochow ulcer is noticed as taking place in the hot season. Venereal disease of very virulent form prevails.—(XVIII. 65-68.) According to the Report for the year ending March, 1881, the

list of prevailing diseases includes malarial fevers and anæmia, small-pox, measles, mumps, whooping-cough, erysipelas, rheumatism, cancer, skin and eye affections, etc. Typhus and typhoid fever are endemic. Among Europeans the most frequent diseases are rheumatism, diarrhœa, dysentery, bronchial catarrhs, dyspepsia, and lumbrici. Among ladies, nervous affections are stated to be common. Malarious fever, of more than usually severe type, occurred as an epidemic during the three months of September, October, and November, at which time the rainfall was slight, and the rice-fields were drying up. Parotitis, small-pox, and measles were also epidemic during those months. Annually, during winter, small-pox prevails as an epidemic. Syphilis in all degrees of virulence is rife. Cholera has not occurred since 1877. 'As usual,' there were numerous cases of lumbrici among children and adults.—(XXI. 52-56.)

In the Report for the half-year ending March, 1882, Dr. Stewart writes as follows in regard to the *type of disease*, as observed by him: 'As it has been remarked in a former Report of this district, that the distinguishing type of disease has changed, we can only add to that remark that this year confirms it. It has been said before that ileo-colitis had been the distinguishing type, but that it was supplanted by malarial fevers; that these fevers were generally slight and fleeting, though protean in their forms, but sometimes very severe, if rarely deadly. This year we have had no genuine case of ileo-colitis, any more than we have had during the past five or six years, while remittents and intermittents we have had, and without marked abatement of their own particular predominance. Two cases of remittent fever assumed a very low or typhoid type, while one affected the brain in an extreme manner—the peculiar affection being persistent hallucinations, the patient remaining rational, and aware that he was suffering from hallucinations. A few doses of hyposulphurous acid procured sleep and allayed the hallucinations.' A strong objection to the drug is its pungent smell.—(XXIII. 35.)

Type of Disease.

AMOY.

Amoy is the treaty port of the province of Fokien; the geographical position of the city about 24° 10′ 8″ N. lat., and 118° 13′ 30″ E. long. This part of the province just named is very hilly. The hills are of granite, but as every tree and shrub has been cut down and the natural grass removed, they have a bleak and uninviting look. The granite thus left bare absorbs the heat by day, and radiates it rapidly at night. Several large rivers and estuaries intersect the country, and thus admit the sea-breezes and monsoons, rendering comparatively mild and salubrious what would otherwise be a hot and unhealthy country. This is further increased by the rise and fall of the tide, both of which are great. The places of business of Europeans are situated along the foreshore of the town—rather a hot locality—but for the most part their private houses are situated on Kulangsu, a rocky island close to Amoy. There strong sea-breezes blow during the day, and the land-wind at night.—(II. 10, 11.)

Topography.

Every spot of land in the neighbourhood of the city is brought under cultivation. The alluvial flats along the banks of the rivers, and gorges among the hills where water is obtainable, are occupied by rice-fields; in the drier soils sweet potatoes, ground-nuts, sugar-cane, and a variety of other suitable crops are raised.—(II. 10.) The more general cultivation of the country has diminished the prevalence and intensity of malaria.—(VI. 31.)

Agriculture.

The town of Amoy, in 1871, was described as being 'superlatively dirty. The streets, narrow and irregular, are filthy in the extreme, and redolent of every impurity. Pigs and dogs are the sole representatives of the elaborate machinery of sanitation in European towns, and a scientific sanitarian, with only home-experience to guide him, would confidently

Conservancy.

predict the reign of epidemics and death. Yet the Chinese manage to live and thrive where he would hardly dare to lodge his pigs. There is no typhus, no typhoid, or other disease considered the inevitable consequence of defective sanitation, though Amoy is full of typical fever-dens.' In the Report by Drs. Müller and Manson it is further added: 'Luckily filth, overcrowding, and bad food, are not the only factors necessary for the manufacture of a typhus epidemic—were they so, we should live in Amoy in perpetual dread.'—(II. 11.)

The people of Amoy, though industrious, are poor in the extreme, and their earnings small: 60 to 100 *cash* per day for an ordinary labourer, 120 to 150 *cash* for a mechanic. Rice, or a mixture of rice and sweet potatoes, flavoured with pickled vegetables, or salt-fish, is the staple food; pork and beef the luxuries of the few. In the inland districts the people are chiefly agricultural; along the coast, seafaring.—(II. 10.)

Habits.

The diet of a well-to-do Chinaman is sufficiently nutritious. Rice, or other farinaceous food, animal food of various sorts, oils, fresh and salted vegetables, supply in abundance all the elements for healthy nutrition. But a large proportion of the labouring classes, and professed vegetarians—no small body—live exclusively on rice, fresh and salted vegetables, and a small allowance of salt-fish. Still lower in the scale are great numbers to whom rice even is a great luxury, and whose diet consists of little more than sweet potatoes and salted vegetables, without any animal admixture whatever. Sometimes their poverty is so extreme, that fresh sweet potatoes are beyond their means, and they are obliged to confine themselves to the dried root so called, the very cheapest food, and in times of scarcity imported in large quantities. Some of the people are so poor as not to be able to buy firewood enough to cook, and are obliged to content themselves with softening the same dried potato with a little water, seasoning it, if at all, with salt borrowed from some charitable neighbour. Among such classes as these, anæmia from insufficient food is common.

Food.

In the same Report, the medical officer discusses the subject of *Race*. He writes: 'The principal directing influences in the development of characters of a race are climate, physical characters of country, food, and the diseases that destroy or impair it. The two latter in their turn depend upon the physical characters of a country.' In the province of Fukien an animal diet is not obtainable; the inhabitants accordingly adapt themselves to a diet of sweet potatoes, or other farinaceous substances, a circumstance which, the reporter observes, indicates the 'adaptability of man, along with some of the other animals, to effect changes from omnivorous to herbivorous, to survive the process, and even develop into a vigorous race.' He considers, however, that before this is done, 'a long and unintermitting process of selection and rejection has been gone through. The influence of endemic disease is referred by the writer chiefly to the question of malaria, as leading to propagation of sickly children, and to inherited susceptibilities. He alludes to the exemption of African races from fevers, and the same peculiarities in Chinese, Malays, and Hindoos, though in a less degree. He observes that in India and China improved cultivation and the consequent decrease of malaria has led to the population of both countries being 'slightly susceptible, though not so much so as the exotic European not used to resist such influences.' Certain diseases, when attacking races for the first time, are characterized by an especial degree of virulence and of deadliness. Syphilis and small-pox are examples in point. But while there is a natural tendency to improved constitutions and disease-resisting qualities, the acquisition of a high degree of civilization, humanity, and science tend to the fostering and propagation of forms less able to resist disease on account of the conditions thus induced fostering the weak and susceptible. This, he observes, is a drawback to civilization. The reporter says: 'It is a common observation with some, when discussing the unhealthiness of these climates, that we should find them as healthy as our native lands did we assimilate our

Race.

habits to those of the natives. But generations have passed before the natives' suitability to the climate, diet, etc., has been acquired, and millions must have died in the process of adaptation.'—(VI. 28-31.)

Climate.

The rainfall is capricious. For the most part the climate is dry, frequently several years passing without a sufficiency of rain. Famine, or great distress, is the consequence, and epidemic disease in some form follows in their train. From April to September, 1871, after three years of drought, plentiful rain fell; tanks and wells that had been useless or offensive for a long time were refilled. During the six months the mean maximum temperature registered was 91° in July; in the others it ranged between 82° in April, and 89° in May and September. The highest mean minimum, 78°, occurred in August; the lowest, 60°, in April. During the winter and spring months the climate is much cooler. Then the clear, cool air goes far to reinvigorate after the summer heat; outdoor exercise also is possible.—(II. 10.) According to the report to March, 1872, the preceding winter, like the summer before it, was the coldest that had occurred for many years, ice having been seen on three or four mornings in the middle of December. Generally speaking, the winter climate of this settlement would compare favourably with that of the most popular health-resorts on the Mediterranean. It is added, however, that the prevailing high winds and the sudden outbursts of north-easters are objections against it. The cold is never unpleasantly felt, yet it is sufficient to admit of exercise being taken.—(III. 22.) In the six months ending March, 1873, the weather was unusually dry and mild; the rice-crop consequently scanty—in many districts a complete failure.—(V. 7.) The half-year ending 30th September, 1874, was characterized by high temperature, and, especially during the first three months, by heavy rainfall and damp, muggy weather.—(VIII. 67.) According to a record of meteorological observations given for the year from 1st October, 1874, to 30th September, 1875, the following represent the mean monthly maxima and minima for that period, namely: the highest for the twelve months, 95° in August; the lowest maximum, 70° in the months of January and February; the highest minimum, 79° in August; the lowest, 40° in January. The temperature of the summer and autumn months was higher than the average of former years. With this higher temperature, the absence of thunder and rain during the afternoons and evenings was noted.—(X. 26.) In the half-year ending 30th September, 1876, the highest day temperature recorded, viz., 93° F., occurred at noon on the 9th September; the highest night temperature, viz., 86° F., at midnight, on 28th July. The mean temperature of the six months was lower than usual.—(XII. 36.)

Health.

In the Report for the six months ending 30th September, 1871, the circumstance is noticed that neither typhus nor typhoid fever occur in the town of Amoy. With the exception of small-pox there occurs no representative of the class of continued fevers which claims so large a number of victims in Europe. Drs. Müller and Manson had never met with a case of scarlet fever, measles, or relapsing fever there. Diphtheria did not exist, or was very rare; mumps and whooping-cough are common enough. For Europeans, well housed, temperate, and who use discretion in exposing themselves to the sun and rain, the climate of Amoy is not considered unhealthy. A little languor by the end of summer, becoming more pronounced the longer one stays here, is 'perhaps the only climatic disease a sensible man need suffer from.' The abundant rain of the present season had a beneficial effect on health, both of the population on shore, numbering about 150, and that afloat, estimated at 1,927.—(II. 11.) In the half-year ending 31st March, 1872, the health was rather above the average.—(III. 22.) In the summer half of that year, except for the occurrence of dengue fever, the public health was good.—(IV. 7.) In the summer half of 1873, the health alike of natives and foreigners was unusually good.

In reference to the means for preserving health, Dr. Manson writes: 'We should endeavour to make the climate suit us, not us the climate. We ought to remember that we are exotics here, and that we should surely sicken and die if we did not, in one way or another, try to reproduce the circumstances of the lands in which our constitutions were bred. The advice that tells us to eat rice and practise all sorts of self-denial should, if it followed up the principle it is founded on, tell us to eschew sun-hats and umbrellas, and to expose our shaved heads and naked bodies to the hardening and acclimatizing rays of the mid-day sun, live in stuffy hovels, exclude ventilation, and sleep on the ground-floor. The true advice is to make China as like Europe as we can, and by cultivating temperance, remain vigorous to resist malign influences when they come.'—(VI. 20, 32.) The winter of 1873-74 was healthy, both as regards the native and the foreign population.—(VII. 26.) The winter of 1875-76 also, was very healthy; yet a good deal of choleraic diarrhœa prevailed among the natives. The Customs staff was less fortunate than usual in regard to health.—(XI. 30.) Although from April to September, 1876, no epidemic prevailed, the mortality is stated to have been unusually large.—(XII. 36.) In the half-year ending March, 1878, the health of the community was good; cholera, which had prevailed in the preceding similar period, had disappeared.—(XV. 25.) To September of that year, the health of the port was 'unusually good.' No death occurred among the residents.—(XVI. 12.) Similarly, in the six months ending 31st March, 1880, the health of the foreign community was 'unusually good;' very few cases of serious illness occurred, and only one death, namely, by abscess of the liver.—(XIX. 30.) From 23rd November, 1879, till 20th July, 1880, there was no death in the foreign community; from the latter date till the end of September, there have been seven deaths. With the exception of an epidemic of fever, the general health, as far as climatic disease of local origin is concerned, has been fairly good.—(XX. 1.) During the half-year to 31st March, 1881, the general health excellent.—(XXI. 57.) In that to 30th September of the same year, good; no epidemic among natives or foreigners.—(XXII. 1.)

Diseases.

According to the Report for the half-year ending 30th September, 1871, so great is the prevalence of small-pox at Amoy, that every one of the population who is unprotected by vaccination, should he live long enough, is sure to contract the disease. Next in fatality are malarial diseases, including remittent fever, ague, diseases of the spleen and liver, anæmia, and their consequences; cholera next, and then perhaps leprosy. Phthisis, bronchitis, pneumonia, cancer, etc., are also rife. At the commencement of the rains, catarrh and diarrhœa attacked many of the European children. Several cases of inflammation of the auditory canal occurred, and from its frequency might almost be looked upon as epidemic. Among the shipping population climatic diseases have been fewer than in any of the past six years, a fact due to the coolness of the present summer.—(II. 11.) Malarial diseases, although they occurred during the half-year ending March, 1872, were much less frequent than in summer. Disease of the respiratory organs is rare. A few mild cases of catarrh occurred among the European children. A trivial epidemic of mumps prevailed in January and February, affecting both foreigners and Chinese. A fatal case of typhoid fever occurred on board a French brig, arrived from Yokohama and Chefoo. Elephantiasis is often met with in the Chinese; ague, or other malarial disease, its usual accompaniment.—(III. 22, 24.) In the summer of 1872, a severe epidemic of dengue occurred. Among the floating population, intermittent fever, enthetic diseases, and diarrhœa were the most prevalent disorders.—(IV. 7.) In the succeeding cold season the sequelæ of dengue presented themselves, chiefly as rheumatism, debility, dyspepsia, and paralysis of particular groups of muscles. In the Report to March, 1873, it is stated that scarcely had dengue subsided, than 'an epidemic of syphilis began.' Famine threatened in consequence of the failure of rice-crops from insufficient rainfall.

The scarcity was made up by supplies obtained from Japan, and the completion of telegraphic lines was looked upon as rendering the recurrence of dearths in famines for the future impossible. During the winter a few cases of whooping-cough occurred among the Chinese, and since the month of January small-pox was rife.—(V. 7, 8.) In the six months ending September of that year, a limited epidemic of dysentery occurred during August and September. Plentiful rainfall took place, and the crops were abundant. The 'epidemic' of syphilis, above noticed, had now subsided. In consequence of the prevalence of cholera in India and the Straits Settlements, quarantine was for a short time established. Malarial anæmia was noticed as a prevalent condition. Of agues, it is stated that 'many come and go without leaving any permanent bad effects.'—(VI. 20, 22.) In the six months ending 31st March, 1874, no death occurred among the resident foreign population on shore. Among those afloat five deaths occurred, their causes abscess of the liver and dysentery, angina pectoris, aneurism of the aorta, and accidental drowning.—(VII. 26.) In the early part of the hot season of 1874, diarrhœa prevailed to a greater extent than it usually does at that period of the year. In nearly all cases the liver was affected. Fever, particularly of the remittent type, was present. No epidemic prevailed.—(VIII. 67.) In the half-year to September, 1875, there was more than the usual amount of abdominal complaints, as choleraic diarrhœa, dysentery, etc. These chiefly prevailed in August and September.—(X. 26.) Among the Chinese choleraic diarrhœa increased in severity towards the end of September and in October. In the latter month 'many hundreds' of them died. With the cold weather of November, the disease diminished, and by December had disappeared.—(XI. 30.) In the six months ending 30th September, 1876, no epidemic prevailed among natives or foreigners, thus contrasting with the corresponding months of last year, 'when a disease closely resembling cholera was prevalent and fatal among the Chinese.' The number of deaths among the foreign community was unusually large, but from general rather than particular diseases. Aneurism is rare among the Chinese; so are pyæmia, erysipelas, and allied diseases, notwithstanding the overcrowding, the great number of open suppurating wounds, and the imperfect sanitary conditions in the native hospital. (XII. 36, 39.) In the Report for the half-year to March, 1877, Dr. Manson enters at length upon the subject of hæmatozoa.—(XIII. 13.) In the similar period ending 30th September, 1877, there was an unusually high rate of mortality, it being accounted for by the occurrence of an epidemic of cholera. The first case of the disease took place in June. The statement occurs that in 1858-64 chronic diarrhœa and fevers were very prevalent among foreigners living at Amoy. Then the majority lived in the Chinese town, and those who lived at Kulangsu were exposed to the risks of living in the neighbourhood of ground that had once been cultivated, but had been allowed to become waste. Now almost every patch of ground is cultivated, foreigners live in good houses, attention is paid to the water-supply, whence the disappearance of these diseases. But the Chinese population is rapidly increasing, and thus a new danger to health is arising from this source.—(XIV. 27, 33.) In the six-monthly period ending March, 1878, cholera had disappeared, and 'small-pox, usually so prevalent in spring, was scarcely present.'—(XV. 25.) In the year ending 31st September, 1879, nine foreigners died at Amoy. A fatal case of diphtheria, recorded among the deaths, was stated by Dr. Manson to be the first of that disease he had seen in China. It is reported to occur among the Chinese, although rarely. Typhoid fever of local origin was met with for the first time in Amoy: it occurred last winter, when a circumscribed epidemic of the disease prevailed in Kulangsu. During the months of March and April a peculiar form of fever prevailed among children. An unusually extensive epidemic of small-pox occurred during the previous winter, and, as observed, the annual recurrence of the disease at the corresponding period of the year is regularly looked for. During summer and autumn the Chinese sufferen to a

less extent than usual from fevers; 'as usual' several cases of diarrhœa occurred among children, but no suspicion of cholera.—(XVIII. 58.) According to the Report to 31st March, 1881, the spring small-pox epidemic was not particularly violent or widespread among the natives, and only one foreigner was attacked. In February and March extensive pneumonia followed measles in the Chinese. Although measles was epidemic in the native town at the end of the period, foreign children had hitherto escaped.—(XXI. 57.) In the six months ended 31st March, 1882, a severe and often fatal form of remittent fever prevailed within certain limited districts during autumn. The population as a whole was not implicated, and the disease did not attack any foreigners.—(XXIII. 17.)

TAMSUI AND KELUNG.

Tamsui is situated on the N.W. of the island of Formosa, the houses being built on the right bank of the Tamsui river. During the tea season, which comprises all the hot months, the merchants reside for the most part at Twatutia, a settlement about twelve miles up the river, where the tea is brought for sale. Kelung, the Coal port, on the N.E. side of the island, and about thirty miles from Tamsui, forms also a small foreign settlement where the officers of the Customs staff live.—(VII. 23.) In the neighbourhood swampy paddy-fields and vegetable-gardens exist, both watered with human manure.—(XI. 21.) The mining locality at Coal Harbour is surrounded by almost entirely uncultivated hills covered with a sparse jungle —(XIV. 82.)

Topography.

During the year ending September, 1876, the rainfall was recorded as having been very considerable. There was an increase of 36 wet days as compared to the preceding year, rain having fallen on 147 days in the entire year.—(XII. 1.) In the six months ending September, 1877, the heat was not excessive; the rainfall 43·93 inches, the number of wet days, 52.—(XIV. 82.) In the year ended 30th September, 1878, rain fell on 118 days. The summer was hot and long.—(XVI. 18.) In that to September, 1879, rain fell on 146 days. The summer was prolonged, but not excessively hot.—(XVIII. 64.)

Climate.

In 1874 the foreign community averaged only eighteen in number. The general health was excellent. One or two slight cases of intermittent fever occurred during the summer of 1873; but they yielded readily to quinine. One case was tedious, from the circumstance, the medical officer thinks, that the patient had to submit to a constant repetition of similar food in the hot weather; such as fish and pork, and the difficulty which exists in obtaining delicacies, there being no sheep here, and the beef, when obtainable, being coarse and tasteless. A dispensary for the Chinese was started by Dr. Ringer and the Rev. G. L. Mackay. Several patients suffering from leprosy applied for treatment.—(VII. 23.) During the heat of the summer season of 1875 some cases of severe diarrhœa, with vomiting and febrile disturbance, occurred; but no cholera. In Peking one or two cases of ague occurred. Among the Chinese treated at the dispensary, the most prevalent affections comprised those of the eyes, alimentary canal, respiratory organs, and skin; next to these were debility, venereal diseases, rheumatism, and ulcers.—(XI. 21.) In the year to 30th September, 1876, intermittent fever and a 'low febrile indisposition,' which prevailed among the foreign community, were assigned to the unusual amount of rain that had fallen. Several cases of severe diarrhœa, with much pain and vomiting, occurred. They were treated for the most part with opium, morphia, chloroform, and hydrocyanic acid; quinine was subsequently given, with much benefit.—(XII. 1.) During the winter months of 1876-77, the health of the foreign residents was remarkably good. One or two cases of inter-

Health.

Diseases.

mittent fever were noted, and those rapidly yielded to quinine; one case of small-pox occurred.—(XIII. 7.)

In the half-year ended 30th September, 1877, the health of the foreign community of North Formosa compared somewhat unfavourably with that of the winter months. A considerable number of cases of malarial fever occurred, chiefly of the remittent and intermittent types. At Coal Harbour, all the mining experts were thus attacked, although during the previous year, it being the first of their residence, they were not so attacked. In the middle of February, 1,500 Chinese troops were landed in Kelung; at the end of September, 300 of them had succumbed to various diseases, chiefly a low form of fever. Cholera did not appear, notwithstanding the severity with which it raged in some parts of China. It is observed that abject poverty, so often seen in the large cities of the mainland, is scarcely ever observed on this island.—(XIV. 82.) In the year to 30th September, 1878, there was an unusually large number of cases of sickness among the foreign community, malarial fever ranking high in the list. Dr. Ringer notices that some cases of this form of fever were followed by boils. He records a death by puerperal fever.—(XVI. 18.) In the summer of 1879 there was, as usual, a considerable amount of malarious fever; almost all the residents having suffered more or less from the intermittent or remittent form.—(XVIII. 64.) Four deaths occurred. In the year to September, 1880, the health of the foreign community was comparatively good. During summer, malarial fevers, as usual, were somewhat troublesome, but in most cases not very severe.—(XX. 16.)

TAKOW AND TAIWAN-FOO (ANPING).

The Port of Takow is situated on the west coast of the island of Formosa, in latitude 22° 36′ 14″ N., and longitude 120° 16′ E. It lies close to the sea. The land in the neighbourhood is, with the exception of Ape's Hill to the north, flat and richly cultivated, forming a large plain, extending inland about 20 miles. Beyond this are the mountains forming part of the great central ridge of the island. Taiwan-foo lies about 25 miles north from Takow. During the south-west monsoon the majority of the foreigners in South Formosa reside in Takow.—(II. 67.) The settlement is divided by an intervening lagoon, the seaward and south boundary of which is formed by a long low sand-spit. Some of the houses built on this locality do not enjoy the immunity from malarial diseases which is possessed by those erected on the other side of that lagoon. This is accounted for (1881) by the proximity of dense vegetation, and by the fact that the whole spit is one enormous graveyard, in which bodies are interred with but scant regard to ordinary hygienic requirements.—(XXI. 58.)

Topography.

In recent years, few foreigners outside of the missionary community reside in the city of Taiwan-foo itself, their houses, godowns, etc., being situated at the village of Anping. This place is separated from Taiwan-foo by a low-lying plain, from which, since the time of the Dutch occupation, the sea has in great part receded. Anping is about a mile from the coast, on the bank of a creek that in one direction runs up to Taiwan-foo, and in another, communicates with a stream. At the mouth of this creek lies the celebrated Anping bar, to cross which it is necessary to get into tubs placed on bamboo catamarans. The plain itself at high water, especially in the neighbourhood of Anping, is in several places submerged, and, becoming uncovered at extreme ebb, exposes large tracts during certain portions of the day to the rays of the sun. From a sanitary point of view, permanent residence either at Taiwan-foo or Anping

Sanitation.

is not likely to be free from objections. Foreigners have raised the ground on which their dwelling-houses are built.—(XXIII. 27.) There is a supply of good water within easy access of the settlement.—(II. 67.)

Water.

In the six months, April to September, 1871, the maximum temperature recorded ranged from 84° Fahr. in the first-named month to 89° in June, thence descending to 87° in September; the lowest from 70° in April to 80° in June, thence ranging between that point and 78° Fahr. to September inclusive. Rain fell on 60 days. The fall took place chiefly in heavy thunder-showers in the afternoons of every second or third day from May to September.—(II. 67.) For the half-year ending March, 1872, the temperature was described as low, and not subject to great variations; the insular position of Formosa admitting of its sea-ports having a climate which is 'one of the best in China.' The highest summer temperature during 1871 was 87° Fahr.; the lowest winter temperature 50° Fahr., giving a range of 39° Fahr. The range between day and night is small. The climate of this place is accordingly at times taken advantage of by Chinese suffering from phthisis, who resort to it from the mainland. The highest temperature attained during the period from October, 1871, to March, 1872, was 88° Fahr. in October; the lowest maximum, 74° in February. The actual lowest, 55° in March; the maximum of the monthly lowest, 77° in October. Rain fell on 27 days, but only in very slight showers.—(III. 34.) During the six months ending with September of the same year there occurred an unusually heavy rainfall, with an absence of high winds; yet prior to the 10th of May there had been scarcely any rain whatever for nine months. On that date heavy rain fell, and continued for three days; afterwards the rainfall was almost nil.—(IV. 24.) Throughout the whole year ending March, 1873, the rainfall was unusually small.—(V. 26.) During the six months ending September of that year, the rainfall was exceedingly large, the temperature somewhat lower than usual.—(VI. 38.) In the six months ending September, 1874, the rainfall was even greater than in the corresponding period just noticed. According to the testimony of the Chinese themselves, the quantity of rain was greater than it had been for forty years. The temperature, as indicated by the thermometer, presented little change from the year preceding. Scarcely a day of the six months passed without a cool breeze which lasted the greater part of the day. The thermometrical observations gave a very inaccurate idea of the temperature as judged by bodily sensations.—(VIII. 12.) As a rule no rain falls during the winter season; but during the six-monthly period ending March 1876, rain fell on several days in each month.—(XI. 24.) During the yearly period ending 31st March, 1878, the actual monthly maximum temperature, namely, 92° Fahr., was registered in September—the lowest maximum, 83° Fahr., in February; the highest minimum, 74° Fahr., in May, and again in October—the actual minimum, 53° Fahr., in January. According to a table given, rain fell on 17 days only throughout the year, of which 10 were in July and August; the total fall 41·18 inches for these months, out of a total for the year of 65·14. This rainfall, though considerable, was for the most part absorbed by the parched ground, and did not produce the agents usually supposed to give rise to paroxysmal fevers. The summer six months were characterized by the absence of the usual severe rain and wind storms. The prevailing winds were from the west and north-west. The winter was unusually warm, for a month seldom passed without several days of mist and relaxing southerly winds.—(XV. 36-37.) During the two years ending 31st March, 1881, the climate is described as being good, considering the geographical position; the drawbacks consequent on heat by no means so great as one would expect. Here the sea-breeze has access, hence a degree of salubrity exists which is not found at Taiwan-foo, situated about 30 miles farther north. Dr. Myers alludes to the very favourable effect the climate of South Formosa appears to exert in cases of tubercu-

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losis. It would seem as though arrest of the disease may often be brought about by this means; and a case is noticed in illustration, but in which the disease returned and was fatal soon after the patient arrived back in England.—(XXI. 58, 59.) In the Report, to March, 1882 he reverts to this subject. He is 'constrained by further experience once more to call attention to the peculiarly good effects apparently produced in tubercular disease by residence in Takow.' He considers that in part this arises from the presence in the atmosphere of sulphurous acid discharged from springs in the vicinity of the settlement.—(XXIII. 18.)

According to the same Report, namely, that for the half-year ending March, 1882, the climate can hardly be described as a very desirable one. The prevailing disease is fever. Unless a man was of a perfectly strong and healthy constitution, he would run no little risk, were circumstances to necessitate his remaining long in Takow. Taking the last two years' records, the mean temperature at Takow is for the whole year about 76° Fahr., or for the seven cool months about 72° Fahr., and for the five hot months 83·1° Fahr. In the summer this is described as being almost the coolest place in China, the mercury rarely touching 90° Fahr., and a fresh breeze generally blowing.—(XXIII. 28.)

In 1871, the foreign residents in Taiwan-foo numbered only 30. The general health of that community was good. The only climatic diseases recorded were mild cases of remittent and intermittent fever. In one of the former, change of climate was necessary; in one of the latter the attack was due to travelling through a malarious district. In that the fever quickly yielded to quinine, but was followed by very acute neuralgia of the supra-orbital nerve, recurring once and sometimes twice daily, and continuing on each occasion for half an hour to an hour. Quinine in large doses failed to check the recurrence of the paroxysms, and the hypodermic injection of morphia had no permanent effect. Arsenic ultimately succeeded in bringing about a cessation of the neuralgic attacks. One case of urinary calculus occurred in a subject who had been about two years in the island; the concretion was voided by the urethra. There were no deaths. Among the natives syphilis is rife. The people are described as being grateful for treatment at the dispensaries established for their benefit. Leprosy is known to prevail among them, but no lepers applied for treatment. Diseases of the eyes are very numerous, being due to the frequent showers of very fine sand which occur during the N.E. monsoon, the sand being brought by means of the wind from the country lying to the north. Malarial fevers were common, quotidian being the most ordinary type. In many cases there was also congestion of the spleen. In the cases of remittent fever, there occurred great and sudden prostration, low delirium, and oozing of blood from the fauces. Enlarged spleen is common, associated with anæmia or ulcers of the legs, more frequently of the left leg than the right. These cases improve under the continued use of iron. Phthisis is common in the district. Goitre prevails among the inhabitants of the lower ranges of hills at the foot of the mountains. Heart disease is rare. Fibrous tumours of the neck are not uncommon.—(II. 67, 68.) In the half-year ending March, 1872, the health of the residents on shore and of the ship population was excellent. Throughout the entire previous year the only diseases observed were a few cases of ague, and two cases of remittent fever. Dr. Manson accordingly combats the proposal made to remove the British Consulate from that settlement on account of the unhealthiness of the locality. Throughout the whole previous year the principal causes of death among the native population were malarial fevers. These were most prevalent during the months from August to November, both included, and least during February and March. Most of these cases came from the flat country in the neighbourhood of Takow, but a considerable number of patients suffering from intermittent and remittent fevers, and spleen-enlargement also came from Lambay, a small rocky island about 10

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miles south from Takow, and separated from the mainland of Formosa by about 6 miles of sea. Judging from its physical characters Lambay Island ought to be the reverse of what is usually considered malarious, but malarious fevers are exceedingly prevalent there.—(III. 34-36.)

For nine months prior to the 10th of May, 1872, there had been scarcely any rain. A great dearth of grain existed in consequence, and a large number of the inhabitants were in a state of destitution. Coincident with a heavy rainfall on that date a severe outbreak of intermittent and remittent fevers took place, and told heavily on the Chinese population, reduced by famine. Among the foreign residents, a few cases of intermittent fever, two of whooping-cough, and one of mild dysentery occurred. Among the shipping, two cases of intermittent fever and five of diarrhœa. Enthetic and parasitic diseases were frequent among the natives; the latter including lumbrici, scabies, and ringworm. Malarial fever became epidemic towards the end of May, and so continued throughout the summer. A similar form of disease prevailed also at Pitau, a large town situated about 6 miles inland from Takow, as also in the surrounding country. No sequelæ of malarial fever, dysentery, and enlargement of the spleen were observed.—(IV. 24, 26.) During the half-year ending 31st March, 1873, the health of the foreign community was good. Malarial disease was absent, both among the residents and seafaring population. Among the native Chinese the amount of sickness was much below what it had been in the summer half-year; this attributable to the fact that malarial disease is less prevalent in winter than in summer. Dengue fever, prevalent at Amoy during the autumn of 1872, made its first appearance on Formosa at Taiwan-foo, and within a few weeks had attacked almost the entire population of that city. The disease was believed to have been imported by means of the *Mary*. Amongst seamen an unusual amount of syphilitic disease prevailed. Malarial fever was stated to prevail to the greatest extent in June, July, August, September, and October, especially so in June and July, when the fever assumed more of the remittent and adynamic type, with a tendency to dysentery during convalescence. Small-pox was very prevalent both among the natives along the coast-line, and among the aborigines in the interior of the island. A large number of cases of phthisis were treated.—(V. 26.) According to the Report for the six months ending September, 1873, excellent health prevailed among the foreign community generally. Malarial diseases, including fevers and dysentery, were the most common affections. Among the natives the principal causes of death were small-pox and malarial fevers.—(VI. 38.) During the six months ending with September, 1874, the health of the community was very good, only three cases being referable to climatic causes. The Europeans had for some time been in the habit of bathing in the morning in an adjoining lagoon, a prolongation of the harbour, where the temperature at ebb tide is about 88° Fahr. Immediately after the bath followed a douche of water at a very low temperature, and in some instances attacks of fibricula resulted. At Taiwan-foo the ordinary European residents enjoyed good health, but several of those who lately arrived to instruct the Chinese soldiers in military drill suffered severely from fever. Among the Chinese periodic fevers were very prevalent, especially towards the end of the season; yet it was stated that Chinese troops encamped about 6 miles inland on the island (Formosa) enjoyed excellent health.—(VIII. 12.)

From October, 1875, to March, 1876, the health of the foreign community was not so good as it had been in previous winters. Several cases of intermittent fever occurred among residents in a locality which has the reputation of being malarious and unhealthy. In October, when the country was drying up after the rains, malarious fever assumed an epidemic form, and was more fatal than it had been for many years. Towards the end of that month, an epidemic of simple cholera occurred among the natives, of whom considerable numbers of the weakly died. Small-

pox also prevailed.—(XI. 24.) That disease is never absent from Formosa. Throughout the entire year ending March, 1877, the health of the foreign community was better than usual. Towards the end of summer there were three cases of simple intermittent fever, and in the winter six months only one case of climatic disease among them. Among the shipping, the amount of disease was much as usual.—(XIII. 39.) The year to 31st March, 1878, was unusually healthy; only a few cases of malarial fever among the foreign residents. Natives as well as foreigners suffered from these diseases; among the former, chiefly those arrived from uncultivated districts in the interior of the island. Both among native Chinese and foreigners, the type of disease was milder than usual. Some cases of the prevailing remittent fever were 'pernicious' in type, some were associated with rheumatism. Among the floating population there were many cases of diarrhœa; and on board ships from Hong Kong and Amoy venereal complaints were common. A case is recorded of a foreign resident arriving from the south suffering from tubercular cavities in one lung. Temporary benefit was derived from the change of climate, but subsequently he died from pulmonary apoplexy. In spring, small-pox made its appearance among the natives. Asiatic cholera, which visited several ports on the mainland, never appeared either in Takow or Taiwan-foo; nor did Dr. Rennie obtain evidence of a case of that disease having appeared in South Formosa, notwithstanding that during the time of its epidemic prevalence at Amoy, several vessels from that port arrived at both these places.—(XV. 36.) In the two years ending 31st March, 1881, the health has been good, the diseases peculiar to the place few as far as foreigners are concerned. The greatest inconvenience experienced by the residents is the want of good food, the commissariat having little beyond fowl, fish, and intermitting supplies of inferior beef. Attacks of ague are rare, save in those who reside in the two most southern dwellings on the spit. The chief factor of discontent is the sense of isolation from the rest of the world. In reference to the subject of a hospital recently established at Takow, Dr. Myers writes that 'there are few places where the *entente* between foreigners and the Chinese is more declared than in Formosa. Even the uncivilized aborigines are not above seeking aid, and only the other day we had quite a crowd of these "savages" who had obtained passports for the purpose of testing the powers of Western medical skill. During the past ten years, upwards of 20,000 patients have been treated.' A remark occurs in a previous page of the Report now being considered, which is important in relation to the question of phthisis in man—namely, that in South Formosa monkeys in a state of captivity are peculiarly liable to pulmonary diseases.—(XXI. 58-60.)

During the year ending March, 1882, the health of the community was, on the whole, very good. Of the diseases which mostly prevailed, the most prominent was fever, evidently of malarial origin, yet special and peculiar in many of its characteristics. Dr. Myers observes, that 'as far as the mercantile community is concerned, the habit of making Takow headquarters, and resorting thither as soon as work in Anping is concluded, does much to obviate evil consequences; and in case of actual attack, health is soon recruited by a prolonged stay there. With reference to the permanent residents, a short stay is sufficient to produce in them such ailments as one would expect from the nature of the local conditions. During the months of December, January, and February, the climatic conditions are very much improved.—(XXIII. 18-28.)

SWATOW.

THE geographical position of Swatow is latitude 23° 23′ N., longitude 116° 42′ E. The city is situated on the left bank of the river Han, 5 miles from its mouth, and at a distance of 220 miles E.N.E. from Canton. The material of all buildings is a sort of concrete, made from disintegrated felspar rock, mixed with lime from calcined oyster-shells. The walls are carried up entire, and openings are then cut for doors, windows, and spaces for beams and rafters. The beach is suitable for sea-bathing. These particulars are obtained from Keith Johnston's 'Dictionary of Geography, 1877.' They are introduced here in view to uniformity in the nature of information given in the present *resumé* of Reports.

Topography.

In the Report for the half-year ending September, 1880, the amount of rain that fell (39 inches) was considered to have conduced to the healthiness of that period by flushing and cleaning out the drains, carrying away much, if not all, the decomposing vegetable and other matters which accumulate in such quantities.—(XX. 24.)

Sanitation.

In that to September, 1876, the climate is described as being 'one of the healthiest and most delightful in the world.' The summer months are not very hot; the maximum of the last six, namely on the 29th and 30th July, was 88° Fahr., and on the nights following these days the mercury fell to 79° and 81°. It is always so here; the days are hot, but there is enough fall at night to make the air pleasantly cool, yet not enough to produce chills. Even in the hottest weather there is a refreshing sea-breeze, which gives bloom to the cheeks and vigour to the frames of the most feeble. Dr. Scott has seen delicate children brought here almost dying, who have got well and strong in a short time; and delicate adults, who could hardly exist at home, or in other parts of China, quickly gain strength in this genial climate.'—(XII. 19.) The six months to September, 1878, were hotter than any corresponding period for ten years.—(XVI. 26.) During the half-year ending September, 1878, the maximum temperature registered was 98° Fahr., namely in July and August respectively; the lowest maximum 87°, namely in April. The absolute minimum, namely 58°, occurred in June; the maximum reading of the lowest, 75° in August. Rain fell on 23 days; the total amount, 39 inches. The summer was described as very mild in comparison to the heat endured at other ports, particularly Shanghai.—(XVIII. 75.) In that ending March, 1880, the actual highest day temperature recorded, namely 90° Fahr., occurred in December; the lowest monthly maximum, 66° Fahr., in February; the highest minimum, 68° in October; the absolute lowest, 40° in January. Rain fell on 10 days, the amount of rainfall for the period being 10·34 inches.—(XIX. 11.)

Climate.

In the six months ending September, 1871, diseases of the zymotic class were those which were most prevalent. Of these, ague stood first as to number. Next in frequency, and far surpassing ague in severity, came venereal diseases and their sequelæ. Then in the order of their frequency, diarrhœa, dysentery, and boils, the latter very troublesome during the hot season. Among the natives, choleraic diarrhœa prevailed, in some cases developing into cholera. Only one case of small-pox among foreigners, and it imported from Shanghai. The conditions of general health were described as unprecedentedly bad; there being 399 cases of illness during the period, out of an estimated foreign population, including the shipping, of 500 persons; the death-rate, however, was small. The general type of disease was intermittent. In connection with this circumstance Dr. Scott notices the fact of the season having been unusually rainy.—(II. 8.) In the half-year ending September, 1872, miasmatic and enthetic diseases were those most frequently met with. Diarrhœa

Health and Diseases.

was unusually prevalent, with, and in the absence of, affection of the liver. So also in regard to dysentery. Boils, attended by much constitutional disturbance, were of frequent occurrence. Two cases of small-pox were noted, but the disease did not occur in epidemic form.—(IV. 87.) In that to September, 1874, the most prevalent diseases were remittent and intermittent fever, and diarrhœa. Dysentery was stated not to be at all common at the settlement. Cholera prevailed severely among the natives during five months, but Europeans did not suffer much from it. The disease had not been epidemic since 1865.—(VIII. 65.) During the half-year ending March, 1876, the general health was recorded as good, although the number of deaths was unusually large. The remark occurs, however, that the European population of the settlement being about 150, including men, women, and children, many years pass without a death among them. On this occasion there were four, namely, by abscess of the liver, 1; croup, 1; albuminuria; puerperal fever, 1. The summer of 1875 was marked by a very severe epidemic of cholera among the Chinese. A few cases of that disease occurred among the sailors. The only foreign resident attacked lived in the Chinese town.—(XI. 29.)

In the half-year to September, 1876, zymotic diseases were again the most numerous. The foreign population, still about 150 in number, furnished 270 cases of illness. Intermittent fever is common among sailors who sleep on deck with little covering over them, and who swim under the hot sun. Whether protected or not by a hat, a man who swims at an unseasonable time is almost certain to be prostrated by fever within twenty-four hours. Apart from these causes, fever is rare, and ague is almost unknown. Enthetic diseases stand first in severity and importance. They are almost entirely confined to sailors.—(XII. 19-21.) In the corresponding period to March, 1877, miasmatic diseases decreased in prevalence considerably. This remark applies more especially to intermittent fever and diarrhœa. Small-pox prevailed extensively among the Chinese in the surrounding districts. In the settlement itself, however, only one case occurred among the foreign residents.—(XIII. 8.) From April to September, 1877, the majority of diseases observed belonged to the zymotic class. Continued fever and diarrhœa were somewhat prevalent, but cholera which affected many other parts of China did not occur at this settlement. Among the Chinese in the neighbouring districts, the disease is endemic. It did not occur among them in larger numbers of cases than usual. Boils, which, as already noticed, are usually very prevalent in summer, were not observed on this occasion. Among the shipping there were several cases of continued fever. Among the persons employed in diving operations there have been several cases of a peculiar form of paralysis, to which the name of 'the Pressure' has been applied.—(XIV. 69.) During the months of October and November, 1877, choleraic diarrhœa and cholera prevailed extensively and fatally among the native Chinese. Among the foreign residents only one case of cholera occurred, namely, in a child eight years of age. Diarrhœa was very prevalent among them at the time. Altogether, the half-year to March, 1878, was considered very healthy.—(XV. 23.) In the summer-half of that year there was no unusual amount of sickness, notwithstanding the more than usual heat of the period, though cases of sun *malaise* were sufficiently common. Diarrhœa and intermittent fever prevailed to their usual extent; but no epidemic of any kind occurred.—(XVI. 26.) In the six months to September, 1879, cholera, a few cases of which usually occur during the summer months, did not present itself; there was no case of heat-apoplexy, and only the usual amount of diarrhœa and intermittent fever. A rather curious epidemic of influenza attacked the children living on one side of the river; the children living on the opposite side and on Double Island remaining unaffected thereby.—(XVIII. 75.) For the half-year to March, 1880, the health of the port was uncommonly good, there having been hardly any serious cases either among the residents on shore, or in the shipping. Dr. Scott

writes: 'Too much cannot be said of the healthiness of Swatow during the winter months.'—In the same Report he remarked that 'many of the foreign women residing in the south of China were unable to nurse their children, either on account of insufficient secretion of milk or insufficient nourishment in it. Many fine children were for the first few months reared on preserved milk. Elsewhere, however, experience is in favour of having native nurses.'—(XIX. 11-15.) During the period to September, 1880, the health of foreigners was unusually good. Fevers and the ordinary summer diarrhœa were less frequent and less severe than usual. No epidemic prevailed. It has been a healthy season for natives also; there was no serious illness of an epidemic character, 'a circumstance rather remarkable, considering the extreme dirt of Chinese towns and villages.' Cholera was entirely absent, although usually endemic during the hot months. While health conditions were thus satisfactory in regard to man, a grievous epizoöty prevailed among cattle, and a plague of caterpillars affected the fir-trees around the settlement.—(XX. 24.) In that to September, 1881, the diseases enumerated included diphtheria, typhoid, dysentery, and varicella. An outbreak of the latter occurred among the resident children on Double Island.—(XXII. 4.)

CANTON.

THE city of Canton is situated in latitude 23° 7′ N. and longitude 113° 15′ E., on the northern bank of the Canton river, and about 70 miles from its mouth. To the north of the city the country is hilly; to the south there is an alluvial plain formed by the delta, and intersected by ramifications of the river. The land here, as compared with other parts of this province, is low and humid. The country people are chiefly engaged on rice plantations, and reside on the plains not far from their farms. According to the Report to September, 1873, all the available land, plains, and valleys of this province have long been under cultivation for rice-plantations. Wherever we go, vast tracts of paddy-fields meet the eye. There are no neglected marshes, jungles, and tracts of country with stagnant water; the country has been under cultivation for centuries.—(VI. 41-42.)

Topography.

Cultivation.

In the Report for the six months ending September, 1872, the remark occurs that 'many of the fevers of the Chinese city must have their origin in overcrowding and bad sanitary conditions. These conditions, though sometimes regarded as harmless, because they have given rise to no epidemics of cholera, and, as far as we know, to no marked forms of typhoid fever, have much to do with the production of the severe fevers that prevail every summer.'—(IV. 70.)

Sanitation.

The following represents the condition of the Chinese prisons in that city in 1872. In that part of the prison called the Wee-ki, the prisoners were kept in separate enclosures inside the building. Thirty or forty prisoners were confined in spaces not more than 15 to 20 feet square, surrounded partly by posts for the admission of air. The men were in filth, rags, and misery, the stench from them most offensive. Of their number, one was dying of fever, another of dropsy and diarrhœa. Fever was very rife, but some of the old prisoners live and thrive, while the new-comers, unaccustomed to the prisoned atmosphere, often die.—(III. 21.)

Prisons.

In the Report for the half-year ending March, 1872, Dr. F. Wong wrote as follows: 'Since the sewerage question has been so much in agitation in connection with typhoid or enteric fever, it may be well to mention that in Canton large numbers of the native population are daily using water and inhaling air charged with the impurities of human

Water.

excreta, apparently with utter impunity. River-water is greatly used wherever it can be obtained, but that used by the crowded boat population along the different jetties is extremely filthy, and must be largely contaminated with human and other impurities. Although comparatively pure water can be easily obtained in the middle of the river, or a little farther from the jetties, the sampan people prefer to get it by the side of their own boats, simply because they receive no harm by the practice. They do not suffer from diarrhœa and fever more than others, but rather less. The water they use, moreover, bears no comparison with the filthiness of the different creeks that ramify into different parts of the city. He will instance, as an illustration, one creek which has been under his observation for some years. This creek, called San-t'sung, is not far from the foreign settlement. It is comparatively narrow and crowded with boats; on both sides of it are innumerable houses, chiefly brothels; the alvine dejections and other impurities of thousands of inhabitants along it are daily discharged into the stream; yet the water, too dirty even for washing, is daily used for culinary purposes, without being filtered or precipitated with alum, as is done in Shanghai. Here we should expect the prevalence of such diseases as typhoid fever and diarrhœa occurring often enough to excite attention; but Dr. Wong has been told by persons who have good opportunities of knowing these people, that they are not more subject to fevers and other diseases than are other persons, and that this impunity is one of the reasons for their continuance in the use of such water. A detailed examination of this creek, and the disgusting habits of the inhabitants, would almost unsettle one's idea of the connection between typhoid fever and polluted water. In the south of China, it is only in Canton that water of such a filthy character is so much used.'—(III. 21.)

In the diet of the people, 1873, the principal article of food was rice. With this was eaten a little fish, fresh or salted; some vegetables, fresh or pickled; some meat, most commonly pork, sometimes ducks or fowls, and sometimes, though less often, beef. Among the better classes less rice and more meat is eaten. The poor people replace part of the rice with sweet potatoes (*Convolvulus batatas*) and taro (*caladium*). Ground-nut oil (*Arachis hypogea*) is in most common use for ordinary purposes, and next to it lard. Potatoes are eaten in small quantities, and not as a common article of food. Fresh vegetables have been in use from time immemorial. Fish is very little eaten among the poorer classes, and not in abundance by those who are well-to-do.—(VI. 42.) Food.

In the Report to September, 1871, the climate was described as generally healthy. The summer had been cool, with an unusually long period of rain, lasting from the middle of May to the end of September.—(II. 70.) The summer half of 1872 was hot; the heat in July and August particularly oppressive; often 94° Fahr. in the shade. Except in the early part of the season there was very little rain. The cold weather set in unusually early, in the first part of September, and it remained cool for nearly the whole month.—(IV. 68.) The summer of 1873 was remarkable for the most terrible thunderstorm that had occurred for many years. It took place on 13th of May, and extended to Hong Kong, Macao, Fat-shan, and Shin-hing. The rainfall in the summer was excessive; with slight interruptions it rained from April to September; much of the crops was in consequence injured, and a great part of the adjacent country flooded. The persistence of rain, however, kept the weather cool.—(VI. 48.) During the six months to September, 1877, the average maximum temperature was 89° Fahr., namely in August, the lowest maximum 76° in April; the highest average minimum 82° in August, the absolute minimum 68° in April. The hottest day occurred in August; the thermometer then stood at 97° Fahr. In the whole period rain fell on 88 days, the total amount 70·1 inches, as against 92 days and 37·4 inches in the same period of 1876; that for the entire Climate.

year ending 30th September was 77·2 inches; the number of rainy days 136. Nearly all the rain occurred during the last six months; the greatest fall on any one day, 5 inches, namely on 8th of May. During the summer months the range between the day and night temperature was very limited. The ordinary summer is long and hot, the heat unameliorated by sea-breezes. Rain usually begins to fall in April, and continues to the end of August. The prevailing wind is from the south, varying from south-east to south-west, though the hot westerly wind comes in occasionally. The rainfall was excessive; the rivers unusually flooded. No actual typhoon occurred, but the month of August was very squally. Notwithstanding the high temperature, if the sky is clear with a good south or southerly breeze, the heat is bearable; but if the days are cloudy and the atmosphere heavy, evaporation is checked and the heat becomes most oppressive. On the 13th of May an inundation of the greater part of the city and of the adjoining low-lying country districts took place. It was owing to about 900 feet of the bank of the North river which flows through Ts'ingyüen, a district about 60 or 70 miles from here, having given way on 26th of the previous month. No similar breach in that embankment had occurred for 39 years. On this occasion 10,000 human lives were said to have been lost by the disaster.—(XIV. 57.)

In the half-year ended March, 1878, the highest average monthly temperature was 82°, namely in October, the lowest maximum 56° in January; the highest average minimum in the period 72° in October, the actual minimum 46° in January. The coldest month was January. The lowest temperature, namely 38° Fahr., occurred on the 19th and 20th of that month. Rain fell on 81 days; the total rainfall 20·7 inches, as against 48 days and 7·1 inches in the corresponding period of 1876-77. In the last four days of March the rainfall amounted to 8·8 inches. A heavy thunderstorm with much rain occurred in the night of 26th and 27th of that month, 6 inches of rain falling in six hours. The winters in Canton are generally very fine, and are looked forward to with pleasure by foreign residents as a most agreeable change, after long and trying summers. This winter, however, was an exception. Instead of fine weather such as usually prevails from September till January, drizzling rain or mist prevailed, with only a few intervals, from November till March. In October and November the weather was comparatively warm; in December the temperature for the first two weeks was unusually high—the thermometer for several days at 80° with a southerly wind blowing. After this the cold weather set in steadily; in January the thermometer often stood at 39° in the morning, gradually rising to 46° and 50° in the course of the day. The cold was intensified by the presence of rain; and many beggars were said to have perished from the severity of the weather. Throughout February the weather was still very cold, but not so severe.—(XV. 12.)

In 1871 the foreign community, exclusive of the shipping, numbered 150; the diseases among them were such as usually occur in hot climates. The long continuance of the rainy season was try-

Health and Diseases.

ing to persons who were liable to rheumatism, neuralgic affections, or diseases of the respiratory organs; but generally, among both foreigners and natives, the half-year to September was healthy. An epidemic of small-pox broke out in the city in the latter part of 1870; it extended to the towns and villages for many miles around, but mortality by it was moderate. Only one foreigner took the disease. At the same time there was also a considerable prevalence of measles in the city. Cholera had not visited the city for many years, and in nothing like epidemic form since 1858. The diseases prevalent among foreigners were diarrhœa, fevers, rheumatism, catarrhs, dysentery and liver affections. Three cases of whooping-cough occurred among their children—a rare phenomenon, as no case of the disease had been seen during the previous ten years. Among the Chinese population the prevailing diseases were

intermittent and remittent fevers, diarrhœa, dysentery, summer cholera, ophthalmia and boils. Ophthalmia, though not confined to any season, is most prevalent in summer. With the recurrence of milder weather in September the severer forms of fever disappeared; they were succeeded by catarrhal affections and mild intermittents. All diseases had more or less of an intermittent type. The fevers from which foreigners suffered were of the intermittent type. Among the Chinese in the city remittent fevers, sometimes of virulent character, were of frequent recurrence; in fact the forms of fever which affect the natives in the summer season are in some cases of the most intractable nature. Dysentery and diarrhœa among the natives of China are mild, while congestion and inflammation of the liver, so fatal to foreigners, are rarely, though sometimes, met with among them. Leprosy, common among the Chinese, has never been known to affect Europeans here. Stone in the bladder is extremely common in this province. The prevalence of this affection has been attributed to the presence of lime in the potable water. Against this theory, however, is the fact that the natives only use water that has been boiled, and consequently the lime in it is thus deposited.—(II. 70). In the winter of 1871-72 the health of the foreign residents was excellent; this remark applying to children as well as adults. The absence of the usual diseases incidental to childhood, including measles, whooping-cough, laryngeal affections and scarlatina, was remarked upon, the latter disease being so rare that the medical officer had not seen a case of it at Canton during the preceding ten years. The health of the Chinese was also particularly good; and yet the season was described as having been unusually severe. Throughout the six months to March, 1872, there occurred no epidemic of any kind; small-pox appeared in February, but only in scattered cases. Associated with intermittemt fever among the Chinese was diarrhœa, a combination very common in the natives of this province.—(III. 19.)

In the half-year to September, 1872, the general health of the adult members of the foreign community was, 'as usual,' very good. Some cases of fever, dysentery, catarrh, bilious congestion, etc., constituted nearly the whole amount of sickness observed among them. With Shamien and other healthy localities along the river-side as places of residence, houses well adapted for warm climates, temperance in diet, and care in avoiding exposure to the sun, foreign residents may, and generally do, enjoy very good health throughout the year. Among the children, besides the usual cases of diarrhœa, coughs, febrile disturbance, and other disorders incidental to the period of dentition, a few cases of great severity occurred, and terminated in death. An unprecedented number of deaths occurred, namely four adults and four children, but not all from climatic disease. Among the diseases noted are boils, small-pox, neuralgia, and fevers.—(IV. 68.) Leprosy is endemic in the province of Quang Tung (1873); malarious fevers very prevalent. Among the foreign community, as in previous summers, there was very little sickness. Among the native population of the city there also was very little sickness during the continuance of the seasonal rain; but as soon as it ceased, and was succeeded by heat, numerous cases of fever appeared among the latter. In May there was a great prevalence of diarrhœa. After the storm of the 13th, little sickness occurred till July, when an interval of great heat intervened; with it fever and diarrhœa prevailed. Then followed a period of heavy rainfall. In September the heat was intense, especially during the first ten days, and then fever again appeared among the native population. As this is the time of the change of the monsoon, the weather was unhealthy, and so, with the occurrence of the north wind, sore throats, coughs, catarrhs, and bronchitis became prevalent. By some old residents, September is regarded as the worst month of the year, but the September of this year was the hottest that had been experienced for many years. Still, taken as a whole, this has been an unusually healthy year for the Chinese population. Measles had, however, been more than usually prevalent, but no other epidemic occurred. A few sporadic

cases of cholera appeared, but they were very rare. This part of China is not considered to be favourable for persons affected with phthisis.—(VI. 41.)

In the six months to September, 1877, the general health of the community was fairly good. The prevailing diseases among the foreign residents were diarrhœa and intermittent fever; a few cases of subacute hepatitis also occurred. Boils affected a considerable number of persons, the young and the full-grown being alike liable to them. Among the Chinese, small-pox continued from the previous winter till the month of April. In January, chynanche tonsillaris affected the Chinese. Measles occurred in May. In that month also bronchial affections were numerous; towards its end diarrhœa appeared, and thence continued throughout the summer. Dysentery persisted through May, June, and July. In August and September, diarrhœa, dysentery, and intermittent fever prevailed, the type of fever increasing in severity later in the season. —(XIV. 57.)

In the six months ending March, 1878, the general health of the foreign community was fairly good. Among the Chinese, the general state of health was also good, diseases of a severe type not of frequent occurrence. The most prevalent complaints were fevers, diarrhœa, and catarrhal affections. A few cases of dysentery occurred. Among the Chinese population the prevailing diseases were catarrh, bronchitis, rheumatism, and fevers. In October, owing to the unseasonable warmth and changeableness of the weather, there was a great prevalence among the latter of catarrhal affections, as also among the foreign residents. Intermittent fevers were quite common in November and December. With the approach of the cold season, dysentery and diarrhœa gradually disappeared. There was no epidemic of small-pox or measles.—(XV. 13.)

In the spring months of 1879, confluent small-pox prevailed extensively among the native Chinese; and, on the opposite shore of Honan, nearly depopulated two villages. During the summer season, a severe form of continued fever, in some respects resembling cholera, prevailed. During the months of August and September, a peculiar form of remittent fever affected both Chinese and foreigners. With the latter it was observed more particularly during convalescence from other diseases, such as acute diarrhœa, dysentery, etc., but especially amongst parturient women. And yet the season was exceptionally free from the ordinary complaints which are naturally expected in this climate. There have been no cases of dengue.—(XVIII. 56, 57.)

During the six months ending March, 1880, the state of public health was very good, only the ordinary diseases incidental to the climate of South China occurring. In the spring, ulcerated sore throat was epidemic. Five cases of measles occurred during the half-year, namely, three in adults and two in children. Gastric and gastro-enteric fever in children, not depending on the presence of worms in the intestines, came under treatment.—(XIX. 16.) During the half-year ending March, 1881, an epidemic of small-pox occurred, and raged 'to an unprecedented extent' in and around Canton. Otherwise, there was very little sickness, 'notwithstanding the fact that throughout China the climate of Canton is considered very unhealthy.' The usual autumnal epidemic of dengue was absent; the prevailing diseases intermittent fever, measles, rheumatic affections, and ophthalmia.—(XXI. 71, 72.) According to the Report for eight months ended March, 1882, an unusually severe form of remittent fever to a limited extent prevailed among foreigners. Among the Chinese there has been no epidemic since the winter of 1880-81. Syphilis prevails to a frightful extent in the city.—(XXIII. 33.)

HOIHOW.

Hoihow is situated on the north-east coast of the island of Hainan, in latitude 20° 3′ 13″ N., longitude 110° 19′ 3″ E. It is the seaport of the city of Kiangchow, 3 miles distant, which was opened for foreign trade in 1876. The walled city of Hoihow is built on the south bank of one of the mouths of the Tingan river; it has a population of about 12,000 inhabitants. The majority of the houses are only one story high, but Europeans have been able to obtain for themselves those of two stories. They are built close to the water's edge, upon a sandy soil. They were flooded by reason of a sudden rise of the river in September, 1880, but a similar occurrence was unknown during the ten preceding years. Residence in these houses has so far not proved injurious. Within ten minutes' walk the ground rises considerably. This elevation was recommended as furnishing an eligible site for houses for the foreign residents; it also possesses good springs of water. From a sanitary point of view, Hoihow does not compare unfavourably with other Chinese cities. The streets are well-paved and drained; a main channel runs through the town; it has branches in the different streets, and discharges its contents into the river. Householders subscribe to keep the drains in repair. Nothing but dirty water escapes into them, all night-soil and refuse being collected and used as manure.—(XXI. 73-75.)

Topography.

Sanitation.

In 1881, Dr. Aldridge wrote: 'It became a question whether one should remain indoors and forego the pleasure of taking any outdoor exercise, or experience the unpleasantness of having to walk along streets where the pestilential odours emanating from the drains and the refuse thrown from the houses must have greatly favoured the spreading of a disease such as cholera. The condition of the streets was greatly aggravated at the time of the Yü Lan, or All Souls' festival, by an increase in the number of fruit and vegetable sellers lining the streets, and by their throwing both into the gutters whenever they become unsaleable.' The state of the town was described as filthy.—(XXII. 6-8.)

The people are poor. Cattle are bred for agricultural purposes, hence foreigners have difficulty in obtaining cow's milk. Goat's-meat can always be had, but as there are no sheep on the island, the want of mutton is much felt by foreigners, who entertain a certain prejudice against the pork sold here. The supply of sucking-pigs is large, and they are in considerable demand. There is always an abundant supply of poultry and vegetables to be had in the market, and the varieties of fish of good quality are numerous. The water obtained from the wells in Hoihow in 1880-81 was brackish, and not fit for drinking; but very good water could be obtained from springs a few minutes' walk from the town. The supply from these springs was not affected by the dryness of the season.—(XXI. 73, 74.) Many of the Chinese prefer to drink the foul water close to their houses, rather than take the trouble of bringing drinking water from the springs a short distance from the town.—(XXII. 8.)

Food.

Water.

According to the Report for the six months ending March, 1881, the climate of this place was considered to be favourable for persons suffering from chest affections. Dr. Aldridge records the case of a man who came to Hoihow, suffering severely from asthma and bronchitis, who speedily improved in health, and gained 27 pounds in weight; also that of another man who arrived on the island three years before, suffering in a similar manner, and who since that time had not been a day off duty on account of sickness. On the 17th and 18th October, 1880, heavy rains and squalls prevailed; while off the north-east coast of the

Climate.

island a destructive typhoon raged. Dr. Aldridge considered that Hoihow is not such an unpleasant place of residence as might be imagined. During the six months from October, 1880, to March, 1881, the weather was fine and clear; temperature moderate, and a more agreeable climate 'it would be impossible to find in any part of the world.' Hoihow presents numerous facilities for outdoor exercise. The average temperature for the period including October, which was a hot month, was about 68° Fahr. In February the thermometer rose in one day to 87° Fahr., a south-east squall and fall of very large hailstones occurring at the same time. In March the lowest temperature was 52° Fahr. The number of days on which rain fell in the whole period was only 22. The wind chiefly north-east; the tides very irregular. As a consequence of the unusual dryness of the season the rice crops suffered considerably.—(XXI. 74-77.) From April to September, 1881, the summer was very long and trying; thermometer only on two occasions during the six months below 82° Fahr.; its average height throughout the period being 85° Fahr. From April till the end of June, violent thunderstorms were of frequent occurrence. In the whole six months rain fell on 55 days; or, for the whole year from 1st October, 1880, on 77. The rainfall usually attended a thunderstorm. In this period the maximum temperature recorded was 95° Fahr.; this occurred in May, and again in June; the lowest of such maximum, namely 86°, occurred in September. The highest minimum, 82°, occurred in August; the actual lowest reading, 67°, in April.—(XXII. 6-10.) In the six months to March, 1882, the maximum temperature of the period, 83°, occurred in October—the lowest of such maximum, 74°, in February; the lowest, 54° Fahr., in February—the highest of such minimum, 77°, in October. The weather during the last three months of 1881 was very disagreeable, the rainfall the greatest in quantity since the opening of the port. October set in with a strong north-east blow which lasted four days. November was a wet month, differing in that respect from the same month in 1880, when no wet day occurred. The weather during this period has been very pleasant; for the most part fine, cool and bracing.—(XXIII. 30.)

Since the date of opening Hoihow as a port, 16 foreigners have been resident for different periods of time—that is, between 1876 and March, 1881. Not one of them suffered from serious illness, nor did any of their number have to leave the port on account of ill-health. In the interval, there was no medical man nearer than Hong Kong, distant 270 miles. The most prevalent diseases were those of the skin and eyes. A large number of natives applied to Dr. Aldridge, and had no hesitation about taking foreign medicine. There is much leprosy in the neighbourhood. Small-pox is much dreaded, a severe epidemic of that disease having destroyed many lives five years before.—(XXI. 73, 74.) From April to September, 1881, the health of the foreign community was reported very good. A few cases of acute diarrhœa occurred among them, but these attacks were readily amenable to treatment; all other affections were trivial in character. The constitutions of those living in Chinese houses were enfeebled, as a result of protracted heat, excessive perspirations, and sleepless nights; with improved houses, however, these evils would be to a certain degree lessened. In the month of August an epidemic of cholera occurred; it continued throughout September. The disease was considered to have been imported from Bankok. Four cases of heat apoplexy and one of intermittent fever occurred on board H.M.S. *Magpie*, but there were no deaths. The French gun-vessel *Parseval* arrived from Haiphong with a mild case of typhoid fever. In June and July many cases of mumps occurred among the Chinese, adults as well as children being attacked.—(XXII. 6-9.) In the six months ending March, 1882, the health of the foreign residents, still numbering 16, was very good. Diseases of the respiratory organs were more prevalent than usual, being attributed to the dampness of the weather at the end of 1881. Deaths from malarial fever occurred among the Chinese troops sent to Hainan.—(XXIII. 30.)

Health and Diseases.

PART II.

MEDICAL.

HISTORICAL NOTICES OF MEDICINE IN CHINA, AND OF CERTAIN EPIDEMICS, ETC.

THE art of healing was practised among the Chinese in their prehistoric times, but the first quasi-scientific efforts of which we have any written record belong to the period of the Chow dynasty, B.C. 1122-250. The physicians of that dynasty classified diseases under the four seasons of the year—headaches and neuralgic affections under *spring;* skin diseases under *summer;* fevers and agues under *autumn;* and bronchial and pulmonary complaints under *winter.* They treated the various diseases that fell under these headings by suitable exhibitions of one or more ingredients taken from the five classes of drugs, derived from herbs, trees, living creatures, minerals, and grains, each of which contained medicines of five flavours, with special properties as follows: sour for nourishing the bones; acrid for nourishing the muscles; salt for nourishing the blood-vessels; bitter for nourishing general vitality; and sweet for nourishing the flesh. It was a standing regulation that all potions administered to the ruler of a State should first be tasted by the Prime Minister, and the public at large was warned against rashly swallowing the prescription of any physician whose family had not been for three generations in the medical profession.*

About B.C. 200 the 'First Emperor' of China issued orders for the destruction of all existing books, with the exception of works treating of medicine, agriculture, divination, and the annals of his own house. In this dynasty a famous physician was named HUA. He was celebrated for his administration of drugs, and his use of acupuncture and counter-irritants. 'If the sick man is suffering from some internal complaint and medicines produce no satisfactory result, then Hua will administer a dose of hashish, under the influence of which the patient becomes as it were intoxicated with wine (*anæsthetised ?*). He now takes a sharp knife and opens the abdomen, proceeding to wash the patient's viscera with medicinal liquids, but *without causing him the slightest pain.* The washing finished, he sews up the wound with *medicated thread* (*antiseptic ?*), and puts over it a plaster, and by the end of a month or twenty days the place has healed up.' For indigestion he prescribed 'three pints of a decoction of garlic and leeks,' with the very natural result, considering the quantity, that vomiting was induced. But one of his prescriptions led to a result disastrous to himself. Having been consulted by Ts'ao Ts'ao, on account of certain cerebral symptoms, Hua declared that they arose from wind, that the seat of the disease was the brain, where the wind collected, unable to get out; he accordingly proposed to his patient that the latter should swallow a dose of hashish, and that then, with a sharp axe, Hua should split open the back of his head and

* From 'Historic China,' by H. A. Giles, p. 9. It is considered that the information thus quoted from the able writer named will enhance the value of that taken directly from reports by medical officers, the object of this epitome being to make that information as complete as circumstances admit of.

let the wind out—thus the disease will be exterminated. Whereupon Hua was thrown into prison, where he died. Ts'ao Ts'ao never recovered from the disease for which the heroic treatment just mentioned was destined.

Under the Sung dynasty, A.D. 960-1280, the functions of magistrates acting in their capacity as coroners were more fully defined than they had previously been; the study of medical jurisprudence was stimulated; medicine, and the art of healing generally, came in for a considerable share of attention. Voluminous works were written on therapeutics. Inoculation for the small-pox was known to the Chinese at least since the early years of this dynasty, if not earlier. It was also under the Sungs that the first work on acupuncture was published.

Under the Mings, A.D.1370-1650, the 'Chinese Herbal' was prepared. This is a compilation from the writings of no fewer than eight hundred preceding writers on botany, mineralogy, entomology, etc., illustrated and arranged under categories.

Under the Penal Code, as at present in force, 'the doctors' prescriptions must be made up according to recipes sanctioned by established practice.' Homicide in a brawl is visited with strangulation. The death of a patient under the hands of a doctor would come under this provision. If, however, it could be shown that the latter had wantonly deviated from the established rules of practice, he would be beheaded.*

Dr. Macgowan writes: 'More than a score of centuries before Hippocrates wrote of "critical days," the Yellow Emperor, HWANGTI, is represented as referring to the same subject, namely crises in disease, and the natural tendency which the body has to cure itself by critical evacuations at certain periods. The occasion on which his Imperial Majesty thus expressed himself is said to have been when conversing on the subject of physiology and pathology with C'HIPE, his physician and minister.' Since the dawn of authorship there has been a succession of medical writers, but no separate caste existed to hand down the earliest observations. An old Chinese essay on Epidemics is noticed. That work was by Wu Yuhsin, a physician of Soochow.—(XXII. 23.)

In the Report on Wenchow, April to September, 1881, Dr. Macgowan gives much information deduced from Chinese records on the subjects of epidemics, and medicine generally. He gives a chronological record of epidemics noted as having occurred in the province of Chêhkiang from A.D. 95 to 1864, referring also to the nature of each, and the season of its occurrence. The term by which epidemics are expressed means 'diseases which affect everyone at the same time.' The list comprehends numerous maladies, and generally indicates that the epidemics were sequels of droughts, floods, famines, or civil war. They were of more frequent occurrence in the maritime regions than in the hilly districts; many of them had also a limited area. The mode of transmission of the 'materies morbi' is given in only one instance; on that occasion a pestilence was conveyed from Hangchow to Sungyang by female children purchased as slaves. The 'germs' (*specific poison ?*) of the disease are thus considered to have been conveyed by clothes; and in the Chinese work 'Pêntsao,' in the chapter on Toxicology, old clothes are included as among the poisons. For 'several tens of years' Wênchow suffered every spring and summer from a contagious malady, which, from the nature of the allusions to it, was without doubt small-pox; during its prevalence 'no one ventured out at night lest a pestilential demon might be encountered.' In 1579 a magistrate instituted an inquiry on the subject, and on the advice of 'men of age and experience,' directed the adoption of certain 'sanitary' measures, one of which was the 'erection of a special temple to the five demons of epidemics.' That temple was erected in a month, and the plague disappeared. Reference then occurs to the appearance of a plague in the

* Op. cit. pp. 33-160.

sixth year of Kautsu, *i.e.* A.D. 591, and to the simultaneous appearance in the sky of 'the five mighty ones,' namely 'heaven-sent demons, agents of the five epidemics, to wit those of spring, summer, autumn, and pestilences in general.' During that dynasty the SUI and the TANG temples were dedicated to ceremonies for averting the pestilential wrath of these 'mighty ones,' now styled 'supernaturals.' In wealthy cities, Ningpo for example, 'the demons of pestilence' are borne in processions of an imposing character; and occurring as this procession does in hot weather, its observance is itself often a source of sudden disease. According to the latest local gazetteer, worship at the Temple of the Demons of Pestilence does not now suffice to ward off the diseases to which the city is described as being particularly exposed, owing to atmospheric vicissitudes, albeit it is the most cleanly city in the empire.—(XXII. 23, 29, 30.)

In the year 1295 the city of Changchau in Kiangsu was ravaged by an epidemic. On that occasion Chang Tzuchi, Minister of State, established a dispensary and directed the gratuitous issue of medicines; but in vain, and so the people repaired to the Temple of the Demons of Pestilence. Temples to the Yo wang, or Princes of Medicine, are everywhere to be met with in China. The earliest of those to whom such temples were erected was Pien Ch'iao, who flourished in the reign of We Lih, B.C. 468—440. Pien Ch'iao is credited with anatomical knowledge obtained by dissection, and with the theory of the pulse, as also with the practice of acupuncture and the moxa. Dr. Macgowan adds, however, that such knowledge is apocryphal. In A.D. 738 there appeared in the capital a singularly attired foreigner; attached to his girdle were calabashes, several tens in number. His fame reached the palace; the Emperor sent for the foreigner, who announced himself as 'an obtained-doctrine man' (*teh-tao*) from India. His name was WEIKU. His Majesty ordered his portrait to be taken, and conferred on him the title of Medicine Prince. A Fukien miscellany names a Medicine Prince Temple or Temple of Pien Ch'iao, also called Temple of Dr. LU. Another says that the Medicine Prince, or Pusa, was WEIKU, who came from Sumatra. He is described as having *teh-tao*, the Buddhist term for one who has entered Nirvana. It is stated that he was not a Buddhist, however. During the reign of the usurping Empress WU, in the latter part of the sixth century, a Taoist practitioner of medicine named WEI SHENCHÜN became celebrated as a monk, and for the cures he performed. Soochow boasts a medical Pantheon, which at the present time bears the name of the 'Temple of the Healing Kings.'—(XXII. 30, 32.)

The general Chinese name for epidemics of all kinds is applied to plagues of a febrile and of a choleraic type. In mediæval times such as occurred were for the most part accompanied by drought or famine. Thus in A.D. 791, during the Tsung dynasty, an epidemic happened with drought, when the wells at Foochow were dried up; it spread over the entire province. Other epidemics are recorded as having prevailed in parts of the province of Fukien, but they did not spread over the whole of it. In 1275 a disease, the nature of which does not appear, destroyed nearly one-half of the population of this province. In 1356 a severe epidemic prevailed at Funing, and at the same time a famine so intense that cannibalism was practised; in 1370 in Funing, in 1450 in Shaowu, in 1682 in Formosa.—(XIV. 33.)

Epidemic frenzies of various kinds have occurred in China from time to time. An epidemic of this nature occurred A.D. 1464, a date, as remarked by Dr. Macgowan, 'nearly concurrent with the beginning of witch-mania in Europe, or that of the Bull of Innocent VIII.' Other epidemics of the same kind occurred in the years 1529, 1596, 1657 and 1753. In regard to the treatment of epidemics of this nature, recourse was had to drugs and counter-incantations, loadstone pills, purgatives, emetics, etc. Talismans and charms of various kinds were in use against the 'disease.' Hartall, arsenic, and other medicines were carried in a belt, branches of the peach-tree hung up in the

house, while 'by music from gongs, drums, fireworks, or otherwise, demons may be driven off.' Such delusions in China were not, as in the West, intensified by religious fury, and women have seldom been regarded as addicted to sorcery, although etymologically the expression YAO, magical, elf, bewitching, and the like, is composed of 'woman' and 'winning.' In 1657 an epidemic was said to have been caused by wizards from the north of the Yang-tze, who appeared at Chinkiang and Changchau. They possessed the power of fascinating or enchanting men whom they met abroad, so that, simply calling them by name, they were enabled to allure them to another city, and sell them all by means of a sort of 'hypnotizing.' The hypnotized being sold by their captors through Soochow and Changchau brokers, led to the suppression of the practice. For a week, however, Changchau was troubled by 'spiritual' manifestations. During night-time there occurred weird phenomena: rafters and tiles of houses shook with fearful noises; phantoms, offensive in odour, appeared; black demons assumed various shapes, as that of a fox; these shadowy ogres smothered or wounded people, but attempts to smite them with swords only resulted in wounding the smiter. Then follow remarks on talismans and charms generally in relation to sorcery. In 1876 an epidemic frenzy of the nature just described occurred in the province of Kiangsu, and in 1881, according to the 'Shên Pau,' two medical sorcerers exercised a powerful sway over a large tract of country bordering the Great Lake. They are dames, but assume and are accorded the title of unmarried women, implying that they are a sort of fairy.—(XXII. 32, 35.)

Dr. Macgowan writes: 'It can be shown that neither army nor navy can be effective without a corps of duly qualified surgeons; that anatomical knowledge is the first thing to be imparted; and that such knowledge is to be acquired by dissections alone.' He relates how in the year 459 the Emperor Hsiao Wu authorized certain 'experiments' of decapitation and subsequent 'recovery' to be performed on prisoners. He quotes from 'Mémoires concernant l'Histoire,' etc., (tome viii. p. 261), in regard to the evisceration, by order of a governor, of forty criminals, *enceinte* women, and children, for anatomical purposes, causing examinations of the viscera to be made by skilful physicians. In advocating the utilization of the bodies of persons capitally punished for dissection, Dr. Macgowan quotes in support of the practice the authority of the 'Pêntsao.' It must be observed, however, that the history given therefrom is less demonstrative than might at first sight appear. As 'evidence' in support of the utility of post-mortem examinations, the highest medical authority the Chinese acknowledge, namely the 'Pêntsao,' narrates the case of a man of rank who, as well as his slave, suffered from abdominal pains. The slave succumbed to the malady, and the master, opening the body, discovered a red-eyed white turtle, on which he tried the effects of various medicines, none of which killed the animal. By accident, however, it was discovered to be *soluble* in horse urine, from which he inferred that that excretion, hitherto unknown as a medicine, would dissolve the tumour that occasioned him so much pain; he tried it, and was cured. Since that time equine urine has held a high place in the Pharmacopœia for the treatment of visceral tumefactions and various other disorders.—(XXII. 48.)

In the Report on Shanghai, January to March, 1872, Dr. Jamieson gives the characters in the Chinese language which represent certain forms of disease. The following indicates the translation of these characters, namely:—1. *Feng-'han,* which seems to include bronchitis and pneumonia; 2. *Shêng-ch'an,* child-birth; 3. *Lao-ping,* a convenient term covering every disease at the end of which the patient dies exhausted—tuberculosis and syphilitic and cancerous cachexia find places under it; 4. *Ching-ping,* or 'violent disease'—another convenient and comprehensive term; 5. *Shang-'han,* which seems to be characterized by intense heat of skin, including probably typhus, pneumonia, and acute tuberculosis; 6. *T'u-hsieh,* hæmoptysis; 7. *K'o-sou,* or cough—chronic bronchitis no doubt, often supplemented by asthma; 8. *Fa-sha,* which includes every state of insensibility; 9. *Ku-chang,* or 'drum dropsy,' ascites; 10. *Fu-chi,* choleraic diarrhœa;

11. *Hsun-szû*, suicide; 12. *Tung-fêng*, acute rheumatism; 13. *Tien-hua*, small-pox; 14. Accidental burning.—(III. 82.)

As examples of some at least of the modern methods of Chinese professional practice, the following, which are casually alluded to in the Reports now being considered, are here given, namely: Surgical operations by them are for the most part comprised under the headings of acupuncture, application of the moxa, and the opening of abscesses. The two first are practised in all manner of diseases, wherever there is local pain or swelling. As a rule, Chinese practitioners are timid with the knife.—(XIV. 51.) In gunshot wounds in which the bullet lodges the means employed by Chinese surgeons consist merely of the application of 'a variety of plasters guaranteed to draw the bullets out.'—(III. 51.) Surgical.

At Hoihow, October to March, 1880-81, the application used by the Chinese in cases of burns consists of fermented rice and cabbage-leaves.—(XXI. 75.) In the Report to September of the same year, it is stated that 'the new Taotai who arrived at Kiungchow in April died two months afterwards; his death due to exhaustion, the result of diarrhœa and hæmorrhoids.' It was stated that seven native doctors were called in to attend him, but were all afraid to administer any of their drugs, fearing that his death should happen while he was under their treatment.—(XXII. 9.)

At Newchwang, October, 1880, to March, 1881, Dr. Watson observed that 'many Chinese doctors in this neighbourhood are skilful in the treatment of dislocations. On one or two occasions he has been sent for to see natives who had falls and dislocations, but before his arrival on the scene the mischief had been discovered and rectified.'—(XXI. 40.)

At Ichang, according to the Report for the six months to September 1880, although Dr. McFarlane made strenuous efforts to get natives to remain in hospital, he so far failed to do so. They will, however, undergo any amount of pain, and drink medicine *ad libitum*, if allowed to go home immediately after it.'—(XX. 20.) Again: in his Report on Takow and Taiwan-foo, for the half-year ending March, 1882, Dr. Myers writes: 'Native appreciation of foreign medicine in South Formosa seems to be more conspicuous than in other parts of the Chinese Empire. This is due to the medical practice and teachings of Dr. James Maxwell, of the English Presbyterian Mission,' whose name is still mentioned in many parts of the island, not excluding some savage districts. Unfortunately there has sprung up in Formosa a horde of charlatans who—under the guise of having been connected with foreigners, no matter in what capacity, and therefore authorized to dispense Western medicine—will, if not checked, in course of time do much to destroy the good previously accomplished. In order to meet this state of things Dr. Myers writes: 'It would be a great aid towards propagating the benefits of foreign medical science if duly instructed natives could be sent out—that is, highly instructed in anatomy, physiology, and the higher departments connected with the practice of medicine.'—(XXIII. 24).

At Swatow, 1879, the reporter was glad to notice an increasing desire among the Chinese in the more immediate neighbourhood of the settlement to obtain foreign advice. On many occasions children in the early stages of infantile fever, diarrhœa, and other affections were brought to hospital, instead of, as formerly was the case, when their condition had become extreme.—(XVIII. 79.) Swatow.

At Wenchow, 1877-78, the Chinese were shy of coming under treatment by English medical men. On the one hand, they believe that in certain cases death is no bar to foreign skill; in other instances they believe more in their own physicians than in foreigners.—(XV. 40.) Wenchow.

Although Western medicine, as a system, is by no means welcomed in China, like everything else foreign, it is so in Japan.—(XIX. 40.) Japan.

As yet, the diseases of Japan have been comparatively little studied, and the effects of the climate of that country upon the European constitution still remain imperfectly understood. In matters medical Japan is often confounded with the more tropical East; on this theory extra premiums for life assurance are frequently charged. Hence the inquiry is important, an abstract of which follows, taking Yokohama as the representative locality, the years 1868 to 1877 the period to supply the requisite data.—(XV. 48.)

Of all patients admitted to hospital at Yokohama in the three years 1875-77, residents furnished 32·96 per cent.; new residents 67·03—many of the latter being seafaring men—hence for the ten years it is safe to take the admissions to represent one-third residents, and two-thirds non-residents. Out of the resident foreign population many had previously lived in the more tropical East, as India, or Southern China.—(XV. 49.) The furth er details in respect to particular diseases in Japan, follow in their order, and supplementary to the remarks on those diseases as they occur in China.

DISEASES, ETC.

I. SMALL-POX.

Historical.

According to a literate named Chwang, a native of Hunan, in the present dynasty, the first appearance of small-pox in China was in the reign known as Chien Wu, that is, about A.D. 317. The Emperor's name at that time was Sz-ma-yen; his posthumous name is Yuen-ti, the first of the Eastern Tsin dynasty—A.D. 317 to 420. In a Corean medical work, consulted by Dr. Dudgeon, called 'Tung-i-pau-chien,' it is stated that the ancients knew nothing of small-pox and measles, but the writers believe that the former took its rise somewhere about the end of the Chow and beginning of the Tsin dynasty; in other words, about the year B.C. 241. But Dr. Dudgeon is of opinion that this position is untenable.—(III. 9.)

Peking. Vaccination.

In the half-year ending March, 1873, small-pox did not make its appearance at Peking as it had done in the few preceding winters. Vaccination is not practised among the Chinese during winter, and there is the greatest difficulty in keeping up the supply of lymph during that season. Only one native vaccinator, a semi-official one, and of long-standing, who has branch establishments at Tientsin, and at Taiyuen-fu in Shansi, is able to keep it up. His method is to hire poor children for this purpose during the winter, who live in his establishment.—(VI. 11.)

In the winter of 1873-74, small-pox, 'as usual, on the approach of cold weather, prevailed among the Chinese, no doubt with its ordinary results, as vaccination is not practised, owing to the native theory of its inadmissibility at that season.' No case of the disease occurred among the foreign population.—(VIII. 29.)

In his Report to 31st March, 1875, Dr. Dudgeon records the death of the Emperor of China, barely 19 years of age, 'asserted to be from an attack of small-pox, which, as in former winters, has prevailed more or less extensively and epidemically.' The Emperor of China was attacked with 'the heavenly flowers' on 9th December—the day of the Transit of Venus. The Chinese

state that this is not the first monarch who has died, as it were, astronomically; and they mention several whose death coincided with certain phenomena of the heavenly bodies. He died on 12th January; and 'on his demise a memorial was presented to the throne to have the two medical men, court physicians, and members of the Great Medical College, who were in attendance, severely punished.' It is stated, however, that they were not to blame; they treated their august patient *secundum artem*, and, of course, could not deviate from the beaten track laid down in their ancient system. It has been stated that the Emperor had small-pox in his youth; also, that there were suspicious circumstances in connection with his death. The present little child-Emperor has been vaccinated. It is also stated that the Emperor and Empress of Japan have been vaccinated since the news of the death of the 'Son of Heaven.'—(IX. 34.)

The Chinese recognise small-pox and measles as depending upon a poison inherited from the parents, which resides in the system till it is developed by external exciting causes, 'like fire concealed in the flint.' As a prophylactic against the disease, or to render the attack slight, it is recommended to eat cinnabar, dried umbilical cord and placenta, hare's flesh, cobwebs, etc. 'At the approach of each winter, and particularly when the weather is mild, and an unhealthy spring is feared, when small-pox chiefly prevails, beans are to be eaten.' Beans are considered to be an antidote against all poisons. Independent of the supposed fatal poison, the books of the Chinese recognise small-pox as epidemic, 'depending, as they express it, *on the air of the seasons*.' They enumerate five kinds of the disease, corresponding to the five viscera—namely, lungs, heart, liver, stomach and spleen, and kidneys. They divide the duration of the disease into periods of *seven* days each; namely, of incubation, development, and decay. The condition of the pustules and patient, of favourable and unfavourable symptoms, are all noted. Minute directions are laid down for the period of convalescence, including contra-indications in regard to eating, drinking, avoidance of smoke and dirty water in the room, combing of the hair, the smell of wines, spirits, and urine, sulphur, asphyxiating medicines, and other matters. To preserve the eyes from the ravages of the disease, a plaster is used, encircling the eyes, the idea being to limit and prevent the malady from crossing over and attacking them. To prevent pitting, the oil of the seeds of the *man-tsing* are used, with which the parts are smeared, or the face is ordered to be washed with the water in which shellfish have been steeped.—(IX. 35.)

During the summer of 1871, small-pox alone of the contagious fevers affected the Chinese population of Newchwang. The disease is never absent from that town and district.—(III. 12.) In the summer of 1872 a ship entered the harbour, having on board a case of small-pox. The vessel had come from Shanghai, all the men on board having been healthy at the time of sailing, although during the voyage one man was attacked with the disease and recovered. Subsequently a second and a third case of the disease occurred on board, but the patients were both removed and treated on shore. In reference to this occurrence Dr. Watson discusses the general subject of QUARANTINE.—(IV. 27.) During the year ending March, 1880, the natives in the town suffered slightly from small-pox, but a large trading-mart, distant from that port some 30 miles up the river, was visited by a severe and sadly fatal epidemic of the disease.—(XIX. 1.)

Newchwang.

In the half-year to March, 1873, two deaths by small-pox occurred among foreigners at Chefoo—both in January. The subjects of the disease in both instances were natives of the Sandwich Islands, one of whom arrived in his ship suffering from the affection, and is stated to have communicated it to the other. Dr. Myers writes regarding the comparative immunity enjoyed by Western foreigners, as being one of the highest tributes to the efficacy of vaccination.—(V. 22.)

Chefoo.

Chinkiang.

At Chinkiang, in the seven months ending March, 1876, small-pox was epidemic, and deaths from that disease in the city and its suburbs very numerous. In a few cases recorded the form of the disease was so mild as more properly to come under the head of varioloid.—(XI. 2.)

According to the Report to September, 1876, it was not till June of that year that the *annual epidemic* of small-pox entirely disappeared. One case only occurred among the foreign community. 'This was a severe one, and although the patient presented clear marks of former vaccination, with a history of an abortive attempt some three years ago, the case presented many of the grave symptoms of the confluent form.'—(XII. 27.) As usual, small-pox prevailed during the winter of 1876-77; it did not amount to an epidemic, however. Only two cases of the disease occurred in foreigners, namely, that of a seaman on board H.M.S. *Frolic*, in January, a day or two after the arrival of that vessel from Shanghai; a second in a man who had visited the *Frolic*. In reference to the latter, the medical officer notes that the circumstance of the subject of the attack having been on board that vessel surely indicates a possible source of contagion. In the treatment of cases no internal medicine was given beyond an occasional night-draught and laxative. A solution of carbolic acid in glycerine is applied externally, a method by which circulation of pus in a state of decomposition, or some product arising therefrom, is said to be prevented.—(XIV. 64.)

In the Report for the year ending September, 1878, Dr. Platt stated that 'small-pox, so constantly met with here during winter and early spring of former years, was rarely seen.'—(XVI. 20.) During the year ending March, 1881, the occurrence of one case only of the disease is recorded, and it in the month of June.—(XXI. 99.)

Kiukiang.

At Kiukiang, during 1871, two cases of confluent small-pox, one of which proved fatal on the tenth day, were recorded. Twenty vaccinations were performed.—(II. 66.)

Hankow.

At Hankow, according to the Report for the half-year ending September, 1871, the English settlement is completely cut off from the Chinese portion. Small-pox, repeatedly and severely epidemic, affected alike both natives and foreigners so long as the latter resided in the town; since they occupied their 'settlement' they have been free from the disease.—(II. 45.) In that ended September, 1876, an epidemic of small-pox was watched in one of the institutions for native children, where many were unvaccinated. But of fifteen attacked only one died, the disease being of a mild type.—(XII. 15.) From that date to September, 1877, only one case of confluent small-pox occurred, and it in a foreigner residing within the limits of the native city. The disease was moderately prevalent in the neighbouring cities during the winter and spring months of 1876-77, but it was said not to be of a fatal type, nor did it exhibit an epidemic prevalence such as the same disease recently did in many cities in Europe.—(XIV. 79.)

Shanghai. Vaccination. Inoculation.

At Shanghai, 1871, there was no difficulty in protecting the foreign population from small-pox by means of vaccination and re-vaccination. The Chinese do not object to vaccination, but they have been accustomed to inoculation; and confluent small-pox so seldom follows the usual operation, that they see no great reason to change their system. They would as soon have their children vaccinated, but they do not much care. For some years a vaccination establishment existed, the applicants to which have lately increased in number; as, however, the small-pox season is considered to end with April, the attendance fell off after that date.—(II. 35.) Vaccination was constantly performed during the winter months of 1871-72. There was no fatal case of small-pox among foreigners in the settlement throughout that period, and only two cases of the disease reported, both benign. Inoculation is, however, still practised by the Chinese.—(III. 79.)

According to the Report, April to September, 1872, small-pox disappeared in April, two cases only having occurred in that month, both in the police force. Variola is never absent from the native quarters, and it is stated will not be so until stringent measures are adopted for the prevention of inoculation. The vaccination dispensaries are month by month becoming more crowded, but the impression they make upon the vast number of children demanding protection from small-pox is very slight.—(IV. 100.)

In the half-year, October, 1874, to March, 1875, small-pox was very prevalent among the Chinese, but only two cases were reported among foreigners. Partly on account of its prevalence, and partly on account of the death of the Emperor by that disease, vaccination was eagerly sought by the Chinese, and 400 of their children were accordingly vaccinated at the Municipal depôt during the first three months of 1875.—(IX. 7.) The disease was present throughout the half-year April to September, 1875.—(X. 55.) In that to March, 1876, small-pox was not epidemic. One case, which occurred in a tidewaiter, was remarkable for the fact that the patient had had the disease twice before, and bore three good vaccination marks on his arm.—(XI. 50.)

In the Report to March, 1878, Dr. Jamieson writes: 'Of all diseases, small-pox would seem to be that one which should be most easily diagnosed.' That mistakes are possible appears from the following case: On the 8th of February, an officer of the *Kwa-sing* complained of ague. Up to the 6th he had been well. On that day he had a short attack of shivering, followed by perspiration, for which, looking upon it as ague, he took quinine. On the third day these phenomena were repeated. Eighty hours after the first manifestation of fever, the characteristic eruption appeared. This patient had been re-vaccinated three years previously on board an English man-of-war, but without result. It is recorded that in the year 1877, at this place, 1,981 native children were successfully vaccinated at the Gutzlaff Hospital, and 3,833 more in the Taotai's establishment in the city, making in all nearly 7,000 children thus protected during this year and that preceding. The first case of small-pox for the season occurred on the 8th December. Others were admitted on 9th December, 3rd January, and 8th February. All terminated favourably.—(XV. 9-16.)

During the year 1878, the vaccinations performed at the Municipal establishment for the purpose numbered 1,295; at the Gutzlaff Hospital, 1,537; making in all 2,832, or in round numbers, and allowing for vaccinations performed by natives from lymph obtained from the foreign establishments, 3,000. Whatever objections to vaccination the Chinese may once have had are no doubt melting away; but a serious objection to the vaccination of girls lies in the fact that, without a few marks as evidence of having passed through small-pox, a marriageable maiden is wanting in one of her chief qualifications, natives in search of wives not having yet learned to accept the vaccination scar as a promise of future immunity. One solitary case of small-pox occurred in the foreign community. During the months of February and March an epidemic of chicken-pox 'rushed through' the settlements, children being chiefly affected.—(XVII. 18.) In the six months ending March, 1880, there was no fatal case of small-pox. At the Shantung Road Hospital, in 1879, the total number of vaccinations performed was 5,129. At the Gutzlaff Hospital 1,859 children were successfully vaccinated, and about 150 tubes were distributed to natives for use in the country.—(XIX. 19.) In 1880, small-pox was prevalent among the shipping as late as the month of May, and cases occurred from time to time throughout the year ending September. The entire number of cases reached its maximum in April. In the entire winter of 1880 small-pox caused only one death.—(XX. 33.) On board ship, according to Dr. Burge, the cases of that disease met with are either imported from Japan, or contracted by the sailors when visiting

Vaccination.

Chicken-pox.

Vaccination.

the back slums of Shanghai. During 1880 there were vaccinated at the Anglo-American Dispensary, 1,472 children; at the French Dispensary, 1,232; and at the Gutzlaff Hospital, 1,481. In reference to the latter, Dr. Jamieson states that not more than half the children vaccinated are brought back for inspection. Of this half, a number, varying from one-eighth to one-sixth, have not taken at all. Of the remainder, a very considerable ratio have had the vesicles broken by accident or carelessness, or covered with native medicine. Thus a bare record of vaccinations performed is quite misleading as an indication of the real value of the work done. Yet Dr. Jamieson writes that he has never seen small-pox in a vaccinated European child at Shanghai.—(XXI. 83-97.)

At Wenchow, according to the Report for the six months to March, 1878, small-pox did not seem to be more rife than the fact of vaccination not being practised would lead one to expect.—(XV. 40.) In the Report for the six months April to September, 1881, Dr. Macgowan wrote: 'Vaccination is making considerable progress in many provinces. Physicians who make a speciality of infantile diseases often include vaccination in their practice; there are also persons who make it their sole occupation. Dr. Macgowan adds: 'The extension of this great improvement cannot be viewed with unmixed satisfaction.' It is to be feared that ignorance or dishonesty on the part of vaccinators may delude whole communities by spurious operations, the baneful consequences of which will become apparent when a small-pox epidemic of unusual virulence appears. At Kinhua, vaccination has been taken up by the Buddhist priesthood; and as they surround the act with mystery and imposing ceremonies they are likely to monopolize the new vocation. A native Christian vaccinator who would not thus deceive the people has lost his practice, and has been obliged to adopt another calling. Vaccination will not speedily supersede inoculation, which, since its introduction from Thibet, A.D. 1023-55, has served to mitigate the violence of small-pox, introduced in the first century from the then foreign region of Hupeh by the army of the hero Ma Yüan.'—(XXII. 46.)

Wenchow.

Vaccination.

Inoculation.

At Foochow, in the half-year to September, 1871, three cases of small-pox were recorded. They were mild varioloid, and required no treatment. They occurred in well-vaccinated subjects belonging to one of her Majesty's vessels, and the disease was clearly traced to a native bazaar where the men had enjoyed their leave on shore. There has been nothing that can be called an epidemic of variola among the foreign community at this anchorage, although cases occasionally occur among them. Small-pox, however, is epidemic among the Chinese in the spring, and sometimes also in the winter months.—(II. 27.) In the Report to September, 1877, a translation is given of a document that was posted on the walls in that neighbourhood. The purport of the translation in question is as follows, viz.: 'Vaccination was introduced hither from Europe. It is practised by "planting three seeds" of virus in a spot on the left and right arms above the elbows. This spot is called "the cold-dispelling pool," and upon it is formed the virus, and a scab, there being no eruption upon the body generally. The result is effected in ten days, and no failure can possibly take place, whilst security is obtained from any natural and original attack of small-pox, or from a second attack, if the patient has already had it,' etc.—(XIV. 89, 90.)

Foochow.

The following remarks similarly represent the opinions held by the Chinese on the subject of inoculation, namely: 'Inoculation has been practised in China for some hundreds of years. The Chinese call small-pox "Heaven's flowers," and inoculation "Cultivating Heaven's flowers." The mode of procedure in inoculation is to pulverize the scabs taken from a small-pox patient, and blow the powder thus obtained up the nostril of the child.

Inoculation.

They inject the powder into the left nostril in the case of a boy, and into the right in a girl. It is impossible to tell whether the disease thus introduced will be severe or not. In some years there are few if any deaths, at other times the mortality is much the same as that from small-pox. Another method is to put the clothing of a patient suffering from small-pox upon the child. They always take the matter from a mild case of the disease. They are careful to choose a lucky day for the operation, and a time when the child is in good health. They prefer to induce the disease at an early age, as in this way they are able to prevent the child from scratching the pustules and so causing pitting.'

It is stated that in China vaccination is steadily gaining way; that inoculation is losing way. Dr. Ringer has it from reliable native sources that inoculation is not very much practised, and that the suspicion with which vaccination was formerly regarded as a subtle device of the wily foreigner is dying out. Dr. Osgood believes that vaccination is gaining ground every year, and is destined in time to drive out inoculation. In Foochow and its neighbourhood it is the rule to vaccinate, and he is of opinion that there must be at least from twenty to thirty natives engaged in the work at this port. According to the Report from April, 1880, to March, 1881, vaccination had made but slow progress. Annually during winter small-pox visits almost all those who have not been protected by inoculation, or by a previous attack of the disease. According to the Report quoted, two cases of modified small-pox occurred (among foreigners), both traceable to an amah who had visited her relatives while they were suffering from the disease. With small-pox annually in the neighbourhood it seems difficult to avoid infection. All ought to be vaccinated and re-vaccinated, and the suggestion is made that families ought to refuse leave to their servants during the period from January to May, when small-pox, measles, and parotitis are so common among natives.—(XXI. 52.)

Vaccination.

At Amoy, in 1871, Drs. Müller and Manson wrote that with the exception of small-pox they had there met with no representative of the class of continued fevers which claims so large a number of victims in Europe. They observe that small-pox is very prevalent; every person is sure sooner or later to contract the disease. This is not matter of surprise, vaccination being unknown. Mortality from the unmodified form is about one in three.—(II. 11.) In the half-year to March 1873, from the middle of January, small-pox was unusually rife. The disease was of a very mild type; the mortality by it not more than one in twenty cases. On account of this benignity of type the native inoculators have been very busy, and have probably done much to spread the disease. Seven foreigners were attacked, four of the shore-going and three of the floating population. All the cases ran a very mild course, being much modified by previous vaccination.—(V. 8.) In his Report to September, 1873, Dr. Manson notices the circumstance that small-pox, like syphilis, when attacking races for the first time, is characterized by a virulence and deadliness seldom met with in their subsequent history. 'Those liable to the worst forms are killed off, and only those whose systems can survive, or can acquire a less deadly form, remain to propagate the next generation with its constitution of greater strength or less susceptibility. An extension of the same principle will help to explain the decay of epidemics, or the complete extinction of some diseases.'—(VI. 31.) In the six months to March, 1878, small-pox, 'usually so prevalent in the spring,' hardly showed itself.—(XV. 25.) During the winter of 1878-79, the seasonal epidemic of the disease was unusually extensive. It was, however, of mild type, and all the foreigners attacked, nine in number, recovered. 'It is interesting to watch the regularity with which this annual epidemic occurs.' Among the circumstances to which this recurrence is assigned are the following, viz.: 1. Winter is the season selected to practise inoculation. [Is this not because then small-pox is more readily induced than

Amoy.

at other periods of the year ?] 2. At this season the poor redeem their clothes from the pawnshops. 3. The crowding and dirt incidental to cold weather.—(XVIII. 58.)

But by far the most potent cause of the winter prevalence of small-pox is believed to be the practice of inoculation. This operation is performed in two ways. The most usual is the introduction of powdered small-pox pustule-crust into the nostril of a child as already noticed. Another equally efficacious method, but only in vogue among the wealthy, is the employment as wet-nurse of a woman who has nursed a child with small-pox. Very high wages are paid to those who lend themselves out for this purpose; paid, however, only on the recovery after successful inoculation of the child.—(XVIII. 59.) In the half-year ending March, 1880, 'the usual spring epidemic of small-pox passed over very lightly.'—(XIX. 30.) In that to March, 1881, the spring epidemic was not particularly virulent or widespread among the natives, and only one foreigner was attacked.—(XXI. 57.)

Inoculation.

At Kelung, in the half-year to March, 1877, one case of small-pox was noted. The patient contracted the disease in the country, and after passing through the usual stages finally recovered with very slight pitting.—(XIII. 7.)

Tamsui and Kelung.

In the Report on Takow and Taiwan-foo, to 31st March, 1873, it is stated that small-pox was very prevalent on the coast of Formosa, and also among the aborigines in the inland parts of the central and eastern parts of the island. A considerable number of persons on the island have been vaccinated. It is also stated that on the occurrence of a case of small-pox among the natives of that island, the custom is for the friends and relatives of the patient to desert the infected house, leaving at the bedside of the sufferer sufficient food and water to last during the natural course of the disease. Sometimes the entire population of a village will decamp at once on the occurrence of a case.—(V. 27.) According to the Report to September, 1873, small-pox appeared about the beginning of March, 1873, and was very prevalent during the summer months. According to the natives the epidemic appeared earlier than usual, and was of an unusually fatal character. An immense number of the younger natives of the towns and of South Formosa were carried off by it. Only seven cases came under the notice of Dr. Rennie, and of these five died, the disease being confluent in all.—(VI. 40.) In the six months ending March, 1876, one case occurred in port. The disease, never absent from the island, was, at the beginning of the year, very prevalent about Taiwan-foo; but, as yet, few cases had appeared near Takow.—(XI. 24, 26.) According to the Report to March, 1877, small-pox, as formerly, was prevalent during the spring months, 'but before many years the disease must become greatly modified by vaccination, which the natives most enthusiastically run after.'

Taiwain and Takow.

In connection with the hospital established there, five vaccinators were busily engaged in the surrounding districts.—(XIII. 42.) In spring of 1878, small-pox 'made its annual appearance' among the natives.—(XV. 37.) According to the Report for the half-year ending March, 1882, vaccination is eagerly sought after. But, unfortunately, some so-called vaccinators are only armed 'with capillary tubes which they fill with any fluid, from dirty water up to pus.' Through this, 'a condition of incredulity is being set up; and what is worse, even loss of life has followed the practice. At a village not far from this place a great number of children are reported to have died after inoculation with a fluid which has been styled vaccine lymph, and this event has naturally caused some little sensation.'—(XXIII. 23.)

Vaccination.

At Swatow, in the half-year to September, 1871, only one case of small-pox occurred among foreigners, and it imported from Shanghai.—(II. 9.) In that to September, 1872, only two cases of that disease.—(IV. 88.) In winter of 1876-77, an epidemic of small-pox was

Swatow.

said to prevail among the Chinese in and around the settlement. Many of the natives applied to Dr. Scott for vaccine lymph, and it is stated that in the district vaccination is extensively practised.—(XIII. 9.) During the six months ending September, 1881, an epidemic of varicella occurred among the resident children on Double Island, seven of whom were attacked. The eruption was copious, constitutional disturbance very slight, and all the patients recovered.—(XXII. 4.)

Varicella.

At Canton an epidemic of small-pox broke out towards the end of 1870, continued in the city and neighbourhood during the spring season, and extended to several distant districts, including Hiang-shan. Its violence was less in degree than the previous epidemic some years before; its mortality 20 to 30 per cent. among the unvaccinated, and very inconsiderable among the vaccinated. There are fifty to sixty professional vaccinators in Canton, and about one-half the children in the city are now vaccinated. Only one foreigner took the disease. —(III. 70.) During the half-year from April to September, 1872, there was no epidemic of small-pox, but scattered cases of the disease appeared up to the month of May. In one case the face was smeared over, first with strong, then weak solution of nitrate of silver, then mercurial ointment and powdered starch; but pitting occurred notwithstanding.—(IV. 69.) In the Report for the six months ending September, 1877, the statement occurs that small-pox, which was severe in the city last winter, was still prevalent up to the middle of April.—(XIV. 58.)

Canton.

From October, 1877, to March, 1878, there was no epidemic of small-pox. According to the Report by Dr. Wong, 'The Cantonese of that date had a high appreciation of vaccination.' That process appears to have been first introduced among them in 1805; and, in reference to this circumstance, an interesting letter from Sir John Barrow to Dr. Jenner is given at page 14 of the fifteenth issue of the Reports now being analyzed. To Dr. Pearson, of the E.I.C., who laboured at Canton from 1805 to 1820, is due the credit of introducing the practice of vaccination here. It was not, however, until within the fifteen years preceding 1878 that it has obtained general acceptance among all classes; but at the latter date it was considered that 95 per cent. of the children in the city had undergone it. It was always the custom to vaccinate direct from the arm, but of late years many Chinese vaccinators have been taught by Dr. Kerr to preserve the lymph in tubes. Chinese mothers object to have lymph taken from the arms of their children, under the idea that it weakens their constitution. The general age at which children are vaccinated is two years; some, however, undergo the operation at four or five months.—(XV. 14.) During the spring months of 1879, small-pox of a confluent form was very prevalent among the Chinese. Two villages on the island of Honan, opposite Canton city, were almost depopulated by it.—(XVIII. 56.) In the six months ending March, 1881, an epidemic of small-pox prevailed, as also in the districts west and north of that city. Among the Chinese the disease raged to an unprecedented extent, and with great mortality. Among the foreign residents vaccination was generally adopted; five cases only occurred, of mild type, and without a death.—(XXI. 71.)

At Hoihow, during the half-year ending 31st March, 1881, small-pox was very much dreaded. Five years previous to that date there occurred an epidemic of the disease, in which 600 or 700 lives are said to have been lost in that town and neighbourhood. Dr. Aldridge writes: 'The Chinese have great faith in vaccination.' At the end of 1877, the officials invited a Chinese vaccinator in Hong Kong to come here, which he did, and vaccinated 300 persons. During the last months of 1878 and early months of 1879, there were 3,500 vaccinated; in the same period of 1879-80, there were 1,200 vaccinated; and since October, 1880, to the date of the Report now quoted from, 4,000 children and adults have been vaccinated.—(XXI. 75.) In November, 1881, a Chinese vaccinator from Hong Kong again arrived, and vaccinated 300

Hoihow.

persons. He then left for Pakhoi. Since his departure, six petty officials have been sent by the Viceroy to perform vaccination among the native population of the island of Hainan.—(XXII. 31.)

Japan.

As regards Japan, in one year only in the ten-yearly period from 1868 to 1877, namely in 1869, were there no admissions for small-pox; but 1872, 1873, and 1876 were practically also years of exemption, as the cases of non-residents in each of those periods had been acquired elsewhere—for the most part in China. During the winters respectively of 1870 and 1871, a severe epidemic of this disease prevailed; in the former, the rate of mortality thereby was 26·4 per cent. of those attacked; of the latter, 21·8. In 1874-75, the disease was again epidemic, but less extensive, and in type milder than on the former occasion; the death-rate 19·6 per cent. The above figures refer to natives. Many of those attacked were broken down in health by previous disease or dissipation. Already had the action of Government in reference to public vaccination done much to control the spread of small-pox, and still more in this direction was looked for in the future.—(XV. 50.)

II. MEASLES.

Peking.

In the Report to September, 1872, Dr. Dudgeon observed that in the spring of each year there was always more or less measles present in that capital. In the spring of 1866, an epidemic of this nature occurred. A similar epidemic was reported from the mouth of the Amoor.—(IV. 41.)

Newchwang.

At Newchwang, in April, 1872, a child, aged three months, residing in the Custom House, became sharply attacked with measles. The lungs were inflamed for two days, but there occurred no other complication. No other case of this disease occurred; although, as observed, ten other foreign and two Chinese children were living at the same time in the block of buildings that constitute the Customs' premises. Isolation of the affected infant is considered to have ensured this exemption on the part of the other occupants.—(IV. 27.) According to the Report for the two years ending 30th September, 1876, a case of measles occurred in a healthily situated house near the settlement; its origin was traced to contagion from a servant who had several members of her family ill of that disease. Measles is very common among the Chinese, but this was the only case in the foreign community.—(XII. 29.) According to the Report for the year to March, 1881, thirteen cases of measles occurred in that period in six European families; namely, two in adults, the remaining number in children of ages varying from one month to eight years. Recovery took place in all.—(XXI. 38.)

Chefoo.

At Chefoo during the half-year ending 31st March, 1880, a mild case of measles occurred in a young child. Many children in the adjoining villages were attacked with this affection, and also suffered from an invasion of whooping-cough, illustrating the relation which exists between these affections, one sometimes preceding the other, sometimes following. After the epidemic of measles had subsided many of the natives were attacked with inflammatory sore throat, in some instances attended by exudation of false membrane, simulating diphtheria, the temperature (of the skin) reaching 103° or 104°. Some of the families thus attacked lost two or three of their members.—(XIX. 32.)

Hankow.

At Hankow, during the spring of 1876, a few cases of *rötheln* occurred, but the disease did not become epidemic. The persons affected were attacked suddenly; a measly eruption appeared in the course of the first day, and continued visible for a few days.—(XII. 15.)

At Shanghai, during September and October, 1871, an 'ephemeral exanthem' of the nature of measles affected large numbers of foreigners and natives; adults and children alike its subjects. (See 'Fung-sha.')—(II. 41.) According to the Report to March, 1872, measles, together with diphtheria, croup, scarlet fever, laryngitis and many other diseases common enough, and very fatal in England, especially among children, are unrepresented at Shanghai.—(III. 86.) During the six months ending March, 1873, an epidemic of measles occurred among the children in the Eurasian school; thirteen out of the sixteen children in that establishment being attacked. The disease differed in few respects from the same as it appears in Europe, and in no case was fatal. Nor did the attack leave behind it any sequelæ. In March and April several cases of the same disease occurred in private practice among foreign children. In neither instance was the malady observed the so-called 'Chinese measles.' In every case there was marked fever with catarrhal inflammation of the ocular and respiratory mucous membranes. On the fourth day the characteristic eruption appeared with rather an increase of pyrexia, and by the ninth or tenth day convalescence was established. Measles of this type is of fair average severity, and differs in no respect from the disease as seen in Europe.—(V. 55.) In the six months to September, 1875, some cases of the disease, very mild in character, occurred, but not in epidemic form.—(X. 55.) Towards the end of the half-year to March, 1876, an epidemic of measles prevailed. The cases were generally severe, although none proved fatal. Slight catarrhal ophthalmia persisted in some instances for several weeks.—(XI. 50.) The epidemic disappeared during the last week of June.—(XII. 3.) Shanghai.

In the six months ending September, 1880, several cases of measles were observed, but the disease did not become epidemic. A fatal case of it occurred in an adult, the form of the affection in that instance being the hæmorrhagic or malignant. According to the Report under reference, measles in Shanghai does not conform to the English type. In several cases among foreign children the eruption was precocious or tardy in appearance, frequently presenting itself on the wrists and chest before appearing on the forehead, fugitive in character, vanishing once and sometimes twice for twenty-four hours at a time, and then reappearing, lasting occasionally to the tenth day, and generally followed by branny desquamation. In other respects there was little or no difference to be remarked.—(XX. 33.) Related in point of time to each epidemic of measles has been an epidemic of whooping-cough. In four cases during the period from October, 1880, to March, 1881, measles immediately followed on whooping-cough, and in five cases immediately preceded it. When the disease has been present among the families of foreign residents it has also been prevalent among native childen in the settlement. The Chinese form of the disease does not protect against measles when a child returns to Europe; nor does English measles (always) protect against it; nor, finally, does it protect against a second attack of the same form. There is seldom any regularity in the shape of the patches of eruption. It may so happen that no more is found than a mottling of the skin of the face; but the fever, slight or severe, the conjunctivitis, throat congestion, and appearance of vesicles on the soft palate and pillars, leave no doubt as to the diagnosis. Measles in the host disagrees with lumbricoid intestinal worms. In five of Dr. Jamieson's cases during the present period, the worms were expelled during the attack of measles.—(XXI. 95, 97.)

At Foochow, in the period from April to September, 1872, a case of measles was imported from Shanghai. The patient was isolated, and the disease spread no further—not even to other patients in hospital.—(XV. 58.) In the half-year to March, 1881, the occurrence of measles is noticed as an epidemic among the Chinese.—(XXI. 50.) Foochow.

At Amoy, in the Report for the six months ending September, 1871, the absence of measles

up to that date was mentioned.—(II. 11.) In the Report to March, 1881, the statement occurs

Amoy.

that several cases of extensive pneumonia following measles among the Chinese were observed during February and March of that year. Though measles was epidemic in the native town, foreign children escaped.—(XXI. 57.)

At Canton, in the period from April to September, 1871, a considerable prevalence of measles occurred about the same time as an epidemic of small-pox.—(II. 70.) According to the Report

Canton.

to September, 1873, measles were more than usually prevalent, many cases having occurred in June. Nine foreign children suffered from the disease, of whom one died. Among Chinese children the sequelæ are usually diarrhœa, debility, and ophthalmia; very rarely affections of the lungs and trachea.—(VI. 48.) In the Report to March, 1878, the circumstance is noticed that there was 'no epidemic of small-pox or measles.'—(XV. 14.) In that to March, 1880, that five cases of measles were treated, namely three, in adults and two in children.—(XIX. 16.)

In Japan, among the native Japanese, measles have at times been severely epidemic; the resulting mortality 'immense'—not so much, it is believed, owing to the virulent type of the malady,

Japan.

as to the enormous number affected, amounting in one epidemic to nearly one half of the entire population. Foreigners also have suffered from the disease, but to a very slight degree, both as regards numerical extent and severity of the disease.—(XV. 50.)

II *a*. FUNG-SHA, OR 'WIND MEASLES.'

The 'ephemeral exanthem' which affected many persons in Shanghai in September and October, 1871 (*see ante*, p. 83), is thus described in the Report to the former named date: 'It had previously been unknown among foreigners, but the Chinese professed to recognise it as Fung-sha, or "wind-measles." The length of the period of incubation would seem to be not less than four days. The period of invasion was marked by headache, pains in the back and limbs, nausea and general *malaise*, but without any notable rise in the temperature. There was no catarrh. On the third day the eruption appeared all over the body, frequently attended with intense tingling. It was papular, and all but undistinguishable from measles, except in the want of configuration in the patches. On the third day it began to fade, and continued to disappear until the fifth day, when a furfuraceous desquamation set in. On the third day, however, more or less swelling of the palms of the hands and soles of the feet was observed, but there was no affection of the small joints, and no marked exacerbation following a period of remission. Fung-sha is thus distinguishable from rheumatic scarlatina or dengue, while the absence of throat symptoms separates it from rubeola. Convalescence was generally complete in a day or two after the disappearance of the eruption, but in two or three instances among foreigners it was prolonged.' Dr. Jamieson quotes from an article by Dr. Dunlop of St. Helier's, published in the *Lancet*, September 30th, 1871, page 464, in which a somewhat similar epidemic is described as occurring in Jersey during the spring and summer of that year.—(II. 41.)

In reference to the above remark, a foot-note occurs in the Report to September, 1872, to the effect that Fung-sha was supposed to be identical with dengue, or closely allied to that disease. This opinion was not shared by the majority of the Shanghai practitioners, but its existence probably accounts for the note in the *Lancet*.—(IV. 12.)

III. SCARLET FEVER.

In the Report on Peking from October, 1874, to March, 1875, Dr. Dudgeon states that scarlet fever is a rare disease in China. It is frequently mixed up with measles. In fact, nearly all the exanthemata are designated by a combination of two words *Chên-tze* and *Sha-tze*. The former is the word for measles (rubeola), the latter applied more correctly to scarlatina.—(IX. 40.) Peking.

At Newchwang, according to the Report to September, 1876, scarlet fever visited the foreign community, there being at least one case of that disease among them, while among the Chinese community it is far from rare. Dr. Watson records three cases of the disease at that port. Two of these cases were in young girls, sisters, and they both had severe attacks; both made a good recovery. The house in which they lived, like so many others at this place, had the floor only a few inches above ground. The other instance was so slight that, but for those stated, it might have been overlooked altogether.—(XII. 28, 29.) In his Report to March, 1881, he states that it is not common in the north of China. In the winter of 1880-81, at Newchwang, two children, sisters, aged respectively two and four years, had very sharp attacks of the disease. Both recovered. The nurse who attended the children had a severe attack of quinsey, with malignant ulceration of the tonsils, but no other indication of scarlatina. —(XXI. 38.) Newchwang.

According to the Report on Chefoo for the six months ending March, 1874, although China is alleged to have an immunity from scarlatina, this is probably merely an inference from the fact that this disease has not hitherto been observed. Such negative evidence scarcely justifies us in assuming its non-existence, especially when we consider the few opportunities enjoyed by foreign physicians for a careful study of the disease among the native population. Details of a fatal case of the disease occurring in a child one year old are then given, the case apparently a solitary one.—(VII. 19.) During the winter of 1875-76, a case of scarlatina occurred on board H.M.S. *Kestrel* at Chefoo, and the reporter says 'it is interesting from the fact that this fever appears to be such a rare malady in this part of China.'—(XII. 43.) In the list of diseases noted as having occurred at this settlement during the six months to September, 1879, two cases of scarlatina are included.—(XVIII. 71.) Chefoo.

In the period from October, 1872, to March, 1873, Dr. Jamieson had never seen scarlet fever in China.—(V. 55.) On the 23rd of October of the latter year, the first case of that disease ever observed in Shanghai occurred and proved fatal in twelve hours after the true nature of the malady had declared itself. The patient was a child brought from Chefoo during the stage of incubation. The subject was isolated, and the disease did not spread. The form of the attack was malignant.—(VII. 34.) In the period ending March, 1882, a case of pneumonia, secondary to scarlatina, occurred in the person of a (foreign ?) lady. With reference to it, Dr. Jamieson wrote: 'The rarity of this fever in Shanghai makes its occurrence worthy of special notice. Dr. Pichon and himself were satisfied as to the nature of the affection; and sufficient proof was afforded by the fact that six children in the house took the disease in turn, all presenting in varying degrees the classical symptoms.'—(XXIII. 43.) Shanghai.

According to the Report on Ningpo for the year ending March, 1874, the missionaries assured Dr. Mackenzie that during the months of December and January an epidemic of scarlatina and measles of a virulent type raged among the Chinese in the city, and that many of the ill-fed and closely packed natives fell victims. A little later on, some foreigners were attacked, but recovery took place in all instances. Among the latter, Dr. Mackenzie only Ningpo.

saw one case of measles and two of scarlatina.—(VII. 24.) At Amoy, in the report for the half-year to September, 1871, Drs. Müller and Manson state that they had never met with a case of scarlet fever, either at that place or on the island of Formosa.—(II. 11).

Amoy.

If the disease scarlet fever exists in Japan, it had not up to date appeared among foreign residents in anything approaching epidemic form. In 1868 one case under this heading, and in 1870 another, was admitted, both recovering. Two other cases are noticed; but both of them considered doubtful as to their actual nature; in fact, if not entirely unknown among natives of Japan, it is exceedingly rare. It has indeed been stated that, subsequent to the above dates, nine cases of unequivocal scarlet fever, one of which was fatal, occurred among Japanese at Tokio, the subjects of different ages, from fifteen to twenty-five.—(XV. 51.)

Japan.

IV. DENGUE.

At Shanghai, April to September, 1872, dengue was not observed, although the disease prevailed extensively at Amoy in August and September. This absence of it is believed to be accounted for by the infrequency of direct and rapid communication between those places.—(IV. 96.)

Shanghai.

At Amoy, April to September, 1872, dengue appeared early in the month of August, 1872, and extended over many parts of the Chinese town, the disease, although not fatal, attacking whole families at a time. In some cases of the malady the distinctive eruption was present, in others it was not. According to a native doctor of the place, the affection was only a form of measles. He said that everyone is liable to three attacks of measles during his lifetime; twice before he has the small-pox, and once afterwards. At first, therefore, the dengue received the name of *Tchoot-pia*, or measles; *Tchoot-pan*, a name loosely applied to many febrile diseases with an eruption, or *Hong-pia*, wind-measles. Gradually, however, it was considered something new, and was variously called *Sin-khi*, the new disease; *Sikhi*, the seasonal epidemic; *Hong-khi*, the rheumatic disease, and by a variety of other loose and indefinite appellations. It was admitted that no one of the existing generation had ever seen the same disease before the present occasion. Europeans as well as natives were attacked, those afloat as well as those on shore. On the 1st of September, however, the disease had reached its climax, and from that date it gradually declined. For several weeks it was confined to the town of Amoy and its suburbs; it afterwards prevailed with similar severity in all the neighbouring towns. An opinion is expressed, but confessedly without facts to support it, that the disease was imported by returning emigrants from the Straits Settlements, where it had been prevailing for many months.—(IV. 11.)

Amoy.

In reference to the epidemic just mentioned, the reporter enters into some particulars regarding the history of the disease itself. The eruption of the fever may be preceded by a few hours of *malaise*, or it may begin suddenly. When fully developed, the patient is completely prostrated, his pulse 120 or more, temperature 103° Fahr. to 105° Fahr.; the condition of high fever in the majority of instances ends abruptly about the second day, passing away with diaphoresis, diarrhœa, diuresis, or epistaxis; the first of these being most common among Europeans, the two last among the native Chinese. There is usually a return of the fever on the fifth to the seventh day, and at the same time the characteristic eruption of the disease appears, after which, at the expiration of two or three days, the eruption begins to desquamate, fading taking place in the order as regards parts

and dates of its appearance. Occasionally, with the characteristic eruption well-marked urticaria takes place. The only sequelæ of the disease observed, besides debility and pains, were enlargement of the lymphatic glands, transient febrile attacks, œdema of the ankles and feet, and sleeplessness.

The treatment employed consisted of a mild aperient at the onset of the attack; during pyrexia small doses of nitric ether and acetate of ammonia; subsequently small doses of quinine and iron. Warm baths, light food, and confinement to bed were the subsidiary measures recommended.—(IV. 12.)

The following remarks occur in the Report to 31st March, 1873, namely: 'By the end of September, 1872, nearly all the population in and around that city had passed though an attack of dengue. In October very few cases occurred, and of them only two among foreigners. One case was met with on the 8th of November, and another on the 12th, and those were the last observed. During the winter, sequelæ of this disease presented themselves, chiefly in the form of severe and persistent rheumatic pains, benefited by faradization. Other sequelæ were impairment of sight, dyspepsia, rheumatism, and paralysis of certain groups of muscles.—(V. 7.)

During the half-year ending 31st March, 1873, it was recorded that dengue made its appearance in Formosa, at Taiwan-foo, on 5th October, 1872, and within a few weeks almost the entire population of the capital had undergone this disease. It was believed that the epidemic was introduced by the *Mary*, a vessel which arrived at Taiwan-foo from Amoy about that date; and from which several native passengers, suffering from the disease, landed and took up their residence in the suburbs, in which locality the disease first broke out. At Takow, a village 25 miles to the southward of Taiwan-foo, the disease was at no time very prevalent, only a few cases occurring among the Chinese. In the country districts the ratio of persons attacked was much smaller than in the capital. At Taiwan-foo two foreigners suffered from the disease. At Takow no foreigner was attacked.—(V. 26.)

Takow and Taiwan-foo.

Dengue, occasionally epidemic in China, has not hitherto appeared as such in Japan. One case, and it of mild type, in the person of a foreigner, has been recorded at Yokohama up to 1877.—(XV. 52.)

Japan.

V.—CONTINUED FEVERS, ETC.

At Peking, in 1868, a severe epidemic of typhus fever occurred. Typhus, like small-pox, is hardly ever absent from the capital city of China; but there are some seasons, of which the above was a remarkable one, when it rages more virulently than in others.—(IV. 41.) In 1871, fever was the most fatal of all the ailments to which foreigners in Peking were subject; it was also, after small-pox, the most prevalent affection among the Chinese. It was called by the latter 'the hot disease.' Numerous cases of low continued fever are seen yearly in the summer. In that of the year under notice, a British subject is recorded as having died of typhus fever. He had shortly before his illness been engaged in superintending the cleaning out of a drain connected with the Legation, and his attack was assigned to that circumstance.—(III. 7.)

Peking.

In the Report to September, 1872, Dr. Dudgeon writes thus in regard to the death of three children which happened during the period then ended: 'Two of the children were carried off by diarrhœa. The third was removed by typhoid fever in the month of August, at the age of five years; the youngest foreigner that has died of this disease, and the oldest child among

twenty-one that have died here during the last eight years.' In the case of typhoid fever, it is almost impossible to say how the disease was caught. One of the nurses, fifty-three years old, was discovered to be sick on the day of arrival at the hills. It was found that typhoid fever existed in her own family. She ultimately recovered. The little patient had no more intimate communication with this nurse than the other children and adults generally. The well-water was considered exceptionally good. The vegetables supplied were fresh, and were not likely to have been washed in pools and city moats, whither all the refuse flows or is thrown. It is not yet proved that the exhalations of drains, privies, and stagnant surface-water do contain or disseminate this poison, or that through such exhalations it can be absorbed into the system. In the period to March, 1873, continued fever was pretty prevalent; this affection seems to be seldom completely absent from Peking. The wonder is that more persons are not attacked, when the filthy state of the streets and drains, and the careless and filthy habits of the people, are considered.—(VI. 7-11.) In 1874 three foreign residents suffered from 'a kind of low fever with much prostration but rapid convalescence,' and a number more were more or less out of sorts. Among the Chinese, typhoid is one of the diseases to which much mortality is due. Typhoid is rising in importance. In the six months ending September of that year, four out of twenty-four deaths in hospital are recorded as from this cause. Four were the entire number admitted for that form of fever. By a reference to the Medical Reports, No. IV., p. 33, it will be observed that from a table of mortality extending over twelve years, to *typhus* (*typhoid*) were due seventeen out of fifty-nine deaths. Twelve of these were Roman Catholic priests and sisters (seven and five respectively), who mix very freely with the people indeed—who seek out and visit the sick and dying.—(VIII. 29-37.) Between October, 1874, and March, 1875, typhus fever prevailed, chiefly in the two last months of that period. It was entirely confined to the native Chinese; and although several foreigners went in and out from the hospital containing such patients, none of them were attacked.—(IX. 40.)

At Tientsin, during the spring and early part of the summer of 1877, typhus, typhoid, and relapsing fever raged among the native population. Later on, cholera prevailed.—(XIV. 66.)

Tientsin.

From October, 1878, to March, 1879, four cases of typhoid fever occurred. Of these, two were contracted in the settlement. In one case, which terminated fatally, the patient had been treating himself with large doses of sulphate of magnesia at one of the outposts: in three days he took 5½ oz. When first seen, his pulse was 140; temperature 103·2°Fahr.; breath very offensive; tongue red and glazed; four rose-coloured 'typhoid' spots on the abdomen; general tympanitis, abdominal tenderness, and gurgling in the right iliac fossa; evacuations very frequent, horribly offensive, ochre-coloured, mixed with blood and shreds. The patient was very prostrate, slightly delirious; he had voided a quantity of blood during the night. The intestinal hæmorrhage continued at intervals in spite of treatment; on the sixth day after admission there occurred symptoms of perforation; general peritonitis set in, and death speedily followed. In January to March, 1879, both natives and foreigners suffered severely from an outbreak of typhus. Small-pox was at the same time prevalent. The greater number of the typhus fever cases occurred among refugees from famine-stricken districts, of whom a large number died. Children as well as adults suffered from the disease; in them the characteristic rash was faint, 'an irregular, mottling, dusky red fire, as if below the surface of the skin, and seen through a semi-opaque medium,' most marked on the inside of the thighs, on the axillary margins and on the buttocks. It is particularly remarked, with reference to the cases of typhus, that the distinctive odour was present in all. In their treatment early stimulation was required.—(XVII. 35.)

At Newchwang, during the half-year to September, 1871, the circumstance is noticed that foreigners and natives equally enjoyed immunity from contagious fevers except small-pox.—(III. 12.) In the two years ending September, 1876, typhus fever occurred in the persons of two priests occupying a building in the same position as that in which a Sister died of cholera. Of the two priests, the attack proved fatal to one. The Mission compound had earned an unenviable reputation as being the one place in the neighbourhood of the foreign settlement where malignant fevers have prevailed among foreigners and Chinese.—(XII. 29.) In the year ending March, 1878, there was throughout the period a good deal of low fever among the natives, its type not very distinct; diarrhœa also prevailed, together with many ailments due to the absence of proper food among the population. Among persons who came to that place from Shantung, where famine was very severe, 'a kind of typhus fever prevailed.' Among the Roman Catholic Sisters, several cases of *fever* occurred during winter. In two instances many of the symptoms of *typhus* were present, but there was no rash for a considerable time after being first attacked. Rheumatic pains and inflammation of both lungs were present, and subsequently the rash of typhus did make its appearance. Very great debility followed the attacks, but in both instances recovery took place. It was considered that the *typhus* fever was derived from the poor who arrived from Shantung, of whom many were cared for by the Roman Catholic Mission. In a former Report (XII. 28), Dr. Watson remarked on the unhealthy house and compound in which the Sisters lived. Now they occupy the best built house in Newchwang, and a great deal has been done by drainage to improve the sanitary condition of their compound. What then—he writes—is the cause of the great sickness and mortality that distinguish this Mission? Among the causes he enumerates the ascetic life led by the Sisters, whose physique is never equal to that of the lay members of the community. He describes the routine of their daily life, and adds: 'It is natural that under such circumstances vitality should be impaired, and that if fever is present, people so circumstanced should fall victims to it. If the prudence of those who are responsible for the working of the Mission was equal to the devotion of its agents, there would be less sickness and fewer deaths than unfortunately has been the case in past years.'—(XV. 28, 30, 31.) In the six months to March, 1879, one death is recorded under the head of puerperal fever, or, as stated within parentheses, from gastro-enteric fever; the age of the patient, thirty-four years.—(XVII. 11.) During the year ending March, 1881, Dr. Watson observes that while there was the ordinary amount of sickness among the Chinese, almost every foreign resident suffered, and in some cases severely. The Chinese are crowded together, while the European community live in large compounds and in comfortable houses far part from each other, have no drains, and have all noxious matters removed from their vicinity at short intervals. Fevers have in the past been common among the Chinese and unknown among the European community. This winter the tables are turned, and from some causes which we cannot discover, among other diseases enumerated, individual cases of typhus fever occurred. A case of typhus fever occurred in the person of the Lady Superior of the Roman Catholic Mission. She recovered; but in reference to it Dr. Watson again adverts to the monotony of life of priests and Sisters as constituting 'serious depressing factors.'—(XXI. 37-38.)

Newchwang.

In the Report on Chefoo—October, 1874, September, 1875—Dr. Carmichael mentions *Japan fever* as observed at that settlement. All nationalities appear to be equally subject to that fever. The prominent symptoms resemble those of typhus, but there is less regularity in its course than is observed in that disease. It is very contagious. The rash, mulberry in hue, appears early. There is often diarrhœa. Defervescence does not take place at regular periods. Hiccough sets in early, and is often severe. Certain nervous symptoms

Chefoo.
Japan Fever.

persist, it may be for weeks, after convalescence. Facial or lingual paralysis may supervene after even slight attacks. Out of fifty cases, two deaths occurred. Post-mortem examination showed intense congestion of the cerebral membranes, the spleen soft, extensive peritonitis, and perforation of the intestine.—(XI. 3.) During the year to September, 1876, Dr. Carmichael did not see a single case of typhoid or enteric fever either among natives or foreigners.—(XII. 44.) Early in the winter of 1877-78, a case of typhoid was imported. The subject of the disease was a seaman; his first symptoms were diarrhœa; he was treated with milk diet, and recovered.—(XV. 18.) According to the Report to September, 1878, during the prevalence of typhus fever in the north, two cases of the disease occurred at this place. One of these, very severe in character, appeared to owe recovery to the free administration of alcohol.—(XVI. 15.) In the six months ending September, 1877, a case of typhoid occurred in a visitor. It proved fatal in seven days after his arrival, from perforation of the bowel.—(XVIII. 73.)

Chinkiang.

At Chinkiang, during the half-year to September, 1876, the occurrence of a case of typhoid fever in a Chinese is mentioned. In it the axillary temperature rose to 104° Fahr. The patient recovered.—(XII. 27.) In the summer of 1877, a startling list of 'typhoid affections' occurred among the native staff connected with the Customs establishment. The insanitary conditions of the locality, and contamination of the water-supply, are mentioned as causes of those affections.—(XIV. 63.) In the six-monthly period ending in March, 1880, it is recorded that a 'typical case of typhoid fever occurred in the person of a resident from Wuhu. It was described as typical; head symptoms marked; successive crops of rash; evacuations from the bowels, and thermometer indications all typical. A second similar case occurred in a Chinese, also typical. In the first-named case, when on the twenty-fifth day some wine was administered, an immediate rise of temperature to 102° Fahr. was the result; and a similar rise occurred when the stimulant was resorted to three days afterwards. The patient recovered completely.'—(XIX. 7.) In the year ending March, 1881, some cases of typhus fever occurred. There was also a fatal case of that disease on board H.M.S. *Pegasus;* subsequently other cases developed after the ship returned to Shanghai. Dr. White was of opinion, from inquiries made by him, that the disease arose on the north of the Yangtze, where great poverty prevailed among the people, and drought had affected their crops. The *Pegasus* had anchored near a small town in which several deaths had occurred from fever. Since January, 1881, several cases of typhus have been recorded, and they have invariably come from the north, or contracted the disease from some one who had been in that direction.—(XXI. 98.)

Kiukiang.

At Kiukiang, during the half-year ending 30th June, 1872, a case of continued fever, or *typhus mitior*, was recorded. It occurred in the person of a marine on board H.M.'s gunboat *Dove*. The patient was seen for the first time on February 10th; crisis took place on the fourteenth day; convalescence was interrupted by 'latent or masked pneumonia,' and resolution of the same took place in seven or eight days.—(III. 58.) A flood having occurred and lasted from 21st July to 17th September, 1879, the low-lying country for many miles around was submerged and many of the people reduced to a state of destitution. Typhus, and other diseases affecting the destitute, broke out among them. The general sickness and want were speedily mitigated by the distribution of relief. A case of typhoid fever was also recorded—the first during five years. The sanitary condition of the settlement was fairly satisfactory. The assigned cause of the disease was milk diluted with stagnant water; yet a second person who partook of the same milk vomited, and had no fever. In the treatment good results followed the administration of stimulants and good food.—(XVII. 2,3.) During the year ending March, 1880, a case of typhoid of great severity was recorded as having occurred in the foreign

community.—(XIX. 9.) In the year ending March, 1881, a larger number of missionaries than usual arrived from the districts, suffering from dysentery and fever.—(XXI. 48.)

At Hankow, in 1871, the usual absence of enteric affections was remarked upon in connection with the system practised by the Chinese of extensively irrigating their fields with decomposing night-soil; also that the form of fever which usually prevailed was not of the continued, but rather of the remittent type.—(II. 44.) According to the Report for the half-year to March, 1872, 'the failure to discover any type of exanthematous fever is scarcely what might have been anticipated, considering the filthy condition of the houses and streets, the density of the population, and the poverty in many parts of the native city. It might have been presumed that the haunts of enteric fever at all events would have come to light, seeing that the products whence its organisms are supposed to be derived and nourished abound in all directions. The latrines are numerous. Their contents are allowed to accumulate for three or four weeks; they are then disposed of to the farmer or gardener, and carried to the jetties in uncovered buckets. While the process of emptying the troughs is going on, the neighbourhood is saturated with odours of the most intense description, and which defy the tolerance of even well-blunted olfactories. Dr. Reid refers to the theory of M. Boudin and some American physicians, that where malaria exists, or in a body of men who have suffered from aguish fevers, there is a neutralization or tolerance of the enteric poison. At *Hankow*, however, there was certainly no evidence in the form of malarious fevers here to confirm the opinion expressed by Dr. Harley that these fevers and enteric fevers are developed amidst the same conditions.'—(III. 43, 44.) In the period ending September, 1872, a considerable number of cases of fever, periodic and continued in type, occurred. The reporter writes that 'it has hitherto been found impossible to induce continued fever patients to reside in hospital, as neither they nor their friends comprehend the natural resolution of many fevers; they expect and are clamorous for the promised remedies which will forthwith extinguish the disorder.'—(IV. 74.) During the summer of 1874, cases of fever, ague, and dysentery were met with among foreigners. Of fifteen cases of fever in Chinese treated at the dispensary, four were distinguished by the temperature reaching 104° to 105° Fahr. Fever and dysentery combined were frequently seen in dispensary patients.—(VIII. 43.) In the half-year ending September, 1875, fever, more particularly of the continued type, prevailed. It rarely set in with marked rigors; it was accompanied with nervous prostration; it lasted two or three weeks, during the last of which profuse perspiration took place. Full doses of quinine, *i.e.* 20 to 30 grains night and morning, exercised no specific effect on the disease while the patient remained in a malarious neighbourhood.—(X. 46.)

Hankow.

In the Report for the year ending 30th September, 1876, Dr. Reid considers the question as to whether an 'antagonism' exists or not between typhoid and endemic malarial fevers. His own experience at that place tends to confirm an opinion expressed by several writers, that typhoid fever is rarely found under such conditions. He writes: 'The difficulty of defining some of the fevers encountered in malarial and stercoraceous atmospheres has of late given rise to the term "typho-malarial;" and if this term be applied to malarial fevers which exhibit many of the symptoms of typhoid, but without the characteristic roseola, it would include one type of fever prevalent here.' Then follows a note from the *British Medical Journal* for September, 1876, according to which 'there is a report of an epidemic of typhoid fever in Paris, where rose-coloured papules were absent in the majority of cases.'—(XII. 14.) In the half-year ending March, 1881, besides a prevalence of periodic fevers, a considerable number of those of the continued fever occurred. Of the latter, fifteen in the native

Typho-malarial Fever.

Chinese presented all the symptoms of typhoid, except those of rash and of the alvine motions; two of these cases proved fatal.—(XXI. 45.)

Shanghai.

At Shanghai, according to the Report for the half-year ending September, 1871, no authentic case of disease had been observed from the adoption of sewage irrigation in the neighbourhood of the farms so treated. Among the diseases 'which may, with more or less probability, be ascribed to climatic causes, Dr. Jamieson enumerated hepatitis and dysentery; to local causes, typhoid and small-pox; to the action of the sun, and no doubt aided by personal habits, typhus, sunstroke, delirium tremens, meningitis.' He observes that 'the differences between these classes it is difficult, and often impossible, to draw accurately.' In each month, from April to July, one case of typhoid was recorded. The various forms noted as occurring among foreigners include febricula, typhus, typhoid, periodic, and 'bilious.'—(II. 33, 37.) In that to March, 1872, Dr. Reid wrote: 'It might have been presumed that the haunts of enteric fever would have come to light, seeing that the products whence its organisms are supposed to be derived and nourished abound in many directions.' (The conditions are then described, as already given under the head TOPOGRAPHY, of this settlement, p. 30.) He then continues: 'These various prolific sources for the development of organic germs have been specially referred to in connection with the absence of enteric fever, because it may happen that in time evidence may be collected to prove or contradict an important theory in relation to this fever,' namely, whether where malaria exists there is neutralization or tolerance of 'enteric poison.'—(III. 43, 44.)

From April to September, 1872, according to the Report by Dr. Jamieson, 'typhoid' fever presented no special features. Two severe cases occurred; both ended in recovery; 'in neither of these was any treatment worth mentioning adopted, except the liberal use of wine and milk, and due attention given to hygienic conditions.' Typhus fever is luckily rare, as when it occurs it is almost uniformly fatal.—(IV. 96.)

In the Report for September, 1873, Dr. Jamieson writes: 'Dysentery and typhoid fever are here constantly lying in wait for the unwary. Whether the former disease is always specific is fairly open to doubt, and the specificity of the latter is denied by one of the greatest living authorities on the subject.'—(VI. 56.)

In India.

In the Report to September, 1874, the medical officer discusses the subject of 'enteric' fever. He observes that in India that disease occurs spontaneously in young soldiers. He writes: 'An inspection of Dr. Bryden's reported cases shows how closely malarial fevers occasionally run with typhoid. Thus the diagnosis in cases noted as ague or remittent, is frequently amended on the appearance of a typhoid rash, or other characteristic symptom. Instances reported will prove that cases set down as "remittent" would, had there been an eruption, or iliac pain or gurgling, have been entered as "typhoid." The entire subject of the dependence of disease upon organic effluvia is enshrouded in mystery. On the one hand, there is evidence which cannot be gainsaid that sewer gases when admitted into a house are a fertile source of typhoid fever: these gases are products of organic substances. On the other, we have equally distinct evidence that workers in drains are not specially subject to typhoid, although Murchison explains this by the protection afforded by age, by previous attacks and by lengthened exposure.' The effluvia given off in the process of tanning, soap-boiling and gelatin-making, although insupportable to those unaccustomed to them, are in no way injurious. He sums up thus: 'Our knowledge of the etiology of the great majority of diseases is purely empirical, but it is our duty to eliminate, as far as may be, all apparent sources of danger.'—(VIII. 17, 18.)

Malarial and typhoid fevers were common and severe during the last quarter of 1874 and first quarter of 1875. In the earlier months of the half-year, remittent fever at Shanghai was found

associated with intractable dysentery, or followed by obstinate diarrhœa. Dr. Jamieson observes that in his previous Report he drew attention to the fact that, of late, the severer type of remittent fever is approaching closer and closer to that of typhoid, and that cases of true typhoid are rapidly increasing in number.—(IX. 7.)

During the six months, from April to September, 1875, sun *malaise* was common in July; throughout the whole period intermittent and remittent fever occurred, 'and a few doubtful typhoid cases.' Dr. Jamieson says: 'Of late years, and especially in Germany, the subject of ground emanation—in relation to cholera and typhoid fever—has been carefully investigated by Pettenkoffer, of Munich, and others. The simple fact is that during sixteen years in Munich, he found that the mortality from typhoid fever varied with pretty constant regularity inversely as the height of the ground-water. But the variations in the ground-water level are taken merely because they measure most accurately the dampness of the soil.' Adverting to the occurrence of a fatal case, returned as of enteric fever, he observes that it may have been one of abscess of the liver. The patient died at sea, and the symptoms during life were very doubtful.—(X. 55-59.) Munich.

In the half-year to March, 1876, an apparent increase in the cases of 'typhoid' fever took place; some cases of the type so named were accompanied by pneumonia. Dr. Jamieson wrote: 'It is probable that to a notable extent the late apparent increase in the number of such cases is due to the fact that cases which a few years ago would have been classed as "Shanghai remittent" are now more correctly referred to typhoid.'—(IX. 50.) In the succeeding six months, namely to 30th September, 1876, a case of 'enteric' fever, with violent delirium, is recorded as having taken place in a child of eight years old.—(XII. 3.) In the half-year to March, 1877, malarial fevers were among the prevailing diseases. No death by enteric fever occurred in hospital, and only one in private practice.—(XIII. 44.)

In the returns for the half-year, April to September, 1877, the reporter bracketed together the deaths from enteric, gastric and remittent fevers, enteritis, and chronic enteritis, on the ground that 'it is probable that all might fairly come under enteric fever.' Of the latter disease he states that there were several cases of more or less severity, especially in July and August; but only three deaths among adult residents could be ascribed to this group.—(XIV. 44.) According to the Report for the period ending March, 1878, no death by enteric fever occurred among the residents. This disease, however, has been constantly present, and appears to have completely replaced the old Shanghai, that is remittent fever.—(XV. 6.) In the Report for the half-year to September, 1880, allusion occurs to typhoid *conditions* occurring from different causes. Two cases are recorded in which the symptoms were those of profound 'blood-poisoning,' depression, rapid exhaustion, variable but never high temperature, profuse perspiration, yellow staining of the skin, night delirium, transudation of altered blood through the mucous membranes except that of the mouth, profuse emanations of broken-down blood, epistaxis, expectoration of blood-stained mucus, no tympanitis, no exanthem till two days before death, when a mottling of petechiæ, resembling typhus rather than typhoid, occurred in the abdomen. There were no sores on the mouth nor swelling of the gums. These cases were treated with hot cataplasms to the abdomen, quinine, ergot, wine, lemon-juice, salines, concentrated nourishment, but without benefit —(XX. 34.)

In the Report to March, 1881, Dr. Jamieson wrote: 'Fifteen years ago some of the older practitioners denied positively that typhoid fever was ever seen among foreigners in China.' He expressed an opinion that more accurate diagnosis now refers a large number of cases to typhoid which, at an earlier date, would have been classed somewhere under the heading of malarious

affections. He has cause to believe firmly that the remitting fever, which lasts more than a week and does not yield to anti-periodics, is typhoid. Some cases of remitting fever which, before being seen by him, have been treated fruitlessly with quinine, yield when the drug in interrupted, and its administration resumed after the action of an emetic, or of a purge, or when it is combined with salines or with arsenic. But when it is clear that anti-periodics are of no use, that they are hurtful, the sooner they are abandoned the better. In these cases, he has no doubt, we have to deal with typhoid, although there may be neither delirium, diarrhœa, eruption, nor tenderness in the ileo-cæcal region. Dr. Jamieson then gives a clinical history of a case of typhoid fever, treated by him in the month of May, and in which recovery took place. Continuing his Report for the same period he observes that typhus fever appeared as a cause of death for the first time since 1878. One of the cases occurred on board H.M.S. *Pegasus*, but whether the other two originated by contagion from it, he is unable to say. The disease is rare in Shanghai. During the half-year from April to September, 1871, four fatal cases by this form of fever occurred; in the corresponding six months of 1872 five deaths were attributed to it. From that date till February, 1878, no recurrence of the disease occurred, but in each of these months a death from this cause was recorded. Dr. Jamieson writes: 'The immunity from typhus enjoyed by foreigners in Shanghai is surprising, and is not likely to be permanent, considering the overcrowded state of the most central portions of the settlement, the want of ventilation, and the incredible filth of the Chinese population living in their midst.' He accordingly urges the necessity for improvement in those conditions. In the above case the disease was suggested to have been contracted at Chinkiang, and inquiries among the mandarins confirmed the impression of Dr. White that the disease arose on the north of the Yang-tze, where great poverty existed, and which was enhanced by a continuance, during several months, of dry weather. The *Pegasus* anchored near, and to leeward of a village where several deaths by fever occurred.—(XXI. 81, 82, 99.)

In the half-year ending September, 1881, two deaths by enteric fever are reported, and later in that year four more fatal cases of that disease.—(XXII. 54.)

At Ningpo, during the half-year ending March, 1873, a death by enteric fever in a foreigner was recorded. The temperature rose to a maximum of 105° Fahr. on the twelfth day. The patient died on the twenty-sixth day, being conscious up to within a few hours of his death.—(V. 25.) According to the Report for the half-year ending September, 1880, few persons escape having fever. That which most prevailed among the foreigners was remittent in type. In some cases its early stage was characterized by a temperature of 99° to 100° Fahr., in others 102° Fahr., and in a third class 103° to 105° Fahr. The disease lasted nine days to six weeks, but seldom proved fatal. The lowest form of fever cannot well be detected without the thermometer; and when this instrument is not used, Dr. Henderson is of opinion that it may run on for months without being diagnosed.—(XX. 30.)

Ningpo.

At Foochow, in the six months from April to September, 1871, Dr. Somervilie saw several cases of true typhoid in seamen, but observed that they were comparatively rare. In his practice, extending over nine years at that anchorage, he had never seen a case of typhus either on shore or afloat. Fever of the remittent type is not uncommon, so also with intermittent. He has seen one instance of what is called 'Mauritius fever,' namely, a kind of remittent characterized by extreme debility, with tendency to complication in the digestive organs, particularly the spleen, with frequent relapses. The case recovered, but convalescence was very slow.—(II. 30.) From April to September, 1872, fevers, both continued and periodic, were numerous.—(IV. 58.) During the six months from October, 1872, to March, 1873, four cases of typhoid fever were observed. There had been no case of the disease for over three

Foochow.
Mauritius Fever.

years; and in eleven years before the present date, the reporter had only seen seven or eight cases of the disease altogether. Records do not appear regarding the etiology of the disease; but 'all cases were treated on the principles laid down by Sir William Gull, namely, few or no drugs, careful nursing, milk, soups, and stimulants.' There was no evidence of the disease being infectious, and the few cases which occurred must be put down as sporadic.—(V. 39, 41.) In the Report to March, 1874, the forms of fever which occurred, differed in many respects from the recognised type; they were considered as in character 'mixed.'—(VII. 9.) In the period to March, 1876, zymotic diseases, so fatal at home, had hardly an existence here, with the exception of typhoid fever, which appeared in sporadic cases now and then.—(XI. 39.) In the period from April to September, 1877, one case of typhoid occurred. It was considered to be one of 'genuine typhoid, but without much diarrhœa;' and two others, 'that formerly would have been returned under the vague designation of continued fever,' but which the reporter considers to have been cases of 'abortive typhoid.' He quotes from Dr. Aitkin that many of the cases which former writers call 'gastric fever' or 'nervous fever,' are to be regarded as abortive typhus.—(XIV. 86.) In the Report for 1879, the statement occurs that formerly typhus fever used to be rather frequent, especially in one Missionary compound, where the wells were sunk below the level of some adjoining filthy buildings. Latterly these conditions have been rectified, and typhus has given way to remittent. It appears that typhus when it did exist was mild in type, the only fatal case of this affection having occurred in a person who arrived from Hong Kong, suffering from the disease in an advanced condition.—(XVIII. 66.) According to the Report for the year ending March, 1881, typhus and typhoid fevers are endemic. Of fevers which occurred there were three cases of typhoid or enteric and four cases of 'a continued fever of the remittent type, over which quinine had no influence whatever;' these cases occurred during the winter months. The same Report states that three cases of typhoid fever were recorded, namely, one in October and two in February. In one of these 'the physiological effects of quinine were produced, but having failed to influence the course of the fever the drug was abandoned.' After the suspicion of enteric fever as the cause of illness, 'beyond small doses of Dover's powder to control the diarrhœa, no medicines were given.' A case of typhoid in a native has not come under the notice of Dr. Rennie; but fever cases of any kind seldom come to hospital for treatment. Frequently patients suffering from debility, and with the listless exhausted appearance of those convalescing from enteric fever, and having a previous history of two months' fever with diarrhœa, visit the hospital.—(XXI. 52, 54, 55.)

Amoy.

As recorded in the Report on Amoy for the six months ended September, 1871, 'there is no typhus, no typhoid or other disease considered the inevitable consequence of defective sanitation, although Amoy is full of typical typhus-dens. Luckily, filth, overcrowding, and bad food are not the only factors necessary for the manufacture of a typhus epidemic; were they so, we should live here in perpetual dread.'—(II. 11.) In the period to March, 1872, a case of typhoid fever occurred in the person of a mate on board a French brig arrived *vid* Chefoo from Japan. In the previous four years, eight cases of that disease had been treated, the patients in all instances having arrived from Japan.—(III. 23.) In that from April to September, 1872, a case of typhoid fever was imported from Chefoo, in the person of a sailor who had recently arrived at the latter place in his ship from Hong Kong. For a time diagnosis was obscure—cough suggesting tuberculosis, and there being an absence of iliac tenderness and diarrhœa; the surface was covered with prickly heat, and no distinctive typhoid eruption was apparent. After a tedious illness, the patient recovered. The reporter observes with regard to it that its characters prove unmistakably the existence of typhoid fever in China.—(IV. 9.) In the

half-year to March, 1873, one case of typhus fever was recorded. The patient had come from Woosung; the symptoms well-marked, rose-coloured spots and temperature more characteristic. 'Although his ship had been anchored in the river at Woosung, he did not go on shore, nor did the ship take in water there; so it was difficult to say how he became infected.'—(V. 9.) In the period from April to September, 1875, four cases of typhoid fever occurred among the foreign population, namely, one on shore and three afloat; of the latter, one imported from Shanghai, two on board H.M.S. *Hart*.—(X. 26.) In the period to September, 1879, typhoid fever of local origin occurred, as this disease had done during the preceding winter. The first of these cases occurred in the person of a Portuguese; the second in a Chinaman, the disease in both attacking them at Kulangsu. During the months of March and April, 1879, several children were attacked by a febrile disease characterized by high temperature and bronchial catarrh, but without eruption. Several of the cases were severe, but recovered after illnesses of from seven to ten days' duration. The Chinese suffered to a less extent than usual from fever during this time.—(XVIII. 58, 59.) In 1881 an epidemic of fever prevailed. The type was continued, of a somewhat anomalous character. It was circumscribed as to locality; prevailed chiefly among the Chinese, but attacked also a few of the foreign residents. The group of houses from which all the Chinese cases came was situated at the foot of a hill near some rice-fields; there are many low-placed wells exposed during showers of rain to receive garbage from the neighbouring surface. From these wells water is used by washermen, and probably to mix with buffalo-milk sold to foreigners. But the Chinese do not themselves make use of milk, which they look upon as an excretion. Preceding the outbreak there had been some rainy weather. All the foreigners affected obtained their milk-supply from this dairy; others not affected, from another dairy—a circumstance significant, but not necessarily associating the milk-supply and sickness among foreigners as cause and effect. As examples of the fever among Chinese the following cases are given, viz.: 1. A lad about 18 years of age; symptoms resembling typhoid fever—high fever, furred tongue, low delirium, stupid countenance, diarrhœa, abdominal tenderness. Quinine administered without benefit; all drugs then put aside; careful feeding observed. Had been ill about 26 days when first seen; about 40 days afterwards left hospital, very weak, emaciated, with loss of vision of one eye from sloughing of the cornea. 2. This lad's father had a milder attack of the same disease. 3. His mother ill 31 days with what was described as quotidian ague. 4. A girl of about 17 years old. On 15th August felt giddy in the morning; had a rigor rapidly followed by high fever and delirium; when seen three days afterwards was moribund, and quickly died. 5. A young brother of the last who slept in the same bed as her; attacked on 16th with smart fever; quinine subcutaneously injected, and on 22nd was well and left for home. 6. A lad, ill in May; fever, frequent epistaxis; no diarrhœa. Quinine ordered. Towards the end of June his permanent temperature was 105° and 106° Fahr.; emaciated, skin harsh, dry; slightly furred tongue; no delirium, diarrhœa, abdominal tenderness, petechiæ, nor apparent visceral disease. Quinine given in large and oft-repeated doses, and under it recovery slowly took place.

With reference to these cases the remark occurs that the usual *autumnal epidemic of malarial fevers* did not begin till the middle or end of September. Among foreigners the cases were: 7. Mr. A., the employer of the patient last indicated. Taken ill about 10th June; slight chilliness, then feverishness every afternoon, succeeded during the evening and night by perspiration, then an intermission from morning till 2 p.m.; no diarrhœa. Quinine did not check the attacks till he took a sea-voyage to Tamsin; on his return to Amoy, he had slight relapse. 8. The wife of above. On night of 26-27 June had shivering, then violent fever followed by perspiration; on 28th similar attacks; on 29th four distinct paroxysms of rigor, fever,

Autumnal Malarial Fevers.

diaphoresis; temperature of skin, 105° Fahr. Quinine in small doses, then in large. The fever became continued, diarrhœa set in; on 1st July miscarried, and collapse threatened. Under lead and opium began to recover, but a bed-sore formed on one gluteal region. She gradually recovered, but her *hair* fell off. While she was ill three other grave continued-fever cases occurred in foreigners. 9. Mr. B., at beginning of June, had an attack of ordinary summer diarrhœa; this began to abate, but on the 10th of that month he felt feverish. Feverishness and diarrhœa set in together, and persisted till 27th or 28th day of illness; skin temperature, 103° Fahr. or 104·5° Fahr.; no marked iliac tenderness, nor enlargement of spleen; delirium of typhoid character, subsultus, and a few rose-coloured spots. At first drugged with quinine without benefit; during the latter period treatment entirely 'expectant.' 10. Miss C. had languor, headache, pain in limbs, and fever. Took quinine without benefit. On 7th day of illness, temperature 103° Fahr., diarrhœa present and, with the fever, continued for a week; no spots, splenic enlargement, nor iliac tenderness. On 21st or 22nd day, convalescent. 11. Mrs. D., attacked on 4th June with fever, diarrhœa, and pericardiac oppression. Living in a malarious locality. On the 28th day temperature had fallen to normal; a relapse then occurred, and not till the 7th week could she be pronounced convalescent. 12. Mr. D., her husband, about 26th July, suffered from headache, lassitude, anorexia, fever, but without diarrhœa. Was treated with aperients and quinine; toward the end of the second week he slightly improved, but relapsed, and only began to recover early in the fifth week.

Relative to the above cases it is stated that in every one occurring in foreigners the hair fell off. Of the six foreigners attacked, four were missionaries; the cases occurred in three different houses, two close to each other, the third in a high and salubrious situation. The hypothesis of those attacked having been exposed to specific poison was opposed by the fact of the other two cases, husband and wife, living at a distance from and being unconnected with the missionaries. The only circumstance in common among them was their milk-supply already mentioned; the dairy, or dairies, being situated in the focus of the epidemic among the Chinese. In 1878 there had been a localized epidemic of fever in the same houses now attacked. That this disease was genuine typhoid is by no means certain. In some cases supposed 'characteristic' symptoms were present; in others, except that the fever was continued, and uncontrolled by quinine, there was no evidence of its typhoid nature. One instance was decidedly intermitting, yet quinine failed; in another, it seemed to cut the fever short at once. In place of candidly admitting that we really know little or nothing of the real nature of anomalous fevers, such as the above, it has been affirmed that they are a combination of ordinary typhoid and intermittent or remittent fever, and the name typho-malarial applied to them. The writer does not think there is sufficient evidence for the existence of hybrid fevers. If we believe in the germ theory of fevers, and that the germs are specifically distinct, it is difficult to conceive of the marriage of the distinct species; it is not likely that the specific typhoid germ and the specific malaria germ could combine to produce a hybrid germ. The truth is, we are nearly entirely ignorant of a number of specific fevers which from time to time affect the inhabitants of foreign countries. Cases of continued fever, both in foreigners and natives, are often met with which do not admit of diagnosis and classification. In illustration the case is given of a patient from Tamsui suffering from 'Tamsui' fever. On 23rd November, felt pain in left side; 24th, was feverish; 25th, rigors and much prostrated—took some quinine, but the fever continued; on 29th, arrived at Amoy, had considerable fever, prostration, pain in limbs, epigastric tenderness, tongue furred, whole body covered with an exanthem—the spots small, red, not elevated, disappearing on pressure; on 4th December, perspired freely, and the eruption entirely disappeared. From that date improved, and from 20th day of his illness was convalescent.

This case had some characters of mild typhus, but others were absent. A lighthouse-keeper was brought this summer from Chapel Island, a bare rock miles from any land or opportunity of infection, ill with a continued fever. On 7th day of his illness he had much headache and was a good deal excited, but beyond those of simple continued fever had no particular symptom. His temperature did not reach the normal point till the end of the third week. He took abundance of quinine, but without curative effect. What were these cases? the reporter asks. Certainly neither typhoid nor malarial.

Besides the acknowledged exanthematous fevers, whose characters are well-known, there occurs in China a miscellaneous collection of fevers, whose diagnosis and treatment the medical man has to make out for himself. A certain proportion of these may be relegated to 'malaria,' but others can neither be classed as exanthems nor malarial. Very soon after arriving in the country, the reporter learned to separate the non-exanthematous fevers into those in which quinine acted speedily and those in which it had no specific action. Given a fever which does not subside on administration of the proper specific for malaria, the conclusion is justifiable that such fever is non-malarial; if such fever subsides after a week or two spontaneously, and is not succeeded by the consequences of malarial poisoning, there is abundant reason to pronounce it non-malarial. He remarks that one gets little satisfaction on the subject from books. Certain classifications are proposed; but when the attempt is made to attach a name to a given case, the attempt is seldom satisfactory.

Alluding to existing discrepancies of opinion, he thinks that the clue to proper classification of tropical fevers will not be found until investigators disabuse their minds of the idea that these fevers must be modifications or combinations of two *poisons* only, the typhoid and malarial. We are too apt to assume that we can assign correctly the various causes of disease, and dislike to think that there are forces and poisons in nature of whose existence we are ignorant.—(XX. 2-9.)

At Tamsui and Kelung, in November, 1878, a fatal case occurred of fever complicated with diarrhœa. These affections had for a long period persisted in the patient, a person advanced in life, and who had passed many years in the East; finally, death occurred by exhaustion.—(XVIII. 64.) In the six months from April to September, 1880, one or two instances of continued fever, lasting for two or three weeks, with a high temperature, sometimes up to 103° Fahr. or 104° Fahr., with no skin eruption, and apparently unaffected by medication, certainly not improved by quinine, were under treatment. In these cases long exposure to the heat of the day seems to have been the exiting cause. Dr. Ringer having given details in regard also to the occurrence of malarious fevers at these places, thus continues his remarks: 'All such cases as the foregoing, namely, of continued and of periodic fevers, are generally put down to the influence of malaria, from which it seems to him that our knowledge of the pathology of malarious disorders is at present somewhat imperfect; and much good work might, he thinks, be done in this direction by careful records of all such cases in different localities, with notes of habits of life and age of patients, condition of dwellings, influence of treatment, etc.' —(XX. 16.)

Tamsui.

At Swatow, during the period from April to September, 1876, a case of typhoid fever arrived from Newchwang. The subject was a child, who had been ill from the beginning of April, when first seen by Dr. Scott. The early symptoms recorded were diarrhœa and fever. Recovery ultimately took place. Dr. Scott adds, that 'in many cases of enteric fever which came under his notice, though not at this port, during the previous three years, he had obtained excellent results from the free exhibition of quinine.'—(XII. 20.) In that to September, 1877, several cases of continued fever occurred among the shipping, details of which are given. In reference to the cases described, the medical officer observes that one was more like typhus than typhoid, though the rose-coloured spots made their appearance during the course

Swatow.

of the fever. With regard to a second, he declared it probable that the patient had gone through an attack of typhoid, but had lain down only at the last moment.—(XIV. 68.)

During the half-year ending March, 1878, together with the prevalence of diarrhœa and cholera among the Chinese, much fever and constitutional disturbance generally attended attacks of the former disease. During the winter of 1878, a case of a peculiar form of fever occurred. The subject was a child, five years of age. The illness began with pain in the left ear. The day following several red patches, the size of a hand, appeared on different parts of the body, especially the chest and abdomen; towards evening, a severe but short convulsion, then several partial convulsions, followed by unconsciousness. On next day, temperature of skin 104° Fahr., with nervous twitchings; then cough, with mucous râles in right lung. For several days these symptoms continued very severe; diarrhœa succeeded, then slow convalescence; but from the ear profuse and offensive discharge set in and persisted long.—(XV. 23.) Peculiar Fever.

In the period to September, 1878, together with the usual amount of diarrhœa and intermittent fever, two cases of typhoid fever occurred in the early part of summer. In the Report under notice, one of these is thus reported: A case of typhoid fever occurred in the beginning of April, 1878. The subject of attack was a sailor arrived from Bangkok. During the passage from that place, extending over five weeks, he had suffered from fever, profuse perspirations, sudaminæ, diarrhœa, and great debility. On reaching Swatow, he was treated with quinine. He continued, however, to get worse; diarrhœa peristed, with tenderness in the iliac fossæ—no spots are mentioned. The subsequent treatment consisted of brandy and opium; linseed poultices; milk diet. Bed-sores occurred; but on the 63rd day convalescence had sufficiently advanced to admit of the patient rejoining his ship. A second case of fever with diarrhœa was designated 'enteric fever.' It also occurred on board ship; but on the 15th day diarrhœa ceased; a few 'spots' appeared on the abdomen; subsequently there was constipation, and on the 31st day of illness the patient was discharged. The treatment is unrecorded.—(XVI. 26.) In the six months ending 30th September, 1879, some severe cases of fever and dysentery occurred. Two fatal cases of typhoid were recorded—one in a sailor, the second in a resident. In the same Report, the recurrence of a peculiar kind of fever was mentioned. Its type was more continued than remittent; children its only subjects. It began with a rigor or pain in a limb or ear; great irritability of temper, loss of appetite, disinclination to move, and vomiting. About the third day headache comes on, with congestion of the eyes and flushing of face; then large red blotches on some part of the person, the blotches either in raised patches, or like urticaria, and these, after existing a few hours, disappear. The next symptom may be convulsions or delirium, or these alternating, with high temperature, 104° Fahr. or 105° Fahr., pulse 120 to 140. For a time the fever usually intermits for a couple of hours during the twenty-four hours. This continues during a few days, attended by chest complication in the first instance, subsequently by the abatement of these and of the fever, to be followed by recurrence of the latter, and now diarrhœa, the evacuations unhealthy-looking, for a few days. The attack usually runs its course in twelve to twenty days. In the treatment of such cases, grey powder and quinine were the remedies trusted to. Complications were treated as they occurred.—(XVIII. 75, 76, 79.) In the period from April to September, 1881, there occurred one case of typhoid fever, namely, in a child seven years old, also a case of continued fever in a child of two; recovery took place in both.—(XXII. 4.)

At Canton, in the half-year ending September, 1871, intermittent and remittent types prevailed among the native Chinese, and 'fevers' among foreigners. Fever in its various forms constitutes the bulk of the practice of Chinese physicians. With the advent of cool weather in September, the severer forms of fever disappeared, to be succeeded Canton.

by catarrhal affections and mild intermittents. Foreigners chiefly suffered from intermittents, the Chinese from remittents. In fact, the diseases that prove most fatal to the Chinese population of the city every summer are remittent and continued fevers, including under these some fevers that are more or less amenable to treatment, and others of the most intractable character. For the treatment of fevers, especially those of the continued form, the Chinese rarely send for European physicians; and it must be allowed that in these the native faculty manage to make many cures.—(II. 70.) According to the Report for the year ended March, 1872, the medical officer had only seen two cases of enteric fever among foreigners at that settlement during the preceding ten years. If foreigners are sometimes attacked by it, Chinese may be considered not to be altogether exempt; but foreign physicians have not hitherto been afforded sufficient opportunities of seeing the fevers of the Chinese to enable them to distinguish by personal observation the varieties that exist among them. The natives have no faith in the skill of foreign physicians in the treatment of fever, and when taken with it do not send for them, nor do they come to hospital to be treated as indoor patients. Among the outdoor patients, the fevers treated are usually intermittents. From native books and physicians no distinct idea can be gathered of such a disease as typhoid fever. In reference to the question of sewage, in relation to enteric fever, the medical officer says that in Canton large numbers of the native population are daily using water and inhaling air charged with the impurities of human excreta, apparently with utter impunity. Then follows a description of the water of the San-t'-sung creek, as already given (p. 63) under that heading in the topographical notice of Canton, to which the reader is referred.—(III. 20.)

Throughout the year ending September, 1879, but more particularly in summer, the native population of Canton suffered from virulent fevers, to which they give the name of *Chut-pan*—meaning 'spotted fever,' though in very few cases are spots visible. The fevers thus included are mostly severe remittents, taking the continued or typhus form. The fever begins with alternate feelings of heat and cold, and some remissions are observed in the first three or four days. In some cases it begins at once in the continued fever. If the patients are not properly treated death may occur in eight or nine days, but more frequently from nine to twenty days. The prominent symptoms are great oppression at the epigastrium, frequent pulse, the tongue coated with yellow fur, and delirium. Epistaxis occurs in about one in every ten cases. The rate of mortality, 'if the cases are properly treated,' should not be more than one or two in ten; but as the patients often put off seeing a doctor till they are seriously ill, the general mortality is perhaps 30 or 40 per cent. In reference to this form of fever Dr. Wong wrote: 'Doubtless other poisons besides malaria give rise to some of the malignant fevers seen here, and, in fact, in some of them quinine has no influence. Many of the fevers of the Chinese city must have their origin in overcrowding and bad sanitary conditions. These conditions, though sometimes regarded as harmless, because they have given rise to no epidemics of cholera, and as far as we know to no marked forms of typhoid fever, have much to do with the production of the severe fevers which prevail every summer.—(IV. 70.)

Chut-pan.

In the Report for the half-year ending September, 1873, Dr. Wong wrote: 'During the whole time of the rain there was very little sickness, but as soon as the rain ceased and was succeeded by heat, numerous cases of fever appeared.—(VI. 48.) During the half-year ending September, 1877, one case of typhoid fever, and one of serious hæmorrhage with fever, occurred among the foreign residents. Since 1873 numerous cases of the disease had occurred at this settlement. In most of these cases the duration of the disease was between thirty and forty days; in one it extended to sixty-one days, but in the latter a relapse had taken place. The treatment pursued was by milk

diet, and astringents when required. The Chinese do not suffer from it so often or so much as one would expect from the water they drink and the air they breathe. In some of the above cases there was but little diarrhœa, or it came on late in the disease and gave but little trouble. In others the ordinary symptoms were present, rose-spots, diarrhœa, tenderness and gurgling over the cæcal region, rise of temperature and delirium.—(XIV. 57, 59.)

In the period ending March, 1878, fevers were prevalent. The type for the most part was intermittent, but some of the continued type was observed. In one instance, namely, that of a girl seven years old, there was a continued sensation of coldness and shivers; the fever lasted three weeks, was unaccompanied by diarrhœa, and was unaffected by quinine.—(XV. 13.)

During the summer of 1879, a severe form of fever, presenting several characters of cholera, prevailed. In hospital, patients who had undergone operations manifested great liability to it; and although in many cases amenable to quinine, its sequelæ were of a weakening nature. Later on in the season a peculiar form of remittent fever appeared. It affected the Chinese as well as foreigners. In the latter it occurred more particularly during convalescence from other diseases, as acute diarrhœa, dysentery, etc., but especially among parturient women. Almost every lying-in woman was attacked by it. It began without any marked chill or fever, but with nausea and severe headache. Within twenty-four hours the entire body was covered with a slight flush, the pulse and skin temperature being at no time much above the normal standard. Profuse perspiration followed. After this stage began, the fever recurred at intervals of four hours, but unaccompanied by the flush, nausea, or headache. Quinine seemed to have no effect, either in large or small doses. Dr. Carrow found marked benefit from the use of dialysed iron and quassia.—(XVIII. 56.)

Choleraic Fever.

In the half-year ending March, 1880, gastric and gastro-enteric fever occurred in children—not dependent upon the presence of intestinal worms. Exacerbations at noon daily; there was little remission; the symptoms were abdominal tenderness, constipation, flatulence; temperature, maximum, 103° Fahr. and 104° Fahr.; tip and edges of tongue scarlet, its middle covered with yellow fur, showing papillæ through its thickness. The affection yielded slowly to quinine and acid drinks, but showed a great tendency to become chronic.—(XIX. 16.)

In the Report for the half-year ending 31st March, 1881, Dr. Carrow wrote: 'I can bear Dr. Manson out in stating that we meet with varieties of fever in South China which have not been described, and which do not fall under any classification heretofore made; especially in this province. 'Fevers which yield to quinine, and fevers over which it has no influence,' seems to be a classification, although unsatisfactory, which one has to adopt in the treatment of these cases. At the present time I am treating two cases with quinine, and have had them under observation for two weeks, during which time I have kept up symptoms of cinchonism, and thus far have noticed no improvement whatever. In a recent case I gave up the quinine treatment, and a cure was speedily effected spontaneously.'—(XXI. 72.)

In that for the eight months ending March, 1882, the same medical officer writes on the subject of a type of fever which prevailed in Canton: 'An unusually severe form of remittent fever prevailed to a limited extent among foreigners. Two cases of recent date have had to be sent to northern parts, after long-continued and large doses of quinine, carbolic acid, etc., had been used without apparent effect. Dr. Carrow has noticed the more frequent occurrence of these severe forms of "continued remittent" fevers each succeeding year, especially with fevers which have a typhoid character. The cases have occurred, without a single exception, in people who have resided here for more than ten years; while those who have but recently come always have it lightly. Patients perfectly strong and vigorous in other

Continued Remittent Fever.

respects are attacked without warning, and often without cause which they themselves can see; and when this has been the case, Dr. Carrow has always had to order a change of climate, not having succeeded in effecting anything more than a temporary cure by all the known remedies. He has noticed that after the first attack is experienced, the disease recurs regularly every year in January, February, or March. Those whose business brings them into the open air seem to be less liable to these climatic changes and diseases than those who lead sedentary, indoor lives.' He records the occurrence of one death by typhoid fever during the period in question.—(XXIII. 33.)

Japan.

In Japan only once during the ten-yearly period (1862-71) has typhus fever been epidemic—namely, at Yokohama, in 1869-70. On that occasion the disease was almost limited to the shipping in the harbour, and to those recently landed therefrom—one single ship furnishing 14 per cent. of all cases. Thus the disease appears to have been of the nature of what formerly was designated ship-fever, propagated by overcrowding and generally bad hygiene. Yet it spread to some extent epidemically among the natives. A few cases of the disease were noted in 1871, and in 1877 a case occurred, clearly imported. In 1869 the ratio of mortality of typhus to cases of the disease was 18·4 per cent.; in 1870, it was 26·2; in 1871, it was 33·3; for the whole ten years from 1868 to 1877 it was 25·3 per cent. of those attacked. Experience at Yokohama indicates that since 1871 typhus fever has been very rare among natives, and altogether unknown among foreigners. The occurrence of typhoid fever appears to have moved almost *pari passu* with typhus. Two cases were noted in 1868, but in 1869 there were 31 admissions from this cause, or a percentage of 11·8 of the total treated in hospital; in 1870 they were 15, or 4·3 per cent. of all: thus while typhoid was most severe in 1869, typhus was most severe in 1870. In 1871 only 4 cases of typhoid, or 2 per cent. of the admissions, occurred, and after that date the disease almost disappears from the record. The next occasion on which a case appeared was in 1874; in that year, 1875, and 1876, one case occurred in each; in 1877 two cases—all those from 1874 to that year among river residents. A large number of the typhoid cases were in non-residents, as were those of typhus at the same period; in 1869-70 eleven cases, or 24 per cent. of all the cases in that year, were from the steamer that on the same occasion yielded 14 per cent. of the cases of typhus. This reporter supposes that the preponderance of cases from the shipping depended upon contaminated water-supply by drainage, and that the infrequency of the disease since 1871 is accounted for by the improvements that have been effected in these respects. During the same period of ten years the cases of simple continued fever which occurred are indicated as having been cases of 'abortive' typhoid. *Cerebro-spinal meningitis*: there is reason to believe from native reports that some years ago an epidemic of this disease prevailed in the country between Yokohama and Kioto some years ago, but no record of the disease having occurred in Yokohama itself or immediate neighbourhood exists. Relapsing fever, yellow fever, plague: these diseases are not known to have occurred in Japan.—(XV. 52, 53.)

VI. PERIODIC AND 'MIXED' FEVERS, AND 'MALARIAL' DISEASES.

Peking.

In the Report on Peking for the half-year ending September, 1871, Dr. Dudgeon wrote: 'By far the most common affection during the period under review was ague. It is usually the rarest of diseases. Of all classes of disease seen at the hospital in 1864 and 1865, ague formed each year only 1 per 1,000; in 1866, 4 per 1,000; and in 1867, 5 per 1,000, which was the highest rate during ten years. In the latter year there was an unusually large fall of rain in August and September.'—(III. 7.) In that capital, the former

rarity of ague was considered to be due to the light, sandy, and absorbent nature of the soil. But in 1871 cases of the disease were numerous, and in 1872 still more so. In the latter year it attained its maximum prevalence during autumn, when the water began to abate, and when the effects of heat, moisture, and decaying vegetable matter were most pronounced. In the treatment of cases, the reporter states that the supply of quinine becoming soon exhausted, he had recourse to Fowler's solution. Cases also occurred now and then which seemed to resist the action of quinine, but gave way readily to arsenite of potass. He used with good effect a new preparation, namely, the carbazotate of ammonia, and found its action to be similar to that of quinine. Ague, which continued to prevail during the summer of 1872, gave way before the approach of winter. In the summer of 1873, ague was the most common disease in the capital. It had prevailed during the last three or four years in this district, owing, it was believed, to the great floods and inundations. During the winter and spring months the disease was absent, but on the return of warm weather it broke out afresh. In July there were 377 patients with ague out of an aggregate of 1,427, equal to 26 per cent.; but as ague patients generally recovered after one visit, or few returned again, the percentage ought to appear larger. In August, 45 per cent. of the new patients suffered from ague; in September over 40 per cent. The cases of the disease came not only from the city, but also from the surrounding country. The disease did not stop with the approach of cold weather, as in former years, but prevailed with great virulence till the end of November, and did not decrease till late in December. The early cases had had few attacks. Those patients seen later on complained of having had attacks for two and three months.—(VI. 8, 14.)

In the winter of 1873-74, ague prevailed with great force till the end of December. In that month there was a great falling off, as compared with the previous five months; but not till January did a great diminution take place. Fowler's solution and quinine were extensively used. A few cases were met with in which quinine proved of little or no service, or if the symptoms were checked it was only to return in a few days.—(VIII. 29.)

During the half-year ending September, 1874, ague prevailed to such an extent as to constitute an epidemic. In its treatment, Fowler's solution and quinine were both extensively used. The former is considered more active and certain, when continued for a few consecutive periods, than the latter. Dr. Dudgeon has met with a few foreigners and Chinese in whom the disease resisted quinine, but gave way readily to arsenical solution. In the Report to March, 1875, the statement occurs that ague was dying out, and hopes were entertained that after one or two dry seasons Peking might again become an unaguish district.—(IX. 21, 40.)

At Tientsin, in the half-year ending March, 1873, the health of the foreign community was not affected by the inundation that had taken place in 1871-72. This immunity on their part was explained by the fact that the portion of the settlement occupied by them was elevated and well drained. The native Chinese, however, suffered much from fevers of a remittent and intermittent type.—(V. 24.) Tientsin.

In the period to September, 1873, the tertian type of intermittent fever was that which most prevailed. The majority of cases yielded to small doses of quinine; in a few, arsenic, or bromide of potassium and strychnine had to be employed. At the same time a severe form of the ordinary marsh intermittent fever prevailed among the native inhabitants. It was very fatal, owing to dysentery setting in during convalescence. This form of fever was almost unknown here prior to the inundation of 1871, so that its origin is easily traced to the saturated condition of subsoil, owing to want of proper drainage.—(VI. 52.)

In that to September, 1874, the quotidian type of intermittent fever was very prevalent, but with the exception of a few cases, was very amenable to treatment.—(VIII. 10.)

During the half-year ending 30th September, 1876, most of the cases of remittent fever which occurred were 'infantile remittent,' and were of mild type.—(XXII. 48.)

During the six months to September, 1877, cases of remittent occurred with others of dysentery and bowel derangement. In the early part of the period, typhus, typhoid, and relapsing fever raged among the native population, and in August and September cholera.—(XIV. 66.)

Malarial dysentery and ague prevailed during the first portion of the half-year to March, 1879. On the occurrence of the heavy autumnal rains they ceased. This improvement was considered to be due to the circumstance that the marshy, grave-dotted plain at the back of the settlement became inundated, and the numerous large pits upon it filled with water.—(XVII. 34.)

In the year ended March, 1880, notwithstanding that the general state of the public health was reported good, malarial disease, as diarrhœa, dysenteric attacks and intermittents were the diseases which most prevailed. For the most part the type was slight.—(XIX. 5.)

At Newchwang, in the summer of 1874, intermittent fever, for the first time, occurred. During the summer of 1873, and that of 1874, the rainfall had been excessive and unusual. The first case occurred in the person of a girl six years of age. She was attacked in June; the type irregular. Very soon afterwards tertian intermittents became frequent, but the cases were amenable to treatment by Epsom salts, rhubarb, and quinine, although the health of the subjects of attack remained impaired for several weeks afterwards. The case of a native gentleman is alluded to in the Reports. Of nervous temperament, he had lived in Formosa, where malaria had been imbibed, and he suffered from ague and broken health. Soon after returning to China, he found that 'worry,' or fatigue, brought on a series of attacks of what the reporter thinks was 'dumb ague.' These attacks consisted of a chill, soon followed by headache, very slight but occasionally distinct fever, and ultimate recovery. As precautions, warm clothing was worn; quinine was administered, but it was not tolerated; iodide of potassium did no good, but arsenic and iron soon relieved, and eventually controlled the attacks. They recurred several times during winter and early spring, and in June and July the patient had regular attacks of tertian ague; these were treated with arsenic. In reference to 'malaria' generally, Dr. Watson writes in the same Report: 'The effects of malaria were various. In one family one-half the members would suffer from hemicrania, the other half remaining well. As "malaria has a trick of returning to a locality it has once visited," the medical officer urges the circumstance as a reason for improving the "sanitary conditions" of the settlement.'—(VIII. 8, 10.)

Newchwang.

At Chefoo, according to the Report for the period from October, 1871, to March, 1872, ague was unknown in the immediate neighbourhood; but to the south and west of the province, where great plains allow the rains of summer to settle down in the soil, it is not uncommon.—(III. 40.) In the six months ending March, 1873, thirty cases of intermittent fever came under treatment. With three exceptions all had their origin in Japan, Amoy, or Swatow. Of the exceptions, two were sent from Shanghai, and one arose on the spot, in a patient who had suffered elsewhere from fever, two years previously.—(V. 18.)

Chefoo.

In the corresponding period to September, 1874, intermittent fever, mild in type, prevailed among the residents, in June, 1874, and chiefly affected children. It occurred in them during the period of dentition, and was accompanied in many cases by diarrhœa; but the disease was in a great measure confined to families occupying inferior descriptions of houses. During the early part of summer there was a large influx of visitors from the south, affected with malarial remittent fever and intestinal catarrh. The former speedily yielded to change of climate.—(VIII. 50.)

Dr. Carmichael observes, in his Report for the year ending September, 1875, that fevers, dysentery and diarrhœa, so common and fatal in the south, are very seldom met with here. The

prevalent fevers are generally of the intermittent type, introduced for the most part from the south or from Tientsin, where they are considered to be due to inundations. Malaria, long dormant in the system, may become excited at Chefoo, from the cold and sudden change, after residence in a warmer and malarial climate. In some instances noticed, men had been free from the disease for months until they were exposed to cold and severe weather at this place. Such attacks are not generally repeated after small doses of quinine are given.—(XI. 2.)

In the Report for the year ended September, 1876, Dr. Carmichael gives details of a case 'of one of the numerous forms of malarial fever which, after a certain duration, assumes the continued type.' The details are headed, 'Remittent Fever with Enteric Symptoms.' It proved fatal, but no post-mortem examination was performed. The early history of the case contains the following particulars: J. S——, aged 54, resident in China ten months. Never had any sickness at home, and was not troubled with any complaint in China until two months ago, when he was attacked with fever and ague. When taken ill, he was living at Woosung, in a Chinese house. After taking a course of quinine, the fever disappeared. Three friends with him were affected in the same manner. After this he removed to Hongkew. He was then affected with diarrhœa, and pain over the right side. This was shortly followed by dysentery, which lasted a week, and then again gave place to diarrhœa, which gradually diminished until he left for Chefoo. During the voyage he was ailing, and complained chiefly of thirst. When first seen on his arrival at Chefoo, on 27th August, he lay in bed; his expression was cadaverous; he stared in a stupid way, and did not appear to comprehend at once when questions were put to him; he was restless; his pulse 116; temperature 103·8° Fahr.; the hands tremulous. His death occurred on 13th September.—(XII. 45.)

According to the Report for the half-year ending September, 1878, no case of either remittent or intermittent fever occurred among residents during the previous twelve months; 'in fact, Chefoo enjoys an immunity from these fevers.'—(XVI. 16.)

At Chinkiang, during the year ended September, 1877, remittent and intermittent fevers were among the prevalent diseases.—(XIV. 63.) In that ended March, 1881, two cases of remittent came under notice, one of the number proving specially persistent. —(XXI. 99.) Chinkiang.

At Wuhu, in the half-year ended September, 1880, with the exception of five or six cases of intermittent fever, the Chinese who presented themselves for treatment suffered from diseases unconnected with 'malaria' or with climate. Dr. Deane describes some of the cases seen as presenting 'slight and latent forms of malarial fever,' due to the position in which the dwelling-houses stand. The foreign residents from time to time complained of *malaise*, gastric disturbance, diarrhœa, or constipation; axillary temperature 1·5° to 3° above the normal; general indisposition for work.—(XX. 22.) Wuhu.

At Kiukiang, in 1871, there came under treatment 97 cases of tertian ague, 3 of ague in infants under three years old, 7 of tertian ague passing into the remittent, or continuous type. Two of these were opium-smokers, and their cases appear to be quite exceptional, as the use of the drug, among many evils, seems to secure one benefit, namely, immunity from intermittent fever. Several examples occurred in persons who had recently broken off the habit, 'but in this there is nothing surprising.' Irregular ague, 10; intermittent attacks of diarrhœa, 5; quartan ague, 17—this form of the disease had lasted in several cases for periods of two or three years; quotidian ague, 40. In three of the latter the attacks anticipated, threatening to pass into remittent fever; in three, the attacks were repeated twice or thrice a day (*quotidiana duplicata et triplicata*), and passed at length into a severe type of remittent Kiukiang.

fever, with continuous febrile action and slight remissions, but without distinguishable chills. Among the sequelæ of intermittent fever were anæmia, fever with anasarca, chlorosis with mitral bruit, palpitation, pains in the limbs, debility, sallowness, and emaciation. In the majority of these the history of ague could not be made out, nor was there any palpable enlargement of the liver and spleen. The usual ferruginous preparations, with liberal dietary, sufficed in most cases to effect a rapid cure. In one or two cases of two years' standing, the mere substitution of animal food and bread for the insipid vegetable diet of the natives, together with change of residence, sufficed to produce a wonderful improvement. There were several cases of tertian ague and dysentery affecting the same patient, the prostration of strength and emaciation being very great. In these cases a combination of equal parts of quinine, bismuth, saccharated carbonate of iron, and Dover's powder, was most useful. In one case from a swampy district, enlarged spleen was present, and yet its subject denied having had ague. He suffered, however, from increased temperature, but seemed to be affected in no other way. A case of cancrum oris was recorded as a sequel to ague. While these fevers prevailed one case of continued fever occurred. It was attributed to cold; its duration was seven days; it was unaffected by sudorifics, purgatives, or quinine.—(II. 64, 65.)

In the Report for the year 1872, cases of cancrum oris occurring in children are related. These are described as being due to malaria in and around this settlement. Cephalalgia and convulsions, apparently associated with exhaustion and anæmia, are also related. The pain assumed an intermittent character, but recovery took place under the use of quinine.—(IV. 45, 47.) During the year ended March, 1877, notwithstanding that the summer was mild, malarial fevers, together with dysentery and diarrhœa, prevailed. These were attributed to the flood by which for ten weeks the concession and low-lying districts around were deluged, their chief prevalence coinciding with the drying up of the waters.—(XIII. 1.) In the year to March, 1879, an unusual amount of sickness prevailed among foreigners, for which Dr. Jardine was unable to account. Among the diseases considered due to climatic causes, including 'the unusual length of the close, sultry weather, combined with the depressing influence of the flood,' were diarrhœa, fever, and many minor climatic ailments.—(XVII. 3.) In the year 1880, two priests arrived from the southern part of the province, where they had resided some years. The one suffered from chronic dysentery; the other from extreme emaciation, debility, and almost imbecility, consequent on severe attacks of remittent fever.—(XIX. 10.)

According to the Report to March, 1881, 'during the autumn of 1880, malarial fevers were very common, a large proportion of the community suffering from remittent or intermittent fever of severe and obstinate type; quinine in doses of 20 to 30 grains alleviating somewhat, but failing to "cure" the latter. The persons who suffered most were those who were in the habit, in the evenings, of bathing in the lakes after the water began to subside over flooded districts; such cases were particularly obstinate. A larger number than usual of missionaries resident in the interior arrived at this settlement suffering from fever or dysentery. Besides a larger number of cases than usual of malarial fevers in the settlement, an increase took place in those treated for their sequelæ—chronic hypertrophy of the spleen, anæmia, and dropsy.'—(XXI. 48.) Throughout the year ended March, 1882, the 'more common diseases of this climate' were not unusually prevalent. In June, two cases of intermittent fever occurred; they yielded readily to quinine, but one of the patients had a recurrence of the disease before the end of the annual period. One case of severe remittent fever arrived from Ngankin; it did well. According to accounts brought by missionaries, a severe form of remittent fever prevailed in the month of June at a village about 30 li east of Kiukiang. Of the patients who applied at the dispensary in the

settlement, nearly one-third of those who sought treatment on account of diseases of the eyes suffered from ulceration of the cornea. Many of the worst forms of that disease began while the patient was recovering from malarial fever; indeed, the debility induced by intermittent and remittent fevers seems to be the starting-point of a large percentage of the cases seen here. Of the direct results of such fevers, anæmia with enlargement of the spleen, and at times of the liver, are frequent, the latter not seldom further complicated with ascites. Cases of cancrum oris also occur as sequelæ; and of them, only the minority do well under treatment.—(XXIII. 38, 39.)

At Hankow, in the half-year ended September, 1871, fever was generally of the remittent type; its duration from a few days to several weeks, but leaving an amount of prostration out of proportion to the febrile symptoms. A case of adynamic fever occurred in a young woman engaged in tending native children. The nursery was situated on the ground-floor close to a badly kept drain. The girl had an attack of fever in May; it reappeared in an intermittent form in June and July. In August, quinine having failed to check or moderate the disease, Dr. Reid first saw her. The malignant aspect which the fever had then assumed was by him attributed to impairment of the health by malaria, an impure atmosphere, and previous unsuitable employment. The patient died. In the case described, also, of a native missionary, the patient had for some time suffered from indications of fatty heart. He had a mild attack of fever, and suddenly expired during the evening exacerbation, the sudden collapse being explained by the depressing effect of malaria on an organ already crippled. A case is described in which febrile symptoms arising from stricture of the urethra so closely resembled those due to paludal origin, that they were treated as if due to that cause. Malarial fevers prevail in September and October annually; also, after periodical inundations. They affect alike natives and foreigners.—(II. 47, 48.) Hankow.

In February, 1872, a rise of 20° Fahr. to 30° Fahr. in the maximum temperature took place, accompanied by a prevalence of malaroid disorders of the intermittent and remittent type.—(III. 43.) In the half-year ended September, 1872, a large number of cases of malarial fevers came from the surrounding districts. Chronic rheumatism, which prevailed extensively, was considered to be due to malaria.—(IV. 74.)

In the half-year ending September, 1874, fever and dysentery combined were frequent. In two of such cases, convalescence was interrupted by epistaxis.—(VIII. 43.) During the year ended September, 1875, 'malarial disorders' prevailed throughout the summer and autumn months. 'This can be easily explained by the usually accepted theory that malaria is a poison generated by the action of heat and moisture on decomposing matter in the soil.' Certain forms of suppurative hepatitis, dysentery, and malaroid fever have been the chief cause of serious illness among foreign residents here.—(X. 46.) During the year ending September, 1876, malarial disorders were prevalent. In reference to the existence of filthy pools in the locality, and offensive emanations therefrom, as possible causes of these diseases, Dr. Reid wrote: 'Although a marshy district and wet decaying organic matter are not the only necessary factors in the production of malaria, which is occasionally met with in a dry soil, and even in mountain regions at a height of several thousand feet, yet there can be no doubt that there is often a causative relation between them; for in numerous instances malaria has disappeared or diminished according to the drainage and cultivation of the soil, or even in correspondence with the dryness of the year.'—(XIV. 14.) During the year ending September, 1877, no example of severe malarial fever was met with among the foreign residents of this port. 'This may have been partly due to the dryness of the summer, the low state of the river, and the filling up of several of the low-

lying lots.—(XIV. 79.) In that ending September, 1878, a few cases of dysentery and malarial and heat fever, of mild types, occurred among the shipping population; a few of dysentery and of malarial fever among the foreign residents.—(XVI. 23.) During the half-year ending March, 1881, remittent and intermittent fever were common, but only a few cases of any severity; these were fatal.—(XXI. 45.)

Ichang.

At Ichang, according to the Report on that place, for the six months ending September, 1880, 'from the number of ague patients it will be inferred that the locality is not quite free from miasmatic poison; but it is remarkable that, so far as Dr. McFarlane was aware, no other fever was known to the natives of Ichang.—(XX. 20.)

Shanghai Malaria.

At Shanghai, according to the Report on that settlement for the half-year ended September, the characters of the soil, as already described under the heading 'Topography' (p. 29) qualifies the district as 'malarious,' the convenient term 'malaria' being used to designate the mass of describable and indescribable conditions which prevail in the neighbourhood of marshy lands, especially when these are subjected to powerful heat. From May till September, intermittent, remittent, and bilious fevers prevailed among foreign residents. The prevailing type of disease in Shanghai is periodic, and this type presents itself in the course of other diseases presumably not of malarious origin. The settlement is one of the homes of malarial fevers. But in cases of these diseases, the temperature curves were distorted by the intervention of quinine treatment; 'the patient and not the disease being in each instance the primary object of study.' In former years, the form of remittent fever here met with was of a dangerous and often fatal character, so much so, that it was known as 'Shanghai fever.' In the treatment of that form, 'quinine in any quantity often disagreed.'—(XI. 33, 37.)

Shanghai Fever.

In the period to March, 1872, the almost complete disappearance of the malignant, or at any rate extremely fatal, fever so named is noticed. Dr. Jamieson gives the following particulars in regard to it from a Report by Dr. Henderson, in 1861, namely: 'Although primarily remittent, with daily exacerbations, its tendency is to become continued, in which form it differs but little from a severe case of typhus. It usually commences suddenly. The patient is seized with severe rigors, which last from half an hour to two hours; then great heat, intense headache, flushing, and fever come on, followed by profuse perspiration. Occasionally the disease advances insidiously and gradually; and its nature is only apparent after a certain period. In severe cases, during the cold stage, with other symptoms, the extremities are cold and livid; an intense feeling of cold pervades the whole body. Reaction ensues after a time: the skin becomes dry and pungently hot, the face is flushed and turgid, the pulse quick, full and bounding, the mind often wanders, with acute delirium. After a few hours, these symptoms subside, profuse perspiration occurs, the pulse falls in force and frequency, and the patient lies prostrate and exhausted. If the disease is neglected, the tongue becomes coated with brown dry fur, the liver becomes disordered; there are bilious vomiting and diarrhœa, with tenderness and pain in the right hypochondria, rheumatic symptoms occur, purpurous spots appear, blood is discharged from the mucous membranes, great prostration ensues, and the patient dies comatose or delirious.'—(III. 78.)

During the six months from September, 1872, numerous cases occurred of the malignant form of fever named after the locality itself, as already mentioned; and this circumstance is the more noticeable as the number of such cases had gone on diminishing during the few preceding years. In one case related, the patient, aged thirty-five, had been subject to intermittent fever for many years. During two months the fever had assumed a remittent type, but yielded partially to quinine in large doses. A fortnight before observations commenced it became continued, with

marked afternoon exacerbations, and delirium and sleeplessness at night. The patient was in the habit of taking quinine 'by the spoonful.' At noon on the first day of treatment, he was deeply cinchonized and muttering; there were besides constant starting of the tendons and occasional floccitation. He could be roused to consciousness, but did not care to recognise anybody. Temperature under the tongue, 107° Fahr. In the treatment of this case quinine having failed, turpentine was administered, but with such effects that the medical officer would not again give it. Finally the patient improved so much that he was put on board ship and despatched to England. At this settlement 'remittent' fever is frequently intractable, and occasionally deadly. The medical officer calls it 'remittent,' although he is not quite sure what it is; he thinks it is well referred to the class of mixed fevers. The absence of any sign of decomposition fifteen hours after death, under a temperature ranging from 83·5° to 86·5° excludes rapidly fatal typhus, and the fact that the patient was lodged in a tolerably cool room, and not exposed to the direct rays of the sun, excludes sunstroke. During the period in question, bilious diarrhœa, febricula from exposure to the sun, intermittent, and neuralgia, with other diseases usually assigned to 'malaria,' were somewhat prevalent among the outdoor staff of the Customs.—(IV. 94, 101.)

In the half-year ending September, 1874, remittent fever of a typhoid character prevailed among adults and children, the former associated with more or less hepatic congestion. Intermittent fever was also common, but generally mild. Under the head of the prevailing diseases due to climatic causes, Dr. Jamieson includes hepatitis, dysentery, the malarial fevers, neuralgia, sun *malaise*, and dyspepsia due to hepatic congestion. In the same Report the medical officer gives particulars of three cases of typho-malarial fever as occurring at that settlement. The term, which he adopts from America, includes all those cases which lie on the borderland between remittent and typhoid, which would be considered remittent but for the marked typhoid symptoms, and for the less than doubtful efficacy of quinine; and which would be classed as typhoid but for the absence of eruption, and of iliac gurgling and tenderness. This class is therefore conterminous with the 'mixed fevers.' The type may at first be intermittent or remittent, but after a few days the disease becomes a true continued fever with delirium, which, alternately violent and muttering, may pass into coma, vigil, and death. There may be diarrhœa or constipation, but the evacuations almost always are extremely offensive. Fortunately, many of these cases recover. In reference to the first case recorded, the medical officer observes that 'Quinine had no effect in lowering the temperature.' In a second, 'quinine excited vomiting almost invariably.' In it, also, 'medical treatment was almost *nil*,' the chief trust being in amateur nursing. After the thirty-sixth day, convalescence proceeded. In a third case he 'could attribute no benefit to the quinine administered,' unless 'that he fancied it controlled the epistaxis with which the patient, a girl of thirteen, was attacked.' In reference to the case thus noticed, Dr. Jamieson writes: 'The opportunity is a good one for noticing the extraordinary excellence of amateur nursing in Shanghai. Every practitioner must be struck not only by the readiness and devotion of the patient's friends so soon as the fatiguing duties of a nurse appear to call them, but by the skill and discretion with which they discharge the task they thus assume.' Several cases of remittent fever are then detailed in illustration of two distinct types of that disease to be met with at that place, namely, the uncomplicated and the complicated.—(VIII. 16, 22, 23, 26.)

Typho-malarial Fever.

'Mixed' Fevers.

Amateur Nursing.

During the period from October, 1875, to March, 1876, malarial fevers, chiefly intermittents, prevailed; none of a very serious character. In one case, 'orchitis occurred immediately after a severe paroxysm of intermittent fever; it lasted five days, during which time there was no recurrence of pyrexia, and on the sixth day suddenly disappeared, with the contemporaneous renewal

of the fever.'—(XI. 50.) In the six-monthly period ending September, 1876, a severe case of quotidian intermittent occurred in a child two and a half years old.—(XII. 3.)

In his Report to September, 1877, Dr. Jamieson notices a case in which the symptomatic fever in a case of orchitis simulated remittent fever. The case occurred in August, and in a person who had been on previous occasions the subject of malarious fever. The remark occurs, however, that the remittent character of purely symptomatic fever often strikes one in surgical practice.—(XIV. 49.) In that to September, 1880, Dr. Jamieson wrote: 'The multiform modifications imposed by acute or chronic malarial saturation on the natural course of specific diseases deserves careful study, as also do various independent typhoidal conditions hitherto undescribed, which occasionally end in death, and which are, in all probability, manifestations of acute malarial poisoning. To include them, the application of the term 'malaria' may require to be widened so as to include the vehicles of poisons other than that, or those productive of the group of affections now classed as 'malarial.'—(XX. 33.)

Under a different heading, namely, 'Trichina spiralis,' Dr. Manson also alludes to 'that cloak for ignorance we call malaria.'—(XXI. 36.)

At Ningpo, in the half-year ending March, 1873, three cases of intermittent fever, and one of dysentery, represented all the 'malarial' diseases met with.—(V. 25.) According to the Report for 1875-76, eight cases of intermittent fever occurred, all mild, and the majority tertian. They all speedily recovered under quinine.—(XI. 27.) In the year to March, 1877, 'intermittent fever was not so prevalent as in former years.'—(XIII. 47.) In that to March, 1879, intermittent fever had still further decreased, yet most complaints exhibited an intermittent character.—(XVII. 6.)

Ningpo.

In the Report for the eighteen months ending September, 1880, a description of the locality of Ningpo is given as already transcribed under the heading 'Topography' of that place. In reference to such conditions, Dr. Henderson writes: 'Here are the conditions favourable to the development of malaria, and its protean forms are everywhere manifest —neuralgia, recurrent diarrhœa, enlargement of the spleen and liver, anæmia, subnormal temperature, intermittent and remittent fever. Of ague is to be seen the quotidian, tertian and quartan types, but principally the tertian. During the preceding hot season fevers were very frequent, yet there was but little diarrhœa, and no dysentery. The form of fever which most prevailed was the remittent. All the forms met with were amenable to treatment. The mortality among the Chinese by these fevers is small. The lowest form of remittent may run on for months, undermining the constitution, producing the pallid, washed-out, and miserable specimens of humanity everywhere to be seen around the settlement. During the rains there was no fever. In July, three cases appeared; in August, eight; and from thence the numbers increased at a rapidly accelerating ratio to the middle of October, involving nearly the whole community in its tide; and, according to accounts received, proving fatal to a considerable number of Chinese.—(XX. 30, 31.)

Malaria.

At Wenchow during the six months from October, 1877, to March, 1878, ague from country districts occasionally came under notice.—(XV. 40.) According to the Report to September, 1881: Wenchow, situated on a reclaimed marsh, reticulated by canals, and almost on a level with their sluggish waters, is the abode of intermittent fever. Every spring, to some extent, and in autumn, that disease prevails, on occasions affecting half the inhabitants of a village. It is generally of mild type, except to new comers; and they, after acclimatization, do not regard it with dread. The labouring poor, after being subject to attacks for years, cease to be so; but then the anæmia and debility that ensue render them liable to other maladies, and so they are not long-lived. The quotidian and tertian types are light and amenable to treatment, disap-

Wenchow.

pearing on the advent of cold weather. Tertians, which are the most prevailing forms, sometimes run into quartans, become chronic, resist all methods of treatment, and after a year or two terminate fatally. Adverting to the question of dependence of these forms of intermittent fever on the presence of rice-fields, Dr. Macgowan notices the circumstance that the native inhabitants exonerate the rice-fields. From time immemorial the Chinese physicians have been aware of the value of arsenic in the treatment of ague, although they refrain from administering it internally. With regard to fever and ague and the state of the weather, they affirm that this disease prevails when a season is unusually windy.—(XXII. 22, 28.)

Rice-fields.

At Foochow, in 1871, a considerable number of cases of intermittent fever occurred among the residents. Yet the land is high, the soil dry, consisting of red clay and disintegrated granite; natural drainage perfect; the dwellings of foreigners on dry elevated sites. It is observed that other causes than marsh miasm give rise to ague; among them, exposure to the sun, combined with hard physical and mental labour, tend to induce a paroxysm in all respects similar to malarial fever. Mental anxiety, and especially mental shock, will give rise to it without exposure. Ague occurs in countries and districts that are not marshy. The terms 'malaria' and 'malarious' express rather our ignorance than our knowledge of the phenomena.—(II. 26.)

Foochow.

In the six months to September, 1872, of the cases of intermittent fever that occurred, a large proportion were imported. One of the two local cases was attended by an urticarious rash not seen before by Dr. Somerville. He observes that the cases noted as sun *malaise* might perhaps have been placed under 'Febricula;' but he has kept them apart in order to remark how similar many of these cases are to an ordinary attack of ague. The cold stage is represented by a chill experienced by the patient, and the rest of the case is almost identical with the second and third stages of ague. Further observations on this point are to be desired, as up to the present day our views as to the nature, and even the existence of malaria, are so undecided. With regard to the subject of 'mixed fevers,' the reporter observes that 'one form of fever passes into another, so that it is impossible for some time to ascertain the character of any assigned instance.' He quotes from Mr Lawson as to the complicated character of tropical fevers; that cases may occur as intermittents, after three or more tertian periods the fever become continued, assume all the characters of typhoid, present the appearance of the kidneys and urine met with in yellow fever, and end in death, the post-mortem appearances an intermixture of those peculiar to yellow and to typhoid fevers. A case in illustration is then related, and in regard to it the remark made that in China 'cases are by no means uncommon where the liver and spleen are found extensively diseased after death, without having indicated during life symptoms other than those of functional disorder.' Dr. Somerville relates the case of the mate of a ship, where with symptoms of quotidian ague there was diarrhœa, then intense abdominal pain, delirium, collapse, and death. He looked upon that case as a *mixed fever*, either intermittent passing into typhoid and ending fatally by perforation and peritonitis, or an ordinary intermittent assuming the 'pernicious' type as described by Wood. Fortunately 'mixed fevers' are rare at Foochow.—(IV. 58, 60.)

In the Report for the half-year ending March, 1874, a case of malignant remittent fever was recorded. In it the patient seemed to be passing through an ordinary intermittent or remittent; presently slight confusion of ideas was observed; in a few hours he was in profound coma with stertorous breathing, 'fly-catching,' convulsive jerking of the muscles, and cyanosis. This form of fever presents several points of resemblance to the remittent fever of the Gold Coast, as described by Dr. Donnet. Dr. Somerville remarks that—'Such expressions as "malarial influence," "paludal cachexia," and even "blood-

Malignant remittent Fever.

poisoning," are terms used in the sense of expressing facts instead of mere hypothesis, tend rather to obscure than to clear up the etiology of the "mixed" and malignant forms of fever which are noticed there.' For the present, one thing seems certain, that quinine, so valuable in ordinary forms of malarial fever, is useless, if not positively hurtful, in those alluded to.—(VII. 10, 11.)

During the six months ending September, 1877, cases of intermittent and of remittent fever were very few, and all imported. In that period a case of mixed fever was recorded. It was complicated with severe double pneumonia, and was of so mixed a character that the reporter does not pretend to unravel it, and say what was remittent, what typhoid, and what pneumonia. The subject of the disease, a French sailor, died on the fifty-second day of illness, and no post-mortem examination took place. It is stated that quinine, given both in large and small doses, had no effect on the progress of the disease.—(XIV. 86, 87.)

According to the Report to September, 1879, the malarial species of disease varies from pernicious and remittent fevers down to ague in all its manifestations. During the period malarial fevers were of frequent occurrence. They were of all degrees of severity. What was known as pernicious fever, or congestive fever, was rare: when it happens, the reporter states that, 'Apart from cholera, he does not know a disease, not organic, which so rapidly, and with greater horror to the spectator, brings the patient within threat of instant dissolution.' A gentleman ate a hearty breakfast, went about his work, began to feel chilly, an hour afterwards was comatose. A lady, previously in good health, about 2 p.m. was seized with coldness and shivering, conjointly with pains in the limbs; at 3 p.m. was lying in front of a large fire shrivelled as it were into herself, shrieking with cold and in intolerable agony in every bone; at 3.30 p.m. she presented one dull leaden colour, her shrieks of pain, if possible, more piercing than before—she was thirsty, with a thirst that nothing could slake; at 4 p.m. she was comatose, and next to pulseless; at 5 p.m. a perceptible warmth set in; at 7 p.m. in high fever; at 8 p.m. the fever abated, she awoke from her coma. She ultimately made a perfect recovery. It is further stated that—'Remittent fever was first observed among foreigners about seven years previous. On different occasions, subsequently, an isolated case was noted; the type in each very low, or what might be called typhoid remittent, but until the last year not fatal. Then, however, a case became complicated with pneumonia and proved fatal.' Further: 'Malarial rheumatism is common. It occurs for the most part in a chronic form, and chiefly affecting the right side—hence is liable to be mistaken for "liver." In persons under the influence of malarial poisoning, an attack occasionally supervenes after injuries, as a sprain or contusion.'—(XVIII. 65-67.)

Pernicious Fever.

Malarial Rheumatism.

A topographical description of Foochow having been given in the Report for the year ending March, 1881, as already quoted under that heading (*ante*, p. 43), Dr. Rennie writes, in reference thereto: 'Having around us so abundantly all the acknowledged conditions necessary to the development of the "bacillus malariæ," or whatever the germ of paroxysmal fevers may be, we need not be surprised at malarious diseases, as remittent fever, ague in all its forms, anæmia, and dyspepsia, being very prevalent among the natives.' These diseases affected, also, 35 per cent. of the residents. In all parts of the settlement, among houses situated on the highest points, as among houses built on sites a little above the plain, fevers were equally scattered.—(XXI. 50, 53.)

In the half-year to March, 1882, the former prevalence of ileo-colitis seemed to have been supplanted by malarial fevers, the latter generally slight and fleeting, though protean in their forms, but sometimes severe, if rarely deadly.—(XXIII. 35.)

At Amoy, during the half-year ending September, 1871, the majority of the diseases met with

were such as prevail in hot climates. The preponderance of climatic disease, however, was less marked than during any of the six preceding years, and this was to some extent accounted for by the unusual coolness of the season under notice. Of the cases of intermittent fever nearly all were of the quotidian type, and mild in character. No case of remittent, or of bilious remittent, was recorded.—(II. 11.) Malarial diseases, when they do occur, are of less frequency in the cold season than during the summer.—(III. 22.)

Amoy.

In the Report for the six months to September, 1873, the medical officer writes: 'It is seldom we meet with a genuine case of well-established ague in a European. This is for the reason that the approaching tendency to such an attack is treated by large doses of quinine, so that the regular attack when it does take place is aborted; yet it is followed by an anæmia which hangs about the person for years.' He observes thus: 'We think that the stage of convalescence after this quinine-aborted fever to which Europeans are liable is much longer and more distressing than in the general run of well-developed and perfect agues. The native expects his ague, lies down to it, goes through the three stages with equanimity, and rises up on the conclusion of his fever, ready for his work as if nothing had happened. Observing this, we sometimes think that there is such a thing as giving quinine too soon. The physicians of the last generation thought so. It seems to diffuse the disease, so to speak, as well as ultimately to cure it. We think its early use is the cause of a milder fever, but a more tedious convalescence.' Many agues come and go without leaving any prevalent bad effects. A patient in easy circumstances suffers less severely than one who is poor, and consequently without means of comfort.—(VI. 23.)

Anæmia.

The effect of emotions, such as fear, rage, etc., in preventing the development of an ague-fit is well known. That the ague of a Chinaman with his credulous and superstitious disposition should be very amenable to such influences, is what from his nature we should anticipate. An instance is given of a Chinaman subject to ague having come to a chapel of the London Missionary Society, so as to be 'under the protecting influence of the god of the chapel, that he might through his antagonism to the devil of ague avoid an impending fit.' Nor was the invalid disappointed; his belief had really made him whole. This chapel enjoyed a great reputation, many resorting to it for this purpose. In the same Report the subject of anæmia is discussed. The medical officer observes that every attack of ague or other form of malarial fever is sure to be followed by more or less anæmia. The duration and intensity of this anæmia depend on the treatment adopted, the previous condition of the patient, and his food. A good deal of anasarca may exist in malarial anæmia, and this without the presence of disease of the kidneys or heart. Enlargement of the spleen is frequently present. Cases of enlarged spleen of malarial origin have been met with, however, in which there was no history of ague or other fever, but only of a life since childhood in a malarial district. But such cases are rare. Perhaps the most serious complication of enlarged spleen is ascites. With, or in the absence of, enlarged spleen, ulceration of the leg is a frequent accompaniment of malarial anæmia. An abrasion may ulcerate, or a pustule, or a sanguineo-purulent ulcer form on the skin, and even slough. The force of the cachexia may fall on the kidneys. In the district of Amoy the liver is seldom permanently affected as a consequence of ague. According to the reporter, malarial anæmia in early life retards development; and he gives particulars of a case in illustration. Subjects of this form of dyscrasia are very liable to hæmorrhages from the nose, gums, kidneys, etc., and from ulcers; there is also a tendency to sudden collapse from coagulation of fibrine in the heart and large bloodvessels. In such cases, when a surgical

Recovery through 'Faith.'

operation becomes necessary, the patient should be prepared for it by means of a course of quinine and iron.—(VI. 23.)

In the year ending September, 1879, several cases of malarial fever were imported from Tamsui, but none of local origin among foreigners appeared, nor had the Chinese suffered during that season as much as usual from fevers.—(XVIII. 59.) In the autumn of 1881, within certain limits, a severe and often fatal form of remittent fever prevailed; but the areas in which this was epidemic were very limited. The population as a whole was not implicated, and the disease did not attack any foreigners.—(XXIII. 17.)

At Tamsui and Kelung, during the year ending March, 1874, a few slight cases of intermittent fever occurred; they yielded readily to quinine.—(VII. 23.) In the six months to September, 1877, a considerable number of cases of malarious fever occurred, chiefly of a remittent and intermittent type. At Coal Harbour, several cases of the former type occurred among the mining experts employed there, the men so attacked being Europeans arrived from France and England during the two previous years.—(XIV. 82.)

Tamsui and Kelung.

According to the Report to September, 1878, malarial fevers ranked high in the list of prevailing diseases. The type of remittent and intermittent fevers as presented in some cases was very severe. In one case the occurrence of severe muscular contractions (convulsions) in the course of the cold stage is recorded. During the convalescence of the patient a severe crop of boils occurred. In one of remittent fever, quinine having had no beneficial effect, the patient was removed by steamer to Amoy, and seemed to be restored to health by the change.—(XVI. 18.)

During the summer of 1879, there was as usual a considerable amount of malarious fever, almost all the residents having suffered more or less from intermittent or remittent fever.—(XVIII. 64.)

In the summer of 1880, malarious fevers were also somewhat troublesome. Dr. Ringer stated that he has had frequent opportunities of observing that foreign residents in localities where so-called malarious influences exist may ward off their deleterious effects for a considerable period, even for years, but may suddenly, although being apparently under precisely similar circumstances, be seized with an attack of ague or remittent fever, and with no other cause that one can discover than perhaps a slight chill or a very brief exposure to the sun, such as would usually be passed by without a thought, and in some cases absolutely nothing out of the ordinary routine of daily life can be called to mind by the patient to account for the attack. 'Once a patient has suffered severely from remittent or intermittent fever, it requires as a rule but a slight cause, such as getting wet, or being exposed to the sun for but a short time, to start the blood poison, as it may be expressed, and produce another attack. But,' it is added, 'our knowledge of the pathology of malarious diseases is at present somewhat imperfect.'—(XX. 16.)

At Takow and Taiwan-foo, according to the Report for the half-year ending September, 1871, intermittent fever and malarial neuralgia occurred among the residents. In the former quinine was successful, in the latter not so, but arsenic produced better results. In cases of remittent fever great and sudden prostration occurred, also low delirium and bleeding from the fauces. Enlarged spleen is common, associated with anæmia and ulcers on the legs, the left more liable to these than the right. These cases are benefited by the use of iron. Goitre also is present in the lower range of hills.—(II. 68.)

Takow and Taiwan-foo.

During the period to March, 1872, a few cases of ague and two of remittent fever occurred in the settlement. Among the natives, malarial fevers were the chief causes of death. These prevailed mostly from August to November inclusive, and least in February and March. A number

of cases of this kind came from Lambay, a small rocky island lying about ten miles south from Takow, and separated from the mainland of Formosa by about six miles of sea. The reporter observes that, judging from its physical character, Lambay ought to be the reverse of what is usually considered malarious; yet malarious fevers are exceedingly prevalent there.—(III. 34.)

Coincident with a heavy rainfall in May, 1872, a severe outbreak of intermittent and remittent fever took place among the Chinese population; among the shipping also these affections were numerous. Malarial fever, prevalent more or less during the whole year, became epidemic after May throughout the summer. The mortality in the country districts was reported to be very great, particularly so at Pitau, a large town six miles inland from Takow. The more severe forms of the prevailing fever seen were characterized by adynamic symptoms, little or no remission, and a tendency to dysentery during convalescence. In two fatal cases hæmorrhage occurred from the stomach and bowels. Two cases of death occurred by rupture of enlarged spleen.—(IV. 24, 26.)

In the Report to March, 1873, the falling off in the number of applicants for treatment among the Chinese is attributed to the fact that malarial disease is less prevalent in winter than in summer; also the natives have an objection to leave their homes in winter. As on the previous occasion, so now, during the months from June till October, the prevailing type of fever was remittent and adynamic, with a tendency to dysentery during convalescence.—(V. 26.)

In the period to September, 1873, the circumstance was noticed that intermittent fever specially prevailed in one particular house of a European resident, situated on a site surrounded by water. Again, among natives, malarious fevers were among the principal causes of death.—(VI. 38, 40.)

In the period to September, 1874, the boatmen occupying 'official' residences suffered severely from intermittent fever, followed by much debility and protracted convalescence, with gastric and spleen derangements. The locality in which these residences were situated had acquired the reputation of being extremely unhealthy. Among the Chinese inhabitants intermittent and remittent fevers were very prevalent, although Chinese troops, encamped six miles inland, enjoyed good health.—(VIII. 12, 14.)

In the six months to March, 1876, several of the community suffered from simple attacks of intermittent fever. These were chiefly the occupants of a locality for some time admitted to be malarious. Among other affections assigned to the same cause were enlargement of the spleen, irritable ulcers on the legs appearing with each attack of fever, great depression bodily and mentally. About the beginning of October, when the country was drying up after the rains, malarious fever assumed an epidemic form, and was more fatal than it had been for some years.—(XI. 34.)

In the year to March, 1878, as effects of malarial poisoning among the foreign residents, intermittent and 'pernicious' fevers, with severe and dangerous symptoms, occurred. In one case malarial fever was associated with rheumatism. And yet, as the rainfall, although considerable, was nearly all absorbed by the parched soil, the elements usually believed to be the cause of malarial diseases could not have been developed. No cases of such diseases occurred during the months of December, January, and February.—(XV. 36.)

In his Report for the half-year ending March, 1882, Dr. Myers writes: 'The most prominent ailment at those places is fever, evidently of malarious origin, but the peculiarity of its type attracts special attention. He does not know that he has ever seen a case of what is commonly understood by fever and ague, pure and simple, arise in the Taiwan-foo settlement. On the

contrary, the disease common there is distinctly of the typho-malarial, or mixed-fever class; indeed, were it not for the marked intermissions, so prominent are many of the typhoid symptoms, including spots, iliac gurgling, intense depression, etc., that one seeing a case for the first time would be very apt to call it typhoid, and to have his fears excited to a greater extent than is always called for. As a remarkable proof of the peculiar local influences in relation to the characteristic disease of the place, in the north-east monsoon, when the prevailing winds are more or less off the land, persons on board ships lying in the roads, who have had no contact whatever with the shore, and to whom no shore-water has been supplied, are often stricken with this Taiwan-foo fever, and in their case the consequences are much more grave than those observed among regular residents. In fact, by far the greater number of cases on board ship, coming under the notice of Dr. Myers, occur in the vessels lying off Anping.—(XXXIII. 28.)

Typho-malarial or 'Mixed Fever.'

At Swatow, in the half-year ending September, 1871, zymotic diseases stand at the head of prevailing affections through that period; and at the head of that class stands intermittent fever.—(II. 7.) During the period to September, 1874, the disease most frequently met with was remittent fever. 'Almost every European suffers from it at some time, but fortunately it is of a very mild type.' In the treatment of this form, Dr. Scott has been in the habit of giving quinine with blue pill; after long experience he has found small doses of mercury to be most useful in such cases. Intermittent fever is almost unknown here.—(VIII. 65.) According to the Report for the period to September, 1876, intermittent fever was common among sailors who slept on the decks of ships with little covering, or who were in the habit of bathing under a hot sun; otherwise it was rare.—(XII. 19.) During the period to March, 1877, there was a falling off in malarial diseases.—(XIII. 9.) In that to September of the same year, the majority of diseases met with among residents belonged to the miasmatical class.—(XIV. 68.) Some severe cases of miasmatic diseases occurred in October and November.—(XV. 23.) In the half-year to September, 1879, there was not more than the usual amount of summer diarrhœa and intermittent fever. Some severe cases of fever and dysentery occurred among resident children, two of which were fatal. The peculiar form of fever which occurred among them is already described under the heading 'Continued Fevers.'—(XVIII. 75.)

Swatow.

At Canton, during the half-year to September, 1871, the fevers from which foreigners suffered were all of the intermittent type; among the Chinese of the city, however, remittent fevers were somewhat frequent, sometimes of virulent character, some of an intractable nature.—(II. 70.) In that to March, 1872, the cases of intermittent fever were all of the quotidian type. In many of them diarrhœa was present at the same time. The association of diarrhœa with fever is often met with among the Chinese as well as in foreigners.—(III. 19.) In the period to September, 1877, cases of intermittent fever were comparatively few, but diarrhœa was rather common; so also were cases of subacute hepatitis.—(XIV. 57.) In August and September, 1879, a peculiar form of remittent fever appeared. It affected both Chinese and foreigners. With regard to the latter, it did so more especially during convalescence from other diseases, as diarrhœa and dysentery; also after parturition. The attack began with nausea and headache, but without chill or heat. Within twenty-four hours the body became suffused with a slight flush, the pulse and temperature at no time much above the normal standard. Very profuse perspiration soon succeeded. After this stage set in it recurred at intervals of four hours, but unattended by flush, nausea, or headache. Quinine had no effect in large or in small doses; in one case where its use was discontinued after the patient had been in a state of cinchonism for seven days, improvement began under the use of dialyzed iron and

Canton.

Peculiar Fever.

quassia. The summer was 'exceptionally free from the ordinary complaints which we naturally expect in this climate.'—(XVIII. 56, 57.)

At Hoihow during the half-year ending March, 1882, deaths were reported as being numerous by malarial fever among the Chinese troops sent to quell the disturbances then occurring in the north of the island of Hainan.—(XXIII. 31.) Hoihow.

In the hospital records at Yokohama, up to 1875, only 20 cases of malarial diseases were shown. Of these, 2, or 10 per cent., occurred in residents, and 18, or 90 per cent., in non-residents. From 1875 to 1877 there were recorded 31 cases, including 14 cases of malarial cachexia; the majority of these from a man-of-war arrived from malarial regions beyond the limits of Japan. Of the 31 cases, only 5, or 16·1 per cent., were of residents. It is shown that in the same period there was a small increase in cases of the more acute forms of 'malarial poisoning.' Of 51 cases of malarial disease admitted in ten years into hospital, only 1 proved fatal. Malarial influences are manifest at Yokohama in an irregular and often puzzling manner. Typical cases of remittent and intermittent fevers are infrequent; while periodic neuralgia, dumb ague, and other forms of malarial poisoning, are common. The severe congestive form of malarial fever is rare, and seldom so violent in nature as to be properly classed as malignant or pernicious. A few cases resembling the typho-malarial fever of Woodward have been met with. Japan.

An increase in the prevalence of malarial affections was observed after 1871, in which year improvements in the sewage, drainage, etc., of Yokohama, with consequent disturbance of the soil, began to be carried out. During the re-excavation of the canal, in the spring and summer of 1877, a marked increase in malarial disease was noticed in the neighbourhood of the works. It was therefore considered probable that while the drainage and levelling of the settlement had diminished the frequency of 'typhoid' fever, it had increased the number of malarial troubles. All seasons seem almost equally favourable to the development of malarial affections; and the forms in which they appear are very various. Many such cases appear in midwinter; moreover, certain portions of the elevated and airy Bluff are as subject to malaria as is the level and low-lying settlement.—(XV. 53.)

VII. SOME CHINESE VIEWS REGARDING FEVERS.

Chinese annals contain many notices of fevers, observations on which have come down from proto-historic times. A Chinese medical work, entitled an 'Essay on Epidemics,' discloses the curious fact that, according to its author, physicians in China for 1,400 years had proceeded on a wrong course in the treatment of epidemic fevers, which caused a frightful loss of life during all that period. The work in question is from the pen of Wu Yuhsin, a physician of Soochow. It was written in 1641, and published in 1852. According to Dr. Wu, from the time of Tsin, A.D. 265, down to his own day, erroneous views in regard to the etiology of epidemic fevers had prevailed; namely, that, like ordinary continuous fever, they were caused by vicissitudes of the seasons, instead of ascribing them to *a specific poison*. At the time he wrote, a fearful epidemic prevailed over four provinces of the empire; but he affirmed that the mortality was not due to the pestilence, but to the wrong treatment to which the patients were submitted. It is observed, however, that the earliest known Chinese work on fever dates from the period from B.C. 200 to A.D. 200. According to native theory, 'morbific cold' is a generic term for fever. The cold of winter engenders the miasm, which enters the pores of the skin; it is non-contagious, and prevails every year; while the 'poison' of epidemic fevers is taken in at the mouth and nostrils,

and is communicable. In the former, sudorifics are indicated; in the latter, discutients. 'This contemporary of Harvey says: 'Of three men encountering malaria, one whose stomach is empty will sicken and die; the other, who has imbibed spirits, will suffer a disease; while the third, who has well breakfasted, escapes unscathed.'—(XXII. 23.)

At Peking the popular name for ague is *yau-tse*, the book name *niö-chi*, from its resemblance in its treatment of people to a harsh and cruel man. Several kinds of ague are specified in Chinese medical works. The principal are the following, ranged according to their causes: wind, cold, heat, damp, phlegm, food, excessive exertion of body or mind, spirits (devils), epidemic, pestilential vapours issuing from deep valleys, and old ague. The latter is caused by phlegm, water, and bad blood getting coagulated into one lump, which is buried in the body, and which becomes enlarged and painful. This kind is well known as *mother ague*. The kind called *kwei* or *hsieh* is caused by a person, especially from a distance, sleeping or watching in a room with a corpse. He is afterwards seized with cold and hot attacks, and has bad dreams.

The symptoms of ague are minutely and very correctly described in all Chinese medical books from B.C. 2600 down to the present dynasty. The cause of the cold and hot stages is traced to a want of harmony between the two principles in nature, the *yin* and the *yang*. The former represents the cold, the latter the hot period. In the one case the *yang* is conquered, and the *yin* prevails, which ushers in the shivering stage; the two principles meet again, and this time on the outside of the body, and fighting again ensues, when the *yang* conquers or prevails over the *yin*. When the *yang* is very weak, the cold period is intense, and the very bones become painful. When the *yin* is weak, there is great external and internal heat, and thirst ensues, with quick breathing. In the *yin* stage the pulse is slow; when the *yang* comes the pulse is quick. If the pulse be short, it has been injured by food; if slippery, it has been caused by two much phlegm. —(III. 7, 8.)

In the Report on Amoy, for the half year from April to September, 1873, Dr. Manson discusses Chinese theories of ague. He observes that they have many names for that disease. The proper name is *Kao-jiet-pi*, cold hot disease; other names are *Ui-ueng*, the creeping cold; *Khit-chia-pi*, the beggar's disease, so called because the shivers of the disease resemble those of the ragged beggar; *Ta-pai*; *Sam-ning-pi*, meaning dishevelled hair, as applied to a devil; *Lung-han*, cold wound, etc. Many ague patients do not like to be asked if they have the *Kao-jiet-pi*; they think the mention of the word is sufficient to call the devil. The reporter has heard of cases in which the simple mentioning of the name has induced an attack—they prefer to give the disease a bad name, as beggar's disease, devil's disease, or the two-days'-one-time disease, etc., believing that the devil will not care to answer or come when he gets a disrespectful appellation.—(VI. 23.)

In the treatment of fevers the Chinese physicians in some instances employ diaphoretics, diuretics, and sometimes aperients; in others, 'medicines that subdue fever without diaphoretic action.' In adynamic cases they give restoratives. But in diet the patient is limited to *yam*, and a kind of squash called *tung-kwa*. In 'spotted' fever the chest is rubbed with betel-nut until spots appear; these spots are then pricked or separated, so as to eliminate *the poison* from the system. These measures give a fair amount of success—so much so that the prospect is considered remote of the Chinese abandoning their system for the European method of treating fevers. It is observed that quinine is the only febrifuge we possess which has a decided superiority over the drugs of the Chinese. They can, however, generally cure intermittent fevers with their own drugs, so that the superiority of quinine is not very marked in their eyes. In intermittent fevers of a paroxysmal character the Chinese also effect many cures, namely 80 per

cent., if the patients are treated sufficiently early. Dr. Wong says: 'Quinine can do more than this.' The difficulty of the Chinese, however, is chiefly felt in those fevers of a continued or typhus type, or presenting a malignant character; but as in such cases quinine often can make but little impression, other European medicines possessing no specific power over fever cannot appear to decided advantage.—(IV. 71.)

The forms of ague recognised in Chinese works on medicine include a cold stage and a hot stage; the latter due to the moist heat of summer opening the pores of the skin, the former to checked perspiration by wet weather. The cold is the result of the *yin* vapour or air, and the wind is the *yang* air. The second form, first hot, then cold, is just the reverse, and is explained in a similar manner to the above. Another form described is the hot stage without any cold; here there is the total absence of the *yin*, and the presence of the *yang* air only. From its being hot only this form is called *shan* ague.

Among native remedies used by the Chinese in the treatment of ague 'during the last 3,000 years,' a few examples occur in the Report, namely:

1. ℞. Cinnamon, 1½ mace.
Fang-fêng (rad. Libanotidis), 1½ mace.
Liquorice, 1½ mace.
Infuse.

This is the most common method of administering drugs in China. This remedy is useful in cases of perspiration.

2. In cases where perspiration is absent:

℞. No. 1, with the addition of *Ma-hwang* (ephedra).

3. In the daily form, and cold and hot alternately:

℞. C'hai-ha (rad. Bupleuri octoradiati), 2 mace.
Kwei-chih (cinnamon), 1 mace.
Hwang-chin (rad. Scutellariæ viscidulæ), 1 mace.
Ginseng (Panax quinquefolia ?), 1 mace.
Shwoh-Yueh (rad. Pæonia albifloræ), 1 mace.
Pan-hsia (rad. Ari macrori), 1 mace.
Liquorice, 5 candareens.
Ginger, 3 slices.
Jujubes, 2.

The treatment for day attacks and for night attacks of ague is different. One remedy is the following; if it should prove too hot to take, a little camphor is to be added:

4. ℞. Ti-lung (Lumbricus).
Ginger, peppermint, honey, water, *q. s.*

Another prescription is tortoise-shell reduced to powder. A third is composed of centipedes; a fourth of the skull of a tiger; a fifth of the excrement of foxes; a sixth of the flesh of a fox, and so on.

A recipe of repute for *mother ague, i.e.*, when there is great enlargement of the abdomen (spleen ?), is—

5. ℞. Assafœtida, 2½ mace.
Hsiung-hwang (realgar), 2½ mace.
Vermilion, 1½ mace.
The assafœtida to be boiled, and the other ingredients to be afterwards rubbed up in it.

Several celebrated ague recipes are styled the *Barrier Prescriptions*, because they cut short the attack and cure the patient for ever, thus rendering a future attack impossible. The medicine requires to be taken once only, and the action resembles a divine method.

6. ℞. *Ch'ang*-shan (rad. Lysimachiæ), 1½ mace.
Ping-lang (betel-nut), 1 mace.
Cloves, ½ mace.
Wu-mei (black plum), 1.
Spirit, 1 cup.
Infuse. The mixture to be taken warm on the morning of the day of attack.

This recipe is highly spoken of. It is given as a tonic, this class of medicines being considered very efficacious. Ginseng is recommended extensively in a series of prescriptions, and comes next to cinnamon in the order of frequency.

There are also magical remedies laid down, of which the following are examples:

7. On the East, place patow (Semina crotonis tiglii).
On the South, cassia.
On the Middle, hsiung-hwang.
On the West, alum.
On the North, Ch'-ing-tai (indigo).
Of each, 3 mace.

On the 5th day of 5th month, prepare the above prescription; put each of the ingredients on a separate tray, taking care to prevent cats, dogs, and women from looking upon them. At noon, get five glutinous rice-puddings (they are triangular in form) from friends, remove the spices from the cakes and knead them together, rubbing up the medicines with them. From this pill-mass make pills the size of small marbles, and let the ague patient take one, thinly enveloped in cotton-wool, early on the day of attack, and introduce it, if a male patient, into the left nostril, if a female, into the right, and abstain from all food and drink.

To cut ague short in 'spirit-like manner,' the following is strongly recommended:

8. ℞. Arsenic, 2 mace.
Large spiders, 3.
Round black beans, 49.

Rub them all up and make into pills, the size of small buttons; and on the night before the fit occurs, take one pill under the star called *Peitow*. And on the following morning wrap up one in cotton-wool, and if a male person, put it into the left ear; if a female, into the right, and the patient will immediately recover. One of these pills will infallibly cure two individuals.

The reporter writes: 'It is thus somewhat remarkable that the Chinese should have been following for several thousands of years, among others, a tonic and arsenical treatment. The confidence with which the drugs are given would indicate, unless their whole system from beginning to end is quackery, that their experience must have taught them the efficiency of many

of them. The names by which the prescriptions are known are sometimes very high-flown, such as, "The great, instantaneous, god-like, infallible, speedy, sure, once-to-be-taken ague remedy." ' He observes that he himself has no experience of any of the native remedies, but the fact that so many patients come to us for treatment seems to cast doubt on the efficacy of the native nostrums.—(VI. 15.)

At Kiukiang, in 1871, the treatment approved by the native faculty for the cases of complicated intermittent fevers which occur at that place, consisted in the wearing of a solid ring of silver round the neck.—(II. 65.) Kiukiang.

VIII. HEAT-MALAISE AND HEAT-APOPLEXY.

At Peking, 1871, many Chinese in summer expose their heads to the most violent sunshine without the slightest danger, or protect themselves with only a handkerchief or a fan. Sunstroke, or heat-apoplexy, is almost unknown in Peking. No cases have occurred among foreigners.—(II. 80.) Peking.

At Kiukiang, in the period to September, 1872, one case of solar or heat-apoplexy occurred in a sailor on board H.M.S. *Severn;* recovery took place in it.—(IV. 44.) In 1879, a fatal case occurred on board H.M.S. *Midge.* It took place on 22nd July, at about 3.45 p.m., in a man who had not enjoyed good health previously, and whose habits were not unfavourably reported. He had been at church on shore that morning. The temperature in the shade, 93° Fahr.; the day very sultry and oppressive.—(XVII. 1.) In August, 1881, there was a case of cerebral congestion, induced by heat, in a child eighteen months old. Though at one time in a critical condition, he made a good recovery.—(XXIII. 38.) Kiukiang.

In the Report on Hankow to 30th September, 1873, particulars are given of two cases of insolation, both having occurred in foreigners at that port. Among them the affection is rare; so also is it among the natives, notwithstanding that the latter go through severe physical exertion, and with their heads unprotected from the sun. Both the cases alluded to occurred on board H.M.S. *Ringdove.* Neither of the men had been exposed to the direct rays of the sun. In one the symptoms began towards midnight, in the other towards morning. The temperature at the time of their occurrence ranged in the shade to a maximum of 85° and 88° Fahr.; wet bulb, 83° and 84° Fahr.; vacuum solar at noon, 161° and 166° Fahr. In both cases the stupor was complete; the temperature of the skin, 108° Fahr. Besides the ordinary symptoms, frequency of micturition was a marked indication in one. Recovery took place in both, but more slowly in one than in the other. The treatment in both consisted of the douche applied to the head and spine by means of the ship's hose, purging enemata, and blisters to the nape. With regard to the etiology of insolation, two sets of views are quoted. According to one, the phenomena depend upon a diminished action of the emunctories during intense heat, and the poisonous effect of the retained excreta on the nervous system; according to the other, to enfeeblement of the sympathetic, leading to vasa motor paresis.—(VI. 33.) Hankow.

In 1875, the first week in August was extremely sultry, oppressive, and still. On 6th, at 4 p.m., the maximum thermometer indicated 96° Fahr.; wet bulb, max., 85° Fahr.; black bulb, in sun, 152° Fahr.; min. on grass, 95° Fahr. During that day three cases of sunstroke occurred on board the gunboat in port. One patient speedily died; the other two recovered slowly under the use of affusion by means of a hose. Orders were issued on board that men who ceased to

perspire, or were affected with frequent micturition, should report themselves at once for treatment. Seven men had to be landed on account of febrile symptoms.—(X. 47.)

In the Report for the year ending 30th September, 1876, it is recorded that, the air temperature being 97° Fahr., a foreigner, aged 50, on board a small steamer, was attacked with and died of sunstroke. His skin temperature was 110° Fahr. After the use of the douche, it fell to 100° Fahr., but the patient quickly sank. Adverting to the hypodermic injection of quinine and subsequent recovery in such cases, Dr. Reid observes that it did not take place more rapidly than in similar cases after the use of the douche.—(XII. 15.)

In that for the year to September, 1878, a case of sunstroke from direct exposure is related. The subject of the seizure went out canoeing at 3 p.m., on an intensely hot day, and with a straw hat on. At 5 p.m. he returned exhausted, vomited, had severe headache and feverishness. Next day, to these symptoms he had frequent urination. He ultimately recovered. It is noted that he was of temperate habits and good physique.—(XVI. 23.)

At Shanghai, according to the Report for the six months to September, 1872, few, if any, Chinese die from the direct rays of the sun. Though for some days in every summer the temperature rises to or above 100° Fahr., yet we have never to chronicle results similar to those which follow a like temperature in other parts of the world. With hardly an exception, the deaths from heat-apoplexy might with more correctness be classified as from drink poisoning. Dr. Jamieson considers that the *morbus solstitialis* of Paulus Ægineta and of Hippocrates was sun-fever or heat-apoplexy.—*De Aere, Aquis, et Locis.*—(IV. 94, 103, 104.)

Shanghai.

In August, 1874, a lady, while recovering after confinement, 'retired at 9 p.m.; awoke at midnight with thirst, restlessness, and voiding much urine.' All the usual symptoms of heat-apoplexy rapidly progressed; the temperature in the axilla reached 110·4° Fahr.—the limit of the thermometer—and death took place.—(VIII. 27.)

In July, 1875, sun-*malaise* was common, and children passing through the period of dentition suffered severely from it.—(X. 55.) In the month of October, 1876, several cases of the same affection occurred, but were usually linked with some error in diet.—(XIII. 44.)

From the 8th to 18th August, 1879, the temperature never fell below 80° Fahr., the 15th being the hottest of the season, namely, at 2 p.m., 99° Fahr. From the 10th to the 15th there occurred ten cases of heat-apoplexy, one being fatal.—(XVIII. 81.)

At Ningpo, during the early part of May, 1877, when the morning sun was very hot, several cases of heat-*malaise* came under notice. These, Dr. Mackenzie considered to be due in most instances to want of care in wearing proper head-covering.—(XIV. 65.)

Ningpo.

At Foochow, according to the Report for the half-year to September, 1871, it is observed that cases present all the symptoms of sunstroke, although the patients have not been exposed to the direct rays of the sun; hence the term heat-apoplexy is more correct than sunstroke. That season was very cool, and consequently only one case occurred; it ended in recovery.—(II. 27.)

Foochow.

In the Report to September, 1872, the statement occurs that the cases noted as 'sun-*malaise*' might have been placed under 'febricula;' but they were kept apart on account of the similarity of many of them to an ordinary attack of ague.—(IV. 58.) According to that to September, 1874, heat-*malaise* was among the chief complaints prevalent during the period; it was considered to be 'undoubtedly climatic.'—(VIII. 62.)

In the Report on Foochow, April to September, 1875, Dr. Somerville considers the subject of

Heat-Malaise. He writes that it is a protean malady; its most common symptom giddiness, its subjects sometimes staggering and wild-looking; that these indications disappear under treatment, or on the approach of cold weather; that cases of the affection so named occur more frequently on board ship than on shore, and that ships' cooks are the class of all others most subject to it. He considers that it occurs from exposure to the sun, and has no connection with 'what is called *malaria.*'—(X. 35, 37.)

In the period from April to September, 1877, there were fewer cases of heat-*malaise* than usually occur in the hot season, a circumstance accounted for by the comparative coolness of the summer months. There were, however, a few hot days in July, and on the 16th of that month, twenty men on board of a steamer were found 'quite knocked over by the heat.' Of these, the two worst cases were sent to hospital; the others were treated by the application of ice, and administration of quinine internally—and of the latter, all recovered.—(XIV. 86.)

At Swatow, during the summer of 1878, although cases of 'sun-*malaise*' were somewhat frequent, actual sunstroke did not occur.—(XVI. 26.) Swatow.

In the Report on Hoihow, for the period from April to September, 1881, the statement occurs that there were three or four cases of heat-apoplexy on board H.M.S. *Magpie* during her stay at that place.—(XXII. 7.) Hoihow.

In Japan, sunstroke is rare among the foreign community. Such cases as were recorded took place among the soldiers formerly stationed in Yokohama. —(XV. 59.) Japan.

IX. PLAGUE.

In the Report on Amoy for the half-year ending 31st March, 1878, there is an article on the Plague in China, prepared chiefly from notes by Mr. Rocher, of the Chinese Customs Service. These notes are believed to prove the existence of bubonic plague in China, that of late years the disease spread over a large area of the empire, and that it did not in reality disappear, as believed by some writers.

In Yunnan the sickness known as *Yang-tzŭ*, otherwise Plague, carries off yearly many victims in that province. It appears to have been imported from Burmah. Its early history is imperfectly traced, but since the outbreak of the rebellion in that province it has spread among the population of it. A belief was expressed that its cause existed in exhalations from the ground, because rats and other animals that live in it or much upon it, suffered in an especial manner. After animals had suffered, the disease spread to man. Then the people employ such 'sanitary' measures as purifying their houses, lighting fires in every room, and abstaining from pork. The reporter states that in Yunnan he has seen many persons attacked by the disease, but few recovered. In places where the plague passes but lightly through, the mortality may be estimated at 4 per cent.; in places where it stops for some time, whole families disappear one after another, and the general population is decimated. In some districts the inhabitants, to avoid the pestilence, abandon their houses and harvests, and camp out on the heights, where, however, in some instances the epidemic follows them. The dead are usually left exposed, unburied; thus the *Fung-shui* is not desecrated by their interment; but the odour from decomposing bodies is intense. Yunnan.

In 1871, 1872, and 1873, the epidemic in Yunnan began about the period of rice-planting—that

is, in May or June. During summer, which is also the rainy season, the disease continues, but in a mild form; after the rains have ceased, however, it becomes most active and deadly. Instead of visiting every village in its direct progress, it would pass some completely by, visiting places near to and on either side of them, to return several months afterwards to those forgotten spots, when elsewhere it would appear to have died away. After having devastated villages in the plains, it often ascended mountains, and there affects severely the aborigines. It was constant among the Imperial troops during the years named, while they were operating against the Mahometan rebels. 'One is inclined to believe that the disease is imported by men and women who descend into the valleys to barter, or work at certain seasons at the harvest, as it is chiefly the mountains adjoining the plains that are visited by the disease.'—(XV. 25-27.)

X. CHOLERA.

Cholera has been known in China, as in India, from time immemorial. Two thousand years before our era it was described by the very name it now bears, namely *hwo-luan*, an expression meaning something huddled up in a confused manner inside the body, and which is evidenced by the vomiting and purging. No mention is made in early history of the epidemic character of the disease. In the *Neiching*, a supposed work of the Emperor Hwang-ti, B.C. 2500, cholera is said to be due to the development of three pent-up airs, which give rise to vomiting and purging. These are developed by irregularity in the seasons, the prevalence of wind, and the absence of rain, whereby what is eaten remains undigested; the body consequently becomes heavy, the belly painful, and spasms attack the sinews. An author during the Tang dynasty, A.D. 620-907, attributes it to food, 'and not to demons.' A writer of the Yuen dynasty, A.D. 1280-1368, ascribes it to retained ingesta, aided by certain external influences such as cold, by which the male principle (*yang*) ceases to ascend, and the female (*yin*) to descend, and the diaphragm is drawn down. Another author, Li-Ting, of the Ming dynasty, A.D. 1368-1644, ascribes the disease principally to heat, for the reason that it prevails mostly in summer and autumn, and very rarely at other times.—(IV. 39.)

History.

Chinese writers divide cholera into two kinds, the wet and the dry. By the latter is meant the absence of vomiting and purging; it is considered the most fatal form.—(IV. 40.)

According to Cleyer, cholera prevailed as an epidemic in China in 1669, on which occasion it was 'probably' brought from Malacca. Gentil alludes to the disease as prevailing 'in the Coromandel' (coast) in 1761 and 1769, and states that shortly after the latter date it was present in China. The epidemic of 1817 extended from Bengal to Dacca; thence north-eastward along the Brahmapootra to Rungpore, whence it travelled to the borders of Thibet and South-western China. In 1820 it again appeared in the latter country; first at Canton, whence, as from a focus, it penetrated into the interior of the empire by direct route; it radiated to Ningpo, and thence upwards along the Yangtze Kiang. In 1821 it reached Peking, where, in 1822 and again in 1823, it prevailed, forming the centre of infection in Northern Asia. In 1826 it was again borne from India to China. It reached Peking, whence advancing, it crossed the Chinese Wall, swept through Mongolia, and onwards to Moscow. In 1840, by means of the expedition from India, the disease once again reached China. It travelled to Peking, thence by caravan-route westward to Russia. In 1841 it prevailed in malignant form at Ningpo; in 1842-43 it affected the men of the British East India squadron. From that date a lull in its record appears, lasting fifteen years. In 1858 it reappeared; and year after year continued to do so till 1867. Then another lull, till 1877.—(XVIII. 2.)

At Peking, during the two years ending September, 1872, cholera only once occurred as an epidemic, namely, in the summer of 1862. It then lasted two months; and is believed to have carried off 1 per cent. of the population, estimating it at a million and a half. The disease was first heard of at Taku, then at Tientsin, where it was very virulent, and exceedingly fatal. It followed the course of the Peiho river, attacking the various towns on its banks, and thus reached the capital. The disease appeared first in the southern city, but soon spread to the northern; yet, when it had entirely left the latter, many fatal cases still occurred in the former, where the offal and filth of the people were thrown into the city moat.—(IV. 39.) Peking.

At Tientsin, in August and September, 1877, cholera of a very fatal type prevailed. The disease made its appearance at Taku, and gradually spread by the villages along the river-side until it reached Tientsin. For some days the epidemic made alarming strides; but a sudden fall of temperature having occurred, its progress became checked.—(XIV. 66.) In the autumn of 1878 it was reported that a foreigner died of cholera in a Chinese gunboat, lying outside the bar of Taku. In September several cases of choleraic diarrhœa occurred in Tientsin, but no epidemic outbreak took place. As elsewhere detailed, a few months previous typhus fever was epidemic.—(XVII. 34). Tientsin.

At Newchwang, on 15th August, 1876, a solitary case of cholera, and it fatal, occurred in the person of a Sister, occupying a building situated in a notoriously unhealthy locality. The mission subsequently removed from that position. This was the only case that occurred. It was considered that the attack was not due to contagion, but to insanitary local conditions.—(XII. 28.) Newchwang.

On 26th July, 1876, a case of cholera occurred in the person of a man belonging to the Customs police. It proved fatal. During the previous part of the month, diarrhœa had been very prevalent among the Chinese inhabitants. Cholera afterwards prevailed extensively among the native inhabitants, and also affected persons on board the shipping. Foreign residents, however, escaped the disease. A similar occurrence happened in 1862, that year being the date of the previous outbreak; but as then, so now, the exemption was assigned to the social and hygienic conditions of the latter rather than mere difference of race. Everyone was alive to the necessity of early treatment. In an estimated population of 50,000, the epidemic carried off 50 to 200 daily, and doubtless mortality would have been greater but for early treatment applied. During the epidemic, the excitement among the natives was astonishing; whole tribes ceased business and fled, thus, it was presumed, carrying disease to many an outlying hamlet. It was observed that on 25th July—that is, the day prior to the outbreak of the epidemic—there occurred a cold wind from the north, with heavy rain. Immediately afterwards the mortality rapidly increased, and continued high until it began to decline, and ended by the middle of October. It was believed that the first cases of cholera had been brought in junks from Amoy.—(XV. 28, 29.) In the period to March, 1879, one case of cholera occurred. It was in the person of a Chinaman on board a steamer just arrived from Shanghai. He recovered —(XVII. 11.)

In the Report on Kiukiang to September, 1872, four cases of cholera are detailed. They occurred in foreigners, of ages ranging from two to thirty-four years. Recovery took place in all, 'owing mainly to the use of calomel.'—(IV. 49.) Kiukiang.

At Hankow, during the year ended September, 1878, several cases of sporadic cholera occurred. The disease attacked the workmen in the Brick-tea manufactories, and the natives

residing in the convent. Thus it was not dependent upon conditions limited to one class of persons.—(XVI. 23.) In the Report to March, 1881, it is recorded that during the period in question, together with the prevalence of dysentery and diarrhœa—the latter chiefly among children—there were two cases of sporadic cholera, one of them fatal. —(XXI. 45.)

Hankow.

In regard to Ichang, Dr. McFarlane, in his Report to September, 1880, observes that since 1850, no epidemic of cholera had visited these parts. —(XX. 20.)

Ichang.

Cholera was considered to have been almost unknown in China previous to the year 1838. In that year a large body of native troops arrived from India, and simultaneously with their arrival a marked increase took place in the prevalence and in the mortality of cholera. Indian troops serving in China are said to have shown a far less liability to the disease than Europeans, and when attacked recover in larger proportion than the latter. Throughout the year 1862, 141 cases of cholera were under treatment in the British squadron in China, and of these 89 were fatal. Prior to that date, the disease was prevalent among the Chinese rebels; it spread to the towns they were investing, and extended in a northerly direction to the Peiho. It was very severe at Ningpo and Shanghai, attacking also the foreign residents living on shore at those places, as well as the naval and other shipping. It extended to Japan, and at Nagasaki and Hakodadi especially committed great ravages.

Shanghai.

On the occasion of the outbreak of the disease at Shanghai, in 1862, the first case occurred on board the *Coromandel*. Between that date and the 29th of the same month two other persons on board that vessel were attacked, the issue being fatal in one; but from that date till October no further case occurred. In the *Euryalus* there occurred thirty-nine cases with twenty-one deaths, the outbreak being assigned to the fact that the men had been exposed to fatigue in Ka-ding immediately before attack. It appears that a portion of the troops from the *Euryalus* were marched from Ka-ding to Shanghai, and they not only remained comparatively exempt, but improved in health; it being chiefly those who remained on board who suffered. The extent to which the native inhabitants of Shanghai suffered on the same occasion seems to have been something terrible. The *Impérieuse*, anchored off Shanghai, had thirty-five cases on board, of which number fifteen proved fatal. Among the British troops in the north of China during the six months the epidemic prevailed in 1862, one-twentieth of their whole number were carried off by it, while the loss among the native population was calculated at one-eighth of the whole. On the occasion of the outbreak at Shanghai, in 1863, the strength of the forces on shore at that place was 1,362 white, and 1,061 black troops; of the former, 141, equal to 10·35 per cent., were attacked, 79 of whom died, or equal to 56·73 per cent. of the cases; of the latter, 40, or 3·77 per cent. of strength, were attacked, and of these 15 died, equal to a ratio of 37·50 per cent. of cases.

In 1863 cholera reappeared at Shanghai in the month of June, and continued to prevail through that month, July and August. At that time the heat of the weather was remarkably great, and cases of *coup de soleil* were reported as being numerous. The type of the prevailing cholera, however, was described as more virulent than it had been in 1862, and of the officers and civilians, living under relatively favourable hygienic conditions, scarcely one became affected by the disease. The 67th Regiment occupied a Confucian temple in the city, their surroundings of the most offensive description; twenty men of that regiment died by the disease, this high rate being deemed due to the faultiness of their position. Throughout the epidemic, out of a strength of 718 white troops there were attacked 58, equal to 8·08 per cent.; there died 44,

equal to 30·10 per cent. of cases. Of a strength of 886 black troops, there were attacked 55, equal to 6·21 per cent; there died 9, equal to 16·36 per cent. of cases.

In 1864, a few cases of cholera occurred among the crews of ships lying off Shanghai, there having been in all ten deaths among them from this cause. Among the troops on shore, only seven deaths took place, so that the disease can hardly be said to have been epidemic.

With reference to the occurrence of cholera at Shanghai during the preceding three years, the remark occurs that throughout the period the absence of ozone had been remarked; also that there was a remission of attacks after heavy rains, with thunder and lightning.

In 1865, cholera appeared in the month of August among the foreigners and Chinese at Shanghai. A fatal case also occurred on board the *Perseus*.—(XIV. 40, 41.)

At Shanghai, a severe and frequently fatal form of bowel affection, attended by vomiting and cramps, attracted attention in August and September, 1875. Dr. Jamieson directed attention to the instructions on the subject of that disease, issued by the London Local Government Board in 1874. He observes that when, in the same year, patients at Simla affected with cholera were treated in their own homes, there was no reason to believe that any spread of the disease was due to that circumstance.—(X. 55.)

In October and November, 1875, a brief and limited epidemic of cholera occurred. In the treatment of the disease 'intravenous injections of a saline solution, with subcutaneous injections of quinine, produced a good effect for a time, but the case proved fatal in twenty-eight hours from the first onset.' A code of sanitary instructions was issued on 26th October. On 12th November, the visitation suddenly ceased. Dr. Jamieson remarks that, 'Some cases of cholera will recover, no matter what treatment is adopted; that the algid stage of pernicious remittents is undistingiushable from cholera; that there is a belief that cholera is in reality a fever, if not identical with the worst malarial fevers.'—(XI. 49.)

The disease again prevailed in that city and settlement in September, 1877. It was noted at the time that the amount of ozone in the atmosphere was remarkably small. The disease threatened in June of that year, but the suspicion of its regular outbreak till September is theoretically assigned to the violent storm which prevailed in July, and in the first three weeks of August. On 2nd July, a telegram intimated the occurrence of the disease at Amoy. Not until August, however, did it appear in Shanghai, and during that month there were only two deaths by it. In September, there were twelve cases; of these, four were mild and they recovered; eight severe, and of them, six died. During October there were four admissions by the disease, the last that happened in this outbreak being on the 5th of November.—(XIV. 38.) Thus, among foreigners, there were in all twelve admissions and ten deaths by pronounced cholera, a rate of mortality accounted for partly by the mal-hygienic circumstances under which its subjects lived, and partly by their having been intoxicated and exposed at night prior to attack.—(XV. 3.) The circumstance is particularly noted, that during the prevalence of cholera, there was also an unusual amount of diarrhœa, often attended by vomiting and cramps.—(XIV. 40.)

In further reference to the outbreak above recorded, Dr. Jamieson wrote: 'It appears certain that we must count upon the annual occurrence of cholera of some sort until such time as we discover its source, and arrest it there. It should not be forgotten that, in forms of greater or less severity, cholera every year attacks the natives around us, about whom we know so little.' Dr. Galle seems to attribute the periodic visitation to the want of a public slaughter-house, and to the absence of suitable carriage of night-soil. Dr. Little refers the prevalence of the disease among the shipping to the consumption of water contaminated by excretions of

Chinese affected by it; hence an order was issued that 'boiled water, or boiled rice-water, should be provided for crews, and none other to be drunk,' a measure as to the effectual carrying out of which doubts exist. It was observed that, almost without exception, men seized with cholera were on a debauch, or had been on a debauch just previously. Instances occasionally arise in which apprehension plays a large part, if not the principal part, in producing cholera. At least two such instances arose during last year. Mental conditions will produce ague, or an affection undistinguishable from ague, and curable by quinine, and cholera presents many analogies with malarial fevers. So faint is the line which separates the 'avoidable' and the unavoidable disease, that were a few isolated cases of cholera morbus to occur, and after an interval to be succeeded by cases of precisely the same character, but occurring in large numbers, the latter group would be described as malignant, or Asiatic, or epidemic cholera. 'Epidemic' and 'malignant' are convertible terms as applied to cholera. With reference to secondary fever in cases of cholera, the remark occurs that fever of a typhoid character may be developed, the term 'typhoid' doubtless being applied as expressive of a condition merely, not of a specific form of disease. Alluding to anuria, the reporter lays stress upon the fact that it was absent in some of the cases which occurred; also that the same symptom is occasionally present in so-called pernicious intermittents. As to the histories of individual cases during life, they may in almost every instance be explained without having recourse to the specific poison of cholera, whatever that may be, as the disease material. The overwhelming majority of cases were furnished by sailors, a class of persons reckless, prone to excess, unsuitably clothed, badly fed, drinking impure water and adulterated liquor.—(XVII. 21, 22, 25, 26.)

In August, 1879, two fatal cases of cholera occurred among residents of Shanghai. There was, however, nothing even remotely resembling an epidemic. A case is recorded, occurring in a middle-aged adult; no urine was passed, and none apparently secreted during the period of purging; but as soon as this was checked (by morphia hypodermically, ice internally, and heat to the surface), the secretion was re-established. Eight cases of a similar nature (one fatal within half an hour) were brought to the Gutzlaff Hospital; all recovered except one, moribund when admitted. In all but one there was a history of sleeping in the open air on the previous night, and of indulgence in raw fruits and ices.—(XVIII. 82.)

During the entire hot season of 1879, three deaths were reported as from cholera, two in August, and one in October. What the nature of these cases was the reporter had no means of ascertaining, but 'assuredly there was no such thing as an epidemic of cholera last year.'—(XIX. 19.)

In the Report to September, 1880, two deaths by cholera are recorded; but there was no epidemic of choleraic affections, although at the approach and during the continuance of hot weather, a large mortality among native residents was announced. The cause of this yearly recurring mortality is only vaguely described.—(XX. 34.)

During the six months from October, 1881, to March, 1882, five fatal cases of cholera occurred —all among sailors. With reference to them Dr. Jamieson writes: 'Year by year the same rule is observed, that it is only those who expose themselves without precaution to sudden changes of temperature, or to miasma arising from the ground within and around houses in the worst parts of the native quarters, or who have committed imprudences in eating and drinking, or are the subjects of chronic alcoholism, that present the group of often fatal symptoms, which it would be inconvenient to call cholera were it not that most people associate with this term the idea of epidemicity, and therefore of inevitableness.—(XXIII. 43.)

At Ningpo, during October and November, 1877, an epidemic of cholera prevailed among the

native Chinese; among foreigners only one case occurred. That epidemic was contemporaneous with the prevalence of cattle disease, but what connection, if any, existed between them 'remained to be seen.'—(XVII. 6.) Ningpo.

At Wenchow, during the summer of 1877, cholera prevailed about ten to fourteen days, as it did in most places in China. Little or no treatment appeared to be adopted by the natives—opium-smokers almost certainly died. As soon as a native doctor made out the nature of the case he departed, and the domestic offices for the dead were begun. Wenchow. The epidemic was not spread over the whole city, but chiefly confined to one quarter; this was attributed to the general 'sanitary' condition of the city. The symptoms were peculiarly undemonstrative, the patient frequently appearing to rally, and in many cases the fatal termination was not preceded by any appreciable collapse. Purging and vomiting, except on a limited scale, were rare; but the mortality among the attacked was very great.—(XV. 41.)

In 1878, there was a visitation of cholera in August. The epidemic did not last long, nor did the Chinese public suffer to the same extent as in the previous year, notwithstanding the absence, as then, of all treatment. It also affected foreign residents, and appeared on board the shipping. Among remedial measures recorded, was the method of placing the patient in hot dry air. Thus, on board the *Fei-Hoo*, the patient was placed between the boilers of the ship, kept in a temperature of 120° Fahr., and allowed to drink freely of iced water. The following morning he was convalescing.—(XVIII. 60.)

In the Report on Wênchow, April to September, 1881, Dr. Macgowan enters upon the history of cholera in China. Wênchow has had its full share of ravages by that disease, regarding the origin of which authorities differ. According to one set of writers it originated in the Gangetic delta in 1813; according to another, accounts of its prevalence occur in the writings of ancient Sanscrit, Greek and Arabian authors, showing that after periods of quiescence it recurs at intervals, sometimes of a century or more. Some hold that all its phenomena are explained by contagion, or by a 'germ' from excreta of cholera patients, or that water is the channel through which cholera poison is communicated. Others assign it to local influences; and assert that it is not communicable from person to person, but is air-borne. In 1819, Indian or Asiatic cholera reached the Straits, by way, it is believed, of Siam. In May or June, 1820, it appeared at Wênchow, and about the same time at Ningpo. Attacks of the disease, then popularly called 'the crab-claw disease,' were so sudden and fatal that people were stricken down and died in the streets. In 1821, it appeared in Kiahsing on the borders of Chêhkiang and Kiangsu, and with such severity that one patient out of a hundred was not saved. The disease again prevailed in the two following years with unabated violence; and since that period has been of frequent occurrence throughout the empire, notably in Chêhkiang in 1860. At Wênchow, what is called *dry cholera* is common during the hot weather. At Canton, it is more frequent than elsewhere. It sometimes occurs in winter, however, and is now considered to be endemic in China. During the winter of 1880-81, various villages on the Pootung side of Shanghai suffered from Indian cholera; the epidemic less fatal than such as occur in summer. The cause assigned by the Chinese on that occasion was drought, and pollution of the canal waters. Dr. Macgowan considers that Indian cholera is a new disease in China; that it is due to air-borne germs, influenced by atmospheric and telluric conditions, and that consequently the quarantine regulations to ward off invasion by it are futile. During the autumn of 1848, cholera was somewhat prevalent at Ningpo; on the same occasion *Rubeola* existed epidemically at that place. The latter disease prevailed in the maritime districts of the east coast of China, including the Samoyedes, among whom it was particularly fatal. In China it affected

both natives and foreigners. Whilst rubeola was traversing this region of the earth from the Tropic of Cancer to the Frigid Zone, cholera was pursuing a western course from the Volga to the Mississippi. Besides the epidemic above named as occurring in winter and spring at Shanghai, epidemics of measles and small-pox appeared concurrently, the former in the department of Soochow, the latter at Nanchang, in the province of Kiangsi. In Soochow, the type of measles was particularly severe; the reason assigned being the drought of winter followed by a rainy and snowy spring. 'The synchronous prevalence of cholera, small-pox, and measles, is a noteworthy epidemicological phenonemon.'—(XXII. 26.)

At Foochow, during the half-year from April to September, 1877, 'the great nosological feature of the season was an epidemic of cholera among the Chinese.' Every year, during the summer, there are a few sporadic cases of the disease in the city; but this year it appeared as an epidemic, and was very fatal. It does not appear that it has so prevailed in this place for the past ten years; for the present occasion the rate of mortality among the attacked was about 75 per cent. Only two Europeans were attacked; both died. The drinking-water was boiled; salads and fruit interdicted, except the latter in a cooked state. The disease began in the last week of August; the last cases occurred on the 18th of August. Quoting from Drs. Lewis and Cunningham, Dr. Somerville wrote: 'Until it be proved that living substances can withstand immersion in a fluid at a temperature of 212° Fahr. of some minutes' duration, we have no hesitation in stating that the morbid phenomena which we have observed to follow the introduction into the animal economy of strained solution of choleraic and normal alvine discharges and of other decomposing animal substances, are not the result of ingestion with a material the poisonous properties of which are dependent on its possessing vitality.'—(XIV. 85, 86.)

Foochow.

In 1879 cholera was said to be endemic there; 'sporadic cases occur every summer. It seldom attacks the foreign community; but when it does so, individual cases are usually very severe. At different periods, but upon the whole about every ten to eleven years, cholera becomes epidemic. The last epidemic was in 1867, the one before that in 1864. Both proved very fatal among the Chinese, but each epidemic carried off only one foreigner—the persons previously ailing and of debilitated constitution.' The epidemic of 1867 was more virulent than that of 1864; that is, if it did not kill more, it killed in less time. 'There was no diarrhœa, no vomiting; no time seemed to be given for either in the height of the epidemic or in its worst seizures. People were struck down as with a blow.' The epidemic took a circular course, almost in the shape of the letter S. It did not run along the crowded thoroughfares simply; sometimes it did so, sometimes diagonally to them, according as they harmonized or not with its path. The course was a narrow one, and quite definite, reminding the reporter of tornadoes in certain parts of the United States. As in those tornadoes the destruction was not only of small breadth but worst towards their middle, and bounded by an abrupt edge, so in this outbreak of cholera—in the centre of the epidemic-path the mortality was prodigious, but lessened and lessened outwards therefrom till the line of non-involvement was abruptly touched. Thus a track of death and woe ran through the city, and eighty yards from its centre, maybe, there was no death-stroke.' From what he has seen of two epidemics in Foochow, Dr. Stewart is 'disposed to accept with suspended assent' some of the recent theories about the transmission of cholera.—(XVIII. 67, 68.) From the above date up to March, 1881, cholera had not recurred in Foochow.—(XXI. 52.)

Prior to 1821 there is no record of Asiatic cholera having occurred in Fukien; in that year, however, it prevailed during the months of August and September. A similar epidemic was described as prevailing in Putien-hien, a district surrounding the city of Hinghwa-fu, near Amoy,

during July and August, 1822; the disease reappearing there in the following year. On those occasions the name given by the natives to the affection was 'the men-in-the-morning-and-spirits-at-night disease.'—(XIV. 33.) The sources of information regarding early epidemics of cholera in China are very limited. In the summer of 1858 an epidemic of Asiatic cholera prevailed at Amoy and its neighbourhood, carrying off many natives and foreigners, on shore and afloat. In 1864 an epidemic of similar severity occurred, very many of the Chinese community and several foreigners dying of it. At the same time diarrhœa, acute and chronic, and fevers were prevalent among foreigners living at Amoy, although nowadays (1877) such diseases are almost unknown.—(XIV. 32.)

Amoy.

During the months of August and September, 1875, a good deal of choleraic diarrhœa prevailed among the Chinese. In September and October the disease increased in severity. With the occurrence of cold weather in November it decreased, and in December entirely ceased. In frequent instances death took place within twelve hours from attack. The attack was sudden; vomiting and purging, copious watery evacuations, cramp and coldness of the extremities. —(XI. 30.)

During the half-year ending 30th September, 1877, an epidemic of cholera occurred. The epidemic first appeared on 30th June, in the person of a Manila man who died on that day with all the symptoms of the disease. Inquiry then elicited the fact that since the first week of that month many deaths had occurred from a similar affection, these deaths being said to be confined to a low-lying and filthy part of the town known as Tek-tchui-kha. During the last few days of June, and all July, the disease prevailed extensively among the native population. In the first of the latter month a case occurred on Kulangsu, in the person of a man who had recently arrived from the country, and from that time the disease spread rapidly in that portion of the settlement. The circumstance was also noticed that for some time before the outbreak diarrhœa had been very prevalent among Europeans, both ashore and afloat. The first case among foreigners occurred on 2nd July, on board H.M.S. *Hornet,* and throughout that month a considerable number of foreigners were attacked, the deaths among them being somewhat high. Among the Chinese the disease was reported to have spread to the large cities in the neighbourhood of Amoy, and that the mortality was very great. In the city of Chinchew, sixty miles to the north of Amoy, on the high-road to Foochow, the mortality by cholera was particularly great; and the remark occurs that on this occasion, as on others, the disease was imported either from Saigon, or from Singapore. By the end of August the disease had practically ceased in Amoy. In reference to that outbreak of the disease, Dr. Manson wrote: 'Why did cholera first appear in one corner of the comparatively small town of Amoy, and thence spread over the whole town, and then to the large cities in its immediate neighbourhood, and afterwards make its appearance successively at different ports on the coast, reaching at present as far as Japan? The answer is easy enough. Amoy town itself is the port for the great cities in its neighbourhood, and the centre of a great Chinese passenger traffic.' He then proceeds to discuss the subject of QUARANTINE.—(XIV. 27, 31.)

During the six months ending September, 1879, there were, as usual, several cases of diarrhœa among children, but there never was a suspicion of cholera.—(XVIII. 59.) According to the Report on Tamsui and Kelung for the half-year ended September, 1877, cholera, severe this summer at some of the Chinese ports, did not attack the inhabitants of Northern Formosa. There the towns are situated widely apart, and are neither large nor excessively overcrowded, while the people are, for the most part, in comparatively comfortable

Tamsui and Kelung.

circumstances. Abject poverty, so frequently noticed in many of the large cities on the mainland, is scarcely ever to be observed.—(XIV. 82.)

Takow and Taiwan-fu.

At Takow and Taiwan-fu, in the half-year ending March, 1876, it does not appear that cholera occurred. In the district inland from those places, however, an epidemic of 'simple cholera' occurred, cutting off many of the weak and sickly, and causing considerable consternation among the natives.—(XI. 26.) In that ending March, 1878, cholera, which visited several ports on the mainland, never appeared in the south of Formosa, notwithstanding that during the prevalence of the disease at Amoy and Chinchew, an extensive trade by means of junks and foreign vessels took place between those places and the various small ports along the west coast of the island.—(XV. 37.)

Swatow.

At Swatow, during the six months to September, 1871, together with a somewhat extensive prevalence of ague and diarrhœa, some few cases of cholera occurred among the native Chinese. It does not appear that the disease was here epidemic, but, in the neighbouring district, choleraic diarrhœa was very prevalent.—(II. 9.) In the last five months of the period ended September, 1874, cholera was again very severe and fatal among the native Chinese in the same district. Europeans, however, did not feel it much; only four cases having occurred among them—all on board ship. The first case known of was in May, and the disease was at its worst in September. The epidemic was travelling from south to north. Cholera as an epidemic had not been known here since 1865 until 1874.—(VIII. 66.)

In the summer of 1875 the native population again suffered from a very severe epidemic of cholera. In the cases of a few European sailors in harbour, Dr. Scott 'tried the hypodermic injection of chloral hydrate, but without any good results.' He, however, found that drug, administered by the mouth, very useful in the spasmodic stage of the disease. All the foreigners on shore escaped, with one exception, and he lived in the Chinese town.—(XI. 29.)

According to the Report for September, 1877, 'diarrhœa was not more prevalent this year than usual, though there were some cases accompanied by vomiting and abdominal cramps. The cholera wave, which this year swept over so many parts of China, passed by us. Cholera was not more prevalent than usual among the Chinese in this district, where it is endemic.'—(XIV. 69.) In the period to March, 1878, a case of cholera occurred in a child eight years old, and ended fatally. This was the only case of the disease that happened among foreigners during the half-year, although among the Chinese in the neighbourhood there was much choleraic diarrhœa, as also fatal cholera.—(XV. 23.) In the Report to September, 1880, the remark occurs that the word 'cholera' was not once heard, although usually during the hot months the disease is epidemic at this place.—(XX. 24.)

Canton.

At Canton, in the half-year ended September, 1871, diarrhœa and 'summer cholera' prevailed among the Chinese. Epidemic cholera, however, had not visited the city since 1858.—(II. 70.) In the six months to September, 1873, the medical officer failed to meet with any case of actual cholera, although the disease was reported to exist. In July, the advance of the epidemic from Bankok and the Straits was looked for, especially as the heat of the season was then intense. The reporter observes that an occasional case of sporadic cholera does occur in the city, and that 'English cholera' is very common every summer, although on the present occasion there has been very little of it. The term *hoh-lwan* commonly used to signify cholera, the reporter thinks, answers more to the English than to the Asiatic form of the disease. It is a general term including colic, English, and sometimes Asiatic cholera. When the disease takes on an epidemic form it goes by the name of *wan-yih*, and not *hoh-lwan*, though *wan-yih* properly means pestilence.—(VI. 48.)

At Hoihow, in the middle of July, 1881, a steamer landed 270 passengers from Bankok, where cholera prevailed at the time of her departure therefrom; and it was stated that, during the passage to Hoihow, two deaths by that disease had occurred on board. Dr. Aldridge believes that cholera made its appearance previous to the 8th of August, although it was on that date that he personally saw a case of the disease. It occurred in a woman who, up to one p.m., was in good health; she was attacked at that hour, and died at six p.m. The disease then spread; deaths in four, five, and six hours being recorded. Most of those who died obtained their drinking-water from wells situated either in their yards or within a short distance of the street drains; but almost the entire town population used water from the same sources. Diarrhœa was not a symptom that, as a guide to favourable or unfavourable prognosis, could be always relied on; though evacuations were in fatal cases mostly numerous, death in some instances took place after two or three. During the epidemic, diarrhœa and vomiting were also prevalent; the diarrhœa more or less choleraic in character. As a remedy in such cases, a combination of sulphuric acid and opium gave the best results. Cholera spread from Hoihow to Kiungchow, but there its course was very mild. In the former place it gradually decreased, and by the end of September had ceased to prevail.—(XXII. 6.)

Hoihow.

A few remarks on the treatment pursued in cases of cholera by Chinese and European medical men respectively are added thus: 'The Chinese treat cholera somewhat after this manner. If there is premonitory diarrhœa, it is checked by opium, astringents, and carminatives. When the disease has manifested itself, they give stimulants to forestall the collapse. They employ shampooing by 'skilled pinshers.' At Shanghai, 1862-64, the Chinese were said to cure many cases of the disease by means of acupuncture. At Foochow during the epidemic, in the summer and autumn of 1877, a number of prescriptions for the disease were posted about the city. The most of them recommended external irritation, and 'hot medicines, *i.e.* ginger, pepper, etc.' For the most part the natives, during an epidemic, take refuge in gong-beating, paper-burning, and sing-songs; in some instances, at least, patients suffering from cholera are placed on the roadside, and there left to die.—(XIV. 31, 41, 85.)

Chinese Method of Treatment.

At Amoy the treatment employed by English physicians for cholera consisted of astringents and carminatives, stimulants, medicines administered hypodermically, frictions, and shampooing. By the liberality of one individual, large quantities of astringent pills were distributed among the Chinese; and being taken during the stage of premonitory diarrhœa, are believed to have been the means of saving many lives.

English Method.

At Shanghai, during the prevalence of cholera, 1862-64, a great variety of treatment was adopted; but large doses of chlorodyne with champagne and brandy were principally trusted in.

From particulars gathered from reports of cholera in America, in 1873, the following ratios are given of mortality and methods of treatment employed, viz.:

By Calomel in large and small doses	23 per cent.
„ Calomel and opium	31 „
„ Calomel, opium, and acetate of lead . . .	40 „
„ Calomel, opium, and stimulants	50 „
„ Stimulants alone	59 „
„ Preparations of iron	33 „
„ Sulphuric acid	8 „

When in August to September, 1877, cholera prevailed very severely at Tientsin the subcutaneous injection of sulphuric ether was adopted in one case. Recovery took place; but 'convalescence was very slow, owing to an attack of secondary fever followed by purpura and a

large abscess in the cervical region.' At Hoihow, April to September, 1877, the treatment consisted of frictions; packing in cloths soaked in mustard and water; hypodermic injection of morphia; administration of champagne.—(XIV. 31, 43, 44, 66, 85.)

At Hoihow, in 1874, the treatment adopted in cases occurring among Europeans consisted of small doses of calomel every half-hour, and as much soda-water as the patient could drink; but the medical officer cannot say much in favour of it. The first case known was in May, and the disease was at its worst in September. The epidemic was travelling from south to north. Cholera had not been epidemic at Swatow since 1865.—(VIII. 66.)

Malignant or Asiatic cholera has appeared at Yokohama on one occasion only, during the ten years ending 1877. The epidemic of that year began at a comparatively late and cool season, and was not very severe, either as regards natives or foreigners. The epidemic of that disease, which occurred in 1861-62, was far more severe among the natives than that of 1877, but on the first-named occasion very few foreigners suffered from it. From the strangely irregular behaviour of this disease in different epidemics, nothing can be predicted as to the probable course of cholera in the future; in the past, cholera has often leaped all barriers of social position or even of inferior hygienic surroundings.—(VI. 55.)

Japan.

In Japan, as in China, the early history of cholera is quite obscure. One Japanese authority gives 1817, 1854, and 1861-62 as years when epidemics occurred, while another fixes the dates 1819, 1821-22, and 1858-59 as pestilential years. Although the great epidemic of 1817 had its origin in India in that year, it did not reach Java until 1819, China till 1820, and Japan in 1821-22. With regard to the history of the disease in Japan, Dr. Simmons gives particulars as follows from a native treatise on cholera: In the summer of 2376 era of Jimmu, *i.e.*, A.D. 1718, a fatal illness, under the name of 'fever,' prevailed in the city of Great Yedo; the mortality by it exceeding 80,000 per month; the dead so numerous that, interment being impossible, the bodies were buried in the bay adjoining. The prevailing disease was quite different from ordinary fever, and is considered to have been the first occurrence of cholera in Japan. In 1850, an epidemic raged in Yedo and at several other places in Japan. During the first half of the eighth month of that year, the epidemic was at its maximum. 'At the gates of every temple there were hills of coffins; men who worked at the cremation furnaces in the evening were themselves changed into smoke the next morning.' The disease was attributed to diabolical agency, hence the people gave it the name of 'fox, wolf, and badger.' It was believed that all water and all fish were poisoned, so that people dared not draw water from the pure stream of the upper Tamagawa, nor eat any fresh fish, even when it was brought alive to their doors. Everyone adorned his gate with branches of pines and bamboo, and straw ropes; at the same time some of them offered prayers to the *kami*, others to Buddha. On that occasion, certain instructions were issued by the Bakufu, having reference to the prevention of cholera, and to the treatment of patients suffering from that disease. They were nearly as follows: 'In the way of precaution, avoid exposing your body to cold air; wear a cotton belt round your abdomen; be careful to avoid gluttony and excessive drinking, and the eating of indigestible food.' In the way of treatment: 'If symptoms appear, go to bed; be extremely careful of what you eat and drink; keep the whole body warm, and take the medicine *hoko-san*,' prepared by mixing together *yekichi* and dried ginger in equal quantities, and boil; drink at intervals one or two cupfuls at a time. 'If you vomit and purge much, and your body becomes cold, put 2 *monme* of refined camphor into 2 *go* of spirit (*sho-chiu*), warm the mixture over the fire, dip a cotton cloth in it, and rub the body and limbs briskly.' The application over the stomach of a mustard plaster composed of powdered mustard-seeds, wheaten flour and vinegar is also recommended; or, in urgent cases, mustard only mixed

with hot water. Another form of medicine is this: Into a certain measure of tea pour about one-third the quantity of spirit; add a little sugar, and drink. The patient to be placed in a hot room, and his body rubbed with a cotton cloth soaked in spirit; if the extremities are cold, hot stones to be applied. [These instructions, bearing the Japanese date 8th month of the year of the Horse, 5th of Ansei, 2518 of Jimmu, do not materially differ in kind from such as might, if need were, be issued in the 9th month, 47th year of Victoria, A.D. 1883.] In 1854, cholera is said to have been imported by the U.S. frigate *Mississippi*. Most of the great cities suffered most intensely; and subsequently for several years endemo-epidemics showed themselves in Yokohama at one particular season of each year. It is observed, however, that no mention of the disease on the occasion named was made by the medical officers of either the American or British fleet. In 1861, the occurrence of cholera was preceded by an epidemic of measles, originating from the family of a British official, by means of whom it was introduced. Many persons were attacked with cholera while still unrecovered from measles, and hence, as was believed, much of the high rate of mortality on this occasion. At that time the propriety of establishing a system of maritime *quarantine* was considered, but the epidemic had 'exhausted itself' before the necessary arrangements could be made. As cholera occurred in China, as already noticed, in 1858, and continued to prevail in many parts of that country from that date onwards till 1861 and 1862, a connection between the outbreak there and in Japan may reasonably be assumed to have existed, if not actually demonstrable. From 1862 till 1877—that is, during a period of fifteen years—cholera is unrecorded in Japan; and not only so, but the circumstance is noted that, more especially in the northern portion of that empire, there was a remarkable freedom from intestinal disorders generally. Meanwhile, cholera continued to prevail in China during five years after it had ceased in Japan, namely, till 1867, communication by sea between these countries being constant as before.

On the 7th of July, 1877, the Japanese consul in Amoy telegraphed to his Government the existence of cholera in that port from about the 27th of June. In reply to a telegram from the British minister at Tokio, the Hong Kong authorities stated that they did not consider the disease in Amoy sufficiently severe to justify the declaration of quarantine. Yet the Japanese authorities, bearing in mind the great severity of previous epidemics, took precautions to stay its progress in the event of the disease entering that country. They erected temporary hospitals at seaports, and by means of newspapers and pamphlets gave information with regard to prophylactics and treatment. But the precise manner and means by which cholera reached Japan remained undiscovered. The existence of the Satsuma rebellion, then at its height, rendered it impossible to carry out efficiently quarantine regulations, or inspection of ships. And so, sometime in August, the disease appeared in a small village half a mile from Nagasaki, the persons first affected having been washermen who attended upon shipping. The next day it appeared in another village at a little distance from the preceding, also among washermen similarly occupied; on the same date on board an English war-ship in the harbour; three days subsequently on board a U.S. naval vessel; and meantime several cases were reported on board the merchant shipping. But no actual history of how the disease was brought to the locality. On September 4th, the ship *Shinagawa-Maru* sailed from Nagasaki for Kagoshima, with several hundred police. A few hours after leaving port an engineer died on board from cholera; within four days 90 of the force succumbed, and subsequently 110 more.—(XVIII. 3.)

On the 5th of September cholera appeared in the village of Kanagawa which is a suburb of Yokohama. The first person attacked was the wife of a builder's coolie; she died within twenty-four hours. On the 7th, her husband, grandfather, and son were attacked in the same house, all these cases proving fatal also. On the 9th, the fifth case occurred. It was in the person of the

Assistant-Judge of Yokohama, whose house was situated at Ise Yama, two or three miles distant from the tenement in which the first case appeared, and on the opposite side of the bay. No communication appears to have taken place between these two centres of disease. This lady also died. Case 6 was in the sister of the last named, to whom she had acted as nurse. Case 7 was that of a coolie-master; and so on to Case 11, the subjects of attack living at considerable distances from and having no communication with each other.

From the 15th of September cases increased rapidly; the first persons attacked in the various localities were women, a circumstance said to be solved by the fact that near the place where the first case occurred was a temple much frequented by female devotees, connected with it some 'holy water' in a stone basin, into which, as part of their devotional ceremonies, they dip their fingers, or even wash their mouths or swallow portions of the consecrated element. 'The mystery *would* be solved by *supposing* the water of the basin to have been contaminated with cholera "germs." The well which furnished the water for the basin *may have* been the same as that used by the man who died of the disease in the neighbourhood.' Of the first eleven cases all save one were fatal.

Under the orders of the Local Health Board the most vigorous measures were at once taken with a view to check the spread of the disease. A special police force was detailed, and physicians and medicines placed in attendance at the several police-stations, a report having to be made at them of every case of cholera as it occurred. Carbolic and sulphurous acids were the disinfectants used. In a large majority of cases the bedding and clothing of the affected were destroyed. All corpses were cremated. Water-closets and drains thoroughly disinfected. The use of boiled water for drinking inculcated.

Of resident foreigners, other than Chinese, twelve were attacked—of these four died, eight recovered. From the shipping there were six cases, all proving fatal, with one solitary exception. Only one authenticated case from China Town. There the water of wells was so bad that it was not used by the people, all of whom obtained their supply from a running hydrant fed by pipes from a neighbouring hill, and to this circumstance is attributed the lightness of the outbreak in that locality.

As the scourge spread in Yokohama, diarrhœa, manifesting the presence of 'epidemic constitution,' occurred, but to a less degree than usual in similar epidemics. Dysenteric symptoms appeared at the end of the first month, and *typhoid* symptoms towards the last. In Tokio it first appeared in the neighbourhood of the landing of the crews of fishing-boats from Yokohama; it was most severe in the vicinity of the fish-market, and fish-vendors carried it to different parts of the town; the number of cases, however, was very small when compared with those in Yokohama.

When showers were falling slowly, no marked change was noticeable in the disease ratio; when rain was heavy for a few successive hours a rapid rise in that ratio always followed on the fourth or fifth day afterwards—a circumstance accounted for by the excess of water bringing about contamination of the wells. Throughout this epidemic in Japan the recorded cases of cholera were 12,378, of which number 6,508, equal to 52·58 per cent., died. The attacks to population were 3·79 per 10,000.

In 1878 a number of cases of cholera occurred in Isaka, during the spring season. In Yokohama only two cases occurred during the summer. On 11th November, a case occurred in that portion of the town where the epidemic of the previous year had prevailed; this was followed by a severe outbreak. With few exceptions the scourge remained in the district in which it had revived. The last instance occurred on 23rd January, 1879; the total cases from its recurrence 33, deaths 25. During the year the general statistics of the epidemic in Japan gave 975 cases, deaths 532, equal to 54·56 per cent. The cases to population not stated.

Cholera lingered in Osaka and other southern portions of Japan, and in 1879 these places severally became foci whence the epidemic spread. Some time previous to 20th of April it appeared almost simultaneously in Yehime in Shikoku, Oita and Kagoshima in Kiushiu, and Hiroshima on the main island of Nippon. It manifested itself in Osaka and Hiogo two or three weeks later; then followed irregular courses, generally tending northward, until by the beginning of October it had overspread nearly the whole Japanese Empire.

On the 18th of June, two steamers, the *Niigata Maru* and the *Hiroshima Maru*, both from the infected port of Hiogo, arrived at Osaka. A stoker of the *Niigata Maru* was, on the evening of his arrival, seized with cholera in a brothel, whence he was conveyed to the house of a friend in Kanagawa. The quarter of the latter, where he stayed, became one of the foci of the disease. A man then living in Yokohama, where as yet no instance of the disease had declared itself, and who passed the remainder of the night of the 18th June with the same prostitute, was seized with cholera; but the woman escaped attack, as did also all the other inmates of the house. The next case was a passenger in the *Hiroshima Maru*, arriving from Kobe the same day. The third, that of a man occupying a dwelling close to the closet used by the last-named. This locality, one of the most favoured in the town as regards drainage and general hygienic condition of the people, formed another radiating point for this disease in Yokohama.

With regard to the spread of the disease, the statement occurs that, some months previous, the graves of soldiers who had died in 1877 were opened under instructions from Government. From that point the present disease began instantly to spread; at first slowly, in Kiushiu, whence it was taken to Yokohama and Tokio by the *Hiroshima-Maru*. Yokohama itself suffered but little, as regards its foreign population; and in the Chinese portion of the town, where some 2,000 of this race are crowded in badly constructed dwellings, and abounding in filth, these people escaped the disease, as they had done in 1877, *probably* because, as then, their drinking water was drawn from a source of undoubted purity. Throughout the empire the total cases of the disease during the year was put down at 164,274; deaths, 97,422—equal to 59·30 per cent. The cases to population, 47·40 per 10,000.

The circumstance that cholera was absent from Japan from 1861-62 to 1877 is noticed as demonstrating that it is not endemic in that country. On the last occasion it was considered that the disease spread along the great routes of travel; that the water-supply was the immediate cause of its extended prevalence; and that the towns which suffered most were those situated near the foot of mountains, where the custom of directing streams of water through the streets was followed. With regard to the results of treatment, the statement occurs that where, as in many of the infected places, 'a vast majority of the medical men still follow the Chinese system, the mortality has but little exceeded the average of that in more enlightened countries.' The manner in which the Japanese dispose of their night-soil is also considered to favour the spread of cholera: their system is very similar to that followed in China.

In discussing the influence of the habits and customs of races on the epidemic prevalence of cholera among them, Dr. Simpson wrote as follows: 'In spite of the proximity of this vast empire to India, and the fact that it is of much greater extent and twice as populous, we find that cholera is comparatively rare in China as an epidemic. In explanation of this circumstance, reference has been made to the (assumed) fact that the natives of China do not drink water of rivers and lakes to the same extent as those of India; also, that the absence of pilgrimages in China leaves the water comparatively uncontaminated. Still more potent preventives are no doubt to be found in the fact that the Chinese drink only water that has been boiled, and, for the most part, that in which tea has been infused.'

Japan.

In India excretæ are deposited direct from the body on the soil. In China and Japan manure is permitted to remain for a considerable time, even weeks or months, undergoing a kind of fermentation before being distributed on the land; thus (theoretically) the cholera germs are supposed to be destroyed, cholera evacuations being assumed to be dangerous in proportion to their freshness—a conclusion not borne out by experience in India. According to the reporter, a similar explanation holds good with regard to typhoid fever, a disease comparatively rare in China.—(XVIII. 3-36.)

X. *a.* QUARANTINE.

In the Report on Newchwang, April to September, 1872, the reporter observes that in the event of small-pox occurring on board ships entering that port, it is cruel and absurd to insist on quarantine, for small-pox is never absent from among the Chinese in the neighbourhood of that settlement. The cooping up of two or three cases of the disease does not therefore insure the residents from infection, while the non-infected sailors are made thus to endure unnecessary discomfort. Patients also cannot be properly treated under such circumstances, and meanwhile their friends and relatives—themselves suffering from the disease—attend as usual in their own households or in those of foreigners. He considers that when small-pox patients are brought on shore they should be isolated as much as possible; that they ought to be brought on shore, and the ship then thoroughly disinfected.—(IV. 27.)

Newchwang.

In the Report on Shanghai to 31st March, 1874, the medical officer discusses the subject of quarantine in relation to cholera. He writes: 'At Shanghai, with its complex creek communications, any attempt to shut out a disease by blocking the river alone must prove abortive; and unless native as well as foreign vessels are subjected to regulations, no actual good could result.' In the event of that disease threatening, he would introduce the code of precautions laid down by the Vienna Commission.—(VII. 39.)

Shanghai.

In the Report on Amoy, April to September, 1877, the medical officer discusses the same subject. He believes, in brief, that it is impossible to prevent the disease, when epidemic, from being carried from one part of China to another without putting a stop to trade altogether; the latter would be impossible, as the junk trade cannot be brought under regulations. Apart from this, there is the overland traffic; and, according to the International Sanitary Conference of 1874, land quarantine was 'impracticable and useless,' even in European countries. It is considered *likely* that in the year under notice the occurrence of an outbreak of cholera at Manila was prevented; but the Spanish authorities by their action put a complete stop to trade there; thus traffic between the island and Amoy was for the time being interrupted. Another point is also noticed—namely, that on this occasion the epidemic passed over Swatow and Hong Kong. Such freaks of the disease are characteristic, although no explanation of them transpires.—(XIV. 32.)

Amoy.

In the Report on Swatow, April to September, 1874, the medical officer, writing on cholera, which prevailed severely there, observed: 'As to quarantine regulations, he feared they were almost useless, unless they are applied to native as well as to foreign vessels.'—(VIII. 66.)

Swatow.

XI. DIPHTHERIA.

At Peking, during the summer of 1871, diphtheria was present, although not in epidemic form. In its treatment, lime-water and tincture of iodine were used as local applications 'with considerable success.'—(III. 7.) During the period ended March, 1873, the disease prevailed to a considerable extent among the Chinese population. The outbreak occurred in February. In a particular Chinese family nearly every member was attacked, those first seized having been so almost simultaneously, and in them the attack proved fatal. Among foreigners —even those who were in contact with the family alluded to—no case occurred.—(VI. 11.) According to the Report to September, 1874, the disease, although common in the capital, does not seem to exist in other parts of China, although similar conditions certainly exist. Dr. Dudgeon is unable to find an explanation of this circumstance. He adds: 'No foreigner, if two doubtful cases among children be excepted, has ever been attacked with this severe malady.' —(VIII. 37.) In the winter of 1874-75, next to whooping-cough in prevalence and first in mortality was 'our old enemy,' diphtheria. The disease chiefly prevailed in the early part of that season; its type very severe, the mortality by it very great. The patients were usually seen on the fifth day, by which time little hope of recovery remained. The treatment used consisted of carbolic acid, tincture of iodine, lunar caustic, and the removal of false membrane. But the treatment does not appear to have been very successful—at all events, few returned to give thanks.—(IX. 38.) Peking.

At Tientsin, during the six months ending 31st March, 1873, one case of diphtheria occurred, namely, in the person of a child of foreign parents. This was the first of the kind seen among foreigners since the port was opened, although the disease has on some rare occasions been seen among the native community.—(V. 23.) In the period ending March, 1876, a severe epidemic of the disease prevailed among the native community. It was characterized by high premonitory fever, swelling of the cervical glands, with a tendency to laryngeal exudation and blood-poisoning. The death-rate was about 25 per cent. of those attacked.—(XI. 47.) In the period to September of the same year, three cases of diphtheria came under observation, one proving fatal. In it the attack appeared at first to be one of ordinary remittent fever, but after a few weeks symptoms considered to be of diphtheria set in, and ultimately ended in death.—(XII. 48.) Tientsin.

At Chefoo, in the period from April, 1872, to March, 1873, two cases of diphtheria were recorded, both in children on board ship, the disease fatal in both, although in one of the patients tracheotomy was performed.—(V. 16.) In the half-year to March, 1880, 'shortly after the subsidence of measles,' many of the natives were attacked with inflammatory sore throat, attended in some instances with exudation of false membrane, thereby simulating true diphtheria. Some of the families attacked lost two or three of their members. —(XIX. 32.) Chefoo.

At Shanghai, according to the Report for the half-year to March, 1873, only one case of diphtheria had ever up to that date been observed there.—(V. 55.) In that to March, 1877, a case returned as such is described as having been 'neither typical during life nor on examination after death.'—(XIII. 45.) In that to September, 1881, two cases of the disease appear. In reference to them, the remark is made that 'the occurrence of diphtheria, hitherto a very rare event in Shanghai, is noteworthy.'—(XXII. 54.) Shanghai.

Foochow.

At Foochow, in the period from April to September, 1879, there occurred 'some cases of diphtheria; one fatal in twenty hours from the time when it was first seen, the rest recovered.'—(XVIII. 70.)

Amoy.

At Amoy, in 1879, two cases of diphtheria occurred, one fatal. These were described by the reporter as being the only ones he had met with in China. He has been assured, however, that among the natives the disease is well known; also that it is very fatal and much dreaded.—(XVIII. 58.)

Japan.

At Yokohama and in Kobe a few isolated cases of 'diphtheritis' were stated to have occurred in the winter of 1876. These bore a strong resemblance to diphtheria, but 'the diagnosis between diphtheria and croup was not entirely beyond a doubt.' The spring of 1877 was marked by an epidemic of diphtheria, both in Yokohama and Tokio, in neither place very extensive, and confined to the native population. Subsequent to that date epidemics of the same kind have occurred at different places in the interior of the country, so that all doubt is removed as to the existence in Japan of the genuine form of that disease. —(XV. 54.)

XII. WHOOPING COUGH.

Whooping Cough.

At Peking, October, 1874, to March, 1875, a few foreign children suffered from whooping-cough after the new year set in, and did not get rid of it till the return of mild weather in March. This affection is epidemic at the capital, but always mild in type. The Chinese recognise it as only a form of cough; they do not seem to be aware of its epidemic, contagious, or infectious nature. They call it *hsiao*, from the sound emitted being like the note of water-fowl. Asthma is described as short, rapid breathing without intermission; *hsiao*, as by turns ending in vomiting. In its treatment, the Chinese employ emetics; vinegar is ordered, but 'cold remedies' are forbidden, the theory being that the disease is caused by 'cold enveloping heat.' In diet, 'thin' articles are to be taken. It occurs in children at the end of autumn and beginning of winter. In Chinese works the following kinds of cough are described, namely—from wind, cold, heat (internal), damp (internal), excess of water with goose-skin; consumptive, from debility, over-eating; food produces mucus, fat pork produces cough and apoplexy, and so on.—(IX. 36, 38.)

Tientsin.

At Tientsin, during September, October, and November, 1879, whooping-cough was very prevalent among the Chinese, and six European children contracted the disease. The disease was of a very mild character, and in no case of it were there any alarming symptoms present.—(XIX. 5.)

Chefoo.

At Chefoo, in the summer of 1871, a partial epidemic of whooping-cough prevailed, the disease having been imported from Shanghai. The only remark made regarding it relates to the 'peculiar effect nitric acid appears to have in soothing and even cutting short the attack.' The reporter filled a tumbler with sweetened water, and poured in enough nitric acid to make it as sour as lemonade. The entire quantity to be given to a child in twenty-four hours—the whole containing a drachm of nitric acid.—(III. 41.) In the six months to March, 1880, the young native population suffered somewhat from 'an invasion of whooping-cough.'—(XIX. 32.)

At Hankow, whooping-cough prevailed as an epidemic in the spring season of 1871. The

mortality by the disease was small. The weather at the time was mild, and chest complications of no consequence. In three out of twelve cases noticed, vomiting was an annoying symptom. Treatment by belladonna was employed. In one case rather severe symptoms followed, in the character of scarlatinoid eruption quickly succeeded by anasarca. The belladonna was stopped, and all unfavourable symptoms gradually ceased.—(II. 47.) Hankow.

At Shanghai, according to the Report to March, 1873, whooping-cough, which has appeared only within the last few years, is usually of a mild type, and no sequelæ occurred in the cases that happened.—(V. 55.) In May, 1880, a lady and six children arrived from Hong Kong, bringing whooping-cough with them. The children had cousins in Shanghai, who, contrary to advice, visited them. All the cousins took the disease, but as they were carefully isolated, it did not then spread. Finally, however, it became epidemic.—(XX. 33.) Shanghai.

According to the Report to March, 1881, related in turn to each epidemic of measles there was an epidemic of whooping-cough; in some cases the first-named preceding the latter, in another set of cases the latter preceding the former.—(XXI. 95.)

At Foochow, in the six months to September, 1871, whooping-cough occurred among European children in the autumn, and at that time the characteristic 'whoop' was often heard from native children in the sampans.—(II. 27.) Foochow.

At Amoy, in the half-year to September, 1871, whooping-cough was 'common enough.'—(II. 11.) Amoy.

At Canton, during the six months ending 31st March, 1878, one family was attacked with whooping-cough, including the mother, a baby of eight months old, and two children aged respectively six and seven years. After three months, they all recovered. The cases were treated, in that of the infant by belladonna, in those of the two children with chloral. The conclusion arrived at, however, is that the disease will run its course irrespective of treatment, although antispasmodics are very necessary. With reference to these attacks, the circumstance is noticed in the Reports that no other children were affected.—(XV. 13.) Canton.

XIII. MUMPS.

At Peking, in March, 1875, there prevailed a good deal of mumps, with sore throat and swelling of the glands of the neck. Native and foreign children suffered from these affections. An alum or vinegar gargle, fomentations or inhalations of steam, gave relief. The causes of these diseases were stated to be sudden changes of temperature and N.W. breezes.—(IX. 38.) Peking.

At Hankow, in the period from October, 1872, to March, 1873, parotitis was the only affection that prevailed as an epidemic. The disease was mild in character, and the cases presented no instance of metastasis. In the Roman Catholic Orphanage forty children and one adult were attacked by it.—(V. 31.) Hankow.

At Shanghai in the half-year to March, 1877, there was, among children, 'an epidemic of what would have been mumps if the glandular swelling had been attended by fever, which it was not' in the cases that came under notice.—(XIII. 44.) Shanghai.

At Foochow, in May, 1880, an epidemic of parotitis prevailed, chiefly among the Chinese, but affected also four of the European resident population.—(XXI. 54.) Foochow.

At Amoy, in the six months to September, 1871, mumps, like whooping-cough, 'was common enough.'—(II. 11.) In January, 1872, a trivial epidemic of that disease prevailed among the Chinese, and also attacked a few Europeans. The disease is usually common at the beginning of the year.—(III. 22.)

Amoy.

At Hoihow, in the half-year to September, 1881, many cases of mumps occurred among the Chinese, adults as well as children being subjects of attack.—(XXII. 9.)

Hoihow.

XIV. INFLUENZA.

At Swatow, during the summer of 1879, a somewhat peculiar epidemic of influenza appeared. It attacked the children living on one side of the river, those on the opposite side, and on Double Island, being unaffected by it. It first occurred in a particular house, in a child twenty months old; its symptoms, "running at the eyes and nose, feverishness, general *malaise* and loss of appetite—at the end of five days a sharp bronchitic attack, then lessened fever, gradual resolution, and recovery in about ten days." The second attack occurred in a boy five years of age; it began in the same way, ending in a sharp attack of laryngismus stridulus and bronchitis, recovery taking place after ten days. The disease attacked all the children living on the south side of the river, and affected all in the same way as here described. It only attacked children; and the reporter states that he had previously seen nothing similar to it, although sporadic cases of influenza are not uncommon.—(XVIII. 75.)

Swatow.

XV. SEPTICEMIA AND PYEMIA.

At Shanghai a case of septicemia occurred in January, 1880. The subject of it, whilst examining the mouth of a cow in the last stage of typhus, was spattered with some of the fetid discharge therefrom by the animal coughing. He received a portion of the matter into his mouth, the stench from which induced violent attempts at vomiting. Shortly afterwards the mouth was rinsed with brandy. The next day sharp pain attacked the mouth and head; these were at first attributed to neuralgia. Two teeth were extracted, but without benefit; on the contrary, symptoms increased in severity. Fourteen days after the poisoning the cheek was much swollen, the saliva thick and stringy, the breath fetid; on the right side the anterior pillar, gums, and outer border of the tongue were covered with scattered ulcers, some bright red, some with a greyish-white centre; the glands were little affected, and there were no general symptoms. Fuming hydrochloric acid and honey were applied, but with difficulty, as the swelling prevented the jaws from being opened. Chlorate of potass was given in large doses, coal-tar saponin, with carbolized washes, being used locally. In some days a few of the ulcers had cleared; soon they manifested themselves afresh, occurred also on the opposite side, and with greater intensity; the breath became intensely fetid, salivation profuse; the patient in consequence had to remain in a sitting position; the local pain intense. Sloughing now set in; the ulcers left as sloughs separated became covered with whitish coating, but showed no tendency to heal. Indurated schirrhus-like nodules appeared in the mucous membrane of the cheek. Then they began to slough, the sphacelated pieces having a cadaveric odour and putrid bloody discharge. The general symptoms were such as betray profound blood-change; pulse small and irregular, skin dry, temperature not excessive; from time to time profuse fetid diarrhœa; sleeplessness. The

Shanghai.

loss of substance caused great debility; health was broken, and after lingering to 18th July he died.—(XX. 36.)

At Amoy, in hospital, according to the Report to September, 1876: 'Pyemia, erysipelas and allied diseases were fortunately rare, notwithstanding the imperfect sanitary condition in the native hospital.'—(XII. 39.) Amoy.

At Yokohama, according to Dr. Simmons, the diseases which mostly occur as the consequences of injuries or surgical operations are pyemia or septicemia, erysipelas and tetanus. All of these may, however, occur independently of mechanical injury or surgical operation. They have but seldom attacked foreigners in Yokohama; and this applies to hospital equally with private practice. The remark occurs that in China also pyemia is of rare occurence; and it is added, 'Climatic conditions have more to do with the causation or propagation of diseases of this class than has been admitted of late.'—(XV. 69.) Japan.

XVI. ERYSIPELAS.

At Peking, in the half-year to September, 1871, a considerable tendency to erysipelas during the spring season was observed both among foreigners and the native Chinese inhabitants.—(III. 7.) In the Report to March, 1875, Dr. Dudgeon noticed the infrequency of erysipelas at that capital, and stated that at some of the treaty ports the disease is not met with at all. He contrasts this immunity from the disease with the frequency with which it occurs in the west, and observes that when it occurs in China it usually does so after the slighter, not the more severe operations. The name given by the Chinese to the affection is *ta-t'ow-wén*. In warm winters it is so frequent as to be considered epidemic, being then caused 'by the poison of the seasons.' A variety named *lu-sze* approaches diphtheria; in it the neck is greatly tumefied.—(IX. 39.) Peking.

At Chefoo, in the period to March, 1872, a case of erysipelas occurred and proved fatal. The patient, a strong man of regular habits, had suffered two or three days from a severe cold. By the constant use of the handkerchief he had set up slight irritation of the tip of the nose; this became accompanied by fever, and showed a tendency to spread; when first seen he lay in bed deeply comatose, and exhibiting all the worst symptoms of facial erysipelas extending to the brain. He died twenty-four hours after noticing the irritation at the tip of the nose and feeling feverish.—(III. 38.) Chefoo.

At Kiukiang, in the six months to March, 1882, five cases of phlegmonous erysipelas of the lips were seen at the hospital, the disease fatal in all.—(XXIII. 39.) Kiukiang.

According to the Report of Chinkiang, April to September, 1877, erysipelas was epidemic at that place during the summer months of that year, and continued prevalent at the end of the period. The remark occurs, however, that the disease presented no feature calling for special note.—(XIV. 64.) Chinkiang.

XVII. RHEUMATISM.

At Hankow, in the six months to September, 1872, there occurred 360 cases of chronic rheumatism. The acute form was not met with, and rarely heard of. That which prevails is assigned to generally impaired health, the combined result of malaria, bad diet, damp dwellings, and in certain seasons rapid alternations of temperature. The disease was met with as often during the hot months as during the cold.—(IV. 75.) Hankow.

At Foochow, to September, 1871, rheumatism in all forms and degrees prevailed among foreign sailors, but acute, or rheumatic fever, was rare. The alkaline treatment, sound in theory, was not very successful in practice. The hypodermic injection of morphia was recommended. The affection was frequently connected with venereal disease.—(II. 31.) In the Report for the six months to March, 1876, details are given of a case of rheumatic fever with endocarditis occurring in a Roman Catholic missionary just arrived from Formosa. He so far recovered as to be sent away to his native France.—(XI. 40.)

Foochow.

In the period to September, 1877, one case of acute rheumatism occurred. It was treated by salicin in 20 grain doses every two hours, and afterwards every three hours. The reporter was very much pleased with the result. He remarks upon the 'trouble'—in the treatment of rheumatism—there used to be in the old days with the old remedies.—(XIV. 86.)

According to the Report to September, 1879, the form of rheumatism which most prevails at this settlement is the chronic, although a few cases of rheumatic fever have been met with. A mild form of rheumatic gout is not entirely absent. Three cases of rheumatism of the sphincter ani and adjoining parts of the perineum came under notice; they occurred in men subject to ague, and were very distressing.—(XVIII. 67.)

At Swatow, during the six months to September, 1879, three cases of acute rheumatism—rheumatic fever—occurred, namely, two in sailors arrived from the north, and one in a resident —in the latter supervening on a severe wetting. 'They all yielded quickly to the exhibition of salicin in 20 grain doses every four hours, the effect of the medicine being most marked in the case of the resident, an oldish man (48 to 50 years), very much broken down in health.'—(XVIII. 76.)

Swatow.

At Canton, in June, 1877, treatment of a case of acute rheumatism by means of salicin was tried. After 160 grains of the drug had been taken the pains began to subside, and in eight days from the first administration of the drug the patient could walk, though with a little limping, from which circumstance, the medical officer says, 'it is reasonable to attribute the rapid disappearance of the pain and fever to the salicin.'—(XIV. 59.)

Canton.

This disease occurring in the joints, and in the acute form, is very uncommon at Yokohama, either in natives or foreigners. In both these classes, however, the less important rheumatic affections are not unfrequent. *Gout* is considered to exist in Japan, in the same class of persons and in the same proportion as elsewhere.—(XV. 56.)

Japan.

XVIII. VENEREAL DISEASES.

The Chinese term for *syphilis* is *t'ien-pao chwang*, or *yang-mei*. It is classed with *lai* or leprosy. The treatment adopted in China for this disease during the last 2,000 years corresponds very exactly with our modern Western therapeutics. Calomel, cinnabar, and realgar are among the recognised formulæ, the former entering into every recipe. Prescriptions are given also to drive out the 'poison of the calomel,' after it has effected a cure; among them is *t'u-fu-ling* or China-root, or radix smilacis. The Chinese popularly believe that salivation is the poison of syphilis flowing out. Not only are the preparations of mercury used in the treatment, but some of the most approved methods of the present day have been so from time immemorial; for example, fumigations and vapour mercurial baths, both local and general. As an effective fuming prescription, the following is given, namely: lead and mercury, *aa.* 1 mace; cinnabar, ju-hiang (olibanum),

Historical.

Chinese Treatment.

myrrh, *aa.* 5 candareens; dragon's blood, realgar, *ch'ên*-hiang (wood of Aquilaria agallocha), lign aloes, *aa.* 3 candareens—to be pulverized, wrapped up in paper to form a wick, and put into a lamp. The patient to be covered over, and while undergoing this vapour-bath successive mouthfuls of cold water are to be taken and frequently renewed as it becomes warm. The inhalation is to be through the nose, and the object of the cold water is to preserve the teeth from the influence of the mercurial poison. Another prescription is lead (carbonate), and fuligo (soot), *aa.* 1 mace; black lead, 8 candareens—to be fused with mercury, 1 mace, and formed into cakes, to which is added *yinchu*, or spurious cinnabar, and calomel, *aa.* 1½ ounce; alum and realgar, *aa.* 1 ounce—to be made into a mass with jujubes, and afterwards divided into sticks or pills; one pill to be put into a small charcoal furnace or stove, and the patient to blow it with the head covered. Using this remedy for four or five days, salivation sets in, and so the poison is supposed by this means to be driven out of the system. This is termed the 'blowing or puffing prescription.' Another is called the 'contemplating remedy.' In this the patient is put into a barrel and smoked in the same way. To remove syphilitic blotches, alum and rhubarb in equal parts are mixed with water; with this the affected portion is to be rubbed, and the stain disappears. In the treatment of the syphilides the same course is pursued, the notion being that secondary and tertiary symptoms are not so much a further development of the disease as the calomel; or at all events, the disease having been cured by the use of mercury, there ensue other diseases, or bad ulcers of the palm of the hands (psoriasis palmaris). The book name for affections of the genito-urinary organs generally is *shan*.—(IX. 40, 42.)

Peking.

At Peking, in the period to March, 1875, syphilis was not by any means a rare affection, even among the better classes of Chinese. The Mongols seem to have a worse type of the disease than the Chinese, and to be less amenable to treatment than the latter, this being due to their more filthy habits.—(IX. 42.)

Tientsin.

Tientsin, to September, 1873, had always been remarkably free from enthetic diseases. In the six months to that date, the cases recorded had all been brought from the south, and on board H.M.S. *Curlew* stationed there no single case occurred.—(VI. 52.)

Kiukiang.

At Kiukiang, in 1871, syphilis in very horrible forms and of great severity prevailed; so did venereal diseases of all kinds, details of which occur in the Report on that place. In some of the cases related there is evidence that the discharge from a suppurating bubo does not drain off the syphilitic virus, as believed by some writers.—(II. 65, 66.)

Hankow.

At Hankow, to March, 1872, the following particulars of a case occur: 'A. B., æt. 40, had suffered from syphilis in his youth; contracted a recent chancre, which healed up without hardness or distinct enlargement of the glands. From the woman who had communicated the disease, another adult at the same date contracted a hard chancre, succeeded by an ordinary course of syphilis.' The reporter remarks that this case is of interest, as an example of venereal contagion in a person who had previously passed through an attack of syphilis. He notices that complete immunity for the future is generally acquired when the system has been once impregnated with the poison of syphilis; but cases are recorded (Hill on 'Syphilis,' p. 28) where the symptoms have recurred in regular order.—(III. 47.)

According to the Report for the period from April to September, 1872, there presented themselves for treatment 331 cases of venereal disease in one form or other, the subjects being Chinese. It is recorded that the majority of them were married men, and either living with their wives, or in the habit of visiting them if at a distance, while the progress of the disease was still

unchecked. The prevalence of syphilis among the lower order of natives is alluded to, and it is noted that of the above cases, 31 were of the hereditary form of the affection, the patients in 22 of the number being infants of less than two years of age.—(IV. 75.)

In the Report from October, 1880, to March, 1881, Dr. Begg mentions the occurrence there of a form of disease not met with in England. It is called 'a tubercular syphilide,' for want of a better name. It seems to be a low form of inflammation in the cellular tissues, giving rise to subcutaneous 'cold' abscesses of small size, but multiple. Its natural course is to discharge by one or more openings, and then to cicatrize, leaving a sensitive cicatrix. Sometimes the matter burrows for long distances under the skin, and involves a large tract. The result of these cicatrices is at times great deformity, and occasionally immobility of joints when, as is often the case, the disease is in their vicinity. The contents of some such abscesses, especially when situated near the anus, are of more consistency, and even in some cases cheesy in character. The most common situations are the arms, shoulder, knee, thorax, and neck. The patients are generally young adults, otherwise in good health. A history of syphilis is not obtained in all. The treatment most successful is by iodide of potash, painting with iodine, free incisions, and dressing with carbolic oil.—(XXI. 47.)

At Shanghai, in 1871, the public women and brothel-keepers expressed their willingness to submit to regulations which provided for the establishment of a Lock Hospital, house to house visitation by a Chinese doctor, etc. This remark applies equally to the French settlement and to the English. The natives observe that it is only since direct traffic by land and sea with the south has become easy that syphilis and leprosy have spread in the district.—(II. 35.)

Shanghai.

Steps were taken, during the half-year ending 31st March, 1872, for the establishment of a Lock Hospital. The reporter alludes to the 'experiment of brothel suppression' having been tried, but with the most disastrous results: that in 1845 Berlin brothels were closed, and in 1848 the amount of disease and illegitimacy were found to be greater than before. In one shape or another, venereal disease attacked seven men of the foreign community during the period.—(III. 79, 85.)

According to the Report to September, 1872, venereal disease 'very seldom realizes the sensational description of its ravages by many naval and military surgeons who have written of syphilis in the East.' These affections, however, gave 14 per cent. of the admissions by all causes during the period.—(IV. 100.)

On the 1st of January, 1877, a Lock Hospital for the settlements was opened, and compulsory inspection of public women introduced. This was a revival of an institution established on the voluntary system seven years before, but which had failed, partly through lack of funds, partly through the inveterate objections of the women concerned. Enthetic diseases are neither remarkably prevalent nor remarkably severe at this place.—(XV. 4, 5.)

According to the Report to March, 1879, a decrease in admissions by venereal diseases, as compared with 1877, occurred. As results of the introduction of the Contagious Diseases Act public women devoted increased attention to their clothing and personal appearance. A good deal of difference of opinion, however, at that time existed in relation to the advantages conferred by the Act. It was stated that there are districts in China as yet free from syphilis.—(XVII. 18.)

In the six months ended March, 1881, Dr. Jamieson states that various accidental sources of danger in regard to the conveyance of syphilitic infection exist, and are fostered by the dirty habits of the native Chinese. Among them he enumerates cheroots and the operation of shaving. In reference to the latter, he alludes to two cases of a similar kind quoted from Després in the

London Medical Record, 1881, page 160. He relates the risk also incurred through the operation of tattooing in Japan, and quotes a statement by Dr. Simmons, that three out of four of the urban population of Japan are syphilitic.—(XXI. 94, 95.)

Ningpo.

At Ningpo, according to the Report for the half-year to March, 1878, gonorrhœa was then more prevalent than usual, the increase assigned to the unusually frequent visits of war-vessels of various nationalities. No case of syphilis, however, came under notice during the period.—(XV. 21.)

Wenchow.

At Wenchow, 1877-78, 'enthetic disease was very plentiful; the ecclesiastical tendencies of the place serving to favour its spread, as the nuns are merely prostitutes, and are, as a rule, diseased. Their favours are largely sought, notwithstanding a comparatively high fee, and the general knowledge of their infected state. There are about forty convents, besides several brothels containing avowed prostitutes; and it is stated that domestic morality stands very low, many married women being notoriously dissolute. The wide spread of syphilis is by all this easily accounted for.'—(XV. 41.)

Foochow.

At Foochow, 1871, enthetic diseases directly or indirectly cause the large proportion of sickness among sailors. Under the Merchant Shipping Act, the men affected have to pay for treatment on account of these diseases; this leads to their concealing the primary attack. In 1869, an order was issued prohibiting sailors from going on shore, and as a result venereal diseases declined among them.—(II. 31.)

In the half-year to September, 1872, the good effects of the order referred to were mentioned by the medical officer. He noticed that of 67 cases of venereal disease—namely, 16 of syphilis and 51 of gonorrhœa—only 3 occurred locally; all the others were imported.—(IV. 63.)

In that to March, 1873, a case is related in which a chancre, at first taken to be a soft sore, healed with considerable induration accompanied by glandular enlargement in the groin, so like the non-suppurating bubo of hard chancre as to lead the medical officer to think he had mistaken the character of the sore in the first instance, and to place the patient under constitutional treatment. In a few days, however, the bubo showed signs of suppuration, was poulticed and opened, 'thus proving the non-infecting nature of the sore.' Had the gland not suppurated, he would have pronounced this an infecting chancre (*vide* Ricord in the *Lancet*, of August 17th, 1872).—(V. 39.)

In the period to September, 1879, no case of the severest form of venereal disease has been met with unless contracted at the anchorage in one of the outside ports. Sloughing phagedena of the privates of the worst kind, and destruction of the velum palati, pillars of the fauces, scalp, face, and gastrocnemeus through the action of the specific sore, have been met with; but all such were imported, not originating in Foochow. The reporter is of opinion that the type of venereal sore familiar to the settlement is very mild. He states that 'touching conclusions to be prognosed from the primary sore, one would make a mistake if he anticipated no harm from the absence of hardness. He has known very evil consequences to arise from the neglect of what seemed a slight superficial chap.' He adds: 'The old rule about the Hunterian chancre alone being harmful fails completely in China.'—(XVIII. 69.) According to the Report to March, 1881: 'Syphilis is rife in all degrees of virulence' at Foochow.—(XX. 52.)

Amoy.

At Amoy, according to the Report on that place to September, 1871, no case of syphilis occurred among the residents. In dispensary practice there were treated 36 cases of gonorrhœa, 8 of primary sores, and 26 of constitutional syphilis. It is stated that 'ten per cent. of the population are syphilitic, and the lepers are no exception.'—(II. 12, 23.)

In the Report on that place for the six months to March, 1873, an 'epidemic' of syphilis is described. In the crew of a gunboat at the settlement a large proportion of the men contracted the disease, namely 25 out of a strength of 70. The vessel had been on the station during the previous nine months, and no unusual restriction placed on the sailors as regards going on shore. A considerable number of the ulcers were hard chancres; these, when they occurred in men of good constitutions, were very amenable to mercury. According to the medical officer, 'syphilis can be stamped out by very simple measures.' These measures may meet with much opposition in many parts of Europe, but here, where on such subjects unglozed facts have made people more latitudinarian, there can be little to hinder the adoption of measures calculated to check, and finally eradicate, the disease.—(V. 7.)

In the Report to September, 1873, a statement occurs that the 'epidemic' of syphilis above alluded to had subsided, but that lately two cases of very intractable phagedenic ulcer had come under notice.—(VI. 20.) In that for the period from October, 1880, to March, 1881, as is the case at most large seaports, syphilis is extremely common. There are no regulations in force tending to check its spread, so that the notorious immorality of all classes has brought it into almost every family.—(XXI. 27.)

At Takow, during the period to September, 1871, in reference to a case of tertiary syphilis in the person of one of the aborigines, the statement occurs that his wife and several members of his tribe appeared to be suffering from the same disease.—(II. 68.) In the corresponding period to March, 1873, an unusual amount of syphilitic disease prevailed among the shipping population during the six months. Almost all the vessels came from Amoy. —(V. 26.) According to that to September, 1873, among the 'savages' of the east coast of Formosa, syphilis is of very frequent occurrence.—(VI. 40.)

Takow.

At Swatow, 1871, syphilis in all forms prevailed generally in the population—from simple chancre to most severe tertiaries. All forms and stages have been met with, co-existing in the same person—gonorrhœa, gonorrhœal rheumatism, sloughing chancre, rupial eruption, periostitis of tibia and sternum, and syphilitic fissures of rectum. The medical officer strongly advocated the introduction of a Contagious Diseases Act, to be enforced under the co-operation of the Chinese authorities.—(II. 8.) In the period to September, 1872, the Report states that again: 'Every form of syphilis came under observation,' among them cases of sloughing ulceration of tonsils and fauces, periostitic affections of the tibia, rupial ulceration all over the body, and occasionally total destruction of some organ from sloughing phagedena.—(IV. 88.) During the period to September, 1874, syphilitic diseases of all forms continued to be numerous. The medical officer remarked that 'Here we are much addicted to mercurial vapour-bath and Plummer's pills' in their treatment.—(VIII. 66.) In the period to September, 1876, enthetic diseases stood first in severity and importance. They were almost entirely confined to sailors. Many of the cases illustrate the difficulty of predicting whether any given sore seen for the first time will be followed by constitutional symptoms, or, though not syphilitic, will take on phagedenic action; whether it will heal without difficulty or delay, or give rise to troublesome buboes. What appears at first to be a soft chancre sometimes develops in a few weeks into an indurated sore with constitutional sequelæ; there may be hardly any induration at the site of a sore, and no induration of the inguinal glands, and yet syphilis manifest itself in all its severity. Dr. Scott has 'never seen an indurated lump on the prepuce, and indurated glands in the groin and neck of any person who, sooner or later, did not show other symptoms of syphilitic disease.'—(XII. 21.)

Swatow.

At Canton, according to the Report for the eight months ending March, 1882, syphilis prevails

to a frightful extent, and 'we can only hope for a remedy for this evil when laws which govern inspection of prostitutes in some of our Western cities have force here.' —(XXIII. 33.) Canton.

According to statistics given, there has been a marked diminution in the prevalence of syphilis in Yokohama since Government undertook the medical supervision of prostitution. For a time, however, it would appear that one result of this supervision was a very great increase in secret prostitution, chiefly in connection with sailors' taverns. The more inveterate forms of the disease—namely, secondary and tertiary—are also of frequent occurrence, both among natives and foreigners; a considerable proportion of such cases, however, occur in persons as results of primary syphilis contracted elsewhere. Contrary to usually received opinion, syphilis among natives in Japan is of an exceptionally mild form, the more severe and deeper lesions rare. This comparative immunity from the graver effects of the venereal poison is somewhat paradoxically believed to be due, at least in part, to the long-continued general and unrestrained diffusion of the disease. It is as though the blood of the nation, either directly or by inheritance, had become more or less infected by the poison; and this circumstance, in compliance with a law which applies to most infectious diseases, if it does not prevent the contraction of new infection, at least modifies the effects of the contagion. Similar observations have been made in other countries in which syphilis has been allowed to run riot, more especially in Portugal, where the comparative immunity of the natives was noticed as long ago as the Peninsular War. But the fact that the disease is of a mild type in the natives by no means ensures that it will be trifling when acquired from them by a foreigner; and it is as a rule more severe in the European than in the already more or less syphilized natives. Still, even among foreigners, the disease is neither more severe nor less amenable to treatment than when occurring in Europe or America.—(XV. 56.) Japan.

XIX. CANCER.

The Chinese, as a rule, are ignorant of the nature of cancer, and class it among the ordinary ulcers. Cases of the epithelial form of the disease occurring in them are related by Dr. Dudgeon in the Report on Peking to March, 1875.—(IX. 42.) Peking.

In the Report on Amoy, April to September, 1876, Dr. Watson records twenty-seven cases of cancer among natives as having been seen at the Chinese hospital in twelve months. He describes a form of dysphagia as of frequent occurrence among the native residents of that place, and, in the absence of post-mortem evidence, assigns it to cancer of the œsophagus.—(XII. 38.) In that to September, 1878, a case of 'secondary cancer of the sub-maxillary glands followed an epithelioma of the lower lip excised some months before.—(XVI. 12.) Amoy.

In 1880-81, Dr. Manson alludes to the occurrence of *keloid* in the lobes of the ears of women, as he considers, from the irritation caused by their earrings. He has seen tumours of this nature of a size larger than walnuts; he has noticed the circumstance of their arrangement being symmetrical, as if the skin on each part of the body had local peculiarities. The liability of cicatricial tissue to assume a keloid character in the dark-skinned races is well known. The Chinese in this respect probably occupy a position intermediate between the black negro and the white European. —(XXI. 35.)

XX. LEPROSY.

In the Report on Peking to March, 1875, Dr. Dudgeon gives an abstract of Chinese views on leprosy. This disease is called *ta-ma-fêng*. In books the names *ta-fêng-chchw'ang* and *lai* are met with. Mange in the dog is termed *lai*. Leprosy arises from three sources—climate, infection, and defective nutrition. Five different forms of the disease are met with. In one the skin dies, indicated by loss of sensation; in the second the flesh dies, and no pain is felt in cutting it; in the third the blood dies, and ulceration and pus are formed; in the fourth the tendons die, and hands and feet drop off; and in the fifth the bones die, the nose is destroyed. Along with this, the eyes, lips, and throat become involved. Among the causes specified is 'the air of graves.' The hereditary and infectious nature of leprosy is noticed. The ancients called this disease *lai-fêng*, or *li-fêng*, on account of its malignity. In the treatment it is recommended that lepers shall live alone, and attend to their proper nourishment, avoiding all 'forbidden things' such as salt, fish, pork, also beef, horse, donkey, or mule flesh. When leprosy begins, it resembles pityriasis versicolor, and white skin falls off from the whole body, 'like a serpent casting his skin.' The sovereign remedy for *lai* consists of the leaves of *Xanthium strumarium*. One prescription to be taken on the first day of the treatment consists of *pai-chih* (an umbelliferous plant, perhaps angelica), scorpions, and ginseng; on the second day, rhubarb, the root of amomum, and *chan-t'ui* (feet of locusts), *aa.* 1 tael, 8 mace; *tsao-kioh-tze* (seminæ gleditschiæ sinensis), 1½ tael: mix. Take 5 or 6 mace, and *ta-fêng-tze yu* (oil from the seeds of chaulmugra, *Gynocardia odorata*), 1½ mace, a little saltpetre, a bowl of spirits, all of which is to be taken. Should there be abdominal pain or diarrhœa, rice is to be taken. Persons below fifty years of age may take the above prescription; beyond that age it is not ordered. Very strong persons may take such a dose three times in ten days. On the third day of the treatment a tonic regimen is ordered, and the following is the prescription: *Ti-ku-p'i* (cortex radicis lycii), *king-kieh* (salva [salvia?] plebeia), *k'u-shên* (rad. robiniæ amaræ), *si-sin* (heteropa asaroides), *aa.* 2 taels; to this rub in 2 taels each of *kwan-chung* han-shui-shih (stone from cold water?), sulphur, alum, *shê-chwan-tze*, with 5 mace of saltpetre: mix, and add lard to the whole. *Ta-fêng-tze-yu* is so called on account of its virtue in curing leprosy. A case of tubercular leprosy was recorded. It occurred in a Chinaman, thirty-five years of age. The disease began three years previously. A second case was noticed. It happened in a woman, and took the form of immense enlargement of the foot, with ulceration.—(IX. 29, 30.)

Chinese opinions.

At Chefoo, in the period to March, 1872, ten or twelve cases of leprosy occurred, presenting the ordinary features of the disease. In two of these the influence of damp in causing the affection could be traced. In the way of treatment, cleanliness, avoidance of damp, good clothing and good food, with iron and vegetable tonics, were recommended. Dr. Myers, quoting from a Bombay paper, suggested that patients anoint themselves with a solution of one part of carbolic acid to eighty or one hundred parts of sesamum oil.—(III. 40.)

Chefoo.

According to the Report on Kiukiang for the year ending 31st of March, 1881, among 1,420 native patients, only 3 cases of leprosy were met with, none of them belonging to that place; and as the natives of Kiukiang are a fish-eating population, the hypothesis that fish (putrid) plays any important part in the production of that disease is, Dr. Jardine thinks, untenable.—(XXI. 49.)

Kiukiang.

At Hankow, 1871, of 57 cases recorded, 55 were in males and 2 in females. The disease chiefly affected residents in the country; with scarcely an exception, poverty and hardship had been the

general lot of those affected; the greater the poverty the more numerous the cases of leprosy. In places where it prevails it has for several generations declared itself in particular families connected by ties of consanguinity. When the disease becomes established after puberty, the sexual functions become weakened, and in the majority of instances soon destroyed. The sons of a leper father being for the most part born while the disease is latent, may escape the taint, or the predisposition may be so mild that if placed in more favoured circumstances they may partially or completely combat it. Leprosy contrasts with other transmissible disorders by limiting the number of its subjects through weak generative power; custom also decries the marriage of a leper, and sanctions the separation of a wife when the malady declares itself. It is not dependent on the same circumstances of soil and vegetation as natural diseases; in many parts of the world where these are endemic, leprosy is absent, while the leprous diathesis is all-powerful in other regions which are non-malarious. Seeing that it is a degeneration which flourishes amidst a variety of climates, of soils, of staple articles of food, and of race, it cannot be attributed to any specific defect in one of these; yet it does not take root in a population without an unfavourable conjunction of several of these conditions. At Hankow the disease has occurred in three native immigrants after residence of 10, 12 and 19 years, while their brothers and sisters who remained in their own part of the country escaped. Hankow.

Unlike syphilitic poison, that of leprosy has no power of self-augmentation in the system or of perpetuating itself by transference to the healthy. In that it clings to families it resembles a diathesis like the scrofulous, which may remain latent or be brought into activity by a variety of depressing circumstances.—(II. 55.)

In the Report for the six months to September, 1872, particulars are given of eight cases of leprosy in its anæsthetic form, and as elephantiasis.—(IV. 77.) In that to September, 1875, Dr. Reid gives details of some cases of leprosy treated with Gurjun oil (Dipterocarpus), the result being that in that drug 'Dr. Dougall has discovered a remedy highly beneficial in alleviating the skin manifestations' of that affection. Regarding the question of contagiousness, Dr. Hansen has recorded several cases where the family history for two generations was free from taint, and where he could assign its origin to contagion. A few lepers are found in the cities, but not, as far as Dr. Reid is aware, among families who have resided in towns over two generations. The majority of cases come from wet, aguish country districts where the inhabitants are collected in small hamlets, are extremely poor, subsisting on the produce of uncultivated lands, and partaking only occasionally of fish or flesh meat. Many of the offspring of lepers escape the disease, although all are alike exposed to contagion. Phthisis frequently exists in leprous families. Alluding to the statement by Dr. Liveing that leprosy is not found in China north of the Yangtze-kiang, Dr. Reid writes: 'This may be so as regards some of the provinces through which the river flows, but it does not hold good in Hupeh, for the disease extends along the banks of the Han in a northward direction.'—(X. 48—52.)

At Shanghai, in 1871, it was observed that leprous women very frequently suffer from amenorrhœa and leucorrhœa. No connection was traced between the occurrence of leprosy and residence in a particularly aguish district, nor does syphilis in the parent or individual himself appear to act as an exciting cause. Yet it is only since direct traffic by sea and land with the south has become constant and easy that syphilis and leprosy have spread in the Shanghai district. The results of treatment have been unsatisfactory—arsenic, iron, iodide of potassium, cod-liver oil, improved diet, etc., arrest the progress of the disease, but do not in the least tend to cure it.—(II. 42.) Shanghai.

Dr. Macgowan, of Wenchow, gives a record of epidemics of different kinds, which, according to Chinese writers, have prevailed in China within historical times. According to that record leprosy has on four different occasions prevailed as an epidemic; namely, in 1417, during the fifth moon, epidemic leprosy prevailed in Kinhua; in 1589, the disease prevailed over several districts, preceded by unprecedented rains; in 1590, it reappeared in Hsiaoshan, a district of Hsianhsing; and in 1591 it was epidemic in the Changhua district, Hangchow. On each of the three last occasions it prevailed during summer. Adverting to another epidemic of leprosy not included in the above record, namely that of 1558-59, it is observed that the sudden and apparently unprecedented outbreak on that occasion was remarkable from the fact that the disease is seldom met with in Chêhkiang, and never perhaps in the northern part of the province. Fukien to the south, and yet more in Canton, farther south, are the seats of this malady. Shaohsing, however, is remarkable for the prevalence of elephantiasis of the leg.—(XXII. 24.)

Wenchow.

At Amoy, in 1871, leprosy prevailed extensively. Of patients applying at the native hospital 7 per cent. suffered from some form or other of it. The lesions of the disease were not distributed so symmetrically as in syphilis. In the generality of instances several forms are present, but always anæsthesia. The parts affected most frequently are, in their order, the arms, hands, face, legs, feet, thighs, neck, abdomen, chest, back, genitals. Of fifty-six cases, thirteen were assigned to hereditary taint, four to infection; in five there was a history of syphilis, although no other connection between these diseases. That leprosy is hereditary, few doubt; that it is infectious, few believe. Yet a leper marries a healthy woman; a year afterwards she also becomes a leper.—(II. 14.)

Amoy.

In 1881, Dr. Manson wrote: 'Leprosy has laid a firm hold on the people. Large numbers of lepers are attracted as beggars to that town (Amoy), but this does not explain the extent of its prevalence, and in the population of the neighbouring villages one leper is considered to exist for every 450 of the population, or thereabouts.' In a foot-note Dr. Manson writes: 'We should be rash to conclude that a *bacterium*, described by Hansen, Eklund and Neisser (*London Medical Record*, July 15th, 1880), had anything to do with the causation of leprosy. The present is the age of bacteria, and as they are searched for everywhere, and in nearly every disease, they are found everywhere and in every disease. Concomitance and consequence are easily mixed up. Such a degenerate and half-dead piece of flesh as is a leper-tubercle is just the place wherein one would expect to find bacteria. Though one expects to find maggots in a dead body, yet we do not attribute the existence of the body, or its death, to the maggots; neither, when we find bacteria in the tubercles of a leper, should we, without other evidence than mere concomitance, attribute the tubercle and the leprosy to the bacterium. This *bacillus leprœ* may, and probably will, turn out a mare's nest, like so many of its predecessors.'—(XXI. 27.)

Bacillus Leprœ.

Some consider that the disease called 'morphœa' is a phase of leprosy; but although Dr. Manson has for many years been on the look-out for morphœa, he has not met with a genuine example of the disease. Pale, circular, waxy-looking patches, devoid of hair and sweat-glands, with a vascular border and slightly depressed and anæsthetic centre, he has often met, but always in connection with other evidence of leprosy. *Scleroderma* is considered to be allied to *morphœa*. On the supposition that the latter is a form of leprosy, scleroderma should be common also at Amoy, whereas he has only seen one case of it.—(XXI. 29.)

Morphœa.

At Taiwan-foo, in the Report to September, 1871, it is stated that no cases of leprosy presented themselves for treatment, although it is well known that the disease is by no means uncommon in the district.—(II. 68.)

Taiwan-foo.

At Canton, 1871, leprosy, both anæsthetic and tubercular, is common among the natives; no European, however, has ever been known to be affected with it. The statement that the disease cannot be conveyed by sexual congress ought to be received with great caution. As to treatment, nothing very satisfactory has been recorded. It is stated that leprosy was known to occur in the person of a European 14 years resident at Hong Kong.—(II. 71.) *See* Erasmus Wilson, 'Diseases of the Skin,' sixth ed., p. 633. Canton.

Dr. Wong furnished a note on leprosy in the Report to September, 1873, from which the following particulars are taken. The disease is very common in the Canton province; it is endemic there, and prevails equally among the population on shore, and that of the boats. Outside Canton there are two leper villages; among the residents of them are many persons who are descended from leper parents, but who themselves have 'little or no trace of the disease in them.' Of the whole empire, leprosy is most prevalent in the provinces of Canton and Fuhkien. It is but little seen in Kwang-si, and in the north of China. In the province of Canton it is most prevalent in and around the city of Canton, in the districts of San-ni, San-ning, Shun-tak, Hiang-san, and Tung-kun; also in the districts south of Canton, and on the island of Hainan. According to Chinese opinion, leprosy is capable of spontaneous production in malarious localities; heat and moisture are allowed to be powerful causes, and as an argument against the necessary connection between malaria and leprosy, it is observed that in America there are many swampy places in which leprosy is absent, and that at Shanghai malarial fevers are frequent, but leprosy less so. At Canton, many of the lepers state that they had not been subject to frequent attacks of ague prior to their leprosy. Neither does the latter prevail especially among such persons as are underfed. All the lands around Canton have been under cultivation from time immemorial; the fields chiefly covered with rice, and there are no neglected marshes. In Kwang-si, the rice-fields are less under water than at Canton, and in the former leprosy is less prevalent than in the latter. It does not appear that fish-eating plays any part in the causation of the disease. The rice used by the population is generally good; such as is bad is given to pigs, or 'used for other purposes.' The people of Canton generally live well; they are well clothed, and usually are well off as regards money; and yet lepers abound. In those cases where the disease arises *de novo*, the mode of living and the food of individuals attacked will be found to differ in no respect from that of other people. Europeans living in warm climates appear to be comparatively exempt from the disease. Among the natives, leprosy consists of no more than two principal varieties; the tubercular, which forms three-fourths of the whole number, and the anæsthetic. The Chinese believe that a woman may have her system so impregnated with the poison as to be capable of infecting healthy men, without any external marks on herself except some unusual paleness of face.

A closely allied form of disease is a red tinea-like erythematous eruption occurring in patches called *Hung-yün-hiueh-sien*—blood-coloured ringworms. If curable, they go by that name; if incurable, they are called leprosy. Morphæa and white patches more or less anæsthetic are regarded as varieties of the disease.

It is stated that leprosy is on the increase compared with what it was ten years ago. The disease is found in all classes of persons, rich and poor, in the city and in the country, among artisans, tradesmen, and field labourers. Only one European resident at all the Treaty ports in China has been heard of as being affected with the disease. He was an old resident in the Canton district; a man of dirty habits, and much in contact with the natives. He had in his house a native assistant attacked with leprosy. During five years master and assistant lived much together, and the former then became attacked with the disease in the feet, the Chinese

attributing his attack to infection. The wife of another native assistant living in the same house was also attacked with leprosy. It is stated that among the natives generally the proportion of cases due to spontaneous origin as compared to those in which the disease is propagated is about 30 to 40 per cent. Lepers do not intermarry with the healthy, but leprosy sometimes breaks out in people after marriage. Nearly all the children of lepers show the disease. As a rule the disease becomes milder in each succeeding generation; in the third, the descendants can only be distinguished from ordinary people by a greater pallor of face. In the fourth, it is considered safe to marry, although this is not generally done. So long as marriage is confined to lepers there is a tendency to a natural extinction of the disease. As to heredity, family taint favours the development of the disease, but the extent to which it does so cannot be estimated with accuracy. There is one family in Macao in which every generation produces one leper, and the Chinese, observing similar facts in other families, attribute them to *Fung-shui*—the influence exerted on the family by the ancestral grave (heredity?). The Chinese have a firm belief in the extension of leprosy by means of cohabitation, yet husbands and wives, one or other infected, may live together for years without infecting the other; but the natives believe that wives of lepers, even when showing no marks of the disease, are capable of infecting healthy people through cohabitation. Another belief is that persons infected with a mild form of the disease can get rid of it by cohabitation. This is what they call 'selling off leprosy;' and many instances are believed in of the disease being thus contracted by a healthy man from the wife of a leper who has clandestinely adopted this supposed method of freeing herself from it. Cases illustrative of communication of the disease in this way are given. The reporter states that he has seen many cases of leprosy benefited by the long-continued use of mixtures of arsenic, or Donovan's solution; the particular kind so benefited being a mild species of the anæsthetic variety—reddish patches of irregular shape, with slightly elevated margins, and sensibility impaired in the part affected.—(VI. 41, 51.)

Hoihow.

At Hoihow, during the six months ending the 31st March, 1881, a large amount of leprosy was reported as existing in the neighbourhood. The lepers are frequently to be seen along the sides of the principal streets exhibiting their sores and soliciting charity. Their own huts are clustered together, and they form a small village. Dr. Aldridge has not seen a single infectious case of the disease. An instance is recorded there of a young mother, observing symptoms of leprosy in herself, committing suicide by means of opium. Her relatives allowed her child to die of neglect.—(XXI. 74.)

Japan.

No case of leprosy in Europeans or Americans has been observed in which the disease originated in Japan.—(XV. 57.)

XXI. ELEPHANTIASIS.

Kiukiang.

At Kiukiang, 1871, a case of elephantiasis of the right leg and foot was reported. The part affected was converted into a browny mass, but pitting on pressure; the skin of the heel and dorsum of the foot roughly papillated. There was no pain, but, on the contrary, deficient sensibility and a want of mobility. Arsenic internally, with bandaging and mercurial dressing, effected a marked diminution in the volume of the limb within a month. —(II. 66.) According to the Report on that place to March, 1882, elephantiasis is seldom seen there,

although common at the coast ports. In the period under notice only two cases of the disease presented themselves, and in these the patients did so on account of some more pressing ailment. —(X. 1.)

At Ichang, in 1880, the absence of elephantiasis, and of epidemic disease, and the scarcity of morbid growths, was noticed.—(XX. 20.) Ichang.

At Hankow, in the six months to September, 1872, there were recorded eighty cases of 'Elephantiasis Græcorum;' but no further details occur, except that remarks on them appear under the heading 'Leprosy.'—(IV. 72.) Hankow.

In the Report on Shanghai to September, 1876, the following details occur in reference to a case of elephantiasis: The patient, a Chinese woman, a native of a marshy district near Paoshan, had never suffered from fever. Eight years previous she was attacked with that disease, which is very common in that neighbourhood; her right foot was the first part affected, afterwards the entire limb. Treatment by warm baths and mercurial inunction was at first tried, according to Hebra's plan. The limb having steadily continued to enlarge notwithstanding these measures, the right external iliac artery was ligatured according to Liston's method. Two days afterwards the patient suddenly became cyanosed, and died in less than ten minutes, the death most undoubtedly to be attributed to the operation. This case once more raises the question whether ligature of the main vessel in elephantiasis is justifiable in itself. Fayrer, Simon, and Demarquay pronounce decisively against it.—(XII. 10.) Shanghai.

At Wenchow, during the six months to March, 1878, cases of elephantiasis were in two instances met with.—(XV. 41.) The subject of 'malarial leg,' discussed in the Report for the period ending September, 1881, comes more appropriately under the heading 'Beri Beri.'—(XXII. 40.) Wenchow.

At Foochow, during the six months to March, 1881, three cases of old-standing elephantiasis of the leg, and four of elephantiasis of the scrotum, were examined without success for 'embryo Filariæ.'—(XXI. 56.) Foochow.

Elephantiasis arabum, or elephantiasis, is often met with in and about Amoy. It occurs most frequently in the legs, next in frequency in the scrotum. The medical officer considers the pathology of the disease to consist of an affection of the lymphatics, excited by 'malarial' influences, resulting in inflammation and constriction of those vessels, thus producing the characteristic swelling and other symptoms of the disease. He has never, or very seldom, observed enlarged spleen coexisting with this disease, although ague and malarial fever usually attend its development; he accordingly thinks that elephantiasis is vicarious of enlarged spleen. In some cases the one affection, as the other, occurs in the absence of a distinct attack of ague, yet both may depend on malarious cachexia. At Amoy, elephantiasis agrees with the description of the disease usually contained in books on the subject. 'It is seldom that we meet a Chinaman with sufficient faith in our remedies to induce him to submit to a long course of drugging.' The plan adopted by the reporter is to place a blister over the enlarged inguinal glands, rub iodine ointment into the swollen leg, apply bandages evenly and firmly, give iodide of potassium and quinine internally, and give improved diet.—(III. 24.) Amoy.

With regard to ligature of the femoral artery, it is stated that the accounts of this operation as a means of treatment in cases of elephantiasis are so contradictory, and the principle on which it is based so utterly at variance with our ideas and with the pathology of the disease, that the reporter never thought of recommending it. The disease is not looked upon as a true hypertrophy. When elephantiasis attacks the scrotum *medical treatment is disappointing and only waste of time,*

and removal should be at once had recourse to. In the Report before us the relative advantages and risks of two different methods of operating are discussed, preference being given to that in which the testicle and penis are preserved.—(III. 27.)

In the period ending March, 1874, Dr. Manson performed the operation for elephantiasis of the scrotum in 31 cases without a death or serious mishap. He states that there is often a partial return of elephantiasis, not in the cicatrix, but in the skin which at the time of operation was supposed to be sound; but, as far as he has seen, it seldom amounts to more than a partial thickening. In one case there was a serious relapse of the original disease.—(VII. 28.)

In his Report on Amoy for the half-year ending 31st March, 1877, Dr. Manson continues his consideration of filaria. Having lately found filaria in the blood of a patient affected with elephantiasis scroti, he says he 'is thus enabled to state positively that the affection is a parasitic disease;' he considers also that this is the true pathology of this puzzling affection. Much remains to be done in working out the details of the operation of the cause.—(XIII. 31.)

Filaria.

In the Report on Yokohama allusion is made to the investigations by Dr. Manson, of Amoy, which 'seem to prove that this disease should be relegated to the class of parasitic diseases.' In the records before us only one case is reported, and it is in the person of a Malay who brought the disease from his own country.—(XV. 68.)

Japan.

XXII. LYMPH SCROTUM.

In the Report on Amoy to September, 1871, Drs. Müller and Manson draw attention to notes of three cases of a peculiar form of scrotal disease, regarding which they can find no description in the usual authorities. The scrotum in those cases was thickened and tubercular, the skin tough; when pricked, a clear fluid, rich in albumen, was discharged with considerable projection, and through vesicles which occurred on its surface the scrotum could be injected.—(II. 13.) In that to March, 1873, details occur of six cases of lymph scrotum. In one, when the scrotum first began to swell, the patient had also attacks of quotidian and tertian agues. When ague came on, the inguinal glands and scrotum became red, swollen and painful; but when the ague got well the local symptoms disappeared. These continued during ten years prior to his admission into hospital. In a second case a similar connection between ague and the local affection was observed. In two other cases the same circumstance was noticed. With reference to the cases reported, the medical officer connects the recurrence of lymph scrotum with ague. After a time, one of the vesicles which appear on the rough and thickened surface of the part bursts, or is pricked and gives exit to 8 or 10 ounces of serous-looking fluid, after which it heals, but again to fill after a few days. The fluid is found to be loaded with albumen; it has a specific gravity of 10·10: it contains corpuscles like those of the blood, the spherical in a much larger proportion than in that fluid, and those resembling the red corpuscles destitute of colour and cohesive properties. The disease is described as being 'a sort of lymph dropsy,' but otherwise the medical officer finds it difficult to determine what is its precise nature. He observes that, 'Why the lymph should not become organized into a tissue, as in elephantiasis, when in the body, is a mystery of the disease.'—(V. 9.)

Amoy.

In 1874 he relates further cases of the disease, in some of which lymph scrotum and elephantiasis were combined, and where a chylous state of the urine took the place of the discharge of lymph from the scrotum after its removal.—(VIII. 67.)

In his Report for the six months to September, 1875, Dr. Manson gives a *résumé* of the literature in regard to lymph scrotum. He observes that the first description of the disease, so named, appeared in 1854, in the 'Transactions of the Medical and Physical Society of Bombay' (New Series), vol. ii., p. 341, by Mr. Anderseer Jamsetjee. In January, 1860, a second and third case were published in the *Edinburgh Medical Journal*, by Dr. Wong-Fun of Kumleefou, near Canton. Dr. Vandyke Carter published further particulars regarding the affection in the above-quoted 'Transactions' of the Bombay Society, 1861 and 1862, and in the 'Medico-Chirurgical Transactions of 1862,' vol. xv. In his work on 'Clinical Surgery in India,' published in 1866, Sir Joseph Fayrer describes a case of *lymph scrotum* under the term 'Nævoid Elephantiasis.' He again alludes to the affection in his 'Clinical and Pathological Observations in India,' in 1873; also in the *Practitioner* for August, 1875. The *Indian Medical Gazette* for August, 1874, contains an interesting analysis, by Dr. McLeod, of the literature of this subject; as also the history of a case of the disease observed by himself, and called 'Varix Lymphaticus.' Dr. Druitt alludes to the disease in the *Medical Times and Gazette*, and Dr. Lewis in the 'Reports of the Sanitary Commissioner with the Government of India.' Dr. Manson, in his remarks, endeavours, *if possible*, to establish: first, the generic identity of lymph scrotum and the ordinary form of elephantiasis; second, the generic identity of elephantiasis and tropical chyluria; third, that these three diseases acknowledge the same etiological cause; and lastly, that this cause is the FILARIA of Lewis.

Dr. Manson quotes from an article in the *Indian Annals of Medical Science*, No. IV., April, 1855, in which Dr. Allan Webb states that a patient, after each attack of fever, from which he suffered during a period of four years, found that the scrotum exuded a quantity of *white ropy-looking matter*, which very much reduced its bulk; that this exudation suddenly ceased, and then the tumour of the scrotum rapidly increased in size. During the paroxysm of fever, minute vesicles, about the size of a pin's head, appear all over the tumefied scrotum; these look as if distended with serum; after the fever, they break rapidly, and discharge their contents. And in a case reported by Dr. Manson himself, 'the scrotum for upwards of ten years discharged regularly, once a month, from 10 to 50 ounces of white fluid: this stopped, and the parts then enlarged, assuming the usual appearance of elephantiasis.' Among other authors referred to in connection with this disease, are Brett, in 'A Practical Essay on some of the Principal Diseases of India;' Wise, in 'The Transactions of the Medical and Physical Society of Calcutta,' vol. vii.; Bouilland, Rayer, and Sir James Paget ('Lectures on Surgical Pathology'). He also quotes from 'A Treatise on the Glandular Diseases of Barbadoes,' by Dr. James Hendy, published in 1784. Dr. Manson expresses an opinion that the generic identity of tropical chyluria and elephantiasis is more difficult to establish; but still, he thinks, sufficient evidence can be brought together to warrant such a conclusion. Having adduced arguments with this object, he refers the reader to the writings of Roberts, Beale, and Carter; then adds: 'Seeing then that lymph scrotum and elephantiasis are *proved* to be closely allied, the inference that the latter and tropical *chyluria* are similarly connected may be drawn.'

In reference to the etiology of these diseases, Dr. Manson takes notice of the views expressed by Drs. Roberts, Carter, Beale, and Lewis. He observes that in 1870, Dr. Lewis discovered in the urine of an East Indian, a patient in Calcutta, suffering from chyluria, the *Filaria sanguinis hominis;* and that subsequently similar coexistence of the filaria and chyluria was observed. 'But,' he writes, 'a fourth case in which hæmatozoa and chyluria were associated had a fatal termination, the immediate cause of death being diarrhœa. A post-mortem examination threw no light on the source of the filariæ. In a second case the results were similarly negative. In 1873, Dr. Lewis examined

a case in which chyluria was combined with an *elephantoid* state of the scrotum, and in which the urine also contained a little coagulated blood, filariæ being detected in the latter. But there follows a case of scrotal tumour in which the existence of chyluria was not discovered on examination, but in which filariæ were found in a chyle-like fluid obtained from an elephantoid scrotum.

Dr. Manson writes: 'Helminthologists know that these filariæ are the young of *some* mature nematode which, though it has hitherto escaped detection, *must* exist in the body;' and then he refers to experimental researches on the dog in India, performed by Dr. Lewis in reference to filariæ in that animal. He adds, 'We do not as yet know the seat of the parent parasite,' but he supposes it to be on, or in, the lymphatics in a case of lymph scrotum, the receptaculum chyli, or thoracic duct, or some blood-vessel. (See also *Medical Times and Gazette*, of 4th June, 1881.)

Regarding 'elephantoid' disease, Dr. Manson observes that it has a great preference for certain parts, especially the lower extremities and scrotum, and, including chyluria, the urinary organs. He also notices the fact of their having a particular distribution geographically; and quotes Dr. Hendy, who wrote in 1784, in support of the view that elephantiasis was then imported into Barbadoes by means of negroes from Africa.—(X. 1-11.)

Japan. According to the Report on Yokohama, parasitic chyluria is occasionally met with among the Japanese. Dr. Simmons and Dr. Goertz, of Tokio, have seen cases of the disease, and have detected the parasite. The former had under his care a case of the disease in a patient who appeared to have contracted it in India.—(XV. 68.)

XXIII. PHTHISIS. HÆMOPTYSIS.

Peking. In the Report on Peking to 31st March, 1875, Dr. Dudgeon gives some particulars regarding the Chinese theories of consumption: 'They consider consumption to be infectious, and account for it on the hypothesis that at the moment of death of the phthisical patient a worm (*Bacillus tuberculi?*) is expelled which enters the body through the breath of those in attendance. To stamp it out, therefore, the patient, while still alive, was put into a coffin, burned, or thrown into the river; and so, infectious consumption was warded off from the surviving members of the family.' Dr. Dudgeon thinks that 'this may be the Chinese notion of the hereditary character of consumption.' In the same Report he alludes to the frequency and comparative severity of *hæmoptysis* among Chinese, and the immunity they seem to enjoy from its effects as compared to what is observed in the West. The Chinese will be subject to this disease for years, following some of the roughest and most exposed occupations, although ultimately, Dr. Dudgeon supposes, succumbing to pulmonary disease, or the rupture of some large vessel. In some instances, at least, hæmoptysis appears to be pointed at as a result of 'anger or of sprains.'—(IX. 22.)

Hankow. In the Report on Hankow for the six months to September, 1872, the medical officer writes, regarding the natives of China, that 'if the disease be rarely met with, it will show that certain elements now supposed to be powerful agents in rendering phthisis prevalent among a population have been over-estimated as regards their evil influence on the body, or that some other conditions exist which modify or neutralize them.' Dr. Buchanan and Mr. Simon declare that (in England) dampness of soil is an important cause of phthisis to the population living on that soil. Now, around Hankow, in the towns and in the country districts, drainage is either unattempted or most ineffectually carried out, and during several months of

the year the subsoil water is either close to the surface of the ground, or both town and country are more or less submerged by the overflow of the rivers. Impure air and want of exercise have also been shown to be active causes in the development of phthisis. Not only in man, but in animals, confinement and breathing an impure atmosphere have been found to create a tendency to phthisis. Among the Chinese, Dr. Porter Smith writes that they spit blood with little or no provocation at all; but he did not think that evil consequences resulted from this, or that phthisis was a prevalent disease. In the statistical return attached to the Report now being quoted from, however, 118 cases of phthisis are shown as occurring in Chinese patients; so that the disease is really of somewhat frequent occurrence among them.—(IV. 75.)

Shanghai.

At Shanghai, in the half-year ending March, 1872, there were five deaths by phthisis, the disease in each case dating from a period previous to the arrival of the patient at that place. The medical officer had not seen the disease originate there, and he states that such an occurrence is very rare.—(III. 80.) In 1872, the medical officer again recorded the circumstance that phthisis was always imported, and that its occurrence was distributed pretty generally over the six months ending September of that year. Adverting to the question of supposed antagonism between phthisis and malarial diseases, he remarks that the disease is common among the Chinese inhabiting the neighbourhood of Hankow, and that the circumstance disposes of the opinion that there is an antagonism between malarious poisoning and tuberculosis. At Shanghai, on the other hand, experience supports the theory of antagonism.—(IV. 100.)

Foochow.

At Foochow, from October, 1872, to March, 1873, the reporter states that of 'chronic phthisis' (meaning that form of phthisis which is fatal, independently of destruction of lung-tissue) he has never seen a case of local origin in a foreigner at this port. He observes that 'the chief mortality is due to dysentery and diseases of the liver, while the place is remarkably free from zymotic diseases.' He considers that 'mortality among foreigners in China is much less than is generally supposed.' He adds: 'If it be shown that the foreign death-rate in China does not exceed that of our healthiest towns in England and Scotland, it follows that the large extra premium charged by nearly all the insurance offices for residence in China is greatly out of proportion to the risk.'—(V. 43, 44, 46.)

Amoy.

At Amoy, during the half-year to September, 1873, two deaths by phthisis occurred among the residents. One came from Kelung in an advanced stage of the disease; the other died at sea from profuse hæmoptysis, on the return voyage from Newchwang, whither he had gone for change.—(VI. 20.)

Taikow.

At Takow and Taiwanfoo, in the year ending 31st March, 1873, there were forty-seven cases of phthisis treated. Here both tubercular and malarial disease prevail in the same district of country.—(V. 28.)

Canton.

At Canton, to September 30th, 1873, phthisis is tolerably common, though not so much so as in Europe and America. The reporter considers that neither the south of China nor other part of the tropics furnishes a climate favourable to this disease. The people in and around Canton who are most commonly affected with consumption are the families of the rich. It is more prevalent in the city and among men of business than in the country, and among women than among men. The extent to which it prevails is increased by the system of the rich natives of getting as concubines fair-haired delicate-looking women; and by the general manner of life of those classes, among whose children scrofula in various forms is very common. It is stated that natives of Canton become very liable to phthisis when they proceed to reside in the northern parts of the empire.—(VI. 50.)

Phthisis pulmonalis does not appear to be of frequent occurrence either among foreigners or

natives of Yokohama; yet neither class is by any means exempt from it. Indeed, taking the mortuary returns from 1871 to 1877, it would appear that the relative prevalence of the disease is somewhat greater than the average for the temperate zone generally.—(XV. 57.)

Japan.

XXIV. PURPURA AND HÆMOPHILA.

At Hankow, during the year ended September, 1874, a case occurred of an infant convalescing from enteritis, being attacked with purpura and rapidly sinking. Death took place on the day after the appearance of the patches of ecchymosis, which first appeared on the chest. The infant had not been weaned, and seemed well nourished previous to the inflammatory attack.—(VIII. 42.)

Hankow.

In the Report on Shanghai, October, 1874, to March, 1875, the medical officer notices 'a curious variety of hæmophila' in the person of a lady, who, during every pregnancy, suffers from an excessively vascular growth springing from the inner surface of the gum between the second right upper tricuspid and the first molar, and during each confinement vomits alarming quantities (more than two pints) of grumous fluid, consisting of a watery secretion from the stomach largely mingled with altered blood. The growth bleeds profusely as long as it lasts, but rapidly withers after delivery. Astringent washes, and the application of dry tannic acid have no effect on it; it checked hæmorrhage for a time, but on two occasions, at about the sixth month, the entire tumour had to be ligatured. Falling off in two or three days, it was after each removal speedily reproduced; the hæmorrhage, however, did not become serious before labour, when it stopped spontaneously. Under the microscope the growth is seen to consist of dense fibrous tissue sparingly vascular, but covered with greatly thickened mucous membrane, consisting at first sight of mere meshes of vessels.—(IX. 20.)

Shanghai.

In the Report of Swatow for the half-year ending 31st March, 1877, a case of what appears to be hæmophila is recorded. A small anæmic child of eight years of age had for years been subject to bleeding from the nose on the slightest provocation. On several occasions also he passed blood by the bowels. He was treated with the liquid extract of ergot and tincture of iron; his diet was made nourishing; he was restricted from indulging in violent play; and in three months the hæmorrhages ceased altogether.—(XIII. 11.)

Swatow.

In that to March, 1880, a case of hæmorrhage from a tooth is related. A strong, healthy-looking man, aged 35, suffered from swelling at the angle of the jaw, accompanied with great pain and fever, and it was found that he was cutting a wisdom tooth. The gum was accordingly freely incised over the coming tooth. Next day some rather fœtid matter was discharging, when bleeding began from around the tooth. At first it came in small quantities, but by the end of a week it persisted freely, and then could be seen oozing from around the tooth, the patient having now become faint. Pressure had no effect in stopping the flow, which was of red blood. Perchloride of iron was applied locally and repeated—ergot given internally; and under these means the bleeding ceased. It is noted that the subject of this attack had no hæmorrhagic diathesis, and that no reason could be assigned for it. Hæmorrhage after extraction of teeth is a complication occasionally met with. See SALTER in Holmes' *System of Surgery*.—(XIX. 12.)

XXV. SCURVY. SHIPS' HYGIENE.

At Kiukiang, in the year to March, 1880, a case of scorbutus occurred. The subject of this affection was an Englishman, who, having left his wife in England, neglected himself as regards food. Antiscorbutic diet with perchloride of iron and quinine were administered, and for a time he improved. Subsequently dimness of sight, headache, drowsiness, and then coma occurred, and he died. The patient had been suffering for a period of two months from swollen and bleeding gums; and he stated that he had been living almost exclusively on tea and toast, abstaining from fresh meat and vegetables. Scorbutus, though usually a tractable disease before any of the internal organs have become seriously involved, is undoubtedly grave if, in addition, the patient's constitution is debilitated from long residence in the East, as in the above case. He is also brooding over other troubles, and, moreover, is advanced in years.—(XIX. 9.)

Kiukiang.

At Hankow, in the period to September, 1871, the presence of scurvy among the crew of a ship is noticed as having led to great mortality among the cases of dysentery on board the same vessel, three deaths having occurred in eight attacks.—(II. 46.)

Hankow.

In the Report on Foochow to the same period, the medical officer wrote on the subject of provisioning of ships. It has been abundantly proved that lime-juice, however pure, is not by any means an infallible protection against scurvy. Merchant captains found by experience that their men can be kept in a much better state of general health by supplying them with fresh meat and vegetables two or three times a week, than by keeping them upon salt provisions and lime-juice.—(II. 29.) In the half-year to March, 1873, a case of scurvy on board a German barque was related. The vessel was from Hamburg to Foochow direct, 150 days out. There was no lime-juice on board, and no fresh provisions were served out during the voyage; these not being required, as it appears, by German law. Considering the length of the voyage and the absence of lime-juice and fresh provisions and vegetables, it is strange that out of a company of fifteen this man was the only one affected. The mixture of cabbage and fennel-seed, known as *sauerkraut*, may have had something to do with the immunity enjoyed by the rest.—(V. 59.)

Foochow.

Ships' Hygiene.

In reference to English sailors of the mercantile marine, the Shipping Act of 1867 has done much to improve their health and comfort. By the one order to provide lime-juice of good quality, it has reduced scurvy by 80 per cent. In 1875, Drs. Muller and Manson wrote to the effect that some of the provisions of the Act in question were insufficiently if at all carried out. They also urged the necessity, on sanitary grounds, of the crews of ships outward bound from England being carefully inspected for disease before leaving port; also that the scale of provisions should be remodelled.—(X. 40.) Similar representations to the above were submitted in 1876 in regard to sailors of ships arriving at Shanghai.—(XII. 8.)

Shanghai.

XXVI. ANÆMIA.

In the Report on Amoy, from April to September, 1873, particulars are given regarding anæmia from insufficient food. This below-par condition is looked upon as a disease by the Chinese; they call it *Ha sian*, a term having nearly the same significance as anæmia. This condition is frequently observed in persons of the very poorest classes, who are insufficiently fed and whose food is bad. In connection with this subject

Amoy.

the reporter observes that the diet of the well-to-do Chinaman is sufficiently nutritious. Rice or other farinaceous food, flesh meat, oils, fresh and salted vegetables, supply in abundance all the elements for healthy nutrition. But a vast proportion of the labouring classes and professed vegetarians—the latter a very considerable body—live exclusively on rice, fresh and salted vegetables, and a small allowance of salt-fish. Numbers of persons, lower in the scale, live chiefly on sweet potatoes and salted vegetables, without animal food of any kind; and there are some who are unable to obtain even the latter sort of diet. In consequence of the generally prevailing anæmia among the lower orders, there is hardly a case of illness in which quinine, iron, and animal food is not required or appropriate.—(VI. 27.)

XXVII. BERI-BERI.

In his Report on Wênchow, April to September, 1881, Dr. Macgowan gives some particulars in regard to the history of beri-beri in China. He finds that that disease is well-known under the designation of 'malarial leg,' *kioh-k'i*, the same word which the Japanese pronounce *kakke*. Two forms of the malady are recognised, corresponding respectively with *beri-beri hydrops*, and *beri-beri atrophia*. There are two kinds, the one caused by moist heat, the other by moist cold. 'When the *poison* rises from the legs to the heart, the mind is affected.' Dr. Macgowan has seen one case of the disease. There is reason to believe that the affection prevails in Tungking, and a suggestion occurs that it is the disease called 'mauvais vent,' by Abbé Richard. Under the name of *kioh-koi*, or *chiaoch'i*, this disease seems to have been described in the 'Neiching,' the oldest medical treatise extant, a work attributed to HWANGTI, B.C. 2697, although it has no claims to antiquity, as already observed, beyond the period of the early CHOU, or the sources whence Confucius compiled his annals. During the Han dynasties 'malarial leg' was called the 'slow-wind disease;' in the Sung sway it obtained its present name.—(XXII. 40.)

Wênchow.

In the Report on Foochow, April to September, 1874, the medical officer wrote that during that period he had an opportunity for the first time of seeing two cases of beri-beri. The patients were both sailors in a coasting vessel from Singapore, and were natives of the Malayan Archipelago. The following information concerning the disease as it occurs in the Cocos Islands was obtained from the chief officer of the vessel, who is a native of those islands. Beri-beri first appeared in the Cocos about five years ago. There is a small island only fifteen miles from the Cocos, called Kuling, in which the disease is unknown, and the latter island is therefore used as a sanatorium. People coming from the Cocos generally get cured in Kuling. In the Cocos, the natives live mostly on salt-fish—often in a putrid state—and sweet potatoes. In Kuling they eat birds and rice. Beri-beri appeared in the Cocos just after the bush had been cut down. People subject to the disease have usually two attacks in the year. The mortality of its subjects, speaking generally, is about 20 per cent.—(VIII. 62.)

Foochow.

In Japan, this disease, there known as *kakke*, is common and fatal among the natives, but very rarely attacks foreign residents. The affection appears to be identical with the beri-beri of India and elsewhere. It is considered (by the Reporter) to be due to a specific poison, probably allied to malaria. This 'poison' is considered to primarily affect the nervous centres, other exciting causes being held to comprise exposure, bad food, overwork, lack of iron in the system, etc. But, according to the reporter, 'no ordinary and generally known cause of disease will account for the phenomena of beri-beri.'—(XV. 58.)

Japan.

It occurs during the summer months in seaport towns along the eastern and southern coasts of Japan. It has two distinct forms: the wet (*beriberia hydrops*), and the dry (*beriberia atrophia*),

the former in wet seasons, the latter in dry periods, but both in the same locality. For a long time its territorial limitation was believed to be the Indian shore of the Bay of Bengal, from 18° to 20° north latitude, and the Island of Ceylon. It is now known to range through the islands of the Indian Archipelago, Java, Sumatra, Borneo, New Guinea, Banca, Celebes, Moluccas and countries bordering on the Red Sea. As yet there is no certain knowledge of its existence in China. No allied disease exists on the European side of the Mediterranean, or in North America. Several *epidemics* of the disease have occurred on board French ships carrying coolies from the Coromandel coast to the colonies. In the recent expedition of the Dutch against the Achinese it appeared among the troops. In 1866 its occurrence in Brazil was described by Dr. Da Silva Lima.

In general terms, beri-beri is a disease of low-lying towns on the sea-board, though occasionally met with in the interior. Its period of endemic prevalence is the summer months; it often becomes severer, or epidemic, in seasons of unusual rainfall. During winter old cases recover, and no new ones occur. Old residents are less liable to contract it than newly arrived (natives). The best fed, best nourished, and best cared-for, are usually its most frequent subjects; while the weak, destitute, with attendant conditions of bad hygiene, are only exceptionally its subjects. It has been looked upon as a result of exposure to marsh exhalations, as a form of scurvy, and as rheumatismal œdema. A large proportion of cases occur between the ages of twenty and thirty. Comparatively few women suffer from it except during pregnancy, and for a short time after confinement; its most common form in these is the 'wet.' Those of sedentary habits are most subject to it of persons employed on shore; but it is frequent among sailors, usually appearing shortly after their arrival in port and being supplied with fresh vegetables. As a sequence of miasmatic and continued fevers, and of syphilis, it is not uncommon. Although frequent in gaols in India, it is not so in Japan, unless the prisons are within the limits of its prevalence. It is said that those who are best able to afford good food are most liable to the disease. An attack once occurring, relapses are very frequent. Foreigners, or natives of America or Europe, in Japan, are almost exempt from the disease; in India, however, they are said to be subject to it. The disease is said to attack the occupants of stone-built houses more frequently than those of houses consisting of more flimsy materials. It is endemic or epidemic; it is for the most part limited to well-defined localities.

At Yokohama an outbreak of the disease occurred on the exposure of new ground as building sites, the circumstance indicating its relation to malaria. In the treatment of beri-beri, however, the uselessness of quinine was remarked.

The remedial measure to be adopted is removal of the affected to the mountains. With preconceived notions of the anæmic nature of the disease, foreign medical men wasted precious time in giving their first cases iron and the routine treatment for anæmia; while the Japanese doctors (rude empiricists) saved most of their cases by the opposite plan of rapid depletion and the use of hydragogue cathartics. A case is recorded where beri-beri and *typhoid* fever were combined in one patient, yet where recovery from the fever took place. This combination is said to be not uncommon. It is in different cases also combined with diarrhœa, dysentery, and marsh fevers. In the treatment of beri-beri, rice as diet is to be avoided. This cereal is by some writers charged with being the cause of the disease. The almost specific virtue claimed for *Treak Farook* by Indian physicians is considered to be on account of its cathartic properties. Diuretics are indicated for the same reason as cathartics.—(XIX. 38 to 76.) See further remarks on beri-beri, also a memorandum on *Treak Farook*, both in the *Appendix*.

XXVIII. DISEASES OF THE BRAIN AND NERVOUS SYSTEM.

In the Report on Shanghai, April to September, 1872, details of a case of cerebral abscess are given. In connection with that case the medical officer quoted from Niemeyer: 'Inasmuch as encapsuled abscesses (in the brain) presumably do not seriously interfere with the intercranial circulation, it is clearly intelligible that they should sometimes be found post-mortem, although during life there may not have been even a suspicion of brain disease. Moreover, these cases of cerebral abscess which, except for the hurtful influence exerted on the entire nutrition of the brain, progress without symptoms, are thus rendered comprehensible. It happens by no means seldom that a patient suffers from dull headache, increasing apathy, diminution of the power of thought reaching imbecility, blunting of the senses, increasing weakness and uncertainty of motion, which certainly place the existence of serious brain-mischief beyond doubt, but give no diagnosis of cerebral abscess. Errors, which unluckily are far seldomer published than are brilliantly confirmed diagnoses, can arouse surprise only among the ignorant, and among those who are imperfectly acquainted with the physiology and pathology of the brain and with the diagnosis of cerebral disease.'—(IV. 98.)

Shanghai.

According to the Report to March, 1873, the amount of brain disease encountered at the above-named settlement has lately assumed formidable proportions, and threatens to rival in importance the diseases of the circulatory system to which public attention has been of late attracted. —(V. 53.)

The several forms of affections included under this head are of somewhat frequent occurrence in Japan. Cases of cerebral disease and insanity are also frequent, a considerable part of the latter more or less directly due to alcoholism.—(XV. 58.)

Japan.

Nervous Affection of Tea-tasters.—Certain affections of the nervous system, which are apparently due to the occupation of tasting tea, amount in some instances to grave disorder of the cerebral functions. The reporter rather draws attention to the circumstance than enters into details regarding it.—(XV. 59.)

Tea-tasters' Disease.

XXIX. 'THE PRESSURE.'

At Swatow, April to September, 1877, diving operations were being carried on at a depth of 144 feet. The pressure of the water at the bottom was 62·5 pounds the square inch; the pressure of the air pumped down, 75 pounds on the corresponding space. The men employed under such circumstances suffered from a peculiar paralytic affection called by themselves 'the pressure.' The author alludes to an account of a similar affection as occurring among workmen employed on the foundations of the St. Louis (Missouri) Bridge. Of 160 men so employed, 30 were seriously affected, and 12 died. (See an article in the *Popular Science Monthly*, for July, 1877, on 'Atmospheric Pressure and Life.') Of four men employed in diving at Swatow, three became attacked with 'the pressure.' The first symptoms were jerking of the lower limbs, and inability to walk when they made the attempt to do so; loss of sensation in the feet and legs; great pain in the lower part of the spine; complete loss of power over the rectum and bladder. Individual delicacy of constitution is said to have nothing to do with the attack, and foreigners are liable to the affection. The first case of it that came under notice occurred in a very powerful Cornishman, who 'had been engaged all his life in diving and wrecking ventures, but had never suffered in any way from his occupation.'—(XIV. 72.)

Swatow.

XXX. 'FOX DISEASE.'

The Chinese hold that reynard is not 'canny,' that he can transform himself and bring about evil and misfortune to anyone who injures him, and they therefore stand in great awe of him. Dr. Dudgeon, in his Report on Peking, to March, 1875, states that he had a patient labouring under 'fox disease.' While squatting, he saw a fox pass him; and from that moment he took ill—had pains all over his body, his limbs shook, his appetite, sleep, and usual buoyant spirits left him, he had visions, and great fear got hold of him; his brain was unsteady, and he felt that all he did was in imitation of the animal. The result is not recorded. The Chinese entertain many peculiar notions relating to the fox.—(IX. 26.)

Peking.

XXXI. TETANUS.

In the Report on Chefoo for the year 1873, a case of traumatic tetanus is recorded. The subject of attack had sustained a compound comminuted fracture of the lower third of the leg while at sea. After an interval of a fortnight the limb was amputated below the knee; a few hours afterwards, tetanus set in, and the patient soon died.—(VII. 20.)

Chefoo.

In reference to a case of traumatic tetanus treated at Shanghai during the summer of 1874, the medical officer quotes from opposing authorities regarding the temperature in that disease. Wunderlich records it as reaching 109·4° Fahr., and even 112° Fahr., while Billroth has seen cases prove rapidly fatal without the temperature becoming elevated; in others, the extreme rise was to 104° Fahr. In this case the patient had been leading a pony by a coil of rope, which somehow noosed him by the chest; the pony having run away, he was dragged for some hundreds of yards, and the skin of the abdomen extensively destroyed. On the eleventh day after the injury, he complained of dysphagia; fifteen hours afterwards the jaws were firmly clenched, the abdominal recti in a state of tonic spasm, and occasional twitchings in the legs. Calabar bean was administered, but from the circumstance of no beneficial effect following its use, the drug was considered to have become deteriorated by climate.—(VIII. 21.)

Shanghai.

At Foochow, in the half-year to September, 1871, a case of idiopathic tetanus occurred. In it, rigid trismus was maintained for twenty-nine days; opisthotonos and spasms of the laryngeal muscles throughout that time, and latterly bronchitis as a complication. The patient recovered under the most careful nursing. Large quantities of stimulants and strong liquid food were given. Drugs were of little use except to relieve symptoms. Hydrate of chloral answered at first in relieving spasm and procuring rest, but had to be discontinued when debility set in. Calabar bean was also tried, but had to be given up from its tendency to produce nausea. Vomiting would have caused a fatal result from the rigid closure of the jaws and great debility present. Morphia then did well.—(II. 27.)

Foochow.

In April, 1872, a Manila sailor having a fortnight previously injured his hand severely on the occasion of being wrecked, was attacked with tetanus, at first of the masseters, platysmæ, and sterno-mastoids; ultimately opisthotonos and considerable dysphagia; then emprosthotonos. The patient was treated with chloral in doses of 30 grains every three hours; during his illness he taking in all 4 ounces of the drug; brandy was also given, and the local injury treated with belladonna. Recovery took place.—(IV. 61.)

In reference to the above remarks, Dr. Somerville quotes from various authorities on the

subject of tetanus. Curling's treatise contains 46 traumatic cases occurring in tropical countries. Of this number, 10—or rather more than 1 in 5—recovered. Fayrer (*Medico-Chirurgical Review*, 1868) reports 3 traumatic cases, all of which recovered. The treatment was varied, and included opium-smoking. Dr. Shrimp states in the *Lancet* that the Chinese smoke crude opium in tetanus, regarding which Dr. Somerville asks, 'Has anyone in China heard of this?' In the *Half-yearly Abstract of the Medical Sciences*, vol. lv. p. 199, Sir Joseph Fayrer has 3 more recent cases, 2 of which recovered. Dr. Bakewell reports from Trinidad (*Lancet*, February 2nd, 1869) a successful case, supposed to be traumatic, in a negress. Mr. Croft reports in the *Lancet* of November 4th, 1871, 2 cases in St. Thomas's Hospital, in both of which recovery took place. From the *résumé* given Dr. Somerville concludes, he thinks fairly, that the mortality in traumatic cases is considerably reduced since the introduction of chloral. He observes that in this disease success is claimed for the most opposite modes of treatment; and the drugs used are often so complex that it is impossible to tell to which, if to any of them, recovery is due.—(IV. 61, 62.)

Takow.

At Takow, in the six months to March, 1872, among the accidents recorded was that of a man whose hand got crushed in a sugar-mill three weeks before admission into hospital. The hand, when seen, was in a most filthy condition. The jaws were firmly clenched. Amputation was performed in the middle of the forearm. Opisthotonos and spasm of the intercostal muscles coming on, the patient died 14 days after the operation. Hydrate of chloral was given in large doses.—(III. 36.)

Swatow.

At Swatow, in December, 1876, a Malay sailor arrived frost-bitten from Chefoo. His left foot was gangrenous, a line of demarcation formed two inches above the ankle; the foot was accordingly amputated on 10th January, 1877. On the 20th, symptoms of tetanus showed themselves. On the 24th, the spasms were general; there was not well-marked opisthotonos, yet he suffered severely from dorsal pain. Chloral seemed to lessen the severity of the spasms for a time after each dose, but they increased again as another dose was becoming due. The patient continued in this state till January 31st, when he died.—(XIII. 10.)

XXXII. RABIES.

Peking.

In the Report on Peking to September, 1871, the statement occurs that rabies is extremely rare. Dr. Dudgeon had not met with a case of that disease in eight years, and had only heard of one. Dogs are never muzzled, but every householder owns one or two; so as regards these animals, Peking is not behind Constantinople.—(XI. 75.) The Pekingese consider it an infallible remedy to swallow the body of a Spanish fly in a case of rabies, and the Chinese assert that they have known of cases 'cured' by this means. In the urine voided after this treatment has been employed, small coagula of blood occur; these coagula are supposed by some to be the 'poison' of the rabid animal, by others to be 'small dogs formed in the system by the poison.'—(VI. 12).

Hankow.

At Hankow, during the six months ending March 31st, a case of hydrophobia occurred in the person of an adult foreign resident. On December 15th he was bitten by a stray dog. After two days the wound was cauterized with nitrate of silver; it then healed favourably. On February 1st the patient complained of great lassitude and nausea, but without

pyrexia. In the afternoon of the 2nd, he was unable to swallow cold water; at the same time there was increased secretion of saliva, and the cicatrix of the wound had become red, but there was no pain felt in it or in the nerves of the arm. The secretion of tenacious saliva rapidly increased, violent delirium gave place to exhaustion, and on the afternoon of the 3rd he died. The treatment consisted of subcutaneous injections of morphia, enemata of cold water and of chloral; but none gave relief. The temperature of the skin, as long as observations could be taken, did not exceed 99° Fahr. Post-mortem examination displayed intense congestion of the lungs and abdominal viscera; heart contracted: head and spinal cord not examined. The native dog that inflicted the wound was at the time captured by the patient, who kept it in his bedroom along with two other dogs, a monkey, and a cat. The dogs, the monkey, and the cat all died with nervous symptoms within a fortnight of the bite; and the two dogs, which had likewise been kept in the same room with it, exhibited symptoms of excitement and were destroyed. The reporter states that rabies is known not to depend on the ill-usage to which dogs may be subjected; otherwise it would be ever present among the half-starved mangy curs which fight for garbage in the lanes of the city.—(V. 31.)

In the same Report the medical officer gives some particulars with regard to the treatment, by Chinese physicians, of hydrophobia. In the 'E-tsung-king-keën' it is stated that 'the dog inhales poisonous emanations, and these, penetrating to the five viscera, produce rabies. The man who has been bitten has three chances of dying to one of living.' Chinese Treatment.

Treatment.—Immediately after having been bitten, scratch the wound freely with a knife till it bleeds plenteously, likewise suck and wash it. Then take an empty walnut-shell, fill it with human fæces, lay this on the place bitten, cover it over with moxa made of artemesia. Ignite and renew the moxa a hundred times if necessary, until the walnut-shell has been burnt black, and the contents thoroughly dried; then remove it, and cover the wound with the *Yuh-tsin-san*, mixed with saliva. Repeat the whole of this local treatment during the second, fourth, and fifth days. Internally, give the *Foo-wei-san* until hæmaturia is produced along with pain in micturition; whereupon administer the *Hoo-peh-pieh-yuh-san*, which will alleviate the latter symptom. On the top of the head there will be found a red hair, which is to be extracted.

Second Method.—Take the curd of the black pea, dried and pulverized; mix it with hemp oil, and pour it into a large ball; roll this over the wound for some time, then break it open, and inside it will present a hair-like appearance. Continue the rolling until it is found to have lost the hair-like aspect. The patient must, for the future, avoid eating dog's flesh or silkworms, and he must not drink wine or inhale the fragrance from hemp for 100 days. Neither can he eat with safety diseased meat or anything in a state of decomposition; and he must sleep apart from his wife for 100 days. He must daily partake of plum-kernels. When the poison of the dog has entered the heart of the victim, and has produced feelings of misery and wretchedness, the belly swells up, and there is an abundant secretion of saliva; it is then proper to try the effect of the skull, teeth and toes of the tiger ground up, and given in $\frac{1}{5}$ ounce doses in wine. If a speedy cure does not follow, the person becomes mad, barks like a dog, the eyes are white and glaring, and death soon ensues.

Third Method.—Take a wine-cup and fill it with wine; boil the contents in the cup, and pour them out. While the cup is hot press it over the wound, and as it cools it will draw out the impure blood. Repeat this operation until black blood ceases to flow.

The Yuh-tsin-san above mentioned consists of the following, namely:

Orris root, $\frac{1}{10}$ ounce.
Arum pentaphyllum, $\frac{1}{10}$ ounce.
Peh-fuh-tze, (Aroideæ), $\frac{1}{10}$ ounce.
Urtica tuberosa, $\frac{1}{10}$ ounce.
Angelica, $\frac{1}{10}$ ounce.
Libanotis, $\frac{1}{10}$ ounce.
Grind into a powder, and moisten.

Foo-wei-san: Take of—

Cantharides, 1 fly.
A yellow soft earth, 1 ounce.
Realgar, $\frac{1}{10}$ ounce.
Musk, $\frac{1}{50}$ ounce.

Take $\frac{1}{10}$ ounce dissolved in a cup of wine for a dose. Repeat the dose three times a day. Add one Spanish fly for every day that has transpired since the bite, up to the seventh day; but on the tenth day and afterwards, add ten flies to the mixture.

Hoo-peh-pieh-yuh-san: Take of—

Yellow earth, 6 ounces.
Liquorice, 1 ounce.
Amber, $\frac{1}{2}$ ounce.
Indigo, $\frac{1}{12}$ ounce.

Mix, and pulverize. Take $\frac{1}{2}$ ounce dissolved in water in which the lamp-rush has been boiled.

In the 'Wai-ko-ta-tsin' it is stated that rabies arises from a poisonous emanation, which, when it enters the heart, makes the tongue hang out; when it penetrates the bowels, renders the eyes dull; when it goes to the spleen, induces an abundant secretion of saliva; and when it affects the lungs, renders the animal incapable of barking. If it be determined to the kidneys, the animal forcibly drags its tail between the legs.

Treatment.—Immediately after the receipt of the bite, take the *Kew-sin-san*, which will expel the poison through the urinary organs, and for 100 days the patient must not smoke hemp nor eat curd made from the red bean. If the cure be slow, and the poison not readily expelled, the belly swells up, the voice becomes like the bark of a dog, and the eyes brilliantly white. Under these latter circumstances a fatal result is likely to ensue. While taking the above-mentioned remedy internally, use the *Chuy-fung-yuh-sin-san* mixed with wine, as a local application; cover it over with oiled paper and a bandage—change three times a day. Look for a red hair on the top of the head, and extract it.

Kew-sin-san contains:

Cantharides without head, legs, or wings, 7.
Carbonate of lead, $\frac{1}{10}$ ounce.

If followed by pain in micturition, drink plenty of the infusion of liquorice root.

Chuy-fung-yuh-sin-san contains :

Heteropa asaroides, 1 ounce.
Libanotis, 1 ounce.
Aconitum sinense, 1 ounce.
Peppermint, 1 ounce.
Aconitum, 1 ounce.
Levisticum, 1 ounce.
Orris root, 1 ounce.
Atractylodes rubra, 1 ounce.
Realgar, $\frac{2}{5}$ ounce.

Second Method.—Take one handful of rush pith, and $1\frac{1}{2}$ ounce of black peas; infuse in boiling water, and drink along with the before-mentioned *kew-sin-san.* Locally, mix up equal parts of pangolin scales, cantharides, and artemisia. Take a piece about the size of a walnut, and after covering the wound with a slice of garlic, place the remedy over it, and ignite; then wash the wound, and use the *yuh-tsin-san.* If a cure is likely to ensue, no matter ought to form.

[Apropos to garlic, the following is from an article on 'Herb Lore' in the *Standard* of June 9th, 1883: 'Hellebore and garlic cured the bite of a dog; and the latter herb, if boiled with a cock, would make an ointment which secured the person using it against the attacks of lions.']

Third Method.—If the wound re-opens, take $\frac{1}{50}$ ounce of realgar and $\frac{1}{50}$ ounce of musk; grind them up, and drink in wine. After having drunk this draught the patient rests, and must not be disturbed till he awakens spontaneously. If the urine is red and bloody, continue the medicine.

Fourth Method.—Take one nux vomica seed, rub it in water till it has dissolved, and drink the solution.

In the 'Se-yuen-luh,' the following prescriptions are recommended: 'Take seven Spanish flies without heads, legs, or wings, and mix them with the contents of two eggs in a basin; place the basin in a covered utensil filled with water, and boil till the eggs are cooked; withdraw the flies, and eat the eggs. In the urine will be found red strings of blood, which contain the poison. If there should be pain in the belly, repeat the dose.

Second Method.—Mix cantharides with the best rice, and cook the mixture until the rice becomes of a brownish tint; withdraw the flies, grind up the rice, and eat it along with eggs till there appear strings of blood in the urine.

Third Method.—Wash the bite with water from a clear mountain stream, and drink the freshly expressed juice of the ginger-root. Carefully wrap up the wound so as to protect it from the wind.

Fourth Method.—Take of

Libanotis, 1 ounce,
Arum pentaphyllum, 1 ounce.

Moisten with water, and dry. Repeat the process seven successive times, then grind into a powder. Take $\frac{1}{10}$ ounce twice a day, which will produce perspiration.

In the 'Yen-fan-sin-peën,' a recent work, it is stated that there is an aggravation of the symptoms every seventh day. If, perchance, three weeks pass by without such aggravation, there

is every prospect of the disease being curable. The directions for treatment are—first to look for and extract a red hair, which will be found on the vertex; then to wash the wound with cold tea in an unexposed situation, cover it with boiled white of egg, and over this apply the moxa four times. The spot from which the red hair has been extracted is to be covered with almond-paste, and a cupful of the juice of the shallot is to be drunk every seventh day during 49 days. For 100 days the patient must not smoke tobacco or drink vinegar, and for one year he must not eat pork or fish, drink wine, or share the marital couch. Throughout life he must eschew dog's flesh, silkworms, and red bean curd. The prognosis given is that of three persons bitten by a mad dog in one day, only one will recover. Cantharides is not to be prescribed on account of its poisonous properties, and producing pain in micturition.

Second Method.—Drink the juice of a certain plant, which will produce purging and expel the poison in the form of streaks of blood. This remedy is useful at any stage of the disorder. The plant should be grown in a pot, the leaves fully matured, 8 or 9 inches long and 2 inches broad. Further on, it is stated that persons treated with cantharides must be kept quiet for 100 days; and that if during that time the sufferer hears the sound of a gong, or the report of firearms, rabies is certain to ensue, as the dog is frightened by such noises. It is better to adopt the hygiene before alluded to, and take the following remedy:

Tin, filed to dust, $\frac{3}{10}$ ounce.
Bisulphide of arsenic, broken into pieces, $\frac{3}{10}$ ounce.
Liquorice-root, $\frac{3}{10}$ ounce.
Lamp rush, 1.
Nux vomica seeds, 10.
Macerate in river-water.

Or the Verbena officinalis may be infused with the Scirpus tuberosis, and taken as a ptisan, or instead of these the root bark of the barberry in like manner may be used. Tobacco-oil is also spoken of as a certain remedy, provided the person bitten does not taste it hot and acrid. Frogs are likewise recommended to be eaten during the period of sickness, the wound to be covered with the entrails freshly exposed, and the application changed daily.

In the 'King-neën-leäng-fang' it is recommended to cover the wound with the bark of the *Sophora Japonica,* to surround this with a deep ring made of flour-paste, to fill up the ring with human fæces covered with another slice of the bark, and over all to apply the moxa, repeating the burning fifteen times, which will be succeeded by free perspiration. And a mixture of half an ounce of the bisulphide of arsenic with 100 bruised almonds may be applied to the wound, and also taken internally in doses of one-fifth of an ounce; along with the latter a preparation of tiger's bones boiled in wine should be drunk. Another local application recommended is the root of the *Cercis siliqua* mixed with brown sugar, and internally an infusion of the root of the plum-tree.

In the 'Ts'eën-kin-yih-fang' it is recommended to burn the wound with the moxa once a day for 100 days, and to eat large quantities of almonds.

In the 'Pen-tsou-kang-sunh' various local remedies are given: for example, balm-leaves ground into a powder; the leaves of the rehmannia, mixed with rice formed into a cake and laid over the wound; castor-oil seeds ground and applied, the bite having been first cleansed with an infusion of tobacco-leaves; a mixture of pennywort and realgar; the sulphate of iron; equal

parts of hair and tenrec-quills (*Centetes sp. ?*) burnt, and the dust used: internally, cantharides with rice, and a species of serpent dried and pulverized, are considered efficacious.

The reporter observes, that in the above extracts the necessity of immediately destroying the poison left by the bite of a rabid dog is carefully inculcated. The method by the moxa is effectual, although unnecessary filthy adjuncts are combined with it. In connection with the confidence placed in cantharides, he observes that at one time the same drug was credited in European practice with certain virtues in the treatment of hydrophobia. (See Steele's 'Therapeutics,' p. 382. Philadelphia, third edition.) In Aitken's 'Science and Practice of Medicine,' some of the other drugs used by the Chinese are mentioned as having been unsuccessfully used in European medicine; for example, iron, lead, musk, tobacco, and strychnine.—(V. 32, *et seq.*)

At Shanghai, in the period to March, 1875, a case of hydrophobia was reported. Of several wounds inflicted by a stray dog on the hand, all healed in ordinary course except one on the third phalange of the middle finger: it suppurated, became very painful, and cicatrization of it was not completed until three weeks after its infliction. As the disease advanced, a solution as follows was injected, at first into the right internal saphena vein; but that vessel becoming speedily obstructed, the operation was continued on the left. The solution was considered to represent the composition of the serum of the blood: namely, chloride of sodium, 60 grains; chloride of potassium, 6 grains; phosphate of soda, 3 grains; carbonate of soda, 20 grains; alcohol, 60 minims; distilled water, 20 ounces. The autopsy was performed four hours after death. Nothing was observed except that the spinal cord was anæmic, and all the muscles gorged with blood. The period of incubation in this case was 41 days. The attack began with severe hypogastric pain; although the lower surface of the tongue was examined, no trace was seen of the sublingual vesicles, known as *lyssæ;* no pain had been complained of in the cicatrix of any of the wounds. Morphia injections afforded momentary relief; chloral enemata did not produce sleep, but at least induced anæsthesia; the operation of intravenal injection appears to have hastened the fatal event. Shanghai.

In reference to the general subject of hydrophobia, the most disquieting suggestion that has been made is one originally advanced in 1847 by Dr. Wright (*British and Foreign Medical Review,* vol. xxiii.), and resuscitated by Dr. Muscroft (*Lancet,* vol. ii. of 1874, pp. 513, 864), and by various American physicians; this is, that under certain circumstances, or at certain times, the saliva of a dog apparently healthy, and subsequently presenting no symptoms of disease, may, when applied to a wound, produce rabies in man. Dr. Wright established, as a result of fourteen experiments, that, whatever may be the case as between dogs and men, the saliva of a healthy dog is capable of producing rabies when injected into the veins of another dog; and Dr. Muscroft details two cases, which establish the proposition with which he starts. Professor Maclean (*Lancet,* vol. ii. of 1874, p. 654) gives six cases wherein the periods of incubation were respectively 42 days, 43 days, 40 days, 35 days, and a maximum of 60 or 64 days in the fifth and sixth cases. Dr. Jamieson draws attention to the fact that 'the dread of fluids which is so marked a symptom in the rabid human being, is seldom if ever present in the dog; that animal may show *a greedy desire for water.*'—(IX. 13, 16.)

In 1877 a case of hydrophobia occurred at Shanghai. The subject of the disease was bitten by a stray dog on 25th May. On 30th August symptoms of rabies appeared, and death occurred on the 1st of September. — (XIV. 45) See also *Memorandum on Certain Drugs* in the Appendix.

XXXIII. DELIRIUM TREMENS.

At Hankow, in 1871, the patient to whom Dr. Reid first administered chloral was the only native Chinese he had met with suffering from delirium tremens. That patient was conducted by his wife to hospital, secured in a novel manner. A heavy chain was fixed round his waist by a padlock, and to this girdle was attached in front another chain, four feet long, which ended in a weight like a small grindstone. So long as no great restlessness was displayed, the patient could with an effort lift the weight and change his quarters; but if he became at all obstreporous, he was held down, and additional rings of stone were slipped on the chain until he could only gyrate round a fixed point. When he came under notice, he had not slept for a week, and had kept his neighbourhood awake by his shouts. Under the use of chloral, given in forty-grain doses, twice daily for three days, he slept, only awakening to take food. He became perfectly quiet, and left the hospital a free man.—(II. 48.)

Hankow.

XXXIV. EARACHE.

At Foochow, April to September, 1875, otitis is very common during the hot months, among the floating population. It usually follows swimming; sometimes ends in abscess; at others, a thin muco-purulent discharge persists. On examining the meatus, nothing is seen in the majority of instances except a reddened and swollen appearance of the lining membrane. Dr. Somerville has found the best treatment to be the application of leeches behind the ear, painting the latter part with the P. B. tincture of aconite undiluted, and syringing the ear with a warm weak solution of carbolic acid in glycerine. The affection is often very obstinate.—(X. 35.)

Foochow.

At Amoy, at the commencement of the rainy season in 1871, several cases of acute inflammation of the external auditory canal occurred, and from its frequency the affection might be described as putting on an epidemic character. It terminates in copious discharge, and temporary impairment of hearing.—(II. 11.)

Amoy.

XXXV. DISEASES OF THE EYES, ETC.

At Newchwang, during the winter of 1871-72, inflamed eyes and eyelids were unusually prevalent, both affections attributed to the cold winds and dust which prevailed during that season. The eyelids were generally granular, and in many cases much everted (ectropium). Several Europeans were similarly affected. Treatment by the free application of sulphate of copper was perfectly successful, and in the estimation of the Chinese, marvellous. A number of Europeans suffered from milder attacks of the same affection which yielded to the usual treatment.—(III. 16.)

Newchwang.

At Kiukiang, 1871, affections of the eyes were very common; 457 cases having presented themselves at the dispensary. As an example out of many such: lower eyelids converted into the aspect of raw, red mucous membrane from neglected eczema and inflammation persisting during a period of ten years. There were many cases of inverted lashes. The solvent action of sulphate of soda upon opacities of the cornea in general may be held to be

Kiukiang.

proved. Also, the benefit upon intense ophthalmia of 'touching' the gums with mercury. The perpetual irritation of inverted eyelashes gives rise to a peculiar but easily curable condition of the cornea, which becomes vasculo-nebulous and sodden. A large variety of forms of these diseases is enumerated, some of the cases of an aggravated nature.—(II. 63.)

In the year to March, 1881, eye diseases, so common in every part of this empire, here formed no exception; and next to skin diseases, they ranked in prevalence. The results of treatment in them were very gratifying, however. Many Chinese applied for relief on account of ectropion, cataract, and granular lids; and many have been so improved under treatment as to be able to pursue their usual occupations.—(XXI. 48.)

In the year ended March, 1882, out of a total number of 3,156 Chinese who applied for medical aid, 575 were cases of diseases of the eye and lids, 105 being sufferers from corneal ulcer in its various forms. Many cases of corneal ulcer began while the patient was suffering, or recovering from malarious fever; indeed, the debility induced by intermittent and remittent fever seems to be the starting-point of a large percentage of the cases seen here. Chronic conjunctivitis, with the resulting granular lids, and pannus, is also very frequent. Many operations, including those for artificial pupil, iridectomy, cataract, pterygium, trichiasis, etc., were performed with a fair amount of success.—(XXIII. 39.)

At Amoy, according to the Report to September, 1877, ulceration of the cornea has been met with several times in hæmatozoa cases, and is the only mischief which Dr. Manson had any grounds for attributing to the embryo of filariæ in the blood.—(XIV. 8.) Amoy.

At Takow and Taiwan-fu, in 1871, diseases of the eyes were very common. One cause of their prevalence is found in the showers of fine sand, which are of everyday occurrence during the N.E. monsoon. The continued irritation from this sand gives rise to chronic inflammation of the eyes and all its evil results.—(II. 68.) Takow and Taiwan.

At Canton, according to the Report to September, 1871, ophthalmia is one of the most frequent diseases among the Chinese population; although it is not confined to any season, it is most frequent in summer.—(II. 70.) Canton.

The Japanese suffer severely from purulent conjunctivitis. This disease among them is contagious, and yet foreigners are rarely attacked by it. There appears, however, to be a history of a rather severe epidemic as having occurred among foreign residents some years ago.—(XV. 59.) Japan.

According to the Report on Wenchow, to September, 1881, Dr. Macgowan, after careful investigation during several years, has failed to find evidence of *Daltonism* among the Chinese. He states that of the persons thus examined, the irides were generally dark hazel or black, these being the colours prevalent among the people. He mentions the circumstance lately ascertained, that Nubians are free from the defect, and remarks that in China it is only met with among Europeans and Americans. Of 1,000 native Chinese examined, the irides were generally dark hazel, the others black.—(XXII. 45.) Daltonism.

XXXVI. DISEASE OF THE HEART AND ANEURISM.

In Peking, to 31st March, 1875, disease of the heart and aneurism appear to be of very rare occurrence. Dr. Dudgeon had scarcely met with a case of either. He thinks that probably the quiet and abstemious habits of the Chinese may account for this.—(IX. 22.) Peking.

At Kiukiang, during the period from April to September, 1872, a case of sudden death by rupture of the auricle, small and accentuated aneurisms of the ascending aorta, and fatty degeneration of the heart, was recorded as occurring in a man of 32 years of age. With reference to that case, Dr. Shearer remarks to this effect: In Britain, the deaths from disease of the heart have numerically increased, such increase wholly confined to males over 20 years of age. These diseases are much less frequent in Germany and France than they are in England, least of all among Hindoos, Caffres, Mussulmans, and among rice-eating people generally. Dr. Shearer observes, also, that among the Chinese this class of diseases is extremely rare. Among their causes assigned by Dr. Allbutt are overwork and strain in the heart and great bloodvessels in the case of forgemen, bargees, etc. Mr. Myers traces their development among soldiers to the system of drilling with accoutrements. Dr. Quain gives weight to the overstrained excitement of our times, and quotes from Corvisart as to the increase of heart affections during the French Revolution. Dr. Shearer observes, however, that amid the quiet languor and monotony of the various parts of China, they are alarmingly frequent among foreigners during the prime of early manhood. Much may be assigned to ill-regulated gymnastic exercises, and also to 'good living.'—(IV. 50, 54.)

Kiukiang.

In the Report on Hankow for the half-year ending 31st March, 1872, are some remarks on aneurism which have a general importance. The reporter quotes from several authors on the subject. He remarks that out of 120 cases cited in Cooper's 'Surgical Dictionary,' in 5 only were the subjects between 25 and 30 years of age. Gardiner states that in his cases the youngest patient was over 34 years of age, the large majority over 40. On the other hand, in military life the disease is met with at a comparatively early age, due, as is believed, to the system of clothing, equipment, and diet. It is also common among forgemen, puddlers, and Cornish miners. He refers to the influence assigned to drunken habits, rheumatism and syphilis in inducing degeneration of arterial coats, and thus leading to aneurism. The disease prevails to a greater extent in some countries than in others. In Germany, aneurism of the extremities is rare; it is more frequent in France and Italy, and most frequent in England. Other extracts follow from the work already quoted.—(III. 45.) In the Report to September, 1874, a case was recorded in which a young man of 32 years of age having died of disease of the heart, with atheromatous degeneration in the aorta, the medical officer points to it as illustrative of the degeneration to which foreigners residing in China are especially liable.—(VIII. 42.) In the Report to September, 1876, the case is related of popliteal aneurism in a native Chinese successfully treated by ligature of the superficial femoral artery.—(XII. 17.) In that to September, 1881, the case of aneurism of the ascending aorta in a member of the Customs outdoor staff, in which sudden death occurred.—(XXII. 1.)

Hankow.

At Shanghai, in the six months to March, 1872, six cases of death by aneurism were recorded, and it is stated that several persons known to be suffering from that disease left the settlement during that period. The reporter observes that many persons have aneurism who are unconscious of being so affected. At Shanghai, he says, the causes to which dilatation of the arteries is due, especially when there exists any constitutional tendency to degeneration, are present in full force. The sudden and violent change from the compulsory inactivity of the summer to the gymnastic exercises and athletic sports to which a large number of young men enthusiastically devote themselves at the commencement of autumn freshness, is of itself sufficient to overstrain the arterial system. In England the occasional spurts of a boat-race are considered to have the same effect. In China, the comparative rarity of the disease

Shanghai.

among the natives is assigned to their simple habits, phlegmatic and unexcitable natures; yet among them, arterial degeneration is common.—(III. 80.)

In his Report to September of that year, Dr. Jamieson wrote: 'Aneurism is so rare among the Chinese, that he may mention one abdominal aortic case in the Gutzlaff Hospital, namely, in a woman aged 30.'—(IV. 103.) In that to March, 1873, the medical officer writes: 'Of the aneurisms, that fatal in October occurred in a man aged 35; that in December in a man aged 33; of the two in January, one was in a man, the other in a woman, both 30 years of age. In the same document the medical officer refers to the large number of cases of heart disease and of aneurism, which, of late years, have presented themselves in foreigners resident in China. He alludes to the connection said to exist between those affections and malaria; and expresses a hope that this phase of the subject may be fully investigated.'—(V. 53, 57.)

In the Report to September of that year, he reverts to the same subject thus: 'The alarming frequency and fatality of diseases of the circulatory system among foreigners in China ought now to have its effect in causing each person to examine his manner of life.' He quotes from Dr. Murchison, that, what in many persons is merely a form of senile decay, may, under certain conditions, occur at a comparatively early period of life. Andral and Lobstein long ago connected atheroma of the vessels with 'a particular taint of the fluids closely resembling gout.'—(VI. 55.)

During the half-year ending March, 1874, five of the recorded deaths were due to aneurism. All occurred in males; of the whole, 3 were of the thoracic aorta, 1 was noted as aortic, and in 1 the position was not stated. The ages of the patients respectively were 43, 38, 38, and 36. That senile decay in its ordinary sense has nothing to do with the prevalence of aneurism in Shanghai is clear, yet it would seem as if in a considerable number of foreign residents there exists that degeneration of the tissues which is so often associated with advanced life. The reporter considers that the prevalence of aneurism is considerably greater at Shanghai than at Hong Kong.—(VII. 36.)

In his Report to March, 1875, the medical officer states his belief that there exists a tendency to premature arterial degeneration produced by residence at the former settlement. In a previous Report he quoted from Murchison, to prove that arterial degeneration is most frequently found among people who neglect or overtax their digestive functions. Violent exertion of an intermittent character contributes its share.—(IX. 11.) In that succeeding, namely to September of the same year, he discusses the question whether a connection really exists between syphilitic taint of the constitution and aneurism, but with the result to leave it unresolved. On the subject of training, Dr. Jamieson writes: 'It is certain that any display in athletic skill which demands a preliminary overstrain of the heart and great vessels at a time when muscular waste is at its highest, as in rapidly reducing weight by assiduous sweating, is bad.'—(X. 60, 61.)

At Foochow, in the half-year to March, 1873, two deaths by disease of the heart in foreigners were recorded. On the subject of 'training,' Dr. Somerville quotes the approval by Dr. Parkes of the judicious system recommended by 'Stonehenge.' Dr. Somerville writes: 'It is known that even at home, high training cannot be kept up except for a limited period, and he does not think it ought to be attempted in China at all. Anyone, however, can easily form for himself a good practical course of exercises according to his own tastes; and whether it be gymnastic exercises, games, or field-sports, is of little moment, provided it be well regulated.—(V. 41, 43.)

Foochow.

At Amoy, according to the Report to September, 1876, aneurism was rare among Chinese patients, Dr. Manson in ten years' experience having only met with two or three cases of the disease among them.—(XII. 39.) In that to September, 1881, two deaths by aortic aneurism are recorded; namely, one in a patient arrived from Hankow, the second in a sailor.—(XXII. 1.)

Amoy.

At Swatow, during the half-year ending 30th September, 1871, it is recorded that a case of aneurism occurred; that it was treated by means of large doses of iodide of potassium, with the result that consolidation of its contents occurred in ten days.—(XI. 9.)

Swatow.

Diseases of the heart appear to be somewhat unfrequent in Japan, a circumstance which is considered to accord with the rarity of acute articular rheumatism in that country; the latter affection being considered to be the most prolific source of the former. Aneurism, on the other hand, is of frequent occurrence among foreign residents in Yokohama. In many cases the disease is only diagnosed on post-mortem examination; and there is reason to believe that liability to the affection increases with length of residence.—(XV. 59, 60.) According to the Report quoted from, 'In view to recent investigations which have proved that, in China, dogs frequently suffer from aneurism, apparently due to the presence of *filaria* within the system, and that men also suffer from several diseases traceable to allied species, it has been suggested that the prevalence of aneurism in the human subject in the East *may possibly* be due to the same parasite.'—(XIII. 31.)

Japan.

XXXVII. PULMONIC DISEASES.

At Chefoo, Dr. Brereton observed, in his Report for the half-year to September, 1879, that, considering the nature of that summer, it was matter of surprise that so few cases of bronchial affections occurred; yet that two cases of pneumonia happened—a disease extremely rare there, owing no doubt to the dryness of the atmosphere.—(XVIII. 71.) In the period to March, 1880, cases of ordinary catarrh, associated in some instances with bronchitis, not infrequently occurred; these were generally traced to exposure to cold.—(XIX. 31.)

Chefoo.

At Chinkiang, in the year ended March, 1881, an unusual number of lung cases occurred during the summer season. Among them were five cases of pneumonia, namely, two in adults and three in children. Four cases of acute bronchitis happened in children, and of these one was fatal.—(XXI. 98.)

Chinkiang.

At Ningpo, during the winter of 1877-78, there were several cases of bronchitis, but only two severe, and all have made good recoveries.—(XV. 21.)

Ningpo.

At Foochow, in the period from October, 1880, to March, 1881, coryza and bronchial affections ranked next in frequency to malarial fevers.—(XXI. 53.)

Foochow.

Inflammatory Affections of the Lungs and Pleura.—The Reports notice a steady and uniform increase in the prevalence of these affections at Yokohama, from 1871 to 1874; a sudden decrease in the latter year; and then a more rapid rise up to 1877. These variations may, it is assumed, have a connection with meteorological conditions, but details on this point are wanting. Duration of residence on the part of foreigners does not appear to have any influence on liability to these affections. The general mortality by them, however, is less than the average given for the civilized world. Bronchitis is occasionally epidemic, as influenza.—(XV. 61.)

Japan.

XXXVIII. LARYNGEAL CATARRH.

At Chefoo, in the period from October, 1874, to September, 1875, laryngeal catarrh among children was described as being an ordinary complaint during the autumn and spring months. The affection is so common that there is scarcely a child under three years of age who is not the subject of it in a greater or less degree. It appears to be excited by the extremely dry weather prevailing at the seasons in question. Its invasion is sudden; commencing at night; the child wakes in great alarm, with difficulty of breathing. There is pyrexia, high pulse, and rough respiration, accompanied by a crowing noise, hoarse cough, and frequent spasms; the pharynx is more or less inflamed and congested, this state not always preventing free deglutition. These symptoms vary in intensity in the respective cases, but the acute stage usually subsides within forty-eight hours of the onset of the attack, leaving free bronchial secretion for some days afterwards. At first the attack resembles true *croup*. Ipecacuanha emetics, small doses of grey powder, and bromide of potassium give relief or cut short the attack. Occasionally the disease, by extending to the ramifications of the bronchiæ, gives rise to bronchorhœa; thus the attack may be prolonged for several days. At this stage stimulants and expectorants are serviceable.—(XI. 6.)

Chefoo.

At Tientsin, in March, 1879, a peculiar catarrhal fever, attended by croupy symptoms, prevailed. It began on the 8th of the month. After two warm days, cold winds from the north-west suddenly came on to blow, and on that morning four children were seized. On the 12th, five more were attacked, and on the 22nd and 24th there were eight fresh cases. The characteristic symptoms were great restlessness, severe cough, coryza, dyspnœa, and slight bronchitis. The disease ran its course in from seven to ten days; the termination being attended with diarrhœa in some of the cases, and with profuse perspiration in others. The affection was looked upon as infectious. Treatment consisted of emetics, ipecacuanha, and salines.—(XVII. 34.)

Peculiar Catarrhal Affection.

XXXIX. ASTHMA.

In the Report on Peking to March, 1875, Dr. Dudgeon wrote: The Chinese do not appear to draw any very definite distinctions between asthma and whooping-cough. When asthma becomes chronic, and the patient cannot sleep on account of it, the disease is called *hsiao* asthma, *i.e.* whooping-cough asthma. In this chronic form, the following prescription is recommended, namely: Arsenic, 1 mace; bean-curd, 1 tael; pork, 4 taels—divide into three portions, roast, and add flour with which to make pills. Eight different kinds or causes of asthma are enumerated, namely: cold or wind, phlegm, air, water, chronic debility, injury and weakness of the stomach. In hiccough, called by the Chinese *kai-ni*, irritation of the nose or stopping of the breath is prescribed, and Dr. Dudgeon writes regarding these measures: 'We can all testify to their value.' In chronic asthma, medicinal fumigation is ordered. The following compound is to be smoked, namely: *nan-sing* (tubers of Arum pentaphyllum), *kwan-tung, hwa, o-kwan shih, fo'rh ts'ao* (gnaphalium ?), realgar, *aa.* 1 candareen: to be ground; add artemisia and a slice of ginger, and inhale the smoke. If there should be no artemisia, *yü-kin* (rad. amomi) may take its place. As Dr. Dudgeon remarks, here is the germ—nay, the very practice of smoking stramonium; also according to some botanical authorities the *fo'rh ts'ao* is not artemisia but stramonium.—(IX. 36.)

Historical.

In the Report on Kiukiang, to March, 1872, Dr. Shearer gave details regarding several cases of asthma. In one, spasmodic and organic asthma was complicated with urticaria and intermittent fever; in a second, asthma occurred in an opium-smoker; in a third, the disease was complicated with fully developed emphysema.—(III. 64.)

Kiukiang.

In the Report on Ningpo for the year to March, 1877, a record occurs of the case of a man who suffered severely from a sort of asthma brought on by inhaling dust from wheat, while superintending the loading of a vessel. The chief officer of the vessel was attacked the evening after leaving the port, and for a time was seriously ill. —(XIII. 47.)

Ningpo.

XL. LEECH IN THE NOSTRIL.

In the Report on Amoy to 31st March, 1874, a case is recorded in which a naturalist who had for some months been engaged in travelling in Formosa, complained of epistaxis, pain in the head, and other anomalous symptoms. Through a speculum, the medical officer saw a dark, shining body far up the nose; and just as the speculum was being withdrawn, the head of a leech was protruded between the blades of the instrument and quickly withdrawn. An artery forceps was introduced into the nostril, and after one or two attempts, was fastened on the head of the animal as it was protruded. Allowing the forceps thus attached to dangle from the nose while some salt-and-water was injected, the leech after a time relaxed its hold and fell into the hands of the astonished naturalist. According to his own account, on a trip to Bankimtang, he drank from a pool in which he noticed some leeches about half an inch in length, and he afterwards picked two or three such from the roof of his mouth. Some six or eight days afterwards he was troubled with bleeding from the right nostril, and afterwards with considerable pain on that side of the nose. He had seen something protruding several times. The leech, when extracted, measured an inch and a half in length.

Amoy.

A short time previously, a gentleman residing in Tamsui was afflicted in a similar manner. Every now and then the head of the animal would be protruded from the nostril, and wander about after the manner of leeches over the lip and nose. It was very fond of water, and its owner could generally cause it to protrude by dipping his face in a basin of water. At Takow, Formosa, the medical officer has on two occasions seen what must have been a leech in the nostril of a monkey. At the time the nature of the illness of the monkey was supposed to be polypus. Sometimes, when sitting quietly, a long, dark, fleshy body would come out of the nostril, but the movements of the monkey always caused the protruded object to retreat.—(VII. 27.)

Tamsui.

XLI. CANCRUM ORIS.

At Kiukiang, in the six months to September, 1872, four cases of cancrum oris were recorded. In all, the children affected suffered also from ague and dysentery, and in all the disease was fatal. The results of treatment in this class of cases are not very encouraging, even when seen in the early stage. Suppose the disease arrested and cicatrization obtained, the deformity would be so frightful, and the inconvenience so great, that life would be no boon to the victim.—(IV. 45.)

Kiukiang.

In the period to March, 1882, eight cases of the disease occurred, of which number only two did well; these were treated by the free use of chloride of zinc and stimulants with quinine. —(XXIII. 39.)

XLII. DISEASE OF THE TEETH.

At Kiukiang, during the year 1881, there were among the applicants at the public dispensary, thirty-three cases of disease of the teeth or gums. It is remarked that decay of the teeth is much more uncommon among the Chinese than among the Europeans. The simple nature of the diet of the former is credited with being the cause of this. Decay, when it occurs, is peculiar and usually very slow. It is not uncommon to find a tooth with a large central decayed cavity, yet with but the smallest external opening, sometimes a mere crack, as it were, splitting the tooth down vertically.—(II. 61.)

Kiukiang.

XLIII. QUINSY.

At Newchwang, during the winter of 1880-81, *quinsy* attacked nearly every foreign adult in the settlement. The majority of the patients had more than one attack; in some instances the disease was very severe. The largest number of cases, and the most severe, occurred in the first half of the winter. After a considerable fall of snow the cases decreased in number and severity. In the treatment, inhalation of steam, gargles of hot water and laudanum, the application of solid nitrate of silver, and astringent gargles were the means employed.—(XXI. 38.)

Newchwang.

At Shanghai, in the half-year to March, 1877, a case of extremely acute inflammation of the soft palate, pillars, and tonsils, with a good deal of laryngeal trouble, occurred. On the third day of the disease gangrene appeared imminent. However, leeching and bran-poultices, with deep incisions and constant steam inhalations, moderated the disease, and the patient made a complete though lingering recovery.—(XIII. 44.)

Shanghai.

At Canton, in January, 1877, there was a great prevalence among the Chinese of *Cynanche tonsillaris*, with tendency to suppuration of the tonsils, the general type of the disease severe. The name given to the affection by the Chinese is *Ngo-how* or Goose-throat. The Chinese employ in the treatment of this malady a gargle prepared from a soft stone-like substance called *Hwo-tsao*, not unlike biliary calculus in appearance. The story regarding this substance is that in Siam, when a monkey is wounded, the creature, from its natural instinct, picks out the proper medicinal herbs, masticates, and applies them to the wound, so that successive layers are in this way laid on so as to form a mass. In process of time, the wound heals, and the dried herbs fall off; they are then picked up by the Siamese, found by them to possess peculiar virtues, and sent in small quantities to China as a drug. In the half-year ended March, 1880, sore throat was epidemic here. It was attended by slight fever, but yielded readily to nitrate of silver.—(XIV. 59.)

Canton.

In the spring of 1880, ulcerated sore throat was epidemic. It was attended by slight fever, and yielded readily to a gargle of nitrate of silver.—(XIX. 16.)

XLIV. PECULIAR AFFECTION OF THE PHARYNX.

According to the Report on Newchwang, for the half-year ending March, 1872, in the far north of China, a peculiar form of disease affecting the throat is met with among the natives. It prevails during the winter season, and so far has been met with at no other Treaty port than Newchwang. Its course is somewhat thus: a chill is experienced, then a severe fever lasting a few days; discomfort in the upper part of the mouth; sensation as

Newchwang.

if something were coughed up; in fourth or fifth day of illness the mucous membrane of the back of the pharynx seems to have disappeared, so completely has it lost its distinctive character. The surface looks as if a dry sponge had been applied and the mucous membrane rubbed off; what remains of it is dry, shining, and looks as if stretched. Then comes a thin white membrane which exudes from the part affected, and is coughed up; the exudation, at first white and thin, becomes yellowish and thick. The mucous membrane throughout the mouth and tonsils remains healthy, or very slightly affected. Associated with this affection there is great physical debility. A distressing feature is the liability of the patient to relapses. The treatment employed consisted in steaming the throat with hot water with a little carbolic acid, then gargles containing opium, permanganate of potass or sulphurous acid, internally. Phosphates, stimulants, and nourishing food were given. The affection may or may not be associated with pulmonary disease.—(III. 16.)

In the period from October, 1871, to 31st March, 1872, the peculiar throat affection above alluded to was frequently seen, but in a modified form. The milder character of the cases, the reporter considers, was due to the comparatively moist character of the winter.—(V. 47.)

XLV. DYSPEPSIA.

Peking.

According to the Report on Peking to September, 1871, the natives of that capital drink a small quantity of whisky at each meal. This *samshu* is very coarse, and contains a large quantity of fusel oil, rendering it impossible to drink much of the spirit at once. Immediately after taking it, the face and eyes glow with redness. Nearly all their diseases are traced by themselves either to anger or to wine, and dyspepsia is, without doubt, frequently caused by the constant use of the latter. An inveterate form of this affection, called *ye ko*, in which all the food is returned, and which ultimately after a few months causes the death of the patient, is universally attributed to spirituous indulgence. The œsophagus in such cases becomes constricted just below the larynx, and all food—even water—is returned. The only treatment which the Chinese have been able to devise for this formidable complaint is bread saturated with the blood of decapitated criminals.—(II. 79.) See *ante*, p. 3.

Amoy.

In the Report on Amoy for the six months ending September, 1873, a peculiar form of dyspepsia is noticed. In it the affection is recurrent at intervals of a year. In a case recorded, it was apparently related to malarial fever, with which the attacks alternated. Its chief symptoms are anorexia and eructations of a tasteless, watery fluid.—(VI. 27.) Another condition described under the same heading presents such symptoms as stricture of the œsophagus would give rise to. This form is of very frequent occurrence. Having given details of these illustrative cases of the affection, Dr. Morrison observes that out of 3,055 miscellaneous cases, sixteen were instances of this disease. The ordinary causes of stricture of the œsophagus were carefully sought for in every instance, but not definitely found. —(XII. 37.) See also CANCER *ante*, p. 149.

XLVI. DYSENTERY AND DIARRHŒA.

The occurrence of dysentery in China is one of the great dangers to which sailors visiting ports, and residents in that country are exposed. Among seafaring persons, more especially those of scorbutic diathesis, it is generally severe and often fatal; in foreigners on shore liable to hepatic complication, and showing a tendency to become chronic. Dysentery and malarial

fevers are frequently present in the same individual; both these diseases chiefly prevail during the same period of the year, namely, that in which marsh miasms are most abundant; they are considered to be results of seasonal and climatic causes.

In the treatment of dysentery in China, ipecacuanha in large doses has been administered as in Europe. In particular cases, benefit has rapidly followed; in others, the results have been less satisfactory; in fact, the drug has failed to arrest the disease.

The native remedy which has attained the highest reputation in the treatment of dysentery as that disease occurs in China, is the *Ailanthus glandulosa*—the actual properties of the plant being that it is intensely bitter and astringent; and also that it is powerfully anthelmintic. As is natural to assume from its properties, it is chiefly employed in the chronic form of dysentery. In that form it is administered combined with aromatics, including mace, levisticum, liquorice, together with other substances as *Lonicera chinensis* and charcoal of *Carthamus tinctorius*—the combination taken in rice-water while fasting—the diet of the patient to consist of milk and rice. This *régime* has been directed with success by physicians of the French Legation in Pekin. In several respects it bears analogy to the treatment of chronic cases by the rind of the *Garcinia mangosteena* in the Straits of Malacca, by powdered bael (*Ægle marmelos*) in India. Chinese Treatment.

At Tientsin, during the half-year ending 31st March, 1873, only one case of dysentery was recorded. It occurred in the person of an English sailor who had first been attacked with the disease on the west coast of Africa; and ultimately proved fatal. According to the reporter, cases of chronic dysentery and diarrhœa coming to this place do well.—(V. 23.) Tientsin.

In the half-year to September, 1876, twelve cases of dysentery came under treatment, all occurring on board vessels in harbour. Ten of them were mild, yielding to 'expectant' treatment; two were malignant, and resisted all treatment, although, in both of them, large doses of ipecacuanha were frequently administered, and were well borne by the patient.—(XII. 48.)

In the Report to March, 1879, malarious dysentery prevailed chiefly among persons on board vessels. Ague was at the same time of frequent occurrence. In the treatment of dysentery ipecacuanha was generally successful; and afterwards, *ailanthus*, as restraining diarrhœa. Dysentery, diarrhœa, and ague ceased after the occurrence of the heavy autumnal rains.—(XVII. 34.)

In the year ended March, 1880, dysenteric and diarrhœa attacks prevailed, together with intermittent fevers.—(XIX. 5.)

At Newchwang, during the summer of 1871, a few cases of diarrhœa and of dysentery occurred. In reference to the latter affection, the remark appears that at this place it is usually amenable to treatment by a few doses of ipecacuanha, soothing enemata, simple diet, and slight astringents. The best precautions against attack consist of avoidance of exposure, and of indiscretions in food.—(III. 10.) Newchwang.

In July, 1877, the state of the conservancy at the settlement was extremely defective. A large number of native residents suffered from diarrhœa, and at a later period cholera occurred.—(XV. 28.)

At Chefoo, January to March, 1872, dysentery was treated by means of large doses of ipecacuanha. The same method of treatment was also used successfully in cases of intestinal hæmorrhage due to tubercular ulceration. Dr. Myers 'cannot speak in too high terms' of the effect of ipecacuanha in dysentery. The physician as well as the patient is often tempted to regard it as 'perfectly miraculous.'—(III. 39.) Chefoo.

In the summer of 1876, severe dysentery, considered to be malarial in origin, affected the adult European residents. Dr. Carmichael observes that this outbreak, unprecedented in his

experience, occurred immediately after the first rainfall, and while the temperature was at its maximum. In autumn, there was a fatal form of the hæmorrhagic type of that disease among the Chinese; it affected all grades of society, and therefore could not actually be traced to the scarcity of food then prevailing.—(XII. 42, 44.)

During the summer of 1878, a considerable prevalence of diarrhœa was observed among the visitors and shipping. This was assigned to impure water and unwholesome food. The crew of one vessel had beef served out to them that was actually decomposed; but the circumstance is to be noted in reference to certain theories of the day, that no case of 'enteric' or typhoid fever has been reported on the occasion.—(XVI. 16.)

In the six months to September, 1879, diseases of the digestive system comprised one-third of all affections treated, and of them one-third were cases of diarrhœa. These occurred chiefly among the shipping, and all progressed more or less satisfactorily, except in two, where the disease had become chronic. In them the affection ended fatally, and in each the body became covered with purpuric spots a few days previous to death.—(XVIII. 72.)

At Chinkiang, during the year ending 31st March, 1881, three cases of acute dysentery occurred, and several of diarrhœa. None of either disease was severe in character, and all yielded to treatment.—(XXI. 99.)

At Kiukiang, 1871, dysenteric diarrhœa and dysentery were usually mild and asthenic, but occasionally attended by febrile action. In some the attacks were recurrent and attended by much prostration, more so among Europeans than natives. Both dysentery and ague were considered to arise from malaria; these diseases seize different members of the same family exposed to one and the same conditions.

Kiukiang.

A case was recorded of sphacelus of large portions of the mucous membrane of the large intestine with extensive intestinal hæmorrhage. It occurred in a man of sedentary habits, originating in congestion of the viscera and portal circulation. Recovery took place in it. Dysentery often is present with ague in the same person.—(II. 61.)

In the period ended March, 1875, two cases of dysentery in foreigners were reported. Both the cases were of ordinary severity, and yielded to ipecacuanha.—(IX. 1.)

In the year to March, 1876, chronic dysentery was common among the native Chinese during the autumn months. The usual treatment consisted of ipecacuanha, acetate of lead and opium; 'but as patients rarely return to the dispensary, testing the relative efficacy of medicines becomes an impossibility.' Few cases of diarrhœa occurred among adult foreigners, but two obstinate cases took place among children, both under two years of age, and undergoing dentition. In them the disease set in at the beginning of the hot weather, and proved intractable. One of the children was sent to San Francisco; in the other, alum appeared to be of some benefit.—(XI. 14.)

In the year ended March, 1879, diarrhœa and fever prevailed in an unusual degree. Dysentery occurred among the foreign residents. In its treatment, ipecacuanha, after repeated trials, could not be tolerated by the stomach; Dover's powder was accordingly substituted, and with opiate enemata was successful.—(XVII. 3.)

In the year ended March, 1880, a case of sub-acute dysentery was treated by rectal injections and ipecacuanha and opium. The patient, who had similarly suffered from previous attacks, attributed his more speedy recovery on this occasion to the action of the local treatment. —(XIX. 9.) (See *Practitioner* for December, 1879, pp. 448, 449.)

In the Report to March, 1881, it is stated that dysentery, acute and chronic, was very prevalent among the Chinese during the autumn of 1880. In the chronic cases, Dr. Jardine 'was induced to

try *koronico*, from the *Veronica parviflora*, which is largely used in New Zealand as a remedy in dysentery and diarrhœa.' Some of the results exceeded his most sanguine expectations; many of those, however, who received the drug, did not return to report themselves.—(XXI. 49.)

In September, 1881, there were three cases of dysentery, all of which were readily amenable to dietetic and other treatment.—(XXIII. 38.)

At Hankow, 1871, dysentery in autumn affects natives and Europeans; this, notwithstanding the precautions taken with regard to water. While the latter resided in the native city, the mortality by dysentery among them amounted to three-fourths of deaths by all causes. Sporadic cases occur with the rise of temperature in May; it rarely becomes epidemic until the variable weather in August. The causative influence of low forms of fungi being assumed, an explanation occurs of the disease being viewed as contagious in the same sense as cholera and enteric fever. Relative to Indian dysentery, little tendency exists towards serious hepatic or splenic complications. Here the disease was especially fatal in the case of children attacked during dentition; in them, head symptoms rapidly supervened. Among seafaring persons suffering from scurvy, it was particularly fatal. Dysentery often began with diarrhœa, and that either assumed an acute dysenteric form, or lapsed into chronic dysentery. Ipecacuanha, in large doses, with tincture of opium, total abstinence being observed in the intervals between doses, constitutes the more usual treatment. Enemata of tepid water, infusion of ipecacuanha, or small quantities of creosote, rubbed up with glycerine and added to the enemata, were also used.—(II. 46.) Hankow.

In September, 1875, a case of dysentery was landed from board ship two days before the death of the patient. In this case the immediate cause of death was perforation, deep ulceration being in its turn referred to an attack of 'Malta fever,' from which he had suffered two years previously (*Edin. Medical Journal*, July, 1876, p. 45). Adverting to the use of ipecacuanha, Dr. Reid wrote, 'The grand array of remedies to be introduced by the stomach or rectum in chronic dysentery will be in small request if the acute stages be treated by full doses of ipecacuanha.'—(XII. 16.) In the year ending September, 1878, a few cases of dysentery, with some of other malarial diseases, chiefly fever, occurred among the shipping at this port.—(XVI. 23.) In the Report for the half-year to March, 1881, 'a few cases, with one death of dysentery and dysenteric diarrhœa,' are recorded, together with a good many cases of simple diarrhœa in children.—(XXI. 45.)

At Shanghai, 1871, during the hot half of the year, dysentery was of frequent occurrence, but of tractable form. Ipecacuanha is considered to be the sovereign remedy, in doses of five grains with morphia, every three hours, when vomiting is not present; in larger doses when it is. Some cases of chronic dysentery yield only to calomel and opium; and the mercurial treatment of the acute form has its followers. Dysentery and periodic fevers are considered to be endemic there.—(II. 39.) In the early months of 1872 some cases of dysentery, severe in character, occurred among children; curiously enough, as observed by the reporter, preceding by a short interval the discovery of murrain among the horned cattle. He adds, 'It is needless to say that milk forms the staple diet of foreign infants in Shanghai;' and he notices the circumstance as being, to say the least, 'a coincidence in connection with the occurrence of the cattle-plague.'—(III. 80, 85.) Shanghai.

In the Report for the six months to September, 1874, details are given of a case in which severe dysentery appeared to have set in as a direct result of a large dose of purgative pills. In the course of the patient's illness, ipecacuanha, with other remedies, was administered freely, but the disease proved fatal. In this case death was preceded by epileptiform convulsions, leading to the

suspicion that the immediate cause of death was cerebral thrombosis.—(VIII. 27.) In the period to March, 1875, a case of remittent fever occurred, in which intractable dysentery was also present.—(IX. 7.) In that to September, 1876, a case of chronic dysentery is related. The disease had existed for months, hepatic abscess being also present. In it 'the patient's extraordinary intolerance of ipecacuanha in large and small doses gave rise to the suspicion of abscess, but no satisfactory physical signs could be obtained before death.'—(XII. 5.) In 1881, Dr. Jamieson stated that 'Dysentery is certainly less prevalent here relative to population,' than it was a few years before that time—a circumstance which 'may probably be ascribed to the gradual rising of the settlements above the level of their earlier days,' and to other sanitary improvements effected.—(XXI. 84.)

At Ningpo, in the half-year to March, 1873, diarrhœa and dyspepsia were among the diseases that most prevailed. In one case of dysentery noticed, simple doses of ipecacuanha were administered every four hours with most satisfactory results.—(V. 25.) In the year ending March, 1874, seven cases of dysentery occurred among the foreigners at that place. Of these, four were on board vessels in the harbour, and these speedily recovered under the use of ipecacuanha. In one of those on shore 'ipecacuanha did not have such a beneficial effect as a combination of Dover's powder and grey powder given every four hours, and an injection of starch and laudanum every night. The other two persons attacked were children, and although various medicines were tried, everything failed.—(VII. 24.) In that to March, 1876, a few cases of dysentery occurred. The treatment pursued in all was the administration of grey powder and Dover's powder in combination, with an occasional dose of castor oil; in one case a nightly enema of tincture of opium and starch. 'As usual,' the prevailing complaints were dyspepsia, during the months of June, July, and August.—(XI. 27.)

Ningpo.

In the year to March, 1877, only three cases of dysentery came under notice. Instead of using the powder of ipecacuanha, Dr. Mackenzie used the liquid extract, which he found more convenient and equally efficacious.—(XIII. 47.) In the six months to September, 1877, 'the usual summer complaint, diarrhœa, prevailed, during June, July, and August.' Two cases of dysentery were noted. They were mild in form and treated successfully with ipecacuanha combined with an aromatic tincture.—(XIV. 65.) In the succeeding months of October and November, several cases of diarrhœa, and an unusual number of dyspeptic cases, came under notice, but none were of a severe type.—(XV. 21.)

For the year to March, 1879, diarrhœa as usual heads the list, seconded by dyspepsia. In the treatment of the former, Dr. Mackenzie found oxide of zinc most beneficial, in doses of 20 grains every four hours to adults and 4 to 6 grains in children. Hæmorrhoidal affections, also, were not uncommon.—(XVII. 6.)

According to the Report for the eighteen months ended September, 1880, during the hot season, although few persons escaped fever, there was but little diarrhœa, and no dysentery present. In the hot season preceding, the converse was the case; little fever, but a considerable amount of diarrhœa. This comparison is interesting, as the hot season of 1880 was cool and moist, while that of 1879 was hot and dry—for Ningpo.—(XX. 30.) In the four months from June to September, 1881, diarrhœa existed, although of a type readily amenable to treatment.—(XXII. 13.)

At Foochow, in the six months to September, 1871, cases of dyspepsia were of everyday occurrence, and show the highest figures in the table of prevailing diseases. Many of them were considered to be symptomatic of torpidity of the Liver. Dysentery was not very frequent among the residents, although it and diarrhœa were very common among

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sailors. Recent cases yield readily to treatment. The type of the disease is asthenic. In the treatment, ipecacuanha alone is to be trusted, given in doses of 40 grains with a small quantity of opium, and sinapisms applied at the same time to the epigastrium. Dover's powder in small doses does good in the interval. In chronic cases the liver is often implicated. In these, benefit has been obtained from small doses of castor oil, with enemata of tincture of opium and mucilage. Chronic dysentery, however, is frequently associated with organic disease of the liver.—(II. 27, 28.)

In the six months to September, 1872, eighteen cases of dysentery were treated. In all ot these, ipecacuanha was well borne except in one, a chronic case. In it all other means failed to be successful, and the patient had to be sent to England—the issue not stated. 121 cases of diarrhœa occurred; they were chiefly of the summer form, and yielded readily to treatment. —(IV. 63.)

In the Report to September, 1875, Dr. Somerville records the prevalence at that port of *intestinal catarrh, diarrhœa,* and *dysentery.* Many of the obstinate cases of 'diarrhœa' met with there are, in reality, cases of chronic dysentery, with considerable organic changes in the large intestine. Summer diarrhœa as met with is not generally obstinate. Cases of it occur locally as well as by importation, from Shanghai and from Hong Kong. Dr. Somerville writes: 'What is the cause of the great prevalence of diarrhœa during the summer months? It certainly is *not* the water. Ships carry water from Hong Kong, from Shanghai, and from home; and he observes no difference in the number of cases. He had not noticed fewer cases of diarrhœa in vessels using condensed water only. Gunboats use condensed water alone, and they have much diarrhœa. The U.S. gunboat *Ashuelot* had an unusual number of cases of intestinal catarrh at Ningpo, in the summer of 1875, although condensed water only was used. The residents at this anchorage have drunk the water of the river for years without injury.' He thinks, moreover, that 'there is a growing opinion in the profession, especially entertained by those who have had much experience in tropical and sub-tropical countries, that water containing organic matter has been too heavily blamed as the cause of the disease.' The true cause of the diarrhœa afloat is said to be the practice many of the men have of sleeping on deck during the night-time, and without sufficient covering over the abdomen.

Dysentery has decreased in frequency of late years, this being considered due to the increase of steam over sailing ships, and the improved sanitation of the former as compared with the latter. In the treatment of the disease, in one chronic case imported from India, ipecacuanha in 40 grain doses was retained; but not having much effect on it, 3 grains, with 1 of opium were given at short intervals, with good results. In a second case, small doses of the drug did not check the disease to any extent. In a third, a 40 grain dose immediately arrested the disease, and only one dose more and some pills of Dover's powder were required. In a fourth, a mixture of the two methods, *i.e.* of large and small doses, did well.—(X. 41, 43, 44.)

According to the Report to March, 1876, 'of the deaths that have occurred at Foochow, during the last fourteen years, the majority have been caused by dysentery. The fatal cases of this disease have been mostly imported. Death has usually taken place by hæmorrhage from ulceration somewhere between the cæcum and lower part of the rectum.—(XI. 39.)

Dr. Stewart, in 1879, includes diarrhœa and dysentery among the diseases which most prevail at this anchorage. The former he has seldom met with separated from some form of proctitis; the latter he looks upon as pure ileo-colitis.—(XVIII. 65.)

In the six months from October, 1880, to March, 1881, nine cases of dysentery were reported.

All of them proved amenable to the ordinary treatment by ipecacuanha. Summer diarrhœa among children was most tractable to treatment.—(XXI. 53.)

Amoy.

At Amoy, in the half-year to September, 1872, diarrhœa was the third in order, as regards number of cases, of the prevailing diseases.—(II. 7.) In that to September, 1874, diarrhœa, usually common at the commencement of the hot season, was more than usually prevalent among adults and children; in some cases it was very intractable. —(VIII. 67.) In that to the same month, 1880, several severe cases of dysentery occurred, one fatal. In it, ipecacuanha in large doses, but failed decidedly to check the disease.—(XX. I.)

Tamsui and Kelung.

At Tamsui and Kelung, from April to September, 1877, only one case of dysentery, and it mild in type, occurred. One case of chronic diarrhœa came under observation. Dr. Ringer observed that the exhibition of ipecacuanha wine, and spirit of chloroform in small and continued doses, with a farinaceous diet, completed the cure, after one or two simple doses of the powder had been given.—(XIV. 82.)

Swatow.

At Swatow, during the half-year ending September, 1872, diarrhœa was unusually prevalent, but when uncomplicated with hepatic disease, generally yielded to treatment. When so complicated, however, it was more serious in its nature. In such cases, treatment consisted of local bleeding by leeching or cupping; grey powder, or blue pill and bismuth. The same remark applies to dysentery. Dr. Scott seldom had trouble with this disease, except when, as is often the case, it is associated with disease of the liver. In such cases mercury generally acts well. The usual anti-dysenteric powder in use here consists of 3 grains each of quinine, tannic acid, and Dover's powder, taken every four hours. In cases complicated with diseased liver, the addition of $2\frac{1}{2}$ grains of calomel acts very well.—(IV. 87.)

According to the Report to September, 1874, dysentery is not a frequent disease. When seen in the acute stage, the medical officer always gave 1 scruple of jalap with 4 grains of calomel, which he found acted admirably; in the after-treatment he gave small doses of mercury with chalk and Dover's powder, quinine, and tannic acid, with very good effect.—(VIII. 66.) According to that to September, 1876, diarrhœa in children was treated by the pyrophosphate, or by the muriate tincture of iron; in such as suffer also from anæmia, this method was very successful.—(XII. 19.) During October and November, 1877, diarrhœa prevailed among the foreign community, cholera among the native. Cases of dysentery originating in the place were very rare. One of this disease occurred in a lady who contracted it at Saigon. She ultimately recovered, her recovery having been attributed to the influence of the cold season.—(XV. 23.) In the summer of 1879, no more than the usual amount of diarrhœa met with at that period of the year occurred. Some severe cases of dysentery, as of fever, occurred among the resident children.—(XVIII. 75.)

Canton.

At Canton, during the half-year to March, 1878, a few cases of dysentery and chronic diarrhœa, and one case of ulcerative stomatitis in an adult, came under notice. One foreign infant, aged fifteen months, died of dysentery connected with dentition. —(XV. 13.) In the summer of 1879, diarrhœa and dysentery occurred among foreigners, and it was observed that the peculiar form of remittent fever which then prevailed frequently attacked persons convalescent from these diseases.—(XVIII. 56.)

Japan.

According to the official Report by Dr. Simmons on diseases in Japan, 90 per cent. of the cases of dysentery admitted at Yokohama occurred in non-residents. Of diarrhœa, 83 per cent. were also among non-residents. In all these cases the attacks of dysentery and diarrhœa were severe; but such cases of these affections respectively as occurred in residents were mild.—(XV. 61.)

XLVII. SPRUE.

The disease so named has long been known in India and in Java. The term is sometimes applied to the thrush of infants associated with the development of *oidium albicans* in the mouth. Sprue, however, is entirely confined to adults. Its symptoms are referable—(1) to a remitting inflammation of the mouth and alimentary canal generally; (2) to diarrhœa and irregular action of the bowels; and (3) to anæmia and general atrophy. It is peculiar to hot climates. During an exacerbation, the tongue is more or less swollen, papillæ elevated, shallow ulcers on the cheeks, tongue, and lips; saliva, rapidly accumulating, runs from the mouth while being examined; tongue abnormally clean; no fœtor. The œsophagus becoming implicated renders swallowing difficult. Both the inflammation in the mouth and the diarrhœa are periodic. At times the diarrhœa is semi-choleraic in character, the attacks most frequent at night, occasionally also with diarrhœa; there is great sense of languor, tympanitis, and borborygmi. The evacuations usually are pale, clayey, frothy. There is great emaciation; the patient is feeble, irritable, incapable of much mental effort, and anæmic. The progress of the affection is slow. Removal to a cold climate is absolutely necessary; medicine and diet, though they may mitigate, will not cure the disease so long as the patient remains under the conditions in which it was contracted.

The cause of sprue lies in the general unsuitability of the European constitution to tropical climates. In China, age and residence have a marked influence as predisposing causes. Of five cases recorded, the patients were over thirty-five years of age, and had been over ten years in the country; their habits differed, from free-livers to teetotalers. At Shanghai and other northern places, patients improve during the cold weather. The reporter has never seen sprue in a native. In Batavia, the affection is generally associated with cirrhosis or other disease of the liver.

In the treatment, bismuth and strychnine during the remissions, and bismuth and morphia during the exacerbations, are of some service as palliatives. Wine and spirits should be given much diluted. Other remedies recommended are grey powder, soda and rhubarb; taraxacum with alkali.—(XIX. 33.)

XLVIII. PROCTITIS.

At Foochow (1879), according to Reports, not a summer passes without several cases of proctitis, aggravated sometimes by an extension of rectal inflammation into the colon. Its results vary in severity from simple diarrhœa to dysentery in the gravest form. Proctitis is usually most obstinate, and may continue for years; its persistency increasing as inflammation approaches the inner edge of the sphincter ani. It attacks children at Foochow, but has not been met with among them elsewhere in China. It generally attacks those of from six months to five years of age; but has been met with in a child of ten. Its attack is usually sudden. While at play a child may have a loose evacuation; then another, and so on. The stools soon are tinged with blood and mucus; then they are entirely of blood, passed with much pain and straining. The constitutional disturbance is at first small in proportion to the amount and character of the evacuations; a sudden and great sinking then occurs. On examination, the sphincter will be found inflamed, ulcerated, or sloughing, according to the severity of the disease. —(XVIII. 69.)

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XLIX. HERNIA.

In the Report on Hankow, January to March, 1872, some particulars are given regarding hernia. It is stated that in cases of scrotal swellings attended with much pain, whether due to

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hernia or to hydrocele, acupuncture needles are, by the Chinese, inserted a short depth into the wall of the abdomen on the left side, midway between the umbilicus and the anterior-superior spine of the ileum, or a little in front of the cartilage of the ninth rib, or into certain parts of the leg or foot. It is believed that these places are special gateways that allow a super-abundance of *air* to escape, which is supposed to have collected in quantity in the textures of the scrotum, and impeded the circulation therein.—(III. 50.)

At Chinkiang, according to the Report to March, 1880, inguinal hernia, direct or indirect, appears to be common among the Chinese, and no desire exists to remedy the disease; in

Chinkiang.

fact, little inconvenience appears to be experienced unless the hernia assumes a very large size, and then only relief is sought. Dr. White has not seen or heard of a case of strangulation, and very few cases present themselves in which the protrusion is not easily reduced.—(XIX. 7.)

L. AFFECTIONS OF THE LIVER.

At Peking, according to the Report to September, 1872, an epidemic of jaundice occurred in September and October, 1861. The disease is said to occur in each spring and autumn season.

Peking.

On the occasion named, the cases, although numerous, were slight in the great majority; in a few, however, the accompanying fever was severe, and the attack issued in anasarca. Not only was the capital visited by it, but the disease also extended to the two provinces west of Chihli. The treatment pursued consisted of purgatives according to circumstances.—(IV. 40.)

According to the Report on Hankow to March, 1872, hepatic abscess is very rare in this part of China; yet the summers are hot and variable, the natives extremely poor, and exposed

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to the inclemencies of the season, while their habits are less distinguished for sobriety than is generally supposed. Among foreigners in past years two deaths occurred from this disease.—(III. 52.) In that to September, 1873, details are given of three cases of hepatic abscess, all of which occurred in the summer half-year included. In one, the patient died of gangrene supervening upon the application of a blister. In the second, forty ounces of pus were discharged by means of the aspirator, subsequently twenty ounces more. Under the use of muriate of ammonia, the patient so far recovered as to return to his home. In the third case, the symptoms of abscess are stated to have spontaneously disappeared under the use of muriate of ammonia.—(VI. 34, 35.)

At Shanghai, in 1871, hepatitis was common among foreigners; but that form of the

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disease which rapidly runs on to suppuration is rare, and usually occurs in arrivals from the south. Cirrhosis, or gin-drinker's liver, is rare—indicating thereby the relative absence of excessive drinking among the residents.—(II. 40.)

According to the Report on that place to March, 1873, the medical officer says: 'If it be true that hepatic abscesses following dysentery and other ulcerative affections of the intestinal canal are generally multiple, while those which result from non-specific hepatitis are single,

the advisability of operative interference in a given case will depend materially upon the previous history.—(V. 57.) These remarks are illustrated by a case recorded in the Report for September of that year.—(VI. 64.)

In 1874, a case is recorded in which a man suffered merely from persistent high temperature (102° to 103·5° Fahr.) and wasting, but had no other symptoms. He was subjected to exploratory puncture with an aspirator; an abscess was then discovered to exist; the contents were evacuated at intervals several times, but the patient died.—(VIII. 17.)

In the Report to March, 1876, Dr. Jamieson wrote, in regard to instances in which the symptoms pointed to suppuration of the liver, and yet recovery took place, thus: 'A high temperature in hepatitis is not an indication of suppuration.' In a case of hepatic abscess published by Maclean (*Lancet*, 1873; ii. 39), the highest temperature recorded was 99·9°. The highest temperature in a case noted by Dr. Jamieson was, before operation, 102° Fahr.—(XI. 54.)

At Foochow, in 1871, organic disease of the liver was in nearly every case imported. The most frequent forms were acute and chronic inflammation, resulting in hypertrophy, abscess, or atrophy. In the treatment of these conditions, mercury was inadmissible; nitro-muriatic acid internally, locally, and in baths was given. In all, change of climate became necessary.—(II. 31.) Foochow.

In the six months to September, 1872, cases of persons were by no means uncommon, where after death the liver and spleen are found to be extensively diseased, without any other symptoms during life having appeared than those of functional disorder.—(IV. 60.)

In the Report to September, 1873, Dr. Stewart observed that jaundice was not uncommon, 'while what is called "liver" is what every man is certain he has as often as he is dyspeptic, or has any pain on the right side, or even on the left. The word "liver"'—he writes—'is a great invention; it explains so many things.'—(XVIII. 65.)

At Amoy, in the period to September, 1871, three cases of congestion of the liver from exposure were mentioned; also one of hepatitis and fever imported from Swatow, and one of jaundice.—(II. 12.) A case of hepatic abscess was reported in 1878. The subject of the disease, a Custom-house *employé*, at the time in delicate health, was in February suddenly seized with acute hepatitis at Shanghai. The case ran the ordinary course. In its latter stages the abscess was 'aspirated,' then on two occasions punctured with an ordinary trocar, pus being each time evacuated. The patient sank, however, and died on 5th of June. It appears that no dysenteric complication was present, and that for a considerable period the case had the character of one of intermittent fever.—(XVI. 12.) Amoy.

In the Report to March, 1882, the remark occurs that hepatic abscess is somewhat rare among the native Chinese at Takow and Taiwan-foo.—(XVIII. 21.) Takow.

In the Report on Swatow from April to September, 1874, the medical officer wrote: 'With regard to congestion and inflammation of the liver, he gladly expresses his belief in the great value of local blood-letting. Cupping is to be preferred to leeches, as the quantity of blood taken is accurately known.—(VIII. 66.) In the period to September, 1877, a case of biliary calculus occurred in the person of a foreigner; the case itself interesting as showing the value of a full dose of morphia in arresting the spasm of the choledic duct, and immediately freeing the patient from all pain. The subject of the attack was a lady thirty-five years of age.—(XIV. 73.) In that ending September, 1881, in the Seamen's Hospital a case of hepatic abscess terminated fatally; aspiration was performed, but the patient, a young engineer, of temperate habits, was moribund on admission.—(XXII. 5.) Swatow.

At Canton, in 1879, two cases of congested liver were treated among the foreign residents.

A case of hepatic abscess in the person of a missionary from a place in the district described as low, damp, and malarious. He also was affected with enlarged spleen.—(XVIII. 57.)

In the Reports having reference to Japan, from 1868 to 1875, it is impossible to separate cases of hepatic disease assumed to be due to climatic causes or complicating other diseases, from those considered to be due to individual causes, as excessive indulgence in spirituous liquors. From 1875 to 1877, such a distinction was made, and during that period none appear to have occurred in residents except such as were traceable to individual causes.—(XV. 62.)

Japan.

LI. VESICAL CALCULUS AND KIDNEY DISEASE.

Vesical calculus is comparatively rare in China, except in Kwang-tung and Kwangsi. In those provinces, the rivers flow through districts rich in lime; the large majority of cases of the disease occur in boatmen and farm-labourers, both of which classes use the river-water in cooking and as a drink. The condition of system which leads to the affection is conjecturally assigned to *malaria* and peculiarities of food-articles used by the natives. It has not been found that foreigners, even after long residence in Kwang-tung, suffer from the affection. In the belt of country extending south-west of Canton, and running into Siam and the Laos region, the natives are very subject to it. The varieties of calculus recorded in the Customs reports include only two—namely, that composed of phosphates and that of uric acid. Usually the Chinese apply for treatment on this account only after they have exhausted their own means—namely, the moxa and actual cautery to different parts of the abdomen. In cases where lithotomy is performed, the wound usually heals rapidly; in one instance by the first intention. According to a table given, the composition of the calculus was phosphatic in only 3 out of 140 cases recorded; uric acid in all the rest.—(XVIII. 52.)

General.

At Peking, in the Report to 31st March, 1873, the medical officer notices the absence of calculous diseases in that capital, and he considers that the remark applies to the north of China generally. This absence, however, appears to be relative rather than absolute, as two cases of the affection are noticed in that document. One of these, however, was really a calculous incrustation over a fragment of lead. The patient had practised introducing leaden bougies into the urethra for ten years, with a view of strengthening his constitution and preventing spermatorrhœa. He was an opium-smoker. Lead bougies rubbed with mercury are likewise used in gonorrhœa and other affections of the urethra. These practices are said to form part of the observances of one of the Taoist sects in Mantchuria.—(VI. 11.)

Peking.

In the Report for Kiukiang for the year ending 31st March, 1877, Dr. Jardine gives some remarks in relation to a case of this nature. The patient had been in China since 1859. As a missionary among the Chinese he lived on their food, and it contained a good deal of vinegar or other acid ingredients. In August, 1875, he experienced the first symptoms of his illness. A Chinese doctor 'gave him a little relief by his treatment.' In June, 1876, however, his symptoms became aggravated; uric and renal calculi were passed by the urethra; his urine was acid, and deposited urates, with phosphates and mucus. From that time he estimated that he voided 1,500 small calculi. He was treated according to the method of Dr. Roberts of Manchester, namely:

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℞ Potassæ bicarb., 1½ ounce.
Acidi citrici, 504 grains.
Aquæ ad 12 fluid ounces.

The dose of such a solution is six to eight fluid drachms, with three or four ounces of water. Two table-spoonsful every three or four hours. Diluents to drink; to avoid much animal food, vinegar, and wines, and to live on farinaceous diet.

Under this treatment the discharge of calculi by degrees ceased, and recovery gradually took place. Dr. Jardine adds, however, 'What part the change from Nan-an-fu to Kiukiang may have had in producing these happy results I am unable to say.'—(XIII. 3.)

Stone in the bladder is uncommon at Shanghai; alike in foreigners and in native residents. In one case recorded in the Report for April to September, 1877, the composition of the calculus was chiefly urate of soda; in a second case recorded, oxalate of lime with uric acid. Shanghai. Dr. Jamieson had only met with two cases among foreigners, and had never met with any among the Chinese. The first of these was attended by severe nephralgia calculosa, and the calculus was so friable that, in sounding to ascertain its size, it fell to pieces. In the second, the composition of the concretion was oxalate of lime with uric acid 'diffused' deposit.—(XIV. 49.)

At Ningpo, for the eighteen months ending 30th September, 1880, the medical officer was struck by the absence among the members of the community of the habitual deposit of urates in the urine—the condition termed lithuria; whereas at Chefoo it was frequently found among foreigners. Ningpo. This difference is ascribed to the mere change of locality, and to the difference in the climates of the two places; that of the north being dry, that of the south moist. Urea, he observes, is generally admitted to be formed in the liver.—(XX. 27.)

At Takow and Taiwanfoo, during the half-year to September, 1871, one case of urinary calculus occurred. The patient had been about two years resident in Formosa; the concretion was small, and was voided by the urethra. Takow.—(II. 67.)

According to the Report on Canton to September 1871, stone in the bladder was extremely common in that province, although it is not met with in Amoy, Foochow, Shanghai, Ningpo, Hankow, or Peking. Ever since the establishment of mission hospitals at Canton, Canton. many operations for stone have been annually performed, but of late years the number has increased. From 1856 to the end of 1870, there were 217 cases operated upon in the hospital under Dr. Kerr's care. Of the cause of the prevalence of calculus here, as well as its absence from the places named, Dr. Wong is unable to give a satisfactory explanation. He observes that it is equally difficult to account for its prevalence in some parts of England more than others. The causes and conditions favourable to the production of stone are supposed to be humid climates and moist localities. With regard to the influence of certain kinds of water and of spas in inducing stone, it has been found that none of the forms of calculi correspond with the salts that exist in natural waters. In addition to this, the Chinese always drink boiled water, the lime of which in the process of boiling settles at the bottom of the kettle. As the causes and conditions here enumerated exist more or less in other parts of China—as, for example, at Amoy and Shanghai—the wonder is, not the presence but the absence of the affection from the other parts of the empire. The gouty diathesis appears to have little to do with the prevalence of calculus, as gout is scarcely ever met with among the native population. A large proportion of the patients thus affected were farmers.—(XI. 71.)

At Yokohama, calculous diseases appear to be almost unknown. In ten years, one case only was admitted into hospital there—that of a non-resident; the records of the cemetery contain few cases; nor have they been met with in private practice save when imported. Japan.—(XV. 63.)

Bright's Disease.—In the Report on Kiukiang to March, 1877, details are given of a case

of this affection. It occurred in a member of the outdoor Customs staff, who had passed

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fifteen years in China, and whose habits were described as intemperate. With one or two exceptions the plan of treatment followed was the ordinary one. He was directed to desist from spirits and wines, and to live upon milk and light nutritious food. At first perchloride of iron was administered. Digitalis, bismuth, and magnesia were given according to indications. Horse-radish tea, as used by Rayer, was tried, and as a diuretic it proved more valuable than the bitartrate of potass, for under its use the dropsy disappeared, and did not return. Eventually the patient was sent away to sea.—(XIII. 1.)

At Yokohama, during ten years, cases of 'Bright's disease' formed 1·3 per cent. of the total cases, the mortality in the former being 26 per cent. of cases. Of the entire number, 2·7 per

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cent. occurred in residents, 91·3 in non-residents. From 1871 to 1877, the deaths by diseases of the kidney reached 2·4 per cent. of the classified mortality, 50 per cent. of these being non-residents. Medical men at Yokohama consider that cases of the graver forms of diseases of the kidneys which occur there, are, as a rule, dependent upon individual causes, such as dissipation and old syphilitic affections; also, that they are not of more frequent occurrence there than they are elsewhere.—(XV. 63.)

LII. SKIN DISEASES GENERALLY.

At *Amoy*, next to syphilis and leprosy as causes of *skin disease*, come skin parasites, animal and vegetable, all of which, except *dracunculus* and *microsporon Audouini*, Dr. Manson has met

Amoy.

with there. Two skin diseases common in corresponding latitudes in other parts of the world are there absent, namely *frambœsia* and *pellagra*. Bad rice and cereals of different kinds are consumed in abundance, but maize does not appear to enter largely into the dietary of many of the people. Eczema, psoriasis, acne, lupus, and so on, are stock diseases, as they are at home. Keloid and elephantiasis are unusually common. *Molluscum contagiosum* is not a common disease in China.

The liability of cicatricial tissue to assume a keloid character in the dark-skinned races has been already noticed (p. 149) in relation to cancer. The Chinese, in this respect, perhaps, occupy a position intermediate between the negro and the European.

Dr. Manson, at *Amoy*, met with 'an excellent example of that rare form of *pityriasis versicolor*, known as *pityriasis nigra*.' He alludes to 'the frequency with which Chinese and foreigners in China are attacked with *chloasma*.'—(XXI. 27, 33–35.)

At Kiukiang, according to the Report to March, 1881, cutaneous disease ranked, as regards

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prevalence, next to malarial fevers; this being due in no small measure to the filthy habits and indigent circumstances of the people, conjoined with their utter neglect of all sanitary precautions.—(XXI. 48.)

At Yokohama, certain parasitic and contagious skin diseases prevail extensively among the

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Japanese; and foreign residents are considered to be more subject to these affections than in either Europe or America. They are but seldom serious, however, and for the most part yield readily to treatment.

Prurigo appears to be occasionally met with in a troublesome or aggravated form among foreigners in Japan. It appears to depend entirely upon climatic conditions. Some cases yield readily to treatment. In others, change of climate effects benefit for the time being, although the affection recurs on the return of its subject to Japan—often in so aggravated a form as to render life a burden. Natives as well as foreigners suffer from this disease. —(XV. 63.)

LIII. URTICARIA.

At Newchwang, during the winter of 1878-79, a case of urticaria occurred. In it the affection was considered as due to gastric irritation. Not only were the symptoms very urgent, the fever running high for several days, but for some years previous the patient had suffered from a similar attack every winter. In the treatment, emetics and purgatives were used with good effect, and the warm bath containing a little carbonate of soda was very soothing. Carbolic oil applied at night relieved the irritation and procured sleep. Stomachics and general tonics were given during convalescence.—(XVII. 10.) Newchwang.

On the subject of urticaria, Dr. Jardine, in the Report on Kiukiang for the year ending 31st March, 1876, writes, that 'a dose of laxative medicine and two baths of *pinewood* shavings were sufficient to permanently cure the disease.' The pine (*san, sha-muh*) flourishes in the southern, central, and western provinces of China, and is much used for house-fittings on account of its proof against erosion by insects. Dr. Jardine has used it in obstinate cases of prurigo, and, with constitutional remedies, it was equally effectual as in urticaria.—(XI. 15.) Kiukiang.

LIV. PRICKLY HEAT.

According to the Report on Peking to September, 1871, the absence of prickly heat in summer among the native Chinese is assigned to their mode of life; namely, to the circumstances that they avoid cold bathing, but use the tepid bath; that they are generally temperate; and they do not use flannel. Europeans during each hot season suffer much from this affection, the skin-sensibility in them being said to be much increased by the use of stimulants.—(II. 80.) Peking.

At Shanghai, from April to September, 1872, prickly heat was frequently met with during July. The heat of the nights during the first three weeks of that month was very great, so that foreigners, old and young alike, obtained little sleep; perspiration was at the same time profuse, and prickly heat very prevalent.—(IV. 93.) Shanghai.

In the Report of Foochow from April to September, 1877, it is stated that for the first time a remedy has been found for the affection named. The remedy in question was indicated in the *Lancet* (vol. i. for 1877, p. 672), and consists of the following ingredients, namely: sublimed sulphur, 80 parts; magnesia, 15 parts; oxide of zinc, 5 parts. The skin is first bathed with warm water and a little soap; some of the powder is then placed in a saucer, and a squeezed sponge pressed on the powder. A portion of the powder will adhere to the sponge; this to be rubbed carefully in all the patches of prickly heat, and the process to be repeated morning and evening.—(XIV. 88.) Foochow.

LV. ECTHYMA IN WORKERS AMONG SALT; ALSO LACQUER ECZEMA.

This affection is mentioned in the Report on Chinkiang for the year ending 30th September, 1873. It is said to be peculiar to women engaged in smuggling salt, and is by them attributed to their daily habit of carrying large quantities of that commodity in their girdles directly upon their skin. Besides the local eruption, the subjects of the affection suffer from a febrile condition and anæmia. There is great local itching; and in extreme cases extensive and obstinate ulceration supervenes. Dr. Platt considers that many of the symptoms are Chinkiang.

due to the absorption of salt in such quantities as to produce serious constitutional disturbance, quite aside from any effect it may have as a local irritant.—(XVI. 20.)

In reference to the disease known in Yokohama as lacquer eczema, Dr. Simmons wrote: 'The botanical relations of the *Rhus vernicifera*, from which lacquer is derived, are very close to the American species, *R. venenata* or *R. toxicodendron*, while the effects of all three species are alike. Chemical examination indicates that the irritant effects produced are due to the presence of a volatile toxicodendric acid; hence the occasional occurrence of the poisoning without actual contact taking place, as also the fact that lacquer becomes innocuous when thoroughly dried and hard. The means of prevention have, however, been long empirically known—namely, alkalis and certain chemical agents which form insoluble compounds with toxicodendric acid. Of these, the acetate of lead appears to be most abundantly used. The effects of the poison may manifest themselves within twenty-four hours, or not for several days. The hands and face are the parts most frequently attacked. The symptoms may be erysipeloid or eczematous; the symptoms of all degrees of severity, in cases of greatest intensity obstinate and extensive purulent ulceration taking place. The affection is described as being pseudo-contagious; that is, the poison before its absorption by the skin may be transferred to others, or from one part of the patient's body to another; but once it has taken full effect, it is no longer contagious.' —(XV. 67.)

Japan.

LVI. DISCOLORATIONS.

Chloasma or *Pityriasis versicolor*.—In fair-skinned races this affection appears as a brown or fawn-coloured patch on a light ground. In the dark-skinned races as a lighter-coloured patch on a light ground.—(XXI. 29.)

In the yellow-skinned races, like the Chinese, the patch of the disease and general complexion so nearly correspond, that close observation and the microscope are necessary for correct diagnosis of the affection. A large number of the native Chinese coolies have patches of chloasma about the neck, chest, shoulder, and abdomen, under the waist-belt; these giving them often a mottled appearance.—(XVI. 9.)

Morphœa is by some writers asserted to be a phase of leprosy. Pale, circular, waxy-looking patches, devoid of hair and sweat-glands, with a vascular border and slightly depressed and anæsthetic centre are often seen, but always in connection with unquestionable evidence of leprosy.—(XXI. 29.)

Shanghai.

In the Report on Shanghai for the period ending September, 1871, the occurrence of one case of 'Addison's disease' (Melasma) is casually mentioned. —(II. 37.)

LVII. ULCERS.

At Kiukiang, April to September, 1872, some cases of 'Cochin China ulcer' were recorded. In two of these the disease so described consisted of deep burrowing sinuses in the foot; in two, of 'a patch of chronic callous ulcers on the sole.' According to Dr. Rochard, the French soldiers in Cochin China suffer from this affection in the proportion of one in eight men. The parts around the ulcers are always more or less anæsthetic, as in leprosy; the ulceration often penetrates to the tendons and bones; and resists all treatment until the subject of it is removed from the malarious locality where the disease began.—(IV. 46.)

Kiukiang.

At Hankow, according to the Report to March, 1881, the ulcers admitted into hospital were either hopeless in their nature, unless treated, or they had features of special interest. Many of them were only admitted in the belief that they would prove cases for amputation. Skin-grafting proved very successful in many instances. Once, during the excision of a large portion of the eyelid in a severe case of entropion, the idea occurred to try the excised portion on a healthy ulcer then in the ward. The result was surprising. The piece of skin, one inch long by half an inch broad, took, the cuticle merely coming off like a white film, the raised patch remaining red and healthy, sending out young epithelium in all directions, and completing the cure.—(XXI. 46.) Hankow.

In the Report on Foochow for the six months to September, 1875, Dr. Somerville mentions a simple and effective method of treating ulcers which he had used for a considerable time. A piece of the leaden lining of a tea-box is beaten out smooth and laid carefully upon the ulcer, covering also the adjoining parts, several folds of lint applied so as to absorb the purulent discharge. This method of treating chronic ulcers was first introduced by Mr. Syme of Edinburgh, many years ago. As to the *modus operandi*, explanation does not occur, but 'at all events, there is no doubt about the result.'—(X. 44.) Foochow.

In the Report for 1879, the ulcer peculiar to Foochow was thus described. It is usually, though not invariably, an accompaniment of the hot season. It begins, to all appearance, spontaneously, or after a scratch or mosquito bite. It usually affects the leg, especially the part over the shin-bone, or ankle. Redness and surrounding inflammation increase rapidly, and the sore itself assumes a gangrenous appearance. The curative process is very tedious and unsatisfactory.—(XVIII. 69.)

At Takow and Taiwanfoo, in 1871, Dr. Manson tried by means of transplantation of skin to accelerate healing of the chronic ulcers which are so common there. His great difficulty at first was in the management of the dressings. Having had to change these at least twice a day, the small portions of skin were displaced and lost. To obviate this difficulty he placed over the ulcer, immediately after transplanting the skin, a piece of fine gauze previously soaked in carbolic acid. Over this a couple of folds of lint with carbolic acid, a piece of silk, and then a bandage. When the dressings were changed everything was removed except the gauze, when the surface of the ulcer was cleaned by pouring water over it, after which the new dressings can be adjusted without displacing the particles of skin. Several cases were successfully treated in this manner; but Dr. Manson found that frequently, after all had been going on well for several days, the ulcers, notwithstanding the use of quinine, took on a sloughing action, and thus more time was lost than gained. 'On the whole, he has learned that these ulcers can be healed as speedily by ordinary local applications and the administration of tonics, especially iron, and nourishing diet. Beef-tea will often be efficacious where drugs have failed.'—(II. 69.) Takow and Taiwanfoo.

LVIII. BOILS.

At Kiukiang, during the autumn of 1874, foreigners and natives suffered from an epidemic of boils. Sometimes the boils were large and solitary, but more frequently they appeared in successive crops. In some instances their appearance was preceded by sharp fever lasting twelve hours; more generally the health was unaffected, and only the local inconvenience experienced. The maturation of the boils occupied six or seven days; sometimes the lymphatic glands became affected; and in persons of scrofulous diathesis livid marks or scars remained after the discharge of the contents, whether naturally or by artificial means. Kiukiang.

Regarding the etiology of boils at this settlement, Dr. Jardine considers that they are among the results of malaria. He observes that on one or two occasions neuralgia preceded their appearance; that many persons had an attack of fever ushering them in; that if there was a recurrence of the fever no boils appeared, but that when boils presented themselves there was an end of the fever. He observes that in certain malarious districts in America, the occurrence of boils is considered a safeguard against an attack of intermittent fever. In the constitutional treatment of some of the cases at Kiukiang, many remedies were tried with which boils have been most successfully treated in Britain, without any result but disappointment. Quinine in combination with sulphate of magnesia and sulphuric acid, or quinine by itself, was found beneficial in all cases, not only in hastening suppuration, but in preventing a recurrence of the attack. Liquor arsenicalis in conjunction with wine of iron also proved curative, especially in children, when the disease was associated with anæmia. With regard to the question of opening the boils, or 'adopting the expectant plan,' each case must be considered on its own merits. It is observed, however, that 'incisions had the disadvantage of leaving an ugly scar.'—(IX. 1.)

Shanghai.

At Shanghai, April to September, 1872, the reporter wrote in reference to boils, that among the summer ailments they stand pre-ominent. They are really small carbuncles, and are at times attended by much constitutional disturbance. Powdered camphor applied to the ulcer which is left behind after opening the boil, whether artificially or naturally, promotes rapid healing. He is inclined to think that this is a Chinese remedy, as it was first suggested to him by a Chinese. The general symptoms are to be treated with tonics and generous diet.—(IV. 96.)

Foochow.

At Foochow, 1871, boils were very prevalent throughout the hot season, and all classes of the country suffered from them. New comers and persons recovering from illness were particularly liable to them. Persons of phlegmatic temperament were more liable to them than those of bilious diathesis. To ladies they are especially annoying, on account of the disfigurement they cause, and the train of irritative symptoms to which they give rise. Instances of true carbuncle are very rare.—(II. 26.)

Tamsui.

At Tamsui, according to the Report for the year ended September, 1878, several cases of malarious fever were followed by a large crop of boils.—(XVI. 18.)

Swatow.

At Swatow, in 1871, boils were very prevalent during summer; one man has had 200 during the season. The distress and weakness caused by their suppuration and discharge are very great.—(II. 9.)

According to the Report for the six months to September, 1872, the occurrence of boils was considered due to miasmatic causes. In the treatment of these affections the medical officer gave alkalis 'in deference to John Hunter,' but with no special effect; other remedies and methods of treatment usually recommended had no better result, and the remark occurs that 'we are badly in want of more knowledge of the origin and pathology of this complaint, as, in the south of China, it is a common and hitherto very unmanageable disease.' Poultices seem rather to promote the further formation of boils, though they give great relief as regards the particular boil to which they are applied. Support by adhesive plaster is also useful to individual boils, giving great relief, and seeming to hasten the suppurative process and the ultimate discharge of the core. Sulphate of quinine with diluted sulphuric acid failed in the hands of Dr. Scott, who thinks, however, that the disease ought to be treated constitutionally, and that a generous regimen with malt liquor and tonics are the best remedies.—(IV. 88.)

In the half-year to September, 1877, Dr. Scott had not one case of boils to record, although generally in summer he had met with many instances of this troublesome and painful affection.—(XIV. 69.)

At Canton, according to the Report—April to September, 1872, boils occur every summer among the younger of the foreign community. The remedies suggested for this affection are numerous; but tonics and alkalis seem to have the preference. In children, the weakly are not more liable to them than the strong. In their treatment the Chinese do not use the knife, but apply plasters having caustic properties.—(IV. 69.) Canton.

In the summer of 1877, some of the foreign residents, both adults and children, suffered severely from boils.—(XIV. 58.)

LIX. CARBUNCLE.

At Peking, according to the Report to 30th September, 1871, carbuncles are at all times very frequent among the Chinese, being usually also large in size and numerous on the same person. Their subjects for the most part were elderly persons of debilitated constitution; the mortality by them great. According to the nosology of the Chinese, carbuncle is classed among the cancerous, malignant, and other sores. The usual treatment pursued in the Consular dispensary was that by free crucial incision. The popular name here for carbuncle is *shang* or *hia ta*, according as it is situated on the upper or lower part of the back. The term *ta pei* is also used, but the proper book expression is *fah pei*, denoting an issuing or springing forth of the spinal column. Several varieties are mentioned and named according to their position on the body.—(III. 7.) Peking.

At Foochow, April to September, 1877, a case of severe carbuncle was reported. The subject of the affection was an English sailor, forty-seven years of age. There first appeared an abscess in the neighbourhood of the perineum, which was opened, and 10 ounces of pus evacuated, the wound healing, but not kindly. Then followed two carbuncles, which both occupied the whole of the back, with carbuncles of smaller size, and abscesses in various parts of the body, the patient ultimately sinking under his ailments. In the treatment of one of the large carbuncles, free incisions and poultices were employed, but the results were not looked upon as encouraging. Dr. Ringer quoted the views of Sir James Paget as to the objections against the former practice of treating carbuncle by means of free crucial incisions.—(XIV. 87.)

At Canton, 1879, a case is given of intensely severe carbuncle. The disease first occurred in the usual position at the back of the neck; the tissues all round the neck became affected, incisions had to be made, but extensive sloughing set in, and the patient speedily sank. The subject of the disease was Dr. Wong. His life had been a most useful and active one, and he had practised his profession for nearly twenty years at this place.—(XVIII. 57.) Canton.

Malignant Pustule.—In Japan this disease, though occasionally seen in natives, is rare among foreigners, only one death by it being registered between 1871 and 1877.—(XV. 55.) Japan.

LX. GANGRENE FROM COLD.

In the Report on Newchang, October, 1880, to March, 1881, it is stated that in the beginning of winter a good many cases of frost-bite occur in the crews of Siamese vessels. Dr. Watson has not observed a Chinese or European sailor so affected. But the Siamese often suffer from frost-bite before the temperature is at the freezing-point, so sensitive are they to even moderate cold. Cases in illustration then follow.—(XXI. 39.) Newchwang.

At Chefoo, during the six months from October, 1875, to March, 1876, gangrene from cold formed no small proportion of the cases occurring on board Siamese vessels. The affection is

Chefoo.

generally met with early in October, when the winter winds begin to set in. The parts attacked are the hands and the feet, more frequently the latter. The men most subject to it are the cachectic and the debilitated, it being very rare to find the condition among the well-nourished and the robust. Among European seamen, the particular affection under notice has not been seen, although during intensely cold weather they are sometimes affected with swelling and blisters of the hands, from which they speedily recover without any bad symptoms. It is chiefly among Siamese, Malays, or Lascars that this affection is found. It is remarkable what a small degree of cold proves the exciting cause of this lesion. It has been seen to attack a ship's crew who had previously been comparatively healthy, after night and exposure to a temperature of 45° Fahr. The ordinary history of a case of this gangrene on board one of these vessels is that a seaman on watch is exposed to the cold until he feels uncomfortable, and as soon as opportunity offers he repairs to the cookhouse or to a charcoal fire to warm himself. As may be expected, the reaction is severe. All the symptoms of inflammation supervene, and unless it soon subsides, we have gangrene taking place. In mild cases the disease does not extend beyond the toes or fingers, but not uncommonly the whole foot becomes involved, spreading, it may be, above the ankle or near the knee. This form of gangrene is seldom accompanied by severe constitutional symptoms, except in some cases, during the first few days. There is very little fever or other general disturbance. The local disease does not generally encroach beyond the first observed defined mark of the discoloration of the skin, and the line of demarcation takes place at this situation. The course of the disease, as observed here, is generally chronic, and may continue for months before the slough separates or the patient dies from long-continued irritation or septicæmia. The practice of making incisions to relieve tension, Dr. Carmichael considered to be of no use: he believes, on the contrary, that it has been injurious, the disease rapidly extending after its employment. In cases where amputation was inevitable, his practice was to perform it above the line of demarcation. The results in all cases were unfavourable; not unfrequently the gangrene recurred in the flaps even after a second amputation.—(XI. 3.)

During the winter of 1878-79, five total shipwrecks took place on this side of the Shantung promontory, but only in one case was there loss of life. In this the crew, consisting of six Japanese and five Europeans, were exposed during a whole night on a deserted beach, to a temperature of 8° Fahr. with a north-east wind. One of the Japanese fell into a fatal sleep, and the survivors were severely frost-bitten. Their limbs exhibited different degrees of injury from the frost. Some were swollen, œdematous, and covered with large bullæ filled with serum; others had no appearance whatever of injury, but were perfectly cold and devoid of sensation. In the former, the injuries were more superficial; in the latter, the parts were frozen to the bone. Treatment consisted in the application of hot poultices; these hastened the separation of sloughs. Pain was relieved by laudanum sprinkled over the poultices, and this decreased the demand for narcotics internally. Pain was entirely confined to those milder cases where bullæ had formed, being quite absent in the more severe injuries. In all, obstinate constipation was present. —(XVII. 14.)

At Ningpo, during the winter of 1873-74, which was a severe one, the Sisters of Charity admitted some Chinese into their hospital suffering from frost-bite. In one case both feet had

Ningpo.

dropped off, leaving the lower ends of the tibia and fibula entirely denuded for about three inches. In another case, only about one-half of each foot had been amputated by nature, and in a third case only the toes suffered. Dr. Mackenzie was 'most

anxious to remove the bare bones and useless tissues, but their aversion to the knife of a foreign doctor was too great to overcome; so he was obliged to content himself by applying carbolized oil, which soon caused the offensive wounds to cover themselves with healthy granulations. —(VII. 25.)

At Swatow, in December, 1876, a severe case of the affection came under notice. The sufferer, a Malay, arrived from Chefoo, where he had got frost-bitten. When he was first attacked by the cold, he put his feet into hot water. When first seen at Swatow, the left foot was quite gangrenous, and a line of demarcation forming about two inches above the ankle. Amputation was performed, but tetanus set in, and on 31st January, 1877, he died.—(XIII. 10.) Swatow.

LXI. SYMMETRICAL TUMOURS.

Dr. Manson gives particulars of a case of what he designates *Symmetrical Development of Minute Tumours after Suppression of Profuse Sweating:* 'From a superficial examination of the little tumours behind the ears in the case alluded to, one would be apt to diagnose *molluscum contagiosum;* but a careful examination revealed the absence of several of the characteristic features of that disease; for example, the central depression and orifice, the tendency to become sessile when of any size, and the expressible contents. Those on the hands were very hard, and apparently fibrous and solid; the disease succeeded the suppression of profuse and habitual sweating.' According to the experience of Dr. Manson, molluscum contagiosum is not a common disease in the neighbourhood of Amoy. He has seen a few cases of it, however, in foreigners and in natives.—(XXI. 33.)

LXII. DERMATOLYSIS.

Dr. Manson gives particulars in regard to 'Hypertrophic skin-disease,' for which he has difficulty in finding a name. In it there was hypertrophy of all the integuments; the skin hung in loose folds; hence he applies to it the term *Dermatolysis.* An artificial form of this disease is very common at Amoy on the occiputs of old women. It is produced by the manner in which the hair is dragged in their peculiar manner of dressing that ornament. He has 'often seen this dermatolysis so considerable, that the whole repulsive-looking mass could be grasped in the hand and raised completely away from the cranium.' When such a woman becomes bald, she uses this piece of redundant integument as a foundation whereon to glue or otherwise attach her false hair, thereby, in the course of a very few years, still further increasing the deformity.—(XXI. 32.)

LXIII. FORMICATION.

In his Report on Canton for the six months ending March, 1872, Dr. Wong wrote: He has seen several cases which merit a detailed description, as he has not noticed any account of the affection in question in medical works. The sufferers are attacked with sensations like the crawling of ants over different parts of the body; and in the cases that came under his observation, these sensations were mostly on the hands and face, though sometimes on the arms and back and other parts of the body. They are not felt constantly, but come and go, except in aggravated cases, when they are felt every day, or nearly all the time, with different degrees of intensity. They are apt to be worse at night, when sometimes they interfere with sleep. In mild cases they are felt only occasionally in such electric state of the weather as Canton.

commonly produces neuralgic pains, a few days before a fall of rain. In severe cases even a mass of clouds overhead is sufficient to bring them on. They are excited by heat and atmospheric changes, and by causes working on the mind, as mental anxiety, emotions of fear and anger, and even by reading and writing. Cold has a soothing influence, and in cold weather they are not so much felt. In all the cases observed, the patients were Chinese; and both sexes appear to be equally liable to it. Their general health was good; digestive functions little impaired; their sensibility and power of motion unaffected. In some cases they suffered only from these sensations; in others, also from muscular twitchings and nervous pains. The native physicians recommend a course of tonics in its treatment. The disease does not seem commonly connected with any serious lesion of the nervous system, seeing that so many cases of it recover.—(III. 20.)

LXIV. TINEA IMBRICATA.

Under the above heading, Dr. Manson, following Dr. Tilbury Fox, includes tinea circinata, parasitic eczema, Burmese ringworm, eczema marginatum, Malabar itch, Chinese itch, etc., and attributes those varieties of the disease to the influence of diversity of climate, clothing, constitution, and part of the body affected. Dr. Manson, however, considers that tinea imbricata and tinea circinata are distinct diseases; and he gives cases in illustration of these views; namely, one contracted by a native Chinese in the Straits Settlements, the other the ordinary form met with in China. He states that in all cases of epiphytic skin disease, bacteria, micrococci, and similar low forms of life, abound in and about the epithelial scales. In one experiment, where inoculation with the scales of tinea imbricata was performed on the arm of a person affected with the disease, no result followed beyond a temporary local irritation. (This is important, as indicating the difference there is between a disease communicated naturally, and where an artificial method is adopted.)

A great many cases of this disease are seen at Amoy; but with one exception all the patients have been at one time in the Straits of Malacca, or islands of the Malay Archipelago; and it was there that the disease was acquired. In South Formosa cases occur in all respects similar to those from the Straits; and the remark occurs that considerable similarity exists in regard to the climate of those places. It would appear that some peculiarity of climate is necessary for the ready spread of the disease from person to person, although, when once established in the individual, it flourishes in China as well as in its home, as proved by the results of inoculation. Dr. Manson believes that tinea imbricata is the disease described as *Pita* or *Tokelan itch* by Drs. Fox and Farquhar, and by Dr. Thin in the *Practitioner*. If it is identical with the Samoan disease, we know that it spreads rapidly enough under suitable circumstances. He considers there is no other epiphytic skin disease, with the exception of the fungus-foot of India, with so limited a geographical distribution. He considers that tinea imbricata is the connecting link between chloasma and tinea circinata; also that each specific form of tinea is artificially transmitted by means of inoculation.—(XVI. 1, 5, 6.)

LXV. WASHERMAN'S ITCH.

At Shanghai, April to September, 1873, a peculiar form of skin disease prevails, known as washerman's itch, ringworm, or eczema. The ordinary forms of eczema are frequently seen here,

Shanghai.

and are as amenable to treatment as elsewhere; but the particular form now alluded to proves almost invincible, and the sufferer leads for many months a more or less miserable life, according as by temperament he is irritable or the reverse. Especially obstinate when

it attacks the perineum, groins, and inside of the thighs, where heat and moisture depress the vitality of the inflamed skin; the disease is commonly of short duration when it attacks the axilla, where much the same conditions exist. According to the reporter, washerman's itch may be divided into the parasitic and non-parasitic forms, the former demanding the use of parasiticides, the latter merely rest and general sedatives. When the disease is neglected until the simple erythematous eczema becomes ichorous, or the parasitic affection, while continuing to spread at the circumference, leaves behind it an ichorous surface from which no parasitic forms can be obtained, the treatment then becomes identical in the two cases. It may be matter of doubt in what way the application of 'Goa powder,' iodine, or caustic potash acts, whether by killing the parasite or by setting up inflammation in the cuticle such as is inconsistent with the life of a low organism; but the application is occasionally rapidly successful. Afterwards the resulting inflammation yields to soothing applications. When the constitution is broken down, the removal of the original cause is followed by the development of an ichorous eczema, in the treatment of which, together with suitable local remedies, the internal use of so-called specifics, arsenic, iron, or zinc, is required. In the non-parasitic form, if treated early, the application of a weak lead lotion, such as Rowland's Kalydor, may be sufficient to arrest the course of the disease. A severe attack of eczema having passed by, a tendency to the formation of boils usually persists. These boils may be large and solitary—ecthyma in fact—or small and arranged in more or less continuous curves. Whether superficial or deep, they are extremely painful, and the lymphatics are constantly implicated. Their progress is tedious.

With regard to the eczema, arrow-root poultices are sometimes recommended; oxide of zinc ointment sometimes acts well; alkaline baths diminish the tendency to secretion; and the intolerable itching is immediately relieved by 'dabbing' on a delicate lotion of diacetate of lead, combined with glycerine and rosewater. Notwithstanding that authorities state the disease to be non-contagious, the reporter considers that it must be looked upon as being communicable; and, moreover, he can cite cases in support of his view.—(VI. 58, 60.)

LXVI. ITCH.

The Report on Peking to 30th September, 1873, contains some remarks on 'summer itch' among the Chinese. It is stated that in spring the beggars issue from the Imperial House of Refuge covered with itch, psoriasis, boils, and enthetic diseases. From their scanty clothing in summer they are readily cured with sulphur ointment. Among the lower and middle classes also itch is not uncommon, and from the want of under-garments that can be washed, it is difficult of treatment. The Chinese attribute the disease to dampness. They are quite unaware of its true nature.—(VI. 14.) Peking.

At Kiukiang, in 1871, out of 288 patients affected with skin diseases, 128 suffered from scabies.—(II. 61.) Kiukiang.

At Wenchow, in 1877-78, skin diseases were very general, and of them scabies was the most common form—(XV. 41.) Wenchow.

LXVII. INTESTINAL WORMS.

According to a Chinese author quoted by Dr. Dudgeon in his Report on Peking to March, 1875, 'there are nine kinds of worms which infest the human body, namely: 1st, the *fu* worm, four fen in length, and the chief of its class; 2nd, *yu*, measuring from five to six inches; 3rd, a little worm not quite an inch long, with small head and large procreative powers; the 4th is called a *flesh* worm, and resembles rotten apricots; 5th, the *lung* worm, which resembles a silk-worm, Chinese views.

and the person possessed of it coughs and ultimately begets phthisis; 6th, 'the stomach worm, and resembles a frog;' 7th, 'the weak or diaphragmatic worm;' 8th, the red worm, like raw flesh; 9th, the *jao*, small and like the vegetable worm. All those enumerated are stated to reside in the stomach and bowels, 'and if a person is of good constitution, no injury from them is to be feared; but if a person be weak, any disease may arise.' The corpse worm lives in a person as long as he lives; when the person dies, it also dies. It is the greatest enemy of man; it lives under the skin, is three inches long, and has a head and tail. According to one author these worms live and flourish and produce with water, and are converted or dissolved by rain vapours.—(IX. 23.)

Tientsin. At Tientsin, during the year to March, 1880, entozoa of different kinds were frequently met with. The native Chinese suffered most from lumbrici, the foreigners from tænia; tænia medio-canellata being the only form met with.—(XIX. 5.)

Newchwang. At Newchwang, in 1871, according to the Report to September of that year, intestinal worms were the most prevalent of all complaints.—(III. 11.)

In 1878 tape-worm was prevalent among the Chinese, less so among foreigners. This is explained by the circumstance that the former eat pork extensively, the latter beef and mutton. Impure water is also assigned as a cause. In the treatment, the greatest success has followed the use of oil of male fern. In the after-treatment, draughts containing sulphates of magnesia, iron and quinine, diluted sulphuric acid in bitter infusion, have been given with advantage each morning; a carbonate of iron pill in addition after each meal. The reflex symptoms supposed to indicate the presence of tape-worm in the alimentary canal are so numerous that many physicians ignore them, and do not treat the disease until portions of the parasite have been voided. The feeling of disgust which Europeans experience on becoming aware that they are inhabited by so formidable a creature is the most distressing feature of the case.—(XVII. 9.)

Chinkiang. At Chinkiang, in 1877, entozoa of several species were stated to be present, lumbrici being the most common.—(XIV. 63.)

Shanghai. At Shanghai, during the six months, October, 1875, to March, 1876, 'one man had *an epileptic seizure*, which suggested the presence of *tape-worm*. A smart turpentine purge brought away an unusually perfect specimen of the parasite, and no attack has since occurred.'—(XI. 53.)

In the half-year ending 30th September, 1876, *lumbrici* were reported to be very prevalent among adults as well as in children. It was stated that 'they flourish doubtless by favour of the carelessness which allows unboiled water to be mingled with claret, and imperfectly cleaned salad and celery to be brought to table.'—(XII. 3.)

Foochow. At Foochow, in 1871, intestinal worms were described as being the great pest at that port. So general are they, that when a child is seen fretful and looking ill without any other cause to account for it, the medical officer usually gives a dose of santonine, and in the majority of instances lumbrici come away, relief being then obtained from all the symptoms. Worms are constantly apt to recur, and a child, after getting well for the time, may be as bad as ever in a month or two. The cause of the prevalence of worms among foreign children in China is not apparent. If it arose from objectionable articles of food given by the amahs, native children ought to suffer still more; but the reporter had not sufficient native practice to enable him to decide on this point. By far the most common species of worm here is the lumbricus. A good many cases of tænia in adults are met with, and here the extract of male fern is generally effectual.—(II. 28.)

According to the Report to March, 1881, lumbrici were among the most prevalent diseases, not only children but adults also being affected by them.—(XXI. 52, 54.)

At Yokohama, tape-worm and round worm are somewhat more frequent than they are in most parts of Europe and America. But the parasites are found in that stage of their existence during which they are the source of but little danger to their host.—(XV. 68.) Japan.

LXVIII. FILARIA SANGUINIS HOMINIS.

In the Report on Amoy for the six months to March, 1877, Dr. Manson pursues the consideration of this subject.—See *ante*, p. 154. He alludes to the 'probable connection' existing between filaria and chyluria and elephantoid disease. He asks, 'Could such lesions as this filaria produces in the aorta of the dog give rise to aneurism, were they to occur in man?' He observes that the prevalence of filaria aortic disease in dogs and the frequency of aortic aneurism in man in China is a significant coincidence. He alludes also to the occurrence of 'the worm' in the eye of the horse. Amoy.

Of 190 persons whose blood was examined by Dr. Manson, the presence of filaria was detected in 15, equal to about 8 per cent. He considers that the ordinary measurements of the parasite are one-ninetieth of an inch in length by one three-thousandth of an inch in breadth. He gives details of various diseases, elephantiasis and lymph scrotum among them, and observes that in some instances hæmatozoa were present, in others not. He adds, however, that 'the *filaria sanguinis hominis* may be present in the blood, and yet the host be in good health, and exhibit no other morbid phenomenon; also, that in the same person it may be present at one time and absent at another.'—(XIII. 31.) See also FILARIA IN DOGS.

Dr. Manson, in his Report to September, 1877, continued his remarks on filaria. He had examined 670 individuals of the general population of Amoy, and in that number detected the presence of the filaria in 62, equal to 9·25 per cent.; this also apparently exclusive of those who suffered from definite forms of what he terms filaria disease, namely elephantiasis, varicose lymphatic glands, and lymph scrotum. Adverting to the cases in which 'embryos' of the filaria were not detected, the remark occurs that as most of these were examined only once, 'it might so happen that just at the time of examination the embryos were absent.' (If so, their whereabouts has not been suggested.) According to this reporter the liability to filaria rises in relation to the age of the subject of the parasite, from 1 in 17·5 in youth to 1 in 3 in old age. It does not appear that this rate of liability is affected by sex.

He considers that elephantiasis and allied diseases are much more frequently associated with filaria than with any other morbid condition. He, however, would make a correction for 'temporary absence' of the parasite, although he observes that 'the propriety of this is questionable.' He considers that 'mere coincidence' will not account for the association of the parasite and the disease; they can only stand to each other in the relation of cause and consequence. Yet 'the disease, so to speak, is only an accident, though a very frequent one, in the history of the parasite.' Dr. Manson alludes to 'wandering filaria that have lost their way.' He considers that they do more injury than those that reach and breed in 'their proper habitat,' and as an example he instances the eye worm of the horse. He accounts for the absence of 'embryos' of filaria in certain cases of elephantiasis, by supposing that the death of the parent filaria occurred early in that disease. Hydrocele is considered to be a disease frequently associated with hæmatozoa; according to Dr. Manson 'the prevalence of that affection in hot climates may be thus accounted for.'—(XIV. 1, 5, 6, 7.)

With regard to the filaria hominis, Dr. Manson states that in cases where embryo filariæ are not in great abundance in the blood, they often disappear completely for a time, to reappear after

the lapse of a few days or weeks. This disappearance he attributes to their disintegration; he moreover states that they are voided in the excretions and secretions, and that they have been found in the urine and tears. He then writes that 'man may swallow this *hypothetic* animal.' He observes that 'it occurred to him' that the *mosquito* which fed on the blood *might* be the seat of changes in the development of the filaria found in the blood. Having 'experimented' on mosquitoes that had fed on human blood, he found that his 'idea was correct.' It appears, however, that it is only the female mosquito that feeds upon blood, the proboscis of the male being unsuited for this purpose. A large number of 'experiments' and details are then given, but which are omitted in this place. Among the conclusions drawn from the observations made, were—1st, that filaria and elephantoid diseases were related to each other as cause and effect; 2nd, that such disease is endemic only where the mosquito flourishes.—(XIV. 9.)

With regard to the occurrence of filaria disease at Amoy, 1879, the reporter quotes various opinions in favour of and adverse to the theory of the relation of filaria to lymph scrotum and elephantiasis. He then enters into details with a view to support his belief that the parasite and disease are related to each other as above stated. He observed six cases of this affection, all of which had this feature in common, that in them there was enlargement of the inguinal glands. In the clear lymph obtained from those glands there were abundance of filariæ, although none in blood obtained from the finger. In some instances lymph scrotum was associated with elephantiasis; in others not so. In cases of elephantiasis attended by inflammation of the leg, the accompanying pyrexia was designated *elephantoid fever;* also *transient* fever. Then follow remarks as to whether filariæ are oviparous or viviparous; as to the specific alliances between those entozoa and those found in the *corvus torquatus*, the *Goura coronata*, and the dog. The reporter had examined a number of patients 'with the result of finding that unless there is some disturbance, as fever, interfering with the regular physiological rhythm of the body, filaria embryos invariably begin to appear in the circulation at sunset, their numbers gradually increase till about midnight; during early morning they become fewer by degrees, and by nine or ten o'clock in the forenoon it is a very rare thing to find one in the blood.' This diurnal periodicity is accounted for after this manner: 'The nocturnal habits of filaria sanguinis hominis are adapted to the nocturnal habits of the mosquito, its intermediary host;' and then follows a dissertation, more or less theoretical, in regard to the stages through which the filaria embryo is stated to pass. The present object is sufficiently obtained by simply transcribing the above particulars.—(XVIII. 31.)

In the Report on Amoy to September, 1880, there is a continuation of previous remarks on filaria sanguinis hominis. The belief is expressed that the habitat of the parent *filaria* has been discovered by the observer. As illustrative cases, details are given of one of lymph scrotum, in which the filaria was discovered in the lymph obtained therefrom, but not in the blood of the person affected. A portion of the scrotum having been removed and placed in a vessel, the reporter 'saw wriggling on it very vigorously a long and slender worm of a catgut opaline look, the thickness of a medium-sized horse-hair. One end of the worm was free to the extent of two inches, the other entered the cut end of a "lymphatic."' The worm appeared to be working back again into the scrotum. The portion observed was the head end of a female.—(XX. 14.)

At Foochow, in the six months ending March, 1881, Dr. Rennie, with a view to determine the frequency of occurrence of 'filaria sanguinis hominis' among hospital patients, examined microscopically the blood of 182 patients. The examination took place at 9 p.m.; and in 25 instances 'embryos' of the filariæ were found in the blood. The patients in these cases were affected with various diseases. They came from different parts of the city and of the neighbouring country.—(XXI. 56.)

Foochow.

In August, 1870, Dr. Myers took over from Dr. P. Manson charge of the native hospital at Takow, and from that time continued investigations on the subject of *filaria sanguinis hominis*, previously conducted by Dr. Manson. As a result of his inquiries, Dr. Myers was 'led to think that this state of blood-infection is not common to, nor favoured by, residence in Formosa.' He noted in regard to that island, also, 'the almost total absence of those diseases which Dr. Manson has proved to be dependent on parasitic obstruction, such as elephantiasis and lymph scrotum.' He is 'strongly inclined to think that *filaria sanguinis hominis* does not exist in the blood of the natives of this place.' He observes that the only three persons in whom filaria-infected blood was found had come from Amoy; and that the only person heard of as affected with *elephantiasis scroti* traces his disease to residence on the mainland. Dr. Myers assumes 'that all now take for granted the fact that the mosquito plays an essential part in completing the cycle of genesis of the parasite.' He details a series of experiments on monkeys, in the course of which these creatures were made to drink water containing larvæ of mosquitoes, and their blood was subsequently tested for filariæ. He notices the strong antipathy these animals have to drinking water that appears impure, or in which there are objects in motion. The subsequent examination of the blood was without result, a circumstance accounted for thus: 'I have no doubt that in all the cases which came under notice the mosquito was an inhospitable host, digesting where it should have nurtured.' Takow.

Dr. Myers made a series of observations on a native of Amoy in view to note the periods of appearance and disappearance of the embryos of filaria from the blood of infected persons: 'The embryos appeared regularly between 6 and 8 p.m. By 6·45 p.m. they had begun to appear regularly; but not until 7·15 p.m. had they become numerous. By midnight they seemed to have attained their maximum; decrease then set in, and they appeared to *retire* between 6 and 8 a.m.' Thus, during the twelve hours they disport themselves, their liberators are in active search for food. Temperature bears no very marked relation to the number or activity of the embryos; still, some influence seems shadowed forth. Dr. Myers wrote: 'From what Dr. P. Manson has written, I gather that he is inclined to think the embryos do not periodically dissolve in the blood, but that they probably congregate in some organ (possibly the lungs), and there remain until the time arrives for their wanderings and withdrawal by mosquitoes.' In favour of this view he gives the results of post-mortem examinations of dogs, 'in the lungs of which he finds a great congregation of embryos.' He owns that he is 'not as much influenced by this as Dr. Manson would seem to be.' He queries the conclusion Dr. Manson draws from certain data, as to his mind they do not follow the premisses. As to the manner of the periodical disappearance of the embryos from the blood, he writes—'all must be more or less surmise.' If the embryo die every 24 hours in the host, why do they live so much longer when liberated? As to the cause of their disappearance, Dr. Myers ventures no more than a surmise. When To-Ah, the man experimented upon, was taking quinine (and so it was with the other two patients), he noticed that the embryos were less lively and healthy-looking than when he was not taking that drug. Dr. Myers considers it 'tolerably certain that the *locale* of the mature worm is in the lymphatic system, and generally in the more superficial glands; that with dogs, though worms are found in other parts of the vascular system, still the greater number reside in the heart; yet in man, the home of the parasite appears to be less desperately localized.'—(XXI. 11-23.)

In the 22nd number of the 'Customs' Medical Reports,' namely, to September, 1881, Dr. Manson gives extracts from a letter addressed by him to Dr. Cobbold, on the subject of *filaria*. With regard to the 'periodicity' of the parasites he writes: 'Whatever the cause may be, it certainly operates *through* the body, the medium in which the parasites are;' but he 'very much

inclines to think that, though operating through the body, it is placed outside of it. Of one thing we may be quite certain, that, from the fact of the periodicity being one of 24 hours, its remote cause is the rising and setting of the sun. But, continues the paper, 'the periodicity bears no relation whatever to the hours of sunshine, cloud, or rain.' Having alluded to the periods of terrestrial magnetic maximum and minimum intensity, he observes that 'these hours correspond very closely with those of commencing rest and activity of the filaria in the normal state of the body; but there is no proof whatever that there is any cause-and-effect relation between these two phenomena.'—(XXII. 63, 64.)

In the 23rd number of the series of Reports, Dr. Manson refers to what he had previously written in regard to 'filarial periodicity' being 'an adaptation of the habits of the filaria to those of the mosquito.' He adds that 'the particular force or mechanism that operates on the embryo parasite, causing it to appear in the blood normally only at certain hours, has yet to be ascertained.' In reference to terrestrial magnetism in relation to periodicity,' the progress of discovery has rendered a connection between the two so extremely improbable that he has not considered it worth while to pursue investigation in this direction any longer. 'Dr. Manson alludes to a communication in the *Lancet* of 27th August, 1881, by Dr. Mackenzie, by which the circumstance appears that 'the same periodicity was observed by the parasites as had been described as occurring in China.' If the patient slept during the day and kept awake during the night, periodicity was inverted; therefore, something bound up with the sleeping and waking states has clearly a powerful influence on the parasite or its young. When experiments and facts have been multiplied we may be able to say precisely what is the cause of filarial periodicity. At present, facts are wanting.

Fortunately, there is abundant evidence that filaria sanguinis hominis does not always, or even generally, give rise to disease. But the evidence is equally strong that at times the presence of the parasite entails grave disease; that this disease is sometimes in one organ, sometimes in another. Why should the parasite give rise to disease in one man and not in another? and why should one organ suffer in one subject, another organ in a second, another in a third, and so on?

With regard to the relation between *filaria* and elephantoid diseases, Dr. Manson believes that the true pathology of the latter is the following, namely: 1. Parent filaria in a distal lymphatic; 2. Premature expulsion of ova; 3. Embolism of lymphatic glands by ova; 4. Stasis of lymph; 5. Regurgitation of lymph and partial compensation by anastomosis; 6. Renewed or continued premature expulsion of ova; 7. Further embolism of glands.

Dr. Myers, in his Report, October, 1881, to March, 1882, regrets that he is unable to furnish further particulars regarding the filaria sanguinis hominis, 'on account of the difficulty he finds in getting the filaria-nurturing mosquito brought from Amoy to live long enough to enable him to carry on his experiments on monkeys. (On the subject of filaria sanguinis hominis, see also *British Medical Journal*, April 7th, 1883).—(XXIII. 3, 4, 7, 11, 14, 20.)

LXIX. DISTOMA RINGERI.

In the Report on Amoy, April to September, 1880, there is a description of a 'new' parasite named after its discoverer, *Distoma Ringeri*. It was found lying in the lung-tissue of a Portuguese who died of thoracic aneurism. 'Whilst alive, a number of young (microscopic) distomæ escaped from an opening in the body. There were some small deposits of tubercles, but no cavities.' Some illustrations of the object occur facing page 10 of the Report. Similar 'parasites' were found in the sputa of a man affected with eczema. With

Amoy.

reference to this discovery, however, the observation occurs that 'we are as yet not in a position to say much about the pathological significance of this parasite.'—(XX. 10.)

With reference to this subject, Dr. Manson contributes further remarks in the 22nd issue of the 'Customs' Medical Reports.' He observes that this 'new parasite,' occurring in *Tamsui*, Formosa, was associated with a peculiar form of recurring hæmoptysis. Professor Baelz of Tokio, writing in the *Lancet* of 2nd October, 1880, states that it is not uncommon in Japan. The geographical distribution of the parasite is peculiar, if it be the case, as seems probable, that it is rare, or entirely absent, on the mainland of China. Dr. Baelz considers that it exists throughout Japan; and inasmuch as the geological composition of Japan and Formosa is volcanic, the circumstance is suggested in explanation of the presence of the parasite in both those localities. 'Our knowledge of the history of the ovum indicates the direction which effort at prevention should take. But our knowledge in this instance is a little in advance of any prevention we may look for in a Formosan.'—(XXII. 55.)

LXX. TRICHINÆ.

At Peking, according to the Report to September, 1871, if filthy feeding of pigs induced trichinæ, the most disastrous effects would be seen in China, for pig life here, as elsewhere, is simply revolting.—(II. 79.) No case of trichinosis is recorded. Peking.

In the Report on Shanghai to September, 1880, the observation occurs that, 'when one considers the miscellaneous but always filthy food consumed by pigs in China, and the large extent to which pork enters into the diet of the natives; also that not only ordinary cooking, but smoking, pickling, and even saturation with chloride of zinc solution are inoperative to destroy the larvæ of *trichina spiralis*, when encapsuled in muscle'—it is not unreasonable to attribute certain cases of sudden death to trichinosis, and yet there is no distinct record at this place of a case of that nature having really occurred, although conjectures on this point are expressed.—(XX. 34.) Shanghai.

In that to March, 1881, Dr. P. Manson adverts to the above-quoted observations. He recollects having seen the combination of pains in the muscles and dropsy, but until reading the suggestion of Dr. Jamieson that trichinæ spiralis 'might be the cause of this particular combination of symptoms, he did not seriously attempt an explanation.'—(XXI. 26.)—See p. 209.

LXXI. GOLD-POISONING.

In the Report on Peking from October, 1874, to March, 1875, Dr. Dudgeon states that there was one death by gold-poisoning. He writes that this is a favourite mode of committing suicide in China. Crude gold is said, in the 'Pên Ts'ao,' to be poisonous, but prepared gold harmless. Another authority denies this, and points to the fact that gold-diggers frequently swallow gold without dangerous results; that, in fact, it is used medicinally, as in palpitation of the heart. We know that the salts of gold are strongly poisonous, but it is highly probable that the fatal result is owing to local injury rather than absorption. The Chinese, to account for the poisonous properties of gold, suppose that serpents left their teeth in the stones where it is found, or that birds deposited their dung, which is poisonous, on the stones; but these suppositions are shown to be mere idle guesses.—(IX. 26.)

At Kiukiang, according to the Report to March, 1877, poisoning by gold-leaf appears to be

seldom practised as a method of committing suicide. During a residence of three years, Kiukiang. Dr. Jardine heard of only one case. He writes: 'Gold-leaf, when it does not suffocate, must act simply as an irritant.' He would consider that the rational treatment would be the continuous administration of alkalies, with demulcent drinks and emetics. How far they might succeed in practice remains to be seen.—(XIII. 6.)

LXXII. SNAKE-BITE.

At Hoihow, according to the Report for the half-year ending 30th September, 1881, the bamboo-snake (*Trigonocephalus ?*) is very common, and on account of its green colour is often Hoihow. trodden on by natives, who walk through the grass without shoes. Dr. Aldridge gives some particulars in regard to two cases of bite by this snake. In the first, a man bitten on the ankle was seen twelve hours afterwards. He was then very feverish; pain extended up the leg and thigh; œdema extended from the foot to the knee; the skin was tense, and the patient was unable to extend the leg. A crucial incision over the bite was made, and fomentations applied; the man kept in bed, and in four days he was able to return to work. When first bitten, he had taken a large quantity of Chinese wine; to become intoxicated being considered by the natives the best line of treatment to be adopted in cases of snake-bite. The second case, like the above, was similarly treated, and ended in recovery.—(XXII. 9.)

LXXIII. THE FLESH OF DISEASED ANIMALS USED AS FOOD.

At Chefoo, during midwinter of 1875-76, according to Dr. Carmichael, 'the flesh of all Chefoo. animals that died of the cattle plague, then raging, was undoubtedly used as food by the poor; but, as far as he could learn, this was followed by no ill effects.—(XII. 42.)

According to the Report on Shanghai, from January to March, 1872, medical testimony varies as to the presence or absence of danger to man arising from the consumption of the flesh of animals Shanghai. slaughtered while suffering from rinderpest. The reporter observes that while no one would knowingly eat such meat, yet experience has convinced him that it is practically impossible to distinguish the beef taken from the carcases of diseased animals from that of those in perfect health; this is even true of those slaughtered in an advanced stage of murrain. Therefore, the recommendation was made that an inspection should be made of all animals before they were slaughtered. The reporter adds: 'As nobody has actually died in consequence of eating meat so diseased, it might be rash to assert that the dyscrasia of the blood which kills the animal renders the flesh poisonous to human beings; but it is absurd to recommend people not to be alarmed, when the meat which supplies their tables may, for anything they know, have been cut from an animal dead of a disease which, from the post-mortem appearances, might be described as a combination of diphtheria, typhoid fever, and dysentery.' He himself abstains from beef.—(III. 72, 79.)

At Wenchow, 1877-78, the meat sold in the market for Chinese consumption was for the Wenchow. most part procured from animals dead by disease, or slaughtered while suffering from disease. After a time the meat to be eaten was subjected to regular inspection as to its wholesomeness. Pigs are carefully fed and well cared for in sties.—(XV. 40.)

According to the Report on Foochow for the six months ending March, 1876, Dr. Somerville

wrote :—With regard to the quality of the flesh of diseased animals, his inquiries were rather searching, and with this result :—Such meat he knew to be eaten, not only by the very poor natives, but also by those in better circumstances; and, as he expressed himself, it might be eaten by anyone 'audacious' enough to do it. It was a case of free choice and 'audacity.' Dr. Somerville adds: 'It is some consolation to know that it has not been proved, except in rare instances, that the eating of the meat of animals dying from blood-diseases has been followed by bad effects.' He excludes meat infested by parasites.—(XI. 45.) Foochow.

At Kiukiang, on March 16th, 1872, Dr. Shearer saw some half-dozen members of the foreign community who had inadvertently eaten a quantity of measly pork-chops cut from a measly pig. The leg, or ham, was cut into, when the muscular substance throughout was found to be thickly sprinkled with cysticerci like so many sago-grains. The results to the persons who partook of the chops in this instance are unrecorded.—(III. 64.) Kiukiang.

On the subject of *trichina spiralis* in Chinese pork, Dr. Manson, of Amoy, wrote in 1881 : 'The scavengering habits of the native pig must expose it to *trichinosis*, and many other parasitic affections, provided the parasites exist in the country. He made a microscopic examination of a large number of carcases in view to its discovery, 73 of them with a negative result; the 74th, however, was extensively trichinosed, enormous masses of encysted trichinæ in every fragment of muscle. In the 202nd carcase a second specimen of the disease was found; but of 225 examined no other example of the parasite was discovered. He has no doubt that the flesh of those animals was consumed, also that rats and dogs are eaten daily in large Chinese towns. Pork is eaten by the natives thoroughly cooked, and cooked in very small pieces.' Cooked as the natives cook it there can be little danger; but a roast leg of pork cooked in foreign style would certainly be a most dangerous dish.—(XXI. 26.)—See *ante* p. 207. Amoy.

In the Report on Tamsui and Kelung for the year ending 30th September, 1875, Dr. Ringer observes that 'during the summer months a very severe murrain took place among the swine in and for miles around that port. Post-mortem examination revealed the lower intestines highly inflamed and studded with ulcerations.' It was stated that the Chinese consumed as food many of the dead animals, though he 'never heard of any injurious effects resulting therefrom.'—(XI. 23.) Tamsin.

At Swatow, in the half-year to September, 1880, the Chinese ate with impunity the flesh of cattle that died of the epizoöty then prevailing.—(XX. 24.) Swatow.

According to the Report on Hoihow for the half-year ending 31st March, 1881, the meat of cows that died of the cattle-disease then raging on the island of Hainan was sold to and largely eaten by the Chinese, without causing, as far as Dr. Aldridge can understand, any injurious effects. Most of the meat sold, however, was from cows slaughtered by the farmers soon after they became affected with the disease.—(XXI. 73.) Hoihow.

LXXIV. MILK OF DISEASED COWS.

In the Report on Shanghai to 31st March, 1874, the medical officer discusses the subject of *milk*-supply at this settlement. He writes that: 'Doubtless the milk obtained in sealed bottles from the foreign dairies is above suspicion, so far as intended sophistication is concerned; but the quantity purchased from natives is far in excess of that supplied by foreigners, and the stagnant pool nearest to each native dairy subscribes largely to the milk-pails taken into the bottling-room.' He quotes the remarks by Mr. Foster of Oneida, that milk from cows which inhaled bad odours and emanations from decaying animal or Shanghai.

vegetable matter was unfit for making cheese.—(VII. 35.) It was noticed that when murrain was discovered among the cattle at Shanghai, dysentery of marked severity occurred among the children there.—(III. 85.)

In the Report on *Shanghai*, April to September, 1876, Dr. Jamieson writes: 'By experiments on himself and others, Hertwig has proved that *the foot-and-mouth* disease is conveyed to man by milk yielded by animals affected with that malady. Milk loses its infectious properties by boiling. In Shanghai, many foreign children are fed on milk derived from all sorts of questionable sources—buffaloes and Chinese cows. All milk should therefore be boiled before being used as food.'—(XII. 4.)

With regard to the use of milk of diseased cows, Dr. Jamieson writes thus: 'Most authors are silent as to the quality of the milk yielded by cattle during the prevalence of epizoöty.' It is true that while a diminution of milk-secretion is usually an early symptom in nearly all diseases of the cow, complete suppression of the secretion accompanies any aggravation or prolongation of disease. The source of danger is thus removed by the operation of natural causes. Whether milk secreted at the very onset has acquired hurtful properties has not been cleared up. Boiling destroys any infective germs it may contain.—(XX. 38.)

LXXV. POISONING BY FISH AND SHELL-FISH.

Ningpo. At Ningpo, in 1875-76, several cases of severe purging and vomiting came under notice, caused by eating clams and other shell-fish; although alarming at the time, they were easily managed.—(XI. 27.)

Japan. In his Report on diseases affecting Europeans in Japan, Dr. Simmons discusses this subject. Its study has been impeded by the circumstance that cases of severity have generally occurred in the less civilized portions of the globe. In those species of fish that are well known to be dangerous, the poisonous quality appears to be confined to certain individual specimens, or, if more general in its distribution, to certain seasons of the year. In Britain, many of the more common fish are known to be unwholesome when 'out of season'—the salmon for example; and any fish, when stale, may produce the usual symptoms caused by decomposed animal matter. In Japan, rather alarming though rarely fatal symptoms are sometimes produced, both in natives and in foreigners, by the use of the katsuo and maguro (bonito and albicore). They appear to be injurious only when very stale; but the characteristic symptoms due to them, namely, intense congestion of the head and face, are difficult to explain merely on the supposition that they are due only to decomposition. It appears, therefore, that in several fishes there exists an active poison, sometimes so energetic and fatal in its action as to be comparable to the most deadly agents known to science. The exact nature of this poison, however, is not at present understood.

According to Pappenheim, there are more than forty species of fish which are occasionally poisonous; these occurring in every part of the world, but more especially within the torrid zone. Among the tribes that have furnished cases of poisoning are the mackerels (Scomberidæ), perches (Percidæ), the porgies (Sparidæ), the herrings (Clupiadæ) the weevers (Trachinidæ), the becuna and barracouda (Sphyrænidæ), and above all, a large number of species of the order Plectognathi. Of the six genera belonging to the latter order, five have been found to be poisonous; but in Japan the several species of the genus Tetraodon, known under the general title of *Fugu*, have the most intensely poisonous qualities, so much so that their use has at different times been prohibited by law.

In cases of *fugu* poisoning, the characteristic symptoms may come on within half an hour or three quarters of an hour. They are at first headache, then quickly great muscular weakness, failure of pulse and respiration, depression of temperature, and insensibility. Out of three cases recorded, one proved fatal. Dr. Houghton, of Sarawak, mentions thirteen cases of poisoning by Tetraodon hystrix (a fish closely allied to the Japanese *fugu*, and perhaps identical with one species), from eating which the symptoms were similar to those above recorded, taken from the description by Dr. Goertz, of Yokohama. In all the cases mentioned, both at Yokohama and Sarawak, the symptoms of poisoning occurred only in persons who had partaken of the *roe* of the fish. Cases of a serious character have even been reported as due to the roe of several of the more common European fish, particularly the pike and barbel. Next to the roe of the tetraodon, the liver of that fish appears to be the most poisonous part. Deaths within seventeen minutes after partaking of it are reported from the Cape of Good Hope. According to Kaempfer, the Japanese believe that the *fugu* may be eaten with safety, provided the head, the bones, and contents of the abdomen are removed. Somewhat strange also is the circumstance that, notwithstanding the dangers which accompany the consumption of the *fugu*, and that legal punishment is attached to the act, the natives of Japan persist in consuming it.

Poisonous Crustaceæ and Mollusca.—The effects caused by these are rarely so grave as those that are due to poisonous fish. The symptoms produced are those of irritant poisons; and in the severer cases, depression of the nervous system analogous to that from *fugu*, as above described. The exact nature of the poisonous quality in these lower tribes has not been ascertained. It has been assigned to copper, but chemical analysis has failed to detect the presence of that metal. According to views expressed by Orfila and Dr. Beunie, it is due to the circumstance of the oysters feeding upon the spawn of star-fishes, in itself an irritant poison. It is said that oysters taken from the canals in Yokohama and Tokio, or from the immediate neighbourhood of those conduits, are more frequently injurious than are those taken from purer and more open water. The canals in question are little more than open sewers.—(XV. 64-66.)

LXXVI. POISONING BY CASTOR-OIL SEEDS.

In the Report on Newchwang to March, 1879, Dr. Watson gives details of a case of poisoning by a minute dose of the seed of the *Ricinus communis*. The symptoms were those of cholera, the result of eating one seed in mistake for a bean. Five minutes after the patient had done so, he experienced a burning sensation in the throat, which extended throughout the entire alimentary canal. A few minutes later severe vomiting and diarrhœa set in, and rapidly reduced him to a very prostrate condition. Steam inhalations, with morphia and brandy internally, and mustard-poultices, gave relief within an hour or so; but for two or three days he was weak, his digestion deranged, and he complained of dull aching, which extended from one end of the bowel to the other. The interesting features of this case are the smallness of the dose which produced such severe symptoms, and the rapidity with which the poison acted on a strong man in perfect health. In Taylor's 'Principles and Practice of Medical Jurisprudence' (2nd edit. vol. i., p. 328), it is reported that of three sisters poisoned by castor-oil seeds, they took respectively 'about twenty,' 'four or five,' and 'two' seeds. The first died, the other two recovered; but in none of the cases did the symptoms of poisoning occur until five hours after eating the seeds.—(XVII. 11.)

Newchwang.

LXXVII. POISONING BY OPIUM.

In the Report on Peking, April to September, 1873, the medical officer states that attempts at suicide by opium are frequently made by the Chinese. In allusion to cases of this nature reported at Shanghai, in which *atropine* as an antidote was successfully used in ten out of sixteen cases, the reporter alludes to an article in the *Medical Times and Gazette*, (21st September, 1872, p. 342), in which atropine is condemned; and Dr. Harley's work, 'The Old Vegetable Neurotics' (p. 300) is quoted as showing that the effect of atropine is to increase the cerebral and anæsthetic effects of opium. Dr. Harley considers that the evidence of antagonism between belladonna and opium is inconclusive; that belladonna intensifies and prolongs the effect of opium.—(VI. 17.)

Peking.

Strychnine has been stated to be a certain antidote to opium in horses and dogs. In the *Medical Times and Gazette*, as quoted above, a case is recorded of atropine-poisoning by subcutaneous injection being successfully treated by muriate of morphia. In the cases reported, the quantity of opium taken was from 75 to 350 grains, usually of the paste procured for opium-smoking. The remedies employed by Dr. Dudgeon were emetics, draughts of strong coffee or tea, enemata of coffee or tea, vigorous rousing and walking, and, in the worst cases, chafing the extremities. In four cases he injected atropine subcutaneously; of these, two recovered and two died. In six more cases, all lived. How far the recoveries were due to atropine, and to nothing else, is not stated; rather, doubts on the subject are expressed. At Peking opium-poisoning is very rare—so much so, that in nine years only one case was related. At the date of the Report under notice, however, three cases occurred, of which two died and one recovered. The Chinese believe that a person poisoned by opium may be resuscitated at any time within seven days.—(VI. 18.)

In the Report on Tientsin to 30th September, 1874, the medical officer mentions two cases of opium-poisoning, in each of which, after the usual remedies, including the subcutaneous injection of atropine, had failed, the injection of iced water into the stomach by the stomach-pump saved the patients, although both were given up, and respiration had almost ceased.—(VIII. 40.)

Tientsin.

Dr. Myers, in his Report on Chefoo for the year ending 31st March, 1872, writes: The antagonism between opium and belladonna was pointed out by Prosper Alpin 300 years ago; but it is only since 1843 that any large number of instances have been brought forward in proof of the virtues of atropine as an antidote to opium. Dr. Myers has found injections containing one-third to half a grain of the alkaloid the most satisfactory. According to a foot-note, the credit of this method of treatment rests with Dr. Wilson of Philadelphia (*Medical and Surgical Reporter* for November, 1868, and *Lancet*, 3rd April, 1869). In his case a solution of ¼ grain of the alkaloid was injected successfully when the patient was obviously at the point of death.—(III. 39.)

Chefoo.

In February, 1878, a case of opium-poisoning occurred in which the quantity of opium taken slightly exceeded 20 grains. The patient, a Chinaman, when seen nine hours afterwards, was profoundly comatose. Cold effusions to the head and chest having failed to rouse him, a third of a grain of atropia was injected hypodermically, but this treatment was also unsuccessful. He died shortly afterwards.—(XV. 18.)

At Kiukiang, in 1871, a Chinaman, aged 24, swallowed 4 mace, or about half an ounce avoirdupois, of crude opium with a view to suicide. Twelve hours afterwards he was found awake, able to sit up in bed, speak, and swallow some hot water and mustard. There was no undue contraction of the pupils. He recovered without emesis, or any

Kiukiang.

means whatever having been employed to nullify the effects of the poison. The man was not, and never had been, an opium-smoker. There is no way of accounting for his recovery except on the supposition of personal idiosyncrasy or constitutional insensibility to the action of opium. In a foot-note it is stated that Taylor ('Guy's Hospital Reports,' October, 1850, p. 220) relates a case in which 5 ounces of tincture of opium was taken without producing sleep, and the patient recovered. The corresponding quantity of opium would have been 3 drachms.—(II. 63.)

In the Report on that place for the half-year ending 30th June, 1872, there occurs the record of a case of poisoning by opium in which recovery was considered to have been due to the administration of strychnia. The patient, a Chinese, aged 28, was in the habit of smoking a mace of prepared opium daily. On account of a family quarrel he swallowed half a tael weight of native crude opium, equal to 6 drachms avoirdupois. In the treatment, emetics of sulphate of zinc, the application of the stomach-pump, and strong coffee were used; and he was kept walking about between two coolies. Subsequently, four doses, each containing one-eighth of a grain of strychnine, were administered at intervals of half an hour and upwards; and recovery taking place, it was attributed to the strychnine.—(III. 63.)

In that to March, 1875, the record occurs of one case of poisoning by opium successfully treated as follows: The patient was a woman who had thus attempted suicide. When first seen she was in a semi-comatose condition from which she could not be roused, except to a partial extent by repeated flagellation. As her friends disapproved of the application of the stomach-pump, an emetic of sulphate of zinc was administered with difficulty; sinapisms were applied to the calves of the legs, iced water dashed in her face, coffee administered (after a time), and men employed to drag her about. After persisting in these means for three hours, she was permitted to be taken to her house, where she was still kept in movement for some further time. She made a complete recovery.—(IX. 4.)

During the year ending 31st March, 1877, four cases of opium-poisoning were reported. Of these, three recovered and one died. In the latter, all ordinary means of treatment having failed, $\frac{1}{60}$ grain of *atropine* was injected subcutaneously. 'This dilated the pupils for a few minutes, but the patient never rallied, and died seventeen hours after the fatal dose.'—(XIII. 6.)

At Shanghai, during the six months, October, 1874, to March, 1875, several cases of opium-poisoning came under notice. An emetic followed by strong coffee sufficed to ensure recovery in some cases; in others, the patient when seen was moribund, or actually dead. A case is related of a man who mixed a quantity of opium, variously estimated at from 3 to 6 mace, with a cup of tea, and drank the mixture. Three hours afterwards he was being dragged up and down the waiting-room, being quite unable to walk. An emetic of sulphate of zinc had acted, but he was then unable to swallow; the surface was pale, cold, and covered with perspiration; he had an involuntary action of the bowels; the pupils contracted and insensible to light; pulse 40, respiration 11 per minute. While a solution of *strychnine* was being prepared, the patient was placed in a chair, his stomach washed out by a stream of cold water passed continuously through it; 20 minims of the liquor strychniæ B.P. (grs. $\frac{1}{6}$) were injected subcutaneously. Within fifteen minutes he was able to swallow some strong tea; shortly afterwards he vomited freely; the pupils dilated, and were sensitive to light; he was allowed to sleep, and recovered.—(IX. 19.)

Shanghai.

At Wenchow, according to the Report to March, 1878, opium-poisoning cases at certain periods of the year are common. On the occasions where the aid of the medical officer has been sought, the subjects have been generally insensible. Dr. Myers has been able by means of atropine and strychnine, 'after washing out the stomach with cold

Wenchow.

water,' to resuscitate the greater number of those treated. The Chinese remedies most in vogue here are: first, the contents of the adjacent urinal or fluid from a latrine; next, the warm blood as it spurts from the recently incised throat of a sheep, goat, or fowl. In ignorance of this last mode of procedure, the first few discharges from the stomach-pump are apt to cause alarm. Unaccountable as it may appear, the above would-be emetics generally fail to bring about the desired result.—(XV. 41.)

LXXVIII. OPIUM-SMOKING.

At Peking, in 1871, opium was described as 'of all our luxuries the surest destroyer of health, prosperity, position and life.' Among the physical evils which follow indulgence in it are

Peking.

dyspepsia, inveterate constipation, diarrhœa, dysentery, and spermatorrhœa on its withdrawal. The native-grown opium is milder than the Indian; it is also more fragrant, less injurious, and cheaper than the latter.—(II. 80.)

In the Report to September, 1872, the statement occurs that opium-smokers when imprisoned, and thus deprived of opium, suffer greatly in consequence, and that many of them are carried off by diarrhœa and dysentery.—(IV. 32.) In that to September, 1873, Dr. Dudgeon writes on the supposed antagonism between opium and ague. Among ague patients he has seen not a few who have been opium-smokers. He has not been able to trace any antagonistic effect between opium and malaria, so as to enable him to pronounce with authority on the subject. At the commencement of the opium trade at Canton, officials, from the north especially, were in the habit of partaking of the drug to prevent the depressing effects of the climate, and ague, with which they were attacked, or to which they were rendered liable. The Chinese then, as now also to some extent, were anxious to find some excuse for indulgence in the illegal drug. Doubtless the benefit they derive from the soporific was not in warding off ague or neutralizing the poison of malaria, but simply as soothing the system and blunting sensibility. China as a whole is a mountainous country, ague is almost unknown in many provinces; opium-smoking is general everywhere, and smokers are attacked with intermittent fever.—(VI. 8.)

At Newchwang, in 1871, the Report states that 'opium-smoking is on the increase, although it is far from general.' In regard to it, the medical officer writes: 'Its consequences are so

Newchwang.

disastrous in many cases as to make all earnest men regret its increasing hold upon the people of this great empire.'—(III. 13.) Dr. Watson writes in the Report to September, 1876:—'He had under his treatment a considerable number of Chinese porters, compradors, and small traders, who smoked opium more or less. The practice did not appear to injure the health in more than 10 per cent. of those addicted to it; nor, except in that 10 per cent., was the quantity of the drug consumed increased from year to year. With regard to the remaining 90 per cent., if the drug did not appear to do them any good, neither did it seem to manifestly injure them. Of the 10 per cent. who took opium in quantities to affect health, the effects in them were loss of appetite, constant diarrhœa, impaired physical and mental energy,' etc. Dr. Watson observes that opium, except as a medicine, is never necessary; that the tendency of those who use the drug is to increase the dose; and that as regards both opium and alcohol, it is difficult to say which has the more debasing effect when taken in excess. His own conclusion is, 'that foreigners have generally exaggerated the amount of evil said to follow the use of opium;' but he has no doubt in his own mind 'that opium-smoking is unmistakably an evil.'—(XII. 33.)

At Kiukiang, in 1871, of 197 opium-smokers, 27 used about ℥ daily; 54, ℈.; 38, ℈ ;

41, ʒij.; 18, ʒiij.; 8, ʒiv.; 7, ʒv.; and 4, ʒvj. The period during which they had thus smoked varied from 10, 17, 20 to 30 years. The whole of the above 197 had applied for medicine to break them of the habit. It is calculated that one-tenth of the inhabitants are opium-smokers. The use of the drug has the reputation, and usually does act as a prophylactic against malarial fevers. Two opium-smokers having been attacked with tertian ague, which passed into the continuous or remittent type, their cases were looked upon as exceptional. In several persons who had given up the habit, agues occurred with or without diarrhœa. Dr. Shearer further says that of confirmed opium-smokers who appeared to have been 'cured' of the craving and habit, many relapsed into their old indulgence when the state of their finances improved. Poverty, and consequent inability to purchase the drug, was the general excuse pleaded for coming to see him. Some reduced the quantity used from three to four mace to one, and there stopped. A great deal of physical distress is endured by many on laying aside the pipe. Diarrhœa and bloody flux, abdominal pain, gnawing and uneasiness, wrenching pains in the joints and limbs, insomnia and anorexia, are some of the symptoms complained of. Within equal periods he has seen nearly three times as many opium-smokers in Kiukiang as in Hankow.—(II. 62.)

Kiukiang.

In the Report on Hankow to September, 1874, some remarks occur on the same subject. The experience of Dr. Reid amounted to over 500 cases of opium-smoking. In every instance the applicants for medical advice had lost their means of subsistence through the use of this drug; but nine-tenths of them had no idea of finally relinquishing the pipe. Their object in coming was merely to obtain a remedy to appease their present craving and restore their strength, so as to enable them to resume their duties and earn wages to be again expended in opium. Among dispensary patients, the chief patrons of the drug are found among the half-idle shopkeepers and yamên attendants. Those who have to earn their bread by the sweat of their brow have generally a wholesome dread of the habit. None of the hard-worked coolies can take it with impunity in what may be considered moderate doses by a regular smoker, namely one to two t'sien (55 to 110 grains) daily. Anæmia, emaciation, loss of appetite for good nourishment are sure to follow, and the accompanying loss of physical strength soon entails beggary on the labourer and his family. Even while work can be carried on, the expense of the indulgence is ruinous, as a certain sum must be daily devoted to the stimulant. While a powerful coolie can earn 200 cash daily, it requires nearly 80 to buy his food and a like sum for his wife's support if he is married; there would thus be only 40 cash a day left to provide opium, clothes, food for the children, etc. The cost of opium in the divans varies from 50 to 60 cash per t'sien, and half a t'sien morning and evening is moderate smoking; so that the practice can only be indulged in by the labourer if he utilizes in this way the money that ought to be expended in food for himself and family. Opium differs from alcoholic indulgence by the absolute necessity for having a daily quantity. Among the rich, a person has been known to smoke an ounce of opium per day; and report states that double that quantity has been taken. In divans the foreign opium is mixed with the cheaper native products from Yünan and Szechuen. In many country districts the native opium is altogether used, and may be a less injurious article than the foreign. The medical officer thus concludes his remarks: 'In alluding to the effects of opium-smoking, I do not wish it to be inferred that any injury might arise from its very moderate consumption, that is, in quantities of a quarter to half a t'sien daily, as those who came for treatment had invariably exceeded that amount.'—(VIII. 45.)

Hankow.

At Wenchow, when in the period to March, 1878, cholera prevailed, opium-smokers if attacked by that disease almost certainly died.—(XV. 41.) In 1881, Dr. Macgowan wrote as follows:

'Wenchow is an opium-producing and also an opium-importing region. The domestic product is used largely to adulterate Patna opium; that from Malwa not being so tampered with. Native opium being deficient in alkaloids, produces comparatively transient effects on the system.' Dr. Macgowan states that, under the care of Mr. Douthwaite, the Inland Mission established a hospital (at Wenchow) for ophthalmic and opium patients; that 200 of the latter were there 'cured' of their habit, having, on an average, been under treatment four weeks each. The average quantity of opium smoked by them was three mace two candareens, against four mace, as mentioned by Dr. Dudgeon as the allowance of smokers in Peking. The method adopted by Mr. Douthwaite was to withhold from the first the accustomed narcotic, and then 'combating the fearful consequences.' Stimulants, astringents, tonics and nourishing diet were allowed; and it is stated that 'a taste for alcohol was never acquired by such patients.' The habit of smoking opium having been broken, the man, physically and morally, takes a new departure, and gradually recovers manhood in every sense. It is noted, however, that 'he again becomes liable to attacks of malarial fever and catarrhs—the narcotic, and a suggestive fact it is, affording him immunity from these disorders. Dr. Macgowan observes that 'the cultivation of opium in China is favoured by writers of note. In November, 1880, the semi-official *Hsin-Pau* had a cleverly-written article defending the culture and use of opium on economic grounds.'—(XXII. 42.)

Wenchow.

In his Report on Takow, ending March 31st, 1881, Dr. Myers writes: 'In Formosa the use of opium is indulged in by a great proportion of those of the inhabitants who are either themselves immigrants or the descendants of colonists originally from the mainland. Opium-smokers are divided into two classes: (1) Those whose social position and wealth admit of their giving vent to their passion; and (2) The majority, who are obliged to work for their living, and among whom moderation is the rule. It is not quite fair always to attribute to opium-smoking those fearful concomitant evils which are often depicted as its consequences. Although excessive smoking may hasten the effects of a general moral depravity, he is inclined to think that it is much more often rather a sequence than the cause. Opium-smokers will tell you that there is a point, varying with different men, up to which they can go with impunity. One old gentleman said he had smoked for thirty years, and at that time seemed to be, as he said, tolerably healthy—never exceeded a certain quantity as a maximum on festive occasions; but that there was a minimum sufficient to give him all the satisfaction he required, and this was his ordinary allowance.' The highest quantity smoked in a single day, with alleged safety, was five mace, while the lowest rate quoted was three mace. But the manner of smoking has to be taken into account—the affluent rapidly filling the bowl, and not nearly exhausting the charge, which often affords considerable enjoyment to humbler votaries who re-smoke it.'

Takow.

In the lowest ranks of life men will be met who have smoked regularly for from ten up to twenty or even thirty years, and who show little or no sign of mental or physical degeneration. The average quantity smoked is one to two mace per diem. In Southern Formosa there is a class of men, including coolies, chair-bearers, and couriers, who daily do a remarkable extent of physical work. These have for years taken a certain quantity of opium; by so doing they assert that they attain a greater degree of comfort in performing their work, and Dr. Myers failed to obtain evidence to justify him in attributing marked harm to their habit. Among every class of men there are those to whom moderation is impossible, and who, in the gratification of their desires, will drag themselves and those dependent on them to the lowest misery. This is one of the greatest evils connected with alcoholic intemperance; but the result of the experience of Dr. Myers in Formosa, and in other parts of China, is that opium-smoking does not, at least up to a certain point, provoke excess, as is very often the case with the stimulants commonly indulged in

by foreigners. He has met with instances in which the effects of opium-smoking were most deplorable. Yet these are few in relation to the number of smokers, and his preconceived prejudices with reference to the universally baneful effects of the drug have been severely shaken. Dr. Myers alludes to 'the enormously preponderating amount of opium cultivated in China,' as compared to that imported from India. He writes: 'Except at advanced stages of the opium-smoker's career, one does not hear of sufferings and other manifestations such as have been so graphically depicted by De Quincey, but, at a very early period, the *opium-eater* begins to complain and show marked symptoms of the sad effects of his vice. Dr. Myers has had some opportunity of contrasting the two effects, and he feels justified in asserting that *smoking*, as compared with *eating* opium, is as different as the excesses of the *bon vivant* are from chronic, hopeless dipsomania. The smoker may, after a time, reap the painful fruits of his indiscretion—with the eater the consequences begin almost directly.

Adverting to the *cure of opium-smoking*, Dr. Myers writes: 'Dr. Osgood, of Foochow, was the first to commence the cure of opium-smoking by immediate and total deprivation of the drug, substituting for it chloral hydrate, which, with tonics, he gave in the form of pill. Dr. Lyall, of Swatow, treats all his cases without opium.' But Dr. Myers has 'been led to fear that the number of smokers really desirous of being cured is very small, and, too often, application to the foreign physician is merely to tide over some temporary inability to procure the drug, to which they return as soon as circumstances prove favourable.' One of the greatest obstacles to the permanent cure of opium-smoking is fashion—to present the pipe, to join in its participation, has become the almost universal sign of courtesy and hospitality. Dr. Myers has had a considerable number of applicants for treatment, and many have undoubtedly been cured. But he 'cannot recall a single instance where he was sure relapse, after a longer or shorter time, did not take place, and it was always the same excuse: "I can't help it. My friends all smoke, and if I do not they will leave me, and I shall lose my business, or 'face,'" as the case may be.'

In the south of Formosa, opium-eating is now becoming very common, and this does not supersede the use of the pipe. The consumption of *morphia* has also greatly increased at Taiwan-foo.—(XXI. 60–66.)

LXXIX. ALCOHOLISM, INCLUDING DELIRIUM TREMENS.

According to the Report on Yokohama, a marked increase in the percentage of admissions from these causes has taken place since 1875. During 1872 to 1874, the annual proportion was 2·7 per cent. of all admissions; in 1875 to 1877, the ratio had risen to 8 per cent. Formerly some of the admissions from alcoholism were entered under the head of 'general debility.' Much of the increase, however, is assigned to depression of business, which began in 1875.—(XV. 63.) Japan.

LXXX. CHILDBIRTH, AND DISEASES CONNECTED THEREWITH.

At Chefoo, according to the Report to March, 1873, convalescence after parturition was uniformly favourable. Even in cases where the system had been subjected to considerable shock and exhaustion, the reporter had no fatal result after labour to record. This is mainly due to climatic influences. In two years and a half 51 foreign births had taken place with no maternal death, and but one instance, and it embryotomy, of infant mortality.—(V. 19.) Chefoo.

Chinkiang.

At Chinkiang, according to the Report to March, 1880, many fatal cases of childbirth have been reported, from ignorance in the management on the part of the midwives. According to accounts from native sources, labours have extended over four days, the delay being caused by cross-birth, and the result, of course, fatal.—(XIX. 8.)

Kiukiang.

According to the Report on Kiukiang to March, 1877, skilled assistance in the case of native Chinese women during their confinements is never summoned until all hope is fled, and the patient is exhausted. Sometimes the foreign medical man is met on his way by a messenger announcing the death of the woman; or he finds her in a state of collapse, sometimes with sloughing of the vagina from continuous pressure of the fœtal head; or that an arm has been presented for seventy-two or eighty hours, the uterus firmly contracted, so that evisceration is necessary. Seven illustrative cases are related. In one of these 'spontaneous expulsion' appears to have taken place.—(XIII. 5.)

Hankow.

In the Report on Hankow to December, 1874, some particulars are given with regard to *obstetrics* among the Chinese. This department of practice for all classes of the community alike is entirely in the hands of poor, ignorant old women. Various instances are cited in illustration of the gross mismanagement to which cases of difficult and complicated parturition are exposed at the hands of such midwives. In one patient the hand and greater part of the arm had been extruded for some time, and two old dames were busily engaged in pinching and applying salt to it, so as to compel the fœtus to withdraw the limb. On their threatening to lacerate it with a knife, the father applied to the consular medical officer. Having related other cases more or less similar, Dr. Reid wrote: 'These few examples are sufficient to show the boon that awaits the mothers of China, when their attendants shall have the power and opportunity of learning something of the principles of obstetrics. They also indicate a high mortality from childbirth, and one which may even be greater than in uncivilized countries, from the close confinement in which the women are brought up and kept.'—(VIII. 44.)

Shanghai.

In the Report on Shanghai, January to March, 1872, also, the subject of obstetrics among the native Chinese is discussed. Among the adult female population, the reporter states that not one-fifth bear children, while the fertile minority suckle their children for periods seldom less than two years. Some obscurity, however, hangs over this passage as to whether the proportion alluded to refers to married women alone, or to all adult women. The Chinese themselves variously estimate the death-rate in childbed at from 5 to 8 per cent. on all labours, as against 1·21 per cent. in hospitals in Europe generally. Among Chinese women, except in the rare cases when spontaneous evolution takes place, presentations of the arm (say 0·4 per cent. of all cases) must be fatal to both mother and child. Placenta prævia, fœtal hydrocephalus, pelvic tumour, distorted pelvis, insuperable rigidity of the cervix, and many other serious complications which demand interference, must terminate in the death of the mother, while the probabilities are all against a successful delivery when the labour is powerless, the uterus displaced, or the placenta retained. To this list must also be added formidable sequelæ, as syncope, secondary hæmorrhage, puerperal peritonitis, uterine phlebitis, and tetanus, while abortion in the early months, with profuse hæmorrhage, doubtless results in death in many instances. In reference to parturient women, certain superstitious usages among the Chinese are alluded to. 'It is well known'—so it is stated—that there are ten Buddhist hells, one of which is the 'bloody lake.' Beneath the surface of this lake all women who die within a month after parturition are supposed to be plunged. In order to obtain the release of the sufferers, large sums have to be paid to the priests, who, by repeated recitations (of a formula), exert the same power over the purgatorial regions which, by means of masses, is exerted by the Romish clergy. Short of actual release, or during

the tedious process of accomplishing it, pauses in the torment can be obtained by purchasing the privilege of affixing a few hairs cut from the dead woman's head to the inside of a certain bell set apart for this purpose. Every time the bell is struck during the progress of the temple ceremonies, the women whose hair is attached to it rise for a moment above the lake, and are allowed to catch a breath of air. In 1851, Dr. McCartee visited a temple in the suburbs of Tzu-chi, and found that a bell, 5 feet high, which was used for this purpose, was crammed full of hair, while alongside of it there stood a firmly packed bale of the same substance, that had recently been removed from the inside. This bale was 3½ feet high, and nearly 8 feet in circumference.—(III. 82, 83.)

In July, 1877, a Chinese woman had been in labour four days. An odour of gangrene pervaded the room, notwithstanding the burning of incense-sticks. The patient was pulseless, the abdomen painless; the vagina and rectum one indescribable cloaca with black, ragged, swollen borders; the perinæum had altogether disappeared; the child's head in the place where the perinæum ought to have been. Two nights previously, a Chinese midwife seeing that the child was arrested, tore the parts with her hands, in order to facilitate its exit, but finding no progress made by the following morning, she then deserted the case.—(XIV. 45.)

In March, 1878, a woman, aged 33, in her third pregnancy, fell into labour. Pains continued through the first day and night, and became violent on the following day, when towards evening two midwives were summoned. On the morning following, the waters having run off, while no progress was made, a third midwife was called, who cut into the child's head, and endeavoured to extract it with an iron hook. Failing in this attempt, all three midwives ran away, and the woman seems to have been left to die. She was subsequently removed to the Gutzlaff Hospital, where, on arrival, her condition was desperate; by means of evisceration of the child, delivery was effected; great deformity of the pelvis was then discovered to exist, but ultimately the patient recovered.—(XV. 7.)

In January, 1879, a woman, aged 25, had been in labour three days when first seen. An arm was then found to be presenting, the humerus broken; the bladder of the patient distended. A series of native midwives had in turn maltreated her, and had finally given her up. There were no labour-pains. By means of manual interference the medical officer effected delivery, and in a few days she quite recovered.—(XVII. 32.)

In the Report on Shanghai, April to September, 1876, Dr. Jamieson notices the comparative rarity of post-partum hæmorrhage in parturient women there, as compared with what happens in India. But, he says, 'the marked tendency to inertia is worthy of attention.' In 50 cases of labour, 5 were abortions earlier than the third month, and 4 miscarriages earlier than the sixth month. There was one case of twins, both females. By 41 labours at term there were born 23 girls and 19 boys. Of the 42 children born at term, 1 died of trismus on the fifth day, and 1 was born dead. In 12 cases of the number the forceps had to be used, namely in 6 at the brim, and 6 in the pelvis. In 10 of these they had to be applied in default of uterine action. Of the 50 cases summarized, 2 were of serious difficulty.

During the same period a case of puerperal fever occurred. It was of the purely nervous form. The patient convalesced well after labour, but on the ninth day, after a severe nervous shock, she became delirious, and died in thirty-six hours.—(XII. 9, 7.)

According to the Report on Wenchow to March, 1881, at the same time that epidemics prevailed in the provinces of Kiangsu and northern Chêhkiang, puerperal fever raged in Soochow.—(XXII. 50.) Wenchow

At Foochow, in the Report to September, 1877, Dr. Somerville gave statistics of 38 cases

in obstetric practice. Of that number, 4 were abortions before the fourth month. Of the 34 labours at term, there were born 18 boys and 17 girls, 1 birth being a case of twins. Of the whole 38, two mothers died, namely, one from cerebral hæmorrhage or embolism on the seventh day, the other from puerperal fever on the seventeenth day. All the children of the 34 labours at term were born alive, and of the 35 children, 3 died within a few days; these included the twins. Of the 34 labours at term, 33 were head-presentations, and 1 a breech-presentation. The forceps were used in 4; twice on account of inertia of the uterus, once to rectify a mal-position of the head (antero-posterior), and once in a face-presentation. In one case there was post-partum hæmorrhage or placenta prævia. In one of the abortions there was free bleeding, which necessitated the use of the tampon; in the other abortions the loss of blood was very small.—(XIV. 91.)

Foochow.

At Tamsui, in October, 1877, a death took place from puerperal fever, after a labour which was, as on three previous occasions, perfectly natural. The disease manifested itself three days before death; delirium was of a very mild form; treatment was powerless to do more than afford relief, and the patient died with all the symptoms of blood-poisoning.—(XVI. 19.)

Tamsui.

In the Report on Swatow for the half-year ending 31st March, 1880, Dr. Scott gives some particulars in regard to 80 cases of parturition. In these there were born 32 girls and 47 boys. Two deaths occurred in the children born at full time, and two in children born at seven months. The forceps were applied only twice in the 80 cases. The placenta was retained in 4 cases out of the whole number. Chloroform seemed to conduce to inertia of the uterus. Dr. Scott thinks ladies living in the south of China may congratulate themselves on the comparatively easy process parturition is there. Added to the above 80 cases he notices 5 miscarriages before the third month, and 3 cases of mole-pregnancy.—(XIX. 14.)

Swatow.

At Canton, in the summer of 1877, a case of miscarriage attended with severe flooding, and followed by brain fever, occurred. The ovum having been discharged, a solution of muriate of iron injected into the uterus checked the hæmorrhage. On the third day fever supervened: the head was affected almost from the first; there was great pain, facial twitchings, acuteness of hearing, and spectral illusions. The cold douche, with other means of treatment, was employed, and recovery ultimately took place.—(XIV. 58.)

Canton.

According to the Report on Hoihow, April to September, 1881, it is considered a most unusual thing to hear of a bad midwifery case among the native Chinese in that part of the island of Hainan.—(XXII. 9.)

Hoihow.

At Yokohama there is reason to believe that pseudo-menstruation, or a more or less periodical recurrence of hæmorrhage during pregnancy, is frequent among foreign women. 'Dry labours'—that is, deficiency of the liquor amnii among foreign women—is the rule rather than the exception. Puerperal fever, or 'blood-poisoning,' is rare among them. These diseases have not been epidemic, although isolated cases, unconnected with each other, have from time to time occurred.—(XV. 70.)

Japan.

LXXXI. CAPACITY OF EUROPEAN WOMEN TO NURSE THEIR INFANTS.

At Shanghai, according to the Report to September, 1876, of 41 mothers delivered at full term, 20 could not nurse their infants at all, 2 nursed them for about three weeks, and 15 for more than three months.—(XIX. 9.)

Shanghai.

According to the Report on Foochow to September, 1872, it is rare to find in China a foreign

mother capable of nursing her child, although the attempt is very often made by ladies to do so. Native nurses can be obtained from the agricultural population in the neighbourhood. This is deemed better for the infant than giving insufficient nourishment from the mother's breast, and supplanting this by 'the bottle.'—(IV. 63.) Foochow.

According to the Report on Amoy, April to September, 1873, a large proportion of European mothers are unable to suckle their children in China. Adverting to this subject, Dr. Somerville writes: 'In a natural and primitive state of society, in which artificial means of feeding are unknown, the children of such mothers must inevitably perish; only such children as could be reared by their mothers could survive, and from them the race would be continued—a race, the women of which would have the power of suckling their children. The European constitution must be altered in this respect before it could flourish here.'—(VI. 31.) Amoy.

In the Report on Swatow to March, 1880, Dr. Scott observes that of 78 mothers, 41 nursed their infants the usual nine months, and some for a longer period, though much against his will; 1 had plenty of milk, but preferred to bottle-feed from the commencement; 11 partly nursed, and partly bottle-fed; 2 nursed for some weeks, and were obliged to leave off—1 because there was no milk, the other on account of abscess of the breast. The remaining 23 were unable to nurse at all. From his observations, Dr. Scott is of opinion that many foreign women residing in the south of China are unable to nurse, either on account of insufficiency of milk, or of insufficient nourishment in the milk. He has seen five children reared on condensed milk for the first few months, and then on stronger food.—(XIX. 15.) Swatow.

At Yokohama, a large number of foreign women are unable to nurse their children, though otherwise in good health. It is calculated that 33 per cent. are in this position.—(XV. 70.) Japan.

LXXXII. ARTIFICIAL SECRETION OF MILK.

In China it is by no means a rare circumstance for a Chinese woman without milk to bring the secretion back for the sake of suckling an infant deprived of its own natural aliment. In a case related by Dr. Müller, a married woman, aged thirty, who had suckled her own child till the age of two years, but whose mammæ had been inactive for six years, began in the last week of March to bring her milk back. She ate *piptupe* stewed with a milk-thistle, as well as her usual rice and fish, and applied the infant to the breast constantly. For the first ten days little if any success followed, but by May 11th milk was secreted freely. During her period of lactation which followed, menstruation ceased entirely, and she had no leucorrhœa. A second woman, aged forty-five, commenced at the same time as the preceding to encourage the secretion of milk; she used the same means with the addition of the boiled fruit of the tree melon, which in its unripe state has milky juice. On May 11th she had a moderate secretion. Her menses diminished in quantity, but did not entirely cease. In reference to these two cases, an instance is recorded by Dr. Macartney, of Nanking, of similar proceedings, undertaken on a cow, being succeeded by secretion of milk in that animal.—(X. 15, 16.) Dr. Burton states that a young bitch had a litter of puppies, which she was disposed to ill-use or neglect. Her mother, who had not had pups, or been with a dog for more than two years, immediately took charge of them, and drove away the real mother. Her teats rapidly enlarged, and within a few days she had a plentiful supply of milk, with which she reared the family.—(XI. 56.)

LXXXIII. SICKNESS AND HEALTH OF EUROPEAN CHILDREN.

Adverting to the cases of diarrhœa among children at Kiukiang in 1875–6, Dr. Jardine quoted thus from Dr. Eustace Smith: 'During dentition diarrhœa is so common among children that only a small proportion escape it; and it is regarded by many as a safety-valve in preventing convulsions. When nervous symptoms do supervene on dentition, these are seldom relieved until artificial or spontaneous diarrhœa occurs. The latter is a more common accompaniment of dentition in summer and autumn than in winter. Even if the diet, given in addition to mother's milk, be a suitable one for the infant when in health, it by no means follows that the same regimen should be found equally appropriate when the irritation set up by the advancing tooth has temporarily reduced his digestive power. The ordinary diet may then become indigestible, and therefore too irritating for the bowels.'—(XI. 14.)

Kiukiang.

In the Report for the year ending 31st March, 1876, Dr. Jardine observes with regard to foreign children in China, that in addition to vicissitudes of temperature to which they are exposed, they are generally suckled by native nurses, whose milk, though abundant, is often poor. They thus require some additional nourishment, and this is best supplied in the form of cow's milk and lime water. At Kiukiang good cow's milk is very difficult to be got. 'In such a dilemma, Liebig's food for infants (Mellin's) has been found invaluable at home, and it has preserved the lives of many children. Here children soon dislike it or refuse to take it altogether, and then our dietary becomes narrowed down to beef-tea, veal-broth, or mutton-tea, as farinaceous food is as a rule inadmissible at this period.'—(XI. 15.)

At Shanghai, according to the Report to March, 1872, foreign children were in general healthy during the winter six months. The occurrence of some cases of dysentery among them in the early part of that year, preceded by a short interval the discovery of murrain among horned cattle. Milk forms the staple diet of foreign infants in Shanghai, and accordingly 'the coincidence is at least noteworthy.'—(III. 85.) From April to September of that year, although the mortality among children was comparatively large, neither it nor the prevalent health-state of European children during that summer warranted the conclusion that, with proper care, Shanghai is exceptionally hurtful to the very young. The care of foreign children, especially during summer, is a matter of much anxiety. Brain congestion in the infant, the result of heat, is attended as often by diarrhœa as by constipation. Much of the illness of children is due to injudicious feeding. Native children at the breast swallow rice and vegetables, and appear to thrive. The explanation is that the mother before putting the food into the infant's mouth carefully chews it into a soft and uniform bolus, by which process she unconsciously transforms all the starch into grape-sugar. In this condition the food is readily assimilated, and hence the rarity among Chinese children of those convulsive affections which would infallibly follow the extensive use of farinaceous food among foreign infants.—(IV. 104.) The climate is not so fatal to child-life as that of India; indeed, in some respects the children in Shanghai would seem to be more favourably situated than children in Europe.—(V. 54.) The mortality among European children at Shanghai is very trifling. *Trismus neonatorum*, common in India, is rare at this settlement.—(XV. 4; XXII. 7.)

Shanghai.

At Foochow, April to September, 1872, the reporter remarks on the subject of infant *marasmus* and infant mortality. As standards he takes children in England and Wales in 1863 to 1867, the mortality among them being 15·5 per cent. in their first year of life; among those of the Society of Friends, 11·1. In 1864, of children under 5 years, of the well-to-do-class, the deaths were 11 per cent.; of agriculturists, 20 per cent. Of children

Foochow.

artificially fed, 50 to 70 per cent. In Normandy, the mortality of infants at the breast was 10 per cent.; of those fed by the bottle, 50 per cent. In 1871, of those born in St. Giles, London, 21 per cent. died in their first year; in all London, 17; in Bristol, 16·5; Nottingham, 18·7; Portsmouth, 14·4; Liverpool, 26·9; Leicester, 24·1. In India, the average annual mortality among soldiers' children during the four years ending 1854 was 68·83 per 1,000; and from 1864 to 1869 it averaged 94·41 per 1,000 in Bengal; in 1869 it was 145·2 per 1,000 among the children of British soldiers in Bengal, so that the rate of mortality among them has gone on increasing. In China, statistics of mortality among children of foreigners are difficult to procure; the reporter considers, however, that much is due to artificial feeding 'by the bottle.'—(IV. 63.)

In the Report to March, 1882, particulars are given as to the improved health of children at this place in recent times as compared with some years ago, and as to some of the circumstances to which this favourable change is considered to be due.—(XXIII. 36.)—See *ante* p. 47.

Japan.

According to the Report on Yokohama, the non-occurrence of *scarlatina* in Japan has been already noticed. With the exception of this disease, and cholera infantum, which is very rare, children of foreign parentage in Yokohama suffer from the usual maladies of their age. On the whole, however, the death-rate among them is lower than in most parts of Europe and America. The comparative rarity of cholera infantum is the more remarkable that a large number of the infants born in Yokohama are fed from the bottle. The mortality among foreign children at Yokohama is exceptionally small.—(XV. 69, 70.)

VARIOUS.

LXXXIV. LESIONS FROM PUNISHMENT.

Takow.

On the island of Formosa, when a thief is discovered in the fact, the mob takes the law into its own hands. The hands of the thief are tied behind his back, a stout cord with a running noose placed round the arm 4 inches below the axilla, the culprit slung in this way to the nearest tree or post, and suspended there for ten to thirty minutes. The result is paralysis of the arm more or less complete, the peculiarity being that the great vessels escape injury entirely, only the nerves suffering. After some months the use of the arm is regained.—(V. 28.)

In 1874, a man was brought to hospital at Takow, six days after receiving violent injuries by way of punishment for repeated acts of theft. His eyes had been very dexterously extirpated, some of his fingers so nearly amputated that they were on the point of dropping off, and many wounds of considerable length and breadth inflicted on other parts of his body. Many of the wounds were so close to important vessels and membranes, that it was difficult to understand how these had escaped injury, seeing that the wounds were inflicted with the large knife commonly used by the Chinese for domestic purposes. The man, bereft of eyes and with his wounds suppurating, presented a most hideous aspect. With good and nourishing food, and great attention to the dressing of his injuries, he recovered, and at the end of six weeks returned to his home perfectly healed.—(VIII. 14.)

LXXXV. REQUEST FOR MUTILATION.

In 1877, a native Chinese requested the medical officer at Shanghai to amputate his two ring-fingers. The request was of course refused; but on inquiry the cause of its being made was found to be that the person making it—aged about 35—was anxious to join the Pootoo priesthood, and that this ordeal had accordingly been placed before him in order to test his devotion. It is added that the man was much put out by the refusal, and went away expressing his determination to have the operation performed elsewhere.—(XIV. 45.)

Shanghai.

LXXXVI. BANDAGING THE FEET OF CHINESE GIRLS.

In the Report on Hankow, January to March, 1872, a case of amputation at the ankle-joint is recorded, and in reference to it, some interesting particulars given with regard to the method followed for contracting the feet of Chinese girls. A woman, aged 26, had suffered during five years from disease of the metatarsal bones of the right foot, with large ulceration on the plantar and dorsal surfaces. Previous to the onset of the disease she had frequently walked a distance of 60 li (20 miles) in one day without fatigue; and the reporter observes that in the districts around Hankow, bandaging the feet does not interfere with progression so seriously as is often imagined. Walking, he says, is almost dependent on the heel of the foot, the knee-joint is kept rigid; the calf of the leg atrophies, but the muscles of the thigh become well developed. [Not in all cases, certainly, for in Tientsin I have seen a very well-developed calf in a woman whose feet were contracted.—C. A. G.] In the present instance bandaging had been commenced at the customary age, namely, the fifth year. The healthy foot measured 5 inches in length, the ball of the toe and the heel approximated to each other, and were separated by an abrupt cleft $2\frac{3}{4}$ inches in depth, which represented the arch of the foot. Rolling of the foot is effected by means of a cotton bandage 4 yards long and 3 to 4 inches broad, wound round the foot and ankle, and reversed so as to make it lie smoothly. The period necessary for accomplishing the wished-for alteration does not appear to have been very accurately determined. Details of particular cases then follow.—(III. 48.)

Hankow.

LXXXVII. CHINESE NOMENCLATURE OF THE RING-FINGER.

It appears that in every one of the ten Turanian languages from Finland in the west to Manchuria, the northern portion of the Chinese Empire in the east, the ring-finger is known as 'the finger without a name.' In the Dravidian languages of Southern India it is also called 'the finger without a name;' and in these its designation appears as a Sanscrit name, and not as a Dravidian. In Tamil, Telugu, and Canarese, it appears as *anâmika*, 'the nameless thing,' from the Sanscrit *nâma*, a name, with the *a* privative prefixed. The Chinese name this finger 'the nameless digit,' *wu-ming-chi*. The other fingers are called respectively, thumb, index, middle, and little finger. The term 'nameless finger' is used by *Mencius*, Book vi. Part i. cap. xii. 1.—(VIII. 28.)

LXXXVIII. DIGITAL SIGNATURES.

Dr. Fauld's observations on the finger-tips of the Japanese have an ethnic bearing, and relate to the subject of heredity. For twenty years Mr. Herschel had charge of a registration-office in India, where he employed finger-marks as signs-manual, the object being to prevent

personation and repudiation. Doolittle, in his 'Social Life of the Chinese,' describes the custom, which well-informed natives consider came into practice subsequent to the Han period. In China, great importance is attached in courts of law to this digital form of signature, or 'finger-form.' Such signatures are sometimes required in the army to prevent personification; when the description of a 'recruit' is written down, the relative number of 'whites and coniferous finger-tips is noted.' Fortune-tellers discourse on these rugæ 'as glibly as phrenologists do on bumps.'—(XXII. 47.) See *Nature*, 28th October and 25th November, 1880.

LXXXIX. CHINESE EUNUCHS.

The Chinese boldly castrate men and animals. By some method, the nature of which does not transpire, they have discovered the dependence of conception upon the presence of the ovaries; and acting upon this knowledge, they castrate boars and cocks, and spay sows with remarkable skill and success. The operation of castration is mentioned by native historians B.C. 1100, when it was by edict constituted one of the recognised punishments for certain offences. The reporter observes that, although in the instances stated its object was punitive, yet he would advocate it for preventive purposes, so as to prevent criminals of the worst class from founding or increasing criminal families.

In China as elsewhere, eunuchs are in general made to qualify them to act as palace servants, and occasionally as palace executioners; certain lamas also, who act as domestic chaplains, are eunuchs, and for these several purposes there are numbers of willing candidates who voluntarily submit to the necessary qualification. The operation is performed at an establishment maintained for the purpose. The operators are known as *knifers*. The operation is completed by one sweep of the knife; a pewter plug is inserted in the urethra, paper soaked in cold water applied to the parts, and healing is complete in about one hundred days. About 2 per cent. of those operated on die; some by hæmorrhage, some by extravasation, and some by irritative fever. For a long time afterwards, however, incontinence of urine persists.

Eunuchs are described as being hysterical, easily moved to violent anger, easily appeased, readily amused or depressed, timid, honest, charitable.

The practice of castration is of great antiquity. The earliest notice of eunuchs occurs in the Bible, and has reference to Egypt. It prevailed in various nations of antiquity, besides the Chinese; namely, in Rome, in Greece, and among the Jews. Athenæus (*Deipnosoph.*, xii. 9, 11) preserves accounts of the practice among the Medes and Lydians, and says that the latter nation had discovered the secret of ovariotomy. The Valesians, early in the fourth century, devoted themselves to making eunuchs until in A.D. 325, the Council of Nice reproved the practice. The Valesians are in modern days represented by the Russian *Skoptsy*, who perform emasculation either complete or partial upon themselves. The operation appears frequently among the penalties of the ancient Germanic codes. Adverting to experiments regarding the effects of the operation in animals performed by M. Poncet ('Archives Générales de Médecine,' October 1877, p. 495), Dr. Jamieson observes that, as far as they have gone, they do not appear to upset any of the notions commonly held with regard to those effects.—(XIV. 51-54.)

PART III.

THERAPEUTICS AND DRUGS.

I. HISTORICAL NOTICES.

ALTHOUGH in China the art of medicine is in decadence, and for the most part in the hands of empirics and charlatans, the art of pharmacy appears to be in a better state, notwithstanding that

Pharmacy.

medicaments in themselves simple, or based upon superstition or empiricism, are often used; also that particular drugs are believed to have special curative powers in regard to particular diseases. However this may be, and although many substances in themselves inert are made use of, it is no less true that long experience and patient observation have taught the Chinese the indisputable properties of a large number of remedies. Thus it is beyond doubt that

Anæsthetics.

from a very early date they have known how to induce anæsthesia, general or local, employing for that purpose certain fungi or the root of aconite. [In reference, also, to certain 'magic rituals,' in connection with the worship of Maitrëya Buddha, '*soporific incense*' (see *ante*, p. 69) was lighted, and the victims thrown into deep sleep. 'This soporific, or "soul-confusor," as it is called, makes people feel tired and sleepy; they are recovered by means of charm and *cold water*.' It is observed also that the use of an anæsthetic, prepared from hemp, has been known to the Chinese for the past sixteen centuries at least.—From 'Historic China,' p. 160.] Mineral medicines are little employed, the materia medica being almost entirely composed of vegetable preparations. The number of plants thus used is immense, and includes nearly all that grow in China. Various animal substances also are used, including the bile of bears, deers' horns, glue from donkeys' skins, ambergris, the bezoar of ruminants, bones, whiskers and claws of tigers, and some matters the most filthy in nature in the same way as *Therinea* was formerly used among ourselves. Some drugs formerly imported into Europe from China have fallen into disuse, more especially ginseng and galingal, *Alpinea galanga*. China still furnishes musk, rhubarb, cubebs, cardamoms, ginger, camphor, cassia, bark, canella, etc.

Chemistry is in the most primitive condition among the Chinese; the chemical productions few in number, but nearly all of them used in medicine. Mercury is found native in several

Chemistry.

localities. Calomel is manufactured by means of processes more or less complicated; so also is vermilion. Carbonate of potass is obtained by the incineration of *polygonum, artemisia,* and other herbaceous plants in the provinces of Shantung and Chihli. By subjecting to certain processes the efflorescence by which the soil in extensive tracts of country in these provinces is covered, chloride of sodium, carbonate of soda and saltpetre are obtained. Marine salt is obtained along the shores of the Gulf of Pechili by spontaneous

evaporation of the sea-water and that of marshes. Alum is furnished by Formosa. Sulphate of iron and sulphate of copper are obtained in several provinces of the empire. (Catalogue spécial de la Collection exposée au Palais du Champ de Mars,' Paris, 1878, p. 56.)

Homœopathy.

According to Dr. Dudgeon, the native Chinese practice is strictly *homœopathic*—things in nature from their resemblance to things in man, who is considered a little world, are prescribed. This theory is carried out in its fullest detail according to Chinese philosophy; things according to their tastes, etc., being portioned out to the viscera that belong to such a taste. Thus walnuts are ordered in cases of disease of the testes; Siberian crab in ulcer of the breast; canine urinary calculi in want of tone of the heart. The Chinese possess numerous aphrodisiacs and also anaphrodisiacs, several of both of which Dr. Dudgeon enumerates. A remedy for procuring longevity and preventing the advance of debility is the 'pine-ceiling dew.' A hole is dug under a fine old fir; the central root is taken, a jar of wine placed under it, and fire under this again; the alcohol fumes enter the tree with the sap, and the leaves for a few days assume a marvellous green tint. In a few days more the tree dies, the sap on returning distils into the wine-jar, and this is drunk for the above purpose. It was so by the Emperor Kienlung. —(IX. 31.)

Dietetics.

Culinary and dietary regulations abound in China. For example, eatables that are not incompatible should be selected for the same meal. Articles which when taken separately are wholesome, become noxious when in combination, so much so that they may be classed as poisonous. The most noted of these is a mixture of honey and onions. In some places they are employed for suicide, and cases of death from this cause are frequently reported. Honey and Chinese *dates, i.e. Zizyphus jujuba,* are interdicted. So are eel and sugar-cane. At Shanghai, a death was reported from eating crab and persimmon, *i.e.* fruit of *Diospyros kaki.* On these subjects, the great authority named is the physician Sun Szemiao. He was canonized early in the seventh century.—(XXII. 45.)

Drugs.

A very large number of foreign drugs have found their way into the Chinese herbal. Some were introduced from India by the Buddhists, and others during the Yuen dynasty, when the Mongol armies overran Asia and part of Europe, and a Mongol Khan sat on the throne of China. The names of such drugs are foreign, and many of them can be identified. Several of these are noticed in connection with the native Chinese method of treating asthma.—See *ante,* p. 177. (IX. 37.)

II. AILANTHUS GLANDULOSA.

Peking.

The *Ailanthus glandulosa* is a very common tree at Peking. There are two varieties of it, namely, one fragrant, called *ch'un,* and one fœtid, called *shu*—the latter growing on the hills. According to the Chinese, it may be used as an antidote against sulphur, arsenic, and gold. It is also anthelmintic; 'it is used in demonology against the transfer of disease from a corpse;' in dysentery, diarrhœa, prolapsus ani, and leucorrhœa. It is sometimes prescribed alone; at other times with *ti-yu,* or the radix hedysari. It is strongly recommended in all cases of hæmorrhage, from whatever cause or locality. It is diuretic, and may be used in gonorrhœa and spermatorrhœa. The inner white bark of the root and stem of the tree of the more fragrant kind are the parts used. It is sometimes prescribed along with kolilo (*ko-tze*), the fruit of the *Terminalia chebula,* also astringent, aa. ½ tael; the powder of 30 cloves; vinegar q.s.—to be made into pills, of which 50 are to be taken at once with ginger. The following are some of the prescriptions for chronic dysentery, in which this remedy plays a part: Bark of non-fragrant ailanthus, 4 taels; *kin-yin-hwa* (flor. Lonicera Chinensis), 2 mace 5 candareens;

charcoal of *ti-yu, hung-hwa* (Carthamus tinctorius), aa. 2 mace; *tang-kwei* (rad. Levistici chinensis), 1 mace 5 cand.; liquorice, 5 cand.; wine, 1¾ catty; water, 3 cupfuls—to be boiled down to 1 cupful and divided into four doses: the whole to be taken in one day. For the dysentery of children: Inside white bark of ailanthus, to be ground, mixed with water, and made into small pills with jujubes. In cases of incessant dysentery, day and night, the same bark is to be infused in river-water for three days, the outside yellow bark to be scraped off, the inner skin to be dried, pulverized, and to each tael 2 mace of *mu-hiang* (Costus amarus) to be added, and the whole made into pills with soft-boiled rice; the dose to be 1 mace 2 cand., to be taken on an empty stomach with congee. In passing nothing but blood, and the bowels painful, the recipe is: The white bark of the root, washed, scraped, dried, pulverized, and made into pills with vinegar; and 40 or 50 pills to be taken on an empty stomach with congee; the above for 'red dysentery.' In 'red and white dysentery,' *i.e.*, blood and mucus, the same as the above, without the vinegar; the dose of the powder being 1 mace, said to be very efficacious. In leucorrhœa it is combined in equal parts with *hwa-shih* (a kind of soapstone containing alumina instead of magnesia), and made into pills with rice, of which 100 pills are to be taken. The following is a standard Chinese prescription against dysentery:

℞ Chw'an hwang lien (rad. leontiæ) from Szechuen, 1 mace 2 cand.
T'iao-hwang-k'in (rad. Scutellar. viscidulæ), 1 mace 2 cand.
Chih-pai-sho (rad. Pæoniæ rubræ), 1 mace 2 cand.
San-cha-jow (fruit of Cratægus pinnatifïda), 1 mace 2 cand.
Chih-k'o (a kind of citrus), 8 cand.
Chw'an-how-po (bark of Magnolia hypoleuca), 8 cand.
Chw'an-ping-lang (betel-nut ?), 8 cand.
Ts'ing-p'i (fruit of Citrus microcarpa), 8 cand.
T'ao-jên (kernels of peaches), 1 mace.
Hung-hwa, 3 cand.
Chw'an-tang kwei, 5 cand.
Ti-yü, 5 cand.
Shêng-kan-tiao (liquorice), 5 cand.
Water, 5 cupfuls; to be boiled to 2.
3 candareens, *mu-hiang* to be added, and the whole mixed.

This medicine is not to be thrown away, but again used; 3 cupfuls of water being again added, and boiled down to 1 cupful.

Credit is given to M. Dugat for bringing the virtues of the ailanthus to the attention of French surgeons in the navy in Eastern waters, and of medical *savants* at home.—(IX. 28.)

Mons. M. E. Dugat, physician to the French Legation in China, states that, in 1872, the modes of preparing and of administering the root and bark of the *ailanthus* in cases of dysentery were described to him by one of the Lazarist missionaries at Peking. To prepare it: Take 15 to 20 drachms of the fresh bark, pound it in a mortar, aiding the operation by the addition of a few spoonfuls of cold water. Express the pounded bark through linen. The juice thus obtained is the remedy. The mode of administration is: the bottle being shaken, a tea-spoonful is taken in a cup of weak tea for four consecutive mornings, fasting. The diet meantime to be exclusively milk during the earlier days; farinaceous food may be gradually introduced. Cases are then related to illustrate the advantages of this method of treatment of chronic forms of the disease.—(X. 22.)

The medical officer at Chefoo states in his Report for 1873 that he had his attention drawn to the *Ailanthus glandulosa* (*choo-chun-shu*) as a native remedy for dysentery. The tree belongs to the N. O. Xanthoxylaceæ. It was introduced into Europe in 1751, and is now, among other places, seen ornamenting the squares and boulevards of Paris; also in the Royal gardens at Kew. At Peking it is used by the Chinese as already stated in the treatment of dysentery, and missionaries who have used it among themselves attest its value. It has also been used with success by MM. Dugat and Bretschneider at the French hospital at Peking, in cases of chronic dysentery. The bark of the root is the part used; this is pounded in a mortar, and mixed with a little water until a pulpy consistence is obtained. It has an intensely bitter and astringent taste.—(VII. 21.) Chefoo.

In the Report to September, 1874, Dr. Myers gives details of three cases of dysentery treated by the *ailanthus*, and winds up his remarks as follows: 'In the first case the effect of the remedy was negative; in the second, there seems to be evidence that it may sometimes have a positive (beneficial) effect; in the third, we have great reason to believe that the change for the better was due to climatic influences, and this seems reasonable when we mention that there was a change from wet and miserable weather to a fine dry and bracing atmosphere simultaneously with the first use of the ailanthus.'—(VIII. 53.)

According to the Report for the year to September, 1875, a seaman arrived at Chefoo suffering from a severe and acute form of dysentery; *ailanthus* produced vomiting and distressing abdominal pains. Dr. Carmichael therefore abandoned the drug; in its place prescribed mercury with chalk and compound powder of opium, which produced speedy relief, and complete recovery in the course of a fortnight.—(XI. 2.)

III. ARSENIC.

According to the summary of Chinese medicine, given by Dr. Macgowan in his Report on Wenchow, April to September, 1881, *hartall* (see *ante*, p. 71), arsenic bisulphide, called also orpiment, and king's yellow, is used as a prophylactic against malarious and *demoniacal* influences; infinitesimal doses being taken with cinnabar, in a little liquor, on the fifth day of the fifth moon, Dragon festival. In the case of children it is smeared on the forehead.—(XXII. 22-32.) See Periodic Fevers, Wenchow.—See *ante*, p. 111.

IV. CITRATE OF CAFFEINE.

Dr. Stewart, of Foochow, gave citrate of caffeine in two-grain doses for megrim, and found the drug useless. In four-grain doses, repeated after an hour or two, it was of decided benefit. He considered the two-grain doses 'as useless as the two-grain doses of oxalate of cerium.' (XXIII. 36.)

V. CANNABIS INDICA.

Cannabis indica was introduced into China from India (see *ante*, p. 226). It is called in Chinese books *ta-ma*, the great hemp; *hwo-ma*, fire-hemp; also *han-ma*, a word not unlike the German *hanf*, and our *hemp*. The male plant is called *si-ma*, and *p'in-ma*; the female *k'ü-ma* and *tze-ma*; the flowers are called *ma-pên* and *ma-po*. 'Ma-po will cure every sort of bad vapour; it is an antidote against forgetfulness, confers prophetic powers, and will give a knowledge of what is about to happen in the four quarters of the globe.' Linseed, *hu-ma*, or the sesamum, is its antidote. 'If too much hemp be eaten, devils may be seen; in fact, it is taken by those who indulge *in spiritualism*.' It is recommended as a cure for scorpion-bites; it stops the advance of age. It is, however, seldom used medicinally by the Chinese.

Bang, i.e., Cannabis indica, was employed in China A.D. 220-230, as an *anæsthetic* by the famous surgeon Hwato during the dynasty of the WEI. It was then used for this purpose where acupuncture or the moxa was applied, and it produced such anæsthesia 'as if the patient had been either drunk or dead,' so that cuts, amputations, etc., were performed without sensation being felt. The term *ma-yoh* is applied to anæsthetic medicines as a class; not to any one drug in particular. —(IX. 37.)

VI. CARBOLIC ACID.

In the Report on Foochow to March, 1873, Dr. Somerville wrote, in reference to a case of gunshot-wound in the person of a Chinese, the hand being blown away at the wrist-joint:—Amputation through the forearm was employed, and antiseptic dressings on Lister's method applied. There was no bad symptom, and the wound united by the first intention. As a rule the Chinese make excellent surgical patients. They stand operations well, and recover from them readily. After an experience of Lister's dressings of four years' duration, Dr. Somerville 'cannot speak too highly of their value, and no doubt much of the success must be ascribed to them; but even during the old system of water-dressings he used to notice how well surgical cases got on in natives.' He notices a property of carbolic acid to which, as far as he is aware, little attention has been drawn, namely its power of producing local anæsthesia. He had noticed that a patient suffered no pain in a wound from the time it was dressed with this substance; also that in the fingers of the dresser there was a feeling of numbness. In the *Journal of Cutaneous Medicine* for June, 1870, Sir Erasmus Wilson showed the value of carbolic acid in producing anæsthesia previous to the application of caustics to lupus and epithelioma. Similar effects of the drug are related in the *American Journal of Medical Science* for October, 1870. See Braithwaite's 'Retrospect of Medicine,' vol. lxii., p. 382, and vol. lxiii., p. 171.—(V. 39.)

Foochow.

In the Report on Chefoo, January to March, 1872, the medical officer writes: 'I would here mention the well-marked effect which the inhalation (not by spray, which appears injuriously stimulant) of carbolic acid has in advanced cases of phthisis in apparently arresting the further deposit of tubercle, besides alleviating the distressing symptoms. —(III. 39.)

Chefoo.

VII. CHRYSOPHANIC ACID.

Dr. Stewart, of Foochow, has seen *Chrysophanic* acid act most beneficially in all forms of skin diseases due to cryptogams; he has been taught to look upon it as a specific in these diseases, and even more reliable in them than quinine is in malarial poisoning. He used to employ it in 10 and 20 per cent. strengths; he now often uses it undiluted or unmixed, and that to a raw sore; applied to a raw on the skin he has found it act energetically as a healer and diminisher of smarting pain. He has known it cure quickly both ringworm pure and ringworm aggravated to a very high degree by eczema, when sulphuret of calcium and other remedies had failed; indeed, seeing what an offensive compound the sulphuret of calcium is, he does not see why it should ever be used while chrysophanic acid is to be had. In that cryptogamic form of disease which, attacking the palm, goes on to burrow and spread till the whole surface of the palm is changed, and little is left of it except cracks connected by thin fibres of skin, chrysophanic acid does not, without being given a due amount of time, effect a cure. It requires from two months to half a year at least for that. The long-continued use of chrysophanic acid gives rise to conjunctivitis. The conjunctivitis is not severe, and rapidly passes off on giving up the chrysophanic acid for a short time.—(XXIII. 37.)

Foochow.

VIII. COD-LIVER OIL.

In his Report on Peking to 31st March, 1875, Dr. Dudgeon gives some particulars in reference to *Chinese knowledge of cod liver-oil.* In the 'Great Herbal,' there are mentioned 31 kinds of fish with scales, and 37 without scales. The *cod* is not known in Chinese waters as far as he is aware, and no oil is extracted from the *liver* of fishes. The use of fish, and fish-oil, however, particularly *shad,* is used in the treatment of consumption. That fish is called *man-shan, pai-shan, shih-yü,* and when dry, *fêng-man.* It possesses the virtue of killing insects, and all sorts of worms that infest clothes, and wooden or bamboo articles of furniture, and mosquitoes. If its bones are put among clothes, moths will not destroy them. It is prescribed in fistula in ano, hæmorrhoids, bad ulcers, and prurigo pudendi. The oil of this fish 'is a most certain cure in pityriasis versicolor,' the cure being effected by one application.—(IX. 22.)

IX. DATURA.

The *datura* or *man-to-lo* of the Buddhist classics is foreign to China, having, it is said, been introduced from India. On account of the shape of its leaves it is called *fêng-kieh,* and *shan-kieh.* It is recommended in all 'wind' diseases (convulsions). 'When eaten, unconscious laughter is set up, and the person acts as if intoxicated. It may be used as an anæsthetic. It is used in infusion to wash the feet; it is also applied to ulcers of the face, in convulsions of children, and in prolapsus ani.'—(IX. 37.)

X. EUCALYPTUS.

In the Report on Hankow, April to September, 1872, details are given of cases of intermittent fever experimentally treated with eucalyptus globulus; the effects, as far as can be gathered, being either negative, or result in frontal headache and a feeling of nausea, both of which disappeared when the remedy was given up. Dr. Reid, accepting the eulogies passed by Gubler on the planting of the eucalyptus, writes that 'the introduction of the tree into the malarious districts of China must prove of inestimable value in curing not only fevers, but many of the other ills that flesh is heir to.' Such were the anticipations then formed regarding it.—(IV. 74.) Hankow.

The Report on Shanghai for the half-year ending 30th September, 1875, states that attempts have lately been made, with but scant success, to domicile there the *Eucalyptus globulus,* as a means of counteracting the influence of marsh miasm. It is pointed out that in India similar attempts have failed; in lower Bengal it thrives as a seedling, but becomes sickly after eighteen months, and generally dies before the third year. In the north-west provinces its fate has been various; but the conclusion is that it is unsuited to swampy land, and it is unable to resist the hot winds of the south-west.—(X. 58.) Shanghai.

On the subject of eucalyptus, Dr. Macgowan, in the Report on Wenchow, April to September 1881, writes: 'It is extremely desirable that the Imperial Government or the Governor-General of the southern provinces should be moved to introduce eucalyptus trees extensively, the prophylactic of malarial fever, which is so injurious to the best interests of the State. Although the various species that he experimented on were unable to endure the cold of a Shanghai or Ningpo winter, the plants rarely thriving beyond the third year, yet farther south the result has been all that can be desired.' Dr. Macgowan adds: 'It is true that recent observations are unconfirmatory of the anti-miasmatic properties of this exotic Wenchow.

in Algeria and California. A minister like Tso Tsungtang, whose recent work on tree-planting in Kansuh is unequalled by any like feat in history, requires no solicitation to favour such an undertaking as the acclimatization of useful plants.'—(XXII.

XI. IODINE.

Iodine and some of its preparations enter largely into medical practice. In Chinese books, particularly the 'Pen-tsao,' there are notices of sea-weeds, noted as possessing well-known therapeutic properties, as in the discussion of hard tumours, goitre for example. They have long been acquainted with its general properties, and mention various kinds found along the Eastern Seas, on the coasts of Corea and the Malayan Archipelago. The chief kinds mentioned in their 'Great Herbal' are the *hai-tsao, kwen-pu* or *lun-pu, hai-tai, hai-yün, shui-sung, shi-fan, yueh-wang-yü-swan.* The botanical names of neither of these are forthcoming. The poor people in Shantung and other of the coast provinces eat sea-weed plentifully, as a vegetable, and medicinally; they use it also as a manure. It is prescribed alone chiefly as a tincture, or is mixed up with other medicines in various prescriptions. The uses to which these various kinds of sea-weed are put correspond with the uses to which one formerly put burnt sponge and other sea productions before the discovery of iodine. The Chinese for centuries have prescribed it in swellings and tumours of all kinds. They prescribe it also as a diuretic, and assert that 'it is capable of driving away any number of demons.' Two examples of prescriptions of sea-weed are given in the Reports before us. One, which dates from the thirteenth century, is as follows, namely: *Hai-tsao,* 1 catty; spirit, 2 sheng. To be put in an open bag and digested for two days in spring and summer, and three days in autumn and winter; about an ounce to be taken three times daily. The second dates from several hundred years earlier, and is as follows: *Hai-tsao,* 1 tael; *hwang-lien* (justicia), 2 taels. Grind to powder and eat it regularly, avoiding fatty things, and things difficult of digestion. As a diuretic the following is the prescription: *Kwen-pu,* 1 catty. To be digested in a kettle of rice-water, and then cut into slices; again digested to a pulp, to which salt, vinegar, soy, orange-peel, etc., are added. In glandular swellings it is recommended to suck or chew the sea-weed, and when dry to throw it away.—(VIII. 37.)

XII. IODOFORM.

Iodoform has been found extremely useful by Dr. Stewart, of Foochow, in the treatment of syphilitic sores; the same may be said of herpes preputialis. Where he has found iodoform most useful is in a bleeding cracked condition of the meatus ani. He had two cases of this affection in which it did away with the necessity for the scalpel.—(XXIII. 36.)

XIII. IPECACUANHA.

At Hankow, in the period to September, 1875, two cases of *hepatitis* occurred, in which large doses of ipecacuanha were administered with benefit.—(X. 46.)

At Canton, April to September, 1872, the use of ipecacuanha in dysentery disappointed expectations in two cases; both attended by severe straining and abdominal pain. In the first of these, ipecacuanha was given in a dose of 15 grains; in the second, in one of 40. The patient in the first case refused to repeat the dose; in the second, no improvement followed the use of the drug in decreased quantities; and under small doses of mercury the disease was subdued. For further particulars see HEPATITIS and DYSENTERY. See *ante,* pp. 180-190.—(IV. 70.)

XIV. LU-SHUI.

In the Report on Chefoo for the year 1873, the medical officer alludes to a substance used by the Chinese for preparing bean-curd, and styled 'Native hydrochloric acid.' It is also known by the Chinese under the name of *lu-shui*. It is said to be one of the productions in the manufacture of saltpetre, which is found in combination with chloride of sodium impregnating the soil of the coast of the Gulf of Pechili; some localities being distinguished by the combined salts forming a white efflorescence on the surface. The poisonous product is the liquid incapable of crystallization in the extraction of the salt. It is poisonous in doses of from one fluid ounce. A woman in the village of Tingshin had taken a small quantity; an emetic was administered, and she recovered. The substance was given to five dogs, but the post-mortem appearances were not the same in any two of them. In the case of a horse to which the substance was administered, the appearances of strong corrosive action were unmistakable, and did not present any similarity to those seen in the dogs.—(VII. 21.)

XV. PARTURIFACIENTS.

Native Chinese books are rich in prescriptions for rendering parturition easy, and for procuring abortion. Private recipes belong to the class of secret remedies. The more powerful of the former become abortive agents. They include the following, namely: the seeds of Impatiens balsamina, ginseng, sandarach, kernels of cratægus and of peach, musk, camphor, oak-bark, hemp-seed, gypsum, the Cyperus rotundus, umbelliferæ, Leonurus sibericus, seeds of Tribulus terrestris, a species of arum, roots of Sida tiliæfolia, seeds of Gleditschia sinensis, Ophiopogon spicatum, Rehmannia glutinosa, etc. 'And as the sublime and ridiculous are always in China connected,' the following substances also find a place among parturifacients, namely: water-turtle, tortoise, hippocampus, flying-fish, a kind of nitrate of potash, fruit of Sophora japonica, rice-husks, lotus flowers, large beans found in cow-dung, *hair* of white cock, albumen, blood from the comb of a black cock; blood, brains, skin, and hair of a rabbit; ashes of a Chinese pencil, rat, mule's hoof, dog's hair, of the wooden handle of any utensil, and of old straw slippers; blood of a white dog and of a pig's heart; human urine, honey, bile pills, ink, iron utensils, ancient cash, rust of spades, arrow shafts, bow-strings, baskets, cart-oil, husband's garters, the parturient woman's nails, serpent's skin, deer's dung, lard, mud from a well, water in which children have been washed, etc. As rendering labour easy the remedies proceed on the theory of their being emollient, demulsive, soothing, etc. This class includes the seeds of Pharbitis nil, the seeds and flowers of a mallow, white bark of elm, seeds of Hibiscus abelmoschus, plantain, Sorghum saccharatum, a kind of bean (Dolichos or Abrus precatorius), horse betel-nut (a fruit from Yünnan), arrowroot, Dianthus fischeri, Akebia quinata, rad. Clematis sinensis, Aralia papyrifera, Alisma plantago, Portulaca oleracea, a kind of buxus, seaweed, wheat-sprouts, soapstone (agalmatolites), Typha angustifolia. Besides these substances the following are specified, namely: honey, castor-oil seeds, the patient's shoes, an ant-hillock, cow-dung, salt, soot, a bridle, the refuse-water after grinding knives; skin of a red horse, of an otter; the patient's trousers, her hair; mud from the front of a busy shop where animals and men congregate, etc. There is also a stone called *fu-shêng*, taken by parturient women to expedite labour.

In the class of more direct abortives are the following, namely: aconite; Arum macrorum, pentaphyllum, and other species; Corydalis ambigua, legumes of Psoralea corylifolia, phytolacca, root of Pupalia geniculata, or Achyranthes aspera, rhododendron, henbane, bulbs of

a cucurbitaceous climber, root of Coix lachryma, rubia, carthamus, root of Saccharum spicata, bark of Pæonia moutan, root of euphorbia, cyperus, dried ginger, cassia buds, dried Chinese varnish (a kind of rhus), fruit of Sophora japonica, croton oil, a kind of Xanthoxylon (Chinese pepper shrub), cantharides, scolopendrum, a number of insects, caterpillars, lizards, sal ammoniac, mercury, realgar, orpiment, nitre, red hæmatite, bezoar-stone (of oxen), a kind of styrax, passerina chamœdaphne, etc.—(IX. 31.)

XVI. QUININE.

In the Report on Peking to 31st March, 1874, the medical officer remarks on the inefficiency of quinine in the treatment of severe cases of intermittent fever at that capital. He attributes this circumstance to the importation of a spurious drug, and writes: 'Nothing is so likely to bring contempt upon us and our medical science as the sale of adulterated and spurious drugs, and especially of quinine, of which the Chinese have already a very exalted and just appreciation.'—(VIII. 29.) In 1874-75, muriate of cinchonine was on sale in a native *hong*. None of the spurious quinine reported as sold in the south of China was traced to the capital.—(IX. 22.)

Peking.

At Kiukiang, to March, 1875, several cases of gleet of old standing were treated successfully by means of injections of quinine, of the strength of one and a half grain of that drug dissolved in an ounce of water, acidulated with a few drops of diluted sulphuric acid, and used twice daily. Similar treatment was described as very successful in causing fistulous tracts to granulate and heal up; it is also useful as an eye-lotion in purulent ophthalmia after the acute stage has ended. A drop of the solution put into the eye night and morning is recommended in such cases.—(IX. 2.)

Kiukiang.

In the year to March, 1877, quinine was administered as a prophylactic against malarial fevers. In cases of tardy convalescence, notwithstanding its employment, removal to a neighbouring hill sanatarium was had recourse to.—(XIII. 1.)

At Hankow, in 1871, quinine, administered in a case of severe intermittent developed out of continued fever, produced no effect, and the patient died.—(II. 47.)

Hankow.

At Shanghai, 1871, quinine was useful in the treatment of disease generally. In some exceptional cases of double tertian ague it was hurtful: in these, Fowler's solution with opium was 'not only permanently useful, but rapidly so. In cases of remittent fever, quinine in large doses was occasionally given with success when the pulse was over 100. In the severe form of remittent, known as Shanghai fever, quinine in any quantity often disagreed.'—(II. 38.)

Shanghai.

Dr. Macgowan, in his Report on Wenchow, April to September, 1881, writes: 'It is matter of regret that quinine, the anti-malarial value of which the Chinese fully appreciate, should, owing to its cost, be unobtainable by the masses.' He accordingly suggests that the cultivation in Yünnan of the cinchona tree should be experimentally tried.—(XXII. 48.)

Wenchow.

At Foochow, according to the Report for 1871, fevers, remittent and intermittent, usually yielded readily to quinine in large doses given in the intervals between the accessions. In some instances, however, it failed, and in these arsenic was administered with better success. Fowler's solution, in doses of 5 minims gradually increased to 10 minims three times a day, was the form in which the latter drug was administered under such circumstances. Cases in which quinine failed were, however, quite exceptional.—(II. 27, 31.)

Foochow.

In the Report to September, 1872, Dr. Reid stated that quinine is valuable as a means of diagnosis, especially in the hot season, when ordinary heat eruptions may serve to mask the real characters of a case of fever under treatment; that this drug is useless in the treatment of continued fever. In the West Indies many cases of typhoid are said to be marked at the outset by periodicity; in this stage quinine is valuable, but it loses its power and even seems to aggravate the symptoms when they become continued. A case is then recorded as that of a patient who had resided eight years in China, and who during that period had no serious illness except during the hot season intermittent fever with gastric disturbance and constipation. He died of 'mixed fever.' Until attacked by it the intermittent fever had always yielded to moderate doses of quinine.—(IV. 58, 59.)

At Tamsui, in the year ending 30th September, 1878, a case of remittent fever is recorded, in which, quinine having had no marked effect, change of climate appears to have been instrumental in bringing about recovery. In a case detailed, the attack of intermittent fever was very severe. After several repetitions of individual attacks, which were treated during the intervals between them with ten-grain doses of quinine, the patient still suffered from extreme headache and want of sleep, which yielded to bromide of potassium and opium. —(XVI. 18.) Tamsui.

At Taiwan and Takow, 1871, quinine, successful in cases of intermittent fever, was not so in malarial neuralgia. In the latter, arsenic was administered with good results. In it, hypodermic injection of morphia had no permanent effect. —(II. 67.) Taiwan.

According to the Report on Swatow to September 1871, a case of secondary fever, following cholera, was treated successfully with large doses of quinine.—(II. 9.) Swatow.

At Canton, April to September, 1872, the reporter observes, in reference to quinine, that there are many fevers in which the drug has no sphere of action, and in which *expectant* and general treatment must be adopted; and secondly, 'the Chinese can, to a very considerable extent, cure with their own medicines the cases which it cures; they can generally cure intermittent fevers with their own drugs, so that the superiority of quinine is not very marked in their eyes. They use quinine in ague, and this medicine is in increasing demand every year; but in any other form of intermittent fever not preceded by regular cold stage, it is not used.' In remittent fevers of a paroxysmal character, it is his impression that the Chinese effect cures in 80 per cent. of cases if the patients are early treated, and quinine can do no more than this.—(IV. 71.) Canton.

In the summer of 1879 a peculiar form of remittent fever prevailed. Quinine seemed to have no effect upon it, either in large or small doses. In one case the use of the drug was discontinued after the patient had been cinchonized seven days. Quassia and dialyzed iron was then given with good effect.—(XVIII. 57.) See also MALARIA, PERIODIC FEVERS.

XVII. SALICYLIC ACID.

The results of trials regarding the therapeutic action of salicylic acid are recorded in the Report of Chinkiang for the year ending 30th September, 1878. The administration of the drug was found to be difficult in consequence of the degree of irritation of the fauces set up by it. In combination with the liquor acetatis ammoniæ, it was found useful in rheumatism; but the action of the vehicle as a diaphoretic is to be borne in mind. In fact, the Chinkiang.

result of trials made with it in the treatment of chronic rheumatic arthritis, typhoid and intermittent fevers, gave average results 'the reverse of satisfactory.' As a local application, however, in diphtheritic pharyngitis, catarrh and worms, it was more satisfactory. Also, with glycerine, in chronic eczema of the feet, so common among foreigners in China.—(XVI. 21.)

XVIII. TONGA.

Chinkiang.

At Chinkiang in 1881-82, Dr. Stewart wrote of tonga, that he had no high opinion of it. Given along with citrate of caffein, say within half an hour or an hour after a four-grain dose of the citrate, when the latter did not appear to be taking full effect—in cases of megrim—he has found tonga advantageous, more so 'perhaps' than a second four-grain dose of the citrate would be.—(XXIII. 37.)

XIX. MEMORANDUM ON TREAK FAROOK, OR THERIACA ANDROMACHI.—(*See ante*, p. 163.)

The nature of the drug so named and the method of its preparation having both passed out of general knowledge, it is believed that the particulars now to be given in regard to these points may be considered to have at least some historical interest to justify their introduction here.

In the work of Dr. Freind on the 'History of Physic,' 1726, vol. ii., p. 209, the author wrote:—'Mithridate and the treacle of Andromachus have been in use for near two thousand years, and are still allowed to be good medicines by the ablest judges; and yet were we to examine every particular, we should probably be at a loss by any force of reasoning to comprehend why this or that drug should have been made choice of, or how it could add to the efficacy of the medicine.'

According to Pomet ('History of Drugs,' 1737, p. 278), 'Treacle, commonly called Venice treacle, is a composition of certain choice drugs, prepared and reduced into an opiate or liquid electuary with honey. The treacle takes its name from the *viper*, which the Greeks call *therion*, or *thyrion*. The Venetians of late years have got the reputation of being thought the only people who had the true way of preparing the treacle.'

Among the medicines recommended in 1528 by Dr. John Kaye for the 'sweating sickness' then raging, were theriaca, Armenian bole (consisting of chalk and oxide of iron), and pearls, each of which occurs in various combinations (Hecker's 'Epidemics of the Middle Ages,' pp. 303 and 371). And all were used as prophylactics against the prevailing epidemic. Theriaca is thus referred to in the work of that physician, entitled 'A Boke or Counseill against the disease commonly called the Sweat, or Sweating Sickness, made by John Caius, Doctor in Physicke, anno 1552': 'For in al the discourse preseruativ and cure, of thys disease, the chefe mark and purpose is, to minister suche thynges as of their nature haue the facultie by colyng dryenge and closing, to resist putrefaction, strength and defende the spirites, comforte the harte, and keep all the body agenst the displeasure of the corrupt aire. Wherefor it shal be wel done, if you take of this cōposition folowyng euery morning the wight of ij.d. in vi. sponefulles of water or iuleppe of Sorel, and cast it upon your meate as pepper. ℞ seīs citri acetos. ros. rub. sādal. citrin. ān. ʒi.; boli armeni oriētal ʒi. s.; terr sigil. ʒs.; margarit, ʒi.; fol. auri puri nº. iiij.: misce s. f. pul. diudatur ad pōd ʒs. Or in the steade of this, take fasting the quantitie of a small bene of *Mithridatum* or *Uenice treacle* in a sponeful of Sorel, or Scabious water, or by the selfe alone.'

In 'The Druggists' Shop Opened,' by William Salmon, 1693, it is stated (p. 745) that among the remedies recommended against *bites* by scorpions were mithridate, Venice treacle, 'our London treacle,' etc.

Dr. William Cullen, writing in 1809, observed that 'Even the London College, who in their Dispensatory of the year 1746 had shown so much discernment and judgment in correcting the luxuriancy of composition, still retained the Theriaca andromachi in its ancient form.' (See 'A Treatise on the Materia Medica,' vol. i., p. 10.)

According to Dr. Waring, 'Therapeutics,' p. 653, 'Treak Farook is an important article in India. From a printed paper in Persian characters which accompanies each canister it is professedly the *Theriaca Andromachi* of old writers, and is prepared in Venice, whence it is exported to the East.' Andromachus, whose name the preparation bears, was physician to Nero A.D. 37-68. According to his biographer he was its 'inventor.' During his 'incumbency' the drug was 'among the necessaries of the Roman Court.'—(Hecker, p. 276.)

With regard to the *theriaca*, the following remarks occur in the 'Narrative of the Committee' appointed to prepare the Dispensatory of 1746: 'And for the additions made to it by Andromachus, we are not informed of any pretence upon which they were severally added, except that by the viper's flesh this medicine was to be rendered more useful against the bite of that animal.' —(Galen, 'De Antidot.,' li., c. i.) However, the theriaca gained so high a degree of credit that even Marcus Aurelius was prevailed on by his wife to make a daily use of it, to the great prejudice of his health, till his head was so affected that he dozed in the midst of business, and then, omitting the opium in it, was not able to sleep at all.—(*Ibid.* p. 6.)

Sir George Ballingall wrote: 'Two native (in India) remedies of great celebrity—the *Treak Farook* and *oleum nigrum*—appear to have been adopted latterly in the treatment of *Beri-Beri* by European practitioners, and are favourably spoken of by Mr. Malcolmson.'—('Military Surgery,' ed. of 1855, p. 593.)

In the third edition of his 'Cyclopædia,' Surgeon-General E. Balfour gives particulars in regard to Treak Farook. As in the Greek of Galen (*theriaké*) so in Arabic, 'tiriaq' means treacle, also antidotes of every kind against poisons, and 'tiriaq farook' is 'the best sort of treacle.' Dr. Balfour had a formula for the preparation of the drug from the Commissariat Department of Madras, and writes: 'The ingredients were numerous, many of them warm spices.' In the second edition of his 'Cyclopædia' he wrote: '*Theriaca veneta*, the modern representative of the mithridatum of the ancients' (see subsequent note from Grey), 'is sold in little canisters in the bazaars of India. On the wrapper is printed, in Persian, "The Theria of Andromachus, an invention of Theron the Presbyter. It is prepared, measured, and made public by me, John Baptist Sylvester, in the Rialto, by authority of the excellent Government Physicians of Ancient Righteousness and of the Council of Apothecaries and Learned Physicians."' *Tiriaki* in Turkey means an opium-eater.

It is evident, on reference to Pomet's 'History of Drugs,' 1737, p. 278, that several compounds were at that date known under the name of Venice Treacle, or Andromachus's Treacle. Quoting from Charra's work in French, entitled, 'The Natural History of Animals, Plants, and Minerals that make up the Composition of Andromachus's Treacle,' M. Pomet gives the following receipt, namely:

'Take troches of squills, six ounces; troches of vipers and hedycroy, long pepper, opium prepared, of each three ounces; red roses, Florentine orrice, juice of liquorice, wild navew seed, balsam of Judæa, fine cinnamon, agaric, of each one ounce and a half; powdered myrrh, Arabian cistus, saffron, cassia lignea, Indian spikenard, flowers of camels' hay (*Juncus odoratus*), olibanum in tears, white and black pepper, dittany of Crete (*Origanum creticum*), tops of white horehound, fine rhubarb, Arabian Stæchas (*amaranthus sp.?*) Macedonian parsley seed, mountain calamint, turpentine of Clio, cinquefoil, ginger, of each six drams; poley mountain (*Polium montanum*),

ground-pine, storax in the tear, spicknel, true amomum, valerian, celtic spikenard, sealed earth, Indian leaf, natural calchitis, gentian root, aniseed, juice of hypocistis, fruit of balsam tree, gum arabic, fennel seed, common cardamom, marsilian hartwort, treacle mustard, flowers of St. John's wort, the true acacia, gum sagapen in tears, of each four drams; castor, small birthwort, candy carrots, Jew's pitch, flowers of lesser centaury, opoponax, and galbanum, of each two drams; choice honey three times the weight of all; Spanish wine as much as to give the due consistence.'

Then follows instructions for the preparation of troches, severally of squills and of vipers.

It will be observed from what is to follow that the officinal preparation known in London in the middle of the eighteenth century under the name of 'Theraica Andromachi,' differs in several respects from that just noticed. The following represents the composition of the drug so named, otherwise 'Venice Treacle,' according to the 'London Dispensatory' of 1746, p. 343, viz.:

'Take of the troches of squills half a pound; long pepper, opium strained, dried vipers, of each three ounces; cinnamon, balsam of Gilead, or in its stead expressed oil of nutmeg, of each two ounces; agaric, the root of Florentine orrice, water germander, red roses, seeds of navew, extract of liquorice, of each an ounce and a half; spikenard, saffron, amomum, myrrh, costus, or in its stead zedoary, camel's hay, of each an ounce; the root of cinquefoil, rhubarb, ginger, Indian leaf, or in its stead mace, leaves of dittany of Crete, of horehound, and of calamint, French lavender, black pepper, seeds of Macedonion parsley, libanum, Clio turpentine, root of wild valerian, of each six drams; gentian root, Celtic nard, spignel, leaves of poley mountain, of St. John's root, of ground-pine, tops of creeping germander with the seed, the fruit of the balsam tree, or in its stead cubebs, aniseed, sweet fennel seed, the lesser cardamom seeds freed from their husks, seed of bishop's weed, of hartwort, of treacle mustard, or mithridate mustard, juice of the rape of cistus, acacia, or in its stead gapon earth, gum arabic, storax strained, sagapenum strained, Lemnian earth, or in its stead bole Armenic or French bole, green vitriol calcined, of each one ounce; root of creeping birthwort or in its stead of the long birthwort, tops of the lesser centaury, seeds of the carrot of Crete, opopanax, galbanum strained, Russia castor, Jew's pitch, or in its stead white amber prepared, root of the sweet flag, of each two drams; of clarified honey thrice the weight of all the rest. The ingredients are to be mixed in the same manner as in the mithridate.

Remark.—Here the same cautions in relation to the powdering of the species are to be observed as in the mithridate, very little alteration has been attempted in either of these celebrated antidotes. But for what small variation has been made, see the 'Narrative of the Committee,' p. 117, etc.: to which may be added, that wild valerian is here received upon the judgment of Fabius Columna; and *rhabarbarum*, rhubarb, is inserted instead of *rhaponticum*, after the example of the Dispensatory of Augsburg, the rhapontic not being used with us otherwise in medicine.

Note.—All electuaries, if they grow dry, should be reduced again to their consistence with a small quantity of canary, and not with syrup, or honey; by this means the dose will be rendered the least uncertain, which is especially necessary for those that are made up with syrup, and contain a large quantity of opium, such as the philonium, and the confection bearing the name of *paulina*.

Remark.—The reason for this caution is, that the quantity of the fresh syrup, or honey, will be so great as to vary the proportion of the whole to the original ingredients, and make the effect of the medicine precarious.

The following occurs in the 'Narrative' at p. 117, referred to above, namely: 'The committee in their last draught made no further alterations in the ingredients of the mithridate and *theriaca*

than rejecting such as were not in the original, except substituting cinnamon for *cassia lignea*, which, it is evident from Galen, was only used through the scarcity of the other (*a*) ("De Antidote.," l. i. c. 14; "De Sanitat. Tuend.," l. vi. c. 1), and by omitting the *asarum* in the mithridate, which is inserted on a conjectural emendation only of a corrupted passage in the original description; in the *theriaca* they also changed the name of the vitriol, which modern dispensatories have generally substituted under the title of the Roman, for the ancient *chalcitis* now not certainly known, in order to obviate a mistake, which the first compilers of our Pharmacopœia have handed down to us.'

Remark.— (*a*) 'Neither the description in verse of the elder Andromachus, nor the prose explanation of the younger, make any mention of the white pepper afterwards added to the composition of theriaca (Galen, "De Antidot.," l. i. c. 7); and the forming the agaric into troches with ginger is also another innovation; in like manner the *radix iridis* in our description of *mithridate* (which see) is a supernumerary ingredient not warranted by the original.'

XX. MEMORANDUM ON MITHRIDATE.—(*See ante*, p. 163).

The *mithridate* above alluded to is described as 'Mithridatum, sive Confectio Damocritis;' its composition is detailed at pp. 340, 341 of the 'London Dispensatory' of 1746.

According to the work by Pomet, already quoted, p. 281, the following is the receipt for *mithridate;* 'Take of a choice myrrh, saffron, white agaric, ginger, fine cinnamon, Indian spikenard, frankincense, and thlaspi, or treacle mustard-seed, of each ten drams; Marsilian hartwort, balsam of Judæa, camel's hay, Arabian stœchas, costus, galbanum, turpentine, long pepper, castor, juice of hypocistis, storax in tears, opoponax and Indian leaves, of each one ounce; cassia lignea, poley mountain, white pepper, water germander, candy carrots, fruit of the balsam tree, troches of Cephi and bdellium, of each seven drams; celtic spikenard, gum Arabic, Macedonian parsley, opium, the lesser cardamom, fennel, gentian, red roses and dittany of Crete, of each five drams; aniseed, the true acorus, small valerian, and gum serapin, of each three drams; spignel, acacia, and the sea skink, St. John's wort-seed, of each two drams and a half; Spanish wine, a sufficient quantity; fine honey, nine pounds, eight ounces and two drams.' Thus it becomes apparent that the difference between the composition of these famous drugs is not very great. Democritus, whose name is attached to the mithridate, died B.C. 361, at the reputed age of 109 years. (See also Grey's 'Supplement to the Pharmacopœia,' 1828.)

XXI. MEMORANDUM ON OLEUM NIGRUM.

Adverting to the notice by Sir George Ballingall, of the use of *oleum nigrum* in the treatment of Beri-Beri, *ante*, page 162, the following information regarding the drug so named may be interesting. Surgeon-General Balfour, in the third edition of his 'Cyclopædia,' writes under the head of *Celastrus paniculata:* 'The *oleum nigrum*, an empyreumatic black oily fluid, is obtained by the destructive distillation of the seeds, but it does not differ in any sensible degree from the empyreumatic products of the distillation of common fixed oils, containing naphtha; large quantities would doubtless yield paraffine and creasote. The seeds have a hot biting taste, and the oleum nigrum obtained from them was at one time largely employed in Beri-Beri. It is stimulant and diaphoretic. It is called in Tamil "Mālkŭngānee."' Under the heading 'Oleum

Nigrum,' Dr. Balfour says: 'It is made by putting the seeds of Celastrus paniculata, with benzoin, cloves, nutmegs and mace, into a perforated earthen pot, and then obtaining, by a kind of distillation *per descensum* into another pot below, a black empyreumatic oil.'

XXII. MINERAL WATERS.

There are two celebrated mineral baths near Peking: one at Pi-yün-sze, a famous Buddhist temple, about twelve miles west from the city; the other at T'ang-shang, twenty miles to the north and about fifteen miles south-east from the Ming tombs. The former contains sulphuretted hydrogen, and its waters are cold: the latter includes two springs; they have a temperature of 120° Fahr.; their chief ingredients alkaline chlorides, particularly chloride of sodium, carbonate and sulphate of soda, bicarbonate of lime, and a little magnesia, with sulphate of lime and silica—thus having a likeness to the spas of Baden and Bath, and proving, like them, extremely useful in gout and chronic rheumatism.—(II. 81.)

Peking.

In the neighbourhood of Chefoo there are sulphur-springs, which are found to be most useful in the treatment of cutaneous diseases and constitutional rheumatism. They are much resorted to by the Chinese; and many foreigners have also benefited greatly by them, particularly in cases of obstinate consecutive syphilis. The water bubbles out at a temperature of 112° to 120° Fahr., and in the bath preserves a uniform temperature of about 100° Fahr. An analysis of this water had not been obtained in 1872.—(III. 4.) According to the Report for the year from 1st April, 1872, to 31st March, 1873, the mineral baths already described are situated at a village called Loong-Chuen-Tang, about thirty-three miles in an eastern direction from Yentai. At the time referred to, measures were in progress to establish means of accommodating foreign visitors who might resort to these baths. In their vicinity, tradition says that 'the god of healing' resides. The heat of the sulphurous water varies, according to different authorities, from 110° to 119° Fahr.

Chefoo.

Other baths are to be found at a village called I-San-Tang, in a north-westerly direction from Chefoo, distant about fifty miles; the waters said to have even greater virtues than those of Loong-Chuen-Tang. At I-San-Tang there are four or five baths, one of which is situated in a room, and kept more or less private. The temperature of these baths ranges as high as 124 °Fahr. —(V. 20.)

At Takow and Anping, Report for October, 1881, to March, 1882, sulphur-springs exist on the shores of a lagoon at the base of hills that form the western boundary of the harbour, as well as on the hills themselves. From these springs a discharge of sulphurous acid gas takes place at all times; and to the intermixture of it with the atmosphere, Dr. Myers attributes the circumstance that tuberculous patients at Takow frequently undergo great improvement in health.—(XXIII. 19.)

Takow.

Besides those above enumerated there are many hot springs in the provinces of Shensi and Sz'chuen, and at Jeho in Chihli. From those of Sz'chuen an inflammable gas, having a bituminous odour, arises, and being conveyed in bamboos, is burnt under evaporating vessels containing salt water from other springs in the same locality. Some springs are sulphurous, others chalybeate, found in Shensi and along the Yellow River. Sulphur-springs occur in great abundance in Formosa, the sulphur from these being purified for powder manufacturers.—('Middle Kingdom,' by Williams, vol. i., p. 312.)

XXIII. THE 'NATURAL SCIENCES' IN RELATION TO MEDICINE.

(*See ante*, pp. 70, 207, 227, 232.)

Natural history, in its various branches of geology, botany, zoology, etc., is chiefly studied for the assistance these respectively give in furnishing articles for the Materia Medica of the native physician. As sciences, however, they cannot be said to exist. In all the departments of learning the Chinese are unscientific. In regard to chemistry and metallurgy the same remark applies, and yet many operations connected with both are performed with a considerable degree of success. Sir John Davis gives details of some experiments in oxidizing quicksilver, and in the preparation of mercurial medicines performed by a native at Canton, which afforded a curious proof of similar results obtained by the most different and distant nations possessing very unequal scientific attainments, and bore no unfavourable testimony to Chinese shrewdness and ingenuity in the existing state of their knowledge.—('Middle Kingdom,' by Williams, ed. of 1883, vol. ii., pp. 118 and 134.)

Chemistry.

Alchemy was pursued in China long before it was known in Europe. For two centuries prior to the Christian era, and for four or more subsequent thereto, the transmutation of metals into gold, and the composition of an elixir of immortality, were questions ardently studied by the Chinese. Intercourse between China and Persia was frequent both before and after the Mahomedan conquest of the latter country; embassies from Persia, from the Arabs, and from the Greeks in Constantinople visited the court of the Chinese Emperor in Shansi; Arab traders settled in China; and there was frequent intercourse by sea and land between China and the Persian Gulf. China had an extensive alchemical literature anterior to the period when alchemy was studied in the West, hence the facts stated go to indicate that this pseudo-science originated, not with the disciples of Mahomet, but that it was borrowed by them from the Chinese.

Alchemy.

With regard to the philosopher's stone, while the alchemists of the West have spoken with doubt as to what it was, with the Chinese its identity appears hardly to have been questioned. That wonderful body which, when used as a chemical agent, was supposed to have the power of converting other metals into gold, and when employed as a medicine, of conferring immunity from death, is, according to the writings of the Chinese alchemists, *cinnabar*. Marco Polo notices the idea that sulphur and mercury are capable of prolonging life. Of the *Cingui* (*i.e.*, *Chugi*, the Jogis in India) he says: 'These are longer-lived than other people, for they live from 150 to 200 years; for they take quicksilver and sulphur, and they mix them together and make a drink of them—and they say that it lengthens their life—and they do this twice every month. These people use this drink from their infancy, in order to live longer; and without fail, those who live so long, use this drink of quicksilver and sulphur.'—(See *Quarterly Review*, July, 1868.)

Philosopher's stone.

Ko-hung, author of the 'Pan-p'uh-tsi-p'ian,' a work of the fourth century, enumerates various mineral and vegetable productions possessing in different degrees the properties of an *elixir vitæ*. Of the first of them, cinnabar, he writes in terms thus translated by Mr. Edkins:—'When vegetable matter is burnt, it is destroyed; but when the *Tan-sha* (cinnabar) is subjected to heat, it produces mercury. After passing through other changes, it returns to its original form. It differs widely, therefore, from vegetable substances, and hence it has the power of making men live for ever, and raising them to the rank of the genii. He who knows this doctrine, is he not far above common men? In the world there are few that know it, and many that cavil at it; many do not

know even that mercury comes out of cinnabar. When told, they still refuse to believe it, saying that cinnabar is *red*, and how can it produce a *white* substance? They say also that cinnabar is a stone—that stones, when heated, turn to ashes, and how can anything else be expected of cinnabar? They cannot even reach this simple truth, much less can it be said of them that they have been instructed in the doctrine of the genii.'—(See 'Science Papers,' by D. Hanbury, of 1876, p. 622.)

There is a tradition among the Chinese that the Emperor Shên-nung, or Chen-nong, who is said to have reigned about 2700 years B.C., is the Father of Agriculture and of Medicine. He is believed to have put together the first treatise on medicinal plants, in a work known as 'Shên-nung-pên-ts'ao-king,' or Classical Herbal of Shên-nung, generally quoted by Chinese authors under the name 'Pên-king.' According to Bretschneider, that work enumerated 347 medicines, of which number 239 were plants. Mr. Hanbury observes that the drugs enumerated are divided somewhat thus: 'There are 120 of the highest class, these are of the nature of aliments; they have no venomous or malignant quality. If you would have the body active and nimble, even in old age, make use of the remedies contained in this class. There are also 120 of the second class. These drugs perform the function of servants or domestic officers; they give a man a disposition which renders him more capable of performing the functions of nature. There are some which have a malignant quality, and others which are quite innocent and harmless. There are 125 sorts of drugs of the lowest class, which perform the function of officers not belonging to the house, and are therefore particularly useful in curing distempers. They partake of the nature of the earth, and have all great malignity, or some poisonous quality.' Further details are given after this manner:

Medicinal plants.

'Among medicines there are some which are in the place *Kiun* or sovereign; other in the room *Tchin* or domestic servants; others that hold the place of *Tso-ché*, or officers from without. Some partake of the nature of *Yin*, others of *Yang*. Certain remedies have relations among themselves, like that of mother and child, and the eldest brother and younger. The physician Yuen-sou says, with respect to patients, that when the distemper lies in the upper cavity of the body, it is necessary to use the upper parts of plants; when in the inferior cavity, which is the lower belly, the inferior parts of plants. The upper half of the body partakes of the *Yang*, and is of the nature of the heaven; the lower, of the *Yin*, and is of the nature of the earth. Li ché tching divides drugs into seven classes, according to their quality, namely: 1. Simple; they are never compounded, but are always taken alone. 2. Those that must be joined together, as for example, *Gin seng*, liquorice, the *Hoang ki*, the *Tchi mou*, etc. 3. Those that lend each other mutual assistance. 4. Those that have a mutual antipathy, and which reciprocally render their virtues useless. 5. Those that fear or hurt each other. 6. Those that are contrary or incompatible. 7. Those that destroy or kill each other. Drugs are distinguished according to taste, as sharp, salt, sweet, bitter, and strong; also according to the qualities of the air—cold or hot, temperate and fresh,' etc.

The physician Ki-pe-cao says: 'There are inveterate and new distempers, likewise great receipts and small. If the disease has ten degrees of enormity, these medicines may diminish six, seven, or eight, according to their own degrees of malignity; when medicines are used that have no malignant quality, out of ten degrees of the distemper they will take away nine. If the patient suffers from a distemper of a *poisonous* or malignant quality, and has a constitution able to resist strong remedies, a stronger dose may be given; but to such as cannot bear them but with difficulty, the dose should be small. The same plants are different among themselves, on account of diversity of soil, or growing in the north or south; the different times in which they

spring up, and the parts of the plant.' According to Cong-tchi-yo: 'Those who purchase drugs and medicines ought to have two eyes; one eye is sufficient for physicians who prescribe them, and those who take them need have no eyes at all.' Cao says: 'Medicines prepared by mastication were formerly in vogue, that is, before proper instruments were invented to cut and reduce them small. Physicians then chewed the simples they designed to use, squeezed out the juice, and gave it to the patient. This sort of preparation served to facilitate the motion of the humours upwards, and to distribute them more easily throughout the *vessels*.'

Li ché tching says: 'In the First Age, the ancients prepared medicines, but seldom used them —their health was so perfect; in the Middle Age, virtue being degenerated and strength decayed, then disease arose. Of 10,000 persons who took medicine, there was not one who did not recover his former health.' He adds: 'As for the present time, medicines are used which are of a malignant and poisonous quality, for the cure of diseases when they lurk within the body; and caustics, sharp instruments, and matches (moxas) to drive away the distemper, and yet all these inventions bring no great advantage.'

Chun-yn-y says: 'There are six sorts of distempers. The first, of the presumptuous or haughty, who will not listen to reason; the second, of the covetous, who take greater care of their riches than of their own bodies; the third, of the poor, who want the necessaries of life; the fourth, of those who have the *Yin* and the *Yang* irregular; the fifth, of those who from weakness and want of flesh are not fit to take any sort of remedies; the sixth, of those who give credit to quacks and impostors, and have no faith in regular physicians.'

Tong-chë says: 'Regard must be had to the age and constitution of the patient, and to his present disposition, whether of plethora or of inanition; also whether the distemper be new or inveterate. It is necessary likewise to examine the degrees of malignity in poisonous medicines when they are made use of. In short, we must not obstinately adhere to the letter of this rule on all occasions; but it must be moderated as different circumstances require. Each medicine ought to be proportioned to the distemper for which it is made.'

Van-sou says that: 'The sages, or masters of medicine, when they make use of remedies to restore the health of the upper region, take special care not to excite any disorder in the lower region; when in the lower region, not to disturb the upper; when in the middle, not to affect the upper or lower.' Then follow various receipts, by Chinese physicians, for the cure of different diseases.'—(Du Halde, vol. iii.)

Another very ancient work which gives an account of plants known by the Chinese in ancient times is the 'Rh-ya,' a dictionary of terms used in ancient Chinese writings, which, according to tradition, has been handed down from the twelfth century B.C. The greater part of the work, however, is attributed to Tsŭ-sia, a disciple of Confucius, consequently its actual date is about the fourth century B.C. It was divided into nineteen sections; it treats chiefly of natural objects; it gives an enumeration of nearly 300 plants, and as many animals, of which also drawings are given. In the fourth century of our era this work was commented on by Ko-p'o.

The Chinese works on materia medica and plants from the sixth to the sixteenth century are very numerous. The epochs of the Tang family, 618 to 907 A.D., and the Sung, 960 to 1280 A.D., especially, were very productive in writers in this department. These works multiplied greatly; they became confused; they were full of faults, and wanting in proper arrangement. At the close of the sixteenth century, Li-shi-chên published his well-known treatise on Materia Medica, the 'Pên-ts'ao-kang-mu,' having spent thirty years on the work, and made extracts from 800 authors, retaining everything that was good in them, and adding a great deal of his own. In the work thus completed there are 1,100 woodcuts of minerals, plants, and animals, and name or synonym

attached to each. It is much to be desired that a regular list of these woodcuts should be drawn up, and scientific names attached to such as can be identified.

The whole work of Li-shi-chên embraces fifty-two chapters, and is divided into several sections. Inorganic substances are arranged under the heads Water, Fire (chapters 5, 6), Earth, Metals, Gems, and Stone (chapters 7–11). Plants are comprised in twenty-six chapters (12–37); Zoology in fourteen chapters (39–52.)—(Bretschneider.) The following is a summary view of the contents of that work, and of the arrangement of the various subjects discussed in it, namely:—

Chap.		
1. 2.	Introductory Observations on the Practice of Medecine, and Index of Receipts.	
3. 4.	Lists of Medicines for the Cure of all Diseases.	
5. 6. 7.	Earths.	
8.	Mineral.—Metals.	
,,	Gems.	
9.	1. Stones.	
10.	2. Stones.	
11.	Saline stones—as common salt, alum, borax, sulphur, etc.	
12. 13.	Vegetable.—1st Division, *Herbs.*	1. Hill plants.
14.		2. Odoriferous plants.
15. 16.		3. Plants which grow in damp places.
17.		4. Poisonous plants.
18.		5. Creeping and climbing plants.
19.		6. Aquatic plants.
20.		7. Rock plants.
21.		8. Mosses and Lichens.
		9. Miscellaneous plants, and plants having names, but not yet used in medicine.
22.	2nd Division, *Grains.*	1. Hemp, wheat, rice, etc.
23.		2. Millet, maize, etc.
24.		3. Leguminous plants.
25		4. Alimentary preparations of a vegetable nature, and used in medicine (as boiled rice, yeast, soy, vinegar, wine, etc.).
26.	3rd Division, *Culinary Herbs.*	1. Plants having a strong colour and pungent taste (as garlic, mustard, ginger, etc.).
27.		2. Soft and smooth plants, pot-herbs (as lettuce, chicory, mallow, etc.).

CHAP.		
28.		3. Plants producing fruit upon the ground (as the gourd tribe). 4. Aquatic vegetables (as edible sea-weeds). 5. Fungi.
29.	4th Division, *Fruits.*	1. Cultivated fruits.
30.		2. Hill fruits.
31.		3. Foreign fruits.
32.		4. Aromatic fruits.
33.		5. Fruits which grow in the ground, and have no kernels (as melons). 6. Aquatic fruits.
34.	5th Division, *Trees.*	1. Aromatic trees.
35.		2. Stately trees.
36.		3. Bushy trees.
37.		4. Parasitic plants. 5. Flexible plants and trees (as osier, bamboo, etc.). 6. Miscellaneous trees.
38.	On Garments and Domestic Utensils.	(Appertaining to medicine).
39.	ANIMAL.—1st Divison, *Insects.*	1. Insects born from eggs.
40.		2. Insects born from eggs.
41.		3. Insects produced by metamorphosis.
42.		4. Aquatic insects (including frogs.).
43.	2nd Division, *Scaly animals.*	1. Dragon. 2. Serpents.
44.		3. Fishes having scales. 4. „ „ no scales.
45.	3rd Division, *Shelly animals.*	1. Tortoises.
46.		2. Molluscs.
47.	4th Division, *Birds.*	1. Aquatic birds.
48.		2. Birds living upon open lands.
49.		3. „ „ in woods. 4. Mountain birds.
50.	5th Division, *Hairy animals.*	1. Domestic quadrupeds.
51.		2. Wild animals. 3. Rodent animals. 4. Monkeys.
52.	6th Division, *Man.*	(Parts of the human body, and human secretions and excretions employed in medicines).

(See 'Science Papers,' by D. Hanbury, 1876, p. 214. Also, 'The Middle Kingdom,' by Williams, 1883, vol. i., p. 370).

Botany.

The first purely botanical work which appeared in China seems to be the 'Nan-fang-ts'ao-mu-ch'uang,' by Ki-han, in the Tsin dynasty, 265-419 A.D. It consists of four divisions, namely, herbs, trees, fruits, and bamboos; and contains a description of 79 plants of Southern China. About the close of the Ming dynasty, ended A.D. 1643, there appeared another botanical work—the 'Kün-fang-p'u'—a herbarium, in 30 books, compiled by Wang-siang-tsin; a considerably enlarged edition of that work was published in 1708, with the title 'Kuang-kün-p'u,' in 100 books. A review of the cultivated plants is also to be found in the 'Shou-shi-t'ung-kao,' a book on agriculture, horticulture, and the various industrial sciences, issued by order of the Emperor Yung Ching, in 1742, in 78 books. In 1848, the last Chinese treatise on botany of any note, named 'Chi-wu-ming-shi-tu'-ka'o,' was issued by Wu-k'i-sün. It contains 60 chapters, referring chiefly to plants now known to the Chinese, and includes 1,800 carefully executed drawings.

In 1656, a pamphlet, bearing the title 'Flora Sinensis,' was published in Vienna. The author of that little work was Pater Boym, who had lived in China from 1643 to 1659. In 1682, a work on 'Chinese Materia Medica' was published at Frankfort. It was edited by Andrew Cleyer, and contained, together with some Latin treatises, translations from the Chinese by Michael Boym, the Jesuit missionary above mentioned. In 1712, the 'Amænitates,' by Kaempfer. All the accounts of Chinese natural history, furnished by the Jesuits, and given by Father Martini, are collected in the work of Du Halde, 'Description de la Chine,' 1735. In 1750, a work by Osbeck appeared. In 1790, the 'Flora Cochin Chinensis' was published by Louriero. In 1818, Grosier published his 'Description générale de Chine,' in seven volumes. Nearly three of these treat of Chinese natural science, 660 pages being devoted to botany. In 1836, a work, entitled 'An Historical and Descriptive Account of China,' was published by five authors, namely Murray, Crawford, Gordon, Wallace, and Burnet; in that work is to be found a note, entitled 'Fragments towards a Flora of China.' (See *Edinburgh Cabinet Cyclopedia.*) In 1841, Bridgman's 'Chrestomathy' contained three chapters, treating respectively of botany, zoology, and mineralogy. In 1846, the work by Williams appeared; besides several articles on this subject published in the 'Chinese Repository.' Between 1849 and 1862 the several works by R. Fortune were published. In the former year the 'Mineralogia Polyglotta,' by Keferstern. In 1850, Dr. Tatarinov, Physician to the Russian Ecclesiastical Mission in Peking, during the ten years, published a list of drugs obtained from the Chinese apothecary shops; as also a list of the plants growing around that city. In 1853, Hoffman's and Schulte's 'Noms indigènes d'un choix de plantes du Japon et de la Chine' appeared. In 1856, a work was published at St. Petersburg, entitled 'Catalogus Medicamentarum Sinensium quæ Pekini comperanda et determinanda curavit Alexander Tartarinov.' This work, an enlarged edition of that which appeared in 1850, includes the names of 500 medicinal substances. In 1861, the 'Flora Hongkongiensis' by Bentham appeared, the materials having been collected by Drs. Hinds, Hance, and Harland, Colonel Champion, and others. In 1862, D. Hanbury's 'Notes on Chinese Materia Medica' appeared, and since then they have been included among his 'Scientific Essays.' Père David has more recently gathered thousands of plants in China, which have yet to be carefully described. The Russian naturalists, Maximiwitch, Bunge, Bretschneider, Pressevalsky, besides those already named, have added to the knowledge of the plants of Mongolia, the Amoor basin, and the region about Peking. ('Science Papers,' by D. Hanbury, 1876, p. 211; 'Middle Kingdom,' by Williams, vol. i., p. 255; 'The Study of Chinese Botanical Works,' by E. Bretschneider, p. 22.)

XXIV. MATERIA MEDICA.

With a view to render the information regarding medicine generally in China as complete as possible, the following list is given of substances made use of in the treatment of disease by Chinese physicians, or popularly believed in. A careful perusal of that list can scarcely be made and the reader avoid the impression that the actual or supposed *modus operandi* of the substances enumerated had reference to particular theories of causation of disease which have come down from very ancient periods. For example, the enumeration of certain drugs as having 'alexipharmic' properties naturally leads to the conclusion that from ancient times even down to the present day the theory of 'specific poisons' in relation to particular diseases has remained in force. Among those described as such are *abrus, linum,* etc.

On the assigned property of drugs named to expel 'phlegm,' 'humours,' etc., we are thus led to the 'humoral theory' of disease. *Inula, ricinus, salisburia, sinapis,* etc., are drugs of this order.

As in the present day, among Western nations, so in China, from time immemorial, certain drugs have been administered as prophylactics against certain diseases. Of this class, in China, are *lonicera* against fever, *prunus* against hydrophobia.

So, also, the theory of 'blood-poisoning' now in favour among the physicians of Europe and America is indicated as similarly existing in China by the circumstance of particular drugs being set apart as 'blood-purifiers.' *Piper, daphnidium,* and *lophantes* belong to this class.

That the 'septic' theory has been accepted and acted upon in China is apparent from the fact of certain drugs being used as 'antiseptics;' as, for example, the pollen of *anandria*—so also with regard to *Citrus aurantia* as a deodorant. A native drug, named *k'oo-ch'ung,* the exact nature of which has not been ascertained, is used as a disinfectant.—(No. 138c. p. 67, 'Vienna Catalogue').

The theory of 'similia similibus' was evidently that in accordance with which *Scolopendra morsitans* has, from time immemorial, been prescribed in *chancre* and other forms of syphilitic disease.

The 'expectant' theory would explain the advantages of *shells, fossils, horns,* etc., as remedies in certain disorders.

With reference to the use of the amethyst, hereafter to be noticed, the natural explanation is doubtless of the nature stated by Royle in regard to an Indian sage, who, 'after giving a prescription of precious stones for curing the diseases of kings and rich men, very judiciously adds another for people in general, composed of vegetables, because these are procurable by all.' —('History of Hindoo Medicine,' p. 4.)

What may be called the 'torpedo' theory of drugs, namely, that according to which 'a molecular mechanism, like a very cunningly devised torpedo, shall find its way to some particular group of living elements and cause an explosion among them, leaving the rest untouched'—('Transactions of the International Medical Congress,' 1881, vol. i., p. 100)—is the modern counterpart of that in obedience to which the Chinese, for generations past, have prescribed *inula, clematis,* and the exuviæ of *serpents.* See under these respectively.

Dr. Hobson has given an analysis of 442 medicinal agents, enumerated in one of the popular dispensatories; of the whole number, 314 are vegetable, 50 mineral, and 78 animal. Medicines are arranged under six heads—tonics, astringents, resolvents, purgatives, alteratives of poisonous humours, and of the blood. Among the agents employed are many strange and repulsive substances. Calomel, vermilion, red precipitate, minium, red oxide of lead, arsenic, plumbago, and sulphate of copper are among the metallic medicines used by Chinese physicians; and Dr. Henderson enumerates thirty-three distinct drugs of this class.—('The Middle Kingdom,' vol. ii., p. 127.)

The following particulars have been taken from the 'Catalogue of the Vienna Exhibition, 1873, and the 'Catalogue spécial de la Collection exposée au Palais du Champs de Mars, Exposition Universelle,' 1878, pp. 57-98; 'The Middle Kingdom,' by Williams. Sir Joseph D. Hooker, K.C.S.I., and Professor Oliver, of Kew, have kindly verified the nomenclature of the plants as under.

a. From the Vegetable Kingdom.

Abrus precatorius.—The seed: emetic, 'alexipharmic;' also as food for horses.

Acacia catechu.—Cutch, or Catechu: applied to feet, renders the skin hard.

Acanthopanax spinosa.—See Aralia palmata.

Acer trifidum.—Leaves: the silk weavers of Wuhu drink in summer an infusion of the leaves, believing that this prevents their perspiration from soiling the silk.

Achillæa.—See Ptarmica.

conitum Anthora et A. barbatum.—Root: stimulant, diuretic, alterative. As an antidote; also against fever and hæmorrhoids.

Fischeri (?) or A. barbatum.—Root: stimulant, diuretic, alterative.

Sinense et A. japonicum.—The root: the powder is applied to ulcers and wounds; also to poison arrows in killing game. Powder of that from Szechwan is used to produce local anæsthesia.

Sp.—Root: used in certain renal diseases; also considered tonic, astringent, styptic and anti-syphilitic.

variegatum.—Root: much employed in Chinese medicine, to which it furnishes various drugs. Various species, used in fevers, leprosy, etc., after the poisonous properties have been diminished.

Acorus calamus.—Root: powdered and in tincture; as a restorative; also in chancres. In hæmoptysis, colic, and fluxes. Applied to carbuncles, buboes, deaf ears, and sore eyes.

terrestris.—Root: tonic, stimulant. In powder, used for tincture, in hæmoptysis, colic, etc. Also anti-spasmodic, sedative, stomachic, etc.

Adenophora trachelioïdes et A. verticillata.—The roots: expectorant, pectoral and emollient.

Agaricus campestris, vel sp. (?).—Mushrooms: as delicacies, and also medicinally.

Ailanthus glandulosa.—Bark of the root: in chronic dysentery very powerful as an astringent.

Ajuga procumbens.—See Brunella.

Algæ.—A plant of this order, name not stated, is used in cases of dropsy. Another, taken in decoction in skin diseases, and to purify the blood; also in cases of goitre.

Alisma plantago.—Rhizomes: said to be tonic, refreshing, diuretic, galactogogue, etc.

Allium uliginosum.—Seeds: used to purify the blood; in urinary diseases; against spermatorrhœa and hæmorrhages. Fried in sesamum oil and applied hot, supposed to cure toothache.

Aloe sinensis.—Aloes: anthelmintic, stomachic, purgative.

Anchusa tinctoria.—Bark: used in dyeing. Medicinally, to bring out the eruption of small-pox.

Alpinia officinalis.—Galangal: used as a tonic.

sinensis.—Root: stomachic, cordial, sialogogue, anti-periodic.

Amomum sp.—Seeds: tonic, stomachic, cordial, astringent; against incontinence of urine. Used also as condiments.

(Cardamomum) A. xanthioïdes.—Seeds: in decoction as stomachic, tonic, carminative. Used in pyrosis, dyspepsia and pulmonary diseases; said to drive away hypochondria.

globosum.—Seeds: considered to have a useful action in tertian fevers; also as condiments.

Amaryllis sp. (?).—Bulbs: alterative, given in scrofula, certain specific affections, anthrax, hydrophobia, etc.

Ampelopsis serianæfolia.—Roots: used as an astringent.

Amygdalus Armeniaca.—Almonds: as confection in quinsy, pains in the teeth, hydrophobia and worms. Sedative, antispasmodic, and conducive to longevity; used also for preparation of almond oil.

Persica.—Almonds; vermifuge, emmenagogue; in coughs; 'resolving;' given in rheumatism. Given also in blood diseases.

Anandria bellidiastrum.—Pollen: as antiseptic in cases of wounds.

Andropogon schœnanthus.—Root: used against eruptions of the hairy scalp.

Anemone japonica.—Root: used to arrest vomiting.

Anemarrhena asphodeloides.—Root: used much the same as squills; in abdominal inflammations, and in puerperal fever. Cooling, lenitive, and diuretic.

Angelica decursiva.—Root: sialagogue, carminative and stomachic.

officinalis.—Root: as above.

(Sp. ?)—As above; purgative and diaphoretic.

Anthemis (sp. ?).—Flowers: stomachic.

Apocynum juventus.—Root: used to dye black the beard. The Chinese attribute marvellous properties to it, as preserving a prolonged youth. Used in some diseases of the kidneys; as a tonic, astringent, styptic, and antisyphilitic.

Aquilaria chinensis.—The wood: burnt as a perfume by the Chinese.

Arachis hypogea.—Seeds: cakes to fatten cattle. Yield the oil chiefly used for cooking purposes, and for lighting. Supposed to relieve chest affections.

Aralia palmata or Acanthopanax spinosum.—The bark of the root: for the preparation of a tincture used in rheumatism and syphilis. A. edulis, prescribed in menstrual, chloretic, and puerperal diseases of women.

papyrifera.—Pith: indicated as counter-irritant.

Areca catechu.—Nuts: used medicinally as a purgative; given in dropsical affections; also as tonic, astringent, antiperiodic, anthelmintic. The husk is used in inflammations, with *Chavica betel* leaves, as a masticatory.

Arisæma triphyllum, or Pinellia tuberifera.—Root: in the fresh state emetic and diaphoretic; dried, is used in fevers, rheumatism, and diseases of the kidneys.

Aristolochia contorta.—Roots: purgative, hematic, anthelmintic; also given in rabies.

Kæmpferi et A. contorta.—Fruit: used in pulmonary affections.

Artemisia abrotanum.—Twigs: young shoots used in alimentation; the juice is used in catarrh, jaundice, fever, and dysuria.

dracunculus, or A. desertorum.—Whole plant and roots: used as anthelmintic, arthritic, and in skin diseases.

eriopoda.—The plant: yields a kind of solid essential oil, like camphor.

Indica.—Leaves: stomachic.

Moxa et A. indica. Seeds: considered a sovereign remedy in hæmoptysis; the leaf ignited upon the skin to cauterize the part.

Arum macrourum vel Pinella tuberifera.—Bulbs: used in decoction in inflammation of the throat.

pentaphyllum.—Root: alterative, deobstruent, diuretic, aperient, 'vulnerary,' against apoplexy and hemiplegia. Also in the preparation of various drugs producing local anæsthesia. A species known as 'Midsummer root,' in its fresh state, acts as an emetic; the prepared root is given in fevers, rheumatism, etc.

Asparagus falcatus.—Root: anodyne.

Atroctylodes alba.—Root: as stomachic and tonic. Is prepared as a kind of tea; is warm stomachic, and tonic.

alba et A. chinensis.—Root: stomachic, tonic, stimulant, diuretic. At Wuhu, a decoction is used when an eruption of dark spots (purpura ?) appears on the skin.

ovata, var. f. pinnata.—Root: tonic, digestive, strengthening in cases of debility.

rubra et A. sinensis.—Roots: stomachic, tonic, stimulant, diuretic, against chronic dysentery; said to be conducive to longevity.

Auklandia costus.—Herb: used in making incense; also as an astringent, sedative, and antiseptic.

Balsamodendron myrrha.—The gum: applied as a powder to wounds as a purifier and healer. Also used in the form of plaster, and of decoction; vulnerary, astringent.

Bambusa arundo.—Rhizome: astringent, styptic, antifebrile, also demulcent, sedative, tonic. The leaves are reputed tonic, anthelmintic, stomachic, and carminative. The scraped bark of various species used as an astringent.

Benincasa cerifera.—Rind of the fruit: used in consumption, chills, and asthma. Seeds: used to give ease in colic, spasms, etc.

Berberis chinensis et B. aquifolia.—Fruit: with that of B. lycium, for preparing a cooling summer drink, tincture, tonic, and febrifuge. Infusion of leaves given for nervous headaches, fatigue, lassitude, and in feverish excitement. The juice of the fresh fruit is applied to weak eyes. The young shoots and leaves are used as a vegetable.

Lycium et B. chinensis.—Root bark: made into a tincture, febrifuge, and tonic. Given in cases of measles in children; also in rheumatism, remittent fever, and debility; to it are attributed many of the properties of quinine.

Betonica officinalis.—The stems: for headache, and colic.

Biota (Thuja) orientalis.—Seeds: deprived of their envelopes, as stimulant and tonic; also purgative.

Blumea balsamifera.—A kind of camphor obtained by distilling the leaves of Blumea, and also of several other plants of the N. O. Labiatæ.

Boswellia serrata et B. glabra.—Gum olibanum: used in plasters and decoctions; as a stimulant and tonic. Also burnt as incense in temples.

Boymia rutæcarpa.—Seed: alterative.

Brassica napa.—Turnip-seed: laxative.

Broussonetia papyrifera.—Seeds: tonic, refreshing, restorative, cooling. In menstrual disorders.

Brunella vulgaris.—Leaves and stems used for diseases of the eyes. See LOPHANTHUS RUGOSUS.

Bryonia cordifolia.—Root: in powder, purgative; used for ulcers, pectoral and stomachic disorders, and for cooling the blood.

Bryophyllum calycinum.—The leaves: cut and dried, are used in the falsification of tea.

Bupleurum octoradiatum.—Root: antiarthritic and derivative. Also sudorific; in abdominal inflammations and puerperal fevers. Makes a refreshing tisane in cases of fever. Against swelling of the veins.

Cæsalpinea sappan.—The wood: astringent, sedative and vulnerary. An excellent substitute for logwood.

Calamus aromaticus.—Root: carminative.

Calamus draco.—A dry resinous substance which covers the fruit: used as a tonic and astringent.

Calophyllum.—Fruit: yields oil, and afterwards is used in the manufacture of soap.

Cambogia gutta.—Gamboge: only for painting purposes.

Camellia japonica, C. oleifera, C. sasanqua.—Flowers: those of the last-named species are odorant, and used to perfume tea. After the oil has been pressed from the seeds of C. oleifera, the latter are made into cakes for feeding cattle.

Campanula glauca vel Platycodon grandiflorum.—Root: as a substitute for ginseng, used as tisane in colds and chills.

Camphora officinalis vel Laurus camphora.—Camphor: warm, diaphoretic, carminative, sedative, and as a stimulant; deodorant, and in neuralgia. That from Borneo is from *Dryobalanops camphora*. Also an essential oil of camphor.

Capsicum (sp. ?).—Chillies: for seasoning purposes, and as a stimulant.

Caragana flava et C. microphylla.—Roots: tonic, emollient, arthritic and prophylactic; said to prolong existence.

Carthamus tinctorius.—Flowers: stimulant, sedative, alterative, emmenagogue and abortifacient. In menstrual disorders. Used in fevers; also as a dye with vinegar prepared from prunes, and as a component in the manufacture of rouge.

Carum sp.—Seeds: used as an aromatic in abdominal disorders; also in confectionery.

Caryophyllus, two species.—Cloves: as a tincture in medicine, and as a hair-wash.

Cassia.—Used for coughs and colds.

Tora or Celosia argentea, or Thermopsis fabacea.—Seeds: all these, confounded under the same name, are said to clear the eyesight, and 'clean' the eyes diseased. Cassia oil is used as a condiment.

Celosia argentea.—Seeds: 'penetrate the heart and liver,' and make heat of skin and pruritus to disappear. As an ingredient in emollient lotions, and as anti-ophthalmic. As an anthelmintic and tonic. The bruised seeds are stuffed into the nostrils in epistaxis.

Cerasus communis.—Almonds: in rheumatism, dropsy, cardialgia, as anodyne and diuretic.

Chavica Roxburghi.—Fruit: stimulant, stomachic, astringent; in coryza, pyrosis, dysentery, hypertrophy of the spleen, and menstrual irregularities. C. betel: leaves as a masticatory.

Chloranthus inconspicuus—The flowers are much used for giving to tea a cowslip scent; the tea thus scented is used in cases of fever.

Chrysanthemum, or Pyrethrum sinense.—Flowers: used as tonic or sedative, antivinous. The small yellow flowers of a species mixed with tea are believed to possess 'cooling' properties; all tea-shops are accordingly supplied with them in the summer months.

Indicum, also C. alba.—The flowers: in decoction, infusion and tincture; in affections of the head, as a collyrium, and in affections following fever and chills; calming, and as a cooling draught. Burnt, is used as an insecticide; in powder, against intoxication.

Cichorium (sp. ?).—Leaf-stalks: tonic, antiscorbutic, as a remedy in hæmorrhoids. The root in dysentery, dysuria, etc.

Cicuta, (sp. ?).—Root: stimulant, antispasmodic, arthritic.

Cinnamomum Cassia.—Bark: stomachic, and as a condiment.

Cirsium segetum et C. sinense.—Roots: nourishing, antiscorbutic, astringent; used also as cataplasms in boils and engorgements.

Sp. or Cnicus spicatus.—Root: antiscorbutic and astringent; used as poultices in boils and engorgements.

Cirsium, Cnicus, Centaurea and Carduus.—Alterative, astringent, and antiscorbutic.

Cissus dissecta et C. davidiana.—Stems: medicinal use undetermined. Believed to be used in dropsy.

Citrus Aurantium.—Rind of the fruit: tonic and stomachic. The seeds are used as stimulant, carminative, antiphlogistic and deodorant.

From Szechwan.—The peel: bitter, stomachic. The pips of all kinds of oranges, dried, are used as tonics and as condiments.

Aurantia, var. scabra.—The rind: serves for a tincture, highly esteemed as sedative, carminative, and stomachic.

Decumana.—Rind of the fruit: used as a cordial in dyspepsia, and for cough. Stomachic and tonic.

fusca.—Fruit: enters into a great many preparations. Refreshing and stomachic.

medica (vel Sarcodactylus odoratus).—The rind: stomachic, tonic and stimulant.

Citrus microcarpa.—Orange peel: stomachic, stimulant, tonic, and as a condiment. The unripe fruit is also used for these purposes.

nobilis.—Rind of the fruit: stomachic, stimulant.

Clematis angustifolia.—Twigs: in decoction for ulcers.

tubulosa.—Stems: 'penetrates the heart and small intestines, opens the bile, kills the nerves, excites all the senses and faculties.'

Cnidium monnieri, or Selinum japonicum.—Seeds: anti-rheumatismal, aphrodisiac, and 'vulnerary.

Cocculus thunbergii.—As carminative. From Szechwan.

Coix lachryma.—Job's tears: as gruel, in rheumatism, night-sweats, lung and urinary affections.

Colchicum variegatum.—See UVULARIA.

Convolvulus sp.—Root: against rheumatism, and grave affections of the bronchiæ and urinary passages. Three species or varieties are used, in spermatorrhœa, debility, and dyspepsia. They are often substituted for ginseng.

Convolvulus (sp. ?) or Phyteuma (sp. ?).—Root: much employed against hæmoptysis, hæmaturia, hæmorrhages after parturition, and in dysuria. Often used as a substitute for ginseng. Used as a tonic by the poor; also in spermatorrhœa, as debility, and dyspepsia.

Vel Phyteuma, vel Campanula (sp. ?).—Root: tonic. From Shansi.

Cornus officinalis.—Fruit: astringent, febrifuge, vermifuge.

Corydalis racemosa, vel FUMARIA officinalis.—The leaves and stems: used as a prophylactic against poisons.

Corylus heterophylla.—Bark: emollient.

Cratægus pinnatifida et cuneata.—Fruit, fresh and dry: as a peptic; in jelly as a stomachic and refreshing drink. Used against indigestion.

Croton tiglium.—Seeds and fruit: powerfully purgative and emmenagogue. Chiefly from Szechwan.

Cucumis et Citrullus.—The seeds: eaten as soothing, pectoral and pectic.

Cucurbita melopepo et C. citrullus.—Seeds: are mixed with pectoral and peptic medicaments. They are also eaten *pour passer le temps*. The rind, demulcent, in flatulency.

Cupressus thyoides.—Kernels: stimulant and tonic; also as stomachic and antispasmodic. Cypress, or Juniper leaves, decocted, are considered soothing; taken in cases of diarrhœa, dysentery, etc.

Curcuma longa.—The seeds: used against colic. Root: in decoction, for ophthalmia; in tincture, and as a condiment.

(Sp. ?)—Root. The precise plant is not yet determined. It is used as a perfume and in tincture.

Cuscuta monogyna et C. europea.—Seeds: diuretic, tonic and diaphoretic.

(Sp. ?)—The plant: as an antiperiodic in fevers; also as a febrifuge.

Cydonia chinensis.—Fruit: sedative, stomachic, and astringent.

Cymbidium sp.—Mucilaginous root: against rheumatism and neuralgia. Also in colouring.

Cyperus esculentus et C. rotundus.—The tubercles: tonic, stimulant, stomachic and astringent.

Daphne Genkwa.—Flowers: dried, infused in alcohol, used in Central China as a cordial, tonic and febrifuge.

Daphnidium cubebæ vel Laurus cubeba.—The fruits: imported from Cochin-China; strengthening, stomachic, carminative; in decoction against hysteria, paralysis, loss of memory.

strychnifolium vel Cocculus laurifolia.—Root: used as a remedy in 'diseases of the blood.'

Dendrobium Ceraia (?).—Stems: pass for stomachic, tonic, and antiphlogistic.

Dianthus chinensis or D. fischeri.—Stems: diuretic, anthelmintic; in collyria and as abortifacient.

Dictamnus fraxinella.—Bark: aromatic, tonic.

Dimorphanthus edulis and Levisticum sinense.—Root: given in decoction some days before accouchement, and to prevent accidents during that condition.

Dioscorea sativa.—Root: pressed and dried; in powder, with finely ground flints and sesamum oil, applied to swellings. It is given internally in dyspepsia and emaciation. Said to increase the appetite, and to be conducive to corpulence. A preparation is used in diarrhœa.

Diospyros kaki.—Calyx: used in medicine. A conserve of the pulp in coughs, colds, etc. The dried fruit is given in disorders of the stomach, and in diseases of the kidneys. As a preserve it is given to children affected with worms.

Schitze.—Natural sugar exuded by the fruit: used in affections of the urinary passages; also a cooling drink is prepared from the fruit.

Dolichos lablab.—Seeds: taken in great quantity, being considered protective against fever.

(Sp. ?)—The beans fermented and salted, from Hupeh, are used as a sudorific. The small black kind are purgative. Soy is prepared from beans of Dolichos or Soya.

trilobus.—Roots: emetic, antiphlogistic; given in exanthemata, and all kinds of eruptions.

Draba nemorosa. Seeds: stimulate the stomach; used in epileptic and bronchial affections; in asthma and in urinary diseases.

Ephedra vulgaris, E. flava.—Roots and stems: derivative and sudorific.

Equisetum arvense, hyemale, et racemosum.—The stem: as an astringent in diseases of the eyes.

Eriobotrya japonica.—Leaves: bitter; they 'dissolve' inflammations, arrest cough and thirst, appease melancholy, and strengthen the stomach; used only in the fifth and sixth months. The 'guitar dew' is extracted from the leaves.

Eriocaulon cantonense et E. setaceum.—Stems: as cephalic and styptic against epistaxis; also vaunted in ophthalmia following small-pox in children.

Erioglossum (?) or Nephelium (?).—*Bungtalar* of the Siamese. In China furnishes a jelly that is refreshing and laxative. Medicinal use undetermined.

Erythræa (sp. ?).—As a cooling and arthritic remedy, and in affections of the eyes.

Euonymus japonica.—Bark and root: against spermatorrhœa, excessive perspirations, and puerperal affections. Said to be tonic and invigorating.

Euphorbia chamæsyce.—The juice of the plant from Szechwan is used as a laxative.

lasiocaula.—Stems: from Honan, purgative.

Euryale ferox.—Fruit: with flour made into hard biscuits and thus used in medicine. In decoction, it is used in diseases of the skin. Also as a tonic.

Fœniculum dulce.—Seeds: as medicine, and as seasoning.

officinale.—Seeds: the entire plant is diuretic, tonic, 'anticephalic;' also stimulant, and as a condiment.

Ficus stipulata et Japonica (?).—Fruit: figs, boiled, are used as applications to hæmorrhoids.

Filices.—An unnamed fern ('Nine-headed lion herb'): is considered soothing and soporific. Given in cases of diarrhœa, etc.

Forsythia suspensa.—Capsules: diuretic, antiphlogistic, relaxant and emmenagogue; also antidotal and antiscrophulous.

Fumaria officinalis. See Corydalis—Leaves: applied to swellings, abscesses, etc.

Fungus (?).—Named *Fuh-ling*: found growing from the roots of fir-trees. Used in syphilitic diseases. It is considered to be tonic, cooling, stomachic, sedative and diuretic.

Gallæ.—Galls: differ in no way from those of Quercus infectoria. In powder, given in dysentery, chronic diarrhœa, nocturnal perspiration, etc. Several kinds of galls are distinguished according to the tree on which they are produced. Those of *Quercus castaneæfolia* are called 'lo lo tong;' those of *Quercus robur*, 'tchuen lo.' The 'mu-shi-tze' differ in no way from the galls of *Quercus infectoria*. Those called 'wu-pei-tze' are produced on the *Rhus semi-alata* by the *Aphis chinensis*.

Gardenia florida, G. radicans, G. grandiflora.—Fruits: used to dye yellow.

Gelidium (sp. ?).—The sea-weed from which Collocaria brevirostris elaborates the jelly of 'Birds' nest soup.'

Gendarussa sp.—Root: counter-irritant. Boiled in milk, it is given in rheumatism, fever, etc.

Gentiana asclepiadea or G. squarrosa.—Root: in ophthalmia, liver complaints; against snake-bite, and in hæmaturia; antiphlogistic and anti-rheumatismal. Boiled, and thus used as lotion in skin diseases.

Gleditschia chinensis et G. heterophylla.—Fruits: pass for being emetic and purgative; and for being useful in a variety of diseases; also anthelmintic, and used for dispelling swellings and tumours. The spines are used as an anthelmintic. The seeds and pods, in the shape of a bolus, are given as an antidote in cases of metallic poisoning.

Glycirrhiza glabra et G. echinata.—Root: used to allay thirst, feverishness, etc. It is said to 'rejuvenate' those who use it. The importance of liquorice is considered to be only next to that of ginseng. It is said to be highly nutritious. It is also tonic, alterative, and expectorant.

Gynura pinnatifida.—Root: has a high reputation among soldiers, who attribute to it extraordinary medicinal properties.

Hedysarum brachypterum.—Roots: astringent, styptic and vulnerary.

Helminthochordon, Algæ, Ulva, Conferva, Desmarestia, Chondrus, etc., are used as vermifuges.

Hemerocallis (sp. ?).—Stems: medicinal use undetermined. See Lilium.

Heterotropa asaroides.—Root: emetic, diaphoretic, diuretic, purgative, against rheumatism, and in apoplexy.

Hibiscus abelmoschus.—Seeds: as emollient, demulcent, diuretic, laxative.

mutabilis.—Flowers: given in infusion, as a pectoral in pulmonary affections. The leaves are used as applications to tumours.

Syriacus.—Flowers: applied as emollients to boils. Leaves, as a poultice to swellings.

Holcus sorghum.—The grains: as food; also as food for cattle, and in the manufacture of spirits.

Hordeum distichum et H. hexastichum.—Barley: used principally in the manufacture of spirits. The sprouts are given as a stomachic. Much used in diseases of children generally.

Hovenia dulcis.—Fruit: used to combat the odour of drunkenness, which it dissipates with remarkable rapidity. Used in indigestion.

Hydrocharis morsus-ranæ vel Isolobus radicans.—The flowers: from its habit it is reputed refrigerant.

Hypericum (sp. ?).—Leaves: used as an antidote.

Illicium anisatum.—Chinese aniseeds: warm and fragrant; infusion given in cases of fever.

Impatiens Balsamina.—Roots and stems: a decoction is given to diminish the pain in surgical operations, and to facilitate delivery.

Indigofera (sp. ?).—Root: this is not the indigo-yielding plant of commerce, although it bears that name. The present one is used in decoction for menstrual irregularities. Pure indigo is used for swellings, bruises, stings, and is also applied to strumous swellings.

Ink (Chinese) is used as medicine in certain internal diseases. At Wuhu it is prepared by mixing ordinary soot with that obtained by burning oil of SESAMUM, which *see*.

Inula chinensis.—Flowers: they are believed to 'penetrate' the lungs, liver, the great intestine and ureters; to expel the humours and phlegms. Given in small doses to persons suffering from debility. Also given as stomachic.

Iris Florentina (?).—Rhizomes: tonic, emmenagogue, diaphoretic; in rheumatism, neuralgia, etc.; also used in the toilette.

Ruthenica et I. Chinensis.—Leaves: extolled in puerperal affections.

Jasminum nudiflorum.—Flowers: in decoction in 'cold in the head.'

Sambac vel J. indica.—Flowers: used to perfume tea.

Juglans (sp. ?).—Walnuts: supposed to have a beneficial effect upon the blood and kidneys.

Juncus.—Rush ginger: the roots of a kind of rush; applied internally in cases of 'scurvy or scabby heads;' given in decoction internally in cases of rupture, etc.

Juniperus excelsa et J. sinensis.—Leaves and branches: medicinal use undetermined.

Justicia gendarussa (?).—Root: boiled with milk, against rheumatism, dysuria, and boils; also in cases of jaundice.

(Sp. ?)—Stems: medicinal use undetermined.

Kadsura sinensis.—Dried fruit: tonic and aphrodisiac.

Kochia scoparia.—Seeds: antiscorbutic. The entire plant is used for diarrhœa, dysentery, and disorders of the urinary organs.

Lablab vulgaris.—The white seeds: eaten as preservative against fever. See DOLICHOS.

Laminaria saccharina.—This alga, and several others, as Iridæa, Rhodomaria, etc., are used against goitre; also as strengthening.

Scissa: against goitre, and in dropsy.

Lamium petiolatum.—Medical use undetermined.

Lappa major.—Seeds: medical use undetermined.

Lemna gibba vel L. minor.—The 'water lentiles' make a refreshing potion, used in boils, syphilitic eruptions, and various affections of the skin; burnt after being dried, they drive away mosquitoes.

Leonurus sibericus et L. sinensis.—Stems: as tonic, by the poor; to re-establish menstruation; also in affections of the skin; and during confinements. Popularly it is said, 'Give me ten mace of "yi mu," and I guarantee that mother and infant do well.'

Leontice (sp. ?) or Justicia paniculata, or Coptis trifolia.—The root: as a febrifuge.

Levisticum chinense or Dimorphanthus edulis.—Root: in diseases of women; against hæmorrhages, diseases of the heart, etc.

Libanotis siberica (Siler divaricatum, Benth. et Hook.)—Root: against catarrh and rheumatism Also in leprosy.

Lichen (sp. ?).—Collected from rocks: medicinal use undetermined.

Ligustrum glabrum et L. lucidum.—Seeds, in tincture: against rheumatism. A kind of vegetable wax is obtained by boiling the fruit.

Lilium candidum vel Polyanthes tuberosa.—The bulbs: are boiled and eaten as a tonic with meat or rice; are considered to have cooling and 'refreshing' properties. Also given with chicken-broth. Used for coughs and other pulmonary affections. Much used in the sacrifices offered to ancestors.

Linum usitatissimum.—Flax-seed: as emollient, arthritic, anthelmintic, and alexipharmic.

Lithospermum erythrorhizon.—The root: used against small-pox, to facilitate eruption of that disease, and to 'neutralize its poison.' Also given in cases of anæmia.

Lonicera chinensis, L. chrysantha, L. xylosteum, or L. flexuosa.—Flowers: applied to ulcers, against suppuration, in blenorrhagia, dropsy, syphilis; as infusion and tincture. Persons subject to fever drink an infusion of the flowers of L. sinensis during the hot season. Flowers of L. xylosteum refrigerant; used in cases of rheumatism, syphilis, and dropsy.

Lophanthus rugosus.—Seeds: 'Penetrate the lung, dispel the sad spirits, dissolve the phlegm, and dissipate cough.' Stomachic. Also the leaves, in affections of the blood, diseases of the eyes, and in scrofula. Used, in infusion, in fevers; especially when the tongue is dry.

Luffa Petola vel Cucumis longa.—Fruit: passes as galactagogue, anthelmintic, and is recommended in small-pox.

Lycoperdon giganteum, or L. bovista, or Polysaccum sp.—Fungus: furnishes to medicine the reddish-brown dust used in affections of the œsophagus, lungs, and throat, aphonia, to dry up ulcers, and in hæmorrhages. A species of fungus known as 'pigs' tubers,' found on the trunks of the liquidamber tree, are used in urinary diseases, and in fluxes.

Lysimachia (sp. ?) japonica (?).—Roots: emetic, alterative, and much used against fever.

Magnolia hypoleuca, or M. champaca, and M. pumila.—Bark: tonic and stomachic in certain fevers; used also for anal fissures, indigestion, and dysentery.

purpurea.—Medicinal use undetermined. The flowers, dried in the sun, are used to perfume chambers.

Yulan vel M. stellata.—Flowers and seeds: carminative, 'cephalic,' stimulant, febrifuge, diaphoretic.

Malva or Tilia.—Shavings of the wood used in the preparation of a kind of bandoline.

Maranta arundinacea.—Arrowroot; used medicinally.—See NELUMBIUM.

Matricaria (sp. ?).—Flowers: tonic and sedative.

Medicamentum compositum.—Sold in the form of bricks; is said to be composed of 120 different kinds of plants. Used in affections of the chest.

Melanthium cochinchinense.—Root: used in affections of the chest; stimulant.

(Sp. ?)—Tubercles: pass for pectoral, antiphlogistic, anthelmintic, and vulnerary.

Melia azadirachta.—Seeds: bitter, vermifuge; used also in affections of the urinary passages.

Mentha arvensis.—Stems and leaves: carminative, antispasmodic, stomachic, 'alexipharmic.' Infusion, as a cooling drink; also as an eye lotion.

hirsuta, M. crispa, M. canadense.—The leaves are used for the extraction of peppermint *oil*. The *oil* is used as application to the head for 'megrims' and in the manufacture of peppermint 'pastiles.' A kind of *camphor*, prepared from the oil, at very low temperature, strongly polarizes light. It takes the form of transparent and colourless crystals.

Mentha piperita.—Leaves: used as infusion, in the form of tea, carminative, antispasmodic, stomachic, and 'alexipharmic.' N. Pulegium.—The herb decocted. As a cure for opium-smoking; also stimulant.

Mercurialis leiocarpa.—Stems: in diseases of the bones, fractures, etc.

Momordica charantia, M. balsamina.—Fruit: a powerful drastic.

Morella (sp. ?).—Mushroom: as a condiment.

(?)—From Szechwan: supposed to have qualities of ginseng; strengthening, used in hæmorrhages.

Morus alba.—From the branches a tisane is prepared, and taken with other medicines after great fatigue; also in strains, and cases of inward hurt. Fruit, highly praised against coughs, strumous diseases, and in dropsy. Also tonic and carminative; the liber used in pulmonary diseases; it is given to children suffering from convulsions. Bark, used as a styptic. An epiphyte upon the mulberry, its name not indicated, is used in disorders of the pregnant and puerperal states.

et Broussonetia papyrifera.—Seeds: tonic and restorative. Bark of the root styptic; used in uterine hæmorrhage, hæmoptysis, and infantile convulsions, etc. Dried leaves are also used, but purpose undetermined.

Muricia Cochinchinensis.—Seed: in bruises, swellings, and ulcers.

Musci.—Unnamed species of mosses. Used for the purpose of heating the acupuncture needle. Decoction also given at child-birth 'to purify the blood.'

Mylitta lapidescens.—Fungus, from Szechwan: reputed anthelmintic; also used in diseases of the hair of the head.

Nandina domestica.—Seeds: medicinal use undetermined.

Nelumbium nucifera.—Seeds: as condiments.

speciosum.—Seeds: eaten in soup; as medicine for indigestion, and to strengthen convalescents. Root taken in decoction for inflammation of the intestines. The enlarged carpophorus is a popular remedy in hæmoptysis. Poultices, applied to sores, ulcers, etc. A flour is prepared from the roots. The seed-vessels are also used as astringent, and for the toilette. The roots are 'refreshant.' Those of one species are used against weakness of vision. The Chinese extol its virtues, and rank it among the plants which are employed in the composition of the 'Liquor of Immortality.' The root yields 'Chinese arrowroot.' The essence from the blossoms, cooling; to be used in the fifth and sixth months.

Nephelium litchi.—Young branches: sudorific. Said to be a violent poison. From Shensi.

Nicotiana Chinensis, fruticosa and rustica.—Leaves: less commonly used for smoking than in Europe; no tobacco is chewed, and little taken as snuff. In the latter form it is used medicinally rather than as a luxury.

Niphobolus (Polypodium) lingua.—The fronds: as pectoral, diuretic, astringent, and used in bronchitis.

Nymphæa lotus (?).—Stamens, as an astringent, and cosmetic.

Olea fragrans.—The buds: used for scenting tea.

Ophioglossum vulgare vel Pteris serrulata.—Roots and rhizomes: pass for diuretic, corrective and vulnerary.

Ophiopogon japonica, or Commelina medica, or Convallaria japonica.—Rhizomes: tonic and restorative; also pectoral and 'refreshant.'

Oryza sativa.—Rice: boiled with sappan wood (Cæsalpinia sapan) till coloured thereby, is used as an ornamental dish.

Orobanche (sp. ?).—Medicinal use undetermined.

Pachyma cocos vel Lycoperdon solidum.—Fungus growing on the roots of Pinus sinensis and of Cunninghamia sinensis. Pass for restorative; and are much used in febrile affections and dyspepsia.

Pachyma hœlen, a still unknown kind of fungus, resembles P. cocos; used in fevers, and in some diseases of the urinary organs. It is apparently produced in the roots of fir trees, and, like *Smilax*, is sold under the name of 'China root.'

Pachyrhizus trilobus (Dolichos).—The root: emetic, antiphlogistic, febrifuge; is given in exanthemata and in eruptions of all kinds. Reduced to fine powder it is used as aliment.

Pæonia albiflora (coloribus variis).—Root: important in blennorrhagia and in diseases of women; also as 'fortifying the stomach.' Used in affections of the liver. As a pain-killer, tonic, and sedative. Infusion as tisane in fever.

Moutan.—Bark of the root: much used in affections of the blood, hæmorrhages and menstrual disorders; also anthelmintic; against small-pox and ague.

rubra.—Bark: alterative and carminative; used as an astringent. Strengthening. Given in midwifery cases; and considered an important medicine.

Panax ginseng.—Ginseng: the 'panacea par excellence;' strengthening in cases of debility; also emetic. P. quinquefolia.—The roots are rendered transparent by steaming, skinning, and drying, while fresh.

Papaver somniferum.—Capsules: anodyne and calming; in inflammations, internal and external. Sedative, astringent.

Pardanthus chinensis.—Rhizomes: much reputed popularly against diseases of the throat; given cooked with ginger. Diuretic.

Passerina (sp. ?).—Root: plant not yet determined; used in anasarca, ascites, tympanitis, hydrocele, dysuria. Applied to the ears for deafness.

Pharbitis (Ipomea) nil.—Varieties white and dark; purgative, diuretic, anthelmintic.

Phaseolus (sp. ?).—See Dolichos (sp. ?).

Phragmites Roxburghii.—Roots: refreshing, stomachic and astringent.

Phyllanthus urinaria.—Leaves and fruit: diuretic, sudorific, antisyphilitic.

Phytolacca octandra. As an emetic and hydragogue.

Pimpinella anisum.—See Illicium.

Pinellia tuberifera.—Bulbs: violent poison, used as emetic and diaphoretic. Also in fevers and affections of the kidneys.

Pinus sinensis et sp. varia.—Resin, leaves, pollen, bark, etc.: are used as stimulant, sedative, antiphlogistic, and anthelmintic. Also as plasters, and as glue.

Piper futokadsura. — Stems: against rheumatism; tonic; as 'purifying the blood;' against leprosy. P. nigrum: stimulant and diaphoretic. P. nigrum is imported, chiefly to be given as an infusion in the treatment of fevers.

Pittosporum tobira.—Bark: as an anodyne.

Plantago major et P. asiatica.—Seeds: diuretic, tonic, pectoral, demulcent, and anti-rheumatismal.

Platycodon grandiflorum.—Root: tonic, astringent, carminative, pectoral, antisyphilitic, and vermifuge.

Polyanthes tuberosa vel LILIUM CANDIDUM.—Bulbs: refreshing and soothing in catarrh, etc. Leaves or sections of the bulbs, infused. Boiled and eaten with rice as a soothing medicine for coughs, etc.

Polygala sibirica et P. tenuifolia.—Root: against diseases of the throat, boils; the leaves are used in spermatorrhœa. Imparts strength to the body and vigour to the mind.

Polygonum aviculare et P. hydropiper.—Root: diuretic, carminative, anthelmintic; the juice is applied to the skin to allay itching of cutaneous affections.

perfoliatum.—Seeds: use undetermined, and identification doubtful.

tinctorium.—Roots and stems: medicinal use undetermined.

Polypodium repandum.—Rhizomes: bitter; 'penetrate the loins, remedy fracture of the bones, consolidate teeth, and kill worms.'

Polyporus (sp. ?).—Fungus: growing on trunks of elm; medicinal use undetermined.

Populus spinosa.—Leaves and stalks: tonic and aphrodisiac.

Portulaca oleracea.—Stems and twigs: according to LI SHIH-CHEN these furnish a vegetable mercury.

Potentilla fragarioides, and other species.—The entire plant: astringent.

Prunella.—See BRUNELLA.

Prunus Armeniaca.—Bitter almonds of apricots: used against hydrophobia.

Mume.—Fruit: refreshing.

(Sp. ?)—Fruit: laxative; cooling; decoction given in fevers. The kernels are made into a tea and taken after dinner.

Ptarmica Sibirica.—Plant: tonic.

Pterocarpus flavus.—Bark: removes 'fire of the nerves and heat of the bones.' Tonic and diuretic.

Pulsatilla chinensis.—Root: medicinal use undetermined.

Punica granatum.—The rind: boiled with a copper coin; astringent, tonic, antirheumatic, anthelmintic; to make eyewashes; used also in dysentery, fluxes, and prolapsus recti.

Pupalia geniculata et Achyranthes aspera.—Root: extolled in rheumatism, puerperal affections, urinary, cutaneous diseases, syphilitic pains, ague, fever, etc.

Pyrethrum sinense.—See CHRYSANTHEMUM INDICUM.

Pyrola media.—Seeds: medicinal use undetermined.

Quisqualis indica.—Seeds: efficacious against lumbrici in the case of children.

Ramalina calicaris.—Lichen: medicinal use undetermined.

Raphanus raphanistrum.—Seeds: lauded as diuretic; also used for toothache.

Sativus.—The seed: vaunted as a diuretic and for toothache.

Rehmannia chinensis, R. purpurea.—Root: in chronic diseases of the viscera. As a cooling and purifying drug.

glutinosa, R. chinensis, or R. lutea.—Root: alterative, refrigerant, and tonic; prescribed in many diseases of debility, also in menorrhagia and leucorrhœa.

lutea, Symphitum sp.—Root: alterative.

Rhamnus theezans.—The leaves: used as substitutes for tea.

Rheum palmatum (not R. officinale).—Also several other species: used as cooling, laxative, stomachic, emmenagogue, diuretic, eliminative, deobstruent, etc.

Rhododendron, Hyoscyamus, vel Datura metel.—Flowers: medicinal use undetermined; those of D. alba serve as anæsthetic, and are given in infantile chorea.

Rhus succedanea.—See LIGUSTRUM GLABRUM.

R. semilata.—Yields 'galls,' which are deemed expectorant, astringent, and corrective.

Ricinus communis.—Seeds: 'expel the aqueous humours.' Purgative. The oil from a variety with prickles is used for culinary purposes. The broken kernels of nuts are applied as a poultice to wounds, cuts, etc.

Robinia amara.—Root: its use is extolled in jaundice, fevers, dysentery, and scrofula. Also given as a tonic.

Rosa rugosa.—Flowers: as perfume. In asthmatic complaints.

Rubia cordifolia vel R. munjista.—Roots: in tincture, as a tonic, emmenagogue and vulnerary.

Rubus idæus.—Fruit: soft and mild; used as an astringent, and as an ophthalmic remedy.

nivæus, et R. purpurea et R. idæus.—Fruit: astringent.

Ruta angustifolia (?).—Root: in diseases of the skin.

Saccharum spicatum.—Root: medicinal use undetermined.

Sagittaria sinensis, vel S. macrophylla, vel Erythronum dens-canis.—Root: cultivated in many places as a comestible. It is considered strengthening and stimulant.

Salisburia adiantifolia.—Almonds: used to dissipate phlegm and to arrest vomiting; also as anthelmintic.

Salix alba.—The leaves of this and of several other species used in the preparation of a medicine against neuralgia; also for falsifying tea.

Salvia multiflora, S. plebeia, vel S. tenuifolia.—Stems and leaves: in catarrh and dysentery; also in the pruritus of the exanthemata. Supposed to 'strengthen and purify the blood.'

multiorrhiza.—Root: decoction used in fevers. Extolled as an alterative, antispasmodic, tonic, 'cardiac' sedative, and 'vulnerary.'

plebeia.—Stems: against catarrh, dysentery; also during desquamation of exanthemata.

Santalum album.—The wood: stomachic, sedative, etc.

Scrophularia Oldhami vel S. alata.—Root: as an alterative, tonic, antiscorbutic, etc.

Scutellaria (sp. ?).—The plant: in convalescence after rheumatism.

viscidula.—Root: emollient, pectoral, anthelmintic, cooling, and febrifuge. In decoction, for aphonia; much used in diseases of women.

Selaginella involvens, Lycopodium hygrometricum, et L. squamatum.—The fronds: emmenagogue, cordial, and astringent.

Senicio kœmpferi.—Flowers: expectorant; in coughs and asthma; as a lotion in ophthalmia. As an antidote in cases of opium-poisoning.

Sesamum orientale, vel S. indicum, and var. nigra.—Seeds: cooling, emollient, pectoral, laxative and emmenagogue; also to falsify opium. Mixed with vinegar and oil, are used as strengthening. The cake, after extraction of oil, is given to cattle as food.

Setaria italica.—Millet: germinated, is used as tonic.

Siegesbeckia orientalis.—Stems: emetic, and used in rheumatism.

Silene aprica, Saponaria vaccaria, et S. officinalis.—The seeds and young shoots: as vulnerary; styptic, diuretic, galactagogue, and resolvent.

Sinapis alba.—Seeds: sudorific, 'expel the phlegms and strengthen the mouth of the stomach;' stimulant; diaphoretic.

Siphonostegia chinensis.—Plant and seeds: used in fluxes and hæmorrhages.

chinensis or S. brassicata.—Seeds: in amenorrhœa, and in powder as sinapisms.

Sisymbrium atrovirens.—Seeds: pass for soothing and laxative; are used in dropsy, dysuria, amenorrhœa, and fevers; against catarrh and flatulence; also in wounds and bruises.

Sium sisarum (?).—Medicinal use undetermined.

Smilax arex C. (?).—Root: extolled against asthma and affections of the respiratory organs.

chinensis et S. lanceolata.—Root: in syphilitic diseases. Also as a diuretic; and is supposed to increase flesh.

Sophora flavescens, or S. tomentosa, or S. angustifolia.—Root: highly esteemed as tonic, pectoral and diuretic. The twigs and flowers are also used.

japonica.—Seeds: astringent and tonic. Flower-buds: tonic, astringent, in hæmorrhoidal discharges; in tincture, for jaundice. Also as a yellow dye. Leaves cathartic, stimulating the action of the liver and kidneys. Used in cases of hæmorrhoids. An extract from the leaves and fruit is used to adulterate opium. Seed-vessels, astringent.

Sphæria vel Cordyceps sinensis.—Mushroom: called by the Chinese worm-plant (worm in winter, plant in summer); grows on a certain caterpillar, apparently the *Hepialus virescens*. Ranged among the rare drugs; is esteemed accordingly, like ginseng. Used by being cooked in a duckling and thus eaten, also as an infusion; in debility, jaundice, phthisis, and other grave diseases.

Sphæroccus cartilagineus, variety setaceus, or Gracillaria lichenoides.—A lichen, or alga: properties, restorative and anti-dysenteric.

Styrax sp.—Seeds of 'Storax balsam,' decocted with almonds and liquorice, are given in cases of hacking coughs and asthmatic affections; they are considered to be soothing.

Symphioglossum (?) Smilax sinensis (?).—Stems: used against rheumatism.

Tamarix indica and T. sinensis.—Branches: medicinal use undetermined.

Tanacetum (sp. ?).—In decoction: as a cooling draught in summer; also for cutaneous diseases.

Taraxacum officinale et Leontodon chinense.—Roots: tonic, aperient, augment secretion of milk in women; used internally and externally in cases of diseases of the teeth, and in snake-bite. Also to disperse swellings.

Taxus cuspidata.—Roots: used as floats, which the boat-women secure to the backs of their children.

nucifera.—See Torreya nucifera.

Terminalia Chebula.—Fruit: when given in substance, it has astringent properties; purgative when given in decoction or infusion.

Thalictrum sp.—The roots: in leucorrhœa, amenorrhœa, prolapsus of rectum; tonic, antidotal, and derivative.

Thea.—Tea. For many generations the common beverage of China. Its effects, those of a very mild narcotic.

Thuja orientalis.—See Biota orientalis.

Torreya nucifera.—The seeds, eaten as nuts, are laxative and anthelmintic. In Japan an oil used for cooking is obtained from them. At Wuhu a decoction is taken in diseases of the throat.

Tribulus (sp. ?).—Seeds: astringent, anti-dysenteric, demulcent; in powder in hæmorrhages; in decoction against stomatitis, laryngitis, etc.

terrestris.—Fruit: as galactagogue; diuretic; and in inflammations of the mouth and throat; also given to parturient women.

Trichosanthes dioica.—Rind of the fruit: used as a diuretic. The root, powdered, is used as medicine and as food.

Palmata and T. dioica.—Root: finely powdered, is used as a purgative. Rind of the fruit: medicinal use undetermined. Used for colds and chills. The seeds emollient and pectoral.

Triticum repens.—The root: used as expectorant.

vulgare.—Also HORDEUM: wheat and barley germinating, *i.e.* as malt, are given as stomachic. Wheat is used in the preparation of macaroni, or 'chow-chow.'

Tulipa (sp. ?).—Bulbs: against strumous abscesses and ulcers. Strengthening; stimulating.

Tussilago (sp. ?).—Decocted: as a wash for weak eyes. The dried flowers are smoked by persons suffering from coughs. As an expectorant in apoplexy, phthisis, cough, asthma. As demulcent in fevers.

Typha (sp. ?).—Pollen of the stamens: yellow in colour, and inflammable; used as astringent, styptic, and absorbent.

Ulmus (sp. ?).—The white bark, decocted; laxative.

Uncaria Gambir.—The spines: prescribed in the diseases of infancy. Gambier, formerly called Terra japonica, is obtained from this plant. It is powerfully astringent.

procumbens vel U. gambir.—Thorns: employed in diseases of children, fever, chorea.

Urtica (sp. ?).—'Benefit mother seeds.' Cooling: given to women previous to labour, to alleviate the pains of parturition. It is a common saying in speaking of prescriptions for women at child-birth: 'Only add three mace of Yih moo, and I'll warrant both mother and child will do well.'

Uvularia cirrhosa vel Colchicum variegatum.—Roots: in affections of the chest.

grandiflora.—Root: in fevers, dysuria, hæmorrhages, diseases of the eyes, etc.; also in rheumatism.

Veratrum nigrum.—Root: passes as an irritant poison; is emetic, errhine, and anthelmintic. Is used as an unction in itch and skin diseases.

Verbena officinalis.—Stems: said to have an action on the blood; against congestions and obstructions, dropsies, and hæmatocele; also emmenagogue, anthelmintic and anti-scorbutic.

Vincetoxicum atratum.—Root: purgative.

purpurascens et V. atratum.—Root: medicinal use undetermined.

Vinum Araliæ palmatæ.—Medicinal wine prepared from the Aralia palmata.

Viola variegata or V. canina.—Root: medicinal use undetermined.

Viscum album, V. articulatum.—Twigs, from the mulberry tree: tonic, astringent; in the treatment of diarrhœa, diseases of pregnancy, and after parturition. Also given during pregnancy.

Vitex incisa, V. cannabifolia, et V. spicata.—Fruit: stimulant, emmenagogue, antispasmodic. In decoction in paralysis of the limbs, and muscular pains.

ovata.—Fruit: believed to make the hair and beard grow. V. irisca, in catarrh.

Xanthium Strumarium, X. indicum.—Seeds: a kind of flour prepared therefrom, used against 'the rheum,' and vomiting; also yields an oil much used for lighting purposes. An extract from the roots and leaves is given as a remedy for ulcers, etc.

Xanthoxylon alatum and Z. nitidum. Silkworms are fed largely upon the leaves as a medicine. Carpels of the fruit, containing oil: as a condiment, carminative, astringent, and stimulant. The seeds of Z. nitidum are called 'Japan pepper.'
piperitum vel Z. nitidum.—Fruit: as a condiment. From Shantung.

Zingiber officinale.—Root: sudorific, stomachic, etc.
Zizyphus Jujuba.—Fruit dried and smoked: used in dyeing. Almonds, tonic, expectorant, stomachic, sedative; one species is soporific.

b. From the Animal Kingdom.

Alligator sinensis.—The scales: used medicinally in the treatment of syphilis.
Angiulla (sp. ?).—Eels, fresh and dried: are applied locally in cases of moon-stroke.
Antilope gutturosa and A. rupicapra (?).—Horns of the antelope or chamois of Mongolia, burnt and powdered: used against convulsions, apoplexy, and rheumatism. Supposed to be cooling; used in inflammation of the lungs and of the liver.
Apis (sp. ?).—Bees-wax: used for coating pills.
Arachnida (sp. ?).—Spiders are eaten in their natural state, or beaten up and mixed with water to form a solution which is taken three times a day, for flatulency.
Arca granosa, etc.—The shells, reduced to powder, are used in eruptions, fever, apoplexy, etc.
Arca, Pecten, etc.—Calcined and powdered, serve to prepare medicaments against fever, apoplexy and hæmorrhages.

Bombyx mori.—Exuviæ, etc., of the silk-moth: used in catarrhs and chest affections. The chrysalis used in bronchial disorders. The eggs, dried, are used in cases of small-pox.
Bos taurus.—The interior of horns used as medicine in Mongolia. Cow sinews boiled with eggs, shrimps, etc., taken by invalids as a restorative tonic. Glue, prepared from cowhides, is taken extensively in the form of decoction by women as strengthening; used in cases of hæmorrhage, and in urinary disorders. Gall-stones used as a sedative and tonic.
Bufo vulgaris.—Dried toads: in the treatment of elephantiasis, leprosy, etc.; applied also as plaster and ointment to sores, ulcers, etc.

Cantharis vesicatoria.—For blisters: in hydrophobia.
Cardelia, Pachydomus, Spirifer, etc.—Fossil shells of the Devonian period, among which Mr. Davidson and M. de Konink have found 3 Spirifer, 2 Rhynchonella, 1 Productus, 1 Crania, 1 Cornulites, 1 Spirorbis, 1 Aulopora. These are used in powder against diseases of the eyes.
Cardium edule (?).—Cockle-shells: powdered and decocted, as an ingredient in plasters for sores, etc. Taken internally in cases of itch.
Centetes illiger et Erinacens dealbatus.—The skin of the head, face, and groin, decoction given in pulmonary affection; passes also for astringent, styptic, stomachic, vulnerary, etc.
Cervus alces (?).—Sinews of the back; also horn shavings decocted: used against rheumatism and sciatica. Taken by invalids as a restorative tonic. The horns furnish jelly, which is considered to be stimulating.
Cicada (sp. ?) Exuviæ.—Used as medicine, and given internally against fevers, and to children.

Coccus pela.—Is nourished by, and deposits 'white wax' on the Fraxinus Chinensis. This wax is used for coating pills.

Coleoptera.—Beetles: dried, pulverized; taken in spirits, supposed to heal fractures of any kind. Considered one of the most important medicines.

Collocalia brevirostris.—The swallow which elaborates from a seaweed (Gelidium) the costly jelly used as 'birds'-nest-soup.'

Collus.—Glue—gelatine: from skin of equus asinus. Secretly prepared in Shantung. Has a high reputation in affections of the chest.

Ordinary Glue.—Also employed in medicine. Women use it as strengthening. Also used in ointment in cases of fracture.

Daphnis dione.—The skin of this and other serpents is used in rheumatism, leprosy, and paralysis.

Elaphurus davidianus.—Glue made from horns of the Mongolian deer: used against miscarriage, and for buccal inflammation in new-born infants.

Elephas indicus.—Elephant skin enters into the composition of certain plasters reputed vulnerary, and as rapidly 'curing' contusions. Ivory shavings decocted or in jelly are considered to be cooling and tonic, they are given to weakly children who have a tendency to spinal disease.

Emys sinensis (Tortoise-shell).—Boiled in vinegar and made into jelly, is much used against fevers, rheumatism, ague, debility, and amenorrhœa. The heads of the fresh water turtle are dried and powdered, the powder applied to sores, ulcers, etc. The jelly is considered very strengthening, and is much used by old women. See GYMNOPUS.

Equus asinus.—Glue made from the skin: used against inflammation of lungs. Used chiefly in diseases of women; in fact, is considered solely a woman's medicine. Is said to be tonic and astringent.

Fel bovis.—Dried: used in diseases of digestive organs.

Felis tigris et Leopardus brachyurus.—Tiger's bones: jelly prepared therefrom has the reputation of being stimulating and strengthening in the highest degree. The bones of the tiger mixed with hartshorn and the plastron of the terrapin formed into a jelly, are much used in rheumatic affections of the joints, diseases of the bones, ague, and general debility. This jelly is in high repute among the Chinese. Women do not partake of preparations made from tiger's bones, as they consider that they cause difficulty in child-birth.

Fossiles.—Teeth and bones, fossil, of Rhinoceros tricornus, Stegodon orientalis or sinensis, Equus caballus; the horns of the Chalicotherium sinense, the teeth of Hyla sinensis, the molars of mastodons, elephants, sheep, stags, teeth of the hippotherium, etc., powdered: used in chorea, spermatorrhœa, fever, ague, etc. All these are sold under the name of 'dragons' teeth.'

Gallus domesticus.—Varieties: the gizzards of fowls are used by the Chinese under the guise of pepsine. The preparation is the same as that which in 1721 was given in the London Pharmacopœia, under the name of 'Pelliculæ stomachi galliæ.'

Gecko.—Dried in the sun, is used as medicine; as an ingredient in plasters for wounds, etc.

Gryllus (sp. ?).—The fighting cricket: as decoction for purifying the blood, as in cases of boils. It hastens suppuration and the spontaneous opening of these. The remains and larvæ of grasshoppers, dried, powdered, are given in the form of pills, as anthelmintic and against headache.

Gymnopus, or Tryonix.—Turtle scales (tortoise-shell): used as a tonic, cordial, astringent and arthritic. Also in diseases of the loins. See EMYS SINENSIS.

Haliotis funebris.—In ophthalmic diseases.

Hepialis virescens.—See SPHÆRIA.

Hippocampus.—Dried: has the reputation of facilitating parturition, if held in the hand of the patient. Decoction given in female diseases.

Hirudo (sp. ?).—Leeches are much used by Chinese physicians: the hammer-headed leech is found at Chusan. Also used dried, internally as a purgative, and externally applied to bruises.

Holothuria.—Used as a dainty; reputed aphrodisiac.

Homo.—The curious are referred to the 'Catalogue of the Vienna Exhibition,' p. 147, in regard to man as an article of Materia Medica.

Larvæ.—Maggots from the most filthy sources: dried, powdered, or decocted, as a mild purgative, given to children.

Lepus sinensis (?).—The excretions, decocted: demulcent; employed in the treatment of asthmatic affections.

Lumbricus (sp. ?).—A decoction of worms is used in cases of gonorrhœa.

Macropthalmus latreilli.—Portunus leucodon, etc. Fossil crabs of Hainan in the province of Kwantung: used in powder as anthelmintic, alexipharmic, and as an antidote against vegetable poisons.

Manis javanica.—Scales of the pangolin, burnt: are reputed against hæmorrhoids, ulcers, bubos, and in the treatment of syphilis. They are used wherewith to make friction in pruritus, and for this purpose are secured in bamboo handles.

Pendactyla.—Skin of the pangolin: used in skin diseases.

Mantis religiosa.—The nests of the mantis, gathered from walls, are employed in medicine; their precise use is not known.

Moschus.—Musk: stimulating and antispasmodic.

Mylabris cichorii.—Cantharides: used especially in the treatment of hydrophobia.

Ostrea sp.—Oyster-shells: used in powder as styptic; also against deafness.

Ova.—The internal pellicle of eggs; given with carthamus, ginseng and dates, in jaundice.

Ovis.—The intestines of sheep: are used medicinally.

Passer (sp. ?).—The deposits of sparrows: in decoction, 'purify the blood,' and in boils hasten suppuration. Poultice, to wounds, sores, etc.

Pecten (sp. ?).—Clam-shells: broken and decocted with other medicines, in fever.

Polynemus (sp. ?).—Isinglass: made from the sounds and snouts. P. tetradactylus or bynni-carp, often called salmon by foreigners, also yields isinglass.

Python.—The skin: used in medicine, also in the manufacture of Chinese violins.

Rana (?).—Cakes, prepared with the mucus of frogs: the frogs are enclosed in a vessel containing flour, and, being irritated by means of a small rod, they secrete mucus, which is absorbed

by the meal. The meal so saturated is used as a sternutatory in faintings and convulsions. A medicament made from frogs is used in cases of catarrh.

Rhinoceros.—Horns and hide. Horn shavings cooling; given to women in childbirth. Jelly prepared from either is used medicinally. The horns, scraped very fine, are given in decoction as an antidote against poison. This preparation is given in very small doses.

Scolopendra morsitans.—Used as anthelmintic: from Szechwan; also as a decoction in gonorrhœa and in syphilitic eruptions, to expel the poison of eruptions of chancres; the powder is applied externally to venereal sores, whether primary or consecutive. Also in cases of dumb children, to give them the power of speech.

Scorpio europeus.—Dried, or preserved in salt: administered as a cooling medicine in fevers; also to children when teething. They serve to make a famous tincture, used as a diaphoretic, and are given in all kinds of diseases.

Sepia officinalis.—Cuttle-fish bone, dried. Is considered refreshing and cooling; it is used in gonorrhœa. Astringent, styptic, and anthelmintic.

Sericaria mori.—Silkworms, dried and reduced to powder. Used in infusion in the treatment of diseases of the eyes, infantile fevers, etc.

Serpentes.—Exuviæ of an unnamed kind of venomous serpent: from the habit of the reptile to seek refuge in hedges and crevices, it is concluded that, mixed with other drugs, it introduces itself into the most secret places of the body. See PYTHON. The skins of snakes are used to relieve itching. Small green snakes are made into a decoction, which is taken twice a day; in the treatment of eruptions, blotches on the skin, etc.

Small, green, species unrecorded. Dried: a decoction taken twice per day, in eruptions and other diseases of the skin. Skin of serpents in decoction is used against rheumatism, lepra, and paralysis.

Syngnathus (Pipe-fish).—Dried: is used in medicine.

Vespa.—Nest of the wasp: used in decoction in phthisis.

Vespertilio. sp. ? Excrementa.—Applied, with sugar, in ulcers; also in diseases of the eyes. 'Boil half an ounce in a cupful of water, strain it, and drink the liquid once daily till well.'

c. From the Mineral Kingdom.

Alum.—From the mines of Anhwei: used to precipitate impurities of water; medicinally, as astringent and alterative. Also in the manufacture of paper, and as a mordant in dyeing silks.

Hydrate of.—It is asserted that this substance is found in the soil of places on which bamboos have been burnt. According to Mr. P. Smith, it is found in the internodes of the large bamboo. It is used in convulsions of chorea, and in epilepsy of children. It is the *Tabasheer* of the ancients.

Amber.—Included in this place for convenience: cooling; used in fevers.

Amethyst.—In treatment of ophthalmia. See QUARTZ.

Arsenic.—Natural arsenious acid; as an escharotic in strumous affections.

Red Sulphuret, Realgar.—Against eruptions of the skin, anthelmintic and escharotic. See ORPIMENT.

Borax (Biborate of Soda).—Used against thrush in infants; drunkards take a certain quantity before indulging in libations.

Calomel.—Employed as a purgative, alterative, antiscorbutic, antisyphilitic, and sialagogue.

Cinnabar.—To fortify the viscera and soft parts. 'It is a sort of panacea, or philosopher's stone.' That of inferior quality is used as a tonic.

Copper, Acetate.—Specially used in painting.

Sulphate.—In powder: against disease of the eyes; in rabies, and sometimes as emetic. Verdigris obtained by boiling old 'cash' in water and vinegar is used in dysentery, and to form an application to inflamed eyes, and in skin diseases. Also as an injection.

Flints.—Powdered: in the composition of ointments, etc.

Gypsum-cake.—Antiphlogistic: antirheumatic, astringent.

Iron, Sulphuret of. From Szechwen, Hupeh and Shansi.—Tonic. Given in cases of ague, uterine fluxes, and throat diseases.

Hæmatite.—Tonic. Reconstituting the blood, styptic; against chorea and leucorrhœa.

Magnetic Ore.—Used in medicine as a tonic.

Sulphate.—Used externally for diseases of the eyes, skin, uterus and liver.

Lead (see Massicot).—Various preparations are used as astringents, antiperiodic and anthelmintic.

Lemonite, *i.e.* brown iron stone.—Applied to skin diseases.

Lime.—Made from shells, stone, etc.: astringent, caustic; in making ointments, lotions, etc.

Massicot (White Oxide of Lead).—In medicine as astringent, antiperiodic and anthelmintic.

Mercurial powder.—'Powder of the three genii.' Its composition is little known, but it contains a considerable proportion of sulphuret of mercury. Used in ointment in cases of ulcers.

Orpiment (Yellow Sulphuret of Arsenic).—Often used as an escharotic; also as vulnerary and expectorant. See Arsenic.

Pagodite.—See Steatite.

Potass, Nitrate.—In the manufacture of powder. In medicine, against abdominal tumours and ophthalmia.

Prussian blue.—Used in tincture, alone, and with alum.

Quartz (Rock Crystal).—In the treatment of ophthalmia; in lung diseases, jaundice and rheumatism. [At Festiniog, in North Wales, powdered quartz is given to 'broken-winded' horses.]

Soda, Carbonate.—Used in guise of soap; also by bakers to raise bread. In medicine it is sometimes given as a purgative.

Nitrate.—As purgative and diuretic, enters also into certain collyria.

Sulphate.—When purified, and after a complicated preparation with vegetables, it is said to possess certain mystical properties; among others, the power of procuring immunity from disease. It is used as a cooling and purgative medicine.

Sodium, Chloride (salt), from Shansi.—Is mixed with many medicinal preparations. Has a high reputation among the people as strengthening and alterative. A solution is applied to inflamed eyes. The stomach is rubbed with mineral salt in cases of flatulency.

Steatite.—Considered to be 'alexipharmic.' Used also in diseases of the kidneys and bladder. Also called PAGODITE.

Tabasheer.—See ALUM, HYDRATE.

Vermilion.—Used in medicine and in painting.

Volcanic stones.—Water in which these are boiled is used as anthelmintic.

XXV. MEMORANDUM ON CERTAIN DRUGS FORMERLY USED IN EUROPE.—See *Ante*, p. 171; also pp. 263-265.

Adverting to the nature of substances derived from the animal kingdom which find a place in Chinese Materia Medica, as indicated in the text as above, it is considered that some particulars in regard to substances of the same nature formerly used in England may be of sufficient historical interest to justify their introduction here. In the belief that such is the case, the following extract is taken verbatim from Salmon's 'English Physician, or the Druggist's Shop Opened,' published in London in 1693, pages 636-776, Book VII., 'Of the Parts of Animals, etc., used in Medicine.' (See also Pomet's 'History of Drugs,' London, 1737.

1. Adeps, sevum, fat or suet. 2. Apis the bee. 3. Blatta Bizantina, sweet-hoof. 4. Butyrum, butter, Jessamine butter. 5. Cantharides, buprestis, Spanish flies. 6. Castoreum, castor. 7. Caro, flesh. 8. Caseus, cheese. 9. Cera, wax. 10. Chelæ cancrorum, crabs' claws. 11. Cochinilla, cochinele. 12. Carolina, sea moss. 13. Cornua, horns of elk, deer, etc. 14. Coagulum, rennet. 15. Cranium humanum, man's skull. 16. Crinis, Lana, hair, wool. 17. Cutis, Pellis, Corium, the skin, raw-hide, leather. 18. Dens apri, boar's tooth, Dens equi marini, sea-horse tooth. 19. Ebur, ivory. 20. Fel, the gall. 21. Formica, pismire. 22. Gluten, Gluten oris, glew, mouth-glew. 23. Hepar and Fel anguillarum, liver and gall of eels. 24. Icthiocolla, isinglass. 25. Lapis contra Yerva, stone against poison. 26. Lapis, hominis, bestiæ, stone taken from man or beast. 27. Lapis dentalis, toothed stone. 28. Lapis manatea, a stone or bone of the manati or sea-cow. 29. Lac, milk. 30. Limax, a snail. 31. Lumbrici, earth-worms. 32. Mater perlarum, mother-of-pearl. 33. Mandibula lucii, jawbone of a pike. 34. Medulla, marrow. 35. Mel, honey. 36. Millepedes, hog lice. 37. Moschus, musk. 38. Mumia, mummy. 39. Oculi cancrorum, crabs' eyes. 40. Oleum asparis, and scorpionum, oil of the osprey and scorpion. 41. Oleum nervinum, nerve oil or neat's-foot oil. 42. Ossa, bones. 43. Ossa capitis, and cornua cervi, bones and horns of a hart's or deer's head. 44. Os sepiæ, cuttle-bone. 45. Os cordis cervi, bone of a deer's heart. 46. Ostria, ostreum, the oyster. 47. Ova, eggs. 48. Plumæ, feathers. 49. Priapus cervi, equi marini, etc. 50. Pulmones vulpis, fox lungs. 51. Sanguis, blood. 52. Scorpio, the scorpion. 53. Scinci marini, skinks. 54. Sericum, silk. 55. Serum, whey. 56. Spongia, sponge. 57. Stercus, dung; Album græcum, dog's *dung*. 58. Testes, testiculi, the testes. 59. Viscera, the bowels. 60. Vipera, the viper. 61. Unguis alcis, tauri, equi, cervi, etc., hoofs, claws, nails. 62. Urina, urine. 63. Usnea cranii humani, moss of man's skull. 64. Zibethum, civet.

In the work quoted from, the instructions given for the preparation of the parts of animals for medicinal use are in several respects more or less similar to those which are at the present time in use in China. For example: In regard to *cantharides*, it is stated at page 645, that 'the

ancients advise to cut away the head, wings, and legs, and to use only the bodies. These were prescribed in cases of bites by dogs.' 'Balsam of flesh' (p. 651) was considered excellent against all malign and venomous diseases, including plague and pestilence, and 'other like fevers akin to it.' Even *homo* was utilized for the purposes of medicine, not only in a manner similar to that now in force in China, but in other respects quite as repellent to our present ideas of propriety.—See p. 284 *et seq.*; also p. 651. Horns, bones, including man's skull, as also hair and wool, found a place in the Materia Medica (pp. 660 to 667). The fat of tigers was used against palsies, pains, trembling, and weakness of the nerves and muscles (p. 458). Tincture of hides was considered to be powerfully sudorific (p. 674). Spirit of gall of animals as a 'piercing medicine,' opening all manner of obstructions; curing all sorts of fevers, as also Quartan agues; as good against poison, the biting of vipers, mad dogs, or other venomous beasts (p. 678). Spirit of *glew* was 'singular good' against pleurisies, stitches, obstructions of the lungs, fits of the mother, etc.

Glew itself as vulnerary, and consolidating wounds (p. 682). Livers and galls of eels as facilitating 'the delivery of a woman in labour' (p. 684). Powder of earth-worms taken before and after the change and full of the moon was considered to 'perfectly cure apoplexies, so that they return no more.' As good against the 'bitings' of serpents and scorpions (p. 697). Purified marrow as 'wonderful against cramps, convulsions, pains and aches from a cold cause' (p. 703). Millipedes were recommended for the cure of ulcers, cancers, scurvy, dropsy, jaundice, consumption, gout, rheumatism, and all pains of the muscles and nerves (p. 711). Mummy was 'an excellent thing against all *venomous* diseases, especially such as are pestilential' (p. 714). Fox lungs 'open all obstructions of the breast, and cure diseases of the lungs; they are specificks in curing a phthisis' (p. 740). The volatile salt of *humane* blood was 'good against apoplexies, megrims, hysterick fits, consumption of the whole body,' besides many other diseases (p. 743). Scorpions were 'profitable against poison, as the biting of vipers, asps, or any venomous beast, the poison of the stellion, mad dogs, etc.' (p. 745). 'The liver of the mad dog being given *ad* ʒij morning and evening for some time, secures the life of the person bit' (p. 759). According to an article in the *Morning Post*, October 5th, 1883, 'one good wife, Sarah Mackness by name, stated at an inquest upon a child who had died of hydrophobia in Buckinghamshire less than twenty years ago, that she had dragged the dog's dead body out of the river where it had been floating for nine days, fried its liver, and gave it to the child, who ate it greedily, drank some tea, and then died.' A hair of the dog that bit you is probably as old as the disease itself. The flesh of the viper 'purges and cleanses the whole body by sweat, cures the leprosy and French-pox, and wonderfully restores in consumption; it eradicates cancers, the gout, and king's evil' (p. 672). Many other details of a similar character to the above could readily be added from the curious old volume in hand, from the preface to which we learn that 'the virtues and uses of the principal of them have been learnt by daily experience for these thirty years together;' also that they were 'admirable of their kind.' But the enumeration as it stands will be sufficient to indicate the identity in several instances, and in others the similarity between the 'drugs' used 200 years ago in England and those at the present day employed in China. It is natural to assume that in the seventeenth as in the nineteenth century, the drugs enumerated were prescribed in accordance with particular theories in regard to the etiology and pathology of the disease being treated. On this assumption the conclusion is justifiable that the theories of disease in this country and in the far East were very nearly if not altogether identical. It would be an interesting study to trace out, as far as practicable, the circumstances to which this similarity between them was due.

XXXVI. SOME FURTHER REMARKS ON MEDICINE IN CHINA.—See *Ante*, p. 69.

According to Du Halde: 'Although the Chinese are superstitious in many respects, they do not depend upon incantations and charms for relief in sickness, but resort to the prescriptions of the physician—mixed up, indeed, with many strange practices to assist the efficiency of the dose.' On the other hand, it is stated that in China—'Medicine is completely under the domain of astrology, superstition, and idolatry; and the cure is supposed to depend rather upon the choice of fortunate days, moments, and circumstances, than upon any natural remedy. These causes have so far perverted the good sense of the people, that there is no nation among whom this important art is in a more inefficient state.'—(Murray, vol. iii. p. 87.)

The Chinese physiologists expressly call man *Seau Tien-ty*, a 'little universe or microcosm,' and they extend to this microcosm their doctrine of the *Yin* and the *Yang*, otherwise the male and the female principles of nature.—(Davis, vols. iii. and iv. p. 56.) The dissection of the human body is never performed, though some notions of its internal structure are taught in medical works; and Mr. Wylie notices fifty-nine treatises of a medical and physiological character in his 'Notes on Chinese Literature.' Dr. Harland has described the Chinese ideas of the organization of the body, and functions of the chief viscera; for whatever foreigners may have imparted to them has not yet become generally known. The Chinese have no idea of the distinction between venous and arterial blood (Mr. Williams says); nor between muscles and nerves. According to their physiologists the brain is the abode of the Yin principle in its perfection; at its base, where there is a reservoir for the marrow, it communicates through the spine with the whole body. The larynx goes through the lungs directly to the heart, while the pharynx passes over them to the stomach. The lungs consist of six lobes or leaves suspended from the spine, four on one side and two on the other; sound proceeds from holes in them, and they rule the various parts of the body. The epigastrium is the seat of the breath; joy and delight emanate from it, and it cannot be injured without danger. The heart lies underneath the lungs, and is the prince of the body; thoughts proceed from it. The pericardium comes from, and envelops the heart and the kidneys. There are three tubes communicating from the heart to the spleen, liver, and kidneys, but no clear ideas are held as to their office. Like the pharynx, they pass through the diaphragm, which is itself connected with the spine, ribs, and bowels. The liver is on the right side, and has seven lobes; the soul resides in it, and schemes emanate from it; the gall-bladder is below, and projects upward into it, and when the person is angry it ascends; courage dwells in it; hence the Chinese sometimes procure the gall-bladder of animals, as tigers and bears, and even of men, especially notorious bandits, executed for their crimes, and eat the bile contained in them, under the idea that it will impart courage. The spleen lies between the stomach and diaphragm, and assists in digestion; the food passes from it into the stomach, and thence through the pylorus into the large intestines. The omentum overlies the stomach, but its office is unknown, and the mesentery and pancreas are entirely omitted in their enumeration of abdominal viscera.

Anatomy and Physiology.

The small intestines are connected with the heart, and the urine passes through them into the bladder, separating from the food or fæces at the caput coli, where they divide from the larger intestines. The large intestines are connected with the lungs and lie in the loins, having sixteen convolutions. The kidneys are attached by the spinal marrow, and resemble an egg in shape; the subtle generative fluid is eliminated by them, above to the brain, and below to the spermatic cord and sacral extremity; the testes, called *wai shin*, or 'outside kidneys,' communicate with them. The right kidney, or the passage from it, is called 'the gate of life,' and sends forth the subtle

fluid to the spermatic vessels. The bladder lies below the kidneys, and receives the urine from the small intestines at the iliac valve.

The osteology of the frame is briefly described: the pelvis, skull, forearm, and leg are considered as single bones, the processes of the joints being quite dispensed with, and the whole considered merely as a kind of internal framework, on which the fleshy parts are upheld, but with which they have not much connection by muscles and ligaments. Yet the Chinese can identify and name every bone of the skeleton. To a certain extent they are phrenologists, and have some faith in the external indications of the skull. They look for the principal characteristics of a man in the forehead, and of a woman in the back part of the head. (Davis, vols. iii. and iv. p. 52.)

The Chinese say there is a canal by which the radical moisture passes from the heart to the hands. It is even stated, in Chinese history, that the Emperor HWANG-TI (see note on chronology), B.C. 2766—2666, ordered three physicians, whose names are given, to examine the *blood* vessels. It is by such-like passages that the viscera, which are united to the heart, convey the vital heat (Du Halde, vol. iii. p. 359). Fire reigns in the heart. By the difference of the pulse they discover . . infallibly the disposition . . of the viscera. It is motion, they say, that makes the pulse, and this motion is caused by the flux and reflux of the spirits, which are carried to all parts of the body . . by twelve passages, enumerated (p. 361). As the blood and spirits are in a continual motion, they strike against and press the vessels in which they are conveyed, [thus] there must necessarily arise a beating of the pulse. The earliest treatise on the pulse was that of Ouang chou ho, who lived under the dynasty of Tsin; *i.e.*, in the third century B.C. According to that author: In diseases of the heart, it is necessary to consult the pulse at the left wrist (p. 366). The continual motion of the *circulation* . . is in reality determined to a certain number of circulations; but yet, there are in the pulse a thousand differences, according to the difference of age, sex, stature, and seasons. The captain is the blood; his train are the spirits. The blood runs within the vessels, and the spirits without; they are in perpetual motion of *circulation*, and ought to make, in the space of a night and day, fifty rounds (p. 367). In the time while a person is breathing, that is, in the case of an expiration and inspiration, the pulse commonly beats four times, and the blood and spirits move forward six inches. Though it is translated 'the continual motion of circulation,' there is no assistance given to the expression, for the Chinese words mean the same thing; thence, it seems natural to conclude that the circulation of the blood, discovered so lately in Europe [Du Halde wrote in 1741] has been known by the Chinese at least two thousand years. He is very far from venturing to warrant this conclusion. He does not find the Chinese physicians distinguish exactly between arteries and veins, nor the road that the blood takes in flowing from, and returning to the heart. Some of the learned among Europeans, in translating their dictionaries have found words that signify, according to them, arteries, veins, and nerves (p. 368). [On this subject it is observed in Murray's 'History of China,' vol. ii. p. 85, that 'the circulation of the blood, unknown to the most learned of the ancients, and considered in Europe as perhaps the most splendid of modern discoveries, has for 2,000 years been familiar to Chinese physicians. The glory, however, which they may thereby justly claim has been greatly obscured by such irrational applications as to have made it doubtful whether they would not have been better without possessing this knowledge.' As an example of this, their ideas with regard to the pulse in relation to disease is noticed: 'Although they are aware of the movements of the blood through the arteries and veins, they understand nothing of the process by which it is thrown into the lungs and returned back. They are misled, also, by a theory of the equilibrium of fluids invented under the dynasty of Sung'

The Pulse.

Circulation.

(A.D. 960—1279); and also by the application to science of the mystical cosmogony of the *Yang*, otherwise 'vital heat' motion, or the affirmative principle: and the *Yin*, or 'radical moisture,' repose, or the negative principle.] It is necessary in the summer to use a sharp stone to evacuate what the heart has too much of; that is, the excessive heat that it has (p. 427). From this plan alone it is clear that bloodletting was known to the Chinese a long time ago as a means to prevent the bad consequences of an excess of heat, and it is now used in China very frequently for horses and other animals. With respect to men it is frequently practised. The Chinese tie the arm above the elbow, wash and rub the forearm, then, with a lancet made on the spot with a bit of broken china, open the vein at the usual place, at the bend of the elbow. In a case so operated on in presence of Du Halde, the blood spurted out very high; the ligature was untied, and the blood suffered to run and stop of itself. A grain of salt was applied to the wound, and the next day it was healed up (p. 428). When the 'sharp' pulse is found at improper times, if the patient be a man, it indicates a *virus;* if it be a woman with child, her fruit will be disordered, and she herself, perhaps, entirely carried off; if a woman not with child has this pulse, it indicates a corruption infecting the mass of blood (p. 442). He who feels the pulse should be very attentive; and even the motion of the systole and diastole in himself ought to be regular and just (p. 450).

The Tai-í Yuen, or Medical College at Peking, contains a copper model of a man about six feet high, on which are given the names of the pulses in different places. Mr. Williams writes: 'The irrigation of the body with blood is rather complicated, and authors vary greatly as to the manner in which it is accomplished. Some pictures represent tubes issuing from the fingers and toes, and rising up the limbs into the trunk, where they are lost, or reach the heart, lungs, or some other organ as well as they can, wandering over most parts of the body in their course.'

Another discovery which has thrown lustre on Chinese medicine is that of *inoculation*. For 3,000 years the empire had been ravaged by small-pox; and it was not till the close of the tenth century that this important mitigation was first employed, in the cure of a young prince. The practice rapidly spread, and for some time it was imagined that this cruel malady would be extirpated, till experience proved that it was only rendered more mild (Murray, vol. ii. p. 86). A comparison between the date here given in connection with the history of small-pox, and that recorded at p. 74 of this Epitome, will at once indicate that the question of the first appearance of small-pox in China has not yet been determined.

Theories are furnished in great variety to account for the nourishment of the body and the functions of the viscera; upon their harmonious connection with each other, and [with] the five metals, colours, tastes, and planets, is founded the well-being of the system; with all they hold an intimate relation, and their actions are alike built on the all-pervading functions of the *Yin* and the *Yang*—those universal solvents in Chinese philosophy. A diseased state of an organ is supposed to be owing to a disagreement of the *Yin* and *Yang*, the presence of bad humours, and the more powerful agency of evil spirits. The surface of the body is minutely divided; each square inch has its appropriate name, and plasters and lotions are applied to these places according to the diagnosis of the disease, predicated on the dual theory.

Theories.

The practice of the Chinese is far in advance of their theory, and some of their treatises on dietetics and medical practice contain good advice, the result of experience. When successful in the treatment of a patient, the physician, naturally enough, takes due credit for the happy result; when unsuccessful, he retires with the common Chinese adage that 'there is medicine for sickness, but none for fate' (Davis, vols. iii. and iv., p. 54). Dr. Lockhart has translated a native treatise on midwifery, in which the author, con-

Practice.

fining himself principally to the best modes of treatment in all the stages of parturition, has greatly improved upon the physiologists. This branch of the profession is almost entirely in the hands of women. Surgical operations are chiefly confined to removing a tooth, puncturing sores and tumours with needles, or trying to reduce dislocations and reunite fractures by pressure or bandaging. Sometimes they successfully execute more difficult cases, as the amputation of a finger, the operation for hare-lip, and the mechanical adaptation of false teeth. The practice of acupuncture has some good results among the bad ones. That of applying the moxa, caustics, and cauteries is more general. Their manner of treating inverted eyelids, a very frequent affection among them, is clumsy. Venesection is rarely practised, but leeching and cupping are commonly employed. Many of the operations in cases of fracture present a strange mixture of folly and sense. ('Middle Kingdom,' vol. ii., pp. 119 *et seq.*).

The classes of diseases which most prevail in China are ophthalmic, cutaneous, and digestive; intermittent fevers are also common. Affections of the eyes are considered to be due in part to inflammation, which occurs usually at the beginning of winter, in part to the custom of 'scraping the eyelids'—that is, their inner surface—by the native barbers. Asthma, even in boys, is common at Amoy, and consumption at Canton and Chusan. Intermittent fevers prevail more or less wherever the cultivation of rice is carried on near villages and towns. Elephantiasis is known between Shanghai and Canton, but in the southern provinces leprosy seems to exist as its equivalent. Diseases of an inflammatory nature are not so fatal or so rapid among the Chinese as among Europeans, nor do consumptions carry off so large a proportion of the inhabitants as in the United States. Dyspepsia is a common affection. Urinary calculus, common at Canton, is almost unknown in Northern China. The diseases which result from intemperance and vice are not so violent in their effects as in countries where the inhabitants consume more animal food, and live higher than do the Chinese. Tumors are very prevalent. Goitre is very common in the mountainous regions of the northern provinces. Asiatic cholera has been a great scourge; so has small-pox.

Classification of Disease.

The common classification of disease is under nine heads, namely: those which affect the pulse violently or feebly; those arising from colds, female diseases, and cutaneous diseases; those needing acupuncture, diseases of the eyes, of the mouth and its parts, and of the bones (others not stated). With regard to practice: 'If a physician designedly depart from established forms, and if death ensue from his malpractice . . then . . he shall be beheaded' (Section 297 of the Penal Code).—See 'Middle Kingdom,' vol. ii., p. 133.

Experimental treatment.

Dr. Meadows writes to the following effect: 'In many instances he has noted the remarkable similarity between our diagnosis and those of the Chinese physicians. Particularly are they sagacious in defining the diseases peculiar to the different seasons of the year. Their view is summarily this: In September and October, owing to the sudden changes in temperature, and at the shifting of the monsoons, cold rains setting in, and variable winds and typhoons not infrequent, it is almost impossible to avoid taking cold, which develops into fevers, dysentery and cholera. Those diseases, moderately hopeful in their phase until this change, then assume a more severe form. December, January, and February are generally healthy months; but invalids, whether consumptive, asthmatic, or rheumatic, invariably are worse at this time, and hepatic dropsy, delirium tremens and eruptive diseases develop themselves. If the season is unusually rigorous, all these diseases assume an aggravated type. A singular feature of Chinese clinics is the emphasis given to the periodicity of febrile diseases. Fever patients are thought to exhibit a marked change every seventh day,

Diagnosis.

Season.

and they say the disease "runs seven days light" and "seven days heavy." A fever, intermittent in the first seven days, is continuous the second seven; the third, it either leaves the system entirely, or increases in violence until death; on the other hand, continued fevers passing into intermittents are not uncommon.' Dr. Meadows adds: 'These views of the protean character of fevers are quite in accordance with his own, made some years previous, in a malarial part of Essex. He frequently noticed patients suffering from intermittent, remittent, and continued fevers during one attack.'

Fevers and Periodicity.

With regard to the effect of climate and food on the physique and character of men, the views of the Chinese are in the main as follows: Southern men are thin, spare, delicate, small-boned, white-skinned, with blood of inferior quality; subject to all diseases of an asthenic type. The lands of Southern China are watery, producing chiefly rank vegetation, while fish abounds and forms a staple article of food; with the exception of rice, their diet is comparatively innutritious. Rains are frequent, saturating the earth, rendering vegetables too succulent, so that they fail to supply their eaters with substantial nourishment, hence they become enervated; their old men contracting fevers, and not having sufficient vital power to defy them, die in consequence; their young men fail in the struggle with inward heats, consumptions, and hæmorrhages. Northern men are, on the contrary, tall and strong, able-bodied, with red thick skin, and large strong bones, having rich crimson blood. Their lands producing cereals and hardy woods, their food is grain and the flesh of wild beasts, and they drink wine; this gives tone and vigour to their systems. Cold winds blowing, and snow and ice abounding, make them bold and hardy. All their diseases are, consequently, of an acute inflammatory asthenic (sthenic ?) type. The same general principles will apply to foreigners under similar conditions. Dr. Meadows considers the general conditions of health in China to be dependent to a great extent upon seasons, climate, local surroundings, and drainage. He is of opinion that, looking to the Chinese themselves, we may deduce from their experiences and opinions, truths which, without their testimony, we might be long and bitterly learning.—(I. 143-45.)

Local conditions. Physique.

PART IV.

SOME DISEASES OF ANIMALS.

I. EPIZOÖTIES AFFECTING DOMESTIC ANIMALS GENERALLY.

In his Report on Wênchow, April to September, 1881, Dr. Macgowan adverts to the subject of epizoötics. He observes that there, the summer of 1877 was a cholera season, and in autumn of the same year vast numbers of domestic animals of different kinds perished by disease. Horned cattle, including the cow and buffalo, suffered; so did horses, goats, pigs, dogs, and poultry; the bovine animals from *rinderpest*, the goats from a foot-and-mouth disease; the nature of the malady affecting the others not stated. 'The Taotai then ruling enforced the law which prohibits the slaughter of cattle; he established an asylum where superannuated and worn-out cattle were cared for during their balance of life. There were several hundreds of them in a shed; but they all succumbed to the pest immediately after an infected cow was introduced.' The area over which the epizoöty extended included the whole of the province of Fukien, and portions of Kiangsu and Anhwei. In 1879, a murrain of unusual violence prevailed among bullocks and camels in Mongolia. Pig murrains do not often occur synchronously with cattle plagues. In consequence of the epizoöty alluded to, the transport of tea between Kalgan and Urga was much impeded. A standard Chinese work on 'cow-diseases' gives stercoraceous and mucous vomiting as pathognomonic of a common epizoöty, but it affords no other information that merits transcribing.—(XX. 41.)

Wênchow.

In the Report of Foochow for the half-year ending 31st March, 1876, Dr. Somerville writes that during March and April (of 1875?) a fatal disease prevailed among oxen and pigs, but especially the former. The animals first appeared to be 'off their feed,' and to look sick; after two or three days violent purging set in, then intense prostration and collapse, the animal usually dying before the fifth day. The disease is said to be always fatal. On post-mortem examination the liver is found enlarged; the bowels extensively ulcerated, and extremely offensive. The disease does not occur every year; also in some years, when it appears, it occurs only in sporadic cases, in others it is epidemic.—(XI. 44.) See also article PLAGUE, *ante*, page 123.

Foochow.

II. DISEASES AFFECTING CATTLE.

At Peking, in the summer of 1872, it was remarked that cows were invariably taken ill when they were removed from the city, where they were fed exclusively on malt-refuse, and allowed in part to pasture. The cows belonging to the locality do not seem to suffer. In connection with the occurrence of a case of diarrhœa in a child, and of typhoid fever in its nurse, the circumstance is noticed that the cow belonging to the family became sick and

Peking.

ceased to give milk; the animal was changed for another cow, the calf of which speedily became ill, and died. The precise nature of the illness is not stated.—(III. 7.)

Chefoo.

At Chefoo, in his Report for the year ending September, 1876, Dr. Carmichael notices that a cattle plague prevailed at that place extensively during mid-winter. In some instances the disease was slight, and convalescence supervened. In animals affected there was apparently a pneumonic complication present; a profuse thick and purulent discharge from the nostrils; they appeared to suffer from a malignant fever and secondary pneumonia. The critical period was the third day. The centre of the disease was stated to have been Chinhia, about 180 li distant from Chefoo; there cattle were bred in great numbers, and thence the epizoöty spread in all directions, producing great mortality in bullocks and cows. At Chefoo, in the early part of the epidemic, milch cows were chiefly attacked; and when they were so, the mortality among them was very great.—(XII. 42.)

Shanghai.

In the Report on Shanghai, January to March, 1872, some particulars appear relative to Steppe Murrain among cattle. In the autumn of 1868 that disease prevailed extensively in and around the settlement, and apprehensions existed that the health of the public would suffer from the use as food of the flesh of animals so affected. According to the Chinese, the affection itself is *ma ping*, that is, blood disease. Before the beginning of 1869 it seemed to have disappeared from Shanghai; but on investigation it is stated to have occurred yearly to the date of the Report being quoted from. On the 13th March, 1872, it was reported to have broken out in a dairyman's flock of cattle; of 26 animals attacked between that date and the 31st of the same month, only 1 recovered; 5 were killed, the remainder died. The reporter considers that rinderpest has been for many years as truly endemic in the Great Plain of China as in the Steppes of Russia. He considers the disease to be rapidly infectious, but observes that he need not remind his readers of the uncertain power of those influences which determine the spread of an epidemic.—(III. 56.)

In the Report to 31st March, 1873, some additional particulars are given in regard to the outbreak of rinderpest already alluded to. In December the disease seems to have ceased, but about the middle of that month more cases occurred, one milkman at Pahsienjao having lost five milch buffaloes out of his nine. A number of good cattle began to arrive from Tanyang, but the reporter believes that they contracted the disease from infected sheds (at Shanghai), into which they were placed. In the early part of January rinderpest again broke out violently, and continued to rage until some of the sheds were empty. The medical officer alludes to the method of treatment and prevention adopted in England by Mr. Crookes, F.R.S. It consists in placing at intervals round the sheds in which animals are, portions of quick-lime, and slaking it *in situ*; to this was subsequently added carbolic acid. The actual treatment consisted only of liquid diet, and success is stated to have followed these means.—(V. 55.)

Mr. Blair, in 1875, describes a case of rinderpest successfully treated by means of quinine in doses of one drachm, administered in warm water by being poured down the throat of the animal, and repeated. He adds: 'Although this is for the present only a solitary case, the rapidity of improvement after the administration of quinine, joined with the inevitable fatality of the disease when left to itself, convinces Mr. Blair that to quinine alone recovery was due.'—(X. 25.)

In November, 1879, an epizoöty occurred among horned cattle, and for several months afterwards continued to prevail. The first case was in a heifer imported from France. The scourge spread, first among the sheds in the French settlement, and then extended to the English, proving disastrous at 'The Farm,' where 122 head of cattle were lost within a few weeks.—(X. 25.)

At Ningpo, during the year ended March, 1879, an epidemic of cholera was contemporaneous with the occurrence of an epizoöty affecting horned cattle. That epizoöty was called by the Chinese *ma ping*. Among its more prominent symptoms were lassitude, increasing weakness, low carriage of the head, depression of the ears, staring condition of the coat, refusal to take food, discontinuance of chewing the cud, accelerated pulse, diarrhœa as the disease progressed, and restlessness. Dr. Mackenzie observed all these symptoms in some animals at the slaughter-house in September and October, 1878; also that many hundreds died of the disease in and around Ningpo. At the end of the yearly period the disease had again broken out in the same district with great virulence.—(XVII. 6.) Ningpo.

At Swatow, during the half-year ending 30th September, 1880, a grievous epidemic disease occurred among the cattle in the district, killing 90 per cent. of the cows and buffaloes in some villages. The disease seemed somewhat like cholera in man, either prostrating the animal at once and rapidly proving fatal, or, beginning with diarrhœa, it persisted for several days before death took place. The Chinese ate the flesh of the diseased animals with impunity; and they attributed the remarkable healthiness of the season to the fact that all the disease was among the cattle, and that the human inhabitants escaped on this account.—(XX. 24.) Swatow.

In the Report on Hoihow for the half-year ending 31st March, 1881, Dr. Aldridge thus describes an epizoöty which prevailed at that place: The dryness of the late season has done a good deal of injury to the rice and other crops. Disease appeared first among the cattle at Haian, on the mainland, whence, by means of cattle, it was imported into Hainan. The disease showed itself around Hoihow early in 1880; it spread into the interior of the island, and towards the end of the year was thought to have died out; but during the hot weather experienced in January and February, 1881, it reappeared. It does not appear that at Hoihow water buffaloes were affected by the disease, although in the interior of the island they suffered. Five times the number of hides were exported in 1880 as in 1879, thus indicating the fatality attending the disease. The duration of the disease extended from three to twelve days, the average being five. The symptoms were loss of appetite, great thirst, diarrhœa, tongue furred, skin cold and bathed in perspiration, rapid emaciation, and death by exhaustion. After death, decomposition was rapid; the intestines empty and black, not ulcerated, but their mucous membrane easily stripped off; Peyer's glands prominent; mesenteric glands enlarged; gall-bladder much distended, and the liver enlarged—whence the name *dābae*, or 'gall-bladder disease,' applied to the affection, which Dr. Aldridge considers to have been rinderpest, complicated in some cases by pneumonia.—(XXI. 77.) Nothing further was heard of this epizoöty after April, 1881. It is believed to have then died out.—(XXII. 10.) Hoihow.

III. DISEASES AFFECTING HORSES AND MULES.

At Newchwang, during the half-year ending March, 1872, more mules and horses died than in any similar period within memory. This great mortality was in part attributed to the prevalence of dust during the winter, and in part to the unusually intense cold.—(III. 16.) Newchwang.

At Amoy, in the half-year ending 31st March, 1873, horses and ponies owned by foreigners suffered from a peculiar disease. A sero-purulent discharge, usually from one nostril; enlargement of the corresponding maxillary gland; glandular swellings in different parts of the body. No horse recovered from the disease, nor did any die. It was believed to be *glanders*, and accordingly the horses attacked were slaughtered.—(V. 8.) Amoy.

In his Report to March, 1877, Dr. Manson, describing the presence of filaria in dogs, wrote: 'Another of our domestic animals besides the dog is well known to be affected by a penetrating filaria in China; the worm in the eye of the horse is another member of the genus.'

IV. FILARIA IN DOGS.

In his Report on Peking to March, 1875, Dr. Dudgeon expressed his opinion that filaria in dogs is far more common than he had formerly supposed. A large number of dogs die in the capital under suspicious circumstances, sometimes very suddenly. He had inquired of mutton and pork sellers, and received as a reply that worms were never observed in the heart or blood of those animals, but that in the horns of sheep, worms are sometimes met with. He consulted the 'Great Herbal,' but nothing very edifying, although plenty to amuse, is, as usual, found there.—(IX. 23.)

Peking.

At Chinkiang, in 1876, Mr. Duff found two nematoid worms in an aquarium 'filled with rain-water.' One of them was two inches, the other two and a quarter inches long, and both were in all respects identical with those found in the hearts of dogs. When first discovered they were about half an inch long, but in the course of three weeks attained the above dimensions. Having been kept about four weeks longer, they gained a full length of about three and a half inches. 'One morning they disappeared, and the water in which they had been kept, from being clear on the previous day began to get putrid, and swarmed with the minute, transversely striped animalcules which are found in stagnant water, rapidly propelling themselves by alternately curling and extending their bodies.'—(XII. 12.)

Chinkiang.

At Kiukiang, during the year ended March, 1877, an alarming mortality occurred among foreign dogs of all kinds, and in nearly every case where the dog was dissected death was found to be due to worms in the heart. The left ventricle in some instances was completely filled with them. Dr. Jardine was of opinion that as long as these creatures remain in the cavities they are harmless, and that it is only when they obstruct the passage of blood through the orifices, or impede the action of the cardiac valves that they prove fatal. The whole circulatory system was examined on two occasions, as well as the blood microscopically, but no clue could be got to their origin.—(XIII. 6.)

Kiukiang.

At Shanghai, in August, 1876, a spaniel, apparently perfectly well in the evening, died suddenly on the following forenoon. In the right ventricle of the heart, a coil of six worms, one of which was alive, completely occluded the pulmonary artery. There were no worms in any other vessels.—(XII. 12.)

Shanghai.

In the Report on Foochow, October, 1873, to March, 1874, the medical officer gives some particulars in regard to the disease so named. He describes it as of extremely frequent occurrence in those animals. The filaria found in the heart of dogs at Shanghai and Foochow have been described in the *Lancet* of March 8th, 1873, and by Dr. Cobbold in the *British Medical Journal* and *Proceedings of the Zoological Society*, the entozoon being considered a newly-observed species and named *Filaria immitis*. 'Ropes' of these parasites are occasionally found in the blood-vessels of dogs in China, and masses of them blocking up the cavities of the heart. At Hong Kong the occurrence of the disease has not been recorded. At Foochow it is very common, death of the dog taking place suddenly and suggesting poisoning or violence. Dr. Beaumont, of Foochow, has opened many dogs and found worms in the heart. No treatment has been applied in such cases, and it is difficult to see how any could be suggested. At Shanghai the disease is very common. In many instances

Foochow.

the dog is perfectly well up to twenty-four hours before his death. As a rule the animal vomits a quantity of blood, staggers about, then dies exhausted, or in a convulsion. In a case examined, 'there was a continuous rope of worms stretching from the right hepatic vein through the cava into the right auricle, and thence, by a fine twist of one or two worms through the tricuspid valve into the right ventricle.' The left auricle was packed with worms; the mass only the middle portion of a rope fourteen inches long which stretched into both lungs. There was not a single worm in the left ventricle. At Peking, the disease is believed not to exist. At Chefoo, the filariæ have been met with in the pulmonary artery, substance of the lungs, bronchial glands and œsophagus. They are very common in Chinese dogs, but the animals imported from Europe seem to acquire the parasites more readily and to a more rapidly fatal degree than the native dogs. Dr. Myers, still writing of Chefoo, states that he has also found similar worms in the right ventricle of a horse at that place. As to the etiology of the disease, the *idea* in Foochow among the foreign community, is that dogs get worms in the heart 'from drinking the water of stagnant pools.' As far as is known, this disease does not exist in the human subject in any part of China.—(VII. 13.)

In his Report on Amoy, for the six months to March, 1877, Dr. Manson remarks upon the sudden and apparently unaccountable way in which dogs, at Amoy, often die. He says that 'ten chances to one, the cause of death is found to be plugging of the pulmonary artery, or mechanical interference with the action of the heart by a mass of filariæ occupying the artery and cavities of the *right* side.' He is aware that a similar disease is known in America, France and Italy. Amoy.

Dr. Manson is acquainted with five species of entozoa occupying the alimentary canal of dogs. There are two kinds of tænia, a thread-worm inhabiting the small intestine, and two round worms *like* the human lumbricus. In addition to these there is the heart-worm, variously named *Filaria canis cordis*, or *Filaria immitis*, and a new species existing in the dog in China, named the *Filaria sanguinolenta*. The latter was discovered by Dr. Lewis in the Pariah dog of Calcutta.—(XIII. 13; X. 9.) See also Lymph Scrotum.

Dr. Manson considers that one-half of all dogs in China are affected with this parasite; that is, making the estimate from what he has observed to be the case at Amoy. Having drawn a few drops of blood from the ears of 40 dogs promiscuously, and examined it under the microscope, he found the *embryos* of this parasite in 15; in sixteen post-mortem examinations it was found in the heart in 8. In fourteen other post-mortems, *Filaria sanguinolenta*, or lesions produced by it, were found in 9. Dr. Manson then gives figures of the parasite, and remarks that he has 'never seen any sign of growth or development in the many specimens he has examined—the measurements and appearance of all being exactly alike.' So numerous are they in the blood, that in some specimens four, and sometimes five, occur in the field of the microscope.

If a dog thus infested dies, or is killed, the parents of these microscopic filariæ are found curled up in the right ventricle of the heart, sometimes extending through the tricuspid valve into the auricle, and even into the superior vena cava; and through the semilunar valves far into the pulmonary artery and its branches. Dr. Manson has not found them in any other vessel. Their number varies from three or four to forty-one—the latter being the largest number found in any one instance. They exist coiled together like a mass of whip-cord, the larger eight to thirteen inches in length, and one-thirtieth of an inch in diameter. As a rule female filariæ are more numerous than males. Dr. Manson details the anatomy of the parasite, and discusses the manner of its (supposed) entrance into its host. On the latter subject, however, definite information remains to be furnished. He discusses the evils which, according to his view, would arise were

the animal to occupy the left instead of the right side of the heart. Dr. Manson finds that the lungs of animals thus affected often present an appearance like miliary tuberculosis—a condition which, he thinks, is due to infiltration of the parasite into the lungs. Animals affected with these parasites in the heart often die suddenly after excitement, as fighting—the masses of filariæ acting as emboli. It is stated, however, that the parasite usually causes no inconvenience to the dog affected by it. As illustrating the extent to which *Filaria sanguinolenta* prevails in China, Dr. Manson states that of 13 dogs slaughtered at Amoy, in 1876-77, 9 contained this parasite in different stages of development. It has been found by him imbedded in characteristic tissues in the walls of the thoracic aorta; in the œsophagus; in the loose cellular tissue in front of the latter, and in the pleura—never elsewhere. The male is shorter than the female. The female, when matured, measures about three to four inches in length by about the sixteenth of an inch in breadth. The colour is a dark pinkish-red. Dr. Manson is of opinion that between the present and the *Filaria immitis* there exists a specific difference.—(XIII. 23.)

V. DISEASE AFFECTING POULTRY.

At Tamsui and Kelung, according to the Report for the year ending 30th September, 1876, an epidemic took place among the poultry of those places during the latter months of the period.

Tamsui. It affected equally those that found their own food on the banks of the adjoining river, and those that were carefully fed in foreign yards. In several that died the intestines were found to be ulcerated; in others the cause of death was not discovered. In the course of a month or two the disease seemed to die out, and health was again restored to the inmates of the poultry-yards.—(XI. 23.)

VI. PLAGUES OF LOCUSTS AND CATERPILLARS.

At Chefoo, during the summer of 1876, a serious drought prevailed, and in consequence there was a general failure of the crops. In certain of the neighbouring districts swarms of locusts

Chefoo. appeared, and, in a few days, what was spared by the drought was destroyed by the ravages of these insects. In addition to this last calamity a small caterpillar attacked the leaves and stalks of the sorghum, and was almost equally destructive in its effect. The probability of an epidemic outbreak was discussed; but fortunately such a calamity did not happen.—(XII. 42.)

At Swatow, during the half-year ending 30th September, 1880, the occurrence of a plague of caterpillars was recorded. In the months of June, July and August they literally covered the fir-

Swatow. trees, on which they lived exclusively, leaving them perfectly denuded of leaves. The Chinese were afraid to handle them, declaring them to be exceedingly poisonous; and some foreigners were injured by them. When crushed they exude a glutinous fluid of a light green colour, which is very irritating to the skin, producing an erysipelatous rash, which causes much inconvenience.'—(XX. 25.)

APPENDIX.

THE first number of the series of Reports, an epitome of which has been given in the text, was transmitted to me from Peking. Unfortunately, the document arrived too late to admit of information contained in it being transferred to its appropriate place in the present volume; hence the necessity of adding that information in the form of an appendix. In the meantime, the twenty-fourth number has been received; thus completing the series of Medical Reports from the year ending 31st of March, 1871, to the half-year ending 30th September, 1882, that is, for a period of eleven and a half years. In making an analysis of these documents I have endeavoured to arrange the several subjects noticed in the same order as that followed in the text, and also to make such references as appear necessary to enable the reader to follow the general narrative throughout the entire period embraced by it. In the course of preparing this abstract, various subjects have come under notice, which, although not forming part of the Reports immediately in hand, are more or less directly related to them. It accordingly seems to me appropriate to notice in the following paragraphs some of the subjects in question, in the belief that the general value of information contained in the Reports by Medical Officers at the Treaty Ports may be thus enhanced, and those gentlemen induced for the future to continue their investigations upon the lines they have so successfully followed in the past.

I. TIENTSIN.—(*See ante*, p. 9.)

During the six months ending March, 1871, the state of health of Tientsin was good; only two deaths among the foreign population being recorded: namely, one by chronic renal disease, the other from disease of the heart. The foreign population of that place and Taku, including the shipping at both, was about 500. No epidemic prevailed either among the foreign or native community. The diseases prevailing in Tientsin presented the same symptoms, and required the same treatment as do those in Europe.—(I. 146.)

Health and Diseases.

II. NEWCHWANG.—(*See ante*, p. 10.)

The port of Newchwang is situated in the southern province of Manchooria, on the left bank of the last complete bend from east to west of the river Liaou, before it empties itself into the gulf of the same name. Newchwang is surrounded by a dreary plain. Great mountain-ranges are seen in the distance, stretching in a north-easterly and south-westerly direction; but the nearest hill is some twenty miles from the settlement. The country for many miles in all directions is a dull, dead, and dreary flat. In some directions you can travel forty, fifty, and seventy miles without encountering a single hill. The only elevations are the graves of the dead; these have often rather a pleasant aspect, as around them are usually planted trees, and

Topography.

otherwise this great plain is very poorly supplied with wood. There are great tracts of utterly barren salt ground on which the rankest weeds will not grow, and in the fertile plain, where good crops abound, the scarcity of shrubs and trees makes even the rich ground look poor. But for the great mountain-ranges in the distance, which afford a grateful contrast, the effect of this poor scenery on European residents would be unmistakably depressing.

Climate.

The climate is essentially dry. The only difference between the climate of this province and that of the two other northern provinces of Manchooria are that the winters are shorter, while the summers are longer and warmer. The port of Newchwang has a latitude very much the same as Rome, but the following remarks will show how unlike the climate of the former place is from that of the latter.

Summer of Southern Manchooria.—The thermometer in the shade seldom indicates 90° or 92° Fahr. During the six years before 1871, the latter temperature had only been reached on a few occasions, and only for a few hours on each. The ordinary temperature to be prepared for in the houses is 84° or 86° Fahr. There is no rainy season. On a few days the rainfall is immense, and the force of the fall equal to that in tropical climates. But there are seldom a dozen days in any year which can be considered rainy. There are many on which occasional showers moisten the earth. After the heaviest falls the air is delightfully dry and bracing, and two or three weeks of cloudless weather can be counted on. There is also much fine weather with high and fleecy clouds; these clouds infinitely fashioned, beautiful, and coloured. During the summer months the south-west wind prevails, but an occasional breeze from the north cools the atmosphere. The evenings are generally cool and pleasant; at night the heat is seldom sufficiently great to prevent sleep, hence the rapid recovery from illness and restoration to health experienced in this place.

Winter of South Manchooria.—The winter is very severe. It begins in November and ends in March; thin ice may, however, be seen before and after these dates, and both in November and in March the days are often hot, the nights only a little cold. For several months the thermometer registers several degrees below the freezing-point, for two months very much below that, and for several days from 4° to 10° below zero, Fahr. Generally speaking, even in the coldest weather, the thermometer out of doors does not register much under 32° Fahr. Englishmen do not suffer from the severity of the season; unless when on horseback, they do not require to dress much more warmly than at home. On the other hand, it is exceptional to hear people complaining of cold. Gentle exercise out of doors is sufficient to maintain a gentle warmth.

Spring and Autumn.—The months of April and May belong to spring; the latter half of September and all October to autumn. The spring weather is exceptionally variable: one day as cold as in the depth of winter, the next may be unpleasantly warm. The autumn weather is perhaps the finest in the year; the mornings and evenings slightly cold; the changes fewer than in spring. For all kinds of outdoor exercise the autumn months are the best.

The climate generally is remarkably dry, subject to severe changes of temperature; winds prevail to a great extent, and are very changeable in direction, thus being the cause of many accidents by water.

In relation to Health.

For healthy people, with strong constitutions, the climate of this port and district is almost unsurpassed. There are drawbacks in some respects. 'Life,' compared with that in the large ports, is 'slow,' and the strong and vigorous resident chafes that he has insufficient work. Vitality, unless well exercised, gives rise to nervousness of a most painful nature. This is especially felt in the winter-time, and the more so if the preceding summer and autumn have been unusually dry. Under these circumstances it is no uncommon thing to find an apparently

healthy man suffering from extreme nervous irritability. It is difficult for such a person to read a novel. He cannot apply his mind to the story. The slightest noise, as from a piece of coal falling from the fireplace, or the creak of a door, affects him like an electric machine. He is conscious, as it were, of every limb and organ. His fingers ache; his heart beats tumultuously; he cannot sleep—or if he does, he is suddenly awakened by some terrible fear, the reaction of his excited brain. When a man first experiences these sensations he is in great distress. He fears he is losing control of his senses. And the relief is great when a fall of snow or rain occurs, and all these miserable sensations vanish as if by magic. The intense dryness of the winter climate is no doubt the cause of much of this. People gradually get accustomed to the climate; and the nervous sensations become less urgent every year. Hard work dispels them, and they disappear during a trip into the interior, where the monotony of life is broken, and the interest of travelling among fine hills and beautiful scenery is a grateful change after living for months or years in the plain on which Newchwang is situated.

The frequent winds which prevail are a great blessing to the resident. By the process of dilution they disinfect the foul emanations from drains, manure-heaps, and graves, much more effectually than any artificial means could do. It is the exception when a day without wind occurs, and every week there are two or three days when the wind blows with great force. It thus occurs that unwholesome gases, noisome smells, and 'disease germs' are diluted and blown away, and thus rendered harmless, or nearly so. But for these winds the gross filth that prevails, and which the extreme cold of winter encourages among the natives, must have made this part very unhealthy. The houses are, with few exceptions, built without regard to health; the floors rest on the ground, and when any drainage is attempted at all, it is of the rudest and most imperfect character. All kinds of filth surround the houses, and stagnant pools exist everywhere. These conditions, of course, favour epidemics, and when such outbreaks of sickness occur, as they sometimes do, the mortality is very great. There had, however, up to 1871, been only one epidemic of cholera since Europeans came to this port. Then, the natives died in fearful numbers. Since 1865 there have been no epidemics, although small-pox has prevailed to a terrible extent. It is never absent. Scarlet fever and measles occur every year, generally about the end of winter or beginning of spring. From all these fevers a great many Chinese die. There have been no deaths among Europeans from the above-named diseases, although there have been cases of small-pox, and both children and adults have suffered from measles and scarlatina. The climate is no doubt a good one for the limitation of contagious diseases. It is impossible, even in the worst cases of small-pox, to prevail on the natives to separate the patient from the other members of the family. It is difficult to do so from the nature of their house accommodation; but even where this reason does not exist, it is next to impossible to ensure that isolation which is always attempted when the disease occurs in European practice. What is true of small-pox is true of every other infectious disease. No special attention is paid to separation. The climate is a trying one for two classes of disease—pulmonary and cardiac. The former, in more or less slight forms, occurs very generally all the year round; while all but the strongest and most careful suffer in the winter months from slight attacks of sore throat, bronchitis, and similar ailments. If the patient is strong, the attack is acute and soon over. If he be weak, the most careful treatment is sometimes altogether fruitless in preventing a slight attack of bronchitis or pneumonia from developing into phthisis. The cardiac class of disease is also a difficult one to treat successfully here. The pulse is quickened by the stimulant action of the climate, and aneurism and valvular disease should, when possible, be treated elsewhere.

In relation to Disease.

While the climate of this district is specially unfavourable to the successful treatment of

pulmonary and cardiac diseases, all other diseases are as likely to have a favourable termination here as at any other place with which Dr. Watson is acquainted. The most common diseases are those of the skin, ophthalmia, small-pox, scarlet fever, measles, diarrhœa, all kinds of intestinal worms, and a low kind of fever, like typhus, but which, unlike typhus, has no certain course. Comparatively few deaths have occurred here in the adult European population. A considerable number of people have been accidentally drowned. Two deaths occurred from exhaustion, one from typhus fever and dysentery, one from phthisis, and a few others from causes not certainly determined. In two of the deaths mentioned above, namely, those from typhus fever and dysentery, the patients were addicted to strong drink. In the case of the former the patient was not seen until he was comatose, and treatment was hopeless; while in the latter, he was not seen until his strength was utterly exhausted from disease. Several children have died; two infants a few days old, two children about a year old, and one (a delicate twin) about three years old. Dr. Watson observes that the climate is most trying to infants and young children; nothing but strong constitutions and constant care will enable European children to live without injury to health through the cold winters. Having said this against the climate in relation to disease, he adds that the oldest European inhabitants are the strongest and healthiest in the settlement. These came with good constitutions, and in every instance where this has been the case there has been no deterioration of health, but generally the opposite. It would be difficult to find anywhere finer specimens of men than those at Newchwang. There are few places where a healthy constitution, intelligently cared for, is more likely to enjoy good health than here; while on the other hand, there are few places more likely rapidly to destroy life when the constitution is weak, in which there is hereditary taint, and where the utmost care is not bestowed upon it.

With extremes of climate such as occur, good and sufficient clothing are necessary; no less so are properly built, pleasantly ventilated, and comfortably heated houses. The use of the American stove instead of the open fireplace in winter is recommended. In the case of children and delicate persons, special care in maintaining the warmth of houses is necessary. All the houses should, like those of the Chinese, be built so as to face the south. They should be erected on ground raised above the surrounding compound, and the floors should be at least two feet above the raised ground.

Prevention of Disease.

The following table indicates the extremes of temperature during five years' observations. The thermometers (Fahrenheit's scale) were suspended on the northern faces of stone walls.

Temperature.

Months.	Coldest.		Warmest.	
	At daybreak.	2 to 4 p.m.	At daybreak.	2 to 4 p.m.
January . .	10°	3°	39°	44°
February . .	10	7	35	50
March . .	0	14	43	60
April . . .	27	41	53	68
May . . .	41	52	65	74
June . . .	57	70	76	84
July . . .	62	74	79	87
August . .	63	73	77	85
September . .	41	52	73	80
October . .	28	42	66	71
November . .	9	17	52	61
December . .	6	2	37	44

The winter of 1870-71 was unusually cold. On several occasions the thermometer remained under zero during three, four and five days at a time. On such occasions there was little or no wind, and as a consequence the existing cold was not severely *felt*. In many respects the winter was pleasant. The air was clear; the three or four showers of snow that fell had considerable effect in preventing dust-storms, and in moderating the stimulating character of the climate.—(I. 124-128.)

According to the Report for the eighteen months to September, 1882, the highest temperature during that period was 95° Fahr., namely on 3rd July, 1882; the lowest, namely 1° Fahr., on 24th September, 1881. In that period a much larger European mortality occurred than had been recorded in any previous similar period, but with the exception of two children the mortality was not due to climatic causes; both of these died from exposure to extreme cold. Three Roman Catholic Sisters died of typhus, and a third death by that disease occurred in the Roman Catholic Mission. There was one death by Bright's disease. The patient, one of the oldest residents, had for several years been in a critical state, and for some weeks before his death there was general dropsy. There were twelve European children born in the settlement during the period. Of these, four were boys, two of them twins, and they both required to be delivered by the forceps. Of the girls, one was a foot-presentation; another was imperfectly developed, and only lived five hours.—(XXIV. 2.)

III. CHEFOO.—(*See ante*, p. 15.)

During the year ended September, 1882, the temperature was fairly equable, the winter months exceptionally warm, the summer months not unusually hot. The amount of rain was much less than usual. Taking the entire period under remark, the following represents the thermometric readings, also the number of days on which rain and snow respectively fell, namely: Climate.

Year and Month.	Highest.	Lowest.	Average.	Average in 1880.	No. of days Rain.	No. of days Snow.
1881, October . .	84	44	64	57	4	—
„ November .	67	28	47	44	2	1
„ December .	54	18	36	30	2	7
1882, January . .	50	18	34	27	—	5
„ February .	54	22	38	29	—	1
„ March . .	74	26	50	45	—	—
„ April . .	77	37	57	57	5	—
„ May . .	98	48	73	68	1	—
„ June . .	98	55	76	72	2	—
„ July . .	100	68	84	77	5	—
„ August . .	96	64	80	80	4	—
„ September .	89	57	73	72	2	—

Several cases of a form of fever presenting some characters of typhus occurred among the Chinese. Diarrhœa prevailed to a less degree than usual in the hot weather, the decrease being attributed to a diminished rainfall as compared with previous years. In early spring some cases of ulcerated sore throat occurred, but in all recovery took place in a few days. Eleven births occurred, the mother in one instance being subsequently affected with phlegmasia dolens.—(XXIV. 3-6.)

Health.

IV. KIUKIANG.—(*See ante*, p. 22.)

During the four months, April to July, 1882, the health of the foreigners at Kiukiang was very good; in August and September, however, an unusual amount of sickness occurred among them. Up to the middle of July the season was cool, the rainfall less than in the preceding year, yet a rise in the river took place to an extent greater than had occurred for ten years before that date. In July and August the greater part of the foreign concession was flooded; portions of the town and neighbourhood were also deeply covered by water. So long as the river continued to rise there were few ailments. After it had fallen a few feet, cases of intermittent fever and of dysentery occurred. The water under the floors of the houses and in the lake behind became stagnant, emitting a very unpleasant odour. It is not known whether there was more fever than usual among the Chinese, but many families, driven from their homes, camped on the neighbouring hills.

Health and Sickness.

One case of cholera was landed from the s. s. *Pekin*, and it was stated that several deaths by that disease had occurred on board the river steamer. In Kiukiang itself no case of this nature occurred.

Cholera.

Towards the end of April a missionary from Kiangsi was treated for dysentery. He had suffered from that disease during two years. Ipecacuanha, opium, and astringents, with milk-diet, were tried without beneficial effect. Enemata of nitrate of silver as recommended by Dr. Mackenzie (*Lancet*, 1882, vol. i. 640, 681) were administered, with the effect that after three such had been given, no further treatment was needed.

Dysentery.

An obstinate case of *varicella prurigo* occurred in a child aged four months. The only treatment adopted was tonic: quinine, compound syrup of the phosphates, with the application of calamine ointment to the sores. The attack in the first instance took place in January; it recurred in May, and then the child was sent to the bungalow at Lushan in the hills, where, after a month, complete recovery took place. No other patients with varicella were seen, but small-pox was very prevalent in the city.

Varicella.

A case of intermittent fever occurred in a new-comer in the month of April; during the summer months three other cases of the disease, in one complicated with diarrhœa, came under treatment; all doing well, and recovering quickly.

Intermittent Fever.

In August a case occurred in which a foreign lady, who had suffered from dysenteric diarrhœa during pregnancy, became attacked after parturition with a severe rigor, then severe abdominal pain and pyrexia; the pain subsided under treatment, but the diarrhœa persisted, and death occurred on the ninth day after confinement.

Diarrhœa, Dysentery.

In the same month a case of acute dysentery yielded readily to ipecacuanha in large doses. Four cases of intermittent fever did well under treatment. Three cases of purulent ophthalmia occurred, all the result of contagion from Chinese children. In September seven cases of intermittent and one of mild typhoid fever were treated, besides three of acute dysentery, one of gout, and three of venereal disease; all of these recovered under treatment.

At the native hospital, notwithstanding that the establishment was vacated for a month, during the period there were 3,400 applicants, that number exceeding by 200 the total in 1881. The Chinese at Kiukiang appreciate the benefit to be obtained from foreign medicine. The chief difficulty was to find means for building a new hospital and for carrying it on. The house formerly used as a hospital is faulty in position and in arrangement for its purposes. Sisters of Charity undertake the duties of nursing, and for this purpose reside in the building. Dr. Underwood hoped that in 1883 a new hospital would be complete and in occupation.—(XXIV. 12.)

Chinese appreciation of Foreign medicine.

V. YANGCHOW.

The geographical position of Yangchow is lat. 32° 20′ N., long. 119° 5′ E. The city is situated on the north of the Yangtze and on the Grand Canal. It has topographical characters similar to those of Soochow. In 1881, after the summer heat became intense, numerous cases of cholera occurred; the disease was so fatal that only two out of every ten cases recovered. At the same time a murrain prevailed among cattle, horses, pigs, and dogs. Similar accounts, except as regards murrain, came from Ningpo, Hangchow, and Shanghai. The warmth of the succeeding winter, namely, that of 1881-82, indicated a fruitful year at Yangchow; 'but the cold or negative principle of nature being unable to cope with the positive or warm principle,' disease became rife, particularly affections of the throat among young children, many of whom died a few hours after being attacked.

Topography.

Cholera.

Affection of the Throat.

In July, 1882, the city of Yangchow and adjacent region were visited by cholera in even a more severe form than in the previous year. On that occasion the disease came from the north and went south. On this occasion its course has been reversed; it approached from the south, travelled north, the cholera-wave reaching Tientsin and Peking in a weak form. A month later the region of Yangchow was visited by three types of disease. The first chiefly affected men; it was caused by cold wind suppressing the summer heat, thus inducing fever, which became irregular—some cases experiencing a change between the seventh and tenth days, when the heat gradually subsided, and the patients recovered; others changing between the third and fifth days, presented petechia over the entire body, and succumbed. The second form of the epidemic appeared chiefly in women, who first suffered from chills, followed by fever which did not subside; it was attended with a dry mouth. Cooling remedies were of no avail. Only two or three patients out of ten survived. Thirdly, children suffered from fever, followed by cold, while the whole face broke out into blotches, as in measles. When the eruption appeared distinctly the patient took a favourable turn, otherwise the disease changed to a 'throat-locking' malady, and terminated fatally.—(XXIV. 19.)

Cholera.

VI. NANKING.

The city of Nanking is situated in lat. 32° 2′ N., long. 118° 49′ E. It was the ancient capital of China; it is the principal city of the province of Kiangsu, and has a population estimated at 450,000, as against four millions prior to the transference of the seat of empire to Peking in the fifteenth century. It is included in the treaty of Tientsin, concluded by the French plenipotentiary in 1858, but has not yet been proclaimed among the 'open' ports. The climate is considered to be peculiarly unhealthy. (See Keith Johnston's 'Universal Gazetteer.') According to the Reports before us, 'a mild season and paucity of rain in the winter of 1881-82 caused the spring

of the latter year to be unhealthy, the ordinary maladies of the season showing a tendency to assume a chronic form, and to be cured with difficulty.'—(XXIV. 20.)

VII. NAN-CHANG.

Nan-chang, the capital of the province of Kiangsi, is situated on the Kan-kiang river, 285 miles S.W. from Nanking, in lat. 28° 35′ N., long. 116° E. During the winter season of 1881-82 the weather was changeable; unseasonable rain and sunshine, heat and cold, alternately prevailed, followed by a furious storm, and then severe cold. This brought extensive sickness, though it was not fatal in character; it was cured with difficulty. 'The prevailing disorder resembled ague, but ague it was not; one day the patient would be better, the next day worse. This region also suffered from pig murrain. Those who ate the flesh of those animals were attacked with boils.'—(XXIV. 20.)

VIII. HANKOW.—(*See ante*, p. 25.)

At Hankow, in October, and the greater part of November, 1881, the weather was unusually hot, and much sickness, although not of a fatal nature, prevailed. There was at the same time great mortality in poultry-yards; hens were suddenly seized with fits, and expired at once. Native doctors reported the existence at that place of diarrhœa in the autumn of 1882: also, that the disease, when not treated at its commencement, becomes intractable. Ague was at the same time prevalent, and, in cases of crews that had conveyed rice to Shantung in the spring, it was often fatal. These men returned from the voyage affected with diarrhœa, the food and water of Shantung not agreeing with them.—(XXIV. 19-21.)

Diseases.

IX. ICHANG.—(*See ante*, p. 26.)

In the half-year ended September, 1882, the number of foreign residents was only about a dozen, made up of official and missionary elements. The 'foreign settlement' existed only in name, serving as a convenient designation for the quarter of the suburbs in which is situated the British Consulate. Behind this quarter, which itself occupies a slightly elevated position on the river-bank, is a long row of vegetable gardens. These gardens are liberally and frequently supplied with night-soil, and are the source of an intolerable stench during the greater part of the year. The British Consulate is a Chinese house, on a site some feet below the level of the garden immediately behind it. The Scotch missionaries live inside the city, in Chinese houses. Consulate and other houses of foreigners are very hot in summer, and in rainy weather are damp and cold. Underneath them are drains that are often blocked up, and are mere receptacles for filth. 'With the present habitations a low state of health is induced, even if dangerous illnesses are escaped.' Night-soil is carried through the streets in open buckets at all hours of the day; the latrines, notwithstanding, never seem emptied, and the odours that emanate from them and from the vegetable gardens are sickening.

Topography.

The scenery around Ichang is very beautiful; mountains, precipices, waterfalls, glens and valleys, make up scenery of marvellous picturesqueness. The roads are mere pathways, yet there are many ways of enjoying exercise. Game is plentiful; a tennis-ground has been laid down at the British Consulate. The river affords excellent boating in winter, and pleasant trips may be taken at all times.

The climate is extremely hot during one or two months of summer, but during the rest of the year tolerably agreeable. Rain falls on a large number of days. In the hottest days there is generally an up-river breeze; it ceases in the evening, however, and during nights the air is motionless, the temperature (80° to 85° Fahr.) rendering sleep difficult while these conditions last, as they usually do for several weeks. Climate.

The following table represents the state of the temperature and rainfall at Ichang from April to September, 1882, viz.:

Month.	Highest Temperature.	Lowest Temperature.	Rainfall in Inches.	No. of Days on which Rain fell.
April . .	82°	43°	5·38°	16
May . .	89	57	9·32	17
June . .	88	67	8·96	22
July . .	95	70	6·83	20
August .	97	69	3·07	7
September .	87	59	5·22	17

There is a general absence of any severe degree of malaria at Ichang. Endemic diseases, with the exception of small-pox, are unknown. The native population are sturdy, coarse-featured and strong. There is a large consumption of spirits among them, and drunkenness 'is common enough to be suggestive of Western lands.' The habits of the people are dirty. Parasites and parasitic diseases of the skin—prurigo, scabies, and tinea are common among them. About sundown one may often see on the beach a naked form lit up by the glare of a pile of burning shavings, waving a bundle of clothing in the smoke. This is the recognised and effectual mode of parasiticide. Health. Habits.

There is not much medical practice to be obtained among the natives. Willing enough to chance a dose of medicine, they will not endure a regular course of treatment. They are opposed to post-mortem examinations. As proofs of the sentiment of humanity among them, Dr. Henry mentions two important institutions they have, namely, a free ferry on the Yangtze Kiang, and life-saving boats—the latter successful in numberless cases where life would otherwise be lost in the rapids at some little distance above the settlement.

Suicide is prevalent among the people; the usual mode of performing it, by strangulation, hanging, or by swallowing opium.

The health of the Customs staff was favourably reported on; a case of Ranula, some accidents, diarrhœa, and other trifling ailments making up the list of illnesses among them. The health of other members of the foreign community was less satisfactory. In alluding to a case of fever which occurred, Dr. Henry discusses the question whether it was one of remittent or of typho-malarial fever. It proved fatal. During the hottest period, namely on the 2nd of August, the thermometer registered 95° Fahr. by day, and 83° Fahr. by night. On that day a fatal case of heat apoplexy occurred in the person of a foreigner who, while under the influence of Chinese alcoholic spirits, exposed himself to the sun for some time. At the same date the natives suffered much from the heat, and deprivation of sleep in consequence. The nightly attacks of mosquitoes are no less severe Health of foreigners.

among the Chinese than among foreigners, nor is 'prickly heat' less felt by them than among Europeans.—(XXIV. 11.)

X. SOOCHOW.—(*See ante*, p. 71.)

The geographical position of Soochow is (approximately) lat. 31° 25′ N., long. 121° E. It is situated in a lacustrine region south of the Yangtze, on the Grand Canal. It is the centre of silk culture, and the district connected with it is described as being one of the most populous and fertile portions of the globe. During the summer of 1881, owing to alternations of cold winds and excessive heat, agues and bowel-complaints raged with violence, children being the chief sufferers. It was given out that the 'God of Pestilence had descended,' and people, discarding doctors and drugs, crowded the temples, entirely neglecting treatment. The ill-health of summer extended into autumn; diseases prevailed beyond the capacity of doctors to give due attendance on the sick,—the cause of the maladies being untimely cold winds, with intermissions of extreme heat. Ague and diarrhœa were the most prevalent diseases, and were very fatal, especially among children over ten years of age, many of whom died the day they were attacked. In some instances, whole households were prostrate at the same time.

Health and Sickness.

During the succeeding winter, intractable diseases continued to prevail; afterwards, a very fatal form of puerperal fever, from which it is stated that not one patient in ten recovered. Typhoid fever was said to prevail to such an extent, particularly among women, as to cause an increase in the price of woven fabrics. The city suffered from a virulent form of cholera in autumn, 1882. It was preceded by ague and diarrhœa—the latter of a chronic form.—(XXIV. 19.)

XI. SHANGHAI.—(*See ante*, p. 29.)

The diseases most prevalent at Shanghai attain their maximum in the summer months. The winter season may compare favourably with that of any part of the world, the dry bracing air being in an eminent degree conducive to health. The sanitary condition of the locality had improved during the years preceding 1871; the more perfect system of drainage carried off surface impurities, and the healthiness of the settlement was considered to be in a great measure owing to the absence of water-closets in dwelling-houses, which in England are a frightful source of typhus and scarlatina. The absence of both these diseases here and at Hong Kong is noteworthy. Sulphuretted hydrogen gases, and those of carburetted hydrogen, if given off in the open air, are not so injurious to health as when escaping from sewers. China is *par excellence* the country of bad smells, yet the people do not seem to suffer from them, but on the contrary rather like them.

Health and Diseases.

Conservancy.

During the year ending March, 1871, the health of the foreign community was exceptionably good: the only deviation being an epidemic of small-pox which began at the close of 1869 and extended into the early part of 1870. During the six months ending March, 1871, the deaths from all causes among foreigners amounted to 41 in a population of 3,083, or 13 per cent. for the half-year. During the summer months the prevailing diseases were remittent and intermittent fevers of a mild type, liver affections, diarrhœa, dysentery and rheumatism. In winter the most fatal diseases were dysentery, diseases of the heart, phthisis, and abscess of the liver. Among the diseases recorded were measles, scarlatina, and periodic fevers. Next in frequency after remittent fever came diarrhœa, rheumatism and

Small-pox.

Prevailing Diseases.

syphilis. Diarrhœa, although frequent in winter, is not of the intractable character it sometimes assumes in the hot months. Rheumatism in the majority of cases yielded to large doses of iodide of potassium and counter-irritation. Syphilis was of a mild character except in the secondary and tertiary forms. In the majority of cases recovery took place under iodide of potassium and a mild mercurial course. Some severe cases of asthma occurred. Urticaria is often seen in China, in some cases attended with much fever. Some cases of erysipelas and cynanche parotidea occurred in the autumn. Subacute and chronic inflammation of the liver are not infrequent, also induration and obstruction, with jaundice in some instances. The fluid extract of dandelion with nitro-muriatic acid has proved most reliable in the hands of Dr. Barton. Cases of phthisis occurred during the winter months, but were chiefly imported. Chest affections in Shanghai are not generally severe.

The water procured from the Wangpoo river and from the Soochow creek was remarkably good; it contains a small quantity of organic impurity, and compares favourably with the water supplied in England. Shanghai water is not polluted to any dangerous extent with sewage, and treated with alum and then filtered is both palatable and wholesome. Water taken from the river at high tide is purest. That taken at or below the harbour-master's hulk would afford a pure supply for the town. Water-supply.

Dr. Barton advocated the establishment at Woosung of a sanitarium for persons suffering from fever and dysentery. There, a cool sea-breeze is to be had within an easy distance, more valuable in some cases of illness and indisposition than the whole Materia Medica. Sanitation.

In 1862-63, an epidemic of cholera carried off many people. Cholera.

The annual mortality of the total population of Shanghai for four years, 1864 to 1867 inclusive, was 38 per 1,000; for the years 1868 to 1870, it was 36 per 1,000. The annual mortality of permanent residents alone from 1864 to 1867, was 21 per 1,000; from 1868 to 1870, it was 18 per 1,000. The mortality on the total population for the six months ended March, 1871, was 13 per 1,000, or at the rate of 26 per 1,000 for the entire year.—(I. 38.) Mortality.

In 1882 the summer season was cold, wet, and marked by frequently occurring atmospheric disturbances. Only once did the temperature reach a characteristic summer level, namely, on 18th of July, when the mercury touched 94° Fahr. During that period the mortality was extremely low among adult foreigners of European birth. From April, 1881, until May, 1882, no death was reported from small-pox; of the three which occurred respectively in May, June, and August of the latter year, two—Macao and Manila infants—were unvaccinated. In March, 1882, a Portuguese lady died of pneumonia, secondary to scarlet fever, which latter declared itself a week after a natural labour. Six children in the house took scarlet fever in more or less severe forms, but all of them recovered. While these children were ill, but without any communication that could be traced between the families, two young girls, sisters, were attacked by scarlet fever, the disease proving fatal in one of them, and the second patient subsequently dying of acute miliary tuberculosis. On 18th of November, one of the Portuguese children who had recovered from scarlet fever became attacked with diphtheria; tracheotomy was subsequently performed, but she rapidly sank, and died. Climate. Small-pox. Scarlet Fever. Diphtheria.

In his Report for the period under notice, Dr. Jamieson adverts to the liability there always is of contagion being introduced among families by means of visitors to their servants, and the

advisability of guarding against this danger; the native houses in the city are densely crowded together; the habits of their inhabitants, and the absence of provision for the notification of infectious diseases or of the occurrence of deaths. He comments upon the native custom of retaining dead bodies in their houses for periods more or less long, and on the danger from contagion which thus arises. Numbers of families, although suffering from infectious diseases, are permitted to remain in apartments occupied by those who are as yet unaffected. In illustration, Dr. Jamieson gives particulars of a case of diphtheria occurring thirty-six days after communication in this manner was considered to have taken place. He also notices a case in which that disease was considered to have been thus communicated, notwithstanding that most careful disinfection of the infected apartment was performed. In the cases alluded to, careful isolation of the persons affected was observed, with the result, as believed, that an epidemic of diphtheria was averted. In the month of May a fatal case of suppurative peritonitis occurred in a lighthouse-keeper, aged forty-five, the disease supervening upon constipation.—(XXIV. 39.)

Contagion, etc.

XII. HANG-CHOW.

The geographical position of Hang-chow is lat. 31° 5′ N., long. 104° 35′ S. The city is situated on the Ch'ient'ang river, at the head of a great estuary, where the Grand Canal commences. The winter of 1881-82 at that place was characterized by fluctuations of heat and cold. A large amount of inflammatory disease, attributed to those changes, prevailed among children; throat maladies (diphtheria) proved fatal in a few hours; small-pox also prevailed among them, notwithstanding every precaution to keep them within doors. Besides, inoculated persons, between the age of forty and fifty years, were confined to bed, their faces being covered with pustules; these cases, though severe, were not fatal, recovering in the course of seven days. The existence of small-pox augurs well for a healthy spring.—(XXIV. 20.)

Topography.

Diseases.

XIII. NINGPO.—(*See ante*, p. 39.)

The port of Ningpo is situated on the left bank of the Ningpo river, about twelve miles from its junction with the sea at Chinhae. The city stands in a highly fertile alluvial plain, the latter surrounded on all sides by ranges of hills, intersected by canals and smaller irrigating ditches, the rice-fields being under stagnant water for several months in each year.

Much greater degrees of heat and cold are felt in Ningpo than in places of exactly the same latitude in other countries—New Orleans for example. In the winter months snow, to the depth of 12 or 18 inches, is quite usual. This difference is due to the constant influence of the northern and southern monsoons. Though most of the sun-scorched plains of Asia are north of the parallel 30° in which Ningpo is situated, the influence of their burning winds is felt many degrees south even of the equator, and it is in consequence of the southern monsoon steadily blowing from April to October, that Ningpo summer heat is so intense; while the northern monsoon, setting in from October to April, again increases the cold natural to the place itself. The following table indicates the extremes of temperature in the shade for the months noted, namely:

Topography.

Climate.

	Highest.	Lowest.
October	84°	56°
November	70	40
December	66	29
January	58	28
February	60	26

The fertile fields about the settlement of Ningpo are taxed to their fullest extent and capacity for productiveness. No sooner is one crop ripened and secured, than the ground is made ready for its successor. In late February and early March, winter wheat, spring beans and peas appear, along with a variety of clover used chiefly as a fertilizer, and which is ploughed under after a proper season of maturing. Rice follows the spring crops with every species of vegetable common to Southern and Middle China—peas and beans of a later sort, carrots, beet, turnips, spinach, egg plants, the succulent sprouts of the bamboo, yams, earth-nuts of several kinds, all the varieties of cabbage known to the natives as *T'saê*, and all the leek family termed *T'song*. Tea is cultivated, but not in the immediate neighbourhood of Ningpo city. Priests in the numerous monasteries among the hills cultivate small quantities for their own use, and to set before any chance guest who may visit them. It is very similar in taste and appearance to the Japanese tea one is invited to drink in the shops of Yokohama and Yeddo, somewhat stronger perhaps in its flavour, but not sought after for exportation. Mulberry-trees are little cultivated in this neighbourhood. Were they more commonly introduced about Ningpo, and could they take the place of the rice-crop, the advantages to foreigners, Dr. Meadows thinks, would be evident, because they require little or no artificial watering, and a crop of this kind would generate less miasma than rice or paddy. The cotton-crop is latest, and often in mid-winter the white bursting bolls of the cotton-plant seem disputing the rival whiteness of the snow covering their roots.

Agriculture.

Owing to the vast quantities of decomposing animal matter always corrupting the soil in places where dead bodies are left exposed above the surface of the earth, and the obnoxious fertilizers used so generously on the soil, the water of Ningpo is utterly unfit for drinking purposes. People living in the settlement (1871) are quite cut off from the hill-waters by the river on three sides, and a canal on the fourth. The tides setting up the river for many miles render the water very muddy and saltish. The natives use it after careful precipitation with alum, or after filtration. The perennial springs at Taying supply foreigners with excellent water. It is brought from the vicinity of the stone quarries in water-boats, and is sold at a fixed rate.

Water.

During the half-year ending March, 1871, little sickness prevailed among foreigners or natives in Ningpo settlement or city. Most of the cases reported were mild and amenable to treatment. Diseases of the respiratory organs, including catarrh, asthma and bronchitis, were more general among natives than among foreigners, owing, it was considered, to indifferent houses, and insufficient food and clothing of the former classes. Tertian intermittent fever, among the miasmatic class, predominated. Dyspepsia was common among the Chinese, men and women suffering from it alike, because of the kinds of food they use. Among foreigners tertian intermittent fevers are very prevalent, particularly in the spring and autumn; this, notwithstanding that they live in airy commodious houses. Typhus and typhoid fevers, assigned to dirt and destitution, rage with extreme violence, and are said to be contagious. Diarrhœa, dysentery, rheumatism, asthma and phthisis are prevalent among the natives; so are aggravated cases of

Prevailing diseases.

hepatic dropsy, complicated with ague—chiefly from the neighbouring districts. Elephantiasis Arabum (?), called by the natives *Ta-keö-fung*, is also common. Menorrhagia is almost universal among women. Ophthalmia is not so general as in the north, but still is quite common. Tumors, although frequently seen, are less prevalent than at Hankow; nor do the natives so readily submit to operations for their removal as at the latter place. Dr. Meadows observes that, 'Western medicine and surgery are not held in such high estimation here by the natives as at some other Chinese ports.' Natives and foreigners alike agree in defining disease in this part of China as asthenic; hence bloodletting and other depletory measures are seldom necessary. No epidemic prevailed during the period noted; only a few cases of measles in the foreign community.—(I. 142-44.)

General points.

On general points in relation to health, Dr. Meadows writes:—The great majority of foreigners in China err on the side of eating and drinking too much. Yet a too meagre diet cannot be sufficiently denounced. He urges the necessity of regular generous meals, with a moderate quantity of claret or other light wine, or malt liquor in summer and winter. He advocates great carefulness in adapting clothing to sudden changes of temperature. He compares the sanitary conditions of Ningpo with those of some other places in China—Foochow and Amoy have their sea-breezes and their beaches, Shanghai its bund and Bubbling-well Road, Chefoo its shingly seaside ride or drive; but close to Ningpo there are the hills. Either the Tien-dong or Fung-hwa ranges offer retreats from the enervation and worries of settlement life. Their easiness of access is only rivalled by their variety and beauty of scenery. Dark woods of cypress and fir crest the spurs of many of the bolder ridges. Their slopes are often dense with evergreen shrubs, balsams, and camellias; in the spring, azaleas, scarlet, purple, and sometimes yellow, light up the sombreness of the brown, not yet revivified herbage around. Summer brings its own regalia of jessamines, wild climbing-roses, wisterias, and trailing vines. Fronds, beautiful and unique, are endlessly found. 'We, dwelling in Ningpo, can invite the delicate critic to the groves and grottoes of Tien-dong, and the bold and adventurous to the abysmal chasms and tumultuous waterfalls leaping over precipitous rocks hundreds of feet deep at Snowy Valley, quite equalling in grandeur what one finds among Alpine gorges or the depths of the Pyrenees.'—(I. 144.)

Climate.

The hot season of 1882 was cool for Ningpo. For the four months, June to September, the maximum temperature was 77·9° Fahr., the mean minimum 74·7° Fahr.; the former being 3° Fahr. less than in the two previous years, 7·5° Fahr. less than in 1879. Throughout the six months ending with September, there was a great deal of rain. In June rain fell on 12 days; in July, on 15; in August, on 12; and in September, on 11. Without almost any intermission there was a continuous sea-breeze, the result being as reasonable a degree of health as is compatible with such a region as that in which Ningpo is situated.

The drains, after having been neglected for many years, were cleaned out; this operation taking place in the last week of March and first of April: their contents were thrown into the river. Before the proceeding began, the residents were recommended to take quinine; the advice being acted upon by all except two individuals, and both of them caught fever. In one it was continued in type; in the other it lasted twenty-four hours, and was accompanied by vomiting and purging.—(XXIV. 17.)

Murrain.

At Ningpo, at the close of summer, 1882, there was a cattle murrain in consequence of the heat of the weather; the murrain extending to horses, dogs, and goats. An epidemic such as this, affecting domestic animals generally, is an unusual occurrence. Cows and buffaloes died after having two or three watery evacuations, their illness only being of a few

hours' duration. The year 1878 was remarkable for the virulence of this disease; on that occasion 80 per cent. of the cattle perished. The malady is not new; it is one well known, only it then was of a more severe type than had been seen within the memory of men then living. Since then it has appeared every autumn. Dr. Macgowan writes: The mountains to the south of Ningpo, in Fêng-hua and T'ai-chou appear to be the habitat of a microbe (*Bacillus anthracis?*), the organism of the splenic disease, from which that region is seldom free. The equine disease that prevailed simultaneously was probably glanders. Ponies at Shanghai suffered from that malady about the same time. Concerning the canine epidemic information is yet more meagre. The animals were suddenly seized with tremors, and speedily died, somewhat as dogs in China are known to perish when their hearts become clogged with filaria. Ningpo seems to suffer from an undue proportion of rabies; no year passes without the occurrence of several fatal cases of hydrophobia.—(XXIV. 21.)

XIV. WÊNCHOW.—(*See ante*, p. 41.)

During the year ending September, 1882, the foreign residents at Wênchow enjoyed exemption from illness; but owing to an exceptionally protracted rainy season, the general public suffered from febrile and choleraic affections. The poor suffered most, the prices of food being increased in consequence of floods, which circumstance, added to residence in bad houses, tended to the increased sickness among them. The rains began earlier, they continued longer, and were more copious than usual, causing disastrous floods in the south-western portion of this province, as well as in southern Kiangsi and Anwhei, and inundations of the Poyang lake, and lower Yangtze.—(XXIV. 18.)

Health and sickness.

XV. AMOY.—(*See ante*, p. 49.)

During the six months to September, 1882, the health of the foreign community was fairly good, and the port singularly free from epidemic disease. Six births and two deaths occurred among them, both the deaths by accidents. An obstinate case of quotidian intermittent fever, complicated with boils, occurred in the person of a visitor who resided some time on Formosa; under treatment by quinine, and opening the boils, recovery took place. Several obstinate cases of diarrhœa with dysenteric symptoms occurred; all yielded to treatment. Dr. Ringer observes that the freedom of Amoy from epidemics is the more remarkable, seeing that in Manila cholera has been raging for some time, and between both places there is direct communication by means of steamers. This is accounted for partly by the enforcement of quarantine, and by the circumstance that passengers brought to Amoy were for the most part non-residents, and probably left the town without delay. A case of poisoning by caustic alkali was recorded. It occurred in 'a bought female servant.' The patient is stated to have lived forty-nine days without swallowing food, either solid or fluid, being supported all that time by nutritive enemata in consequence of constricted œsophagus, the result of the alkali.—(XXIV. 22.)

Health and Sickness.

Cholera and quarantine.

XVI. CANTON.—(*See ante*, p. 62.)

The province of Canton, during the spring of 1882, suffered from want of rain, causing a loss of half the crops in some districts. There was much sickness during the period, children being

the chief sufferers. A rainfall abated the evil. Towards the end of July in that year an epidemic suddenly appeared in the city. Its first attack was by excessive thirst and profuse perspiration; afterwards there was a flow of saliva, the tongue retracted, and the patient died of suffocation. Doctors (Chinese) directed that in such cases heated lard should be dropped on the tongue to restore it to position.—(XXIV. 21.) The summer of 1882 was an unusually trying one, owing to the comparative absence of rain, and to the very severe heat of the season. The health of the foreign community, notwithstanding this, was very good, and except a case of 'enteric' fever and one of long-standing liver affection, there was no serious illness among foreigners, nor was there unusual sickness among the native population of the city. The chief diseases were fever, diarrhœa, and liver derangement; cases of boils were numerous and troublesome. Two Chinamen died of hydrophobia; their cases are detailed under the heading of that disease.—(XXIV. 25.)

Peculiar disease.

Prevailing diseases.

XVII. PAKHOI.

The geographical position of Pakhoi is about lat. 21° 20′ N., long. 108° 50′ E. The town is situated close to the sea, stretching from west to east away from it. Forty feet above the sea-level there is a fine plain extending for miles in a south-easterly and south-westerly direction; studded over it are clumps of bamboo and fir, and to the west there is a low range of hills skirting the sea. The town itself, from its filthy condition, is described as not only totally unfit for Europeans to live in, but as being positively dangerous on account of poisonous gases being constantly evolved. On the other hand, it is questionable whether there are many places in China so suitable for residence as this plain, which combines all the advantages of the country and of the seaside. The air is free from the contaminations of the town; a pleasant breeze constantly blows, affording cool nights, and therefore refreshing sleep. There is no malaria, and those who have suffered from its effects elsewhere seem gradually to get rid of it after a residence here. The water is stated to be good, that of one well only being found unfit for drinking purposes. Sea-bathing can be indulged in with impunity in the evenings. Walking exercise can be largely indulged in both in the early morning and evening, and those with a taste for natural history will find enough to make their walks interesting. This place is well adapted for riding. The day temperature is not too high; during the summer of 1882 a temperature of 90° Fahr. was not once registered on the plain.

Topography.

The health of the natives in the town of Pakhoi appears to be only tolerably good. Diseases of various kinds are ripe, and the people have an unhealthy look, many of them being affected with scrofula; phthisis is not uncommon, and tertiary syphilis has come under observation. During the hotter months both adults and children seemed to be seldom free from boils on the body and scalp. According to our Western ideas of sanitary laws it seems hardly conceivable how human beings can live among such filthy surroundings. In the streets no attempt at cleanliness is made; animal and vegetable substances lie decomposing on every side; privies are open, and placed in the most frequented parts. The houses are little better than the streets; in some an open gutter runs through them, into which every abomination finds its way; the gutters, being seldom flooded or cleaned, are extremely offensive, and the floors are saturated with excreta. In spring, with the return of warmth, a very sickly season occurs among these people. In 1882 there was no dispensary at Pakhoi; any attempt at systematic observation and treatment, Dr Lowry thinks, therefore courts failure.

Health.

In the month of April the highest day temperature was 85° Fahr., the lowest 50° Fahr.; the highest night temperature 84° Fahr., the lowest 49°; the number of days in which rain fell, 4. In May, adopting the above order, the figures were 89° Fahr., 71° Fahr., 87° Fahr., 72° Fahr.: 4. June, 88° Fahr., 79° Fahr., 83° Fahr., 76° Fahr.: 8. July, 89° Fahr., 75° Fahr., 86° Fahr., 76° Fahr.: 12. August, 89° Fahr., 71° Fahr., 82° Fahr., 72° Fahr: 15. September, 88° Fahr., 76° Fahr., 85° Fahr., 73° Fahr.: 10. No violent storms or typhoons occurred.—(XXIV. 30.) Temperature.

XVIII. SMALL-POX, INOCULATION, VACCINATION.—(*See ante*, p. 74.)

In his Report on Peking, to March, 1871, Dr. Dudgeon wrote to the following effect: 'The principal disease during the previous six months was small-pox. It is something uncommon that this disease should rage epidemically during two successive winters, as if following some regular and independent law, though it is always more or less endemic in the Chinese Empire; the influences at work, the atmospheric conditions, etc., being, so far as is known, the same. The natives suffer severely, although epidemics do not strike their attention, or cause alarm, as they do among foreigners. There must be some peculiar quality which makes the poison more virulent at one time than another.' Peking.

Small-pox, as a rule, prevails more in winter, and this is the very season when the Chinese *do not* vaccinate. The epidemic of 1869-70 seems to have prevailed in an aggravated form along the whole coast of China, attacking and carrying off foreigners and natives. The epidemic of the winter of 1870-71, which broke out at precisely the same period as that of the previous year, has been felt more severely here, and also in Japan, than that of the former winter. The attacks last year were, on the whole, very mild in Peking. This winter there have been two deaths: that of a child, six months old, unvaccinated, and a vaccinated adult. Both died on the twelfth day. The course of the disease, the two fatal cases excepted, has been greatly modified by previous vaccination. Some of the cases showed considerable divergence from the normal type. A variolous fever, without any eruption, was tolerably prevalent. Some observers have attributed these outbreaks in winter to the fact that at this season the fur or worsted garments, which are supposed to preserve the poison from year to year, are redeemed from the pawn-offices where they have been lying since the spring. But such an argument does not hold good in Europe, where small-pox during 1869-70 has been raging; nor even in all parts of China would it apply, for we are not aware that the pawnbrokers are, as a class, more subject to small-pox than their neighbours. Some skin diseases, very prevalent among the Chinese, are certainly propagated in this way. The Chinese themselves have no such idea, but ascribe it to some supposed poison communicated by the parents to the fœtus. All therefore inherit, more or less, a certain original poison which breaks out as soon as the exciting cause is presented. Their favourite comparison is that of the flint, which requires merely to be struck to bring out the latent fire. [It is interesting to compare this Chinese belief with the opinion expressed by Violante, following Willis, that the suprarenal capsules are the seat of the small-pox *germ*, which is possessed by every individual, and which, no matter how long unfruitful, must sooner or later declare itself, if life be sufficiently prolonged.] There is, therefore, some peculiar but unexplained atmospheric change favourable to its development. Contagion and infection soon do their work in spreading the disease among such combustible matter as the Chinese suppose themselves to be. Season. Pawnbrokers.

The Chinese are not ignorant of the infectious and contagious nature of small-pox and other

diseases. They often kindle a fire in the *Kang*, or earth-bed platform in the north, to drive away the poisonous air. In the upper classes they often remove to other beds for a few days; they destroy the inner clothing of the patient, or take it, and what he may have worn, to pieces, and submit them to a thorough cleansing. Whitewashing is not understood, and never resorted to; and papering is seldom renewed. Drainage is never thought of. These sanitary measures are under no government supervision. Although the Chinese try innumerable preventive measures, they yet consider it a tolerably lucky thing that a person should have small-pox. They are afraid of offending the goddess *Tow chên niang niang* (small-pox-and-measles-mother) by the use of derogatory expressions and terms, and hence their high-sounding names, such as 'flowers,' etc., for the affection.

Infections.

The Chinese experience of small-pox is very extensive and accurate. They are very sharp in early diagnosing the disease, when intelligent foreigners are sometimes baffled. They consider three sorts or kinds of the disease. One is called *shun*, which is favourable in the extreme, and will get better without medicine; a second, called *hsien*, can be benefited by medicine, although the patient may die from neglect or bad treatment; and the last, called *ni*, which is invariably fatal.

In Peking, small-pox is supposed to have come from the South (almost all foreign things here are said to come from Canton), and not to have been known in Peking till about the period of the Yuen dynasty, A.D. 1280-1368. The Mongolian name *hwa*, 'flowers,' is the same as the Chinese, from which we infer that the disease came from China originally. The Chinese assert that it is still unknown in Mongolia. In cold latitudes, and with a hardy people, the Chinese say it does not exist. When the present dynasty came to the throne, the Pekingese who had small-pox, or took it afterwards, were driven thirteen miles out of the city. In the reign of the grandfather of the present (1871) Emperor, a Mongolian 'living Buddha' died in Peking of small-pox shortly after his arrival. Russians, Mongolians, and Chinese, born in Mongolia or on the frontiers, have been known to take it immediately on reaching Peking. All this would seem to show that it is somewhat rare in Mongolia and Mantchooria.

Historical.

The origin of small-pox is shrouded in mystery. It was unknown in America prior to 1492. European nations became acquainted with it about the rise of Mahomedanism. [The earliest western description of the disease was given by the Alexandrian priest, Ahrun, who lived in the seventh century. His 'Pandects,' originally published in thirty books, are lost, with the exception of some fragments preserved by Rhazes.] The Greeks and Romans knew nothing of small-pox. Moore, in his 'History of Small-pox,' traces it to China, 1000 B.C. Cibot, a Jesuit writer, asserts that, in a medical work in the Imperial Medical College, it is stated to have been known for 3,000 years. But we know how books are sometimes made to speak with the authority of antiquity. The whole question of the antiquity of small-pox is very suspicious; the passages are vague, and would apply to many other skin affections. Most Chinese medical works, and special works on small-pox, trace its rise no farther back than the Han dynasty. There was at that time traffic with Central Asia, and by land and sea with India and Arabia; and at that period Buddhist priests visited China, taking with them the classical Indian manuscripts, particularly those on medicine. In the annals of the After-Han dynasty we have an account of the General Pan-chao (A.D. 90), who penetrated so far west as to discover the Western Sea (Hsi-hai) and adjoining countries; and it was in the ranks of his army that some Chinese scholars suppose small-pox to have been brought to China. Much dependence cannot be placed on this, and it is more likely that it was first known in China much later. In the book of Hwangti Su Wen Ling Shu Ching, written before the Christian era, no mention is made of this disease. Neither is the written

character for small-pox (made up of *disease* and a *pea*—from the resemblance of the eruption of the latter) found in the two books by Chang Chung Ching, Shang han Lun, and Chin kwei yau liau; published shortly after the commencement of our era, and still to be had. The word for measles, *chên*, an old character, denoting originally an ulcer of the lips, is found in the 'Shwoh wen,' a book of the Han period (first century). A description of small-pox is found in at least two books—'Chieu p'ien so yen,' and 'Tow chên cheng tsung'—about the time of the Sung dynasty (A.D. 960-1127). The goddess of small-pox is also of comparatively recent origin. In a dictionary of the T'ang dynasty, about the sixth century, the word *Tow* is not found. Kanghi's Dictionary refers to *Tow* (small-pox) as occurring in the 'Tsz hwei,' a book of the Ming dynasty, early in the seventeenth century. Small-pox is considered by Dr. Dudgeon to have originated in China, *probably* towards the latter part of the T'ang dynasty (A.D. 620-907.) Hindoo medicine confirms the view here given of the origin of small-pox. In the 'Susruta,' a systematic medical Shastre, founded on the 'Ayur Veda,' or science of life or medicine, supposed to have been written between the eighth and third century B.C., and considered to have been an abridgement of a work prepared about the period of the Manu Code of Laws, 800 B.C., there is described a disease, in some of its features resembling chicken-pox. The affection was of short duration, and no mention is made of its dangerous character and epidemic form. It may have changed its character, like some other diseases, from unknown causes, although it is far more probable, as Dr. Wise remarks, that the peculiar and dangerous epidemic small-pox is a new form of disease. At all events, the Hindoo writers described it in its present formidable form much later, probably not long before Rhazès, the Arabian physician of the end of the ninth and beginning of the tenth century, described it, some time after which it appeared in Europe. No Hindoo goddess, moreover, is represented as interested in medicine till a later period, when small-pox made its appearance, and committed great ravages in India. A new form was then given to Kali, named Situlla, wife of Siva, and called the goddess of small-pox. The Chinese treatment of small-pox is empirical. The favourite medicines used in other diseases are administered here also. The *vis medicatrix naturæ* plays the most important part.

Inoculation has been known and practised in China since the Sung dynasty, A.D. 960-1127. It is *most probably* of native origin. It doubtless found its way to Turkey across Asia from China. From Constantinople it was introduced into England by Lady Mary Montagu. [In Wales inoculation has been known from time immemorial.] Inoculation.

Vaccination was introduced into Canton in 1805 by Mr. Alexander Pearson, a surgeon of the H.E.I.C. Service, and a tract on the subject written by him was translated into Chinese by Sir G. Staunton. In the north of China it is traced to Canton, and its English origin is for the most part unknown. A native tract on vaccination published at Canton in 1817 was republished in Peking in 1828, when vaccination was introduced there by the Prefect Tseng, who had been a mandarin in the south. Part of Sir G. Staunton's tract has been incorporated in the Chinese one. The discovery of vaccination is ascribed to a Western barbarian doctor named Chan-na (Jenner), and the story of its having been brought by a ship from Manila to Macao, which had children on board for the purpose of keeping up the supply of lymph, is related. The terms English and England are studiously avoided. When in 1828 vaccination was introduced into the north of China, it was proposed to have a relay of boys on the road from Canton to be vaccinated every eight days; but this plan was abandoned, and crusts were sent, which succeeded. In 1871 there were several vaccine establishments in Peking. Although the Chinese adopted this Western discovery, it is mixed up in their books and practice with their own medical theories, which betray the greatest ignorance of the principles of physiology and the Vaccination.

facts of anatomy. They are very particular regarding the diet, warning persons vaccinated most carefully to avoid the smell of whisky (shamshu), opium, heated *kangs* and dirty or decaying matter. Cocks, certain kinds of fish, beef, eggs, beans and bean-flour are to be avoided for at least one hundred days. Buckwheat and cherries are to be shunned for three years after vaccination. The things enjoined are vegetables, pork, and salted ham. Three days after vaccination, shrimps, with rice spirit, Mongolian mushrooms and mutton, are permitted. In winter only may birds' nests steamed with sugar-candy be eaten. The Chinese vaccinate in three places on each arm, on the supposition that it requires six places to neutralize the poison. The poison of small-pox is supposed to be located about four inches below the shoulder, and two above the elbow.

The Chinese now (1871) do not vaccinate in the winter. They are afraid of some morbid air getting admittance, and they find the practice inconvenient on account of the severe cold, and the danger of their clothing rubbing and breaking the vesicles, and consequently causing considerable pain, swelling, and probable suppuration of the arms, if not frustrating the object of the operation. After vaccination, cold, it is feared, might excite to an attack of small-pox or measles. Formerly money was subscribed for providing (for the use of those undergoing vaccination) accommodation, fires, and other conveniences, just as it is now contributed to soup-kitchens, foundling hospitals, and educational establishments. Vaccination lost all this when its great patron, Tseng, died. No government aid is (now) extended on this account. The vaccination establishments are carried on privately as business speculations, for although in one sense vaccination is performed gratuitously, yet it is understood that small fees are accepted, and there is a sort of custom which looks well for the philanthropy of the vaccinator, by which the parents of the child to be vaccinated contributed a small sum to the child from whom the lymph has been taken, which of course falls to the establishment. In winter, when there is danger of the lymph becoming exhausted, children are hired to preserve it and keep up the supply. The children of the upper classes are vaccinated at their homes most frequently by having one of the hired children taken by the vaccinator, and thus lymph is communicated from arm to arm. The introduction of tubes has rendered this almost unnecessary.

The yearly number vaccinated seldom exceeds 3,000. Evidence of the prevalence of small-pox occurs in the numbers of blind persons found in the streets, and in the almost universal 'pitting.' It is difficult to find a Chinaman entirely free from 'pits.' About 10 per cent. *probably* escape an attack, and of those vaccinated probably 80 per cent. are protected. Adult Chinese seldom, if ever, take small-pox, for the obvious reason that nearly all have had it in youth. Chinese smile at adult foreigners taking small-pox, as if it were incredible. After a two years' residence in China foreigners would seem to gain an immunity similar to that possessed by adult natives. [This does not appear to be the case in Shanghai. Foreigners of the better classes do certainly enjoy considerable immunity from small-pox, but this is attributed to the diligence with which early and periodical re-vaccination is pressed by the local medical practitioners.] Absence from the country for a few years seems to render such persons again liable to small-pox on their return. There are numerous instances of foreigners taking it within the first week or month after landing in China.—(I. 114-117.)

At Shanghai an epidemic of small-pox occurred at the close of 1869, and continued into the early part of 1870. The total number attacked was 69, or 2¼ per cent. of the population. The deaths were 9, or 13 per cent. on admissions. During the winter of 1870-71 the disease was not epidemic, only a few cases having appeared, although in Japan it was very prevalent and fatal both among natives and foreigners.—(I. 138.)

Shanghai.

XIX. MEASLES.—(*See ante*, p. 82.)

In the spring of 1870 an epidemic of measles occurred at Shanghai, and affected both natives and foreigners.—(I. 138.) Shanghai.

XX. SCARLATINA.—(*See ante*, p. 85.)

At Shanghai, 1871, scarlatina was rare. One case was recorded in which that disease was suppressed. In it there were symptoms of effusion on the brain and insensibility for sixty hours, recovery ultimately taking place. The eruption did not appear before the ninth day, but then it did so all over the body.—(I. 138.) Shanghai.

XXI. CONTINUED FEVERS.—(*See ante*, p. 87.)

At Peking, during the half-year ending March, 1871, large numbers of cases of fibricula presented themselves in both foreigners and natives, the disease appearing to prevail epidemically.—(I. 118.) Peking.

At Newchang, during the eighteen months ending September, 1882, three Roman Catholic Sisters died of typhus fever. There were seven surviving Sisters, all of whom have had typhus. For the first time in this settlement an undoubted case of typhus occurred within it. It is believed that the subject of attack, a delicate young man, had exposed himself to infection by visiting the Roman Catholic Mission, which is now mainly outside the settlement.—(XXIV. 2.) Newchang.

At Chefoo, during the year ending September, 1882, several cases of fever were recorded, in which many of the characteristics of typhus were present, but which differed from typhus in various particulars. The disease was chiefly confined to the Chinese, only one foreigner being affected.—(XXIV. 3.) Chefoo.

According to the Report for the period from April to September, 1882, it is questionable whether typhoid fever occurs in Ichang, although known in Shanghai. Dr. Reid, during a long practice at Hankow, had never met with a case of this form of fever there. In a case of fever which occurred, there appeared to be difficulty in deciding whether it was remittent or typho-malarial; the patient had been in the habit of drinking large quantities of water, and the state of the drains connected with the Chinese house in which she lived was unknown.—(XXIV. 10.) Ichang.

In Northern Formosa, in 1882, a detachment of Chinese troops from Hunan all suffered from fever of a fatal character: the type of the disease, however, was not reported. It has been found on that island that men from the interior of China are less easily acclimatized than those from the adjacent coast. Excessive rains in summer and the employment of the soldiers as road-makers contributed to render them more susceptible to disease, and the absence of suitable medical attendance served to increase the disaster.—(XXIV. 21.) Formosa.

XXII. HEAT MALAISE AND HEAT APOPLEXY.—(*See ante*, p. 121.)

In August, 1882, a case of heat apoplexy occurred at Ichang, and proved fatal, in a foreign resident. The patient, a delicate man, fifty years of age, had indulged in native spirits, and while thus affected exposed himself to the sun. He was treated with douche and counter-irritation to the nape. The disease is well known to the Chinese. According to Mr. E. C. Baber ('Travels and Researches in the Interior of China,' pp. 11, 12), heat apoplexy is known Ichang.

in Ssu-ch'uan as *lei ssŭ*, or death from exhaustion. In that part of China deaths from it frequently occur among the Chinese. In such cases of exhaustion they place great faith in their favourite practice of acupuncture.—(XXIV. 2.)

XXIII. PERIODIC FEVERS.—(*See ante*, p. 102.)

At Shanghai during the six months ending March, 1871, the disease of most frequent occurrence was remittent fever, 10 per cent. of the whole admissions being due to this cause. It was successfully treated with large doses of quinine, during the sweating stage six grains every second hour up to thirty grains, repeated in two successive days in smaller quantities. The type of fever most prevalent at Shanghai and Hong Kong is the periodic—either remittent or intermittent. The remittent form sometimes becomes continued, when quinine is of no use. Calomel and James's powder in moderate doses being then the most efficacious remedies. quinine ought never to be administered with a pulse over 100. Intermittent fever was also treated with large doses of quinine during the intermissions. The administration of quinine in large doses in such cases has the double advantage of stopping the fever and preventing congestion of the liver and spleen.—(I. 138.)

Shanghai.

[According to the Chinese 'there are diseases, as for example malignant fevers, that are caused by a *poison*, or malignant *hot* ferment in the blood; and there are others which proceed from a poison of a cold nature' (Du Halde, vol. iii., p. 452). This short notice is important in relation to certain theories of the present day as to the nature of fever.]

Chinese Theory of Fever.

XXIV. PLAGUE (?) AT PAKHOI.—(*See ante*, p. 123.)

In his Report on Pakhoi for 1882 Dr. Lowry gives some details in regard to a very fatal epidemic which prevailed among the natives of that district. The disease is known locally as *luen-tzû*, and in its nature is considered to be at least closely allied to bubonic plague. Having made allusion to the account given by Mr. Rocher of the plague in Yunnan, an abstract of which occurs at p. 123 of the text, Dr. Lowry alludes to the notes by Mr. Baber 'On the Route of Mr. Grosvenor's Mission through Western Yunnan.' According to Mr. Baber, the approach of the disease is indicated by the eruption of one or more red pustules, generally in the armpits, but occasionally in other glandular regions. If several pustules appear the disease is not considered so hopeless as when these are few. The sufferer is soon seized with extreme weakness, followed in a few hours by agonizing aches in every part of the body; delirium shortly ensues, and in nine cases out of ten the result is fatal. It often happens that the patient suddenly, to all appearance, recovers, leaves his bed, and affirms that beyond a slight sensation of weakness he feels thoroughly convalescent. This is invariably a fatal sign; in about two hours the aches return, and the sufferer dies. Mr. Baber refers to the mortality among rats as mentioned by Mr. Rocher; also among poultry, pigs, goats, ponies and oxen. The chief informant of Mr. Baber appears to have seen a French priest who had been long resident in the stricken districts, and who had every opportunity of noting the character of the disease. Mr. Baber met a native—Governor Ts'ên—who had been twice attacked by the disease; his second attack much milder than the first. The disease which appears in this district does not seem to spread to any great extent, as Dr. Lowry has been unable to find evidence of its existence in any other part of the Qungtung province, or in the neighbouring province of Kwangsi.

Pakhoi.

In India, the disease called Plague committed great ravages in Scinde from 1815 to 1819; in Narwár in 1836; Kumáon in 1846 and again in 1852. In the latter place the disease appeared as

a fever of a typhus character, accompanied by external glandular tumours; it was very fatal, death taking place in three or four days. It was infectious, but not contagious; the swellings were in a state of incomplete inflammation and suppuration. The disease in man was preceded or accompanied by a great mortality among rats; no other animals were affected. It prevailed at a height above sea-level of 10,000 feet; with a low temperature in the first instance, again in May, with a house-temperature of 95° Fahr. Recently notices have appeared in the *Lancet* announcing rumoured outbreaks of plague in Persia. It was said to have appeared at a village called So-uj-Bolak when there was 35° of frost (−3° Fahr.); also at Yazistan. Dr. Arnaud, of Teheran, reports its having occurred in the spring of 1882 at Ouzoundéré, not far from the borders of Turkish Armenia, and close to the highway that leads through the defiles of Soleymanie from Turkey into Persia. Out of 524 inhabitants 259 were attacked, and 155 died; the duration of the disease varying from one to seven days. Dr. Arnaud calls it bubonic plague; he says that 37 of the persons who recovered had still large buboes on their necks and in the armpits; while others were marked with indurated anthrax. The inhabitants of the village had been camped out and isolated, the whole of the houses being razed; and this energetic action had the effect of preventing further spread of the malady. In Ziemssen's last volume some statistics of the Hillah plague of 1876 are given. The number of cases recorded was 1,826. Of these, the ages of the patients were, in 277, under 10 years; 617 from 10 to 20; 432 from 20 to 30; 292 from 30 to 40; 123 from 40 to 50; and 82 at more advanced ages. According to sex, 889 were in males; 937 in females. In regard to results, 865 recovered; 961 died; 710 had suppuration or swellings in the groins; in 466 the axillary glands were swollen; in 98 the glands of the neck were affected; in 122 the glands elsewhere suffered; 36 patients had carbuncles; 28 had coma; 9 had convulsions; 120 had petechiæ; 2 had epistaxis; 6, hæmoptysis; 27, hæmatemesis; 14, bloody diarrhœa; 2, menorrhagia; 23, bilious vomiting; 16, bilious diarrhœa; and 2, jaundice. The treatment, he says, was only 'expectant.'

Dr. Lowry is of opinion that the epidemic he observed in Pakhoi does not seem to be an old disease, as it occurred for the first time about fifteen years ago, and since that time at certain intervals, the previous outbreak being in 1877. He has been informed, however, that a few cases of the disease occur every year. At the end of March, 1882, it appeared as an epidemic at Pakhoi, and from that date continued its ravages with lessening severity till the end of June, when it entirely disappeared; at Lien-chow, a city twelve miles distant, it raged with more or less severity till August. The previous winter had been very dry, with strong winds from the north. Towards the middle of March the temperature began to rise; during the first ten days of April some rain fell, and the atmosphere was laden with moisture. From this date onwards the temperature gradually rose; by the end of April, the day temperature was 85° Fahr. (maximum or average?); that of the night 76° Fahr. The prevailing epidemic was most severe and fatal from the middle of April to the middle of May. In an estimated population, including both town and junk community, of 25,000, there died from 400 to 500 persons. In nearly every house where the disease appeared, the rats had been coming out of their holes and dying on the floors. Dr. Lowry examined the dead bodies of several of those animals. In the chest he found nothing beyond slight congestion of the lungs. In the abdomen all the organs were congested, the intestines much distended with gas, the stomachs contained nothing except a little gas, and it appeared as if some time had elapsed since food was digested. In two the liver appeared enlarged; the blood was dark in colour. Examination under the microscope revealed nothing. No other animals were attacked. As to the real nature of the disease under notice, Dr. Lowry fears that he has little light to throw on the subject, and no definite theories to put forward. He is not

prepared to say what the contagion is. Although the filthy condition of the houses and of their vicinity, previously mentioned, had long existed, it was not till the temperature began to rise, and rain to fall, that the disease manifested itself. The degree of contagiousness of the affection seems variable. There certainly appear slight differences between what he has observed, and the descriptions given of plague elsewhere; but in the main they agree. Of the diseases we are familiar with, the one under review most resembles typhus fever. His treatment of the disease was various. It included nitro-hydrochloric acid, quinine, aromatic spirits of ammonia, chlorate of potash, etc. To the buboes poultices and lotions were applied; but not the knife. For excessive temperature, tepid sponging was used; plenty of nourishment was inculcated.

The Chinese treatment of the disease appears to have been chiefly the administration of one of their 'cold medicines.' *Shêng-ti, mai-tung, huang-lien,* and *hsüan-shên,* were largely given. A brown paste was put on the buboes, but the physicians acknowledged their treatment to be futile. Recently Dr. Lowry learned that in the two Malta plagues, turpentine and camphor were administered with some success. Neither drug was employed at Pakhoi. No post-mortem examination was practicable; neither was it in his power to examine the blood under the microscope. The dead were buried quickly.—(XXIV. 31.)

XXV. DIPHTHERIA.—(*See ante,* p. 139.)

At Peking, after small-pox, diseases of the throat came next in importance. These include tonsilitis, simple sore throat, and laryngitis. During the six months ending March, 1871, the principal throat affection was diphtheria. In June, 1866, an epidemic of that disease scourged the city, and continued to prevail for more than twelve months, carrying off vast numbers, and committing fearful ravages. Within a month homes were thinned, families swept away, and the population greatly diminished. Funerals were seen everywhere; the people in large numbers were clothed in white—here the emblem of mourning; and the general and almost invariable answer to every question on the subject was: 'Died of throat disease.' In a family of twenty-six individuals that came under observation, twenty-four were carried off in twenty-seven days. In the beginning of 1866, diphtheria predominated most in the west of the city; it afterwards extended to the east and south. Very few indeed applied at the foreign hospital for relief, partly owing to the great distances, the difficulty of transport, the foreign surgeon, sex—females being on the whole more frequently affected; but the chief cause was the suddenness of the attack and the shortness of its duration before death closed the scene. All classes were subject to it, but probably more children died than adults. In the west, large numbers of children between three and ten years of age suffered; deaths were not, however, confined to youth. Many persons at fifty and sixty years of age also died. The average duration of the disease was about five days. Those who applied were out-patients, and remained so. Their cases could not be followed up, and any plan of treatment pointed out was not likely to be followed, especially if the patient grew worse. When unable to come to the hospital, they either sank helplessly at their own houses, or called in a native doctor, who, of course, could do nothing. The doctors dislike these fatal cases very much. They are obliged to do something for the sake of the profession—order some decoction, or try acupuncture; but for the sake of their credit and trade, they prefer doing nothing. The responsibility of death rests upon the doctor's shoulders, and it was the medicine last given that of course killed the patient. For these reasons it would be fatal to take such as in-patients at our hospitals; the chance of recovery, even with the greatest attention and most prompt applications, being so small. Tracheotomy, difficult to attempt on account of the reluctance of the

Peking.

relatives, and often fruitless in the West, is a thousand times more so here, where the operation and the disease are not understood. In our infancy, Dr. Dudgeon writes, with such a people, and standing alone, unbefriended and unsupported by Imperial or other native power, and where every act is closely and suspiciously scrutinized, serious or hazardous operations ought not to be undertaken. By persisting in an opposite course, the good object aimed at is likely to be frustrated. The Chinese, in cases of illness, do not neglect to appease the evil spirits by burning incense before Buddha, or the particular deities supposed to preside over certain diseases.

Diphtheria had raged in former years, but never so long or so fatally as in 1866. That year was an unusually hot one. There was little rain, and very little snow. The population was in great poverty; poor, weakly, scrofulous children are the rule and not the exception; and miserable, unhealthy, over-crowded, unventilated habitations are too common. Drainage has ceased to exist. After rain, pools of water lie everywhere in the street and in the great filthy ditches on both sides, from which the water and mud are taken to allay the dust of the roadway. The symptoms of diphtheria in the epidemic described were similar to those recorded by different observers in various places. The epidemic itself was severe and long-continued, and the deaths from it rapid and numerous. On the second day of the disease one or both tonsils and uvula appeared swollen and inflamed, the former generally marked with white spots, like points of ulceration on the surface. These ulcers in *tonsillitis* are often mistaken for incipient diphtheria, and of course wonderful cures are effected by the application of certain remedies, which are ever after extolled as specifics. Young children and even adults never complain of severe pain, though unable to swallow, and this peculiarity, so deceptive and so hopeful to the patient, establishes a well-marked difference between diphtheria and the purely local throat diseases. On the second day, and co-existing with the swollen tonsil, is enlargement of the lymphatic glands, of the neck on one side or both, and sometimes in front also, the greatest swelling indicating that side on which the greatest damage is to be looked for in the throat. In most cases there is a stoppage of the nose, and a flux of serous liquid and often blood by the nostrils. The mouth exhaled a peculiarly gangrenous odour, and the tongue was covered with a thick yellowish-white mucous coating, except at the tip. The membranous exudation was for the most part first seen on the tonsils, sometimes on the uvula, and at other times in the pharynx. The false membranes were only removed to be reproduced in an incredibly short time. The surface denuded of the diphtheron always appeared red, and exuded a few drops of blood. The disease attained its height in a remarkably short period. Many retiring at night apparently in health, rose in the morning with the disease unmistakably present. In the course of twelve hours from the first feeling of tightness the membranes have been seen fully formed, and covering the entire mouth, and the tonsils and uvula so enlarged as to prove a mechanical obstacle to the introduction of liquids as well as to the passage of air.

During the same year *measles* and *scarlatina* were prevalent. Many cases of the latter were supposed to be diphtheritic when the eruption was absent, but on examination the difference was easily observed. The scarlatina membrane was not continuous and consistent, as was that of diphtheria, and was not so adherent; above all, it lacked the invading property, and did not repeat itself on excoriated surfaces, but was localized at the point of its development. The danger of diphtheria lay in its rapidity and tendency, its situation and extension into the trachea.

Measles. Scarlatina.

Dr. Dudgeon has had occasion to verify, in not a few instances, the fact admitted by MM. Guersant, Daviot, and others, that true gangrene may be met with in conjunction with the pellicular exudation. The Chinese subjects of this disease were generally of bad and enfeebled con-

stitution, and there were raging as epidemics measles, scarlet fever, and small-pox during part of the time, affections which are known to predispose to sphacelus. Extensive gangrene has also been seen in connection with scarlatina anginosa. Gangrene of the tonsils, uvula and fauces has been seen very early in the disease, and the characteristic fetor and gangrenous appearance did not depend altogether upon the putrid solution of the pellicular exudation interspersed with effused blood. It is admitted that diphtheria is a specific inflammation, and as such has its peculiar and essential symptoms depending upon this character, and not upon the intensity of the inflammation. But it requires no great intensity of inflammation, if any, in the Chinese to induce gangrene of the parts. The number of cases of cancrum oris shows this.

Diphtheria is certainly contagious, but to a much less extent than some other diseases. In the majority of cases a connection was traced between the person attacked and another suffering from the disease in the adjoining house or lane. In a few cases no such connection could be traced. In a mandarin's family of about thirty persons eleven had died by the disease up to the time of Dr. Dudgeon's visit. The male and female servants complained of tightness in the throat, but with the exception of one of their children no fatal case occurred among them. Those attacked were related, and had all a similarity of constitution, were pale and sickly, and lived chiefly upon vegetable food and sweetmeats. Poverty or superstition often prevents the Chinese from indulging in animal food. In the above family (and this is the rule among the better classes), the bodies of the deceased were retained for a lengthened period prior to interment. During this time the family—it may be large, or the premises may be small—live literally among the dead, with mat awnings erected over their courts, while priests chant prayers and perform the obsequies, and the members of the family themselves mourn and weep. In this way disease is propagated.

The severity and rapidity of the disease well-nigh baffled all treatment. In the earliest stage benefit was derived from the usual remedies. Laxatives, preventives, and gargles afforded relief in the earliest stages. Yet these cases may have presented only the very simplest form of inflammation. Such were few, and with the fully developed membrane, most, if not all, the extolled specifics were utterly useless. In the first stage alum was found of some use, but in the more advanced stages it seemed to possess no curative agency, either in strong solution or in powder. Of calomel Dr. Dudgeon cannot speak highly. In its local application he has been sadly disappointed. After stripping the hard and soft palates of a thick pellicle, dusting it with calomel and alum, brushing it with nitrate of silver in solution and in stick, and with undiluted hydrochloric acid, the diphtheritic false membrane, and not an apparent one caused by the action of the medicine, has been reproduced almost before his eyes. In the case of the first two substances it was very rapidly reproduced; in the other two more slowly, and after an interval of time. Blisters have been inefficacious. In the earliest stage most trust is to be placed in nitrate of silver, alum gargles, gentle catharsis, supporting the patient's strength, application of fomentations, and removal from the scene of infection. In the later stages of the Peking epidemic nothing was found of the slightest use. An unfavourable prognosis has in every such case been given, and not a single cure of true and neglected diphtheritic inflammation has been observed.

Since the epidemic of 1866 numerous cases have each winter been brought to notice. During the winter of 1870-71 diphtheria prevailed more extensively than in any year since 1866. No foreigners were attacked, though many of their Chinese teachers have reported its existence and fatality in their own families. Such teachers are believed to be on occasions the means of conveying the poison of contagious and infectious diseases, as small-pox. Much that is sometimes called diphtheria by the unprofessional may be simple catarrh or laryngitis. Such affections were prevalent in the spring.

Diphtheria is called in Peking by such names as *Nao sang tse, Heu pi, Heu yung,* all signifying more or less malignant sore throat, or narrowing to suffocation of the air-passages. The former is the popular expression for it. It is said to be a new disease, and to have been known only for the last fifty years. It seems to be almost entirely confined to Peking. It is said not to be known even at Tientsin, but Dr. Dudgeon doubts this very much. No cases as far as he knows were reported from the hospitals of Central and Southern China. He notices the case of a young married woman who was rescued as it were from death by this disease by the free and repeated application of strong hydrochloric acid.—(I. 117, 121.)

XXVI. MUMPS.—(*See ante,* p. 141.)

At Peking in March and April, mumps prevailed both among children and adults. It has been known to occur after exposure to the strong north-west wind which during these two months blows with great violence.—(I. 118.) Peking.

XXVII. ERYSIPELAS.—(*See ante,* p. 143.)

At Peking, erysipelas occurred among natives and foreigners in the months of March and April, 1871, an attack of the disease often following exposure to the strong north-west wind which at that season prevails. The affection is most frequent in the face and neck. No fatal case of it was recorded, but in two the disease resulted in suppuration. Peking. The Chinese have no proper name for this affection. The name given in Bridgman's 'Chrestomathy'—*Tien-pau-chwang*—is applied here to another affection altogether, and to one rather of a syphilitic type.—(I. 118.)

XXVIII. LEPROSY.—(*See ante,* p. 150.)

Leprosy is practically unknown in the north of China. It is called *Ta-ma-fêng* and *Lai.* In its severest forms it seems to be confined to the southern provinces. The connection of anæsthesia with true or tubercular leprosy opens an important field for discussion. Dr. Dudgeon believes that loss of sensation perfectly independent of leprosy is not at all infrequent. Peking. In the spring and autumn the Chinese in Peking suffer from rheumatism, and attacks of cold from exposure to the frequent and sudden changes of temperature. They are accustomed to sleep on the ground, and what is nearly the same thing, on *kangs.* Many have attributed their *ma mu,* or loss of sensation, to these causes. They get well under such remedies as Dover's powder, liniments, etc. Arsenic itself, moreover, is said to cause derangement of the nervous system, and to produce anæsthesia.

Two or three suspicious-looking cases have been seen at Peking. The eyebrows were nearly gone. The Chinese as a rule have very little hair on their faces, and the hair of the eyebrows is particularly sparse at the outer angle. As they do not complain of anæsthesia, and the affections of the skin were probably referable to syphilis which they acknowledged to have had, they were classed accordingly. Psoriasis and its varieties, *mien-pi* (ox-hide) and *ü-pi* (fish-skin) or *shĕ-pi* (serpent-skin), referring to its scaly character and property of falling off, is remarkably common, and in some cases might be mistaken for leprosy. During the eight years previous to 1871 only one case of *bonâ-fide* leprosy came under observation, and it was in the person of a man from Shantung. In that locality the disease has long been recognised. The province is mountainous, but whence he came is flat and occasionally inundated by the Hwang-Ho (Yellow

river). The man affected was an agriculturist. His parents and relations never manifested any similar symptoms; they marry, intermingle and have families, and according to his statement the affection does not seem to be either hereditary or contagious. His relations were not known to have had syphilis or elephantiasis. This patient had the disease for eight years, had tried all remedies, and well-nigh spent his living on drugs and doctors without any permanent result. Once or twice a year it broke out with great violence, when all his symptoms were increased, but the remedy applied seemed by his own account to keep it to some extent in check. The popular treatment in Shantung consists in acupuncture and the wholesale swallowing of drugs. The former is practised between the eyes, on the cheeks, temples, upper lip, chin, fingers, palms of the hand, soles of the feet and on the heels. Immediately on the puncture being made, a small quantity of musk is introduced, and the moxa is used to drive in the benign effects of this drug, and drive out the leprosy; at the same time fifteen medicines are infused together in several gallons of water, and boiled down to about one gallon, and this is drunk.—(I. 122.)

At Hankow, in two years, Dr. Shearer saw 121 cases of anæsthesia and 73 of leprosy. The former affection he considers to be an incipient stage of the latter; its degree varies, different parts of the body being affected in different cases. One case was that of a boy aged eighteen, who suffered from numbness of the feet and face, with dropping off of the hair and scaly eruption. Two cases of 'ma-mung' irregular and scattered, with scaly eruption, were 'cured' by arsenic; four had numbness in irregular patches; one had intermittent 'ma-mung' of thighs, hips, legs and feet, affecting specially the extensor surfaces; 'ma-mung' of right cheek with ptosis of right upper eyelid and paralysis of the right buccinator. Two years before, the last patient had an insensitive spot on the abdomen, which however recovered its sensibility. The ages of the subjects of the disease varied from eighteen to sixty-six. The patients were mostly of the male sex. The anæsthesia varied in degree from a preliminary loss of delicacy of perception of tactile impressions up to an absolute loss of sensibility of the affected parts. These never perspired. In ten cases sensory was combined with motor paralysis, and in two cases with paralysis of the facial nerves. Where motory and sensory paralysis are observed in the same subject they are associated, and hardly ever separately affect distantly related parts; from which it may be inferred that both lesions originate in some mischief affecting the roots of the nerves. Every part of the general integument appears to be liable to the loss of sensibility, the skin of the hands and feet pre-eminently so, and of all the nerves, especially the *ulnar*. From the researches of Daniellssen, a morbid deposit is invariably to be found in the internal organs of leprous subjects; it specially affects the nervous system, assumes the form of chronic neuritis, is symmetrical, and prefers certain nerves to others—the sensory to the motor. In some cases, anæsthesia pure and simple had lasted for a period of ten years, and was not accompanied by wasting, paralysis or ulceration. These constitute the connecting link with cases of true leprosy. The reporter gives details of seventy-four cases of the latter, and in regard to them observes as follows:

Hankow.

'(*a*) They were seen in a period of twelve months at Hankow. During seven months at Kiukiang no case was seen. The latter place is hilly, and seldom subject to inundations.

'(*b*) Only one originated at Hankow; yet Hankow is notoriously subject to inundations. Ague cases equally with leprosy cases were imported; they were principally drawn from necessarily malarious localities; *i.e.* where there is no natural drainage.

'(*c*) Of the anæsthetic cases not more than ten or twelve were women, and of the lepers only two. The vast majority of cases occurred in agricultural labourers.

'(*d*) The foregoing cases were arranged in three groups, viz.:

'(1) Of simple anæsthesia, "ma-mung," or impairment of sensibility.

'(2) Cases of anæsthetic leprosy attended by eruption (pityriasis, psoriasis,) or wasting and shrivelling of the skin and sweat-glands, and decadence of the hair, eyebrows, and eyelashes.

'(3) Cases of tubercular leprosy, where in addition to the above symptoms there is a local *morbid deposit in the affected parts*. Necrosis of phalanges and destruction of joints and limbs are the sequels of this form of the disease.

'(*e*) The researches of Dr. Daniellssen, and the discovery by him of a peculiar morbid deposit in the internal organs, and specially in the nerves of persons who have died of leprosy, have furnished a clue to the connection of the different forms of that disease. Cases of pure anæsthesia are traceable to leprosic deposit—this chronic neuritis being symmetrical, and preferring certain nerves to others, and the sensory to the motory—in or near the roots of the sensory nerves; the tuberculous form to local deposits in the subcutaneous cellular tissue.

'(*f*) The question arises: Whence is this diathesis or cachectic condition of the body induced? The reply given is: A morbid condition of the blood is determined by breathing the impure air of certain malarious districts, and the leprosic deposit is a result. In this respect the leprous diathesis is comparable with that of phthisis; and just as phthisis and gout are unknown in the same individual, so leprosy and ague rarely or never affect the same individual. Leprosy is therefore truly an endemic disease, and in all probability originates in malaria.

'(*g*) There is no proof that leprosy is induced by diet—fish-diet or other food. There is no proof of any connection between leprosy and syphilis. It is not contagious. The better class of Chinese and Norwegians have the most perfect confidence in immunity from the disease, even where lepers abound.

'(*h*) It is transmissible hereditarily, though the fact has been rarely observed, and one is liable to the fallacy of confounding the effect of endemic influences in originating the malady with its conjectural inheritance.

'(*i*) The disease is said to be on the increase in Jamaica during the last twelve or fifteen years (prior to 1871), because of the retrogression towards barbarism of the bulk of the population. Imperfect tillage, draining and culture of land, furnish conditions for the development of the marsh-poison. Leprosy and ague once prevailed extensively in districts where they have now disappeared.

'(*j*) In one case only out of seventy-four reported was the disease arrested through change of residence. According to a writer in the *British and Foreign Medico-Chirurgical Review*, Norwegian physicians acknowledge the fact that emigrants take it or lose it by moving to or from infected districts. Strangers may contract the disease *de novo*. Norwegian lepers emigrating to America get well of the disease, and no new cases occur among them.

'(*k*) Dr. Beauperthey, of Trinidad, treats leprosy very successfully on the following plan: Nourishing diet, with fresh meat and light wine; salt-fish, beef, pork prohibited. Corrosive sublimate, in doses of one-fifteenth of a grain, twice a day, inunction of the whole body with oil of cashew or cocoa-nut morning and evening, and the removal of the patient from the neighbourhood of marshes.

'(*l*) Until agriculture is improved we cannot attack the evil of its source. Surely there cannot be much difficulty in finding amongst the upper parts of the river (Yangtzekiang) a suitable locality for the establishment of a sanatorium or a lazaretto.'—(I. 129-137.)

In the form of a foot-note to the above remarks, Dr. Shearer adds the following, having reference more particularly to conclusion (*g*) preceding:

'At page lx. of "The College of Physicians' Report" Dr. Macnamara gives five post-mortems of the bodies of leprous patients; neither in the nerves themselves nor in the brain and spinal cord did he detect any lesion, by the eye or with the microscope. Dr. Mongeri of Crete, Dr. Davy of Ceylon, and Mr. Hutchinson of Victoria, seem to have been struck only by the excessive development of tubercles in the skin and serous and mucous membranes. Dr. Carter, of Bombay, noticed the results of sixteen post-mortems in cases of leprosy. In five, death was attributable to chronic dysentery; kidney disease was present in two; and in a third, fibrinous deposit was found. Enlargement and diminished opacity of the nerves were the fundamental changes exhibited by them. The general cellular investment was but little altered; the amount of enlargement varies from just above the normal size (at the seat of disease—above or below it the nerve may be smaller than natural) to more than twice that; the colour may also be changed; the consistence varies from softening to semi-cartilaginous; marked vascularity is uncommon. The cutaneous nerves are altered in a similar way. These changes appear at certain "selected" spots; for the compound trunks where they are most superficial, for the cutaneous nerves immediately after they have perforated the deep fascia. As regards the former, the nerve-trunk above the locus morbi may be unchanged; below it is usually atrophied, but occasionally almost normal in appearance and structure. The apparent extent of disease may be limited to two or three inches, but it is often considerably more; in both sets of nerves the terminal branches will be found atrophied and pearly in aspect, being, in well-marked cases, evidently incapable of performing their functions.'

Dr. Meadows, in his Report on Ningpo to March, 1871, writes: 'Leprosy in China seems to be divided into five different species. On the extreme summits of the hills which surround Ningpo is found, according to the Chinese theory, a poisonous mist, or fiendish atmospheric element, fatal to the human system, called the *Kwei-fung*. Many persons living in the immediate neighbourhood of these peaks are afflicted with the most terrible species of leprosy. Though he has himself seen comparatively little of this disease he has frequently heard hill-men speak of the lepers. They are never seen more than a few li away from their native hills. The first species is called *Tsae-fung*, and has the peculiarity that the hair, eyebrows and skin turn white, as if livid and dead. This,' Dr. Meadows thinks, 'corresponds to the "morphæa alba" or "white leprosy" of many writers. The second species is called *Santsong-chi*. The skin becomes sallow, and the limbs swell. The third is *Lan-fung*, in which the whole body is covered, more or less, with moist, scaly ulcers. The fourth, *Ta-ma-fung* (the general name for leprosy), is often marked by one half of the body becoming leprous. The fifth, *Kew-lew-fung*, or "Nine-ulcerated leprosy," is so-called from the disease confining itself to nine deep ulcers, generally in the lower extremities. The few lepers who came to hospital for treatment have been unwilling to stay sufficiently long to allow any satisfactory plan of treatment being pursued.' Dr. Meadows has seen no case which could not be more satisfactorily defined by the terms tubercular and anæsthetic; the former variety being the more common.—(I. 144.)

Ningpo.

A propos to the preceding remarks, and to those in the text, the following transcript on the 'Classical and Ancient History of Leprosy' is alike interesting and important:

'The Jewish, in common with the Greek, the Arabian, the Persian, and the Hindoo doctors, gave one name to what many medical writers in modern times believe to be two distinct diseases, and which seem to be marked by essential differences. Other physicians, however, deny the existence of any essential difference between these diseases, and assert that they are but forms of one and the same disorder. The utmost that can be said is that leprosy itself is of two types, the contagious and the non-contagious, the clean and the unclean. The *bohak* of Moses, the *lepra*

alphos of the Greeks, the *vitiligo* of Celsus and Wittau, still known by the name *baras el Israily* among the Arabians, is commonly called *lepra vulgaris* by modern physicians, and sometimes *lepra Mosaica.* To distinguish between it and the true leprosy, Dr. Good has named it *lepriasis candida.* It is a disease developed in and confined to the skin, and never affects the subjacent tissues; it arises from an apparent absorption of the colouring-matter of the skin and hair, which causes the body to bē covered with white patches, so that in aggravated cases the patient becomes like an Albino. Æschylus describes this disease (Cheoph. 271-274). In some stages of it the skin is covered with small scales, which peel off like bran. It is attended with a prickly sensation of the skin and a roughness of the surface, which causes disfigurement: hence the Sanscrit name of this kind of leprosy—*rikkjivva,* "like a bear's tongue." This disease increases very slowly, and is never contagious nor dangerous in itself, though it weakens the constitution, and renders the diseased person more than usually liable to other disorders which shorten life. Among the Jews the *bohak* did not render the sufferer unclean, nor even separate him from his fellows. Hence the Hindoo physicians distinguish between this disease and the true leprosy, calling the former *too-na,* or benign; the latter *no-na,* or malignant. Of this *bohak* Moses speaks in the thirteenth chapter of Leviticus, ver. 38, 39: 'If a man also or a women have in the skin of their flesh bright spots, even white bright spots; then the priest shall look: and, behold, if the bright spots in the skin of their flesh be darkish white; it is a freckled spot that groweth in the skin; he is clean." Of this disease, which was regarded chiefly as a disfigurement, we have instances in the cases of Moses, Miriam, Naaman, and Gehazi (Ex. iv. 6; Num. xii. 10; 2 Kings v. 1, 27). The true leprosy, or *baras* of the Arabians, is of two kinds, the *berat cecha* and the *berat lebena.* The *berat cecha,* or "dusky berat," the *lepra melas* of the Greeks, the *nigrescens* or *umbræ similis* of Celsus, and the *morphœa nigra* of modern medical science, commences with a tawny discoloration of the skin in various parts of the body: hence its name. The *berat lebena,* with bright white spots, the *lepra leuké* of the Greeks, the *vitiligo candida* of Celsus, and the *morphœa alba* of modern physicians, is tubercular, and is rarely, if ever, cured by medical skill (Celsus, "De Medicina," lib. v. c. 28). These two diseases (or different forms of one and the same disease—for this, as we have shown, is uncertain) are often found at the same time in the same person, and are attended by numbness and ulceration of the part affected, and followed by a slow form of mortification, in which joint after joint of the hands and feet is destroyed, and the nose and lobes of the ears fall away; so that, from the resemblance which the face bears to that of a lion, the disease is called by the Hindoos the lion-like disease (*korh*). The patient thus afflicted suffers, however, little or no pain; and the progress of the disorder is often so slow, as that its growth is for a long time imperceptible. Gradually the sufferer becomes a repulsive object, and subsides into rottenness, for a considerable part of the body has died and been cast off long before the death of the leper. "A distemper so noisome," says Maundrell, "that it might well pass for the utmost corruption of the human body on this side the grave." From this terrible feature of the disease it is sometimes called *lepra mutilans,* or in Arabic *mugadam* (from *gadama,* to truncate), under which name it is spoken of in the Koran. Of this Moses speaks: "And if there be in the bald head, or bald forehead, a white reddish sore; it is a leprosy sprung up in his bald head, or his bald forehead. Then the priest shall look upon it: and, behold, if the rising of the sore be white reddish in his bald head, or in his bald forehead, as the leprosy appeareth in the skin of the flesh; he is a leprous man, he is unclean: the priest shall pronounce him utterly unclean; his plague is in his head. And the leper in whom the plague is, his clothes shall be rent, and his head bare, and he shall put a covering upon his upper lip, and shall cry, Unclean, unclean. All the days wherein the plague shall be in him he shall be defiled; he is unclean: he shall dwell alone; without the camp shall his habi-

tation be" (Lev. xiii. 42-46). Both these forms of leprosy render a man unclean; and though not infectious nor contagious in the ordinary sense of that word, yet companionship and long and intimate intercourse with lepers, even breathing the same atmosphere for a long time, and sleeping in the same apartment, will infect a clean person with the disease "in its most virulent and destructive forms" ("Calcutta Report," pp. 31, 71, 82, 90). Hence the danger of leprous garments and houses, and the command to regard them as unclean. The true leprosy is transmissible from parent to child; and though the disease is capricious, and often, like some other diseases, leaps over a generation and takes hold only of some of the children of a family, leaving the rest untainted, yet its hereditary character is shown in the certainty that some of the children or grandchildren of the leper will suffer in the same manner as their ancestor. This disease lies for years dormant in the body. It rarely shows itself in anyone before the age of five or six years, and the more usual time when it makes itself seen is at the commencement of adult life, though some persons reach the age of fifty before the hereditary taint is evidenced. The child of leprous parents is rarely born a leper; the disease is not developed until after years. It infects the whole internal parts of the body, and corrupts the blood, long before there are any symptoms of the disease seen on the surface; so that leprosy may lurk for many years in the body and gather strength, without its being revealed by any outward sign.

'If what many physicians assert be true, there is great and significant force in the words of the Mosaic law: "If the leprosy have covered all his flesh, he shall pronounce him clean that hath the plague: it is all turned white: he is clean" (Lev. xiii. 13). And again: "If the bright spots in the skin of their flesh be darkish white; it is a freckled spot that groweth in the skin: he is clean" (Lev. xiii. 39). He is not only, that is, without sign of the uncleanness of the true leprosy, he is absolutely clean; for according to the opinion of many Indian physicians the *lepra vulgaris*, the *bohak* of the Jewish law, is never found with true leprosy; so that he who has the one has not the other; whereas the *lepra melas* and the *lepra leuké* may be, and often are, found in the same sufferer ("Calcutta Report," pp. 92, 154, 269). That the differences between these diseases, to which the ancient physicians with singular agreement applied one generic name, was known to Moses is evident from this, that he prescribes a distinctive treatment in the two cases, which was adhered to down to the last days of the Jewish polity. Looking at this matter solely from a medical point of view, a recent writer says: "Moses . . . shows himself a great pathologist here: he actually forestalled the observers of recent time. . . . The results of modern research, to my mind, give a peculiarly prophetic aspect to the Levitical code; and there cannot be a doubt that modern investigation has fully proved its truth."—"Leprosy, Ancient and Modern," by Dr. Tilbury Fox.

'Some lepers—those who were afflicted with the *bohak*—dwelt in the midst of their fellows, and performed the various duties of life in the same way as the rest of mankind: of this we have instances in Naaman and Gehazi. Others, like the four lepers who first brought to Samaria the news of the flight of Benhadad, dwelt apart from mankind. These were doubtless sufferers from the true leprosy, and were unclean (2 Kings vii. 3). This exclusion of those thus diseased from the company of clean persons was rigidly enforced. It was a rule so strictly observed, that of King Amaziah we read: "The Lord smote the king, so that he was a leper until the day of his death, and dwelt in a several house" (2 Kings xv. 5). And, again, of Uzziah we are told: "Then Uzziah was wroth, and had a censer in his hand to burn incense: and while he was wroth with the priests, the leprosy even rose up in his forehead before the priests in the house of the Lord, from beside the incense altar. And Azariah the chief priest, and all the priests, looked upon him, and, behold, he was leprous in his forehead, and they thrust him out from thence; yea,

himself hasted also to go out, because the Lord had smitten him. And Uzziah the king was a leper unto the day of his death, and dwelt in a several house, being a leper; for he was cut off from the house of the Lord: and Jotham his son was over the king's house, judging the people of the land. So Uzziah slept with his fathers, and they buried him with his fathers in the field of the burial which belonged to the kings; for they said, He is a leper" (2 Chron. xxvi. 19-21, 23). Of those lepers whom our Lord healed, some "stood afar off," whilst others came near, as though knowing that their disease was not contagious, and were touched by Him.

'The ceremonies by which men suspected of leprosy were to be examined by the priests, and to be pronounced clean, or separated from their fellows as unclean, are minutely prescribed by the Mosaical law. The disease itself was regarded not only by the Jews, but also by the Greeks and ancient Hindoos, as the direct punishment for sin. By the former it was emphatically spoken of as "the stroke," and "the stroke of the scourge;" by the latter it is still regarded as an indication of the wrath of God against the unhappy sufferer. See article "Leprosy" in Smith's and Fairbairn's "Dictionaries of the Bible;" the "Report on Leprosy by the Royal College of Physicians, addressed to Her Majesty's Secretary for the Colonies" (London, 1867); and the very valuable contribution to our knowledge of leprosy made by the medical officers of the Indian Service, in the "Medical Report on the Character and Progress of Leprosy in the East Indies"' (Calcutta, 1865).—From the Rev. W. Denton's 'Commentary,' vol. ii., second edition.

XXIX. BERI BERI.—(*See ante*, p. 163.)

In his Report on the 'Kakké' of Japan, an abstract of which is given in the text, Dr. Simmons gives a short summary of the chief authorities on the subject, taking much of his information from Dr. Aitken's 'Science and Practice of Medicine.' Among the writers quoted are Hamilton, Christie, Waring, Malcolmson, Hunter, Everard, Farrell, Dick, and Ridley. Copland's 'Dictionary of Practical Medicine' also, and 'Le Dictionnaire de Médecine et de Chirurgie,' contain very good descriptions of the disease. The article on Beri Beri in Johnson's 'Influences of Tropical Climates' is by Mr. J. Ridley, and was taken from the 'Dublin Hospital Reports.' A short essay by Dr. Dammann, and one by Dr. Pralger in the 'Annales de Médecine navale néerlandaise,' 1870, is also quoted. The literature of the disease in Brazil appears to be confined to the writings of J. F. Da Silva Lima, in the *Medical Gazette* of Bahia, and an essay in Spanish, a review of which is contained in the *Edinburgh Medical Journal* for March, 1873.

The literature of the Japanese disease, by foreign physicians, is limited to a paper read before the German Asiatic Society by Dr. Hoffman, one by Dr. Wernich in a German periodical, and one by Dr. William Anderson in 'Guy's Hospital Reports,' which subsequently appeared in pamphlet form. A number of Japanese physicians have written on the disease under the name of Kakké. The earliest description of it was by Osada Lokuhou in 1562; the next by Tachibana Nanké in 1715; and the third by Katô Seito, at the end of the last century. Their speculations and conclusions are described as 'curious.'—(XIX. 41.)

XXX. RABIES.—(*See ante*, p. 166.)

At Canton four Chinamen were bitten on 8th of August, 1882, by a young retriever dog that had some days previously manifested symptoms of distemper. The animal was destroyed; thus precise information as to its condition was not obtainable. One man had a portion of his finger cleanly removed, and in consequence lost a large quantity of blood. Another

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had a slight abrasion on his leg; but his clothes were not penetrated. The two men whose injuries terminated fatally had lacerated wounds on the fingers. Dr. Wales did not see them till several hours after the receipt of the injuries; when he did, he freely applied nitric acid. The wounds afterwards healed kindly under water-dressing. On 21st September, one of these two men was taken ill with rigors and great prostration. When seen on 22nd he was dying from slow asphyxia, the effect of spasm of the respiratory muscles; his mouth was filled with frothy fluid, which he frequently attempted to get rid of by spitting; he had frequent and severe convulsive seizures; he was unable to swallow anything, evincing much horror when a stimulant was offered him.

The other patient was very apprehensive from the time he was bitten. When the wound healed, he returned to his duty as a policeman; but after a short time he began to complain of pain in the region of the heart. The death of the former had a disastrous effect upon him; he gave up work, took to bed, and called in the Chinese medical men, who proceeded to treat him vigorously. Dr. Wales first saw him in his illness on the 26th September. He was seized with convulsions every few minutes, these seizures having commenced that morning; the slightest cause induced them, such as a noise, or slight current of air caused by a person moving in the room. He was perfectly sensible, and both able and willing to take fluid into the mouth, but was altogether unable to swallow, owing to the spasm which the attempt excited. He died later the same evening from exhaustion. In both cases the presence of vesicles or pustules near the frænum of the tongue, described by Dr. Maroshetti, was not detected, although carefully looked for. At a later period, Dr. Wales found that the submaxillary and sublingual glands were enlarged, and the small bursæ, which normally exist in the loose areolar tissue under the tongue, were very prominent.—(XXIV. 26.)

XXXI. DYSENTERY.—(*See ante*, p. 180.)

In the summer of 1882 a case of acute dysentery occurred at Pakhoi, in the person of a missionary aged forty-eight. He had, while travelling in the interior, suffered for some time from diarrhœa, for which he was unable to obtain treatment. On arriving at Pakhoi there was great pain in the iliac fossæ, and along the colon; no hepatic or splenic enlargement. Evacuations were rosy, frothy and mucous, with slight traces of fæcal matter. A dose of chlorodyne was given; linseed and mustard cataplasm applied to the abdomen; five grains of Dover's powder administered every six hours; a diet of broth and milk prescribed. On the second day the evacuations still contained much blood; there were much tormina and tenesmus; pulse was weak; temperature normal. Ipecacuanha with carbonate of soda was administered; the cataplasms continued; a lavement containing 30 min. of laudanum in starch mucilage administered, and at 11 p.m. a 20 grain dose of ipecacuanha given. During the third day, the symptoms persisting, the same treatment was continued, 5 grains of quinine being added to the enema. On the fourth day an improvement took place. On the fifth, it was still more pronounced; and on the sixth, convalescence was established. The patient made a good recovery. —(XXIV. 28.)

Pakhoi.

XXXII. CALCULUS.—(*See ante*, p. 190.)

In the year ended March, 1871, no case of stone was reported from any of the hospitals in China, with the exception of those at Canton and Takow. In the former place, during the previous twelve years 218 cases were operated upon at the hospital under Dr. Kerr. A few cases were met with in the southern end of Formosa. In reference to this

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subject Dr. Dudgeon observes that he is unaware of any explanation having been given for the almost exclusive prevalence of calculus at Canton. The Chinese have a strong prejudice against cold water, either taken internally or applied externally, and are astonished at the copious draughts swallowed by foreigners, and the cold baths in which we indulge. Tea is the universal beverage, and water when drunk at all is swallowed warm, after precipitation by alum, and boiling. The common Peking water contains a large quantity of lime, which is deposited on the kettles by boiling. The specific gravity is 1007. The water used for tea is much softer, and is often carried great distances. That for the Emperor is brought into the palace on the backs of animals from the U-Chien hill near the Summer Palace, a distance of nine miles to the north-west. In the east of the city, the water, except near the courses of the intramural canals or streams, is for the most part hard and brackish; that on the western side is much softer, and the farther west we go the softer it becomes; specific gravity 1003. Canton.

If, as some writers have observed, calculous diseases are most common where the mineral strata are of a calcareous nature, how are we to account for the absence of stone at Peking and other places, and its presence at Canton, where river-water, which in China is usually the best, is almost entirely used? Goitre, which is tolerably frequent at Peking, and still more so in the hilly districts to the north and west, is attributed by the natives to the use of lime-impregnated water. Yet it does not seem to be a common affection in the south. Gout and stone are often found together. If uric acid calculi, therefore, depend upon a certain acid form of dyspepsia, and have any connection with rheumatism and gout, stone ought to be of frequent occurrence in all parts of China. The most common form of indigestion among the Chinese everywhere, from the nature of their food, is that arising from over-acidity. Next to itch, no other single affection predominates so largely in hospital reports. In the north this disposition to the deposit of uric acid ought to be even still greater, as the diet is much more animal than in the south, and from this form of diet a greater quantity of uric acid is said to be eliminated. Stone is generally supposed to be more frequently found in cold than in warm climates. In China this seems to be reversed. Diseases of the urinary system are extremely rare, nay, almost absent. Only one case of calculus, or crystalline or amorphous deposit, has been seen at the Peking hospital during the two years preceding 1871. In March, a man from Shantung was operated upon for stone in the navicular fossa. On being withdrawn it was found to weigh nearly one drachm.—(I. 121.)

XXXIII. REGARDING OBSTETRICS, AND INFANTILE DISEASES.—(*See ante*, pp. 217, 220.)

At Newchwang during the eighteen months ending September, 1882, twelve European children were born. Of these, four were boys, two of them twins, and they both required to be delivered by the forceps. Of the girls, one was a case of foot-presentation; another was imperfectly developed, and only lived five hours; it had six fingers on each hand, and six toes on each foot. One of the twin children, when born, weighed only four and a half pounds; it only lived eleven days. Besides these two infants, three young children died during the period; one from inflammation of the brain, and two from the effects of exposure to extreme cold. In one of these there was intense inflammation of the trachea and bronchial tubes; in the other, acute catarrh of the stomach and bowels, and passive congestion of the lungs. The winter months are very trying to young children.—(XXIV. 2.) Newchwang.

It is deemed convenient to interpolate in this place the following extracts from the translation,

by Dr. Lockhart, of the Chinese treatise on 'Midwifery' already mentioned (p. 272), namely: 'The fact is that some place too much reliance on prescriptions, without knowing why they are used, while no one who has not been long devoted to study can possibly understand the plans laid down. In this treatise a constant reference is made to the powers of Nature rather than to prescriptions. All strange and wonderful prescriptions are to be avoided; and further, if we can succeed in preserving the patient without the use of even the simplest remedies, so much the better. This treatise is drawn up for the benefit of women.

Introductory.

'Not only should pregnant women be made acquainted with this publication, but all, whether old or young, male or female, should render themselves familiar with its contents, for it is much better to attend to that which is useful, than to be occupied with silly plays or foolish novels. Rich and noble families ought particularly to study it, for the females in the higher ranks are generally brought up very delicately; they eat of the fat and the sweet, and they are so pampered by ease and indulgence that their bodies become weak and feeble. Besides which, rich people are proud, and will not listen to advice; so that when such an event as is now spoken of comes suddenly upon them, there is nothing but clamour and confusion. Midwives also come rushing in one after another; and should anything unpropitious take place, then a number of wonder-working prescriptions and strange remedies are confusedly administered, until, in many cases, both mother and child are lost. Is not this to be deeply regretted?

'The great energy of Nature is called life. This life, or life-giving principle, is everywhere apparent, and is most strikingly displayed in giving life to man. Now, pregnancy is the commencement of human existence, hence it is called life; further, the passing into life is a spontaneous operation of Nature; there is nothing that calls for violent exertion, and no difficulties present themselves. In the present age we often hear of difficult labours: if they terminate favourably, it is not because of human interference; and if otherwise, you do not mean to say that this is the fault of Nature! can it be that Nature should slay man in the very gate of life? It is manifestly impossible. Seeing that man is the most intelligent being in creation, how can we suppose that he should be inferior to other created beings? Now other things are produced without difficulty; herbs and plants bud in their proper season, and the chicken leaves its shell at the appointed time; what occasion is there for any aid being given? These processes are entirely spontaneous, and the application of force is in no case called for; why then should the human species alone be an exception to this rule? When a matter is originally easy and you put difficulties in the way, and when a business is one of every day occurrence and you treat it as one that is unusual or strange, are you not thus in error? All I wish for is, that men would implicitly follow Nature, and not interfere with her operations by useless meddling, so that in every case that presents itself life might be preserved.

'When first the pains in the womb are felt, the woman must resolutely make up her mind, and understand that the circumstances in the birth of a man have a certain fixed rule. When the paroxysms of pain come one after another without intermission, and after five or seven returns they become gradually severe, these are requisite for the birth of the child; at this time it is of the utmost importance that the attendant be vigilant and careful, and even when true pains do come on, if she be hurried—a great mistake will be committed. At this stage it is of great consequence that she should bear the pains resolutely. When there is an intermission of pain she may eat a little rice as usual, and sleep and wake till the pains be fully established, and thus she will certainly have an easy labour. She ought also to be told that she must be completely self-possessed; that no one can take her place; that her own life may depend on the issue of the matter now in progress; and that it does not concern others to the amount of a single hair. At

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this time she ought to keep up her spirits, and to economize her strength, and be resolute. It is advantageous for her to lie down and sleep; if she cannot sleep, she may rise up, and, leaning on some person, walk about slowly, or, taking hold of a table, stand upright for a while. While sleeping she must always lie on her back, so that the centre of the abdomen being relaxed, the fœtus may easily turn itself; also when the woman sleeps, the fœtus sleeps; and in turning her body she must not exhaust herself, but be careful of her strength, that the fœtus may have more vigour when it is required at the moment of expulsion: this is to be ever borne in mind attentively. If at the proper time the fœtus is able to work itself out, what need is there for being hasty? because it is to be feared that as the strength of the fœtus is but small, if, when it turns its body, this strength be exhausted, it is brought to the gate of life, but cannot work itself out. Still there is a time when it is proper to make a slight effort, and then one exertion will be sufficient to cause the fœtus to lose its place and descend. Thus at the set time the melon ripens and the tendril breaks. At this period the blood and breath are dissipated (partial recovery), the bones and joints of the body are loosened for a moment, a gush of water takes place, and without effort the child is born, and the mother herself does not know how it came about. The fœtus is able to turn itself, and the time that it does so must be waited for; not only is the use of effort needless, but it is absolutely injurious; for the fœtus sits upright in the womb till the time of birth, when it bends down its head and turns its body to the gate of life, the head being then below, the feet above; as if it were suspended upside down, it comes out at once. If the fœtus has not yet turned its body, and efforts be made to expel it, then the feet will come out first; this is a strange occurrence, and an elegant name is given to it, namely, "the foot-treading or water-lily birth." Again, if the body be turning, and yet be not quite straight, and efforts be made too early, the axis of the body being directed to the right or left, the hip or breech will present, but cannot come out; and all this arises from exertion being used before the proper time. All persons should be earnestly exhorted on no account to use improper efforts. At the same time efforts are not altogether to be discarded; but when used, it is only to be for the period occupied in drinking a cup of tea; above this, all irregular exertion is to be avoided. Some one may ask, How is this swallow-of-tea time to be known, that efforts may be made? The time is certainly not always the same; if the fœtus be pressing downwards to the gate of life, then the bones and joints of the woman's body are relaxed, the chest bears down, the abdomen becomes distended or tense in a remarkable degree; scintillations, as of golden flowers, are seen darting before the eyes—this is the precise moment, and if she be now brought to the tub (on which delivery takes place), some efforts made, the mother and child will be separated. Where lies the difficulty in this? Some persons say, We cannot wholly credit this story of the child being able to come out of itself; what was the opinion of the ancients on this matter? The remarks of the ancients were of a general nature, because they could not enter into the minutiæ of every affair, expecting that their posterity would embody their ideas. The ancients speak of a pregnancy that was protracted for three or four years, and afterwards the child was born; and this was because the fœtus was not willing to effect its exit, and who could then constrain it to do so? on the contrary, when it chooses to come out, who can hinder it?

'Some may ask, As efforts are not to be used too early, might not also injury arise if they be used too late? This is not of any consequence. Some may say, If by chance the child should come to the gate of life while the mother is asleep, would there be no difficulty here? It would be rather beneficial. But now the woman is asleep, and the child is also asleep, therefore what difficulty can arise? But he may still object, saying, What if she should be troubled or disturbed on this account? But she has not been disturbed for ten months, and why should she

be so now? Some may ask whether it is good to bear the pains patiently for a long time? This is the best thing that can be done; who ever heard that a woman being clandestinely delivered, ever had a difficult labour? Some say that the gods interfere on such occasions; but this is not the case: it is because she has become impregnated clandestinely, and then she is afraid that anyone should know it, and then exerts to bear the pains quietly until the proper period, and then the child is born spontaneously. The reason of this is perfectly clear, and there is no reason for doubt.

'Some may say, But if efforts have been previously used, in an improper degree, so as to produce a transverse or unnatural presentation, are there any rules for obviating the difficulty? The woman ought to be put quietly to bed, and to take a large dose of the decoction of the *kung* and *kivei*; then the hands and feet of the fœtus are to be taken hold of and properly adjusted, and after a night's rest she will certainly be delivered. Another may ask, What is to be done, supposing the fœtus cannot be adjusted? If the woman will compose herself to go to sleep there is no danger of the fœtus not being adjusted; but if at this time she will not sleep, but tosses her arms and legs, and persists in taking all sorts of medicines, there is then no help for her.

'Some may ask, What is the reason of prolapsus uteri? It is entirely the result of using efforts, having in the early stage of the business exhausted her strength at the time of labour, she again uses violent straining, so that the blood and spirits are forced downwards, and the uterus follows the child. This having once taken place, is likely to recur on every occasion.

'Some may ask, What is the reason that in some cases the child is born after but one pain, and without any assistance having been given? This is just as it ought to be; what is there strange or marvellous in the matter? for the strength of the womb being sufficient for effecting the separation of the mother and child, the latter wishes to come out; and even if you should wish to do so, you cannot restrain it. Some may ask, Should medicines not be employed at all? Since we have this class of persons, we cannot avoid employing them; but we ought to use them and not let them use us: entirely depending on our own decision of mind, we ought not to receive orders from them. There is also another class of perverse women, who take advantage of this time to quarter themselves upon persons for the mere sake of gain. The evil of this is by no means slight. It is said that these women are called "secure females," "receiving-to-life females," and "welcome-life women."

'For wealthy and honourable families, midwives are called early, and kept in the house till the time of labour; but this is neither pleasant nor profitable, for both at the front door and back gate people are constantly passing in and out, causing a continued disturbance.

'Some ask at the time of labour, Is there any benefit to be derived from the use of medicines, and is it right to use them or not? It is better not to use them. In ancient times of famous prescriptions, none were in greater repute than rats' kidneys and hare-brain pills, and at present none more so than the "restoring-to-life powder;" their use is deprecated, not because they are entirely useless, but because they are used improperly.

'Some ask, To take medicine, is it beneficial or injurious? How can it be injurious? both the mouse and hare pills assail the subtle fluid, and they injure the blood; the life-restoring powder impairs the blood and disperses the subtle fluid. Now at the time of labour *the bloodvessels are relaxed,* and the subtle fluid deficient and rapid; if then remedies for dispersing the fluid be given, and the child should be born before their influence is dissipated, how can this but be injurious? Moreover, to cause *the pores of the skin* to be opened so as to admit the wind, does great injury. In the compounding of the life-restoring powder, rhubarb and the rosa sinensis are chief ingredients; now *the blood being already vitiated,* if you injure it still more,

fever will be often induced after delivery, and innumerable calamities follow. In regard to these different prescriptions, it appears that both ancients and moderns have called them divinely efficacious and wonderfully precious remedies; since it is thus, the reason of their being much used is evident. A strong decoction of the *kung* and *kivei*, with powdered citron-peel, can be used without intermission, for in pregnancy the greatest requisite is a sufficiency of blood. So it is feared lest the woman should not have a sufficiency of blood, also lest the membranes be broken too early, thus making the parts rough and dry. Former philosophers, who were thoroughly acquainted with the male and female principles of nature, compounded these excellent remedies in order to benefit after ages. How very foolish it is for men to go about looking for something out of the way, never thinking whether their use be beneficial or otherwise!

'Some ask, If these things be so, how can there be in the world any such thing as a difficult labour? Sometimes these things will happen. Accidental slips or falls do great injury, and occasion difficult labours, or produce abortion. Either on account of a difficult labour, or from the coldness of the weather, the child then born may be almost dead; it ought then to be instantly wrapped up in warm clothes, and a paper match dipped in fragrant oil being lighted, the cord is to be tied and slowly burnt through; the warm spirits enter the abdomen, and by-and-by the child cries, and is restored to life; but if the cord has been previously cut through with scissors, then there is no hope.

'Some ask, At the time of labour, what diet should be used? At this time it is of importance to prepare nourishing food, but care must be taken not to use fat or unctuous articles; if she cannot use solid food, fowl or duck, or meat soup, is useful—the oil being removed, so as to make it clear and pure; the woman may constantly sip this, and it will strengthen and recruit the animal spirits. Human life depends upon eating, and how can anyone pass a single day without doing so?

'At the time of labour, two or three experienced persons should be in attendance: more are unnecessary; and the whole *posse* of female relatives are to be respectfully dismissed with kind words, and not permitted to enter the chamber. In summer, too, there must not be too many persons in the room, lest the heated air prove injurious (to the patient). In the chamber, people must walk lightly, and speak softly, for it is advantageous that the woman be able to sleep. It is also of the first importance that she be told to be calm and composed, and to bear the pains with fortitude; all alarming and wonderful stories are to be avoided, as also whispering, sighing, and groaning: all these may bring on trouble or confusion of mind, and thus both mother and child be injured. Only one midwife is to be in the room, and she is to sit quietly on one side, and not be making a great clamour. In regard to diet (the patient) ought to take little and often, soup made of the intestines and lungs of fowls and ducks is very good. In winter, a pan of fire must be placed in the chamber; and in summer, vessels of spring water so as to receive the heated air, and these are to be frequently changed.

'At the seventh or eighth month, the hands and feet and five functions of the fœtus are perfected; and it can then move and turn itself about. If the woman should have any heat in her abdomen, or rises and rests at improper times, the fœtus will be disturbed, and its violent movements will cause pain; it is not at all surprising that this should happen. If the pains should not abate, two or three doses of the medicine for calming the womb may be used, and the pains will then disappear. After this, if her time be easy, the woman will be delivered in a few days; but if more distant, then in a month, or at the utmost three or four months. Many persons are not aware of this, and so they squeeze the loins, or rub the abdomen, or they introduce the hand, or employ medicines, thus using means to cause the expulsion of the child. By treatment of

little distance. Whether a boy or girl be born is according to the husband's fate, for the sacrifices of a hundred generations depend on the husband's family; how can it result from the family of the wife? If daughters be successively born, this is a common occurrence; why should it cause distress and grief, and produce painful feelings? When we see a stupid husband taking offence against his wife and making himself ill, shortening his days, how very ridiculous and absurd this is; it is far better on all such occasions to be pleased and liberal-minded. There are even some who disown their daughters; those whose cruel hearts thus act contrary to the principles of reason must ever be haunted by future calamities.

'The after-treatment varies according to the custom of different places. In some parts they use red sugar, in others *shon chachoo yu*, an acrid plant, a drink made of pepper boiled in water; but there is nothing better than the hot wine and (say) water; but should there be severe pain in the bowels, the use of *sang hiva* (a soup) will be found very beneficial. The same diet also is not used in all places. According to the usage of Wei, when the woman has just been delivered, they give fowl and dry rice; in Woo they give stewed vegetables and rice-gruel until the end of the first month, and afterwards leeks or onions. All is useless and ridiculous; for in Wei the common diet is rice-gruel, and after labour, while the stomach is still weak, they add rice and fowl. This is perhaps not right, but still there is not much harm done. While in Woo they eat rice the whole year, except till after delivery, when the bowels are weak and empty; and just at the time when the woman ought to have something nourishing, so as to produce more blood and spirits, she is put upon vegetable and gruel diet. The habits which people acquire are very strange, and they become so attached to them that they cannot be persuaded to discontinue them; and if they be told that these customs are injurious, they will not believe what is said, and thus many lives are lost. But they fall into these habits unconsciously, and in the end they become weak and feverish, and cough comes on. This is all highly objectionable. When the blood is disturbed and the spirits oppressed, a large dose of *ginseng* and *hevoyke* ought immediately to be administered, so as to support the system, and in this way the case may still be remedied; and yet there are some who say that it is exhaustion in consequence of labour, and employ cooling medicines to check the fever, till the patient is carried off without warning. This is indeed deeply to be lamented.

'Some ask, What rules are the most proper to be adopted in the after-treatment? During the time for gruel give gruel, and the same with rice. For the first three days she must only take fowl broth, clear and plain, the oil being carefully skimmed off; she ought not to eat fowl itself. And for ten days she must not eat pork, and for the first month she must not eat lard, because it interferes with the course of the blood and spirits. In regard to other things there is no fear. It is good to eat chicken, because such diet removes local accumulations and produces new blood; but it is essential that it be thoroughly cooked, and it does not matter if it be used from morning till evening. In regard to sugar and eggs, these are raw things which produce congestion, and may prove injurious; therefore they must not be eaten. Ducklings also cannot be used. Some ask, Is it requisite to remove the fat from all dishes, and ought they to be taken pure? It is not only of importance that they be pure, but they must also be thin; for thin and pure are according to the rules of nature, and they purify the animal spirits; but gross articles of food are hurtful.

'Some ask, How is this known? A pregnant woman ought to drink thin wine and eat light food; if she drink strong wine or eat salt meat, all the fluids will be burned up and dried, and she will have no milk. This is the rule regarding light and heavy foods; but still the custom of Woo is not to be followed in the eating of stewed vegetables and rice-gruel only. How much do wrong plans surpass in number the right!

'When the fœtus dies in utero, the citron ought to be used, when the fœtus will be brought away; and if it does not descend, then one dose of the tranquillizing-stomach-powder and two or three more of sulphate of soda must be given, and then abortion will take place. The ancients had their established rules, and each followed his matured plans; these have all been now verified and found correct. But strange and wonderful prescriptions must on no account be followed, lest the woman's life be destroyed. Some ask, How can it be known when the fœtus is dead? When the face is flushed and the tongue livid, the mother will live and the fœtus will die; the tongue being red and the face livid show that the fœtus will live and the mother will die; moreover, the pains that are felt in the expulsion of a dead fœtus are not the same as those experienced in natural labour.

Death of the Fœtus.

'Some ask, What is the reason that the membranes are not always expelled? It is because the woman is confined too early. At the time of labour, the joints of the pelvis ought to be expanded; in the strong this takes place at the proper time, and after a few days they unite again; but in the weak they will not be united before a whole month has passed. But if the woman does not wait for their expansion, and uses violent efforts, then the fœtus will be expelled, and the joints of the pelvis being still closed, the membranes are not expelled. Some ask, Is this a very dangerous circumstance? There is no need for apprehension or alarm, neither must medicine be given. If the membranes do not come away immediately, take a hempen thread, and having tied it to the navel cord, double the latter so as to make a loop, then tie it again with the thread, and fasten a small weight to it; then separate the child by cutting the cord, and in three or four days the whole will shrink, become dry, and pass away. This plan has been often adopted with success; it is only necessary to inform the woman what has been done, so that she may be quiet and not alarm herself. The midwives must not be allowed to pull away the membranes; many have lost their lives from this, therefore be very careful.

Membranes.

'Deficiency of milk arises from want of blood, as when the mother has lost much of that fluid during labour, or when she has been previously sick. This often happens in poor families, and among female slaves; the women after delivery are not sufficiently provided for and nourished, and thus the bloodvessels become dry; or the person being more than forty years old, the blood and spirits have become somewhat diminished. All these things cause the supply of milk to be deficient, but a dose of the decoction for promoting 'the circulation of the blood' may restore it; but if she should confusedly use the armadillo-scale medicine, or the *wang-pŭh-lew-hing* prescription and such like, these remedies will be without benefit; or if she should endeavour by force to promote the circulation, the milk will be thin and meagre, so that the child will not be able to live long upon it. Moreover, when the blood and spirits are injured or disturbed, and the woman becomes sick after labour, and the breasts in a short time become dry—this is a very unfortunate circumstance.

Deficiency of Milk.

'The great Pharmacopœia says, that pregnancy generally continues for seven or eight months, and sometimes for one or two years, and in some rare cases even for four years, and this should be made known. Yong uze Keen has discoursed on ten labours with great minuteness and particularity. At a month before delivery, pain may suddenly arise about the region of the umbilicus; nothing comes of it. These are called "the month trial-pains," and are not the real pains; she must on no account allow people to press on her loins; also she must not use irregular efforts, for the fœtus does not yet present properly. It often happens that midwives order the woman to use her strength while the fœtus is turning itself, when, behold, as soon as she uses one single effort, the position of the child is altered, and it becomes transverse or inverted,

Maxims.

and it cannot be born in its proper position. It is of great consequence that the woman do not use efforts too early. If the true pains have not yet come on, and efforts be made too early, and if medicine be given to cause the child to descend, this is like giving the corn a pluck to help it to grow; no possible benefit can result from so doing, but danger may ensue; this is called destroying the conception. Sĕĕ Yen Tze says, when the woman is about to be delivered, and she perceives within the body a turning or moving, she ought immediately to lie down quite straight, with her face looking upwards, until the fœtus has turned its body and descends. When the pains come on frequently, grasp the joints of the woman's middle finger, and if you feel a distinct pulsation in the first joint, then let her go to the vessel (of parturition), and she will immediately be delivered.

'The great work on Midwifery, Zache, says, generally speaking, all births have a settled time, and when this time has not arrived, the woman must on no account take medicine to force the labour; it also says, do not allow her to sit down on the grass too early, and especially, do not permit the midwife to be meddling with her hand. The physician Chootan Hae says, to hasten the birth, only use the powder of citron-peel; it is a very safe medicine, and has proved efficacious in numerous instances. He also says, the most important thing is to produce new blood, and strengthen the spirits; and although she should have any other disorder, that can be attended to afterwards.'

Then follow various prescriptions, to which allusions occur in the preceding extracts. The decoction of the *kung* and *kivei* is carminative. These drugs, together with wine, are ordered under the following conditions, namely, 'After the sixth or seventh month of pregnancy, if in consequence of slipping or stumbling the womb be injured, or the fœtus die in utero, or lock-jaw come on, or there be severe pain or giddiness in the head, with distress of mind, or a sense of fulness at the epigastrium, and the blood rushes up to the heart, let her take this medicine (powder of citron-peel); and if the fœtus be alive all the symptoms will be relieved, and if the fœtus be dead it will immediately come away. In cases of transverse or inverted presentations, this position will be rectified; or if after delivery there should be abdominal pain or inflammation, or pain in the head; or if blood have been lost, and it be necessary to produce new blood, this same remedy will certainly relieve all these disorders. For regulating pregnancy, when the fœtus moves about much, and there is abdominal pain, or uterine hæmorrhage, take of roots of flax, 2 taels; fine silver, 5 taels; wine, 1 bowl. If you are in a place where you cannot get flax, you may take coarse grass, 5 taels; add water, and boil. The decoction for "relaxing the bloodvessels," to be used when there is little or no milk, is composed of fresh *hevoyke*, 1 tael; *pito cha* (a fragrant plant), 5 mace; pig's feet, 1 pair. Boil with water, and remove the oil from the surface of the decoction; then boil down so as to make 1 bowl, which being taken, let her sleep, lying on her face, and the milk will shortly be secreted; but if not, repeat the dose. This is a remedy that never fails under any circumstances. Immediately after delivery, when there is no secretion, she must not use the pig's feet, but a little wine, which must be boiled with an equal quantity of water, and drank. If she be robust, add three or four candareens of China-rose, in order to cleanse the various passages.' Prescriptions are also given of drugs to be used 'if the blood be congested;' 'if three or four days after delivery fever should appear;' 'if there be any disturbance or oppression about the heart;' 'if there be much flooding;' 'if she be troubled with cough;' 'if the circulation is torpid, and blood does not flow, and the abdomen be hard;' 'if the stomach and bowels be distended;' and so on.

Prescriptions.

With one more prescription this series of extracts may well be concluded, namely: 'The divine remedy for infantile marasmus. This will also cure jaundice, pains in the bowels, and cases of

worms in the intestines, and is wonderfully efficacious. Take of *hevoy*, 3 mace; fragrant musk, ½ mace; *ton sang*, 2 mace; 1 scorpion—remove its legs, and then roast it; roasted silk-worms' eggs, each 1 mace; powder of cinnabar, 1 mace; broad beans, ½ a mace. Pounded in paper, so as to remove the oil. These are all to be weighed carefully, and then pulverized and made into pills the size of radish-seeds, with *shin keŭh* paste. One is to be taken, with a little soup, for a dose. Che Yung, a priest of Hangchaw, invented this prescription, and thus saved the lives of multitudes of children.' Marasmus.

With reference to the original treatise, of which the above is an abstract of translation, Dr. Churchill wrote: 'It reminds one very strongly of the earliest English authors, such as Reynalde, Culpepper, etc., without increasing our respect for the state of obstetrics in the Celestial Empire.' —*Dublin Journal of Medical Science*, January, 1842.

XXXIV. EPIDEMICS.—(*See ante*, pp. 70, 152.)

In his Report on Wênchow for the period from April to September, 1881, Dr. Macgowan gave a list of epidemics which have ravaged the province of Chêhkiang from the latter end of the first century. That list is taken from the 'Provincial Gazetteer,' and from Gazetteers of a majority of departments and districts, and, according to Dr. Macgowan, is accurate as far as it goes, although the documents from which it is taken present many lacunæ.—(XXII. 24.) It has been supplemented by a register of epidemics in China—taken from the 'Ku Kin T'u Shu,' an Imperial Encyclopædia, published in Peking, anno 1726—from B.C. 224 to A.D. 1644; *i.e.*, the end of the Ming dynasty. Unfortunately, the latter record comes no further down than to the seventeenth century; but for the period it embraces, it supplies, perhaps, a more complete enumeration of prevailing pestilences in China than is to be found in any other history referring to the same dates. The chronological order of the combined records affords a standard whereby to compare some at least of the pestilences in other parts of the world mentioned in medical or other history; and the information thus arranged may hereafter serve as a groundwork for further details of a similar nature. If by this means an approach can be made to an appreciation of the laws which determine the occurrence, periodic prevalence of epidemic diseases, the changes of type in the form they assume, the recurrence of particular forms after long periods of apparent cessation, and the various other phenomena connected with them, a most important end will have been attained. It is much to be regretted that the history of ancient epidemics in India is not available, if, indeed, it exists. Thus a connecting link in the following history is wanting. It is possible, however, from the record as it stands, to trace a certain connection as regards periods of occurrence between the pestilences which have successively ravaged China, and those which have swept over countries in the West. The particulars given in small print and shorter lines have been gathered from works by Hecker, Meryon, Du Halde, Bascome, Guy, Haydon, by Vincent, Fleming, Walford, Howe, Dr. Macpherson, and manuscript collections by the Rev. W. Denton. Those in the larger print and longer lines refer to the epidemics in Chêhkiang and China generally. The record as it stands ought to be studied in relation to the note on CHRONOLOGY, which *see*, viz.:

B.C. 224. Tenth month. Pestilence throughout the Chinese Empire.

A.D. 7. Famine and pestilence in Judæa.

10-15. Ireland, famine and great mortality.

14-17. Pestilence in Asia Minor, preceded by earthquakes. Also in Babylon, preceded by famine; and in Greece and Italy.

26. Persia, epizoöty in elephants.

A.D. 37. Great pestilence in Yang-Shü-pu (Kiangsu province).

38. Great pestilence in Kw'ai Ch'eih (Chêhkiang province).

40. Famine and pestilence extended from Italy almost to India. About this time Babylon was almost depopulated.

44-54. During that period pestilences prevailed in Rome. Eruption of Etna, and famine occurred. Pestilence again extended from Italy almost to India. Babylon again suffered severely.

49. Plague in Rome.

53-54. Dearth, famine, and pestilence in Italy.

65. A plague in Rome destroyed 30,000 persons.

68. Plague in Rome.

69. In Rome, pestilence in man and animals.

77-78. A great plague in Rome.

80. A long drought in Italy. A most dreadful and fatal plague in Rome followed the conflagration.

80-88. Pestilence in Rome; 30,000 inhabitants carried off thereby. Earthquakes, tempests, and other commotions of nature occurred; fish in the neighbouring seas were killed.

88-92. Severe pestilence in north of England, and in Scotland. In the latter year some kind of inoculation for small-pox is believed to have been practised in Rome.

92. In Palestine, pestilence in man and cattle.

95. Fourth moon. Pestilence in the Hsian-hsing districts.

95. A great plague in Rome.

99-100. The disease described by Philo the Jewish philosopher, and prevailing at that period, is believed to have been small-pox.

110-114. An earthquake in England. Pestilence occurred in Wales after a hot summer and inclement autumn. Great inundations of the Severn.

119. Fourth month. Great pestilence in Kw'ai Ch'eih, as above. An official distribution of wood for coffins took place.

125. Winter. Great pestilence at Lo-yang (Honan province).

126. In Italy, pestilence in man and animals.

133. Great drought in England; the Thames almost dried up. This condition of the season was followed by pestilence.

151. First month. Great pestilence at Lo-yang (Honan province).

146. A destructive epidemic prevailed in Scotland.

158. Arabia ravaged by pestilence; also it appeared in Rome. These were preceded by 'commotions' in the physical world; by famine; swarms of locusts, and of caterpillars. In Rome the nature of the pestilence was a fever, with gangrene of the extremities, particularly the feet.

161. First month. Great pestilence at Lo-yang.

162. Inundation of the Tiber; famine, 'infection of the air,' and pestilence in Rome, This plague spread by human contact to Antioch.

167, 169, 187, 189. Plagues in Rome in each of these years. Plagues also prevailed over a great extent of the then known world. In the first and last named, Æsculapius was invoked 'in the form of a serpent.'

168. Lucius Verus spreads a plague wherever he comes. Plague travelled from Seleucia to Egypt, and thence to the country of the Parthians. In Italy it was very fatal.

171. Third month. Great pestilence at Lo-yang. Medicines officially distributed.

172. First month. Great pestilence at Lo-yang. Medicines officially distributed.

173. A severe winter in England, followed by famine and pestilence in the succeeding summer. Pestilence also in Rome.

175-79. Rome visited by severe pestilence, affecting principally the soldiery.

179. Spring. Great pestilence at Lo-yang. Medicines officially distributed.
180. Plague in Italy and in England.

185. First month. Great pestilence at Lo-yang.
187-89. Pestilence in Rome and over Italy, attended by pestilence among cattle.
190. In Italy, pestilence in man and animals.
192. Ireland, famine, great mortality, and emigration, 'so that lands and houses, territories and tribes were emptied.' First notice of emigration.
193-95. A great pestilence prevailed in Rome. In the latter year plague extended all over Italy. Men and cattle perished in multitudes.
200. From B.C. 300 to this date the 'cardiac disease,' considered to be the 'sweating sickness,' occurred from time to time in Greece and elsewhere.
207. In Britain 50,000 of the troops of Severus died by plague.
211. A plague in Britain, preceded by an earthquake, and by an inundation of the river Trent.

217. Great pestilence at Lo-yang.
222. Pestilence in Scotland destroyed 100,000 lives.

223. Third month. Great pestilence.

234. Fourth month. Great pestilence.

235. First month. Great pestilence.

242. Great pestilence.
250-65. Plague originated in Ethiopia, and thence extended to the Roman Empire, to Britain, and over a great portion of the globe, depopulating many towns. France and Spain were especially ravaged by it.
251. 'A new pestilence' in Rome.
252-67. A pestilential fever followed the Scythians, and 'devoured the scanty remains of the human race.' 'Pestilence contaminated the face of the earth.' Alexandria and other districts suffered from epidemic pestilence. This pestilence comprised several diseases; among them dysentery, scurvy, typhomania, intermittent fevers, etc. At that time there occurred 'singular exhalations and dews which resembled the ichors of dead bodies.'
261. A great plague in the Roman Empire.
262. A pestilence in Rome, considered to be of the nature of cholera. 'The symptoms were: a dejection of spirits, exhaustion of strength, incessant involuntary evacuations, violent fever of the bowels, with destruction of the sight, hearing and feeling.' It was assigned to heavy cares and depression of mind, and to the pestiferous state of the atmosphere. Plague prevailed in Greece and in Egypt. It was preceded by earthquakes, rents in the earth, inundations, and great darkness for several days together.
269. A great plague in the army of the Goths at Rhodes, Cyprus, and Macedon; their forces so weakened thereby that they submitted to the Romans.
270. Great pestilence in the army of Claudius at Sirmium, in Pannonia.

274. Great pestilence.

275. Twelfth month. Great pestilence in Lo-yang. More than half the inhabitants perished.

276. First month. Great pestilence in Lo-yang.
282. Pestilence in Rome.
287. A great pestilence among the Burgundian troops in Gaul, leading to their becoming an easy prey to Maximian. Famine also prevailed.
291. Pestilence in Italy.

292. Eleventh month. Great pestilence in Lo-yang.
292. Pestilence and famine in England and Wales.

296. Great pestilence in Kwan-Chung (Shênsi province).

301. Pestilence in Italy. Rome was thronged with peasants when the disease broke out in that city.

302. Epidemic pestilence (*loimos*), *i.e.*, epidemic remittent fever, preceded by famine, occurred in Syria. A second disease was described as consisting of an ichor, 'answerable to its affinity with the fiery anthrax.' It originated in famine. It extended to Armenia. It is considered that the disease thus indicated was small-pox.

310. Eleventh month. Pestilence in Siang-Yang (Hupeh province). Over 3,000 died.

310. Pestilence in England and Wales.

312. Pestilence in Siang-Yang.

312. Pestilence over the East.

322. Tenth month. Great pestilence.

325-75. During the fifty years thus included, epidemics, pestilences, and famines frequently recurred in Britain. A plague broke out in Amida, a city in Persia, during its siege by Sapor; it was attributed to the distresses of war, and to the corruption of dead bodies lying about in the streets and plains.

330. Fifth month. Drought, famine, and pestilence.

333. A great pestilence in Syria, Cilicia, and Thrace. Famine at the same time.

336. Plague in Syria.

350. Great pestilence.

353. Great pestilence.

361-64. A great famine in Italy, earthquakes and inundations round the Mediterranean. Italy and Syria suffered from plague, which continued till 394. In Judea, rain, drought, swarms of locusts and dire pestilence.

362. Drought, famine, and pestilence in Lybia, Sicily, and Greece, preceded by earthquakes.

377. A terrible plague in the western provinces of Gaul; also in the western provinces of the Roman Empire.

379. Third month. Great pestilence.

381. At Antioch, famine, 'accompanied by grievous plague.' In Constantinople, pestilence in man and cattle.

384. Pestilence in Antioch, and most cities of Africa.

394. Plague in Magdeburg.

394-95. Swarms of locusts covered Judæa; they were driven by the sea and washed upon the shore of Palestine, the effluvia arising from their decomposition causing pestilence in man and cattle.

397. Eighth month. Great pestilence, during a military expedition in Cheh. It attacked men, horses, and cattle. Five to six tenths perished.

400-19. Pestilence desolated Asia, Africa, and Europe. In the latter year an earth- engulphed several cities in Palestine.

406. Swarms of locusts in Egypt; the stench caused by them after they had died is said to have caused a great and fatal plague.

407. Pestilence prevailed over most of Europe, Asia, and Africa.

408. Famine in Rome, followed by pestilence.

410. In Rome, famine, followed by a plague. A dreadful plague in Spain; also so severe a famine that human flesh was eaten.

423. First month. Great pestilence. Two to three tenths perished.

425-27. A plague in the army of the Huns obliged them to retire from Thrace.

427. Fifth month. Great pestilence at the capital. Medicines and wood for coffins distributed.

430. A great plague in Britain, the living scarce able to bury the dead.

442-43. Pestilence destroyed great numbers of people in England. In Spain a very severe famine.

444. England, epizoöty in fish.

446. Another great plague in Britain. At Constantinople, a severe earthquake, with fire, pestilence in man and cattle, and famine.

447. Sixth month. Great plague.

447. Earthquake at Constantinople; pestilence in most of the Roman provinces.

448. The Britons were visited by a dreadful plague which raged with uncommon fury.

450. On the landing of the Saxons, under Voltigern, in Britain, pestilence occurred among them.

450-67. Pestilence continued to rage in Rome.

451. Fourth month. Great pestilence at the capital. Medicines and wood for coffins distributed.

455. An epidemic, considered to have been of measles, prevailed throughout Phrygia and Cilicia.

457. Great pestilence at the capital. Medicines and wood for coffins distributed.

458. An earthquake destroyed nearly all Antioch. Pestilence in Cappadocia, Galatia and Phrygia; also in England.

460. Great pestilence at the capital. Medicines and wood for coffins distributed. In the sixth month a malarious epidemic attacked the troops operating in the west.

466. In Britain, 'a bad fatal air.'

468. Sixth month. Great pestilence, universal (in China). In Yu-Chow, in the Honan province, 140,000 to 150,000 people perished by it.

472. Famine and pestilence in Rome.

473. Pestilence continued in Rome.

476. England visited by 'a plague of insects.'

480. Earthquake at Constantinople; epidemic pestilence in Scotland; Asia and Africa nearly depopulated by epidemic disease.

502. Scotland visited by epidemic disease which destroyed both men and beasts.

503. Summer. Much sickness.

504. Much sickness in China.

510. Fourth month. Great pestilence in Ping-yang (Shênsi province).

517. Five years of drought and pestilence in Palestine.

527. Pestilence in Wales.

529. Severe epidemic.

531. South Wales, famine, and 'a small plague.'

532. A great pestilence in Ethiopia.

537-38. Famine and plague at Rome; made havoc both in besieged and besiegers.

539. In Italy war, famine, pestilence.

540-90. A very severe famine in Italy; parents driven to devour their children. Pestilence ravaged the greater part of Europe, Africa, and Asia for more than half a century; its forecast, as true plague, pestilential or scarlet sore throat, dysentery, small-pox and measles.

542. The plague of Justinian first appeared in Egypt.

543. Great famine in Italy. A dreadful plague in Persia; also over Europe and in several other parts of Asia. It originated in Egypt and thence spread.

544. Small-pox began at Pelusium, in Egypt, from whence it spread to Constantinople.

544-48. Dysentery, simulating true plague, prevailed in France.

547. In Britain and Ireland, pestilence in man and animals.

557-58. Plague revived in Egypt, whence it again spread through Europe, Asia, and Africa. Constantinople laid waste by pestilence 'and the Huns.' From this date plague continued for nearly fifty years.

561. In Ireland, pestilence in man and beasts of burthen.

565. Great pestilence in Honan province.

565. Pestilence in Italy, France, and Germany. It extended over the entire habitable globe. Mould-spots adhered to the outside of houses, to doors and utensils. In Italy, pestilence in man and animals.
569. Small-pox attacked the Abyssinian army at the siege of Mecca, and soon after reached Alexandria.
569-70. In Italy and France, pestilence in man and cattle.
570. Small-pox epidemic in France and Italy.
571. England, epizoöty in wild birds.
572. Small-pox again in Arabia, introduced from Abyssinia.
580-81. A pestilence, apparently a true plague, raged in France. Almost every district was affected with dysentery, attended with bilious vomiting, fever, headache, and pains in the loins. The pestilence affected man, also horses and cattle (cattle-plague ?).
582. Ireland, epizoöty in cattle.
583. Pestilence in Europe, and nearly all the known world. France, epizoöty in cattle.
584. Capitinata, epizoöty in cattle.
587. Pestilence in Europe, and over the known world.
589. In Rome, pestilence in man and animals.
589-91. Pestilence continued to prevail in Europe, and over the known world. In Spain true bubonic plague raged.
590. A 'horribly destructive pestilence' in Rome, also in Spain. The air impregnated with a kind of mist and fetidness, inducing sneezing. Hence the custom of saluting a person sneezing with the expression 'Dominus tecum.' Pestilence in Italy and France.
591. A severe pestilence in Britain and in the greater part of France. This disease was called Inguinaria, because buboes were found more particularly in the groin. In Europe, pestilence (anthrax) prevailed in man, birds, and all animals, domestic and wild.
595. A violent plague in the army of Chagan, King of the Avari, on entering the Roman territories.

598. Second month. Pestilence attacked the forces by sea and land sent against the Corea; two to three tenths of their number perished.
599. A dreadful pestilence in Africa.
601. The Romans distressed by a pestilence.
605-6. In Italy, pestilence in man and animals.
610. Pestilential small-pox committed great ravages at Mecca.

612. Pestilence, accompanied by drought; especially severe in Shantung.
614. Epidemic elephantiasis prevailed in Italy.
617. An epidemic pestilence like true plague in Italy.
628. The plague in Persia.

636. Great pestilence in Honan province.
639. A great pestilence in Syria, Arabia, etc.
640. Small-pox was by the Saracens introduced into Egypt, where it proved so destructive that it was looked upon as a new pestilence.

641. Great pestilence in Shansi province.

642. Great pestilence in Shansi and Honan provinces.

643. Great pestilence in Shansi and Honan provinces.

644. Great pestilence in Shansi and Honan provinces.
644. A great plague in London.

648. Great pestilence in Shansi and Honan provinces.
654. Constantinople devastated by severe pestilence.

658. Great pestilence in Honan province.
661. England, epizoöty in wild birds.

664. Great pestilence in England; London ravaged by the plague. In Ireland also, a pestilence originating from famine prevailed; it was similar to and contemporary with 'man-cyalm' which raged in England. By some this pestilence was called 'pestis flava,' by others 'infirmitas icteritia.'
665. Pestilence reached Italy.
669. 'A dire mortality' over Europe, extending to Great Britain and Ireland.
671. England, epizoöty in wild birds.
672. 'Universal disease' prevailed in Britain, in Syria, and in Mesopotamia. In the two latter countries, locusts destroyed vegetation.
679. England and Ireland revisited by pestilence. It began in July and continued till September.
680. Rome suffered from pestilence similar to that of the preceding year in England.
681. Pestilence in Saxony.

682. Great pestilence in Honan and Shantung provinces.

682. Pestilence in Syria.
683-86. A great plague all over Europe, including England; only the Picts and Scots were free from the contagion.
684. Universal pestilence in man and cattle.
685. Great pestilence in England; also in Ireland. Syria and Lybia laid waste by disease.
689. Ireland, epizoöty in cattle.
694. England, pestilence in man and cattle.
695. Ireland, epizoöty in cattle.
696. Pestilence prevailed in Constantinople. In Ireland, pestilence in man and cattle.
698. England, epizoöty in cattle.
699. Ireland and England, epizoöty in cattle.
700-8. Ireland, epizoöty in cattle.
703. Scotland suffered from epidemic pestilence.

707. Great pestilence in Honan and Shantung provinces.

713. Epidemic pestilence in Scotland.
714. Small-pox caused great mortality in Spain.
717. An epidemic disease in Rome destroyed 50,000 inhabitants. At the same time Constantinople lost 30,000 persons by pestilence.
724. Pestilence recurred in Constantinople.
729. Pestilence in Constantinople.
732. Pestilential disease in Syria; also in Norwich, England.
740. An epidemic disease occurred in Rome after violent earthquakes; it continued to prevail more or less severely for more than two centuries and a half; *i.e.*, till the year 1000.
744-47. A plague in Calabria; it spread to Sicily, Greece, the islands in the Ægean Sea, and with such fury that the living could scarce bury the dead.
744-48. Ireland, epizoöty in cattle.
746-49. A plague in Constantinople, Calabria, Sicily, and Greece.
749. An earthquake destroyed many cities in Syria. An epidemic pestilence in Calabria, Naples and Constantinople.

758. Pestilence in Chêhkiang, preceded by droughts and floods.

762. Great pestilence in the Shantung province.

762-71. A severe pestilence in Wales; afterwards it extended over England.
765. Ireland, epizoöty in cattle.
770. Ireland, epizoöty in cattle.
772. Fatal epidemic in Chichester (England); it destroyed 34,000 persons there. In Ireland, an epizoöty in cattle.
774. 'An epidemic visitation' of Pavia, attributed to the blockade of that town by Charlemagne. Ireland, epizoöty in cattle. Scotland, famine 'with plague.'
776. Ireland, epizoöty in cattle; great fall of rain, and conspicuous floods.

777. In Ireland, pestilence in man and cattle.
778. Ireland, epizoöty in cattle.
779. Pestilence raged in France.

783. Pestilence in Chêhkiang, preceded by droughts and floods.
784. Pestilence invaded Scotland; in Germany among horned cattle and man; also in various other parts of the world in man and cattle.
786. Plague with signacula, or blood-spots, in Europe.

790. Summer. Great pestilence in Hwai-nan (Kiangsu province), Chinkiang and Fukien.

791. Autumn. Pestilence in the western part of Chêhkiang, preceded by drought.
791. In Hungary, an epizoöty in horses.
797. Ireland, epizoöty in cattle.
800-1. Universal pestilence in man and animals. In France, cattle-plague (?).
804. In Bohemia, pestilence in man and animals.

806. Summer. Pestilence in the eastern part of Chêhkiang. More than half the population died.
809-10. Continent and England, cattle-plague.
817. Pestilence throughout Gaul, succeeding excessive rains and cold damp weather.
820. In France, pestilence in man and animals. Hungary and Western Europe, cattle-plague.
820-22. The Rhine and Danube frozen in winter. Crops failed from excessive moisture, and famine ensued. Pestilence broke out in spring, and persisted during summer and autumn.
822-25. Severe weather persisted in vicinity of Rhine and Danube; drought in summer and pestilence so severe that it killed almost all the inhabitants in France and Germany.
823. Pestilence in man and animals general in Europe.

829. Spring. Pestilence in the western part of the province.
829. In Thrace, Greece, and Bulgaria, pestilence in man and sheep.

832. Spring. Great pestilence in western Chêhkiang.

833. Summer. Pestilence in Hang-chow and western Chêhkiang.
836. Wales, 'the ground covered with dead bodies of men and beasts.'

840. Summer. Great pestilence in Fukien, and at Tai-Chou (Chêhkiang province).
842. Universal pestilence in man and cattle.
850. France, Germany, Spain, cattle-plague (?).
853. Epidemic pestilence in Scotland.
856. Earthquake at Rome and inundation of the Tiber. Sore throats and anginas prevalent.
860. In Europe, pestilence in animals.
863. Epidemic pestilence ravaged Scotland. Famine had prevailed there during seven preceding years.
866. In Europe, pestilence in man and animals.
869. In Europe, pestilence in domestic animals (anthrax ?).

870. Pestilence in the entire province of Chêhkiang.
870. France epizoöty in cattle.
872. England, 'a monstrous kind of insect—an ugly locust,' hence famine and plague.
873. France desolated by locusts and pestilence.
873-74. In France, pestilence in man and animals.

874. Great pestilence in east and west of Chêhkiang.
874. Plague in Rome. Swarms of locusts covered a great part of France; they were driven by winds into the English Channel, and being washed on shore caused such an effluvium that, aided by famine, pestilence destroyed a third of the inhabitants of the French coast.

876. An epidemic disease in Italy ; believed to have been measles.
878. In Germany, pestilence in man and cattle (anthrax ?)
883. Famine and pestilence in Italy. At Oxford, pestilence in man and cattle.
884-86. A pestilential disease at Oxford ; it destroyed great numbers of persons and of cattle. A plague raged throughout England for three years. Famine and pestilence from inclement seasons in Gaul, Germany, Italy, and various other parts of Europe.
886. Universal pestilence in animals.
887. In France, pestilence in oxen and sheep.
888. Upper Italy, epizoöty in horses.

891. Summer. Great pestilence in Hwai-nan (Kiangsu province).

894. In Italy, pestilence in animals (anthrax ?).
895-97. Britain and Ireland, pestilence in domestic animals.
897. Plague in England. Epizoöty also in cattle and horses.
899. Ireland epizoöty in horses.
900. Small-pox in Arabia described by Rhazes.
903. Ireland, pestilence in horses, cattle, and birds.
908. Ireland, epizoöty in horses.
916. Ireland, pestilence in horses, cattle, birds, and salmon.
918. Ireland, epizoöty in cattle.
922. A pestilential fever prevalent ; very fatal in Scotland.
929. Severe frost in the Roman territories invaded by the Saracens, followed by a fatal plague. In England the winter was very severe, the Thames frozen over for thirteen weeks. 'A dreadful famine and disease followed.'
937. Great heat, drought, and pestilence in England.
940. A severe pestilence or murrain among cattle in the north of Europe, followed by disease in man ; in Scotland 40,000 persons perished by it.
941. In Northern Europe, pestilence in man and cattle. The plague raged in Winchester.
942. In Continental Europe, pestilence in man, cattle (anthrax ?), and birds.
950. Ireland, epizoöty in bees.
953. Ireland, epizoöty in cattle.
954. A great plague in Scotland ; 40,000 persons perished.
959. Plague with signacula again in Europe. In Britain 'a great plague' happened in the month of March.
960. Italy, Ireland, epizoöty in cattle.
962. The above plague reached London. Great mortality in England.

963. Seventh month. Pestilence in Hunan province.

964-65. The Emperor Otho's army nearly destroyed by pestilence. Malignant fever or plague in London.
975. In England, pestilence in man and animals ; famine 'scoured the hills.' Famine also in France.
976. A great famine in England.
981. Great mortality among the Lacedemonians. In Ireland, epizoöty in cattle.
986. Murrain among cattle in England mentioned for the first time.
987. A great pestilence in England; at the same time a kind of flux destroyed great numbers of cattle in England, Wales, and Ireland.
988. Plague in Germany.
992. In France and Germany, ergotism in man, anthrax in cattle. In Ireland, pestilence in man, cattle and bees. Ireland, disease in bees.
992-94. Famine and pestilence in France.

994. Sixth month. Great pestilence in the capital. Official distribution of medicines.

994. In Europe, pestilence in man, pigs, and sheep.
995. In England, pestilence in man and cattle.

996. Famine and pestilence in Kiangnan.
996. Italy, epizoöty in horses.
997. 'Burning fevers' and agues were fatal in England.
1000. A great famine in England. Plague also prevailed here.

1001. Pestilence throughout the province of Chêhkiang.

1003. Fifth month. Pestilence in the capital. Official distribution of medicines.
1003-8. Great famine and mortality in France, followed by a pestilential disease.
1005-8. True plague began and continued for three years in various parts of the globe, more than half the human race perishing thereby. In Italy great famine, and mortality therefrom.
1006-9. Pestilence throughout Europe.
1008. Wales, famine and plague.
1009. The earth again 'became deluged with rains, and pestilence which began among the Saxons.'

1010. Fourth month. Pestilence in Shênsi province. Official distribution of medicines.
1010-14. In France the mortality by pestilence continued to be enormous.
1012. Great pestilence in Europe.
1014. Bohemia, epizoöty in fish.
1016. Ireland, epizoöty in cattle.
1017. 'It rained the colour of blood in Aquitaine for the space of three days.'
1019-21. Great pestilence in Europe.
1020. In England, great floods, followed by plague. A dreadful pestilence in Saxony.
1022. Universal pestilence in man and animals.
1024-25. Summer wet and cold; great pestilence in England and other parts of Europe.
1027. Dancing mania, Chorea or St. Vitus's dance, at Kolbig, near Bernburg.
1028. In Bohemia, pestilence in man and animals.
1029-31. Epidemic pestilence in Europe, especially England and Gaul, after tempestuous seasons, vicissitudes of weather, devastations by locusts, and famine.
1030. Denmark desolated by plague.
1033. A dreadful plague in Cappadocia, Paphlagonia, and Armenia; the inhabitants fled. Also a pestilence in England.
1035. The crops in the preceding year were abundant in France. Plague reappeared; the disease attacked man and animals. The exhalations from the subjects of the disease were 'unsupportable.' The famine begun this year continued during the seven succeeding years. In Bavaria, pestilence in animals and bees.
1040. In Ireland, pestilence in cattle and swine.
1041. In England, Germany and France, pestilence in man and cattle.
1042. A plague in France, Italy, and Greece. In England, pestilence among people and cattle.
1044. In Germany and Ireland, pestilence in man and cattle.
1046. In England, pestilence in man, cattle, birds, and fish.
1047-48. In England, pestilence in man and cattle.

1049. Second and seventh months. Pestilence in Hopeh. Official distribution of medicines.
1049. A great pestilence among the 'Scythians' (Huns) who crossed the frozen Danube into Roman territory.
1051. Plague in England.

1052. Tenth month. Pestilence in China. Official distribution of medicines.
1052-60. Great heat in Ghor, supposed to be one of the original seats of the Affghan race; famine and great mortality resulted.
1053-8. Famine and pestilence recurred in France; these lasted five years.

1054. First month. Pestilence in China. Official distribution of medicines.
1054. In Germany, pestilence in man and animals. England, epizoöty in cattle.

1055. Sixth month. Pestilence at the capital. Official distribution of medicines.

1059. In Bavaria, pestilence in man and animals.
1059-66. Another famine in France, continuing during seven years, and compared with that in Egypt in the time of Joseph. Pestilence recurred also, and continued till 1066.
1060. Failure of the Nile caused one of the greatest famines recorded in history.
1062. Great pestilence in the armies near the Danube.
1063-66. Great cold in England; the Thames frozen over. Pestilential diseases, as fluxes, pleurisies, fevers, etc., carried off 'many hundreds of thousands' of Saracens on their march towards Rome.
1067. Leprosy increasing in Spain; lazarhouses for lepers first established in Valencia. 'An awful plague swept away a great part of the inhabitants of Egypt and Arabia.'
1068. Famine in England. A great pestilence in York and Durham. A terrible plague in Constantinople.
1072. In Egypt the overflow of the Nile having failed for seven years, great famine resulted. In that year pestilence broke out.
1077-79. Famine, pestilence, and locusts made great havoc in Italy, Russia, Flanders, and England.
1078. In Ireland, pestilence in man and cattle; in Constantinople, 'from the multitude of strangers.'
1082. A great plague in Denmark.
1084. In Ireland, pestilence in man and cattle.
1085. In France, England and Ireland, pestilence in man and animals.
1086. Inundations, followed by murrain in cattle and sheep, in England. Intemperate weather; excessive rain; great mortality by fevers and plague.
1087. In England and Ireland, pestilence in man and cattle.
1087-89. Rainy, cold summers, extreme winters; pestilence and famine in England, Gaul, Germany, and Italy; epidemic erysipelas causing great mortality in France.
1088. In Ireland, pestilence in oxen, sheep and pigs.
1089-91. In Europe, pestilence (ergotism?) in man and animals.
1091. At Constantinople, pestilence in man and animals.
1092-94. In Europe, pestilence in man and cattle.
1093. In England, great famine and mortality.

1094. Fourth month. Pestilence at the capital. Official distribution of medicines.

1094. A great mortality in London. Plague in England.
1095. Great mortality in Ireland.
1096. England, 'summer rain, tempests, and bad air.'
1098. In France, Germany and Syria, pestilence in man and animals. Syria, in camels.
1103. Murrain among cattle in England; pestilence in man.
1103-5. Unhealthy seasons; pestilence and famine in Syria. Multitudes of caterpillars in England, Palestine, and Holland. In England, 'an epidemic erysipelatous fever.'
1106. England, famine from barren land, then plague.
1106-11. Fevers and fluxes rife in England; pestilence in various parts of Europe.

1109. Pestilence in Kiangtung.

1111. Again great mortality in England and Ireland. It extended to cattle, fowls, and other domestic animals.
1112. Plague in England; an epizoöty also in cattle.
1113. Pestilence in Judea. Ireland, epizoöty in cattle.
1115. In England and Ireland, pestilence in man and animals, including birds.
1120. A great plague of mice and locusts in Jerusalem. A pestilential period began, preceded by famine and murrain; it continued to ravage various parts of the world for 272 years, *i.e.*, till 1392.

1120-25. Epidemic erysipelas with great mortality in England.
1123-24. France and Germany, famine from 'terrible weather;' greatest plague.
1124-25. In Europe, pestilence in man and animals, including bees.
1126-28. A destructive pestilence in England.

1127. Third month. Pestilence in Pien-king (Honan province). While the men of Kin were besieging Pien-king, the present Kaifêng-fu, a pestilence broke out which carried off nearly one-half of the inhabitants.
1127. In France, pestilence in man and animals.
1129. In Ireland and Continental Europe, pestilence in man and animals. Epizoöty in goats and pigs; also in bears and stags.

1131. In sixth month. Pestilence in Hsian-hsing and western part of the province of Chêhkiang, preceded by famine.
1131. Murrain in England. It affected cattle, pigs and poultry.

1133. Second month. Pestilence in Yung-Chou (Hunan province).
1133. In Ireland, pestilence in cattle and swine. In France, epizoöty in birds.
1133-46. 'Dismal pestilence' broke out in England; it lasted twelve years. Famine also prevailed, and among cattle murrain.

1136. Pestilence in Szechuen province.
1142-43. In England, pestilence in man and beast.

1144. Pestilence in Hang-chow.

1146. Pestilence in Hing-tu, Kiangnan.

1147. Autumn. Pestilence in Hang-chow.
1149. In Belgium and Germany, pestilence in cattle and sheep.
1150-69. Severe winters, dry summers, frequent inundations and earthquakes. Famine and pestilence swept the world; Scotland, Ireland, Italy, Gaul, Sicily, Judea, Asia, and Africa, suffered severely.
1151. In Europe, pestilence in man and cattle.
1153. A 'miserable dearth' in Scotland, followed by a violent pest, but *not* contagious to man and beast.
1154. England, famine from 'rains, frost, tempest, thunder and lightning;' epizoöty in deer. In Ireland, an epizoöty in cattle.

1156. Pestilence in Hing-tu, Kiangnan.

1164. Winter. Pestilence in Kiangnan, among the distressed refugees from Hwai-tien; also in Chêhkiang province.
1164. Great pestilence in England.

1165. Pestilence in Lin-an and Yu-yaou, preceded by famine. Also in east and west Chêhkiang.
1165. Earthquakes in England.
1166. In Saxony, pestilence in children and beasts of burden.
1171. In Germany, pestilence in man, cattle and sheep.

1172. Summer. Great pestilence in Hing-tu (Kiangnan province); also in Kiangsu province, among the famine victims; also at Shao-hing, Chêhkiang province, accompanied by floods.
1172. A great plague among the troops of Henry II. in Ireland. He was thereby forced to quit the country.

1173. Summer and autumn. Pestilence in Hang-chow.
1172-93. Small-pox, measles, influenza, scarlet fever, quinsies, and pleurisies, were rife in England, and in various other parts of the world.
1173. A plague and famine in Ireland.
1174. Small-pox epidemic in England.
1175. England, pestilence, followed by great dearth.

1176. Wales, a great famine and mortality. In Germany, 'locusts ate up all; famine and plague.'

1177. Great pestilence in Chên Chou (Honan province).

1181. Fourth month. Great pestilence in Hing-tu and Chen-chow (An Hwei province). Medical officers sent to the sufferers.

1182. Fourth moon. Pestilence in Hang-chow and Lin-an.

1183-85. Severe pestilence in England; 'a most cruel plague in Rome, Castile, and Leon.'

1187. Spring. Great pestilence in western Chêhkiang.

1187. In England, pestilence in man and cattle.

1188. Spring. Pestilence in Hang-chow.

1190. A great scarcity of food, and heavy rains at Acre. The Crusaders before that city were seized by a fatal pestilence; also with scurvy.

1191. Spring. Great pestilence in Fuchow (Szechuen province).

1192. Spring. Great pestilence in Tsze-chow and Yung-chow (Szechuen province).

1193-96. Famine in Italy; pestilence in England of the fiercest character, and in the form of an acute fever, followed upon famine; plague in the principality of Catalonia.

1194. Sixth moon. Pestilence in the western part of Chêhkiang.

1194. Pestilence in England and in France. Inundations along the Danube.

1195. Third and fourth moons. Pestilence in Lin-an (Yunnan province) and in Hsian-hsing, preceded by famine.

1196. Fifth moon. Pestilence in Hang-chow and at Hing-tu (Kiangnan province).

1197. Third moon. Pestilence in Hang-chow. Also at Hing-tu, and in Kiangsu and Chêhkiang provinces.

1199. In summer. Pestilence in Lin-an (Yunnan province).

1199. Pestilential fever at Cordova.

1200. In Portugal, pestilence in man and cattle.

1200-1. Epidemic pestilence in man and animals in England.

1202. Excessive rain in England.

1203. Great dearth and mortality in England.

1204. Fifth month. Pestilence in Hang-chow; in Kiangsu and Chêhkiang provinces.

1204. A fatal pestilence again in Ireland; 'a prodigious number of persons' died.

1206. An incursion by the Tartars into Poland. The devastation they committed produced a famine, and it, followed by a plague, depopulated that country. Great rains following an eclipse of the sun. Pestilence in Spain.

1207. In Ireland, pestilence in man and cattle.

1208. A pestilence in Yu-yaou, preceded by drought.

1209. Pestilence at Hing-tu (Kiangnan province).

1210. In summer. Pestilence in Lin-an; at Hing-tu, Kiangnan province. Many deaths.

1211-12. Pestilence in Hang-chow; also in Lin-an. Distribution of money, medicines, and coffins.

1213. In France and Spain, pestilence in man and cattle.

1217. Great drought, famine and pestilence, affecting man and cattle, in Spain. In Italy the plague destroyed nine-tenths of the population. At Damietta only three persons out of 70,000 are said to have survived.

1221. Famine from extremes of weather, and pestilence almost desolated the whole of Europe. In Poland, it affected man and cattle.

1222. Pestilence in Kan-chow (Kiangsi province).

1222. Heavy rains and tempests in autumn; Europe and Egypt visited by plague, which raged with incontrollable fury; the animals also suffered from disease.

1223. England, epizoöty in sheep.

1223-25. England and Europe, cattle-plague.
1224. A dearth, and in Europe great mortality by anthrax among sheep.
1228. Heavy rains; hot summer, severe winter and inundations, followed by fatal disease in Friesland.
1230. Severe pestilence in the island of Majorca; also a second, viz. 'St. Anthony's Fire' (erysipelas). Various hospitals were then erected in Spain.
1230-36. Inundation of the Tiber; hot autumn followed by severe pestilence, which continued for five years. England suffered from pestilence, and leprosy had become very common. Denmark and Gaul, and various other parts of Europe, successively suffered from pestilence during this period.

1233. Fifth month. Great pestilence at Pien-king (Honan province). In fifty days 90,000 corpses were taken out of the city gates, 'the very poor, for whom separate burial was impossible, not included.'

1233. Continuous thunder and rain storms in England, followed by famine and disease. ['At this time most of the houses in London were built of wood and wattles, and thatched with straw; the windows were without glass, and there were neither chimneys nor boarded floors; common straw was used for the King's bed.'] The Adriatic frozen over.
1232-34. Europe, cattle-plague.
1234. Great dearth and pestilence in England and Germany.
1235. In Europe, pestilence in all animals, including poultry. The plague in London.
1236. Ague epidemic in England.
1237. Dancing mania in Germany. It broke out among children at Erfurt, as it had done at Kolbig in 1027.
1238. In Europe, pestilence in all animals, including poultry.
1238-39. These were both 'destructive years' in Europe. In the latter, extreme famine in England.
1240. Inclement seasons; fish died on the coasts, and pestilence appeared in various parts of England. Pestilence in man and beast (cattle-plague).
1242-43. Inundations, drought, and deadly pestilence in various parts of England.
1247. Pestilence in England; it broke out in the month of September.
1249. A dreadful pestilence ravaged the armies of St. Louis the Crusader, 'caused by the decomposition of dead bodies of those slain in two great battles,' and from eating fish from a river into which many bodies had been thrown. The pestilence in question appears to have combined scurvy and sphacelus. In Friesland pestilence in man and cattle.
1251. Famine in Italy; epidemic pestilence traversed all England.
1252. Severe frost and inundations in England; plague in London and throughout the country, beginning in autumn, continuing through winter, and ending in summer. In England, pestilence in man and animals; anthrax in cattle.
1254. A murrain among sheep, and mortal disease among horses in England, called 'the evil of the tongue.' Pestilence also in deer.
1255. Great famine in England.
1256-57. Great floods in England, followed by droughts and failure of crops; fatal fevers, chiefly during summer, in England.
1257. England, floods of autumn followed by pestilence.
1258. After fifty years' labour, water was first brought to London by means of leaden pipes. Severe dysentery in man, epizoöty in cattle, in different parts of England; an epidemic of typhoid influenza also prevailed. Famine throughout the country. In this year the first recorded importation of grain from abroad took place, namely, wheat, barley, and bread from Germany; 'but citizens of London were forbidden by proclamation against dealing in the same.'
1258-59. Famine in England.
1262. Plague and famine caused 'great destruction of people' in Ireland.

1264-66. Murrain among cattle and horses in Germany and England. Swarms of the palmer-worm (larvæ of Calandra) destroyed all vegetation in Scotland.
1269. 'Epidemic seasons' existed; pestilence destroyed the Crusaders on their march to the Holy Land.
1270. Army of Louis IX. of France destroyed at Tunis by a pestilence.
1271. Throughout Ireland, famine and pestilence.
1274. 'A grievous rot' which persisted for twenty-five to twenty-eight years, and destroyed almost all the sheep in England. The chief diseases among the flocks during this time are considered to have been scabies and sheep-pox.

1275. Fourth month. Pestilence again in Hang-chow.

1276. Third month. Pestilence at the capital.

1277-1340. During that period 'excessive seasons,' famines and pestilence at different times among the people of Britain, Italy and other parts of Europe; also in Egypt.
1278. Dancing mania at Utrecht.
1280. Inundations in England.
1281. 'Was the first coming of the pest in Scotland, to the great mortality of the people thereof.'
1283. Pestilence in the French army at Gerona; also 'innumerable swarms' of flies seemed to be generated there, the poison from which killed both men and horses.
1285. Small-pox very prevalent and fatal in France.
1286. Austria, epizoöty in birds; in England a period of famine began, which continued with more or less severity for twenty-three years. Prussia infested with 'venomous worms.'
1287. In England, plague all the year.
1288. Great dearth in England.
1290. All fruit failed in England.
1291. Ireland, epizoöty in horses. In the country around Delhi, 'a most terrible famine.'

1297. Eighth month. Great pestilence in several districts of the Chihli province; in Mongolia, and in eastern Szechuen.

1297. 'Calamatous' famine and pestilence in Scotland.
1298. 'A great famine in England, chiefly want of wine.'
1299. Persia ravaged by famine and pestilence. In Spain, an epizoöty in horses. In Germany, epizoöty in cattle. In England, the seasons for three years had been inhospitable; severe catarrhs and fluxes pervaded the country.
1299-1302. The seasons inhospitable; severe catarrhs and fluxes prevailed in England.
1301. A fatal febrile epizoöty in the kingdom of Seville.
1302. In Spain famine and very fatal pestilence. In Ireland pestilence in all animals.

1304. Spring. Pestilence in Hsian-hsing, Ning-po, and Tai-chow. Sixth month in eastern Szechuen.

1305. Seventh moon. Pestilence in Hsian-hsing, preceded by famine.

1307-10. Intemperate seasons, famine and great mortality in Britain and Ireland. Coals first used as fuel in England. The filthy state of London, the mode of living, and disgusting habits of the inhabitants 'gave ample cause for the outbreak of pestilence.'

1308. Seventh moon. Pestilence in Hang-chow, Yu-yaou, and Ning-po, preceded by drought and famine.

1308. In Ireland, pestilence in man and cattle.

1313. In consequence of a long drought there was much sickness at the capital (Peking). 'The Emperor said, "I am alone to blame for this; what wrong have the people done?" Next day there was a fall of snow.'

1313. Rome and Ireland, epizoöty in horses.
1314. In Ireland, famine and variola distempers.
1314-16. Great famine in England. Pestilence also in man and cattle.
1315. Famine and pestilence in Germany.
1316. Famine in England; 'a peculiar disease,' fever with severe dysentery, raged chiefly among the poor, with an intensity and mortality equal to the true plague. A Royal proclamation issued; no more beer to be made.

1320. Sixth month. Pestilence at the capital (Peking).
1320. England, epizoöty (farcy) in horses.

1321. Twelfth month. Pestilence at Chênting (Chihli province).
1321. In England, famine again; the last occasion, according to some writers, in which serious famine occurred in this country.
1321-24. Ireland, epizoöty in cattle and all other animals. In England, rot (?) in sheep.
1325. In England, pestilence in all animals.
1328. Yemen, Arabia, epizoöty in horses.
1330. Weather tempestuous in England; the harvest late, plague in Glasgow.

1331. Fourth month. Pestilence in Hêng-chou (Hunan province), accompanied by drought and locusts; afterwards by floods. Nine-tenths of the people perished.

1333. Third month. Pestilence in Chêhkiang, preceded by floods and droughts in the tract of country watered by the rivers Kiang and Hoai, followed by severe floods in and around Kiangsi. The mountain Tsincheou fell in, and vast clefts were formed in the earth. This pestilence, while it continued during this and the succeeding year, overspread China, causing a mortality estimated at thirteen millions of persons.
1333. England, epizoöty in sheep.
1333-34. Great pestilence in Barcelona.

1334. Pestilence in the western part of Chêhkiang, preceded by a drought. Also in Hang-chow, Chin-kiang, Kia Hing, Chang-chow, etc. (Kiangsu and Chêhkiang provinces). Inundations in the neighbourhood of Canton. In Tche great drought, also a great plague. In Honan drought during five months. Locusts destroyed the vegetation; famine and pestilence, 'as usual,' followed in their train.
1335. A grievous famine in England, succeeded by great and fatal pestilence in man, and epizoöty in cattle. In Ireland an epizoöty in birds.
1336. Simultaneous with droughts and floods in different parts of China, many uncommon atmospheric phenomena in the north of France. In Ireland during the same year an epizoöty affected all animals.

1337. Famine in the vicinity of the Kiang, a tributary of the Yellow River, by which 4,000,000 persons perished: also deluges, swarms of locusts, and an earthquake lasting six days. A pestilential epidemic raged this year. In the same and succeeding year myriads of locusts.

1338. Continuous earthquakes in Kiangsi.
1338. In Germany and Ireland, pestilence in man and animals. In France, failure of the harvest.
1338-39. Ireland, epizoöty in cattle.

1338-42. A succession of inundations, earthquakes, and famines in China. 'It seemed as though everywhere on the tops of mountains springs were made to burst forth, and dry tracts were deluged in an inexplicable manner.' Floods at the same time in France and near the Rhine.

1339. The mountain Hong-tchang fell in. Great floods and rain in China. In Egypt and Syria, violent earthquakes.
1339. Denmark desolated by war, famine, and pestilence.

1339-44. Earthquakes occurred in Ven-tcheou (Wenchow ?), the sea overflowing in consequence.

1340. The Black Death raged in Italy, this being the sixteenth occurrence there of the disease since 1119.

1342. A very severe famine around Delhi. A terrible plague in Scotland, which destroyed one-third of the population.

1344. Summer and autumn. Great pestilence in Fukien province.

1344-45. In India, very severe famine, especially in the Deccan.

1345. Summer and autumn. Great pestilence in Tsi-nan, Shanting province.

1345-47. 'Subterranean thunder,' floods and famines in different parts of China; particularly in Ki-tchwu, and at Canton. During the three preceding years similar phenomena were of frequent occurrence.

1345-50. Pestilence broke out in Spain in the month of March. It lasted five years; it was described as 'leaving scarcely a fourth of the human race alive.' Medical and other writers spoke 'with horror and astonishment of this terrific plague.' It spread through Europe, and most parts of the world; more especially in Syria, Greece and Egypt. Africa and Asia suffered severely by it. By another account the pestilence first broke out in Africa, whence it extended to all parts of Egypt and Asia, and finally attacked Italy, France and Spain; but in the city of Almeria, where it raged with great malignity, it lasted nearly eleven months.

1346. A plague began in China; it ranged through Asia, and depopulated a great part of Europe. This pestilence was considered to be the progenitor of the Oriental plague. It originated after terrible earthquakes and changes of the soil, after the world had been free from this scourge 700 years.

1346. 'Pestilence began in Eastern Tartary, and moved gradually forward to the Atlantic Ocean, on both sides of the Mediterranean; and returning by Britain, ravaged all the countries of Northern Europe.' Another account says of this pestilence that it 'commenced in Upper Asia; it first appeared in Cathay; it arose from a most filthy smelling vapour; this vapour, like a fire, consumed all that stood in its way—animals, horses, trees, etc.' It spread, 'depopulating the whole of Asia, and subsequently Egypt, Greece and Italy; thence it spread into France, Spain, England, and at length into Germany. In the city of Florence there perished (by it) 60,000 persons.

1347. Throughout Europe, epidemic pestilence, in the shape of pleurisies, quinsies, and spotted fevers; the last terminating in Oriental plague, with buboes and carbuncles. In London 50,000 persons perished by it in one week; in Venice 100,000 persons died by it; in Lubeck 90,000; and in Spain 200,000. In many places this pestilence persisted during the following year.

1347-49. Universal pestilence in man and animals.

1347-50. A great pestilence (Black Death) in England, Scotland, and Ireland. The Scotch having made an incursion into England, infection was introduced into their own country by the returning army. Plague continued in this country and in several other parts of Europe. It is said to have destroyed one-fourth of the population.

1348. A general pestilence extended from the East to the ultimate boundaries of the West, sweeping Italy with peculiar severity. It is said to have begun this year in Syria, and thence spread, scarcely any part of Europe escaping. This disease was called 'Sort Diod'—the black pestilence or death. Its symptoms: fever, difficulty of breathing, spitting of blood, difficult deglutition, flushed face, spots and abscesses, and suppuration of the inguinal and parotid glands. Earthquakes in Italy, Greece, and adjoining countries. Wine in casks

became turbid. In Cyprus, earthquakes and overflowing of the sea. Before the earthquake 'a pestiferous wind;' many persons fell ill and died; 'a thick malodorous mist advanced from the East, and spread itself over Italy;' chasms in the earth were formed, floods occurred; foul vapours arose everywhere; the air was contaminated by the decomposition of beasts and of countless corpses. On that occasion Cyprus lost nearly all its inhabitants by the pestilence. Earthquakes continued to recur in Europe till 1360. In the former, and again in the latter of these years, plague at Avignon; the mortality there so great, that bodies of the dead were thrown into the Rhone, as the churchyards would no longer hold them. When plague ceased in man, sheep and cattle perished by disease in great numbers; no bird or beast of prey would touch their corpses. The corn was spoiled for want of hands to gather it, and a great dearth was the result. The order of the seasons seemed inverted; rains, floods, and famines prevailed in different places; diseases, the consequence of famine, broke out. In 1348 the plague reached England, where it first appeared in Dorset; it raged in Wales, where it was chiefly confined to the lower orders of people. It was very severe in London and in Winchester. It extended to the northern counties. It was thence conveyed by the Scottish army to Scotland, and there raged with peculiar violence, as above stated. 'This plague is said to have appeared first in the kingdom of Cathay, in the year 1346; to have proceeded, generally westward, to Constantinople and Egypt. From Constantinople it passed into Greece, Italy, Spain, France, and Africa, and by degrees, along the coasts of the ocean, into Britain and Ireland, and afterwards into Germany, Hungary, Poland, Denmark, and other northern kingdoms.' According to Hecker, it began in China in 1333, as above. After the cessation of the 'Black Plague,' a great fecundity in women was observable.

1348-49. Pestilence continued in England and Northern Europe.

1348-57. Described as 'a pestilential period.' 'There began among the East Indians and Tartarians a certain pestilence.' It destroyed the Saracens, Turks, Syrians, Palestinians, and Grecians. At length it passed to France, Germany, and Dutchland; the seventh year after it began it came to England, and first began in the seaports and coast-towns of Dorsetshire,—thence over all England, Wales, and Ireland, where, however, it did not affect the Irish-born who dwelt in the hilly country.

1349. 'Black Death' in Italy. In England plague in man was accompanied by murrain in cattle; the mortality so great that the fields were left untilled. Throughout Germany this disease also prevailed. The Flagellants had only recently appeared in considerable numbers.

1350. Called 'the year of the great mortality.' Plague occurred in Rome. In Germany, Barbary and Morocco, pestilence in man was attended by murrain in cattle and other animals; beasts of prey refused to touch the carcases. Plague occurred both in England and in Ireland; in the latter much less severely than in the former. This pestilence, having continued for three years from 1347, made the circuit of the world; depopulated Asia, Africa, and Europe, and is said to have destroyed a fourth of the human species. According to Mezeray, this pestilence, with many others, came from China.

1350-51. 'Sore disease prevailed in Ireland, Holland, and England.' Its 'infallible signs were great fever, vomiting, spitting of blood, hæmorrhages, indicating an universal disorganization of the system.' Here we have the worst symptoms observed in the bilious remittent or yellow fever of the West Indies and other parts of the world.

1351. Most of the animals and 22,000 people died of plague in Gaza in six weeks. Plague broke out in Russia, after it had passed through the south and north of Europe, but not until three years after it had appeared in Constantinople.

During the above-noted years, with the prevalence of plague in Europe, there was a great development of insect-life. Of the pestilence itself, it is recorded that India was depopulated by it, and Tartary, Mesopotamia, Syria, Armenia, covered with dead bodies.

1352. First month. Great pestilence in several districts of Shansi province; 900,000 persons estimated to have perished.

1352. Scarcely one-fourth part of the students at Oxford survived the plague. It also prevailed fatally in England and in Northern Europe. Cattle suffered greatly in many countries. The occurrence of pestilence in China is recorded (Bascome); also of famine.

1353. Twelfth month. Great pestilence in Ta-tung-lu, Shansi province; also in two districts of Kiangsi province.

1354. Great plague ('Yi Li') at the capital (Peking). Fathers and sons devoured each other. Also in summer in the Kiangsi and Hukwang provinces; in the tenth month in Mongolia.

1355. A peculiar kind of madness epidemic in England, those affected fled into the woods, and wandered in the fields.

1356. Spring. Great pestilence in Honan province.

1356. In Germany, pestilence in man and cattle.

1357. Sixth month. Great pestilence in Ch'ü Chow, Shantung province.

1358. Great pestilence in Fên-chow, Shansi province.

1358. In England, a great dearth and pestilence, called 'the second pestilence.

1359. Spring. Great pestilence in Kwantung province.

1360. Summer. Great pestilence in Sha-hing, Chêhkiang province; also in An Hwe province.

1360. Thunderstorms in various parts of England; pestilence, with fevers and disorder of the bowels, carried off numbers. An epizoöty in horses.

1361. Summer. Pestilence in two districts of Shaohsing.

1361. A great dearth, and pestilence in England.

1361-62-67-69. Pestilence in Scotland, in London and Paris.

1362. Fourth month. Great pestilence in Sha-hing, Chêhkiang province.

1363. A dreadfully severe winter, followed by 'a terrible pestilence' in Europe. It was called 'the year of the second mortality.' In England, pestilence in man and animals.

1363. Pestilence in two districts of Shao-ning.

1365. Pestilence carried off 20,000 inhabitants of Cologne and its vicinity. Small-pox in England. Blomfield, in his 'Chronicles of St. Alban's,' states that 'a sickness that men called the pockes slew both men and women,' and states that this is the first time he had met with any record of small-pox in England.

1366. In England, pestilence in man and birds.

1367. 'A dreadful mortality' in London and in Paris.

1368-70. A severe pestilence in England, Ireland, and Scotland; it persisted during two years. This pestilence was considered to have become disseminated by means of 'goods' obtained by pillage. This was the third time the pest came to Scotland during the Christian era. Pestilence also in Italy and Gaul.

1369. Great pestilence in Fukien province; the dead lay in heaps on the ground.

1369. A dearth, and great pestilence, called the Third Plague, in England. It seized the people so suddenly that 'many who went to bed well, were found dead in the morning.' Epizoöty in cattle and other larger animals.

1370. In England, pestilence in man and cattle.

1371. Pestilence was rife at Barcelona.

1372. Pestilence 'invaded' Germany, Egypt, Greece, and all the East. Pestilence also 'laid England waste.'

1373. The use of coals forbidden by Act of Parliament, under the idea that the smoke of London corrupted the air. Pestilence in Ireland.

1374. Dancing mania, or choreomania, reappeared in Lower Germany. An analogous malady, called 'Tarantisme' and 'Tigretier,' among the Abyssinians; a similar affection also in the Shetland Islands, where it existed from time to time for a hundred years previously. Also in France, where those affected by it were called 'Convulsionnaires.' Plague prevailed in Milan.

1375. In Germany, pestilence in all wild animals. The dancing mania spread to Scio.

1379. Epidemic pestilence in England, especially in the northern part.

1380. Great pestilence in Kia-hing, Chêhkiang province.

1380. 'A contagious disease' imported from England into Scotland by means of reckless Borderers in their raids.

The different pestilences which occurred between 1350 and this date are considered not to have included 'plague' properly so called.

1381. Plague raging in Glasgow.

1382. On the 20th June a great earthquake and very pestilential fever in many parts of England, and great inundations in the Fens. The 'Black Death' in Italy.

1383. In England, pestilence in man and horses. A great pestilence, called the fourth, in Ireland; also in Seville, where it was preceded by inundations and 'extraordinary showers.' Plague in Milan.

1384. 'The third plague of Mallorca' (Majorca) broke out.

1385-87. In Spain, Portugal, Italy and Galicia, pestilence in man, cattle, and fowls. England, epizoöty in sheep.

1386. In England, epizoöty in cattle. A fatal epidemic sickness among the troops in Galicia.

1387. Severe pestilence among the troops in different places in Spain. Influenza epidemic in Italy.

1388-89. Drought; violent tempests; famine; followed by anginas and dysenteries in England and in other parts of the world. They affected children chiefly.

1389. In England, pestilence in man and deer.

1390. A great mortality in Norfolk and several other counties in England; also great dearth, so that the people were driven to eat unwholesome articles as food.

1391-1400. The above 'anginas' and other diseases persisted in England.

1392. Scarcity having prevailed in England for two years, the people suffered from 'flux,' attributed to unwholesome food.

1394. The plague, under the name of the 'Black Death' and 'Beggar's Death,' in Scandinavia, reaching to Greenland. Epidemic pestilence from great heat in Valencia and Catalonia.

1396. Severe pestilence in Barcelona.

1399. Plague in Italy, 'for the sixteenth time.' Severe pestilence in the English army on the Scottish Border.

1400. Heavy rains and sterility, followed by pestilence at Seville. At that place, according to its annals, 'this plague occurred at centenary periods.'

1401. Pestilence in Florence and in London.

1403. Seventh moon. Pestilence in two districts of Shao-hing.

1404. Third month. Great pestilence broke out among the workmen who had come from all parts of the empire to Peking.

1405. Famine and plague in Denmark.

1405-6. Severe pestilence in England.

1406. London revisited by deadly pestilence. A similar disease, namely malignant dysentery, in Bordeaux, Aquitaine, and Gascony.

1407. Winter. Great pestilence in Ling-hien, Hunan province.

1407. A great pestilence in London; 30,000 deaths thereby. In Ireland, an epizoöty in cattle.

1410. Tenth month. Great pestilence in Kwang-chang, Kiangsi province; also in Shantung province, where over 800 families perished.

1410-11. The epidemics called *Tac* and *Ladendo* in France. Both these diseases were accompanied by severe cough. In the Ladendo there was severe renal pain, followed by eruptions about the nose and mouth. Influenza epidemic in Italy. Epidemic pestilence at Seville, and several other cities and towns in Spain.

1411. Epidemic influenza in France.

1412. Great inundations in England.

1412-13. Great drought and famine in the Ganges-Jumna delta.

1414. Pestilence throughout Hang-chow, Hsian-hsing, and Ning-po. In the third month in Chihli, Honan, Shansi, Hupeh.

1414. In Germany, pestilence in man, horses, cattle, dogs, and cats. Influenza (coqueluche) prevailed in France. Gaol distemper in Newgate prison.

1415. Pestilence in the army of Henry V. in France; a contagious dysentery destroyed three-fourths of his men.

1416. Epidemic scurvy in Germany; plague in Spain. The plague in Durham.

1417. Fifth moon. Epidemic leprosy in Kin-hua.

1418. Strasburg was visited by the dancing mania.

1419-24. A contagious distemper resembling a fever and dysentery prevailed in England and Scotland.

1423-25. Ireland, pestilence in man and cattle.

1427. An epidemic pestilence in England. Epidemic influenza in Italy. *Ladendo* again in France.

1429. Epidemic pestilence at Barcelona.

1430. In Germany, pestilence in man and horses.

1433. In Germany and Spain, pestilence in man and horses.

1434. Ireland, epizoöty in wild birds.

1435. Winter. Pestilence in Hsian-hsing, Ning-po, and Tai-chow. In the sixth month of the same year, great pestilence in Hing-hwa, Fukien province.

1436. Seasons in England inclement; dearth of corn in various parts of Europe Epidemic coughs, small-pox, and fevers 'swept away many thousands from the face of the earth.'

1438. In India, the occurrence of epidemic cholera in his army compelled Ahmud Shah I. to raise the siege of Mandoo in Malwah. Famine in England; bread made from fern-roots. Influenza epidemic in Italy.

1439. 'A cruel pestilence' in Huesca (Spain). Great dearth in England. The Mayor of London sent to Prussia, 'and caused to be brought to London many ships laden with rye, which did much good;' for people made bread of fern-roots.

1440. A severe epidemic of small-pox in England.

1441-42. In Germany, pestilence in all domestic animals. Ireland, epizoöty in sheep and bees.

1443. In Ireland, pestilence in sheep and bees. Spain, epizoöty in horses.

1443-50. Famine and pestilence, 'destructive to millions of the human race,' especially in Asia and on the Continent of Europe. At Naples the horses of the Spanish besiegers died from 'a peculiar kind of epizoöty.'

1445. Ireland, epizoöty in cattle.

1446. Tenth month. Pestilence in Ning-po and Tai-chow, preceded by drought.

1448. Plague raging at Ferrara. Severe pestilence at Barcelona, attributed to 'excess of moisture and unprecedented heat of the weather.' Great mortality in the Spanish army encamped at Pomblein.

1450. In Ireland, epizoöty in cattle.

1450-52. In the month of June a pestilence broke out in the city of Saragossa; it extended to Barcelona.

1454. Second month. Pestilence in Kian Chang, Wa Chang, and Han-yang, Hupeh province.

1455. Pestilence in Kia Hing, Chêhkiang province.

1462. Great pestilence in Hing Ning, Hukwang province.

1462. Ireland, epizoöty in wild birds.

1463. Pestilence in Hsian-hsing.

1463. Plague in Saxony and Thuringia.

1464. Ireland, pestilence in man and animals.

1465. Pestilence again in Italy.

1466. Plague again in Ireland, preceded by famine. Cadiz nearly depopulated by a plague, and other parts of Spain suffered from pestilence.

1466-67. Severe pestilence in England; after its appearance, great inundations.

1468. Epidemic pestilence raged at Parma.

1470. A great famine and pestilence in Ireland. Dublin 'wasted by plague.'

1471. Fifth month. Great pestilence in Tsing-ping, Kweichow province.

1471. A famine in Orissa. A pestilence at Oxford, and throughout England.

1472-74. Excessive heat and drought continued for three years. The city of Valencia suffered from a severe epidemic.

1473. Ireland, epizoöty in cattle.

1475-76. The Danube fordable in Hungary; swarms of locusts there and in Poland. A second pestilence on the Island of Majorca; a Board of Health appointed there; and quarantine established. 'A terrible plague at Barcelona.'

1477. In Spain 'a wretched pestilence of leprosy, which may be said to have prevailed epidemically, so numerous were the cases.' Plague in England raged so severely that, according to Hollingshed, 'the fifteen years' war past did not consume one-third of the people that four months only brought to their graves.' The pestilence continued till 1479.

1477-85. Glandular plague in Italy, where it raged without interruption till 1485. At the same time 'remarkable intercurrent diseases prevailed in Italy, such as inflammatory pain in the side (pleuritis?).' In 1478 and 1482, among the natural phenomena recorded were flights of locusts.

1478-82. Swarms of locusts in the south of Europe.. Sweating sickness.

1480. Pestilence in Chang-loh, Fukien province.

1480. In Continent and England, pestilence in man and cattle.

1480-81. Pestilence in Hsian-hsing.

1480-81. Famine in Germany and France. Extensive inundations of the Tiber and Danube. Putrid fever and phrenitis; also encephalitis in Germany.

1481. Pestilence in Pêng-tseh, Kiangsi province; also in Tu-yun, Kweichow province.

1481. In Germany and Switzerland, pestilence in man and animals.

1482. After two years of scarcity in France, a devastating plague prevailed. Also febrile cerebritis (*Hauptkrankheit*) and epidemic influenza in that country; epidemic pleuritis in Italy.

1483. Glandular plague in Spain. Great inundation of the Severn.

1484. Famine and plague in Denmark.

1484-85. Malignant fever in Germany and Switzerland; plague in Spain. In the latter year the plague was severe in Milan. Sweating sickness first appeared in England; the disease broke out among the foreign troops of Henry VII. on their return march from their victory at Bosworth. The troops in question consisted of 'the most wretched soldiery' the reporter had ever seen; collected, it was probable, from gaols and hospitals, and shortly before brought in crowded transport ships to seaports in England. From them the disease spread, first in London, then throughout the country; it continued till 1486, and was attended by a preponderance of affec-

tions of the brain and nerves—especially of the eighth pair. It was at the time described as 'a new kind of sickness;' its nature 'a rheumatic fever in the most exquisite form that has ever yet been seen in the world;' its immediate cause said to be the filthy and dissipated habits of the soldiers at that time. The five preceding years had been unusually wet. In January of that year a violent tempest occurred, and the disease ceased. Glandular plague continued in Italy.

1485. Plague in Milan. Sweating sickness in England.

1486. Pestilence in Fukien province.

1486. Plague in Spain, having prevailed since 1484. Scurvy prevailed as an epidemic in Germany. The correspondence between the state of the blood in the sweating sickness and in scurvy was noted by Hecker. At the same time the absence of the usual conditions which give rise to scurvy was recorded.

1488-90. Plague in Spain, especially in Andalusia. Barcelona visited by a dire pestilence, namely, 'pains in the joints, fetid ulcers in the mouth, and pustules.'

1489. First month. Great pestilence in Hwa-jung, Hunan province; whole families perished.

1490. The first eruption of petechial fever in Grenada. By some writers it was considered to be due to the presence of unburied bodies there; by others as imported by soldiers from Cyprus, where this kind of fever was endemic. A bilious remittent fever was rife in various parts of Europe.

1491. In Ireland and Poland, pestilence in man and cattle.

1492. Great pestilence in Kia-hing, Chêhkiang province.

1492. Epidemic small-pox was unknown to the Indians until introduced into India this year by means of the commercial intercourse of the Dutch. That disease is considered to have been also introduced into America by means of the Spanish expedition against Mexico. In Ireland this year, pestilence in man and beast.

1493. Pestilence in Kia Hsing, preçeded by floods.

1493. The fifth plague in the Island of Majorca, called 'the plague of Boja,' from the name of the man who was believed to have introduced it. Barcelona revisited by pestilence. According to Sydenham, Lues venerea appeared in Europe. It appeared in Rome in the month of August; the coast of Guinea believed to be its source. 'The venereal disease, during its first prevalence, was a pestilential fever, which was communicable through the genitals and otherwise; at that time there was no discredit or stigma attached to it.' According to other writers 'the serpentine disease came from the Spanish island of Hispaniola.' The reason for applying this name to syphilis is 'because the disease was considered to be analogous to the foulness of that reptile.'

1495. Fifth month. Great pestilence in all the south-west provinces.

1495. Outbreak of syphilitic pestilence or 'epidemic Lues' at Naples in the army of Charles VIII. of France. 'His mercenary troops, by their excesses, gave to their already existing poison a malignity till then unknown' (Hecker). The French called it 'the disease of Naples,' and said that at the siege of that place there were certain merchants who barrelled the flesh of men slain in Barbary, which they sold for tunny-fish, and that from such food the disease originated. It is certain that cannibals are much infested with the venereal disease. It was known in England before 1162, and was called 'Brenning,' or 'Burning.' It principally attacked the limbs with excruciating pains and pustular eruptions (Bascome). In Spain, pestilence in wild animals.

1495-96. A pestilence at Saragossa, attended by buboes, carbuncles, etc.; in the latter year it appeared in a petechial form among the troops employed in Grenada.

1496. Epidemic scurvy, or, as it was then called, 'epidemic ulceration,' prevailed in Germany, Portugal, and other countries. In Ireland, pestilence in cattle and all other animals.

1497. Barcelona again visited by epidemic pestilence; it began in July, and continued till November. In Ireland, 'intolerable famine;' many perished.

1499. In Germany, pestilence in man and cattle. Great pestilence in London. Sweating sickness also prevailed.

1499-1503. In Brussels epidemic pestilence. Mould-spots (signacula) in Germany and France. In Germany fatal murrain among cattle, and extensive blights from caterpillars. In France and Germany the prevailing disease assumed a glandular form. It was followed by a most vehement intemperature of the seasons. This period 'was the commencement of a century of putrid malignant diseases—a century replete with grand phenomena affecting human life in general.'

1500. Ninth month. Pestilence in Kiangsi province.

1500. Great plague in England. In London alone 30,000 deaths by that disease. Ireland, epizoöty in cattle. Spain, rabies in dogs. From this date the literature of cholera in India shows that that pestilence has had various periods of increase and of decrease in that country.

1500-3. Mould-spots (signacula) in Germany and France. In 1500 great mortality among cattle in Germany. In England plague continued; in London alone 30,000 persons died by it. The signacula ascertained by Agricola to be a species of *mycoderma*.

1501. Epidemic pestilence broke out at Barcelona in the month of October; from that place it spread over Spain. In Silesia, pestilence in cattle and other animals.

1502. Blights of caterpillars on vegetation in Germany.

1503. Glandular or bubonic plague and other destructive epidemics in Germany and France. In the latter the inhabitants fled into the woods. From 1500 to this year, signacula spread through Germany and France.

1504. Pestilence ('Wên Yi') in several districts of the Shansi province. 'China was nearly depopulated by pestilence' (Bascome).

1504. In Ireland great mortality from epidemic disease. Plague in Spain, where a severe earthquake occurred in April of that year. Plague also in Germany. In Saxony, pestilence in man, cattle, and pigs. The dry and continued heat caused a failure of the crops. Various kinds of fevers accompanied this outbreak, including 'putrid fevers and putrid inflammations of the lungs, with bloody expectoration.'

1504-5. Encephalitis, putrid fever, and malignant pneumonia as above, in Germany; also continued murrain among cattle.

1505. Influenza epidemic in Italy and Spain. Plague in Germany and in Portugal. First epidemic of petechial fever in Italy; it extended all over Europe; this disease being looked upon as a 'peculiar form' or 'degeneration' of the bubo plague which between 1483 and 1490 had at intervals preceded it.

1505-6. A decided determination to the skin observable in England. In summer of 1505 the 'sweating sickness' re-appeared, but did not extend beyond England; also murrain among cattle.

1506-8. Pestilential epidemics in Spain; also swarms of locusts in that country. Constantinople nearly depopulated by pestilence. Germany suffered from epidemic encephalitis and malignant pneumonia.

1508. Austria, epizoöty in cattle and pigs.

1510. Pestilence in Hu-chow, preceded by floods.

1510. Great influenza (coqueluche) throughout France. Plague in the north of Europe and in England; 'stoope galant' in Scotland. Hecker writes: 'According to recent experience, we should be warranted in supposing that this malady had its origin in the remotest parts of the East' (China?).

1511. Pestilence in Hu-chow, preceded by floods. Also in Kia-hing, Chêhkiang province.

1511-13. Malignant fever and dysentery in Verona, extended to France, and in the latter year reached London.

1512-13. Spring and summer. Pestilence prevailed in Ping-wu.

1512. Plague in Perth. 'Gaol-distemper' in England.

1513. Plague in Edinburgh.

1513-14. Continent and England, pestilence in man, cattle and sheep (cattle-plague?).

1514. Great pestilence in Ho-ching and Lu-kiang, Yunnan province.

1514. In England, an epizoöty in cats. The plague in Scotland, particularly in Aberdeen.

1515. France, epizoöty in sheep.

1515-16. Pestilential epidemics in Spain; malignant sore throat (diphtheria?) in Holland.

1516. Spring. Pestilence in Ching-chow, Hupeh province; and in winter a great pestilence. Fifth moon: Pestilence in Wen-chow.

1516. Plague in Germany.

1517. Plague again visited Barcelona and other parts of Spain. A disease having the character of scarlatina prevailed at Amsterdam. In Europe, pestilence in man and cattle (anthrax).

1517-18. Epidemic tracheitis and œsophagitis (diphtheritis) in Holland, extending to Basle; encephalitis and other inflammatory fevers in Germany; the third outbreak of the 'sweating sickness' in England; the disease itself so malignant that patients died three hours after attack. This disease occurred in Calais; where none but the English residents suffered from it. Frenchmen enjoyed complete immunity from it; nor did it spread to any other part of France. An epidemic of malignant sore throat at Amsterdam. In December a plague in England, lasting all winter. Small-pox and measles broke out in Hispaniola, St. Domingo, both these diseases having been conveyed to that place by Europeans. In England the 'sweating sickness' was surrounded by a whole group of epidemics. The winter of 1815-16 was mild in Germany; the summer of 1517 unfruitful, 'although not on account of wet weather.'

1518. In the kingdom of Navarre a destructive epizoöty among the horses of the regiments quartered there; namely, 'apostemes on the head and throat, with an insatiable thirst, and hectic fever.'

1519. Spring. Great pestilence in Pao-ting, Chihli province; also in Wu-ting, Shantung province; and in Tai-chow, Chêhkiang province.

1519. Plague at Aix-la-Chapelle.

1521. Dreadful pestilence at Barcelona; plague at Dresden. England, famine and mortality. A great famine in Sinde.

1521-22. Contagious fever broke out at the Assizes of Cambridge.

1522. The sweating sickness, which had continued to prevail in England, extended to Germany, Holland, France, Denmark, and Norway.

1523. The plague raged in the island of Majorca; also at Valencia. In the latter place the sickness was attributed to 'atmospheric poison.'

1524. Great plague at Milan, where it carried off 50,000 persons. The plague was also rife at Xativa, and at Seville the greatest pestilence from which that city ever suffered took place at this time. Ireland, epizoöty in cattle.

1525. Spring. Great pestilence in Yu-yao, Chêhkiang province.

1526. In summer. Pestilence in Yu-yao and Hsian-hsing, preceded by drought.

1527. Inundations in Upper Italy; plague in Italy and in Wurtemberg. Pestilence broke out at Xativa; also in the Imperial army of Italy after the sacking of Rome. Small-pox 'carried from Europe to America.'

1528. Spring. Great pestilence in T'ai-chow, Shansi province.

1528. Repeated inundations, continual south winds, and in summer grey fogs in Italy. Second great epidemic of petechial fever there. Destruction of the French army before Naples by a pestilential spotted fever. The pestilence spread through Italy, and was conveyed abroad by Italians. The plague appeared also

at different places, as in 1524; at Milan, 50,000 persons died by it. The kingdom of Aragon was visited by severe plague. A fourth epidemic of 'sweating sickness' in England, extending also to Cork in Ireland. In some of the towns over half of the population destroyed thereby; great dearth in consequence of heavy floods. In Upper Italy violent earthquake, afterwards 'blood-rain;' with the south winds great drought and swarms of locusts, these extending to Germany.

1528-34. Petechial fevers were very destructive. The French army before Naples lost great numbers from spotted fevers. During this period 'trousse galant' carried off a fourth part of the population of France. That disease was attributed to 'elemental disturbances.' The affection so called was a highly inflammatory fever, which proved fatal in the space of a few hours. In many of those who recovered the hair and nails dropped off; convalescence was slow, leaving the constitution much shaken. It was considered identical with Dandy fever, *i.e.* *Dengue*. During this period 'drought and swarms of locusts were observed in the north of Germany.' In France unusually cold summer and hot autumn; famine and dearth; 'trousse galant' very fatal. In England 'sweating sickness;' great dearth, succeeding heavy floods.

1529. Spring. Great pestilence in Siang-yang, Honan province; also in Szechuen province, and in Yung-ning, Kweichow province.

1529. Disease fatal among porpoises in the Baltic; unwholesomeness of the fish in the rivers of Germany; disease among birds (boils under their wings, anthrax?). In man, languor resembling syncope, and accompanied by palsy in the hands and feet, was epidemic in Pomerania; frequent suicides in the March of Brandenburg, and paralytic attacks common in Germany. Epidemic sweating sickness in Hamburg and over Germany. It also prevailed, though less severely, in England, but did not extend either to Scotland or to Ireland. The disease was introduced into Hamburg by travellers from England. Violent remittent pestilence appeared in Amsterdam in the month of September, during a misty state of the atmosphere, and, after lasting five days, it disappeared as suddenly as it began. About this time a pestilence, called 'the English disease,' broke out in Brussels. Blood-coloured rain at Cremona. The occurrence of meteors and unusual atmospheric conditions was mentioned.

1530. Sweating plague in Germany; epidemic scurvy in Denmark. In the month of March pestilence broke out in Aragon and in Saragossa. Great floods in Rome; Holland overflown in consequence of the dykes having given way. Plague in Italy since 1525; that country and Spain suffered also from a gangrenous sore throat, which affection was epidemic. At Milan, pestilence in man and cattle. Germany, epizoöty in pigs.

1531. The Tagus overflowed, and flooded a great part of Portugal. Pestilence followed, and devastated several cities, especially Lisbon.

1532. Spring. Great pestilence in Shênsi province.

1532-34. Continued dryness and scarcity. Malignant fevers prevailed in circumscribed localities throughout Europe. Plague in London; throughout England, epizoöty in cattle.

1533. Autumn. Great pestilence in Hukwang province.

1533. Great want of corn in Aragon, and what existed was bad in quality. Unusual heat also prevailed. Very fatal pestilence arose, and was assigned to these causes, especially in the city of Huesca.

1534. Great pestilence in Taichow and Feng Hwa, Chêhkiang province; also in Hiaku Chêng, Hukwang province.

1534. The city of Narbonne suffered from plague.

1535. Great pestilence in Fukien province.

1535. Return to the natural state of the seasons in Germany, after a succession of floods, famine, and pestilences for several years. Epidemic disease raged in Cork, and also in Dresden.

1536-39. England suffered from pestilence. 'Mortal dysentery' prevailed all over Europe. Great heat prevailed over Europe; swarms of locusts in the south.

1538. Ninth and twelfth months. Great pestilence in Tseuen-chow, Kwangsi province.

1538. Epidemic dysentery in France during summer, which was a cold one. The disease had persisted from 1536, and spread over Europe.

1540. *The* hot summer; forests took fire spontaneously; great death by a kind of 'hot ague,' and flux universal throughout the greater part of the realm.

1540-43. A general famine in Sinde during these three years.

1541. Plague in Constantinople, spreading by means of Turkish troops to Hungary.

1542. Swarms of red locusts came from Turkey, and destroyed every green thing in various places in the South of Europe. Plague in Hungary and Germany. In England, pestilence and famine.

1543. Summer. Great pestilence at Yu-tsze, Shansi province; many 'hundreds' died.

1543. Plague and petechial fever in Germany, especially in the Harz districts and in Metz. Cholera raged at Goa, and was exported from India; at the same time and place, pestilence was common to 'all things living.' Since then the disease has extended from time to time to Europe and elsewhere.

1544. Great pestilence in Wên-shui, Shansi province; also in Chen-chow, Honan province.

1544. A severe plague at Dundee. In Peru, an epizoöty in alpacas.

1545. Great pestilence in Fukien province; about 10,000 people perished.

1545-46. 'Trousse galant,' supposed to be the same disease as Dandy fever or *Dengue*, again in France and the Netherlands; 10,000 English died of the disease at Boulogne; the sick also suffered from thread-worms (*cephalitis verminosa*). The disease first appeared in Savoy, and over a great part of France. In many cases an eruption was observed, of which no mention is made in former outbreaks of the malady. Bubo plague also in the Netherlands and in France.

1546. Pestilence in Wen-chow, preceded by drought.

1546. Plague in Netherlands and France. Also in Scotland (Aberdeen).

1547. Pestilence in Kiah-hing, preceded by drought.

1547. Petechial fever in the German Imperial army.

1547-51. Pestilence raged over all Europe, especially in England, Holland, and Germany. The question whether it was contagious or not was much discussed. Mould-spots and 'red-water' in the south of Germany.

1548. Plague raged severely in London. In Paris the outbreak of the disease first occurred in the prisons in the month of August, and was attributed to the filthy condition they were in.

1549. Caterpillars destroyed the herbage in Germany; great mortality among the cattle there; in man an epidemic of petechial fever.

1549-50. Malignant fever in the north of Germany.

1550. A plague year in England. Petechial fever in Germany.

1550-53. Epidemic catarrh and dysentery. After great dearth in Spain, pestilence raged in Valencia; it was attributed to the use of damaged grain. Seville similarly suffered.

1551. Malignant fever in Swabia; plague in Spain, also influenza. In the spring malodorous mists on the banks of the Severn; on 15th April epidemic sweating sickness at Shrewsbury, reaching London in July, the mists and sickness spreading over England, and continuing till September. Foreigners were unaffected, but Englishmen in foreign countries sickened with the English 'sweating sickness.' Influenza epidemic. Tempests and unusual atmospheric phenomena in Thuringia; everywhere in Europe the lives of plants and animals were influenced. Mould-spots again appeared in Germany. Petechial fever general over

the Continent. Sweating sickness generally prevalent. From 1544 to this date a 'continuous typhous constitution' persisted.

1552. A mortal pestilence raged in Messina, blood being in many instances discharged from the pores of the body of those affected three days before death. At the same time an epizoöty in cattle throughout Italy.

1552-53. Malignant fever in Germany and Switzerland.

1555-56. 'Hot burning' fevers and other strange diseases in England and in France, continuing with redoubled violence during the summer of the latter year, which was unusually hot and dry. Epidemic variola in the city of Valencia. In the army of Charles V. of Spain, who invaded France, pestilence destroyed many of his troops. In the latter year an epizoöty of anthrax among cattle in Switzerland.

1556. Autumn. Great pestilence in Fukien province.

1556. Scurvy devastated the kingdom of Brabant. Small-pox epidemic in England. Vienna suffered from pestilence.

1557. In Spain a form of fever, then called 'a new disease,' broke out. It originated with the Spanish Arabs, and by means of their disbanded soldiery, was communicated to the inhabitants of cities and towns; summer dry; influenza epidemic in England and throughout Europe; petechial fever and whooping-cough in France; epidemic scurvy in Denmark; scarlatina in Amsterdam; bubo plague in Holland, also a recurrence of epidemic tracheitis and œsophagitis as in 1517, attended by unusual atmospheric phenomena, as electric illumination of prominent objects. 'The close connection between those affections and the epidemic catarrh, or influenza, is quite apparent.'

1558. Violent quartan agues in England. Epidemic influenza persisted throughout Europe; in France malignant dysentery; agues in Holland; and petechial or spotted fever in Spain—the latter disease as fatal as the plague, and considered to have been yellow fever, synocha, etc., as prevalent nowadays, and termed 'Andalusian fever.' The city of Murcia suffered from pestilence. In Barcelona 'mortal pestilence' began in January, and continued to July, when it ceased.

1559. Magdeburg, epizoöty in cattle.

1560. Great pestilence in Shih-chow, Shansi province; 'out of ten houses nine were empty.'

1561. Spring. Great pestilence in Ching-chow, Hupeh province; over 10,000 people perished.

1561. Small-pox prevailed in England.

1562. Pestilence ('Wên Yih') in Fukien. Seven-tenths perished. Whole families were swept away, all the shops closed, and people afraid to leave their houses.

1562. Pleuritis and coryza in England. Scurvy devastated Holland.

1562-63. Pestilence and famine in London and in most parts of Europe, especially in Barcelona and in France.

1563. Spring. Great pestilence in Kien-chang, Kiangsi province.

1563-65. Dearth and famine in England. Plague began at Newhaven and extended to London, and there proved very fatal. It extended to most parts of England. Burgos was nearly devastated by plague. Many European cities suffered from epidemic disease, particularly Dantzic, Hamburg, Lubeck, Dresden, etc.

1564. Great pestilence in Tai-chow, Chêhkiang.

1564. Plague in the west of France; in Spain and Germany also, together with epidemic pleurisy in England. In Barcelona 10,000 persons died between July and November. Fatal quinsies and spotted fever in various parts of Europe. Saragossa suffered from an epidemic disease, having the character of yellow fever.

1564-65. Pestilential sore throat and scarlatina epidemic in Lower Germany.

1565. 'A pestilential epidemic' in France, at Seville, and various other parts of Spain. In the latter places, however, it was not very fatal. Dancing mania or 'tarantism;' epidemic pleurisy in Holland. Plague in Hamburg; in England small-pox, measles, and malignant sore throat.

1566. Petechial fever broke out in the Hungarian camp near Komorn.

1567. Spotted fever, similar to that in the Hungarian army, prevailed in Paris. It raged in many other parts of Europe, continued for three years, and then degenerated into true plague, which prevailed for the four following years. In France, an epizoöty of sheep-pox.

1568. Plague in Paris; also in Edinburgh, into which city the disease was introduced by human means. Seville visited by epidemic pestilence. The sea broke through the dykes of Friesland. Pestilence ensued.

1569. Plague in London.

1570. Great pestilence in Cheih-hien, Shansi province.

1570. Plague throughout Europe. It was carried to America by means of commercial intercourse, and caused great mortality in Mexico. Epidemic pestilences, in the shape of measles, erysipelas, malignant fever, etc., prevailed in various parts of the world. In Poland the plague, and in Basle a malignant fever, were very fatal.

1571. At Memmingen, pestilence in man and cattle.

1572. The city of Augusta de Alemania was visited by a pestilence; Dresden suffered from plague. In Ireland, pestilence in man and cattle.

1573. Great pestilence in Tsao-yang, Hupeh province.

1573. Siege of Leyden by the Spaniards, great pestilence among the besieged, induced by famine.

1574. Plague in England. Pestilence caused great mortality in various parts of Spain and Italy.

1574-77. Plague general in France and England. In the latter year pestilence occurred at Oxford, owing to the filthy state in which some prisoners were brought into court from their cells. Hence the occasion is known as 'the black assizes.' A dispute arose as to whether the disease was contagious or not. The physicians did not give it a name; but it was as fatal as the plague. At the time of its occurrence the river Isis was low, the weather hot and sultry, a damp fog prevailing.

1575. Cholera in India was stated to be usually associated with double tertian ague. In England, 'a plague of flies and beetles on the Avon.'

1575-76. Pestilence in Italy and in most other parts of Europe.

1577. A 'strange sickness,' viz. 'gaol-fever' appeared at Oxford.

1578. An epidemic of whooping-cough in France. At Paris, pestilence in cats and poultry.

1579. Great pestilence in Hiao-yih, Shansi province.

1579. Plague raged at Marseilles. A grievous plague at Yarmouth; about 2,000 persons died by it. Epidemic catarrh began in Sicily, and pervaded all Europe. 'One of the most destructive plagues ever known began at Cairo.' The statement occurs that 'epidemic anginas, catarrhs, measles, etc., generally precede great and destructive plagues or pestilences, all these distempers being essentially similar, differing in appearance only as modified by climate, season, etc., and also by the duration and energy of various efficient causes.'

1580. Great pestilence in several districts of the Shansi province.

1580. Whooping-cough and influenza throughout Europe, the latter said to have originated in Asia and thence extended westward; in Spain being succeeded by malignant sore throat (garrotillo), epidemic catarrh, and variola very fatal in

Seville, especially among children. Plague extended to Egypt. In Paris alone 40,000 persons died.

1580-81. Pestilence in Cairo, and in different parts of France, and in Seville. Epidemic influenza in England. In Europe and England, pestilence in man and animals.

1581. Great pestilence in Lu-an and Ping-ting, Shansi province. 'In Lu-an the city gate opened by itself, and this was immediately followed by a pestilence, which spread in all directions.'

1581. Raphania, or gangrene, from diseased corn in Brabant. Scarlatina was epidemic in Paris. Persia desolated by famine and plague.

1582. Great pestilence in Shantung, Chihli, and Shansi provinces.

1582-83. Epidemic pestilence in Cadiz and various other places in Spain, attended with carbuncles, anginas, etc. In Flanders, plague, famine, and war destroyed numbers. Epidemic pestilence in Moravia, Holland, and Germany. Egypt and Rome suffered from famine and disease.

1583. Plague in London and other cities of England. Epidemic dysentery in England.

1584. Spring. Great pestilence in Teh-an, Hukwang province.

1585. Great pestilence ('Wên Yih') in Yuen-chü, Shansi province. The mortality so great that even relatives were unable to perform the funeral rites.

1585-86. Winters severe; summers hot and dry; famine followed, universal catarrh, and general pestilence prevailed over all Europe. In Toledo small-pox broke out, and was peculiar in that it attacked only old persons. Plague in England. It extended also to Narva and Revel in 59° north latitude. Plague also raged at Dresden. In Edinburgh it broke out in the month of May, and continued till January following. Sir Francis Drake's expedition suffered from 'calentures.' Sudden and strange disease (gaol-distemper) at Exeter, London, and Oxford.

1586. Flanders, Hungary, Austria and Turkey, rabies in dogs. In England, great dearth of corn; this led to the first introduction of the *poor-law*, which dates from this year.

1587. Spring. Great pestilence in Lu-an, Shensi province; also in Kiangsi much sickness.

1587. An epidemic of small-pox in Madrid. Petechial fever in northern Italy. Plague persisted in Scotland.

1588. Great pestilence in Hu-chow, Kia-hing, etc., Chêhkiang province; also in Tseh Chow, Shansi province. Whole families perished; in other districts the wheat harvests could not be gathered. In Honan also a great pestilence, accompanied by drought.

1588-89. Pestilence in Seville similar to that of 1583 in Spain. Plague in Barcelona; it began in June and ceased in December.

1588-95. Raphania, 'cripple disease,' or spasmodic 'tragedy,' throughout Germany.

1589. Epidemic leprosy over several districts of Chêhkiang, preceded by unprecedented rains; also in Chi-chau, preceded by floods and famine.

1589. The plague in Durham.

1590. Summer. Great pestilence in Hukwang province. Epidemic leprosy reappeared in Hsiao-shan, a district of Hsian-hsing.

1590. Montbelliard, rabies in wolves. Petechial pestilence in the city of Valladolid. Unusual heat in England; also swarms of flies, fleas, and gnats.

1591. Epidemic leprosy in Chang-hua district, Hang-chow.

1591. In Sicily, pestilence in man and herbivorous animals. Leipsic, epizoöty in fish.

1591-92. Plague in the city of Dresden.

1592. In Britain the drought was extreme; autumn sultry and variable. Plague in London, Shropshire, and other parts of England.

1593. Plague in London; 14,303 persons perished. The disease was imported from Alkmaar.

1593-97. Malta ravaged by plague. Seville visited by pestilence, which lasted four years. Pestilence also in many parts of Spain. Malignant fever in England.

1594. Summer. Great pestilence in Yao-an, Yunnan province.

1596-97. Influenza epidemic in England.

1597. Great pestilence in Ta-li, Yunnan province.

1597. The plague in Durham.

1598. Great pestilence throughout the province of Szechuen.

1598. Tschemer, or Hungarian disease. In Germany, pestilence in man and animals (ergotism).

1599. A great pestilence in England, its nature uncertain. Burmah nearly depopulated by famine and disease. Pestilence in Constantinople. In Italy 'a mortal pestilence destroyed much cattle.' In Lisbon and in Spain plague was very prevalent. In France and Upper Italy, pestilence in man, cattle, and goats (cattle-plague).

In reference to the epidemics of the sixteenth century, 'we are literally bewildered with the repeated references to earthquakes, inundations, tempests, violent storms of rain and hail, comets and fiery meteors, blights, mould-spots, fogs and stinking mists, hosts of caterpillars and swarms of locusts, inverted and distorted seasons, warm winters and inclement summers, famines, murrains, and fish rendered unfit for food. In addition to these there were gatherings and disbandings of hosts of mercenary troops, sieges and battles—things hard to parallel in any earlier or later times.'

1600-3. In Russia great numbers died by famine and the plague. Human flesh was exposed in the shambles. Catarrhs and acute fevers scourged the human race. Great famine prevailed for a series of years, the crops having failed for several successive years. The city of Grenada visited by very fatal pestilential epidemics. Galicia suffered from epidemic small-pox. True plague in many cities in Spain. In Paris the same disease continued to prevail during 'three or four years.' Pestilence in London, into which it was believed to have been imported. In England, pestilence in man and animals. Pestilence also prevailed in Scotland, and in various parts of Europe. At the same time disease prevailed among cattle, dogs, and other domestic animals.

1601. Seventh month. Great pestilence in Kweichow province.

1603. Great pestilence in Kia-hing, Chêhkiang province.

1603-4. The 'puncticular fever' extended all over Spain, raging with great violence, and attacking both old and young. In Paris rabies prevailed in dogs. Plague in London, in Scotland, and in Ireland. The London 'Bills of Mortality' date from this period. In London 68,596 persons died by the disease. This outbreak lasted eight years.

1605. Fatal epidemic pestilence in Arbucias, and several other parts of Spain.

1606. Great pestilence in Chu-chow, Chêhkiang province.

1606. Epidemic pestilence all over Europe; and continued for several years. It extended to America, where it attacked the body of emigrants under Sir George Popham in New England and Massachusetts. Bubonic plague in Barcelona and several other parts of Spain, remarkable as having been confined principally to children. Spotted fever in the British fleet on its way to Virginia in America. The disease was identical with yellow fever, and raged with an intensity equal to that of plague. Pestilence in Somersetshire and in Norfolk.

1606-7. Plague, or a disease nearly as disastrous, occurred in Paris, also in England.

1608. Great pestilence in Wu-ting, Yunnan province.

1608. Plague reappeared in Scotland.

1609. Great pestilence in Shao-wu, Fukien province.

1609. In the month of July pestilence broke out in Albania, in various places in Italy, and in August extended to Seville. In Memmingen, pestilence in man and cattle.

1610. Great pestilence in Yang-chu, Shansi province. Distribution of medicines, etc., by the Governor.

1610. Plague near Granada, Spain. Plague had continued in England since 1606. Putrid sore throat in Spain. In Alsace and Spain, pestilence in man, animals and birds.

1611. Great pestilence in Sui-chow, Shansi province.

1611. Plagues of caterpillars, then flies, in Spain and Switzerland.

1611-13. A pestilence in Constantinople and in France. In the former, 200,000 persons died. Swarms of locusts left not any green herb or leaf in all the country. Plague also at Hesse, and other parts of Germany.

1612. Great pestilence in Kia-hing, Chêhkiang province; also in Si-an, Shansi province.

1612. A great pestilence in man, also among pigs and cattle in Germany. In Austria, clouds of grasshoppers. Swarms of locusts, and 'amazing quantities of spiders' appeared in Provence; storms and inundations in Holland. In England the summer was unusually hot; malignant fevers prevailed.

1613. Great pestilence in Fukien province.

1613. Small-pox epidemic in England. Epidemic pestilence in various parts of France; in Montpelier a malignant fever, with livid spots and carbuncles. At Lausanne pestilence raged with great violence; a remarkable development of flies occurred there at the same time. Pestilence affecting man and cats raged at Constantinople. Spain suffered from fatal malignant sore throat. 'The most deadly small-pox' at Alexandria, in Turkey, Italy, Germany, France, Poland, Flanders, and England; also in Persia and Asia—the mortality from this disease equal to that from plague in its worst form. In some of the above-named countries, measles also prevailed.

1614. In Bohemia, pestilence in man and poultry.

1615. In Switzerland, epizoöty in horses.

1616. In Europe, pestilence in man and cattle. Epidemic agues in Germany. Malignant angina at Naples. Plague in Northern Europe, in Egypt, the Levant, and many other places.

1616-18. Italy, Spain, epizoöty in cattle (anthrax).

1617. Great pestilence in Fukien province.

1617. Influenza epidemic in England.

1617-23. Epidemic diseases, as small-pox, plague, etc., in Malta, Italy, Hungary, France, and England. In South and North America 'a terrible yellow pestilence'—*i.e.*, a spotted putrid fever, with ulcers, yellowness of the skin and eyes, bleeding from the mouth and ears—swept off thousands of the aborigines.

1618. Great pestilence in An-yih, Shansi province; also in Tsing-chow, Hukiang province, and in Kwei-yang, Kwei-chow province.

1618. Malignant sore throat (garrotillo) having prevailed in Spain during forty years, it spread over all the seaports of Italy, Sicily, and Malta.

1619. Epidemic pestilence in many places in the Levant.

1620. Scarlatina epidemic in Naples. Cholera and dysentery prevailed in the French fleet off Sumatra.

1621. Pestilence in Yun-hien, Hukwang province.

1621. Plague in Moscow.

1622. Pestilence in Sin-hing, Yunnan province; also in Ning-po.

1622-26. Epidemic pestilence prevailed in London during four years. Plague appeared in Amsterdam. Pestilence in many parts of Spain.

1623. Great pestilence in several districts of the Yunnan province.

1623. Plague in London.

1624. Great pestilence in Ta-li, Yunnan province. In summer, a pestilence in Ning-po, preceded by drought and famine.

1625. Great mortality by plague in London, throughout England, and in various parts of Europe. In the year preceding, only 11 deaths by plague; in that following, 134. Epidemic pestilence in Italy, Denmark, and Egypt. In Southern Russia, Hungary and Italy, an epizoöty (anthrax) in cattle.

1626-28. Pestilence in Lyons; also in France during two years.

1627. Great pestilence in Siang-yang, Hupeh province.

1628. Pestilence in Ning-po.

1628. Pestilence at Berne. In Venetian States, epizoöty (rot) in sheep.

1629. Epidemic pestilence broke out at Narbonne. It also prevailed at Amsterdam, and at Cambridge, England. 'Yellow pestilence' in America. Plague at Marseilles. Cholera at Batavia.

1629-30. Epidemic influenza throughout Europe.

1629-31. Small-pox prevalent in England.

1630. The plague in Milan. 'Plague' in some parts of Catalonia, described as yellow, bilious, or Andalusian fever. In Upper Italy, pestilence in man, cattle and cats. Gangrenous ergotism in many parts of France.

1631. An erysipelatous epidemic in various parts of Europe. Pestilence in France.

1632. Great mortality in Lyons. The natives of Goa considered that cholera extended from India over Persia, Syria, and Egypt, and that the disease ceased in the African desert.

1632-37. Plague broke out at Dresden, and continued during that period.

1633. Great pestilence in several districts of the Shansi province.

1633. Pestilential fever in America, preceded by vast swarms of flies in the adjoining woods.

1634. Pestilence in Chin-chow.

1634. A very fatal epizoöty among cattle in England. Mildews affected vegetable life then at the same time. Plague at Ratisbon. Small-pox epidemic in London.

1635. Great pestilence in Lin-chin, Shansi province.

1635. Nimeguen, pestilence in man, poultry, and birds.

1635-36. The plague in London and in Holland. In the latter country flies were at the same time produced in vast numbers. Plague very fatal at Leyden and in many parts of Germany.

1636. Plague of Nimeguen, and in Holland generally. This outbreak lasted twelve years. Plague raged in London. Epidemic pestilence rife in Denmark and Constantinople.

1638. Malignant fevers, with small-pox, in the United States, and along the coasts of South America; and 'a new disease' along the south-west coast of Spain, and some of the inland provinces. In Friuli district, *i.e.* north-east of Italy, epizoöty in cattle.

1639. London visited by 'epidemic pestilence of a severe type.' A similar disease also rife in other parts of Europe.

1640. Great pestilence in Chihli province; also in Yen-chow, Chêhkiang province.

1640. Plague in England, though not as a severe epidemic. Many parts of South America inhabited by Spaniards suffered from 'yellow pestilence.' Jura Alps, epizoöty in cattle. In Spain, glanders in horses.

1641. In the sixth moon. Pestilence ('Wên Yi') in Shantung; also pestilence in Chih Shan, Shansi province. Pestilence in Hang-chow; it continued through the year 1642.

1642. Scarlatina epidemic in Leipsic. The settlers in Newhaven, in the United States of America, and those on the banks of the Delaware river, suffered from pestilence.

1643. Great pestilence in Mi-chih, Shansi province.

1643. The 'pest' in Edinburgh, preceded by drying of the wells. Pestilence in the city of Boston and many other parts of the United States. A malignant fever in the army of the Earl of Essex, besieging Reading, also in that besieged; it extended to Oxford, and a radius of ten miles from Reading. It was considered to be a mild form of plague. In Saxony, an epizoöty in cattle.

1644. Great pestilence in Lu-an, Shansi province. 'Those attacked had hard lumps grow on the neck or arm, like clotted blood. Whole families perished. In some cases the victims vomited blood suddenly, and expired.'

1644. Epidemic malignant disease in Madrid. Malignant fevers, followed by dysentery in Denmark and England.

1645. The plague in Scotland; especially fatal in Edinburgh and in Falkirk.

1646. Plague in Malta.

1646-48. Inundations in Holland, etc. Earthquakes in many parts of the world. Great ravages by locusts. Destructive pestilence in Andalusia. Plague in London and various parts of England. Great mortality in Ireland. Epidemic catarrh in America, affecting the European immigrants. Pestilential fever in the West Indies, especially in Barbadoes and St. Kitts. Valencia and other parts of Spain suffered great mortality from an epidemic.

1647-48. A highly malignant pestilence in Scotland; its greatest fatality at Glasgow and Largs.

1648. Germany, pestilence in man and horses (influenza).

1649. Plague in Scotland, London, Southampton, Ireland, and Spain. Small-pox epidemic in London; also in the city of Boston, United States. In Lancashire, famine, 'occasioned by the ravages of the armies' (civil war); and the plague. In Padua, an epizoöty of variola in sheep.

1650. Winter open; spring cold and wet. Severe influenza over all Europe, succeeded by general pestilence during the hot summer and autumn. It prevailed in the form of ague in Denmark, and as inflammatory fever in France. As 'ignis sacer,' and 'fièvre St. Antoine,' it raged with great mortality in Sologne, this form being ascribed to a diseased state of the rye. Pestilence caused great ravages in Russia and Poland; clouds of locusts also destroyed the vegetation in these countries. Epidemic pestilence throughout Spain. In Europe generally, epizoötic disease affected the fish.

1651. Pestilence in Spain continued.

1652. In autumn. Pestilence in Ningpo.

1652. Miliary fever broke out and prevailed in Saxony. A malignant fever appeared at Copenhagen after an unusually hot and dry summer. Small-pox epidemic in London.

1653. Pestilence broke out in Gerona, and raged with great violence.

1654-55. Pestilence reappeared in England; also in Turkey, Russia, Hungary, Italy, Sardinia, Holland, Malta, and Egypt.

1655. Small-pox epidemic in London.

1655-56. Pestilence in most parts of Europe. In Naples three parts of the inhabitants perished.

1656. A great plague carried from Sardinia to Naples by a transport with soldiers; 400,000 died in less than six months. Pestilence also raged in Rome. 'Precautionary measures' taken by the Spanish and Portuguese were highly lauded. The alexipharmics used by them were 'the unicorn' and 'the bezoar concretion.' Italy, pestilence in man, cattle and sheep. West Indies, in pelicans.

1658. Influenza epidemic in England. In spring epidemic catarrh all over Europe; in

autumn it degenerated into malignant fever; very fatal in England and in France. In North America epidemic pestilence. In England the form of the fever was 'a pernicious intermittent,' which raged with as great destructiveness as the plague. Very tempestuous weather prevailed in various parts of Europe.

1659. Small-pox epidemic in London. In Italy, an epizoöty in cattle.

1660. In summer and autumn. Pestilence in Wen-chow.

1660. Plague in Woodbridge.

1661. Small-pox epidemic in London. Autumnal intermittents, which had been on the increase for several years in England, broke out with great violence. These lasted till 1665. Drought and famine in the Punjab.

1662. Great droughts in England. An epizoöty, with great mortality, among cattle, being 'a disease of the liver, a small worm (entozoon), especially in sheep.' Venice was visited by this disease. Puerperal fever very destructive at Leipsic and Copenhagen.

1663. Influenza epidemic in continental Europe; throughout Europe, including England, an epizoöty in cattle, 'rot' in wild ruminants; in England the latter disease was confined to sheep. Pestilence in England; inflammatory fevers and quinsies more frequent in London than they had ever been known to be.

1664. Measles in England. Small-pox epidemic in London. The great plague in London began in December, and continued until the conflagration in September, 1666. At Yarmouth 2,500 persons died by the disease. In Italy, variola in sheep.

1664-66. In England malignant fever prevailed; in many respects it could not be distinguished from the plague. It appeared in May. Before the advent of the plague, birds and wild-fowl left their accustomed haunts, and but few swallows were seen. In summer flies and ants were generated in great numbers. The plague 'fell upon several places of the city and suburbs like rain, even at the first.' During this period a plague infested the island of Malta; yellow fever or pestilence prevailed in many of the West Indian Islands.

1665. A plague year in London and through England; also greatly increased mortality among women in childbed or who had suffered abortion; more children perished by teething, rickets, and canker. Malignant sore throat spread through Poland, Denmark, and Holland.

1665-67. The occurrence of that plague was preceded for some years by a pernicious intermittent fever, as in 1658. The cold weather checked the disease in some measure. Dysenteries were very frequent.

1666. Plague at Cambridge, and in Derbyshire.

1667. A few cases of plague in London. Fatal dysentery very prevalent; small-pox epidemic. A similar pestilence raged in Bavaria. Spain suffered from epidemic pestilence of quinsy, attended by malignant fever.

1667-73. Scarlatina, mild in type, epidemic in England.

1668. The plague raged in Winchester. Small-pox epidemic in London. Yellow fever in the United States of America, especially in New York and Philadelphia.

1669. Malignant sore-throat epidemic in Leyden. Dysentery very severe and fatal. Cholera of aggravated type in London. Small-pox and malignant measles in England; the latter disease in Norway. At Leyden a severe fever prevailed. The outbreak of that disease was preceded by a cold spring; latter part of summer and autumn unusually hot, with little or no rain, and a constant calm or stagnation of the air. In Germany, pestilence in man and cattle.

1670. Measles in England. Small-pox epidemic in London.

1670-74. Gangrenous ergotism in Aquitaine, in Sologne, and in the Galinois district; also in Montagris and neighbourhood.

1671-72. Malignant sore-throat epidemic at St. Petersburg. In Westphalia, an epizoöty in cats.

1672. In Spain great sterility of the land, and epidemic disease prevailed. Pestilence

on the French frontiers. Pestilence in Hungary. Another plague year in the West of England. Small-pox epidemic in London.

1673. In summer and autumn, pestilence in Siang-shan.

1673-74. 'A violent epidemic' in Spain; described as being of a tertiary type. It was of mild type in May and June, but during autumn increased in virulence; in Barcelona it destroyed nearly half the inhabitants.

1673-86. Scarlatina, severe in type, epidemic in England.

1674. Measles of extreme violence prevailed in England. Small-pox epidemic in London. Denmark, epizoöty (rot) in cattle. Venetian territories, variola in sheep.

1675. Plague in Malta. Epidemic influenza throughout Europe. A miliary epidemic very fatal in Hamburg. Epidemic tertian fevers in the city of Carthagena.

1675-76. Virulent small-pox and measles again in England.

1677-79. Pestilence again broke out in Murcia and Carthagena. Small-pox very fatal in London and in many parts of Europe; also in Massachusetts, United States. Epidemic pestilence overspread Spain. Cholera at Goa, attended by fever.

1677-83. Malignant sore throat continued epidemic in Germany.

1678. A pestilence in Lishui.

1678. Plagues ravaged Algeria and Morocco.

1679. Fever and cholera in England. A grievous plague in Yarmouth. Last recorded appearance of plague in London. In Vienna, pestilence in man, cats, birds, and wild ruminants.

1679-80. Mortal pestilence in Vienna; in Malaga and other parts of Andalusia. Pestilence and famine in Germany. Plague in Dresden.

1680. A pestilence in Pingshu.

1680. Germany, epizoöty in fish.

1681. A pestilence in Ningpo.

1681. A mortal angina, fatal in twenty-four hours, raged in Italy, Poland, Switzerland and Germany. A petechial fever in Dublin. Pestilence in the island of Sardinia, and generally over Spain. Small-pox epidemic in London.

1681-89. Small-pox continued epidemic in London.

1682. Europe, epizoöty (glossanthrax) in cattle.

1683. Plague at Malta.

1683-86. Epidemic pestilence in Argel and other parts of Berberia. Epidemic disease spread over the continents of Europe and America, and nearly over the entire world. In Europe and America malignant fevers were very destructive.

1684. Plague in Venetian forces at Santa Maria.

1685. Silesia, epizoöty in cattle. In France, 'at Languedoc, strange devouring grasshoppers.'

1685-86. Epidemic years, plague and fever in England.

1686. England, Ireland, and all Europe, pestilence in man and horses (influenza). In Germany, farcy in horses. Silesia, foot and mouth disease in cattle.

1686-87. Yellow fever caused great mortality in the West Indies, especially in the Island of Martinique, where it was called 'Maladie de Siam.'

1687. Pestilence at Masulipatam preceded by dense flights of locusts. In England, 'gnats, flies and insects.'

1688. Europe, including England and Ireland, influenza in horses. Catarrhs, pleurisies, and dysentery epidemic in Europe and America.

1689. Europe, pestilence in man and sheep.

1689-91. Pestilence prevailed with great severity in Germany, Italy, various parts of Spain, and in the United States of America.

1690. The springing crops were spotted with mildew; grapes and other fruits destroyed; the leaves of plants and shrubs eaten by insects; much rain fell; all animals suffered; bees and silkworms perished; swine died of suffocation; pestilential disease prevailed among men and cattle; miliary or sweating sickness in

Northern Germany. Yellow fever in Charleston and other parts of America. Epidemic disease in Spain and in Italy. Throughout Germany, Poland, and Italy pestilence affected man, cattle, dogs and pigs; sheep suffered at the same time from 'rot' and variola. In Italy a disease raged among bees.

1690-97. Malignant sore-throat epidemic in Dresden, Wurtemberg, Ulm, and Hungary.

1691. Influenza epidemic in England. In Italy and Switzerland, glossanthrax in cattle and sheep.

1691-94. Small-pox continued epidemic in London.

1692. Port Royal, Jamaica, destroyed by an earthquake. Mosquitoes and flies generated in great numbers. Yellow fever at Port Royal and Barbadoes; in the latter island the disease persisted during several years.

1693. England, Ireland, and all Europe, influenza in horses. Hesse, contagious pleuropneumonia in cattle.

1694. Epidemic catarrh raged among men and horses in various parts of Europe. Domestic animals, including pigs and poultry, suffered from ergotism. The troops and seamen sent to the West Indies suffered dreadfully from yellow pestilence, which also prevailed in Boston, New York, Philadelphia, and other parts of America. Miliary fever in Berlin.

1694-1701. Malignant sore-throat epidemic in Berlin.

1695. Influenza epidemic in England. Pestilence broke out among the American Indians. Yellow fever in Barbadoes. In Hesse, pestilence (aphthous fever) in man and cattle.

1697. Yellow fever in Connecticut, New Hampshire, etc. In Germany, pestilence in man, dogs, and poultry. Sweden, *glossanthrax* in cattle.

1698. Spain again suffered from epidemic disease. A similar disease nearly depopulated Lima. Buenos Ayres also suffered, all classes and nations alike being equally affected. Small-pox epidemic in London. In France, pestilence in man and horses (*influenza*).

1699. A plague in Tatta, in Scinde, destroyed 80,000 of its inhabitants. Influenza epidemic, and very fatal in England. Charleston and Philadelphia suffered from epidemic disease, similar to that which prevailed at Barbadoes in 1692. Plague in the Levant. Pestilential catarrh in man, and an epizoöty among cattle and horses in France and England. During the seventeenth century, small-pox recurred in England as an epidemic about once in three years; in some years 'favourable and of regular type,' in others 'anomalous,' 'black,' or 'irregular.' Measles more than once was the forerunner of small-pox.

1700-1. A malignant exanthematous fever attended with delirium among the troops engaged in civil war in Spain. A very fatal miliary or sweating pestilence prevailed in the North of Europe; it was followed by small-pox. In London, an epidemic of the latter disease.

1700-7. Epidemic pestilence in various parts of the world.—England, Scotland, Friesland, United States, etc.

1701. In Germany, pestilence in man, horses, cattle, and geese.

1702-11. Plague in the north of Europe, especially Dantzic. A malignant and very mortal fever in Harwich.

1703. Small-pox and scarlatina at Boston, United States; in the other States a most malignant fever. Bilious plague, called 'the great sickness,' broke out at New York. Ergotism throughout Freiburg. In India, famine in Scinde.

1704. In Germany and France, epizoöty in horses.

1704-5. Small-pox epidemic in London.

1705. An epidemic malignant fever broke out and raged in Ceuta. In the month of April pestilential disease appeared at Tunis; in May at Malaga. In Germany, Saxony, Poland, Switzerland, pestilence in horses, cattle, and chamois.

1707. In Franconia and in England, pestilence in man and horses.
1707-10. Small-pox continued epidemic in London.
1708. A universal catarrh overspread all Europe and America; it was followed by pestilential fevers. In Italy, peripneumonia prevailed in spring. It is recorded that throughout Europe, pestilence affected man, horses, cattle, dogs, and wild animals; that in Ireland the sheep suffered from 'rot;' in Hungary and Transylvania epizoöty occurred in pigs, wolves, hares and foxes; and in Suabia, rabies prevailed as an epizoöty in dogs.
1709. Sologne, *i.e.*, an old district of France, now comprised in the Departments Loir-et-Cher and Loiret, again visited by ergotism; a fourth part of the rye crop affected with ergot. Ergotism also in Switzerland. At Dantzic plague, preceded by a great increase in the number of the arachnidæ. Throughout Europe, pestilence in man and animals (cattle-plague). Zurich, epizoöty in fish.
1709-11. Various parts of the coast of South America, especially the Brazils, suffered from putrid or yellow pestilence. Seville and other parts of Spain visited by dire pestilence. Plague or pestilence at Dantzic.
1709-14. General and aggravated epidemic disease all over Europe. An epizoöty among horned cattle and horses.

1710. A pestilence in Siang-shan.

1710. Throughout Europe, pestilence in man, cattle, and dogs. Catarrhous fever, influenza, or Dunkirk fever in England; introduced by disbanded soldiers; also small-pox and spotted fever in Norwich. Sweating sickness at Copenhagen and many parts of Sweden. Pestilence in Lithuania. A fatal 'epidemic distemper' among the British troops landed near New York.
1711. Pestilence at Vienna. An epizoöty—*i.e.*, a sort of typhus fever or fatal dysentery—among cattle in Italy and Germany. Throughout Europe, pestilence in horses, cattle, birds, and fishes; England, variola in sheep. In Carniola, famine from rain and mildew began; it continued several years.
1711-16. Plague in Northern Europe.
1712. Throughout Europe, pestilence in man, cattle, horses, pigs, etc. (anthrax). In Hungary, variola in sheep; 'rot' in goats; an epizoöty in cats, deer, wild hogs, etc. In Germany, pigs and poultry suffered; also in France.
1712-50. Small-pox continued to persist in London.
1713. In Europe, pestilence in man, domestic, and wild animals; in horses, anthrax. In Switzerland, contagious pleuro-pneumonia in cattle. France, glossanthrax. Germany, rot. England, cattle-plague. Germany, epizoöty in fowls and geese. Small-pox rife at Constantinople.
1714. A fatal epizoöty among horses and horned cattle in England. In Europe, pestilence in cattle, sheep, goats ('rot'), horses, hogs, and poultry. France, distemper in dogs. Silesia, epizoöty in fish.

1715. A pestilence in Tai-chow, preceded by famine.

1715. In Europe, pestilence in man and animals. At Cologne, in pigs. France and Cologne, distemper in dogs. Miliary fever, which had several times prevailed in Germany since 1652, extended to France. Small-pox and measles epidemic in many parts of Europe. Malignant pestilence in the United States of America. Miliary fever at Breslau and Turin. Ergotism in Switzerland and at Orleans.
1716. Bilious remittent and low fevers, also malignant sore throat and various pestilential diseases prevailed in Lower Bengal. In Ireland, 'rot' prevailed in sheep.
1716-19. Epidemic small-pox broke out in the month of March in the city of Aguilar de Campo; it was followed by pestilential sore throat.
1717. In England and Europe, pestilence in man, cattle, horses, pigs, poultry, bees, and fish. Hungary, epizoöty in geese and turkeys. Silesia, disease in bees. An epidemic jaundice became very general in the Asturias; it appeared first in autumn. True plague in Aleppo; also at Marseilles.

1718. In sixth moon. Pestilence in Siang-shan.

1718. Miliary fever or 'Picardy sweat' first appeared in France. In Germany, pestilence in man, horses, sheep, and pigs (glossanthrax); also in geese, fowls, pigeons, and fish.

1719. In Europe, pestilence in sheep, dogs, geese, and wild creatures. Bohemia and Venetian States, variola in sheep; epizoöty in geese. Zurich, disease in wasps and lizards; Italy, in silk-worms.

1719-24. In Europe, *rabies* in dogs continued epizoötic.

1720. Miliary fever very prevalent and fatal in the Canton de Bray, Lower Seine. The plague at Marseilles, and through France; it raged with great fury. Throughout Europe, pestilence in man, horses, sheep, and asses (glossanthrax). In Saxony, variola in sheep. In Peru, an epizoöty in the llamas.

1721. Plague continued at Marseilles, carried off 50,000 persons; also at Toulon. Small-pox raged in New England. In Europe, pestilence in man, horses, and pigs (ergotism), dogs and cattle. In Germany, laborious parturition was epizoötic among cows. In Sweden, cattle-plague prevailed.

1722. Throughout Europe, pestilence in man, cattle, sheep, and goats. In Lake Constance, an epizoöty in fish. Plague in Moscow. Inoculation for small-pox 'introduced' into England from Turkey.

1723. Plague in Lisbon and other cities on the coast of Spain. Small-pox epidemic in England. Deadly yellow pestilence in Port Royal, Jamaica. Very malignant pestilence, attended with exanthematous eruptions, broke out in Granada; the city of Placentia, Newfoundland, was also visited by pestilential fever. Sore throat, with dizziness and pain in the limbs, prevailed in London; measles in America; plague in Vienna, Hungary, and the East; dysentery in Upper Saxony; ergotism in Silesia; miliary fever at Frankfort-on-the-Maine.

1723-4. Europe, pestilence in man, sheep, cattle, mice. Germany, cattle-plague. Venetian States, France, variola in sheep. Germany, rot. Silesia, epizoöty in mice.

1724. Epidemic catarrh, chiefly among children, in the Asturias. An epidemic of lead colic in Devonshire.

1724-27. Malignant fevers prevailed all over Europe and America.

1725. Europe and America, pestilence in man, dogs, horses, and geese.

1726. A series of anomalous diseases prevalent, and very fatal in Granada. Leprosy began to spread in Andalusia, where it lasted until 1764. In Europe, pestilence prevailed in cattle, deer, sheep (carbuncular plague and pleuro-pneumonia); an epizoöty in fowls and in fish. In Germany and Poland, variola prevailed among sheep; deer also suffered from epizoötic disease.

1727. Epidemic mania prevailed in Spain. Carthage visited by pestilence.

1727-8. England and Ireland, pestilence in man and horses (influenza).

1728. Influenza epidemic in Spain. Yellow fever at Charleston, United States; also at Carthagena and Portobello in South America. Epidemic pestilence in Poland, Austria, and Siberia. Plague in the island of Bourbon, at Tripoli, Damascus, and Aleppo. Scarlet fever in Edinburgh. Chincough in England. Miliary fever in Savoy.

1729. Europe, pestilence in man, cattle, horses, wild boars (influenza and cattle-plague).

1729-35. Pestilence raged in Austria, Germany, Italy, France, Bohemia, Denmark, Sweden, and Russia.

1730. Outbreak of gaol-distemper at Taunton. This was the first occurrence of the disease in England since the year 1586. Simultaneously with the outbreak of pestilence (black vomit) in Spain, pestilence occurred in animals.

1730-38. Epidemic pestilence began at Cadiz; it extended in all directions on the Continent, and lasted eight years. In the latter year a frightful dysentery invaded the seaboard of Spain. During this time domestic animals, including poultry, were first affected. A universal development of insect life occurred.

1731-32. Europe, including England and America, pestilence in man, horses (influenza), and cattle (glossanthrax and strangles). England, 'rot' in hares.

1732. A pestilential fever in London during the month of April. Yellow fever epidemic in many of the States of America.

1732-33. Epidemic influenza in England.

1733. Miliary fever in France, where it had occurred at intervals for fifteen years. Influenza epidemic in England. Influenza overspread Spain and many other parts of Europe; the island of Majorca suffered greatly. Famine in North-Western provinces of India.

1734. Epidemic dysentery, with swellings of the head, attacked poultry, especially geese, in the environs of the town of Coburg. In Germany, England, and Scotland, a pestilence in man, horses (influenza), dogs, and fowls. Baden, glossanthrax. Coburg, epizoöty in poultry. England, rabies in dogs.

1735. Malignant sore throat appeared and spread over the American colonies. 'A plague' in Sicily. Plague severe in Egypt. Yellow fever in various cities of America, affecting also the tribe of Michigan Indians; also was rife in Barbadoes and other West Indian Islands. In North America, pestilence in man and animals. England, 'rot' in sheep. South America, distemper in dogs.

1735-44. Various pestilential epidemics raged for more than ten years, afflicting Great Britain, Holland, Calabria, Switzerland, Tangiers, and Smyrna. In North America a distemper affecting the throat and respiratory organs nearly exterminated the young children.

1736. In Seville, privations and disease among the lower orders. Epidemic pestilence in Cairo destroyed 100,000 persons from 1st February to 12th March. In England the summer intensely hot; insect-life greatly developed. Ergotism in Bohemia.

1736-37. In England, pestilence in man and horses (influenza). In Europe, in mammals and poultry (ergotism). Italy, cattle-plague.

1737. Influenza epidemic in England. In Silesia and Bohemia, ergotism in poultry.

1738. In Siberia, pestilence in man, horses, and cattle (anthrax). Small-pox epidemic in South Carolina. In Spain, famine and disease.

1739. Putrid sore throat as an epidemic first recognised in England. Famine in the province around Delhi.

1740. Epidemic disease in Ireland; failure of the potato-crop in that country. In Germany, fevers attended with convulsions. In Spain, the 'vomito negro.' In Siberia pestilence attacked, first horned cattle and horses, and afterwards human beings. It prevailed in the form of pestilential carbuncle (anthrax). In England and Ireland, pestilence in man, horses, sheep ('rot'), deer, rabbits (influenza). Hungary, Bohemia, Bavaria, cattle-plague.

1741. Malignant spotted fever among the poor of London; it had previously raged in Bristol and in Galway. England and Ireland, pestilence in man and animals. Ireland, it prevailed among pigs; it also affected poultry and fish. Barbadoes, rabies in dogs.

1742. Influenza epidemic in England. Gaol-fever at Launceston. In England and Ireland, pestilence in man and horses (influenza). Lorraine and Switzerland, cattle-plague.

1742-43. A very fatal pestilence in Carthagena.

1742-50. Cholera in Minorca was said to have specially attacked persons in the cold stage of ague.

1743. Malignant sore throat appeared in Paris. Plague at Messina, Aleppo, and Moscow. Epidemic influenza in England. In Europe, pestilence in man, horses, sheep, and cattle. Suabia, Switzerland, France, cattle-plague and pleuro-pneumonia 'rot' in sheep.

1744. Italy, Germany, Holland, cattle-plague.

1745. A murrain among cattle in Turkey, succeeded by a violent plague, especially fata

in Constantinople. The murrain extended to Germany, France, and England; its progress accompanied by a bluish mist in the atmosphere. Puerperal fever epidemic in the Viverais district of France. In Ireland, an epizoöty in horses.

1745-52. India, famine in Scinde during all this period.

1746. Germany, Bohemia, Moravia, Ireland, epizoöty (influenza) in horses. In France, variola in sheep.

1746-48. Malignant sore throat, small-pox, spotted fever, and dysentery all prevailed in England.

1747. An epidemic of malignant catarrh broke out in the spring in Aragon, succeeded by petechial fever. In the Asturias an epidemic of jaundice, attended with fever of malignant type, in the month of May. Pestilence in Constantinople. Dysentery in various parts of the United States of America, succeeded by yellow fever, which continued till 1755. In England, 'rot' prevailed as an epizoöty in sheep.

1748-49. Malignant sore throat at Kidderminster.

1749-53. Malignant sore throat prevailed in Devonshire and Cornwall.

1750. In Europe, pestilence in man and animals (influenza). Toulouse, variola in sheep, disease in silkworms. Cholera, which for a considerable number of years previous had been unknown in Bombay, reappeared there. Violent outbreak of gaol-fever in Newgate.

1751. Pestilence at Constantinople. Famine and pestilence in Isen and Cordova, attributed to the arrival of merchants at the ports of Malaga. In Ireland, epizoötic catarrh in horses.

1751-60. Epidemic pestilence continued to prevail in various parts of the globe. Malignant dysentery in the Northern States of America. Malignant fever in Normandy; gangrenous sore throat in Ireland and France; a petechial fever in Constantinople. Famine and plague in Syria, Smyrna, and Cyprus; epidemic pestilence in Aleppo, Jerusalem, and Damascus. In London and neighbourhood vast numbers of horses died of a murrain. Yellow fever of extreme malignity in the West Indies and on the coast of Africa; in the latter 'produced by a pestilential vapour which arose in the south-east of the Guinea coast,' the disease affecting equally the blacks and the whites. Yellow fever in New York and Philadelphia. An 'atrabilious' fever in Senegal.

1752. In France and Switzerland, pestilence (ergotism and anthrax) in man and animals. Vienna, epizoöty in poultry. Small-pox epidemic in England.

1752-53. Ireland, 'rot' in sheep.

1754. In Hanover, anthrax in cattle and sheep; foot and mouth disease in pigs. Small-pox epidemic in France and England.

1754-79. Small-pox continued to prevail in London.

1755. Europe, foot and mouth disease in cattle. In Austria, epizoötic catarrh in horses. In Switzerland, variola in sheep.

1756. In Germany, pestilence in man and animals, wild and domestic (anthrax and cattle-plague). Scurvy in the besieged garrison of Oswego.

1756-58. Saxony, variola in sheep.

1757. Pestilence in Ping-shu.

1757. In Russia and Finland, an epizoöty in deer; in horses, anthrax; in cattle, cattle-plague. In France, anthrax in pigs, dogs and asses; also an epizoöty in fowls and fish. Small-pox epidemic in England.

1757-80. Numerous epidemics of cholera occurred in Southern India, but did not spread beyond it.

1758. In Europe, pestilence in man and animals (influenza). Lapland, cattle-plague in reindeer. Influenza epidemic in England.

1759. In Peru, pestilence in man and dogs. Austria, epizoöty in cattle. Scurvy in the garrison of Quebec.

1759-60. Small-pox epidemic in England.

1760. An extremely severe plague in Aleppo and in Syria; also in Cyprus. It was asserted that the persons of strongest constitution were those most liable to be attacked by it. In England and Ireland, pestilence (influenza) in man and horses. Switzerland and Italy, anthrax and foot and mouth disease in cattle. France, epizoöty in fish.

1760-62. Plague at Aleppo, Jerusalem, and Damascus.

1761. Severe catarrh or influenza prevailed in spring in the United States; it changed to malignant yellow fever during summer and autumn. Yellow fever also prevailed in the West Indies. In France, variola and 'rot' in sheep. A deadly epizoöty among the dogs in Madrid and over all Spain; no other domestic animal suffered from it. This epizoöty continued to prevail till 1764. France, Austria, Franconia, Esthonia, anthrax in cattle.

1762. In Europe, pestilence (influenza) in man, cattle and horses (gangrenous sore throat and anthrax). In France, glossanthrax in sheep. Malignant sore throat at Vienna. Influenza epidemic in England. Bilious remittent fever in the United States, and in Havannah. Pestilence in Siam, Bengal, Syria, France, and Britain.

1762-63. Small-pox epidemic in England.

1763. In Europe and America, pestilence in man and animals (namely, catarrh, anthrax), and in cattle foot and mouth disease. Very fatal yellow pestilence in Massachusetts. In Nantucket, an epizoöty in fish. Epizoötic catarrh (the snuffles) very destructive to cattle and horses in Denmark. Pestilence again among dogs in Madrid; the poultry died of it at Genoa, and horned cattle in France and Sweden. Epidemic disease first attacked animals, then man. In France, Switzerland and Germany, anthrax and foot and mouth disease in sheep. In France and Germany, swine-plague, and foot and mouth disease in pigs. In France, anthrax in dogs. In France, Germany, Italy and Spain, an epizoöty in poultry and wild birds. Malignant fever at Naples. Epidemic pestilence in the city of Carthagena, namely, a severe tertian fever. Plague in the island of Cyprus; also generally over the Ottoman Empire.

1764. Small-pox in England. Very fatal epidemic pestilence in Estremadura and other parts of Spain. In Carthagena, very fatal tertian fevers. Pestilential disease in Spain, Suabia, Scotland, and Ireland. Lethal epidemic disease in Austria. In Holland, Saxony, etc., foot and mouth disease in cattle; in Sweden, an epizoöty in goats; in Provence, an epizoöty in poultry. Bilious remittent fever in the United States of America. The pestilence in Ireland was marked by all the symptoms of bilious remittent or yellow fever. Plague at Cadiz and in Holstein. Famine and plague in Italy.

1764-65. Small-pox epidemic in England.

1765. Malignant sore throat at Montpelier. In Moravia, cattle-plague in sheep. (In the Tyrol, pneumonia in cattle. In Turkey, Hungary, etc., cattle-plague. In Switzerland and Suabia, swine-plague.)

1766. In Europe and America, pestilence in man, horses, dogs, and cattle. Malignant catarrh swept over Europe. Murrain destroyed many horses and cattle in New England and New Jersey. A similar murrain among cattle in Pomerania, Brandenburg, and Mecklenburg. In Hanover and France, an epizoöty in geese and turkeys. In England, 'rot' in sheep.

1767. Small-pox epidemic in Peking.

1767. In Europe and America, pestilence in man, cattle, dogs, and geese; horses affected with epizoötic catarrh. Small-pox severe in London; influenza prevalent. Puerperal fever very fatal in Normandy. Epidemic pestilence in Madrid. A catarrh of peculiar type, but not very fatal, broke out in Madrid, and extended over the Continent. In Italy, foot and mouth disease in cattle.

1767-68. Cholera attacked troops on the march from Bengal to Masulipatam.

1768. In America, epizoötic disease in horses. Pestilence again broke out in the city of Carthagena, and raged with great violence and fatality; vast numbers of caterpillars in Massachusetts. In Austria and Prussia, anthrax and cattle-plague.

1769. Small-pox, dysentery, and hydrophobia prevailed in Boston and in other parts of the States; anginas were also rife. Yellow pestilence in Jamaica. In Holland a murrain destroyed many cattle and sheep. Cholera at Pondicherry. Famine and pestilence destroyed three millions and upwards of the inhabitants of Bengal. Various parts of Spain suffered from epidemic pestilence. In France, influenza in horses; in that country, Holland, and Switzerland, pleuro-pneumonia, cattle-plague, 'rot,' etc., in horned cattle; at Geneva, an epizoöty in poultry.

1769-70. India, a great famine; 3,000,000 persons perished; the air infected by decomposition of the dead.

1769-74. Cholera occurred at Pondicherry and other places in the Madras Presidency during this period.

1770. Deadly pestilence in many parts of Europe, Western Germany, Moldavia, etc., affecting man and cattle. Great mortality by murrain among cattle in Sardinia, Holland, Flanders, etc. In India, Siberia, and St. Domingo, influenza in man, anthrax in cattle; camels being also affected by that disease in Siberia. In Germany, swine-plague. In Moldavia, epizoöty in wild birds. In Russia, Poland, Bohemia, famine and pestilence.

1770-71. Malignant sore throat at Vienna. Pestilence or plague at Constantinople; in Poland and in Moscow. A singular epidemic destroyed the foxes in the United States of America; rabies in dogs was also epizoötic in America. Tertian fevers of a malignant type broke out in the city of Carthagena. Puerperal fever fatally epidemic at Vienna.

1770-72. Small-pox epidemic in England.

1771. Plague in Moscow. In Germany, pestilence (ergotism) in man and poultry. Paris, foot and mouth disease. America, horn-distemper in cattle. Siberia, variola in sheep. Moscow and Wallachia, distemper in dogs. America, rabies in foxes.

1772. Small-pox very fatal in England. Epidemic catarrh and measles in the United States of America. Small-pox rife in Scotland. Saxony, France, St. Domingo, anthrax and pleuro-pneumonia in cattle. Saxony, epizoöty in sheep. Pestilence still raging in Carthagena extended to other provinces of Spain. Plague very fatal in Bassora. Famine and disease destroyed vast numbers of lives in the peninsula of the Ganges.

1773. A fatal pestilence in Persia; miliary fever in France. In the latter country and in Holland, cattle-plague. In Switzerland, epizoötic pleuro-pneumonia.

1774. Measles epidemic in London. Cases of gaol-fever in the Old Bailey. 'Epidemic convulsions' in France. A similar malady in the United States of America. In England, epidemic catarrh with sore throat. In Guadeloupe and Brittany, pestilence in man, horses, and cattle (anthrax). In America, blight of the wheat-crop; off the coast, disease among shell-fish, including oysters and lobsters; in France, murrain among cattle. In Spain, tertian fever very prevalent. In that country, and in Holland, cattle-plague. In Lorraine, an epizoöty among geese. At Vienna, puerperal fever again epidemic and very fatal.

1774-75. Small-pox epidemic in England.

1774-81. Cholera persisted at Pondicherry.

1775. Europe, pestilence in man, horses, dogs (influenza and anthrax), sheep, cattle, and fish. In France, glanders in horses. Austria, Sweden, etc., cattle-plague. France, variola in sheep. England and France, influenza in dogs. France, epizoöty in poultry. Sumatra and America, epizoöty in fish. Influenza epidemic in England. Gaol-fever at Axminster.

1776. Gaol-distemper in Ireland, and in London. An epidemic of whooping-cough in England; the first recorded. France, glanders in horses. Antilles, rabies in dogs. Anthrax, cattle-plague, and foot and mouth disease, prevailing in France, Austria, and Poland.

1776-80. Africa, epizoöty (intermittent fever) in wolves and foxes; France, in deer.

1777. Italy, anthrax in horses. Germany, abortion in cattle and pigs. France, epizoöty in geese.

1777-78. Malignant sore throat in Paris and in London.

1778. Yellow fever prevailed in Philadelphia. Plague at Constantinople. Carthagena in Spain suffered from pestilence as in 1771. It continued till 1779. Throughout Europe, pestilence prevailed in man and animals, including cattle-plague and foot and mouth disease in cattle; in Germany, anthrax in horses, goats, pigs, and asses; in England, influenza in dogs; in Germany, an epizoöty in deer.

1778-79. Malignant sore throat at Newcastle and other places in England.

1779. In Peru, an epizoöty in dogs. In France, Switzerland, etc., cattle suffered from anthrax, pleuro-pneumonia, and cattle-plague.

1780. Bilious remittent fever in Philadelphia, and in other parts of the States. 'Break-bone fever' (Dengue) also prevailed extensively there. Cholera broke out at Hurdwar during the annual festival held at that place. Epidemic pestilence in various parts of Spain, believed to have arisen from overcrowded graveyards; in Pampeluna it persisted till 1787. At Rio de Janeiro and other Brazilian settlements 'Andalusian fever' prevailed among the Spanish colonists. Scurvy in Gibraltar and other besieged towns and garrisons. Gaol-fever in Aylesbury, also in Northampton, and in other places. Throughout Europe, pestilence in different forms affected man and animals; in France and Italy, glossanthrax in cattle; in France, an epizoöty also in poultry; in Saxony, in bees.

1780-81. Great increase of dysentery in England.

1781. In Asia and in Europe, pestilence prevailed in man and cattle; epizoötic influenza in horses. Cholera travelled from Ganjam to Calcutta and Sylhet. From that date till 1817 'the disease was scanty in Bengal.' Small-pox epidemic in England; cattle-plague as an epizoöty. In Flanders, ophthalmia.

1781-83. Famine in the Carnatic, and Madras. The Monegar Choultry first established. Influenza was believed to have originated in China; it spread through Asia and Europe, and in the latter year to America.

1781-89. Epidemic sickness in various parts of the world. In England, an epizoöty among horses and horned cattle. Epidemic disease in the Channel fleet. Epidemic puerperal fever in London. Measles in New York and other cities in the United States. Numerous cases of hydrophobia in the Southern States. In Maryland, great mortality among horses and cattle. On the coasts of Lapland and Norway the fish died in vast quantities.

1782. America and Europe, pestilence in man, horses (influenza), cattle, dogs, cats. Germany, influenza in cattle; France, ophthalmia; Holland, cattle-plague. Famine and pestilence at Constantinople. Cholera in the fleet at Trincomalee. 'A terrific epidemic' in Languedoc and Roussillon. True plague in Catalonia. Variola in Aragon. An 'epidemic distemper in Chili.' In England, influenza epidemic.

1782-4. India, famine in Scinde, caused by devastation of war. In France, distemper epizoötic in dogs.

1783. Malignant sore throat epidemic at Newcastle. Plague in Egypt, Damascus, and Constantinople. Cholera at Hurdwar; also in Travancore and Burmah. In Iceland, England, France, and Italy, pestilence in man, horses, cattle, sheep, and dogs, viz., glanders in horses, anthrax in cattle. In the West Indies, rabies epizoötic in dogs.

1783-96. Small-pox persisted in London.

1783-84. India, famine in the Punjab, the North-Western provinces, and Behar.

1784. Siberia, anthrax in horses; in France, abortion as an epizoöty in domestic animals. In Hungary, Italy, and Germany, cattle-plague prevailed. Pestilence in various districts in Spain. Small-pox, mild in type, prevailed. Cholera at Surat.

1785. Exanthematous fevers, rheumatism, and quotidian and tertian intermittents throughout Spain. Small-pox assumed a malignant type. Severe pestilence at Carthagena. In Nassau, glossanthrax epizoötic in cattle. In America, rabies epizoötic in dogs.

1785-86. Measles epidemic and severe in England.

1786. Malignant sore throat epidemic in London. A plague in the Levant. 'A frightful' epidemic in the province of La Mancha, now comprised in the province of Cuidad-Real. The 'vomito negro' at Havannah, attributed to putrid hides. Pestilential cholera at Arcot. In Germany, France, Italy, etc., glossanthrax in and croup in cattle. Pezenas, distemper in horses, dogs. In Germany and Sweden, anthrax also in pigs.

1787. In Germany, the sheep suffered from variola; in Ireland, from epizoötic sickness. Cholera devastated Arcot.

1787-88. Famine in Behar and the Punjab.

1788. Cholera in India was 'sympathetic' in intermittent and remittent fevers. In Europe, pestilence in man, horses, cattle, and pigs (anthrax).

1789. In America, Egypt, Germany, and Italy, pestilence raged in man and animals. In America the most severe pestilence on record occurred all over the United States, in the form of anginas, croup, ulcerated sore throats, putrid bilious fevers, etc. Measles, which occurred the previous year, was the prelude of a series of epidemics which raged for thirty years. Influenza in various cities in the United States; it affected the Indian population and also seamen at sea; it raged from 15° to 45° N. In France, anthrax epizoötic in cattle. In Austria, cattle-plague. In Germany and America, rabies in dogs. At Cairo, an epizoöty in cats. In Upper Italy, an epizoöty in poultry. In Norway, Lapland, Archangel, and America, an epizoöty in fish. Influenza epidemic in England.

1790. Famine in the province of Quang-tung.

1790. The last year in which the insanity of the *Convulsionnaires* in France is mentioned, that affection having prevailed there for fifty years previously. In Germany, France, Hungary, pleuro-pneumonia and anthrax in cattle.

1790-91. Severe catarrhs in America in spring; measles in autumn; yellow fever and whooping-cough were also rife. In Maryland a black caterpillar destroyed the crops; a blight destroyed the fruit; the palmer-worm destroyed the forest trees and all woodwork. The 'bilious plague,' *i.e.* yellow fever, in Philadelphia, also in the island of Grenada, and on the West Coast of Africa. Plague in Egypt. Typhus in England. Yellow pestilence in Havannah. A severe murrain among cattle in Hungary, Servia, and other European countries. Cholera attacked a body of troops near the Chilka Lake. At Chittagong it 'recurred every hot season.'

1790-92. Serious dearth in Baroda and Southern India. The poor in that country first employed on public works.

1791. In Kutch, a famine was caused by swarms of black ants, which destroyed vegetation. In Normandy, Saxony, and France, variola, hæmaturia, and contagious foot-rot epizoötic in sheep.

1792. In May and June, caterpillars and 'the wheat insect' continued their ravages in Long Island and in part of Maryland; in July, yellow fever 'raged terribly' in the city of Charleston; in August, scarlet fever in that city, in New York, and elsewhere. Plague in Egypt. More than 800,000 persons died. Severe pestilence at Bombay and in Morocco. In Italy, Franconia, etc., in cattle, pleuro-pneumonia, cattle-plague, and epizoötic abortion. In England, 'rot' epizoötic in sheep.

1793. Yellow fever at New York, Philadelphia, and Boston. A fatal dysentery in

Georgetown, Coventry ; a serious fever at Fairfield, U.S. In Europe, pestilence in man, cattle, and horses (anthrax). France, Bavaria, etc., cattle-plague.

1794. Yellow fever at Philadelphia, Baltimore and Norfolk, Virginia. A similar pestilence in Dominica and other West India Islands. In Dominica it continued till 1796. In France, scabies epizoötic in horses. Italy, in cattle, foot and mouth disease.

1795. In Italy fruits perished from mould ; a disease among the vegetables ; walls and paper-hangings covered with damp white mould ; millions of insects in the air, in fact, a pestilential constitution in the air. Yellow fever in many parts of the United States of America, and continued till 1800. Murrain among cattle in Lombardy. In Bavaria, glanders in horses. France, variola in sheep.

1795-96. Small-pox prevalent in England. Vaccination introduced.

1796. Small-pox epidemic in England—the worst attack on record. Authors state that there was a marked excess of epidemics of small-pox in the eighteenth as compared with the seventeenth century. In the Rhine provinces, glanders in horses. Lombardy, anthrax in cattle. Holland, England, epizoöty in cats. America epizoöty in poultry.

1796-97. Yellow fever in various States in America ; it began with symptoms of remittent fever, and increased progressively in violence. In Italy, murrain among horses, cattle, and poultry. Cholera at Bombay, on the coasts of Malabar, and Coromandel.

1796-1803. In Saxony, an epizoöty continued to prevail among bees.

1797. America, Europe, pestilence in man, cats, dogs, fowls, rats. Bavaria, influenza in horses. Wurtemberg, anthrax in cattle. Saxony, variola in sheep. America epizoöty in poultry. America, in rats.

1798. Catarrhs, pleurisies, sore throat, and bilious fevers in Pennsylvania and New England ; also a pestilential fever, 'which exhibited both bubo and carbuncle, with many other symptoms of true plague.' A peculiar vapour or fog was observed in New York during the most fatal period of this pestilence, namely, in the month of September. Prussia, England, influenza in horses. Piedmont glanders.

1798-1803. Small-pox continued to prevail in London.

1799. Great mortality in Barbary and Morocco. Plague in the French army in Egypt At Magador it broke out in April in the form of small-pox ; by July it assumed the type of the most deadly plague ; by October it ceased. Birds deserted their former abodes during this pestilence. In Italy, in cattle, foot and mouth disease and cattle-plague. England and Scotland, cattle-plague, Italy, France distemper in dogs ; in Italy, variola in sheep.

1800. Malignant yellow fever in various parts of the United States. In America, Spain, and Italy, pestilence affected man and animals. In Spain, yellow fever was epidemic ; in England, glanders epizoötic in horses ; in Italy, anthrax, pleuropneumonia, and cattle-plague in cattle ; also an epizoöty in dogs, cats, poultry, and canaries. In France, hydrorachitis was epizoötic in sheep.

1800-4. Many deaths in Bagdad. In Cadiz, a pestilence, believed to have been yellow fever, raged severely. Persons born in the West Indies or in Spanish America escaped its influence. New arrivals suffered more than the older inhabitants, men more than women. Winter did not check its prevalence. It spread to adjacent places, including Seville. At the time of its outbreak in Cadiz that city was crowded with fugitives from war. On the outbreak of the disease animals also suffered ; dogs died first, then cats, then horses, then poultry, then cage-birds, as canaries. In England, a great increase in infantile mortality, in the prevalence of small-pox and measles, and in the death-rate from all causes.

1801. Anginas, pleurisies, and yellow pestilence continued to prevail for several years in the United States of America, and in other places. Typhus in Ireland and in

England. Plague appeared in the army in Egypt in September. In continental Europe, and in Ireland, an epizoöty affected cattle.

1801-2. Plague continued among the British forces in Egypt.

1801-3. In France, variola continued epizoötic in sheep.

1802. Dry summer, thick fogs; fatal sweating sickness in Central Germany, ceasing with the occurrence of clear cold weather in December. Ireland and Bavaria, in cattle, anthrax. Poland, Prussia, Italy, cattle-plague. In Ireland, influenza epizoötic in horses. At Kutch, the crops destroyed by locusts.

1802-4. Famine in the Nizam's dominions, caused by want of rain; in Kutch, by locusts; in Candeish by war.

1803. Influenza epidemic in England. England, Switzerland and France, pestilence in man, horses (influenza), dogs, sheep, cattle, cats. Peru, rabies in dogs. Switzerland, rabies in foxes.

1804. 'A yellow pestilence' in Leghorn and Lucca; also in the West Indies. In Holland, Germany, France, influenza in horses. Saxony, variola in sheep. Wurtemberg and Baden, rabies in foxes. In France, cattle suffered from an epizoöty of disease of the horns.

1804-5. A pestilential disease (yellow fever) in Spain and Gibraltar. At Cadiz it began in August and ended in December. It extended along the shores of the Mediterranean to Carthagena, Alicante, and vicinity of Barcelona.

1804-7. Scarcity in the Bombay Presidency.

1805. Spotted typhus or petechial pestilence in the United States. Small-pox epidemic in England. In Europe, influenza in horses. France, variola in sheep. Switzerland, Piedmont, foot-rot. Italy, epizoöty in pigs. In England, cattle-plague in cattle; distemper epizoötic in dogs.

1805-10. Small-pox continued in London.

1806. England, rabies in dogs. Baden, rabies in foxes.

1807. Prussia, influenza in horses. France, glanders. Bavaria and Ceylon, epizoöty in deer, boars, badgers, hares, elephants, etc. (anthrax). In Europe generally, anthrax in cattle, and cattle-plague. In Ireland, rabies epizoötic in dogs.

1807-8. Plague epidemic in Astracan.

1808. In North America, an epizoöty in horses.

1809. The British army in Walcheren destroyed by fever. Epidemic sickness among the British troops in Portugal. In Switzerland and Brunswick, influenza in horses. France and Germany, 'rot' in sheep. Throughout Europe, foot and mouth disease, and cattle-plague epizoötic in cattle.

1809-12. Zurich, rabies in foxes.

1810. India, pestilence in man and animals. Bavaria, in cattle, pleuro-pneumonia and anthrax. England, 'rot' in sheep. North America, rabies in dogs, wolves and foxes. England, an epizoöty in them. Yellow pestilence appeared at Gibraltar.

1811. Small-pox in Ning-po.

1811. Plague in Balaclava, assigned to neglect of the state of the harbour. Puerperal fever prevalent and lethal in Somersetshire. Piedmont, influenza in horses. France, swine-plague. Siberia and Germany, cattle-plague; in Switzerland, filaria.

1812. Plague very severe in Constantinople. Small-pox epidemic in London. In France, epizoötic disease (intermittent fever and influenza) in man, horses, hares, etc. In Germany, anthrax epizoötic in that country. Switzerland and Spain, cattle-plague, and foot and mouth disease. In Russia, glanders.

1812-13. A plague of rats in the Madras Presidency; of locusts in Scinde and Cutch. In those and other parts of India the crops were destroyed by these creatures, and famine was the result.

1812-14. Scarcity persisted in the Madras Presidency owing to an unfavourable season in 1811.

1813. The plague at Bucharest; also at Malta. That island had not been infected with plague previous to this occasion since 1683. Typhus fever particularly prevalent and fatal in London. Scarlatina rife, but not very fatal. At Gibraltar yellow pestilence prevailed. Plague at Malta, where it had not been known before for 138 years, viz., since 1675. In France, an epizoöty prevailed in horses. In Switzerland, the Rhine provinces, and Hungary, pleuro-pneumonia, cattle-plague and anthrax prevailed in cattle. In the island of Mauritius, rabies in dogs.

1813-14. Partial famine in the Agra district.

1814. An epidemic of cholera in Jaulnah, Central India. In Siberia, pestilence in man and reindeer. Switzerland, France, influenza in horses. Europe, cattle-plague. Italy, variola in sheep.

1814-15. Great mortality among the French troops in Italy.

1815. France, pestilence in man, cattle, horses, dogs, and cats; 'rot' in sheep. England, influenza (?) in horses. Italy, in cattle, pleuro-pneumonia. France, dysentery. Germany, contagious foot-rot in sheep. Norway, Austria, rabies in dogs. Italy, anthrax in pigeons.

1815-17. A fatal fever in Naples and Venice. Women were the first and most frequent victims; children also suffered in a similar proportion; old persons were more exempt. The disease was preceded by famine; other diseases prevailed at the same time. Pestilential disease was developed in the island of Corfu, destroying one-fourth of the inhabitants in a few days.

1815-19. Pali plague or Mahamurree in Guzerat, Kattywar, and Cutch; it spread to Scinde, and there disappeared in the latter year for a period till 1836.

1816. In Bengal the morbid effects of a long train of anomalous weather became evident among the people. Low fevers of a typhoid character, and malignant sore throat—a disease previously unknown there—occurred in Bengal. In Ceylon, cattle-plague. In Nassau, anthrax in cattle. In France and Germany, 'rot' in sheep.

1817. The commencement of a pestilential period all over the habitable globe, which continued for a series of years. Yellow pestilence at Savannah, and in several cities of the United States. Pestilential cholera at Jessore, Bengal, where it 'broke out in the month of August;' in November it attacked virulently the troops near the river Sind in Bundelcund. The outbreak of the pestilence preceded by influenza or small-pox epidemic in London. In India, pestilence prevailed in animals as well as man. In Germany, anthrax was epizoötic in horses, and pigs were affected with disease. In Wurtemberg, cattle suffered from 'tail disease.' In Germany and France, foot and mouth disease affected cattle. In Italy, anthrax in horses. In England, influenza was epizoötic in domestic animals, and in Scotland 'rot' prevailed in sheep.

1817-18. Cholera in Central India; also in Lower Bengal. It extended to Madras and Bombay, and all over India, and to many of the neighbouring countries. Yellow pestilence raged at the same time in many of the United States, in various parts of South America, in Guiana, the West Indian Islands, and in Bermuda.

1818. Cholera and fever prevailed together at Ganjam; at Maligaum, cholera and remittent fever. In France, distemper in dogs. Germany, anthrax in large game.

1819. A kind of red mould (signacula?) coloured vegetable and animal substances in the province of Padua. A general spread of epidemic pestilence all over the world, 'each portion having been visited by the forms of disease peculiar to its several climates.' Great scarcity in Allahabad district, owing to irregularities of season. Penang, Sumatra, Singapore, Bourbon, etc., infected by pestilential cholera. In England, influenza in horses, Cashmere, epizoöty in goats. Germany, rabies in foxes.

1820. In autumn. Asiatic cholera in Wen-chow and Ning-po. Tonquin, the Philippines, etc., infected by cholera.

1820. In England, rabies epizoötic in dogs.

1820-22. Famine in Upper Sinde, caused by unseasonable weather. In Siberia, cattle-plague. In Europe generally, influenza in horses. In France and Germany 'rot' in sheep.

1820-25. Switzerland, Baden, rabies in foxes.

1821. Pestilence and cholera continued in Wen-chow and Ning-po.

1821. Miliary fever in England and in Germany. This disease had occurred on the continent of Europe at intervals since 1652. Xeres infected with yellow pestilence; also Cadiz, at which place eleven epidemics of this disease had occurred since 1800. The air, from its stagnant state, 'became so vitiated that its noxious qualities affected even dumb animals.' In America periodic fevers, bilious fevers, and dysenteries prevailed in the swampy districts; in August yellow fever appeared in several cities of the United States, and persisted for a year Cholera extended in the Indian Archipelago; very fatal in Java. It attacked Persia and Arabia. In Siberia, distemper in dogs. Germany, epizoöty in cats. Thuringia, Jena, rabies in foxes. In France and Bavaria, a swine-plague epizoötic.

1822. At New Orleans, yellow fever prevailed as a pestilence; an epizoötic disease at the same time affected the dogs. In Germany and France, epidemic disease in man, anthrax in domestic animals, pleuro-pneumonia in cattle. In Holland, rabies in dogs. In England, an epizoötic disease in pheasants. Scurvy in Millbank Penitentiary.

1822-24. Cholera revisited Tonquin; appeared in Peking; also Central and Northern China also Chinese Tartary.

1822-24. Cholera extended westward through Persia, Syria, and to Russia. Other diseases were rife also in various parts of the world.

1823. Mahamurree or Indian plague again mentioned. An outbreak of the disease occurred this year at Kedarnath. In Lapland, murrain among cattle and other animals, including wolves. Yellow fever in Lisbon, the Island of Ascension, at Sierra Leone, and other places on the West Coast of Africa. Cholera along the shores of the Caspian and Mediterranean Seas. In the Island of Mauritius, pestilence affected men and horses. In Ireland, human beings and horses suffered from prevailing disease. In England, horses were affected with epizoötic influenza. In France and Germany, 'rot' prevailed in sheep. In Norway, Denmark, Russia, and England, rabies in dogs; in the three first-named countries, rabies also affected wolves, foxes, and cats. In Lapland 'rabies' or anthrax was epizoötic in deer. In England and Helsingland, an epizoöty affected fish.

1824. India, pestilence in man and dogs. Italy, France, Germany, Russia, in cattle, foot and mouth disease, and cattle-plague; 'rot' in sheep. Sweden, Russia Norway, England, and Ireland, rabies in dogs. Sweden, rabies in cats; Dresden, exanthematous fever. Sweden, 'rabies or anthrax' in reindeer. Sweden, Russia, Norway, rabies in foxes and wolves.

1824-25. Yellow fever persisted in Lisbon, in the Brazils, and many places on the coast of South America. Wild as well as domestic animals there perished of disease. Small-pox very fatal in Hamburg. Pestilence very fatal in Cairo. In India, famine in the district of Delhi, and in Madras Presidency.

1825. In South America, pestilence (yellow fever), in man and animals. Russia, anthrax in horses; Europe, influenza. Italy, Russia, Germany, cattle-plague. Russia, epizoöty in fish. Small-pox epidemic in London.

1825-6. Famine in North-Western Provinces of India, caused by failure of the rains and by blight.

1826. In Europe, pestilence in man and animals (influenza, anthrax). Russia, Switzerland, France, anthrax and pleuro-pneumonia in cattle. Germany, rabies in foxes. The Groningen intermittent; also influenza in Germany and Holland. Epidemic typhus all over Ireland; also 'well-marked cases of yellow fever' there. Cholera in different places in India.

1827. Yellow fever in the United States; remittent fever, in its severity almost amounting to pestilence, in England. Cholera in Chinese Tartary, India, Aracan, etc. In England, glanders in horses; France, ophthalmia. Italy, Austria, Germany, in cattle, foot and mouth disease; France, pleuro-pneumonia; Russia and Danubian Principalities, cattle-plague. Germany, yellow-fever in dogs; Calcutta, an epizoöty in those animals.

1827-28. Drought and famine in Lower Bengal, and near the Jumna.

1828. An epidemic yellow fever resembling plague at Gibraltar, and at the same time an epizoöty in animals there; influenza in England; 'trousse galant' in France. 'Dandy fever' in West Indies, in Paris, and various parts of France. The spring in France was wet; the crops failed; cholera extending north-westerly from India. In England and Austria, influenza affected horses; in Belgium, pleuro-pneumonia was epizoötic in cattle; in Scotland, anthrax.

1828-34. In Italy, famine and pestilence; epidemic disease continued to prevail also in various other parts of Europe.

1829. In Nassau, abortion and difficult parturition were epizoötic in domestic animals. In Moldavia, Bessarabia, and Hungary, cattle-plague prevailed. In Saxony, rabies prevailed among dogs. In France, an epizoöty in ducks. In various parts of Europe and in Egypt, 'rot' affected sheep. An epidemic pestilence at Orenburg in August. The atmosphere there suddenly filled with masses of 'small green flies, which in Asia are looked upon as the forerunners of pestilence, and therefore called plague flies.' Cholera in Persia. At Berhampore, in Lower Bengal, that disease was epidemic; an epizoöty at the same time prevailed among dogs at that place.

1830. In Europe, pestilence in man and animals (variola). South America, epizoöty in horses.

1830-31. In Europe generally, an epizoöty in poultry. In England, 'rot' in sheep.

1830-32. A blight of the potato and other crops in Ireland, in various parts of Germany, and in America. Cholera on the borders of the Black Sea, in Russia, and in Persia; it also extended in various directions, in one, reaching Vienna, in another, England.

1831. Cholera deadly at Bagdad. That disease was introduced by the Russian army into Poland. In August it appeared in Egypt; very fatally in Alexandria. At Paris the epidemic broke out in May. 'An extraordinary malady,' namely, gangrene of the spleen, prevailed as an epidemic at a village called Mandroros (?) in Russia. An epidemic of whooping-cough in England. Asiatic cholera first reached England and Scotland. In England the presence of grey fogs during summer was noticed. In Europe, together with pestilence in man, epizoötic influenza affected horses and other animals. In Russia, domestic animals suffered from ergotism. In Warsaw, cholera was considered to affect animals. In Prussia, influenza was epizoötic. In France, pleuro-pneumonia affected cattle. In Germany and Poland, cattle-plague. In Bohemia, an epizoöty in cats. In Europe and in Ceylon, among wild animals.

1831-32. Cholera in Scotland; great mortality among birds. In the Baltic an epizoöty in fish. At this time great scarcity in the crops in the Southern Mahratta country in India.

1831-33. Influenza epidemic in England. It had raged previously in Russia and Southern Germany.

1832. In Europe, pestilence affected man and animals. In Holland, glanders was epizoötic in horses. In Germany, 'rot' in sheep, and ergotism in pigs. In

Saxony, rabies epizoötic in dogs. At Aleppo, an epizoöty prevailed among cats In France, an epizoöty raged among poultry. Cholera reached Ireland, the Channel Islands, Canada, and the United States. In New Orleans that disease and yellow fever raged at the same time.

1832-34. Famine in the North Western Provinces of the Bengal Presidency ; and in Bundelkhund ; caused by drought.

1833. Famine in the Madras Presidency. In India an epizoöty in horses. In Europe with epidemic disease in man, influenza was epizoötic in horses. In Hesse, fragilitas ossium in cattle. In Antwerp, mollities ossium in those animals. In Bohemia, an epizoöty affected hares. In Jamaica, cattle were affected. In Barbadoes, rabies prevailed in dogs. In Australia, an epizoöty affected sheep. Cholera again in Paris, in Calais, and other places in France ; also in the United States of America.

1833-34. Cholera throughout Spain, and many places on the shores of the Mediterranean. It reappeared in London and in North America. In India it continued to prevail.

1833-35. Famine in the Madras Presidency ; locusts destroyed vegetation. Famine also in parts of Bombay Presidency.

1833-38. Plague raged with great violence in Constantinople, Cairo, Alexandria, and Smyrna.

1834. In autumn. Pestilence in Ning-po.

1834. An outbreak of Mahamurree in Kumaon. Cholera rife at Gibraltar. Pestilence or plague at Alexandria, and upwards along the course of the Nile ; also at Malta. In Europe generally, anthrax, foot and mouth disease, and cattle-plague affected cattle ; in Russia, an epizoöty affected cattle. In Saxony, they suffered from 'cow-pox,' at the same time that rabies and distemper affected dogs there. In Berlin an epizoöty affected poultry. In France it affected pigs. In England, influenza prevailed in horses ; an epizoöty at the same time in wild deer. In Ireland, 'rot' similarly affected sheep.

1834-39. Yellow fever in various parts of the United States.

1835. In spring and autumn. Pestilence in Ning-po, with dearth.

1835. In Germany and France, an epizoöty prevailed in poultry ; in Prussia, it affected pigs and deer ; Switzerland, foxes. In Luxemburg, 'bilious fever' prevailed in dogs. In Naples, horses were affected by an epizoöty. In the west of Ireland the fish suffered. In Chili, rabies prevailed in dogs.

1835-36. Cholera at Leghorn and Odessa. Epidemics were prevalent in various parts of the globe. In Europe, North and South America, and West Indian Islands, an apoplectic pernicious fever prevailed. Epidemic influenza at Sydney and the Cape of Good Hope.

1836. Mahamurree recurred in Kumaon ; also at Pali in Marwar, whence that disease was then called Pali plague. In Europe, pestilence (influenza) in man and horses. In Mecklenburg, glanders in horses. Germany, Belgium, etc., in cattle anthrax, pleuro-pneumonia, cattle-plague. India, an epizoöty in cattle. Germany, variola, anthrax in sheep ; in England, epizoöty in them. Ireland, swine-plague. Paris, rabies in dogs. India, in rats.

1837. Epidemic influenza prevailed in Europe ; the twentieth epidemic of that disease since 1510. Pali plague in Meywar. Cholera at Rome, Malta, Zanzibar, etc. In England, France, Germany, Switzerland, pestilence in man, horses, cattle (influenza). South Africa, horse-sickness. Holland and Lithuania, in cattle, pleuro-pneumonia ; Turkey, Austria, etc., cattle-plague, anthrax, etc. France, Switzerland, epizoöty in pigs. Germany and Austria, rabies in dogs. Rome, epizoöty in poultry ; Wurtemberg, foxes ; France, wild ducks.

1837-38. In the North Western Provinces of India, famine prevailed, from failure of the seasonal rains.

1838. In South America, pestilence affected animals, wild as well as domesticated. In Germany, animals were similarly affected. In England and Ireland, an epizoöty affected pigs; in England, influenza also prevailed in sheep. Yellow fever at Ascension, first appearing in a dirty locality. The epidemic extended to the crews of some vessels there.

1839. A violent epidemic, 'characterized by typhoid symptoms,' suddenly broke out at Mount St. Bernard. Epidemic erysipelas at Algiers. 'Sudor miliaris' in the district of Coulommiers in France. Petechial fever in St. Petersburg. Measles epidemic. Yellow fever very destructive at Galveston, Texas. In France, epizoötic abortion prevailed in the equine genus. In Europe generally, influenza in horses, foot and mouth disease in cattle; in Poland, Germany, etc., anthrax in bovine animals.

1839-44. In Europe, pestilence (foot and mouth disease) in animals. Lithuania, variola in sheep; in Scotland, louping-ill. Ireland, epizoöty in rooks. In India, epizoöty in the wild bison of the Himalayas and Nilghiri hills.

1840. Many deaths in Turkey. Blight among the crops in Germany, especially the potato. A similar disease appeared in the Island of Arran, and other parts of the Highlands of Scotland. Cholera reached China from Calcutta. In England, Scotland, Ireland, influenza in horses. France, anthrax. Lithuania, France and Switzerland, pleuro-pneumonia in cattle. Hesse and Ireland, epizoöty in pigs. England, epizoöty in poultry.

1841. In Vienna, Germany, and France, rabies in dogs. In New Grenada, variola in monkeys. Small-pox epidemic in London.

1841-42. Plague very violent in Syria and at Erzeroum. Epidemic religious ecstasy in Sweden. It chiefly affected women. Yellow fever at West Florida. Severe remittent fever in many ships on the West Coast of Africa.

1841-44. Algeria, India, glanders in horses. Germany, France, influenza. Great Britain and Ireland, the Continent, in cattle, pleuro-pneumonia. Egypt, Russia, Bessarabia, cattle-plague. Bohemia, variola in sheep. Germany, variola in pigs.

1842-43. Cholera in many parts of Persia. Cholera continued to extend in various directions from India.

1843. Blight on the potato-crop in the United States and in Canada. Epidemic erysipelas in some parts of the United States; also 'typhoid fever' at Erie; yellow fever in Mississippi.

1844. Yellow fever at Goree in Senegal. Small-pox epidemic in London. Cholera in India, Persia, etc.

1845. Blight among the potatoes spread through Germany, Holland, France, England and Ireland; its appearance always preceded by a mist or fog. Fever appeared in H.M.S. *Eclair*, on the West Coast of Africa. Cholera on the banks of the Indus, in Affghanistan, and generally over Central and Northern Asia, including Persia, Arabia, etc.

1846-47. Cholera of extremely virulent type suddenly appeared at Kurrachee in Scinde; the outbreak preceded and accompanied by a small lurid cloud. This was at the commencement of the hot season. The Mormons while proceeding from Nauvoo to Utah were attacked with yellow fever; also with a kind of scorbutic disease called 'black canker.' Pestilence in North America. Cholera in Teheran. Epidemic remittent fever in Scotland; that type supplanting exanthematous typhus. A similar fever prevailed in Glasgow in 1740, 1745, 1764-65; and in Dublin in 1816. Cholera extended through Persia to Russia; to the Caucasus and Transcaucasus. An epizoöty or murrain destroyed many oxen in Europe; dogs, horses and sheep suffered comparatively less severely. A kind of pleuro-pneumonia affected both man and beasts in various parts of Scotland. Influenza in Portugal, Spain, Newfoundland and New Zealand; France, Hong Kong and West Coast of Africa. Virulent small-pox in Java; typhus in Ireland, and at Prague. Yellow fever at New Orleans. Epidemic pestilence rife and fatal in various

parts of the world. Cholera in Russia. In Ireland, failure of the potato-crop, and famine in consequence ; pestilence prevailing in that country.

1847. Small-pox appeared among sheep in England.

1848. Cholera made its appearance in Egypt in the month of June.

1848-49. Cholera in India, Egypt, Russia, Canada, and United States of America. Cholera revisited England. Large quantities of dead fish were cast upon the shores. Small-pox epidemic in London.

1849. Cholera in Europe. Mahamurree in Ghurwal.

1850. Cholera in Egypt appeared in July.

1849-52. Mahamurree epidemic continued to prevail in Ghurwal.

1851-52. Small-pox epidemic in London. Cholera in India, African side of the Mediterranean, West Indies, America, etc.

1852. Small-pox epidemic in England.

1853. Cholera in West Indies, United States, Russia, Denmark, etc.

1853-4. Great scarcity in Bellary district, from deficient rains.

1855. Small-pox in London. Cholera over Europe, in West Indies, and a considerable part of America. In Egypt, cholera appeared in June. In America, a great plague of locusts at Utah.

1855-56. Small-pox epidemic in London.

1856-59. Cholera epidemic in Persia, India, Arabia, Eastern Africa, etc. Diphtheria occurred severely in England ; by some looked upon as a new disease, by others as a recurrence of 'malignant sore throat.'

1859. Cholera recurred in various places in England and Scotland ; also at Mecca, and in India. Small-pox epidemic in London.

1859-60. Mahamurree epidemic in Kumaon. On this and former occasions the outbreak of the epidemic was preceded by great mortality among rats, jackals, snakes, and other animals.

1860. Small-pox epidemic in London.

1860-1. Great drought in the district situated between the rivers Jumna and Sutlej.

1861-2. Scarcity of food in Bombay Presidency from deficient and unseasonable rains.

1862. A great many sheep died from small-pox in England. Severe cholera epidemic at Peking.

1863. Small-pox epidemic in England.

1863-64. Cholera prevailing severely over India.

1864. In eighth and ninth moon. Pestilence in Ning-po.

According to the Reporter the epidemics in China named above were generally sequels of droughts, floods, famines, or civil wars.—(XXII. 24.)

1865. Cholera raged in Smyrna, Constantinople, and Marseilles. At Mecca the disease took the form of typhus and cholera. It chiefly affected the pilgrims. Cattle-plague in England ; at the same time large quantities of dead fish were thrown upon the shore. A universal blight seemed to attach itself to organic life. Oxen, horses, sheep, pigs, poultry affected with disease ; the potato disease worse than it had been since 1847 ; the vine-crop also diseased. Signacula in houses, on linen, stairs, walls, etc. In Cairo cholera raged, having broken out in June. When at its height the sky was leaden-coloured, the atmosphere oppressive, the city as if enveloped in thick mist ; sparrows deserted the town, and did not return until the epidemic was on the decline.

1866. Severe famine in the Lower Provinces of Bengal ; in Behar and Orissa ; less severe in Madras Presidency. A new and hitherto incurable disease, named 'Black Death' on account of blotches on the skin, appeared in Dublin. Cholera epidemic in Russia, Central Asia, Europe, and America.

1866-67. Small-pox epidemic in London.

1868. Small-pox in the Madras Presidency. In America, a plague of locusts in the Red River Settlements.

1869. Cholera in Malabar; the coast strewn with myriads of dead fish. Small-pox in Northern India.

1869-70. Famine around Delhi and Meerut, and in other parts of North-Western India, caused by failure of the rains in 1868.

1870. Cholera continued to prevail in Central Asia, and in Continental Europe.

1870-71. Small-pox prevailed severely in London, in England, and in Paris. The epidemic of this period 'had a world-wide character, and exceptionally severe form.'

1871-2. Small-pox epidemic in London, Amsterdam, etc. Severe famine in Persia.

1872. Cholera at Lucknow, in man and horses.

1873. Many deaths in Turkey. Cholera began to decline in Europe. In America it continued to prevail.

1874. Great famine in Bengal, caused by irregularity of seasons and rains. In the United States of America, the Western plains ravaged by locusts.

1874-5. Severe famine in Asia Minor.

1874-7. In various parts of the United States, the Colorado beetle caused great devastation of crops.

1875. At Delhi, cholera in man; great mortality in cats from a similar disease.

1876. Great mortality in Bagdad. Small-pox epidemic in England.

1876-77. Scarlet fever raged in Astracan. Fever, measles, and small-pox had persisted there during four preceding years. Plague at Resht, near the southern shore of the Caspian Sea.

1877. Very severe famine in Madras Presidency. Cholera in several districts. The seasons during the three preceding years irregular. Famine and drought also in Egypt, Morocco, Brazil and China. In the valley of the Salween river in Yunnan, where plague prevailed in 1877, 'many varieties of malarious exhalations prevailed after sunrise; fogs, red, yellow, and blue, of which the red is the most deadly, the blue next in the scale of mortality.'

1877-78. Appalling famine in Northern China; 9,000,000 persons destitute; parents selling or destroying their children; others committing suicide by swallowing arsenic. The cause, failure and irregularity of the summer monsoons. In one district the famine began by a visitation of locusts. Great mortality by dysentery, typhus, and famine fever.

1877-78. Small-pox epidemic in London.

1878. Plague recurred as an epidemic in Astracan. In Natal, 'horse sickness' or Loodiana fever among horses; mules and wild deer there died of the same disease; epizoötic diarrhœa also among horses there; pleuro-pneumonia among cattle. In Spain, locusts appeared at Badajos. In Algeria a plague of these insects occurred; also in Bosnia. In several parts of the Madras Presidency they occurred in vast numbers, and did great damage, increasing the then prevailing famine. Severe famine in Morocco, and in Cashmere.

1878-79. A plague of rats in Western and Southern India.

1879. Famine prevailed in the north of China.

1879. Plague continued epidemic in Astracan.

1881. Small-pox epidemic in England.

1882-83. An epizoötic disease, like cholera, among cats in the Bombay Presidency.

1883. Cholera in Egypt, the epidemic having broken out in June. When at its height in Cairo, on 23rd July, a yellowness of the air, something like a fog, was observable; there was an absence of wind; birds took flight. The Arabs give to cholera the name of 'Yellow air.'

In his Report for the year ending September, 1882, Dr. Macgowan refers to information respecting epidemics in the interior of China supplied by native correspondents of Chinese newspapers. He writes: 'These Chinese medical natives take cognizance of meteorological and telluric influences as causes of disease, and of such causes the exceptionally abnormal

character of the weather during the summer of 1881 and the following autumn and winter furnished apt examples. The abnormalities consisted of a series of typhoons, of which there were a score in the province of Kiangsi, some of them extending late into autumn. Then followed an 'open winter,' which was coincident with a like condition of weather prevailing over the northern portion of the Europeo-Asiatic continent. In Northern China rivers and harbours were blocked by ice later, and the thaw occurred earlier than usual. Barometric readings in China are always high during winter. Only statistical information can determine what effect these atmospheric conditions had on the public health; and in the absence of vital statistics Dr. Macgowan makes use of 'folk-lore' on the subject thus: 'The Chinese divide the year into four seasons, having regard to four types of disease, each of which corresponds to a particular seasonal period. For example, in spring infectious and contagious maladies prevail, such as typhus and small-pox; in summer, spasmodic cholera; in autumn, diarrhœa and ague; and in winter, non-malignant fever.'—(XXIV. 18.)

Nanking.

At Nanking, the ancient capital, situated on the right bank of the Yangtze river, showers on 20th September, 1881, brought down the temperature. It soon rose again, however, and this change was followed by a virulent form of cholera, from which children suffered most.

In the autumn there was a remarkable mortality among field-rats at Nanking. The animals emerged from holes in dwellings, jumped up, turned round, and fell dead. Here was evidently a subsoil poison which affected the animals precisely in the same way as the malaria of the Yunnan pest, which extended to higher animals and to man. [In reference to the Indian plague, or *Mahamurree*, which raged in Kumaon and Ghurwal at intervals from 1823 to 1877, Surgeon-General Francis observed that 'one very singular circumstance is the almost invariable death of rats of the village, which occurs on the eve of the outbreak of Mahamurree. The animal would emerge from its hole in the floor, stagger, perform an involuntary gyration or two, bring up blood, and die.' He alludes to the same occurrence in connection with plague in Yunnan. —'Transact. of Epidem. Society of London,' vol. iv., p. 401.] The miasm at Nanking did not affect animals that live above ground, nor did subterranean animals communicate the disease in any way.—(XXIV. 19.)

In reference to the above list the circumstance is noticeable, that, in Chinese records, the term 'pestilence' is applied to whatever epidemic disease prevailed at particular dates specified, whereas in Western countries a distinction between the nature of outbreaks of this kind was made at a very early date. Following down the record to recent times, the further circumstance becomes evident that epidemics, differing in form from each other, have prevailed together in the same country, as also in different countries; that epidemics, previously unknown, have suddenly appeared, and after prevailing for a period of variable length, have ceased—some to reappear after a very long period of 'quiescence.' Some pestilences, after having had a local existence for many years, have suddenly spread over extensive tracts, some, as cholera and small-pox, over a great part of the globe. It is also rendered apparent that, contemporaneous, and to all appearance connected with epidemics in man, certain diseases and other affections have come over plant and animal life in regions infected. Moreover, that certain 'natural phenomena' have taken place. Whether any or all of these phenomena ought to be looked upon as *precursors*, *portents*, or mere *coincidences* with these outbreaks, the frequency, nay, almost constancy, of their occurrence demands attention. If, on the one hand, it is asserted that the older writers attached too great importance to them, on the other, do modern observers accord to them that amount of importance which is their due?

On the general subject of epidemics the following remarks, quoted from Hecker, p. 58, are apropos to the subject now in hand, viz.: 'In the fourteenth century Galeazzo di Santa Sofia, of Padua, distinguished carefully *pestilence* from *epidemy* and *endemy*. The common notion of the two first accords exactly with that of an "epidemic constitution," for both consist, according to him, in an unknown change or corruption of the air: with this difference, that *pestilence* calls forth diseases of different kinds; *epidemy*, on the contrary, always the same disease. *Pestilence* and *epidemy* consist not in alterations of the four primary qualities (warmth, cold, dryness, or moisture), but in corruption of the air, powerful, though quite immaterial, and not cognizable by the senses, in a disproportion of the imponderables in the atmosphere.' Hecker adds, p. 216: 'The infecting matter of infectious diseases that are permanent or unchangeable when once formed, whether in diseased persons or inanimate substances (fomites), are always in existence, and are but called into activity by those causes of general disease (epidemic constitution) which are favourable to their propagation; at all times and under all circumstances they excite the same unchangeable diseases. Infectious diseases which are not always in existence are called forth from nonentity by the causes of general diseases or epidemic constitutions, and they disappear again. Examples of the former are furnished in small-pox, plague, measles, etc.; of the latter in yellow fever, catarrh or influenza, nervous and putrid fever, etc.'

In reference also to the nature of information contained in the chronological record of epidemics now given, it is to be observed that in the periodicity of the return of some of those noted, and in the reappearance of others at an interval, it may be of great length, after their supposed extinction, the questions naturally present themselves, do these outbreaks really depend upon conditions of only a local nature, or affecting only particular individuals or communities? Because, after a certain time of prevalence, a particular epidemic ceases in a particular locality, is that cessation brought about by particular measures applied with the professed object of 'stamping out' the disease, or does it depend upon what experience points to as 'a law' of the epidemic, namely, that each has its time of occurrence, increase, decay, and quiescence, precisely as happens with other phenomena called 'natural'? It is considered that in order, as far as it is possible, to arrive at a due estimate of the several phases of epidemics thus indicated, an examination of their occurrence as a whole is more likely to conduce to this end than is an inquiry having reference only to one such outbreak at a time. In the hope that this view is correct, and in view to the subject as thus presented being followed up by future reports, the particulars now given may perhaps serve as a foundation whereon to build a record which shall prove of great value when the next epitome of the Chinese Customs Medical Reports comes to be written.

Among the propositions contained in the work on 'Epidemic Diseases,' by Dr. A. H. Howe, the following appear suitable to the subject of the present article. According to that writer, 'Epidemic visitations recur at regular intervals of time, of which eighteen and a half years may be taken as the type. This interval is liable to variation, both on the one side and on the other, but a period varying from seventeen to twenty years will embrace all possible variations' (p. 2). In illustration and confirmation of that proposition, it is stated that, according to Mr. Jackson, plague visits Morocco every twenty years. Dr. Copland remarks that 'the epidemic influence causing the plague is developed generally after lengthened periods of ten, fifteen, and twenty years. The plague is looked upon as appearing in Egypt at intervals of seven years; at Aleppo every ten years. According to Sydenham, plague visited England every forty years. Humboldt observed that yellow fever, which is almost endemic upon the continent of America, becomes epidemic at certain determined epochs. In the north of Persia, epidemic small-pox appears only at intervals of from six to ten years; in Iceland, every twenty years. At Cadiz the plague has

only reigned four times epidemically, namely, in the years 1507, 1582, 1640, and 1681. At Seville it occurs at centenary periods. According to a chronological record given in the same work, from the year B.C. 512 until A.D. 1849, an epidemic pestilence has visited the world at regular intervals, varying from seventeen to twenty years. Dr. Wight wrote, under date 1682, that, 'one time with another, a plague has happened in London once in twenty years;' also, that up to that date, 'the plagues of London kill one-fifth part of the inhabitants.' Another subject closely connected with the periodicity of epidemic constitution is, the uniform increase of seizures and deaths. We see in the first week (of an epidemic of plague) a small number seized; next week a greater; it so continues to increase, acquiring a maximum of extent and fatality, and then decreases nearly in the same ratio in which the increase had taken place. Another proposition is, that 'The simultaneous appearance of epidemic disease in several parts of the earth's surface, its continuous and progressive march in a somewhat straightforward direction, show that it owes its origin to cosmical, and not to local causes.' Another, that 'The simultaneous appearance of epidemic and epizoötic diseases, referred to by authors on the subject of epidemic diseases, also proves the existence of some great cosmical cause, as distinguished from the more ordinary sources of disease—namely, contagion, malaria, the influence of heat and cold, and all such causes of disease.' Also, that 'Each country has its own peculiar, typical, and invariable epidemics.'

'Cholera always follows the great lines of human intercourse. It usually breaks through all obstacles to its progress, whether natural or artificial, such as mountains, seas, rivers, cordons, quarantines, lazarettos, and all such impediments. In short, epidemics travel from a south-east to a north-west point of the compass. [This, no doubt, applies very generally; but the rule has some very notable exceptions.] Epidemics also admit of classification among themselves. Thus, in England, there are the *exotic*, comprising such diseases as plague and cholera; the *indigenous*, such as ague and scurvy; and the *naturalized*, such as small-pox and scarlet fever.'—(Guy on 'Public Health,' p. 37.) And a similar division is applicable in the case of other countries.

The further remarks on the subject of pestilences by Dr. Bascome (p. 184 *et seq.*) are no less important. 'We see disease assail and carry off mankind at all times, and in all regions; murrain is destructive of dumb animals, blight spares not the vegetable kingdom; in fine, all nature is subjected, in various degrees, to the devastating tendency of the elements in their general evolutions in the mundane economy, based on immutable laws. The records of antiquity show that all kinds of pestilence, including febrile diseases, have been known under various appellations from the earliest ages of the world; the same character of diseases, arising from like causes, occurring during similar seasons, happening in similar localities, and marked pretty generally by the same circumstances. The comparatively modern origin of some diseases may be said to rest on the absence or deficiency of distinct and express notice of them in the writings of the ancients, arising in some measure from false or imperfect translations from the original, and from the practice of the ancients in referring different malignant maladies to the same pestilential constitution. With reference to modern nomenclature, we now hear pestilence called "plague" in Egypt, "yellow fever" in America and elsewhere, "bilious remittent" and "intermittent" and also "yellow fever" in the West Indies, and "typhus" or "nervous fever" (at the present time "typhoid"?) in Great Britain. The phenomena of epidemic pestilences or diseases are various and dissimilar, observing no regular course of succession, but commencing and ceasing at periods influenced by certain changes of the seasons, and modified by various circumstances, especially such as locality and habit of the body. During certain periods or seasons, *elemental disturbance* has enveloped, as it were, the entire globe, carrying death and misery into every quarter; epidemic pestilences or diseases are consequently assignable to natural causes, without searching for or hunting after mysterious agencies,

to the neglect of those which nature is constantly presenting to our view. Every practitioner is familiar with certain conditions which are favourable to the production of certain disorders, such as common catarrh or cold, and its more aggravated form termed influenza, whooping-cough, bowel affections, gastric fevers, etc. But when attributing epidemic pestilences or diseases to natural causes, it must not be supposed or inferred that any one of such causes as heat, cold, moisture, drought, etc., will alone be sufficient to induce disease; to effect that there must be a combination of these causes in continuance and succession, in occasion and variation, as also in circumstance and virulence. A proper and sufficient distinction has never been made between the predisposing and the exciting causes of disease; for example: if marsh and other effluvia are to be considered as exciting causes, instead of predisposing to disease, we should scarcely ever find those places free from pestilence where these matters are supposed to be engendered; whereas we see various localities in South America—in British Guiana, for instance, and even in Ethiopia—which have been condemned as the hot-bed and nursery of pestilence, where putrefaction is supposed to concoct and concentrate its most lethal poisons, still enjoy their seasons of salubrity. The predisposing causes, which are in a great degree under control, are always in existence or operation to a greater or less extent, while the exciting causes may be said to be of only occasional occurrence. We see the vegetable kingdom assailed by disease termed *blight*—"pestiferous blight," as it has been called by some; these blights are but pestilences affecting the vegetable kingdom, and have ever been attributed to natural causes, elemental disturbance, etc. At the periods which have been remarkable for blight, animals, such as horned cattle, have been known to suffer sooner or later, and man also. May we not conclude that the state or condition of the elements which induces blight pestilence in the vegetable, will also act injuriously on the animal kingdom, more especially on the human race, men being, from habit of body, etc., more prone to or susceptible of disease?'

It may be profitable to formulate briefly the deductions to be drawn from a careful perusal of the list of epidemics above given, and from the remarks quoted, observing at the same time that those deductions can only be considered as tentative, and to be confirmed, or opposed as the case may be, by the fuller enumeration of pestilences which it is hoped may find a place in a succeeding volume of the present nature. The following are the chief points which present themselves:

The order of succession of terrestrial physical phenomena, of famines and pestilences, is so marked as in many instances to indicate a relation or dependence of the latter on either or both of the former. In other instances the occurrence of pestilences presents no such relation.

The extent of territory over which a particular epidemic spreads differs in nearly every instance. While one may be limited to a particular city or other locality, a second may involve a country, kingdom, or even a great part of the world. The ultimate conditions which determine this difference have to be ascertained. The expression 'pestilence' was applied in ancient times, and even down to a comparatively recent date, to indicate epidemic sickness of different kinds. It was also alike applied to epidemics and to epizoötics. In some instances the precise nature of prevailing sickness of either nature has been gathered from collateral circumstances; in others this has been unattainable.

In some instances, the spread of epidemics has been continuous. In others, different forms of epidemics have contemporaneously prevailed in parts of the world far separated from each other, and between which communication at or about these times was physically impossible. Instances are related in which epidemic diseases of different kinds have simultaneously prevailed in the same locality. The circumstance of epidemic disease being spread by means of human contact

was noticed in very early times. Particular conditions affecting the atmosphere are so frequently recorded in connection with the occurrence and prevalence of epidemics, as to point to the strong presumption that, to a considerable extent at least, a relation approaching that of cause to effect exists between them.

Particular classes of the community have in several instances suffered more than others from epidemic diseases. The connection between conditions of war and outbreaks of such diseases, as also the liability of soldiers when massed together to become themselves affected and to be the means of propagating them, is rendered very apparent.

In some instances epidemic disease in man and that prevailing simultaneously in animals is identical in nature. In other instances they differ from each other. Some are intercommunicable, some appear not to be so. In animals as in man, more than one kind of disease may simultaneously prevail in the same locality.

In some instances the occurrence of epizoötic diseases has preceded by only a brief period the outbreak of an epidemic.

Instances are recorded in which from time to time 'a new pestilence' has appeared in a particular locality. At intervals of time, periods of pestilence have occurred; these periods differing greatly among themselves in length of duration. On the other hand, the periods during which the occurrence of epidemics has been unrecorded have always been of short duration; an epidemic being known to prevail now in one locality or country, now in another, the 'local conditions' in all instances, as far as can be deduced from available records, differing in different countries, but in each remaining alike equally during the prevalence and in the absence of an epidemic.

Particular forms of pestilence appear to have their cycles of recurrence, and of their absence. In some instances, during such intervals diseases of different nature have intervened. In an instance stated, a form of disease (plague) reappeared after an absence extending over two centuries and a half.

A particular form of epidemic appears to have left temperate regions of the world, to become limited to tropical.

Another disease, considered to have for a lengthened period been limited to particular localities, has overspread the greater part of the world.

In certain instances of besieged cities, the outbreak of pestilence has been assigned to the emanations arising from 'the corruption' of dead bodies. In such instances the pestilence appears to have been limited to the locality.

The circumstance has on various occasions been noticed that together with the occurrence of pestilence in man there has occurred unusual development of the lower orders of life, both in the animal and in the vegetable world.

Various other phenomena in relation to animal life have been recorded in connection with pestilences in man, the phenomena in question affecting all classes of terrestrial, and several kinds of aquatic animals.

Certain diseases having appeared as epidemics in regions or countries in which they were previously unknown, after prevailing in that form have ceased to retain their epidemic character, and become endemic.

Great variety is observable in the characters of diseases which have from time to time occurred as epidemics. Mental affections, as well as such as are bodily, have assumed this form. Untimely parturition has occurred as an epidemic. Periods of great mortality have been succeeded by periods of great fertility. This applies alike to the human species and to the animal world.

The relation indicated by the record as existing between pestilential diseases in man and animals with deranged conditions in the vegetable kingdom throughout the world, leads to the belief that such phenomena are to be looked upon as perturbations in the life-state of these several kingdoms of inorganic nature, comparable with perturbations in the atmospheric world such as we are accustomed to experience in the character of storms, wind, alteration of conditions as indicated by the thermometer, barometer, electrometer, etc. It is obvious that the mere 'local conditions' are insufficient to account for pestilences, famines, and vegetable blights on the extensive scale on which these severally are in constant existence in particular regions, and return to each according to their cycles.

Inasmuch as 'local conditions'—according to the restricted sense usually given to that expression—are of themselves insufficient to originate specific pestilences, neither does experience show that measures of a mere 'local' nature are capable of 'stamping out' pestilence of that nature, however much individual localities and their occupants may be benefited thereby. Particular epidemics have their periods of occurrence, increase, maturity, decay, and cessation, in these respects conforming to other phenomena in nature. They are, in fact, among the incidental conditions affecting every form of organic life, each in its special manner and degree.

XXXV.—NOTES ON 'THE GREAT FAMINE' IN NORTHERN CHINA, 1877-78. (See *ante*, pp. 10, 53, 58; also article 'EPIDEMICS.')

The history of China contains many records of famines occurring in that empire, but it has been declared by native authorities and scholars that no calamity of the kind, to which the present notes refer, had ever before occurred of such appalling magnitude. Droughts, short of actual famine, have frequently been recorded.

In 1876 a famine was reported to prevail in the neighbourhood of Chefoo and in the Shantung province generally. Similar reports arrived in succession from the provinces of Chihli, Shansi, Shensi, and Honan; it was also stated that throughout these provinces, continued drought during three preceding years had reduced the masses of their inhabitants to a state of misery and destitution even before actual famine began. At first the lower classes of the people were chiefly affected; such of them as were able disappeared, and dispersed in search of employment or subsistence elsewhere; soon, the wealthy and well-to-do were reduced to great straits, many of them succumbing to their privations, others quitting the affected localities. Of the entire region over which it extended, it was estimated that seventy-five millions of persons suffered to a greater or less degree from want of food, and that of this number ten millions were reduced to a state of absolute destitution. The boundaries of the famine-stricken districts were most distinctly marked. In Honan and Shansi more well-to-do families than poor perished by it. The poor felt the pinch very soon; they sold their houses, lands, etc., at a loss, to the rich, and fled while they had time and strength; the wealthy bought up the land, houses, and furniture of the poor, and waited on, hoping that things would improve. In the meantime their supplies became exhausted; and finally, when too ill, or impoverished in regard to money, to move, they died in the midst of their possessions. People starved to death with plenty of excellent furniture. In other places, houses left vacant by former tenants who had migrated, remained deserted, or were pulled down. Throughout the whole of Shansi, and the greater part of Chihli, Honan, and Shensi, the autumn crops had completely failed in 1877. No rain had fallen, and the sky remained cloudless. Refugees to the number of a hundred thousand poured into Tientsin, and were housed in hovels made of mud and millet-stalks, erected for the purpose in the suburbs of

Area of the Famine.

that city. In some parts of the country visited by the famine, migration of any class of the sufferers became impossible; the unfortunate people in such instances were hemmed in by such a belt of famine that it would have taken weeks to penetrate it. It was therefore not to be wondered at that they should have clung to their homes until their last cash almost was spent, hoping on each day for rain that never came; until at last, weakened by hunger and almost penniless, they started from their homes, perhaps with wives and children, for a weary tramp through districts as suffering as their own. The whitened bones on the roadside, which were the remains of a very small proportion of those who died, told too plainly the sequel of their efforts.

Many of the houses were, in these times of famine, and pestilence by which it was accompanied, scenes of sad desolation. The dead and the dying were, to a large extent, their occupants. Little or no vestige of life appeared in their surroundings. Barrenness and want were seen on every side; the air of the neighbourhood had been rendered pestilential, from decomposition of the dead, and filth engendered through helplessness of the living. Millions of people in the affected districts for several years underwent every kind of suffering, both personally and relatively, and this in circumstances which intensified it in a manifold degree. At first there was the hopeless sight of parching drought and blighted crops; then the pinch of want and starvation; then the selling of clothes and furniture for a mere trifle; next, the relinquishment of houses, lands, and implements on the same terms; then parting with their wives and children, or leaving them utterly destitute, while alone or in company they removed to distant places in search of food, many of them never to return. Or in the midst of the whole, one and another of the family were laid prostrate from starvation and disease, and in that state remained helpless and neglected until released by death. Suicide was no uncommon thing. And, as if the natural severities of the famine were not enough, the very worst features of 'man's inhumanity to man' prevailed in many quarters. Children were daily sold in the markets; the price paid for little girls of nine and eleven years old being 900 cash, equal to about 4s. 6d. sterling; in other instances young women were offered for nothing, and even on such terms the difficulty was to get anybody willing to take them. The parched state of the ground, and physical weakness to which the people were reduced, rendered it impossible to sow the spring crop of wheat for 1878, even where the stores of grain were not completely exhausted; that circumstance reduced the people to the last extremity of misery and despair. In several towns and villages the dead and dying lay unheeded in the streets, the dogs feeding upon corpses. Wolves, rendered bold, prowled about in the immediate vicinity of human habitations, feeding upon the dead, and carrying away famished children from the side of parents so weak as to be unable to defend them against, far less pursue, those animals.

Intensity of Conditions.

A famine village could be at once recognised. In it, all signs of industry had stopped; everywhere in it, the silence of stupefied misery reigned. Starved men, craving for assistance which they did not expect; others dead by the roadside, and all exposed to the bitter cold of winter. Women, barely able to support the burthen, were seen carrying their dead children for burial where the dust or snow was thick enough to conceal them. Magpies, crows, hawks, and dogs feasting undisturbed on corpses which no one cared to bury. Gangs of desperadoes rendered it dangerous for a traveller to approach the place, or having entered, to leave it. The few trees left standing denuded of bark, they having been stripped so that this might be utilized as food. Children lying about in sheltered corners, conspicuous for their enormously distended stomachs, the result of want of food and the use as such of unwholesome and unsuitable articles; grown-up persons with a complexion almost black, or, in the case of those who had once been in better circumstances, a clearness of skin almost amounting to trans-

Famine Villages.

parency. Houses in ruins, the woodwork and roof having been used as fuel; within their walls, dead and dying sometimes in the same bed; coffins in almost every house—sometimes three or four in every room in which the survivors lived. In the streets, prowling dogs and wolves feeding upon the dead, and even carrying away the youngest and most feeble.

Throughout the area affected, the loss of life by starvation and by disease was enormous, varying in different localities from six-tenths to nine-tenths of the population; the destruction as a whole estimated at nine and a half to thirteen millions. The chief Mandarin of the place, in some instances, purchased a plot of ground in which to bury the dead among the poor, large numbers of whom had flocked to the towns in search of relief. Deep pits were dug, and into them the corpses were cast promiscuously, then covered up with earth. In Honan, it was estimated that six-tenths of the people had died, and that altogether eight to nine tenths of the whole disappeared; in Shansi, seven-tenths of the population were considered to have died, irrespective of those who left that province. At Fên-shi-hsien, which is considered to have suffered most of all during the famine, out of an original number of 120,000 inhabitants, only 30,000 remained when the famine had ceased. In Shansi, the probable loss of population was estimated at 31 per cent. of the whole: namely, by emigration, 1 per cent; temporary removal, 5; deaths by starvation, 19; by disease, 6. In that province, some villages lost all their inhabitants, yet in others close by, owing to a few mows of wet land, there were few deaths. Altogether, 5,000,000 persons disappeared from Shansi. In nine villages of that province, containing a total of 2,540 families, 1,770 persons were reported in the third month of the year (not stated, but is taken to have been 1878) as already dead; thus, reckoning each family, taking rich and poor together, as consisting of 3·60 individuals, this estimate would give 19 per cent. of the whole population as having perished. In another village of the same province—one of the most distressed—three-fourths of its inhabitants are estimated as having died; in it, the three grave-pits received in the course of one week some 200 or 300 corpses. The bodies were swung in without mat, wrapper, or shroud; there they lay, a layer of corpses, and then a layer of earth, until the pit was filled up. In all the cities of southern Shansi a similar plan was adopted. In the district of Lin-fun-hien, the total loss of population was 73 per cent., namely, 67·61 by starvation, 3·49 by disease, 1·90 by emigration. The destruction of property by the famine in the same district was put down at a million of taels at least. At and around Tse-chow, three-fourths of the people were estimated to have died from sheer starvation. Around Tientsin, an estimate of the loss generally sustained was arrived at by observing that one-fourth to one-third of the houses had been pulled down; in one village of about 100 families there were upwards of 40 utterly deserted houses. As a whole, in that part of Chihli, one-third of the population was considered to have succumbed to starvation and disease. In certain portions of that province, 10 per cent. of the people died of starvation, 20 by typhus fever alone, making a total by these two causes of 30. In others the loss was estimated at 20 per cent. of the population during only one year of the famine. In Shantung, the mortality by actual starvation appears to have been relatively small, but from typhus fever very great. It is stated that everywhere, all the professional beggars died; also that as an approximate estimate of all deaths they amounted in Shansi to five millions and a half, in Honan to one million, and in Chihli to two millions and a half; and that the enormous total of nine millions and a half is substantially correct. The very poor had everywhere all gone; those who survived were people who had once been of comparative substance and means. The young and the aged were the first to succumb; women and children, however, seemed at the end of the famine to be in better state than the men. The fact of survival was considered to have been due to the possession of

Loss of Life.

a comparatively strong physique at the commencement. As the numbers in each family decreased there were fewer mouths to feed, so that when the worst of the famine was over, the scanty crops that were gathered enabled them to pull through.

As already mentioned, to famine was added pestilence. Typhus fever and dysentery prevailed to a frightful extent, carrying off thousands of persons who had already passed through the weakening stages of starvation. The air was poisoned, and infection was rife. In the province of Honan famine fever raged during summer. Around Tientsin pestilence in some instances destroyed whole families. In Shantung and Chihli typhus was more fatal than the famine. In Shansi the same form of disease prevailed to a very great extent and degree, in some parts of that province equal to its rate of occurrence in Shantung. In some places, more particularly in and around Tientsin, small-pox and typhus prevailed together, and everywhere the persons engaged in distributing relief were exposed to the liability to attack by the latter, many of them falling victims to it. In some parts of Shansi a pestilence of dysentery beat out typhus as soon as the harvest had been gathered in the spring of 1879, and when, with returning plenty, the stomachs of the people were inflamed by too great indulgence in the unaccustomed food. In the north generally, rich and poor alike suffered from the ravages of disease; whole families in many instances perished; their places rendered a perfect desert; not a soul to be met with; whole tracts of country made desolate. Or robbers spread disorder and destruction far and wide, so that districts were left depopulated and ruined.

Regarding the straits as to food to which the sufferers by famine were put, various details are given. As a general rule, when famine was at its height, the sufferers from it, as long as they were able to do so, were in the habit of gathering grass, weeds, and other herbage they could find in the fields, and of eating these alone, or with such scanty supplies of better food as they were able to get. Others betook themselves to a soft clayey slate, which for a time allayed the pangs of hunger, but had a very injurious effect upon them. Those who had bean-cake, cotton seeds, and grass seeds swept from the roadsides, or bark and dried leaves, were considered fortunate. In Shansi 'stone-cakes' were somewhat extensively made use of as food, and were exposed for sale. The stone of which they chiefly consisted was the same as that of which English soft slate pencils are made. This was pounded to dust and mixed with millet husks, in greater or less proportions according to the poverty of the people, and then baked. It did not look bad, but tasted like what it was—dust. Elsewhere the people made use, as food, of a kind of white earth brought from the mountains, and which has much the appearance of corn-flour. Many of the people, for want of other sustenance, supported themselves upon this 'mountain-meal.' In many places it was impossible to see any trees with the bark upon them; it had all been stripped off to be reduced to powder and so consumed as food. Of another locality it is recorded that the most common food of the people consisted of leaves, mainly willow-leaves, weeds, and elm-bark; that the trees in summer were so stripped of foliage as to look bare as in early spring; the very weeds fast getting used up. Near T'ai-yuen-fu, at the extreme northern limit of the famine in Shansi, the roots of rushes were all eaten up; there were no trees left to bark except the poisonous ones, and hunger made the people often try these. In the same locality every family lived on the seeds of thorn-bushes or wild herbs, which they ground and mixed with a little corn-flour. In the southern part of that province every tree whose bark was not actually bare was stripped bare, and the dead trunks were cut up as firewood; in one district there some fine persimmon (Dyospyros kaki) orchards were left nearly uninjured, from which circumstance it was concluded that the bark of that tree could not be eaten, notwithstanding the excellent quality of its fruit. Elsewhere in that province, the root of the flag-rush (Typha ?), stems of wheat, millet,

Articles Eaten.

maize, etc., and leaves of the willow, peach, plum, apricot, mulberry, and persimmon were eaten; also wild herbs, too numerous to name, oily earth, and many other articles not usually consumed. In some instances it was recorded that by means of small sums of money given by the several agencies of relief, those who were living on straw and reeds ground up with a little mud or chaff, or boiled bark, were able by the addition of more substantial food thus put within their reach to tide over the time pretty well until the autumn harvest was cut. [The Ottomaques, a tribe of American Indians near the Orinoco, eat a species of unctuous clay; and this strange diet, which no doubt owed its introduction to the stern monitor, famine, is probably not extremely rare; for Drs. Spix and Martius noticed a similar practice in Brazil, and Captain Franklin found the same food in use among an Indian tribe near the Frozen Ocean. The clay is stated by this traveller to have a milky, and not disagreeable taste.—See Encyc. Brit., vol. ii., p. 693, 8th ed.]

[Earthy Silica.—(*c.*) *Polishing slate* (*Polischiefer*), white or yellow; slaty texture, opaque, brittle, and floats on water; at Bilin in Bohemia; consists of the siliceous remains of animals or plants (*Diatomaceæ*). (*e.*) *Mountain-meal*, snow-white, pearly, grey, or greenish; has a similar origin. Santa Fiora in Tuscany, Oberohe in Hanover, Kymmenegard in Sweden (where it is used as food), in Bohemia, and the Isle of France.]—(Encyc. Brit., 8th ed., vol. xv., p. 70.)

What is now to follow is very horrible. The details are given very nearly verbatim as recorded in the Report quoted from. In the province of Shansi, under date of March 27th (? 1878, for the actual year is unstated), it is recorded that 'up to the present time the people have contented themselves with eating those who have died, but now they kill the living in order to have them as food. Husbands eat their wives; parents eat their sons and daughters, and children eat their parents. These things we hear of almost every day.' At Ping Yao people 'laid hold of little children, boiled, and ate them.' In Shu-kwo-hien, two men from a village in the neighbourhood were apprehended and punished by the magistrate for eating the dead bodies of some twenty persons whose corpses they had taken out of their coffins, sold their clothes, and cooked and ate their flesh. The village in which human flesh had not been eaten was undoubtedly the exception, but in by far the majority of cases it has been the flesh of those already dead, although instances of men killing and eating their fellow-men are not altogether wanting. Five women were brought to trial by the magistrate, for kidnapping, killing, and eating children in Ping-yang-fu. They were sentenced to be buried alive; and the sentence was carried out. In the more northern parts of Shansi they sold human flesh almost publicly; very often the culprits were condemned to be beaten to death. In a village called Ku-tao a mother killed her own daughter, aged eight years, under the pressure of the famine. It is recorded of eleven villages that in them two-fifths of all the dead were eaten. It is needless to quote further examples.

The circumstances and conditions to which this very severe and protracted famine was considered to have been mainly due were noticed and recorded. In reference to the frequency with which similar visitations are recorded in the history of China, allusion is made to the operation of aërial currents in the production of droughts and famines. The denudation of forests, more especially in Shansi, and consequent desiccation of the soil, are recognised as having their influence; it is also stated that in parts of China reckless destruction of forests is going on, the wood used as fuel, while coal-mines in that country are neglected. Another cause exists in the silting up of many rivers and streams through sheer neglect, thereby arresting the progress of irrigation. But above all there is the defective state of roads and other means of communication with the interior, where the famine prevailed with greatest intensity. As an example of the extent to which the soil was desiccated, it is noted that at Tientsin it was so to a depth of seven feet, below which there was nothing but salt earth, abounding in

Causes of Famine.

nitrate of soda. In Shansi no water communication through the province existed, and there was a distance of 385 li on the main road between it and Chihli over which laden carts could not pass; mules and camels were the only means by which food could be conveyed over that portion of it, thus enhancing the price of food carried in that way. Throughout the provinces affected the rainfall, not only during the famine but for three years preceding, was defective. With regard to the southern portion of Chihli, it is observed that this enormous plain was once famous for its fertility; but since the floods of 1871-75, when it was nearly covered with water owing to the bursting of the Grand Canal and the Peiho, its character has been changed. On that occasion the floods destroyed nearly all the trees which had been left standing, the usual ditches for irrigation were obliterated, the river-courses altered; and when the inundation was succeeded by the rainless years of 1876-77, the plain became parched up and incapable of bearing even a moderate crop. Since the floods, the aspect of the country has undergone a complete transformation. The herbage and crops are now poor and coarse, the farms much less productive than they formerly were; the inhabitants, once well-to-do and contented, are poverty-stricken and improvident. The hares and foxes have greatly diminished in number, and the little ground-squirrels, which once swarmed on the plains as they do in Mongolia, have entirely disappeared. The winter winds playing on the parched surface of the ground, which is annually most carefully denuded of the dried rushes and grass, gather up vast dust-storms, which in the spring cover and kill vegetation; and the ground becomes covered with a white saline exudation fatal to all fertility. At Chu-lu-hsien some streams have disappeared, to develop in other directions; and the large lake named Pei-hu, noted in the Jesuits' maps, no longer exists. In Shansi the causes which promoted the famine still exist. No measure will be taken either to plant the forests on the hills or to prevent the destruction of whatever trees remain. The Yellow River will continue unmanageable and unnavigable; and the Kukoan Pass, unaltered and unmended, will remain the great, if not the only, commercial route by which supplies can be conveyed from Chihli and the Treaty Port, Tientsin. The existence of a drought in Chihli can be shorn of its bad effects, could a little energy be developed among the officials. A few canals, and the necessary floodgates, weirs, and pumping-machinery, would place the inhabitants of the south of Chihli beyond the reach of the misery they have endured since 1871. In the district of Wu-chih, disastrous floods by the bursting of the embankments of the river Ch'in, a tributary of the Yellow River, occurred in the year immediately preceding the famine. That stream, now harmless in appearance, and hardly worthy of the name of a river, is subject to sudden floods of great extent, the expanse of uncultivated land on either side showing the width it is able at certain times to assume, and the enormous banks that have been erected at some points to check its course give evidence of its volume and intensity at certain periods of the year.

Measures of relief. Official.

The measures taken for the mitigation of the sufferings of the people by the prevailing famine were of three kinds: namely, public relief in various ways by the Government of China; assistance rendered by charitably disposed Chinese gentry; and that given in various forms through the instrumentality of foreigners. The Viceroys of Chihli and of the provinces of Shansi and Honan stand conspicuous in their endeavours to forward supplies for the starving millions in those provinces. The Imperial exchequer was early opened to furnish means for the purchase of food. Unfortunately no adequate provision had been made beforehand, and when the calamity had reached its height the state of the roads was such, and the means of transport so imperfect, that these were found to be completely insufficient to meet the wants of the case. Another source of difficulty in some instances arose from the corruption of native agents. The frequent memorials by two high officials above-named, show the deep and earnest interest taken

by them in the work of famine-relief. But the gravity of the distress—far more extensive than the Indian famine of 1877—might well paralyze even States far advanced in resources. The Government, in addition to the ordinary means of supply, resorted to the sale of public offices and honorary rank, which were eagerly sought after; and so, tens and hundreds of thousands of taels were furnished on account of the fund. New taxes were imposed, and voluntary benevolence poured into the Imperial treasury. Large collections of grain took place at Tientsin, and from thence thousands of tons of food were sent inland and distributed. In certain places, if indeed not in all, a staff of relief officers was appointed for the purpose of supplying the famine-stricken with money and food, ten cash per day for an adult being the ordinary donation of the former, and soup and grain issued at regular kitchens or depôts. At one place it is recorded that upwards of 30,000 people were collected; they were divided into camps, and housed in great sheds; they received a ration of food, generally of millet, daily; and although deaths among them were numerous, large numbers of the people so situated seemed to get along with tolerable comfort. With reference to the sales of lands and other property, effected in some instances in order to provide necessary food, the remark occurs that on a former occasion during the present dynasty an edict by the emperor rendered all purchases under such circumstances invalid.

The period during which relief by Government was continued appears to have varied according to circumstances. In Shu-kwo-hien, for example, 40,000 persons received daily six ko of grain—equal to six pints per month—and in addition six cash per day; these supplies being given for several months continually. In other localities, the agencies appointed by the district magistrate were cumbersome and costly. The nearness of Tientsin, and the enormous quantity of grain-stuff stored there, rendered the relief of Chihli comparatively easy. The case was widely different in Shansi, whither a total of four millions of taels were sent from Pekin and the provinces.

On the subject of other means that Government had the power of initiating, the statement occurs that—'If any forms of public works could be instituted, alike for the men and women, such as road-making, cotton-spinning, etc., it would be a great benefit. Orphanages might also be established.'

With regard to charitable assistance by Chinese gentry and others, various particulars occur. Much was done by private benevolence; but on the other hand, the wealthiest were themselves sufferers, and households owning large farms were reduced to absolute starvation. In one place, 'native assistance was largely granted among the poorest villages, 2,000 children being fed' through this means. Another kitchen, established through native benevolence, gave gruel daily to about 10,000 persons. In a third, the Mandarins gave help for a short time, supplying about one-third of the amount of food daily that was sufficient for each person; in a pagoda they also maintained 200 sick persons; and moreover, they distributed money subscribed by themselves. In several places, continuous relief to a certain extent was thus given; in others, the aid was only occasional, and the amount given to each person very small.

Charitable assistance by Chinese.

In the summer of 1877, the missionaries of all denominations were called upon to organize methods of relief. By the beginning of spring, 1878, a central committee in Shanghai, and their agents at Chefoo and Tientsin—all Protestant and Roman Catholic Missionaries—had put forth so great energy in their well-directed efforts as to gain the zealous co-operation of Li Hung-chang, Governor-General of Chihli, and the active countenance of the rulers and gentry in other provinces. In answer to appeals for money, large sums were collected from foreigners in China, and remitted from other countries; the proceeds placed for distribution in the hands of a central committee. Reduced by exchange, etc., approximately to their sterling equivalents, the following sums were thus obtained, namely, China, £6,800; Japan, £960; Hong Kong

Foreign Aid.

£3,700; Penang, £540; Singapore, £940; India, £170; Tasmania, £240; New Zealand, £20; Australia, £5,247; Canada, £150; America, £1,280; Great Britain and Ireland, £31,100: total, approximately, £51,147. In addition to these sums, about £16,000 was contributed direct by various Missionary Societies in England. At Tientsin, the work of distribution in articles of food and in money was efficiently organized and diligently carried out by a committee at that place, and it was calculated that throughout the famine districts about 100,000 families were relieved by foreign distributors. In the suburbs of T'ai-Yuen-fu, three large soup-kitchens were established, where 20,000 starving persons daily obtained an allowance of food, through foreign agency. Another means of relief employed was the distribution of grain and money to persons at their homes. With this object, agents went from door to door, making personal inquiry into the condition of families and individuals, bearing in mind two important matters in regard to relief, namely, that aid should be given only to the real poor, and to be certain that relief, whether in kind or money, should reach those for whom it was intended. When cash were distributed, they were so in amount sufficient to last no more than ten days; and lists of those receiving relief were revised from time to time. As seed-time approached, aid was also given to enable the cultivators to sow their lands; money and grain being distributed with this object. The comparative requirements of particular classes of the people were duly considered, and the statement occurs that among those who were in the worst position were village schoolmasters. So, also, in some districts more than in others, the ratio of relief was increased or decreased; as an example, in the province of Shansi, generally 66 per cent. of the whole population were thus supported. Further, the methods of distribution resolved themselves into two, viz., 'wholesale' and 'retail.' According to the former, the poor of several villages assembled at one central station; there money was given to the representative of each family, according to lists supplied by the head-men, all such distributions being made in public. The latter method implied house-to-house visitation, and personal inquiry into the necessities of individuals. Besides these several measures, orphans were collected and taken care of by agents of relieving committees. According to one of the reports, there were three forms of relief adopted, namely, gratuitous; the giving of small quantities of grain upon security of land, to be subsequently repaid; and the sale of grain at a large reduction in price.

In some few instances certain drawbacks attended the administration of relief, arising on the one hand from inability on the part of the recipients to fully understand that committees and their agents had no other object in view than simple charity. In the great majority of instances, however, gratitude and appreciation were expressed by the famine-stricken Chinese, non-Christian as well as Christian. Among the former, the agents were spoken of as 'Life-saving Buddhas;' and in regard to the missionaries and others engaged in the actual work of distribution—several of whom sacrificed their lives while so engaged—one writer states that he had 'never heard foreigners individually spoken of with such respect and esteem as those gentlemen were.'—(From the 'Official Report on the Great Famine.')

Appreciation.

XXXVI. NOTE ON THE ETHNOLOGY OF CHINA.

In the remarks which follow, an attempt is made to collate such fragments of information on the present subject as have been gathered from works and other writings consulted. The result, so far, is confessedly incomplete. It is hoped, however, that the few particulars now presented may lead to systematic inquiry into the ethnology of China by medical men and others serving in that country, and thus enable the compiler of a succeeding Epitome to give a more complete history regarding it than is at the present time practicable. Following the method adopted in

reference to subjects treated of in the preceding pages, abstracts are submitted of views expressed by certain writers who have given their attention to this branch of study.

Among the early names by which China was called by the Chinese, the most ancient is *Tien Hia, i.e.* 'Beneath the Sky,' otherwise 'world;' *Sz' Hai, i.e.* ('all within) the Four Seas;' and *Chung Kwo,* or 'Middle Kingdom'—the latter dating from B.C. 1150, and the dynasty Chow. The word 'China' is believed to be derived from *Tsin,* the name of a princedom in Shensi, which continued independent from B.C. 1122 (about) to B.C. 250, when its monarch took the imperial title, and soon after gave it to the dynasty of which he was the founder. The name *Seres,* by which the country is called in Western classical literature, is considered to have been derived from the word *s'z,* meaning silk, that article having become an important object of trade during the Han dynasty, namely B.C. 202 to A.D. 226. By the Persians, the country was known as Tchin or Tchinistan; by the Arabs as Sin; by the Syrians as Tsinistan; and by the Armenians as Djenesdan. The Buddhists of India called the country *Chin-tan,* or the 'Dawn.' The reigning dynasty call it *Ta Tsing Kwo.* 'Cathay' meant originally only that portion of the empire northward of the Yellow River, called by the Tartars who ruled it 'Kitai.' 'Kambalu,' the modern Peking, was the capital of the territory so called, the term 'Manji' being applied to the southern portion of the empire as lately as the thirteenth century. After the Mongols under Genghis Khan had subjugated the whole of China, the name *Kitai,* or *Cathay,* came to signify the entire empire they had seized.—('Middle Kingdom,' by Williams, vol. i.)

Names of China.

Dr. Prichard writes: 'The Chinese Empire is inhabited by the Chinese people properly so-called; and by *non*-Chinese races.' According to that author ('Natural History of Man,' p. 230), 'the Chinese race originally existed as a small horde of roving barbarians, who wandered about among the forests of Shensi, at the foot of the high mountains of the Thibetian border of China, without settled dwellings, clothed in skins, ignorant of the use of fire, feeding on insects and roots. Many of the original natives of China still inhabit mountainous tracts in the interior of the country; these are termed Miao, and Miaotseu. The Chinese, properly so termed, appear, however, to be of one race, which has exceedingly multiplied. They speak one language, though in a variety of dialects.'—(*Ibid.* p. 478.)

Races.

Mr. Gardner ('Journal of Ethnological Society,' 1869-70, p. 22) having given a *résumé* of the history of the Chinese, observes that in the time of the (mythical) emperor YU-CHAO, *i.e.* 'He that hath a nest,' the people were in a state of savagery, eating fruits and raw animal food. Yu-chao taught them to make huts of the branches of trees, and of leaves. The next emperor, SUI-JEN, *i.e.* 'Fire-by-friction-man,' taught them to cook their food instead of eating it raw; he also taught them a system of writing, by tying knots in string at different distances. After him came FOHI, and with the latter approximate CHRONOLOGY began. Mr. Gardner writes: 'First, at some time before 2300 B.C., colonists with some civilization, such as the art of writing in a rudimentary form, existed or came to the north-west of China; and secondly, these colonists were not in a sufficiently civilized state to preserve any records or even legends available for historic uses earlier than the time of Yu, say 2250 B.C., at which date they must have been a long time in the country, as no legends are in existence showing how they first arrived. If we allow that the human race is of a common origin, it is an interesting problem to determine when the Chinese first separated from the common stock, and whether the Tolboth Beni Noah throws any light on the subject. While we take lat. 40° and long. 108° as the principal point of ingress of the Chinese race into their present country, we must remember that it is probably not the only point of ingress; but it is in all likelihood the most ancient, and the only one

Aborigines.

where we can fix an approximate date, namely, from B.C. 2800 to B.C. 2300.'—('Journal of the Ethnological Institute,' 1869-70, p. 25.)

The circumstance is noticed as having an important relation to the early history of the Chinese people, properly so-called, that they still consider the seat of their Paradise to be 'The Mountain of Heaven,' or Thian Shan (Klaproth). From this, the conjecture has arisen that their race originally descended by the valley of the Hoangho to the plains, and there for generations wandered with their herds, after the manner of the nomadic races of high Central Asia. It is even stated, that upon the borders of the Asiatic high lands there exist tribes who, in manner and language, bear a resemblance to the Chinese. The migration of the Chinese took place at a distant but unascertained period. Their first entrance into China is believed by other writers to have been made through the territory of Kansu. This tradition is strongly confirmed by the fact that some of the tribes inhabiting the plains of Thibet, and even the principal people of that country, display indications in their language of a cognate origin with the Chinese.—(Pritchard, vol. iv., p. 481.) On this point, Mr. Williams writes: 'The views of Dr. Legge, that the present Chinese descended from settlers who came through Central Asia along the Tarim Valley and across the desert into Kansuh about B.C. 2200, and settled around the elbow of the Yellow River, under the leadership of Yao, Shun, Yu and others, are very reasonable. These settlers found the land at that time occupied by tribes whom they partly merged with themselves or drove into the mountain recesses in Kweichau, where some of their descendants perhaps still remain.'—(Williams, vol. ii., p. 144.) The tribes who thus descended had attained more of that civilization of which, subsequently, they became the founders. Indeed, in the fifth century before our era, all the provinces south of the Yangtze Kiang were inhabited by races whose only clothing consisted of skins, whose food was roots.—(Pritchard, vol. iv., pp. 294, 480.)

Early Immigrants.

In the ninth century, viz. A.D. 860-873, another descent of tribes from high Asia into China took place. Even then the descendants of the early immigrants had forgotten all trace of their original country, and had come to believe themselves aborigines; looking upon the new invaders as of a different race from themselves, and as natural enemies. Still further invasions by the *Moko* and *Tha Tha* (Tartars) have since taken place; the most important, in the thirteenth century, under Genghis Khan.

The races so called represent the ancient Scythians; their country, Scythia. A division of their family anciently extended into Media from the eastward of the Araxes. It is considered that at a long-subsequent date the conquest of the empire of the Greeks in Bactria took place by them; that from the borders of China, when that empire had extended its conquests to the Caspian Sea, came the tribe who, under Attila, A.D. 444, advanced into the heart of France, and of whom it is believed that some few traces still exist among the lake habitations of Switzerland, as also among the non-Celtic element in the races of France and Britain; the Basques in Spain; the Moskoos, Fins, Laps, and Yakuts of the Arctic regions.—(Herodot., vol. iii., p. 544.) One tribe of the same race holds the throne of Constantine, and has established colonies in Western Asia, in Egypt, and in Nubia; a representative sits upon the throne of Persia; another was expelled from that of Delhi in 1857.

Among these Mongols the old Turkish language was spoken and written many centuries before letters were known among other nations of Central Asia; by them, also, Syrian characters were introduced among the Mongolian natives of the far East (Pritchard, vol. iv., p. 313). From this, and other circumstances in the history of the people, there are authors who assign a Western origin to the tribe who originally migrated to the Altai Mountains,

Elamites?

and thence descended into China. These authors would even connect them with the tribe of Elam, whose capital was Suza, situated in what now is Khurdistan, a portion of the ancient Persian Empire.—(Herodot., vol. iii., p. 254.) With reference to this theory, Dr. Williams writes: 'If we suppose that the antediluvians possessed a knowledge of the geography of the world, and that Noah, regarding himself as the monarch of the whole, divided it among his descendants before his death, there is nothing improbable in the further supposition that the progenitors of the black-haired race, and others of the house and lineage of Shem, found their way from the valley of the Euphrates across the defiles and steppes of Central Asia, to the fertile plains of China before the end of the third diluvian century. Whether the surface of the world was the same after the cataclysm as before does not affect this point.'

The view above expressed has been followed out by Professor de Chaumont, of Netley. Writing of the primeval men who spoke in 'monosyllabic utterances,' a language to which he has applied the term 'Archaic,' he observes that all the Semitic and even Egyptian traditions point to the valleys of the Euphrates as their original seat; that 'even the Chinese have shadowy traditions which place their origin to the West, towards the centre of the continent of Asia.' He thus continues: 'We must picture to ourselves this primitive Archaic people, few in number, their wants few, their tongue limited, leading their wandering life. At length, a branch, separating from the Archaic stock, departed to the eastward, and arrived at last in a smiling country, well watered with rivers, and teeming with verdure. Here they settled themselves, and called the land "Sin," which we have since called China. The beauty of the climate, absence of extreme vicissitudes of temperature, were favourable to fecundity of race, and to the rapid development of an early civilization. But they had carried their Archaic tongue with them, and civilization having, as it were, overtaken them before their language was developed, it became fossilized in monosyllables, and remains so to this day. They soon acquired the art of writing, first symbolic or hieroglyphic, but in later times the characters have become so modified as to have lost, in great measure, their pictorial character. This, the earliest civilization, Bunsen designates the "Eastern polarisation of Sinism."'—(Lecture on the 'Origin and Migrations of the Different Families of the Human Race.' London, 1865.)

Philology.

The Mongol and Manchu races are considered to have sprung from the same stock (as the Chinese), but during centuries of separation under different circumstances they have altered much. The Mongols are nomadic, the Manchus agricultural or hunting in their habits, seeming to partake both of the Mongol and Chinese characters. They are more allied to the Chinese, and when they ruled the northern provinces as the Kin dynasty they amalgamated with the latter and adopted their higher civilization.

Under the term Mongols or Moguls, a number of tribes occupying the Steppes of Central Asia are comprised, extending from the borders of the Kirghis Steppe and Kokand eastward to the Sialkoi Mountains. Klaproth confines the appellation of 'Tartars' to the Mongols, Kalmucks, Kalkas, Eleuths, and Bariats, while the Kirghis, Usbecks, Cossacks, and Turks are of Kurdish and Turkoman origin. The fate of the vast swarms of this race, which have descended from the table-land of Central Asia and overrun, in different ages, the plains of India, China, Syria, Egypt, and Eastern Europe, and the rise and fall of the gigantic empire they themselves erected under Genghis in the eleventh and twelfth centuries, are among the most remarkable episodes in the world's history.

The last of the five races is the Thibetan, who partake of the physical characters of the Mongols and Hindoos. They have never left their own highlands, either for emigration or conquest. Their civilization is fully equal to that of the Siamese and Burmese, and life and property are

more secure with them than among their turbulent neighbours in Bhotan, Lahore and Cabul.—('Middle Kingdom,' by Williams, vol. i., pp. 41-46.)

The Chinese people, as the expression is now received, form the leading family in China Besides them there are other aboriginal tribes, including the Miaotze, the Limu, Kakyens, and others in the southern provinces; the Manchus, Mongols, Tartars, and Thibetans in the north; and certain wild tribes in Kirin and Formosa. In physical appearance there is a marked difference between the features of the mixed race living south of the Meiling and the inhabitants of the Great Plain and in Shansi or farther west; the latter are the finer looking. Tribes.

'The people of Kwang-tung must have been a Malay immigration, but their spreading northwards was stopped by a vast range of mountains 8,000 to 10,000 feet high. They speak of themselves as "the children of Tang." Their province was not incorporated in the Chinese Empire until six centuries after Christ.'—(Sir T. Wade, 'Journ. of Br. Geograph. Soc.,' August, 1883.)

The mountain regions in Yunnan, Kiangsi, and Kweichau are occupied by many clans of the Miaotsze, or 'children of the soil.' Some of these remain unsubdued, others have been brought under subjection. They present so many physical points of difference as to lead one to infer that they are a more ancient people than the Chinese around them, and the aborigines of Southern China. The language of the Miaotze proper has strong affinities with the Siamese and Annamese; that of the *Lolo* with the Burmese. The former of these are mentioned in Chinese history during 4,000 years; the latter about A.D. 250, when a Shan nation came under Chinese influence in Yunnan, and was the object of a warlike expedition. The same race still remain on the Upper Irrawaddy, and in Assam as Shans and Kamti, and in the basins of the Meinam and Meilung, all of them akin to the Thibetans and Burmese. An aboriginal race, the *Li-mu*, exists in the centre of Hainan, an offshoot from the Miaotsze, who inhabit the mountains of Kweichau. With reference to the tribes above-mentioned, the following further particulars are collated: 'The term Miaotsze is a general term for all dwellers on the mountain ranges of the Kweichau province. These consist of eighty-two tribes, who are scattered over the mountains of Kwangtung, Hunan, Kiangsi, and Kweichow; they speak several dialects, and differ among themselves in their customs, government, and dress. Their language differs entirely from the Chinese, but too little is known of it to ascertain its analogy to other tongues, although its affinities are thought to be most likely with the Laos, and those tribes between Burmah, Siam, and China. One clan inhabiting Lipo hien, in the extreme south, is called *Yau-jin*. They settled in Kwangsi, and thence passed over the Lien-chau about the twelfth century. Both sexes wear their hair braided in a tuft on the top of the head, but never shaved and tressed as the Chinese. They live at strife among themselves, and are bold against an enemy. It is said of the Miaotsze that some of them live in huts constructed on the branches of trees; others in mud hovels, and one tribe in cliff houses dug out of the hillsides, sometimes six hundred feet up. In one tribe it is the custom for the father of a new-born child to get into bed as soon as his wife is able to leave it, and there receive the congratulations of his friends as he exhibits his offspring, a custom which has been found among the Thibetan tribes and elsewhere.'—(Williams, vol. i., p. 180.) This custom is described under the name of the *couvade* (Tyler's 'Early History of Mankind,' etc., pp. 288, *et seq.*). The reason assigned for it: 'say they, the woman has gone through great travail, so it is right that the man also should suffer his share.'—(*Quarterly Review*, July, 1868.) Miaotsze.

The Panthays or Mahomedans of Yunnan are described by Dr. Anderson as being generally well made, athletic, of moderate height, fair-skinned, with slightly oblique eyes, high cheek-bones,

and a cast of countenance quite distinct from the Chinese; their general type of face like that of the traders who come to Calcutta from Bokhara and Thibet. They usually wear a moustache, but pull out, after Chinese fashion, all the rest of the hair on their faces. They abstain as a rule from strong drink, tobacco, and opium. In practice, however, their abstinence from these is nominal. They eat pork. They are strictly honest in all their trading transactions. They speak Chinese as a rule, although as a race they are of Arab and Turkish descent.'—('Journal of Anthropological Institute,' vol. i.)

Lolos.

The *Lolos* are considered to represent the 'Coloman' of Marco Polo. The tribe so called inhabit a very mountainous district consisting of about 11,000 square miles on the left side of the Yangtze, between the parallels of 27° and 29° N. They are independent of the Chinese, and never intermarry with them. They capture and enslave the latter, however. In physique they are active and robust; they are taller in stature than the generality of Europeans. They live in towns or villages, or in strong positions on their native hills. They burn their dead, instead of burying them as do the Chinese. This people retain a tradition that the country around the district to which they now are limited once belonged to their fathers; that 'the Chinese came, and unjustly expelled them.' They still extend somewhat sporadically in places as far east as the western districts of the Kwei-chou province. They possess the art of writing, and have published a work containing illustrations of men, animals and plants, executed in a crude and primitive manner.—(Baber, 'Proceedings of Royal Geographical Society,' August, 1883.)

The natives of Formosa seem to have more affinity with their neighbours of Luzon and southward than with the Chinese. The aborigines of Formosa, as also those of Lewchew and neighbouring islands, are 'probably' of the same race with the Philippine Tagalas, though some have 'supposed' them to be of Malay or Polynesian origin. Like the North American Indians, they are divided into numerous clans. Their social condition is very low. A peculiar race called the *Hakkas* maintain a neutral position between the (savage) hill-tribes and the Chinese. These people were formerly industrious but persecuted inhabitants of Kwang-tung province, who emigrated to Formosa. Though retaining the Chinese garb and shaving their heads, they pay tribute to and intermarry with the mountaineers, from whom they have obtained large tracts of land.—('Middle Kingdom,' vol. i., p. 138.)

Hakkas.

Although among the Chinese there is a general persistence of type, there is at least as much variation among the natives of the eighteen provinces as there is among the inhabitants of Europe. From a period a thousand years B.C., the Chinese have gradually spread by means of migration and intermarriages with neighbouring non-Chinese indigenous peoples, their superior energy and civilization gradually effacing the characteristics of the latter. The same process is now taking place in Burmah, the Straits, etc.—(Baber, 'Journal of the Royal Geographical Society,' August, 1883.)

Variation of Type.

'In his wide migrations over the world, the Mongolian, through change of climate and life, and still further by intermarriage with other races, loses more and more of his special points. It is so in the south-east, where in China and Japan the characteristic breadth of skull is lessened. In Europe, where from remotest antiquity hordes of Tartars have poured in, their descendants have often preserved in their languages, such as the Hungarian and Finnish, clearer traces of their Asiatic home than can be made out by their present types of complexion and feature. Yet the Finns have not lost the race differences which mark them off from the Swedes among whom they dwell, and the stunted Lapps show some points of likeness to their Siberian kinsfolk who wander like them with their reindeer on the limits of the Arctic regions.'—('Anthropology,' by Taylor, p. 98.)

Migration.

There are many common characteristics which serve as bonds between all races belonging to the group which we term Chinese and Indo-Chinese nations. There is a certain conformity in their manners and moral disposition. There is a like analogy in their bodily conformation: the physical character of the people of High Asia seems in them softened down and modified.—(Pritchard, vol. iv., p. 466.) Type.

'Human nature seems capable of accommodating itself to every circumstance of life. The inhabitants of the Polar regions can live upon fish, oil, and blubber; whilst the Mongols digest half-raw meat, often in a putrid state, without experiencing any ill effects from it. Few individuals among them arrive at an extremely old age, but they are generally very healthy. When a missionary advised them to adopt a vegetable diet with their meat, they hinted that herbs and roots were created for beasts, and beasts for man. According to their maxims, man is a carnivorous animal.'—(Gutzlaff, vol. i., p. 229.) Type.

The present subject, as thus presented, raises the question of unity, as against diversity, of race. Suffice it to observe that there are authors who maintain that the differences which exist between the types of man are brought about by the long-continued operation of conditions under which people are located. It further raises a question of chronology, bearing upon the period assigned to Elam, namely B.C. 2348, as compared with that assigned to the reign of Fohi, namely B.C. 3369 to B.C. 3254. Such dates, however, are as nothing when compared with the ages enumerated by Morrison ('View of China,' p. 58), as constituting the 'Fabulous Period.' Another question presents itself in reference to the use of the word 'Sin,' or *Tsin*, to China. A comparison of the dates respectively indicated will show how widely apart they are from each other. As with the several questions here touched upon, so with others connected with the ethnology of the Chinese, an extensive field for research presents itself. It will no doubt be worked out by able men who may hereafter furnish Reports such as have formed the basis of this volume.

Mr. Gardner says of the Chinese, that in general they are a kindly disposed people, as proved by the great number of their benevolent institutions. Among the chief of these is the Government plan of disseminating a long moral work called the 'Sacred Edict,' which is an ethical discourse on the five cardinal virtues between children and parents, husband and wife, senior and junior relative, friend and friend, people and Government. Chinese gentry often subscribe towards publishing and disseminating, as advertisements, exhortations to the people to lead a moral and virtuous life. Buddhists have a regular Tract Society for inculcating their tenets. At Peking, some of the empty granaries are put at the disposal of beggars and the extreme poor as gratuitous lodgings. In times of famine, the Chinese Government distributes rice gratuitously. Soup-kitchens are established, and benevolent persons officiate to sell food to the poor at cost-price. In times of plague, Government and private individuals give free theatrical representations, and displays of fireworks to the people in order to distract their minds. In many places there are free schools. At Hangchow there is a hospital for the blind and infirm, with their families, containing 2,000 inmates, with a staff of forty medical men who give gratuitous advice and medicine. Free lodging is given, but the patients are provided with light work in order to pay for their own food. Societies for the prevention of infanticide are common all over the empire. These societies both issue good books and establish foundling hospitals, where the children of the poor are received. Another institution common to the empire, with local committees and managing boards, is that for the burial of the uncoffined dead. There exists a society for the collection of waste paper on which there are any written characters. There are evidences to prove that at one time human sacrifice took place to the manes of the departed; but for many ages this The Chinese People.

practice has ceased. The Chinese believe that all disease is caused by malefacient spirits of departed men, who, having no posterity to offer sacrifices, and yet possessing the same need of food as when sojourners on earth, are compelled, vampire-like, to prey upon the health of the living. Hence the Chinese have instituted a yearly service called the *Foo-ying-K'ow*, or 'appeasing the burning mouths.'

Theories regarding Man.

According to the Chinese, 'Man received his form from the conjunction of the primeval essence of Heaven and Earth. All space contains this essence, and is filled with objects. Man is made from the purest portion of this essence; the various other things form the inferior portions, which, scattered at random, make various combinations from which are developed the mammiferous, oviparous, and other classes of animals, man still remaining the one spiritual creation. Men being thus alike, we are unable to explain why the children of scholars and high officers are in the majority of cases so extraordinarily intelligent, whilst the children of agriculturists are, even up to extreme old age, brutish and commonplace. Thus we find the essence primeval cannot be altogether pure. If it be turbid, the form is heavy; if pure, then light; this is how men become either intelligent or stupid. Scholars, by heredity, are always brilliant and clever, and attain to perfection in their studies with ease; but an agricultural family, attempting to change its mode of life and study, never gains reason. Thus a way is shown by which men of talent can be plucked out from the mass. Men from the north are honest, heavy, rough, outspoken fellows; but from the south they are brighter and more intelligent, more refined and ingenious. Nevertheless, brightness or dulness cannot be said to depend wholly on locality. Brilliant men, easy to teach, are numerous in the north; whilst foolish, ignorant blunderers are not few in the south; and to choose men solely from their physiognomy would be to make mistakes. How is it that man, created from the conjunction of the purest essence of Heaven and Earth, is so often found to be utterly incapable of instruction? In antiquity, men were classed as superior men and as rustics, not because they differed in birth, but because their work and duties were dissimilar. Were this not so, how could the statement of man's nature being originally good have originated; or the further one, that some men are born good, but others require instruction to make them so? Still we do not affirm that high and learned families always have excellent sons. The present heterodoxies and extravagances are solely from lack of instruction, without which errors can never be amended. Instruction is not searching, and so men doubt, bad men seduce them away, and the people sink more deeply than ever. If antiquity had come down to our time with its allotment system, its schools, its feasts, its archery, and its study, then superiors would have been acquainted with ceremony and poetry, and villages would have respected their princes and elders. Thus, turbid, heavy primeval essence produces both the intelligent and the foolish. Those whom instruction cannot reach, if strong, become rebels; if weak, turn to magic and scepticism; those, too, who have not broken law, but are punished, though uninstructed, for slight faults, are treated improperly. But instruction is not used, but punishment; and hard then does it become to prevent rebellions, heterodoxies, and suspicions. For our part, however, we should be satisfied if Heaven and Earth would produce only the pure and light essence, and education be dispensed with altogether.'—('Journal of Anthropological Institute,' vol. viii., 1879, p. 228.)

XXXVII. NOTE ON CHINESE CHRONOLOGY IN RELATION TO MEDICINE AND PUBLIC HEALTH.

In the course of the preceding pages references occur from time to time to periods and circumstances connected with the general history of China. With a view to indicate, at least approximately, the relation of those periods and circumstances to actual dates, it has been con-

sidered that a summarized record such as the following is intended to be would not only be useful in this respect, but would serve in a measure to give completeness to the present epitome.

As the work of compilation of a chronological summary proceeded, however, several unforeseen difficulties connected with it presented themselves. For example, it was not always practicable to obtain a correspondence between names of ruling monarchs as given in the several works consulted; neither did agreement always exist between the dates given for particular reigns, or the events assigned to them. Hence it is that the summary now given is confessedly imperfect. Such as it is, it may perhaps be taken as a starting-point whereon to base fuller, or it may be more authentic information in regard to the subjects touched upon, and, it is hoped, the compiler of the next Epitome of Reports may be able to supply much that is now wanting, as a result of studies pursued on the lines here indicated.

The principal authorities from whom information has been taken for the following remarks are Du Halde, Morrison, Schlegel, Pritchard, Boulger, and Williams.

B.C. 3369. FOHI is said to have died B.C. 3254, after a reign of 115 years. By a majority of
3254. authors he is accorded the credit of having founded the Chinese Empire as such. He is said to have taught the people the art of agriculture, fishing and fowling, music, etc.; also the method of preparing nets; the domestication of animals. He introduced the *koua* or lines, as the first advance from the use of a knotted cord, towards characters to express what is desired. The koua thus noticed is considered to consist of eight different representations of nature, namely: *kien*, or ether; *kin*, or pure water; *li*, or pure fire; *tchin*, or thunder; *siun*, the wind; *kan*, common water; *ken*, a mountain; and *kuen*, the earth. He instituted a distinctive dress for men and for women. He instituted the rite of marriage; the marriageable age for a man being seventeen years; for a woman, fourteen. He appointed 'Negotiators of Courtship.' Wine was at this time partaken of as part of the ceremonies attending betrothal. [It may be mentioned parenthetically here, that in China 'two brothers cannot marry two sisters, neither can a son marry the daughter of a widow whom his father has taken to wife. A man cannot marry any of his own relations, however distant may be the relationship.'] It is added, however, that 'several things affirmed of this period were all brushed up by people who lived in subsequent ages.' His reign is variously considered to have begun B.C. 3369, 3322, and 3155.

CHINNONG, the second emperor. To him, also, is accorded the credit of having introduced the arts of agriculture. He is said to have 'discovered the good and bad qualities of simples in the treatment of disease, classifying them according to their several powers, as hot, cold, and temperate.' He found out the 'counter-poison of earth;' he wrote books on physic; taught the means to restore health to the sick; hence he is esteemed the author and Prince of Physic. He introduced commerce; and established markets.

According to some authors, between Chinnong and Hoangti, seven emperors reigned, namely Lincoue, Tcheng, Ming, Y, Lay, Ly, and Yu Ouang. But Chinese historians place only Fohi, Chinnong, and Hoangti in the rank of the first emperors,
3114 to whom the arts and sciences owe their beginning. Chinnong is said to have reigned 140 years.

2722 (?). HOANGTI, third emperor. He entrusted Tanao with the care of making the *kia tse*, or cycle of sixty years. In this reign YONG TCHENG, 'by means of many experi-

ments, could foretell the changes of the weather, and of the air.' Hoangti discovered the art of dyeing; caused machines for bruising rice to be made, also kitchen furnaces, kettles, etc. Bricks were made, and were used in the building of houses. Until his time, branches of trees supplied the only material for habitations, alike for the prince and for the peasant. He built temples; ordered that the dead be buried in coffins; gave instructions for the manufacture of musical instruments, including trumpets and drums. He invented boats with oars; also wheeled carriages, and trained horses to draw them. 'Men suffered from without by the rigour of the seasons, and within by the passions which disturbed the mind; they died before their time. Hoangti carefully considered the five elements, the seasons, and the nature of man, and ordered three doctors named *Ky pe*, *Yeu fou*, and *Ley King*, to examine the *blood vessels;* after which he directed the use of proper remedies for every distemper, and men lived out their time, according to the due course of nature.' The culture of the mulberry, of the silk-worm, and the art of weaving, are said to have been commenced by his wife, *Yuen-fe*. According to some authors, the so-called 'Golden Fleece' brought by Jason in the *Argo* from Colchis, that is, Mingrelia (B.C. 1263 ?), was nothing more or less than raw silk in the hank.—(Marco Polo, p. 57.) He introduced the preparation and manufacture of silk; caps and garments were made in this reign, and the use of robes of state instituted; he built cities, but himself encamped with
2622. his soldiers. He divided the country into Chow or principalities and smaller divisions, thus: A *Chow* consisted of 360,000 families; each *chow* comprised 10 *sze* of 36,000 families each; each *sze*, 10 *tu* of 3,600 families; each *tu* of 10 *y* of 360 families; each *y* of 5 *li* of 72 families; each *li* of 3 *pong* of 24 families; and each *pong* of 3 *lin* of 8 families. The term Hoangti means 'The Yellow Emperor.' In this reign, Tonquin and Cochin China were annexed to China.

2637. The commencement of the sexagenary cycle is referred to this period.

2538. Chao hao, fourth emperor. He cleared out the channels of rivers; levelled the ways on the mountains. He divided official administrators into various classes or ranks.

Tchuen hio, fifth emperor. As the royal princes understood the nature of metals, waters, and woods, *Tchuen hio* gave them the inspection of mines, waters, and forests. He joined the Priesthood to the Crown; himself assuming to have alone the right to offer sacrifices in the Temple of Heaven. He was an expert astronomer. He desired to begin the year in accordance with the passage of the sun through 'the middle of *Aquarius*,' because in this season the earth is adorned with plants, trees renew their verdure, and all nature seems to be reanimated. About this period, namely, B.C. 2450, the rise of Egyptian monarchy is considered to have taken place.

2400. Ti co or Cao sin, sixth emperor. He invented vocal and also instrumental music. He was the first to practise polygamy; he married four wives. He appointed masters
2330. to teach his people virtue. He is said to have reigned seventy years.

2293. Great inundation happened from overflowing of the rivers in the north of China.

Tchi, seventh emperor. He was deposed.

2357. Yao, eighth emperor. 'Born ten months after the death of his father (Kao-sin), by an immaculate conception, he was exposed on the mountain by his mother, who feared a charge of incontinence; but he was spared, nay succoured, by the wild

beasts of the forests.' He cultivated astronomy; encouraged industries; established six superior courts, which still remain. The Hoangho having overflowed in this reign, he endeavoured to restore the lands so flooded, by means of making canals. He is
2255. said to have died at the age of 118 years. Yao ruled over Pehcheli, Shantung, and Honan. He subdued the savage races by whom the provinces south of the Yangtze Kiang were inhabited; and was the first monarch who began the systematic improvement of the country and of the people.

2277. CHUN, ninth emperor. He honoured men of learning with his favour and protec-
2169. tion. He improved agriculture and extended drainage. He is said to have died aged 110 years, according to some authorities, B.C. 2208. In this reign astronomy was first publicly studied.

2217 YU THE GREAT, first emperor of the First or HIA dynasty, held his Court at
or Chansi. The four mountains mentioned in an inscription attributed to Yu are all situated in the Shan-hsi province. Colonisation of the southern provinces, and the clearing of the primeval forests were effected subsequent to this reign. Before Yu the monarchy was elective. Yu however was the founder of the first Chinese dynasty. The *Meau tsze*, believed to be the aborigines of China, existed at this time
2142. as a distinct colony. He wrote on agriculture. 'He received everybody graciously who came to him with any information, or to implore his justice.' In this reign *Y tie* invented Chinese wine (*shamshu*) from rice. As soon as the emperor tasted it, he exclaimed, 'This liquor will cause the greatest trouble in the empire,' and forthwith
2142. banished the inventor.

2133. TI KI, second emperor, and actual founder of the dynasty.

2104. TAI KANG, third emperor.

TCHONG KANG, fourth. Already drunkenness had extended even to astronomers;
2091. some of whom having from this cause failed to predict an eclipse of the sun, they were put to death.

2064. TI SIANG, the fifth emperor.

HAN TSO, a usurper.

2042. CHAO KANG, sixth emperor.

2025. TI CHU, seventh.

1999. TI HOAI, eighth.

1981. TI MANG, ninth.

1965. TI SIE, tenth.

1906. TI POU KIANG, eleventh.

TI KIOUNG, twelfth.

TI KIN, thirteenth.

1832. KONG KIA, fourteenth. Wine-drinking and other forms of dissipation practised at
1818. the Court of Kieh Kwei, as this monarch was also called, leading to rebellion of his subjects and defection of his troops.

1821. TI CAO, fifteenth emperor.

1808. TI FA, sixteenth.

1756. KIE, seventeenth emperor. His name is used as a term of reproach. With him ended the first dynasty.

1743. CHING TANG, who became the founder of the second or Chang dynasty.

About CHING or TCHING TANG, first emperor of the second or Chang dynasty. He intro-

1743 or 1729. duced discipline in his army; engraved maxims of morality. In his reign famine prevailed seven years; believed to have been contemporaneous with that in Egypt in the time of Pharaoh and Joseph.

1710. Tai kia, second emperor,

1681. Vo ting, third.

1656. Tai keng, fourth.

1639. Siao kia, fifth.

1627. Yong ki, sixth.

1552. Taivou, seventh emperor. He ordered that in each town a certain number of old persons should be maintained out of the public treasury.

1539. Chung ting, eighth emperor. Repeated inundations of the Hoangho occurred in this reign.

1524. Vai gin, ninth emperor.

1515. Ho tan kia, tenth.

1496. Tsou ye, eleventh.

1480. Tsou sin, twelfth. Contemporary with this monarch, namely B.C. 1491, Egypt was afflicted with the plagues recorded in the Bible.

1455. Vo kia, thirteenth.

1423. Tsou ting, fourteenth.

1398. Nan keng, fifteenth.

1391. Yang kia, sixteenth.

1363. Ponan keng, seventeenth emperor. Distributed appointments according to the capacity and merit of recipients; that is, he adopted the principle of 'promotion by selection.'

1342. Siao sin, eighteenth emperor.

1314. Siao ye, nineteenth emperor. Wise governors had charge of his education, but he soon forgot their good instructions.

1255. Vouting, twentieth emperor. The one exception in a long line of dissolute princes. He selected a village mason to be his prime minister.

1248. Tsou keng, twenty-first emperor. Order and regularity introduced in the preceding reign continued through the present one, which was short.

1215. Tsou kia, twenty-second emperor. Noted for his vices, debaucheries, and for undoing the good attained during the two preceding reigns.

1209. Lin sin, twenty-third emperor. He died of his debaucheries.

1188. Keng ting, twenty-fourth emperor.

1197. Vou ye, twenty-fifth emperor. An impious and wicked prince. He was killed by
1184. lightning. About this time Chinese colonists were sent to inhabit some islands to the eastward, and some writers assert that 'Japan began to be inhabited by them.'

1181. Tai ting, twenty-sixth emperor.

1144. Ti ye, twenty-seventh emperor.

1112. Tcheou, twenty-eighth emperor. The cruelties of himself and of *Ta kia*, his wife, resulted in a revolt of the people, and the downfall of this dynasty. At this period the capital of the empire was at Honan. The Chinese people were described as being small and feeble, the eastern foreigners (Mongol Tartars ?) numerous and strong. The Chinese gradually obtained a residence in the middle of the country, and hence called themselves 'The Middle Nation.' The circumstance of there being at this early period a people to the eastward of them, stronger than they, is looked upon as important.

1107. Wou Wang, or Vou Vang, the founder and first emperor of the third, or *Tcheou* or *Chow* dynasty. The instructions of *Ki tsou*, uncle to the preceding, were in this reign published in a work called 'Chu King.' In reward, the kingdom of *Corey* was bestowed upon him, and made in a manner independent. Wou Wang introduced
1105. simple habits into the life of his Court, and by enlightened administration of the empire gained the confidence of the nation.

Tching Vang, second emperor. Under the administration of his minister, *Tcheou kong*, his rule was so much admired, abroad as well as at home, that the King of Cochin China (or of Siam) sent ambassadors to convey congratulations. *Tcheou kong* 'gave them an instrument, which on one side pointed towards the north, and on the opposite side towards the south, to direct them better on their way home than they had been directed in coming to China. This instrument was called *Tchi nan*, which is the same name as the Chinese call the sea compass by. This has given occasion to believe that *Tcheou kong* was the inventor of the compass.' Tching vang ordered
1068. every prince to forbid the immoderate use of wine in his dominions. His capital was at Shen-se.

1077. Kang Vang, third emperor. He loved agriculture, which he brought to great perfection.

Tchao Vang, fourth emperor. He was a great sportsman; neglected the affairs of state, spoiled the country, and ruined his people, who were continually lamenting to see their finest harvest overrun by horses and dogs. A conspiracy to destroy him
991. was accordingly formed, and it succeeded.

1000 Mo Vang, or Mou Wang, fifth emperor. His justice and virtues gained him the
to affections of the people. A Chinese army, under command of the emperor, proceeded
952. against the Tartars; the latter withdrew their tents and cattle, on which the Chinese
936. army, finding no enemy to fight with, was obliged to return, fatigued and impaired with long and troublesome marches.

Kong Vang, sixth emperor. Commencing his reign with acts of great cruelty,
928. his later years were spent in repentance and endeavours to make atonement for them.

899. Ye Vang, seventh emperor. Despised of all men; satirised by poets.

Hio Vang, eighth emperor. Over-fond of horses and of grooms. To one of the
884. latter he gave a sovereignty, and one of his descendants became the founder of the succeeding dynasty.

868. Y Vang, ninth emperor. Timorous in action, contemptible to all his subjects.

873. Li Wang or Vang, tenth emperor. Proud, cruel. His exactions reduced his subjects to misery. A revolt occurring, and all members of the royal family being demanded
817. in order to be put to death, *Tchao kong* gave up his own son in place of the youngest prince, whose life was saved in this way. *Tchao kong's* son was put to death. Li Wang lived his remaining days, extending to fourteen years, in obscurity.

837. Siouen Wang, eleventh emperor. *Tchao kong* and another minister took care of his education. *Siouen Wang* recalled to Court numbers of wise men and philosophers,
771. who during the preceding reign had to flee to deserts and mountains. In this reign blights and famine reduced the country to desolation.

777. Yeou Wang, twelfth emperor. Contemptible to his people. In his reign floods, earthquakes, and other calamities; yet he increased taxation, and showed indifference

to the state of the people, who became alienated from him. He perished in battle against the Tartars.

PING WANG, thirteenth emperor. He was placed upon the throne by the great vassal princes. He abandoned his western capital, and fled to the eastern capital in Honan. Wars now occurred, which were to continue for several centuries. These were direct results of maladministration by Yeou Wang. In this reign religion,
720. science, and learning perished. Sedan-chairs, made of bamboo, existed in ancient times. They originated in the south. Men as well as women decorated their heads with flowers. At present the practice is restricted to women.

717. HOUAN WANG, fourteenth emperor. In war against tributary princes he was wounded and defeated.

671. CHANG WANG, fifteenth emperor.

666. LI WANG, sixteenth.

640. HOEI WANG, seventeenth. In this reign Japan began to be governed by
657. kings of its own.

618. SIANG WANG, eighteenth emperor.

612. KING WANG, nineteenth. Praised for his mildness, wisdom, and moderation.

606. KWANG WANG, twentieth.

597. TING WANG, twenty-first. In this reign *Lao Kiun*, founder of the sect of *Taoists*, lived. He was born B.C. 604.

585. KIEN WANG, twenty-second emperor. In this reign two opposite philosophers arose. According to one, 'all men should be loved alike, as well strangers as those that were nearest akin.' According to the other, 'man should mind nobody but himself, nor be concerned about the welfare of the rest of mankind.' A regular system of army discipline was in force.

571. LING WANG, twenty-third emperor. He is said to have been born with hair on his head, and on his chin.

545. KING WANG, twenty-fourth emperor. In this reign Confucius lived. That philosopher or sage revived the ancient religious doctrine of the Chinese, by giving fresh reputation to the ancient books, especially the 'Chu King,' which he proposed as an exact rule of manners; thus his doctrines constituted a code of pure morality. It is generally considered that about this date, also, the religion of Lao tse began, otherwise 'the doctrine of *reason;*' according to which, 'to give one's self up to suffering, care, to be busied about great projects, to follow the dictates of ambition, avarice, and other passions, is to labour more for posterity than for ourselves; it is madness to purchase the happiness of others at the expense of our own repose and pleasure; our pursuits after pleasure should be moderate, our desires not too violent; whatever we look upon as our happiness ceases to be so if it is accompanied with trouble.'—(Du Halde, vol. iii., p. 34.) The doctrine was described as one of pure rationalism.

KING WANG, twenty-fifth emperor. The name is the same as the preceding, but is written in different characters. Confucius was appointed prime minister of the kingdom of Lou, his native country; under him, 'candour, justice, equity, and all other civil virtues flourished'—among the people—but not in the monarch.

475. YUEN WANG, twenty-sixth emperor. Ancient laws began to revive; most of the tributary princes returned to allegiance.

468. Ching ting Wang, twenty-seventh emperor. Named 'the Chaste.'

440. Kao Wang, twenty-eighth.

425. Weili Wang, twenty-ninth. Ouki, a general and statesman of this reign, had as his guiding precept that 'the strength and greatness of a State depended upon the virtues and application of the ruler.' Wars and maladministration were by this time bringing the Chow dynasty to a close.

401. Gan Wang, thirtieth emperor.

375. Li Wang, thirty-first. The imperial family on the brink of ruin. *Meng tze*, or Mencius, lived in this reign.

368. Hien Wang, thirty-second emperor. He had scarcely anything beyond the empty title of emperor. Mencius lived also through this reign.

320. Chin Tsin Wang, thirty-third emperor.

314. Nan Wang, thirty-fourth emperor. The Prince of Tsin was coming into formidable power; and ultimately having conquered, the emperor permitted him to reign on sufferance.

263. Chow Keen, thirty-fifth emperor, and last of the Chow dynasty. Forsaken by his tributaries, he abdicated

243. Tchuang Siang Wang, first emperor of the fourth or *Tsin* dynasty. He was said to have been born twelve months after conception. At first he won several battles.

215. An army of 200,000 men under a confederacy of chiefs was brought against, and defeated him. He did not survive the event.

238. Chi Hoang ti, second emperor. He sent a colony of 300 young men and as many young women into the Japan islands, under the conduct of a sea captain who made himself sovereign of those islands. He defeated the Tartars, and by uniting the short walls which some of the princes of the Northern States had previously erected on their estates, he completed the Great Wall, reaching from the sea to the

220 to 210. extremities of the province of Chensi; including bridges, forts, and various works of defence. This wall was considered to have a length of 10,000 li, or 3,000 miles. At the time this work was in progress every third man in the empire had to take his share of labour on it. It is asserted that 400,000 persons so employed died of hunger, ill-usage, and fatigue. He ordered the destruction of the books called *King*, and certain of those of Confucius; excepting only such as treated of architecture and *physic*. He had little esteem for the arts and sciences, except astronomy. He declared that 'good government was impossible under a multiplicity of masters.' He ordered highways to be made in all directions, and these still remain. As soldiers he selected his men 'from those who were without any fixed profession, and were possessed of great physical strength.' He intentionally placed against each other, in discussion, the practical men and those who were 'theoretical students.'

210. Eul Chi, third emperor. Immoral and dissolute; he over-burthened the people with taxes. They rose in rebellion; the army revolted. *Lieu Pang*, a private soldier, having been told by a physiognomist that he should be emperor, became a leader of the disaffected.

Ing Wang, fourth emperor. Was defeated by the above *Lieu Pang*. And so ended the fourth or Tsin dynasty.

202. Cao tsou, otherwise Lieu pang, first emperor of the fifth or *Han* dynasty. The

260. capital of the empire was at Nanking, in the province of Keang-nan. In the time

of Han the rule of selecting the officers of Government from amongst the literati did not exist; they were all recommended. Cao tsou published a statement of his regrets at the sufferings of the people, in the train of war. He undertook various important public works, including bridges in Western China; roads through mountains, valleys being filled by the debris. One of his 'flying bridges' measured 150 yards in length, and was at an altitude of more than 500 feet above the valley; this at a date 2,000 years before suspension bridges were included in the category of European engineers. He established on these roads post-horses, travellers' rests, and

195. caravanserais. He instituted competitive examinations. At the present day, the examination hall is known as 'the Temple of Fame.' The candidates are under examination not a few hours, as with us, but a month or six weeks. During that time they occupy rooms in the Temple of Fame; cook their own food, but have no communication with the outside world. To many the ordeal becomes too severe, and they succumb under it. In his last illness he refused all mortal aid, saying that 'If Heaven wish me to die or live, it will inspire me what to do.'

182. Hoei ti, the second emperor. His vices and immoralities induced infirmities, of which he died.

177. Liu heou, or Liuchi, empress and usurper.

Wenti, third emperor. He revived agriculture, which had been neglected; planted mulberry-trees; bred silk-worms, and encouraged learning. In his reign the manufacture of paper was discovered, by grinding bamboo in mills; also the manufacture of pencils made of hair; and of ink which dissolves in water. Prior to this date, writing was performed by an iron pencil, on leaves or bark of trees. He ordered that clothing, food, and wine should be provided for necessitous old men, and paid for out of the public funds. He directed that 'for the future the crime of the children should not fall upon their fathers and mothers, nor upon their family.'

156. King ti, fourth emperor. He mollified the rigour of punishments inflicted on criminals, substituting flogging for mutilation.

141 or 135. Vou ti, fifth emperor. He patronised learning and learned men. He studied peace rather than war. He ordained that 'whenever a prince should die, his estate should be equally divided among his lawful children.' He directed that those ancient and precious books which had escaped the general destruction should be put in order

117. and publicly taught, as also the morals of Confucius and Mencius. In this reign China was flooded by the Hoangho, and then afflicted by famine; since that time the overflow of that river has been periodic. *Vou ti* established military colonies in Shensi, and improved the roads from the interior to that province.

Chao ti, sixth emperor. He rewarded officers who had served the state well. He appointed just and able magistrates.

57. Suen ti, seventh emperor. He codified the laws. In this reign a great earthquake occurred, several mountains being overturned by it. 'For the first time in history the Chinese troops became known among the peoples of Eastern Asia as "the troops of justice."' They were the police, defending the weak against the turbulent and the strong. He instituted a pavilion or *Kilni*, in which portraits of his greatest

51. generals and statesmen were displayed. The empress *Hinchi* having fallen ill and died, the physician in attendance was cast into prison (on suspicion), there to await examination under torture. A plot being discovered against the suc-

cession, *Hohein*, its instigator, was ordered to 'drink the waters of eternal life'—otherwise poison.

49. YUEN TI, eighth emperor. A great scholar; moderate, frugal. He used to say that 'he could be contented with little, wanted for nothing.' His leniency was taken
33. advantage of by his ministers and by courtiers.

CHING TI, ninth emperor; loved women and wine, and all manner of vices.
B.C. 7. He deserted his empress and married an actress. 'He died suddenly.' In this reign floods and violent storms were of frequent occurrence.

A.D. 5. NGAITI, tenth emperor. He displaced several governors unworthy of their dignity.

A.D. 1. PING TI, eleventh emperor; 'the peaceful emperor.' He was poisoned by *Wang Mang*, his prime minister, who attempted to usurp the sovereign authority.
17. Tombstones were introduced into China about this time. 'Records engraved were buried in the tomb.' They narrated or extolled the virtues of the deceased. About this time some of the district magistrates sold wine. Great attention was paid by Government in collecting the duty on intoxicating drinks. For the people to distil clandestinely three measures of grain was a capital offence.

10. JU TSE YNG, twelfth emperor; a child placed upon the throne by *Wang Mang* for appearances, then vanished from history.

WANG MANG, the usurper, gave to his family the name of *Tsin, i.e.*, 'New.' Wars, famines, and destruction of crops by locusts occurred; also riots and robberies. Several of his 'Barons' having leagued together, a confederate army attacked his
28. palace, plundered and burnt it, and murdered Wang Mang. The troops designated 'Crimson Eyebrows' were the most prominent in these transactions.

HOAI YANG WANG, thirteenth emperor. His loose and effeminate life 'induced his
30. army to take the crown from him.'

KWANG VOU TI, or LIEOU SIEOU, fourteenth emperor. He invited learned men to his Court. In his reign a total eclipse of the sun occurred (*i.e.*, in the last day of the seventh moon in the twenty-eighth year of the fortieth cycle). Du Halde leaves it to astronomers to examine if this eclipse is the same which happened at the death of Christ.
29. Wars continued throughout this reign. A portion of *Kaochi*, the modern Tonquin, and Cochin China rebelled; and being victorious over the Chinese troops, *Ching tse*, an heroic princess of the native line, was proclaimed Queen of *Kaochi*. She was shortly afterwards defeated, and her country again became the vassal of China.
57. *Kwang Vouti* died after a reign of thirty-three years.

57. MING TI, the fifteenth emperor. He established an Academy of Science, in his palace. He placed in his picture-hall portraits of the greatest men of the empire. He caused an embankment to be made against the overflow of the Hoangho; it was ten leagues long, and one hundred thousand men were employed on the work. Remem-
64. bering a word which Confucius had often said, *that the Holy One was in the west*, he sent ambassadors to India to seek for the true religion. These ambassadors accord-
64 to 68. ingly introduced Buddhism into China. Its leading doctrines thus expressed: 'The principle of all things is emptiness and nothing. From nothing all things proceed, into nothing all will return, and this is the end of all our hopes.' His disciples, however, 'adhered only to his first words, and their doctrine is directly opposite to atheism.'—(Du Halde,' vol. iii., p. 37.)

CHANG TI, sixteenth emperor. He was a lover of peace, was prudent and wise, and granted his protection to men of learning. *Machi*, his adopted mother, was 'one of the finest characters in Chinese history. CHANG TI sanctioned the sending of tribute from Cochin China by land instead of by sea, as had hitherto been the practice. 'Accordingly a road, at the expense of one hundred thousand taels, was made to that
88. country.' The first kiln for the manufacture of porcelain was opened in this reign, namely at Sinping, not far from the present centre of the Honan province.

111. HO TI, seventeenth emperor. Under a general called *Pan tchao*, successful expeditions were sent into various distant countries, including *Judea*, which the Chinese call *Ta tsin*. He was the first emperor who introduced eunuchs into his palace. During
105. this reign a new writing-paper was discovered.

112. CHANG TI, eighteenth emperor.

124. GAN TI, nineteenth emperor. Famines and other grave visitations had brought suffering on the people. The empire being considered by this emperor to have become too large, homage of certain foreign nations was renounced.

CHUN TI, twentieth emperor. Passed a law that no one should be raised to the magistracy under forty years of age. Famines, earthquakes, and landslips on a large
150. scale occurred during this reign.

151. CHONG TI, twenty-first emperor.

152. CHE TI, twenty-second emperor.

HOUAN TI, twenty-third emperor. Learned men were forced to withdraw from Court, at which the influence of eunuchs had become great. A great famine in some parts of China; many of the people obliged to eat human flesh. He died without
167. leaving an heir. During this reign—namely in A.D. 166—an embassy was sent from Rome to China.

LING TI, twenty-fourth emperor. He rejected good counsel; was avaricious; gave to eunuchs greater power than any of his predecessors had done. Yet he had 'the wise instructions of the ancient emperors, which were contained in the five Classical Books, engraved upon marble tables, and publicly exposed at the entrance of the
184. Academy.' Various rebellions prevailed; one conducted by 'an army of vagabonds called *Yellow caps*.'

192. HIEN TI, twenty-fifth emperor. Weak, negligent, stupid, the empire was divided under him into three parts, and afterwards into four. In this reign, *Tsow Tsow*, one of
220. China's greatest generals, lived. Hien ti retired into private life. And so ended this dynasty, during which the face of China had been covered with populous cities and great public works—roads, canals, bridges, and aqueducts—which still remain to the
226. glory of the Hans. During this dynasty the capital was at Lo-yang, in Honan province; and the expression 'Black-haired children of Han' was adopted with pride by the Chinese—the first portion of the epithet having had reference to their personal characteristic indicated, the latter to the name of the dynasty under which their conquests had so greatly extended.

TCHOW LIE WANG, or TI, first emperor of the sixth dynasty or dynasty of the later Hans, or Hans of Chow. One of the chief of his maxims was: 'Virtue alone deserves our attention and pursuit.'

225. HEOU TI, or HEOU CHOW, second emperor. Continuous wars, ending in the destruction of the imperial army, the plunder of the palace, the submission of the emperor to

244. the conqueror—and the end of the later Han dynasty. The capital was respectively at Loyang; at Nankin in Kiagnan; and at Cheng Tu in Szechuan.

265. Tsin Vou ti, first emperor of the seventh or *Tsin* dynasty, son of *Song chow*, or *Szemayen*, founder of the dynasty. Magnanimous himself, he 'could not endure dissimulation in others.' 'Among the reedy marshes of Fukhien, and woody glens of Kwangtung,' a numerous and warlike population resided. During the wars of this
274. reign 'an infinity of soldiers was slain.' A bridge across the Hoangho, at Mongtsin, was constructed by *Tou yu*. It has long ceased to exist. A powerful fleet was con-
265. structed by *Wangsuin* in the conquered village of Chow. The three kingdoms were
290. reunited. At his death *Tsin Vou ti* had reigned over Wei and Chow for fifteen years; over the whole empire for ten. During this period—namely, from A.D. 200 to 300—the relative value of silver to gold in China was in the ratio of ten to one.

Hoei ti, or Sse ma chong, second emperor. Without spirit or genius; incapable, led away by his 'second empress,' wars and maladministration occurred. Then sprang up a new sect, a branch of the *Lao kiun*, but called *Vou quei kiao*—that is to
304. say, 'the Doctrine of the Void and of Nothing.' The emperor died of poison, and left no issue behind him. In this reign, the armies and all the ablest generals of the emperor having been defeated, the command was given to Mongkwan, a eunuch. He succeeded where they had failed.

306. Hwai ti, second emperor. Defeated and captured by *Lieou tsong*, he was
310. forced by the victor to wait upon him at table, dressed as a slave; afterwards he was put to death. It is even stated that the Heung-noo 'made a drinking-vessel of his head.'

Ming ti, fourth emperor. Defeated, banished, and subsequently murdered. A
313. list of population and army of a conquered province comprised the following headings, namely: 'doors,' or families; 'mouths,' or persons; 'men in arms,' or soldiers; and 'civil officers.' From 265 to 317 the capital was at Loyang.

318. Yuen ti, fifth emperor; commended for his esteem of wise and learned men. Yuen ti moved his capital from Loyang to Nanking.

324. Ming ti, II. sixth emperor.

327. Ching ti, seventh.

344 Chang ti, eighth. In this period Amazons were attached to the person of the
to ruler. 'These were mounted on Tartar ponies, and dressed in the magnificent fashion
346. as became the body-guard of a great ruler.' The country was meantime oppressed by the rulers; the poverty of the people formed a striking contrast to the luxury and dissipation of the Court.

358. Moti, ninth emperor.

362. Gai ti, tenth.

367. Tai ye, eleventh. Stamp-duty on the sale of land and houses was introduced.

369. Kien Venti, twelfth.

373. Vou ti, thirteenth. Victorious at first, he gave himself up to sensual pleasures, and died by the hand of his 'second queen.' In this reign the Hoangho became frozen in a single night.

415. Gan ti, fourteenth. Of little mind, indolent, and wanting in application. His reign was full of wars and troubles. His principality was taken from him by *Lieou You*, a cobbler, who turned soldier, became a great general, and founder of the following dynasty.

416. Kong ti, fifteenth and last emperor of the *Tsin* dynasty. He was deposed by *Lieou You.*

419. Kaotsou, first emperor of the eighth or *Sung* dynasty. The name was assumed by *Lieon You.* Displayed great moderation in dress, retainers, and at table.

420. Chow ti, second emperor.

Venti, third. Singularly moderate and just. He ordained that magistrates should not continue in office above six years. Violent wars, immense slaughter; massacre of the bonzes and destruction of their temples took place in this reign. 'Cypress and

450. myrtle decked the tombs, in memory of those who had fallen beyond the Hoangho.'

461. Vou ti, fourth emperor. A scholar, a sportsman; prodigal; rough to those around him.

461. Fi ti, named also *Lieoutsemie,* fifth emperor. He began his reign by wholesale massacre of innocent persons, and was himself murdered within the year.

463. Ming ti, sixth emperor. Barbarous and cruel. Adopted a strange and vicarious method of obtaining an heir. He had to adopt a child, this right not being then admitted in China as it was in India.

471. Lieouyu, otherwise Tsang ngou Wang, seventh emperor. Rough, untractable treacherous and perfidious.

473. Chunti, or Lieou Chun, eighth emperor. Deposed in the second year of his reign, and murdered by Siao tao ching; and thus ended the *Sung* dynasty.

477. Kaoti, *i.e.* Siao tao ching, first emperor of the ninth or *Tsi* dynasty. He fixed his residence at Nanking. He had the reputation of being learned. He boasted that if he governed the empire for ten years he would make gold as cheap as clay.

488. Vouti, second emperor, otherwise Siaotse. He reduced the period of official appointments to three years; he revived an ancient law, prohibiting intermarriages between families of the same name. In this reign a pretended philosopher, whose name was *Fan tchin,* vented most pernicious tenets, hitherto unheard of, namely: 'That all events in this world are the effect of pure chance; that after this life the state of mankind is the same as that of beasts; and that the soul dies with the body.' Tracts against such doctrines were published in the works of the learned.

493. Ming ti, third emperor. Assassinated.

495. Hoen heou, fourth emperor. Cruel and debauched. Dethroned and murdered.

Hoti, fifth emperor, was 'permitted' to drink strong wine of the country, and while in a stupor therefrom was strangled with the silken cord of his robe.

496. Thus ended the *Tsi* dynasty, 'which had established itself by force and not by merit.'

Siaoyen, *i.e.* Vouti, first emperor of the tenth dynasty, called the *Leang* dynasty. He was skilled in almost all the services, particularly the military art. Latterly he adopted the philosophy of the bonzes; prohibited the slaughter of oxen or sheep even for sacrifices, and appointed ground corn to be offered as such, instead of beasts. In his siege against the city of *Cheou Yang,* in Chansi, 'an inconceivable number of men perished by sword and famine. A monastery for a thousand bonzes was erected, into which for a time he retired. He abolished capital punishment, with the result that crime increased to such an extent that this form of punishment had speedily to be reintroduced. A military heroine named *Mongchi* appeared at the siege of Chonghli. The imperial armies in the field numbered on occasions 200,000 men; the opposing forces 300,000 men; the entire loss of both sides at the siege of Chonghli 200,000,

A second heroine, named *Lieouchi*, appeared at the siege of *Tse tong*. Her garrison depended for water upon a single well. That supply being cut off, she ordered rain-water to be collected in vases by means of linen and clothes of the soldiers. A third heroine, named *Houchi*, appeared in this reign. From 386 to 524 the capital was at Changan, Shensi province.

546. KIEN WENTI, second emperor.

YUENTI, third emperor. Nanking, his capital, being besieged by his enemies, he burnt his library, consisting of 140,000 volumes. There was thus 'an end, for the future, both of the sciences and military art.'

549. KING TI, fourth emperor. The king of that part of the North called *Tcheou*, destroyed all the temples and idols of the bonzes. King ti being removed, the dynasty
552. of *Leang* ended. The books of *Leang* mention particularly, as an extraordinary custom which excited great notice, that people sat with their legs hanging down—*i.e.*, they began to sit on chairs or stools. Leang opened five schools; in these the doctrines of *Tuh* were taught.

557. KAO TSO VOU TI, *i.e.* CHIN PASIEN, first emperor of the eleventh or *Tchin* dynasty. From 317 to this date the capital was at Nanking.

WENTI, second emperor. He ordered that a drum should beat within the palace, to distinguish each hour of the night, which custom still continues. The province of Chow revived an ancient custom of maintaining, at the public charge, those persons
567. advanced in years who had done important service to the State.

564. LING HAI WANG, third emperor.

SUENTI, fourth emperor. Fond of music; he loved and protected sages and philosophers.

CHANG CHING KONG, fifth emperor. Plunged into excesses. His people revolted.
589. YANG KIEN, at the head of an army, deposed him. And so ended the *Tchin* or *Chin* dynasty.

584. KAOITSOU WENTI, *i.e.* LI YUEN, first emperor of the twelfth or *Souy* dynasty. His temperance and love for his people gained for him their esteem. He reformed the ancient music; he commanded the learned to use in their discussions nothing but sound reasoning, and to avoid all rhetorical flourishes as vain ornaments. He erected public granaries in all towns; he ordered each family, according to its means, to furnish a certain quantity of grain annually, for the support of the poor in times of scarcity. He made theft to the value of eightpence a capital offence; but he soon afterwards abolished this law. He was inexorable against judges who accepted bribes. He
604. excluded merchants and mechanics from public commands. He abolished schools
607. and colleges in towns; this scheme of national education, dating from the time of the Hans, having been by *Kaoitsou Wenti* looked upon as an unnecessary burthen upon the taxpayer. This abolition, however, appears not to have been general. A portion of the Grand Canal was opened.

605. YANG TI, second emperor. Luxurious and prodigal. He removed his court to Lo yang in Honan, where he erected huge granaries, palaces, gardens, and parks—one of the latter fifteen leagues in circumference. He forbade his subjects to carry arms. He repaired the Great Wall, employing a million of men on the work. He commissioned a hundred of the most learned men to revise and reprint, after a manner practised in those days, all the books that treated of war, politics, physic,

and husbandry. He established the degree of doctor for men of letters and military men. He caused ancient canals to be extended, and constructed new ones, so that ships could go from the Hoangho into the Kiang; 1,600 *leagues* of canals being thus opened in his reign. One of these canals was forty yards wide.

622. Kong ti, third emperor. He was deposed, and afterwards murdered. Thus ended the *Souy*, or *Souyi* dynasty.

618. Chin Yao ti, first emperor of the thirteenth, or *Tang* dynasty. From 557 to this date the capital was at Loyang. He abated penal laws, and moderated the taxes. He caused copper money to be coined, and the words *Tong Pao* to be impressed upon the coins. He caused celibate priests to marry, in order to furnish troops for his armies.

626. Taitsong, second emperor. Temperate; frugal. Had the best books brought from all parts. Became the restorer of the sciences; he reinstated in his palace an academy, wherein were reckoned 8,000 scholars, including the sons of foreign princes He founded a military academy. He established schools, and instituted a system of literary examinations to take place in public. He ordered the laws to be codified. He looked upon himself in his empire as a father in a family. He forbade magistrates to receive presents. Having read the books on physic, composed by the emperor Hoang ti, he ordered as a result of his studies, that criminals should not be bastinadoed on the shoulders, 'but upon the lower parts.' In a time of great drought he released the prisoners, 'to comfort the people;' and 390 capital offenders so released *on parole*, returned, according to promise, after harvest. Nestorian Christians having arrived

636. in China, were allowed to preach before the emperor. His wife, the empress *Changsunchi*, was noted for her learning. Having taken in war 14,000 prisoners in the Corea, he neither massacred nor sold them into slavery. He released them. He endeavoured to mitigate the horrors of war. He ransomed a captured city from his soldiers, in order to save its inhabitants from the horrors of a sack.

658. Kaotsong, third emperor. He was favourable to the Christian religion; erected churches, and honoured Christian missionaries. The Chinese, during this reign, were victorious over the Coreans.

660. Wou Heou, empress of Kaotsong, usurped the throne. She raised a persecution against the Christian religion.

Chongtsong, fourth emperor. Indolent and debauched. He was poisoned.

710. Juytsong, or Litan, fifth emperor.

712. Ningti, or Hiuen tsong, sixth. Discreet; temperate; zealous for the public good.

724. He published an edict forbidding all persons to fish for pearls. He destroyed the royal vessels of gold. He established in his palace a college, consisting of forty of the most learned doctors of the empire, which body of men affords historiographers, visitors of provinces, governors, viceroys, etc. This was the *Hanlin* college, and it still exists. He sought out the most ancient books on military science. The study of astronomy and the observation of natural phenomena were placed on a new and improved basis.

757. Sotsong, seventh emperor. In this reign the construction of cannons or catapults capable of throwing a twelve-pound stone shot 300 paces is recorded.

Taitsong, eighth emperor. At first successful in war, five tributary kings afterwards shook off his yoke. A mandarin named *Fou hou tsien*, 'shaved his head

after the manner of the bonzes,' and thus introduced that custom. This emperor patronised the missionaries of Christianity. Whereas under MINGTI (A.D. 466) the
764. population had exceeded 52,000,000, in the present reign it did not reach 17,000,000, and national prosperity had decreased in proportion.

TETSONG, ninth emperor. He was applauded for refusing to receive presents from strangers; a grant of money being made to him, he distributed it among his soldiers. The power of the eunuchs in this reign became dangerous to the State. To guard against revolt, the army was increased; additional taxation had consequently to be had recourse to—*tea*, which was the common drink, being also taxed. Poverty led to thefts and robberies. The emperor protested against certain superstitions and 'forecasts' made by his astrologers. A return of prosperity took place; the population had
780. increased to 19,000,000 of people. A Nestorian Christian was at this time in the service of Government. Tetsong refused to renew the ancient practice of making the dignity of governors hereditary. Corruption in the public service, distrust and rivalry had arisen.

796. CHUNTSING, tenth emperor.

800. HIENTSONG, eleventh. In times of famine he opened his treasury and public granaries in aid of the afflicted provinces. He sent inspectors to the localities where famine prevailed. Pensions were granted (as they had been prior to this reign) to widows and children of soldiers who had been killed in war. In this reign traditions in China 'were not in favour of the bookworm and competitive candidate being the
811. best military commander.' *Kiatan* compiled his celebrated map of China and its de-
815. pendent states. 'The stories of avoiding the evil influences of the stars existed during this dynasty.'

MOTSING, twelfth emperor. Having disbanded many soldiers, they joined various bodies of insurgents and robbers. Under this ruler the first step towards decline of the Tang dynasty began.

824. KINGTSONG, thirteenth emperor. His behaviour was childish. By the influence of eunuchs he was raised to the throne; through the same influence he was murdered.

840. WENTSUNG, fourteenth emperor. Had an affection for sages and men of letters. An attempt was made to destroy the eunuchs. It failed, and the emperor abandoned himself to wine.

VOUTSONG, fifteenth emperor. He passed a law which is still observed; it obliged mandarins of the imperial city to do their duty; also enacted that every five to seven years the conduct of the chief officers of the empire should be strictly inquired into;
845. and further, that the latter should report their own faults and shortcomings to the emperor. He ordered that Buddhist monks and nuns should quit their monasteries and nunneries and return to their respective families.

SUENTSONG, sixteenth emperor. An advice given to him by a minister was that: 'The best method to procure himself a long and happy life was to control his appetite, subdue his passions, and practise virtue.' 'Scarcely had he taken the drink—under guise of *wine of immortality*—which the sectaries gave him, than he saw himself devoured by worms which swarmed in his body, and in a few days afterwards he died.'

859. YTSONG, seventeenth emperor. Haughty, prodigal, debauched; a general cry arose against him. Yunnan obtained its independence. He sent Buddhist emissaries

to India. A favourite daughter having died, he caused twenty doctors to be killed because they had failed to save her life.

884. HETSONG, eighteenth emperor. Gave himself up to play, music, riding and shooting. The people were ground by heavy taxes; famines, inundations and flights of locusts led to increasing discontent of the people. Justice was a mockery; revolts, intrigues, massacres and executions prevailed. Among his contingents was a body of troops who, from being dressed in a black uniform, were known as 'the black crows.' At this time China was desolate, the towns and capital in ruins; civil war in every province; administration reduced to confusion. *Wang-seu*, a general officer in this reign, declared that 'Every army passes laws; no army can exist without them.' Finding provisions failing him while on the march, he gave orders that 'all the old and feeble should remain behind.'

903. CHAOTSONG, nineteenth emperor. He patronised men of learning. 'Many hundreds' of eunuchs were massacred; then the emperor himself. Gold and silver first weighed by the leang or tael. Before that date they were weighed by the kin or catty. 'From the beginning of the Han dynasty, B.C. 202, to A.D. 900, the empire of China had control over the central countries of Asia westward to the Caspian Sea; also Chinese colonies were founded near that inland sea.' (Pritchard's 'Natural History of Man,' vol. iv., p. 266.)

904. CHAO SIUENTI, twentieth emperor. Resigned the insignia of power to CHUWEN, and so ended the *Tang* dynasty. During this dynasty the capital was at Changan,
618-908. Loyang. China was considered to have been the most civilized country in the world; the laws were above the officers, and the example of China exercised a humanising influence on adjoining nations.

903 TAITSOW, the name adopted by CHUWEN, first emperor of the fourteenth dynasty,
or called *Heo Leang*. China was now divided into a series of principalities; the Court
911. of TAITSOW being in the province of Honan. It is not known when the 'bow foot' of
916. Chinese women was first 'introduced.' It is said that it was in the time of the *Woo-tae* or *Five dynasties*, that *Lee-how-choo* ordered his concubine, *Yaou*, to bind her foot with silk, and thus cause it to appear small, and in the shape of the new moon. From this sprang the imitation of every other female.

917. MOTI, second emperor. A severe winter occurred, and the Hoangho was frozen over, so that the army under Litsunhiu, the prince of *Tsin*, crossed over it to attack posts held by the emperor's troops, on whom he inflicted a loss of 20,000 men. Soon
923. afterwards *Moti's* capital (Pingchow) was captured, and himself killed. Thus ended the *Heo Leang* dynasty.

TCHOUANG TSONG, first emperor of the fifteenth dynasty, called *Heou Tang*. In all his campaigns he bivouacked on the ground like his soldiers, and for fear of sleeping too long wore a bell about his neck. Yet in his early days he was idle and luxurious, and given to frivolous amusements. He was, however, despised by his people; in his army there was sedition.

924. MINGTSONG, second emperor. Illiterate himself, he gave marks of esteem to learned men. He was a devout man, and 'burnt incense' to 'the Lord of Heaven.'

924. MINGTI, or MINGTSONG, third emperor.

926. FITI, fourth emperor. Burnt himself to death.

935. HAOTSOU, or KAOTSOU, first emperor of the sixteenth dynasty, named *Heoutssin*.

He gave as a subsidy to a neighbouring prince of *Pe tche li* 300,000 pieces of silk per annum. This arrangement subsequently led to protracted wars. Although the Tartars of that province had acquired the more luxurious habits of the Chinese they nevertheless remained hardy.

Tsi Wang, second emperor. A defective commissariat led to the defeat of his
937. armies and to the downfall of the *Heoutssin* dynasty, called also 'the *Later Tsins*.'

Kaotsou, first emperor of the seventeenth, or *Heou Han*, or *Later Han*, dynasty.
938. The art of printing dates from about this period. According to Du Halde, it took place A.D. 926 to 933; according to Morrison, in 935; to M. Abel Remusat, in 952.

Yenti, second emperor. Addicted to pleasures, and by his habits alienated the people; so much so that *Kwo Wei*, a successful general, was elected in his stead,
941. and the *Heou Han*, or *Later Han*, dynasty ended.

Taisow, *i.e.* Kwo Wei, first emperor of the eighteenth dynasty, named *Heou Chow* dynasty. He visited the tomb of Confucius. According to some authors, the
944. Mahomedans first appeared in China during this reign.

Chitsong, second emperor. Devoted to science; brave; accomplished as a military commander. In his palace he kept a plough and a loom, to remind him of the station and hard labour of his ancestors. In times of scarcity, he supplied the poor with rice from the public granaries; he melted all the statues of idols to make the metal
950. into money, as the latter had become very scarce.

Congti, third emperor. Deposed by the founder of the *Sung* dynasty, and thus ended that of the *Heou Chow*.

Taitsow, first emperor of the nineteenth dynasty, named *Sung*. Of great judgment, diligent, frugal, clement, affable. He left open the four gates leading to his palace,
964. that, 'like his heart, it should be always open to his subjects.' He banished luxury from the empire and from his court. He conferred royal titles upon his *ancestors*. He showed great consideration to his troops, 'ordered an examination for the officers of the army like that for men of letters,' and promoted them according to 'selection' for fitness. He gave orders to prevent pillage and murder in the city of Nanking after its capture; he then sent 100,000 measures of rice to be divided among its people. Provincial governors were deprived of the power of life and death; thus 'the liberty of the subject' was accorded. Successful in war, many provinces were added to his dominions. From 908 to 970 there was no fixed capital city.

967. Taitsong, second emperor. Learned himself, he patronized learned men. His own library contained 80,000 volumes. He granted exemption from taxation to the descendants of Confucius. He divided his empire into fifteen provinces.

1004. Chintsong, third emperor. He remitted a large portion of taxation; liberated prisoners; was himself devout. He showed weakness towards the Tartars, whom he defeated; gave encouragement to magic and to other superstitions. [The porcelain works in Fauliang hien, east of the Poyang Lake, were first established at this time. The invention of porcelain dates from the period B.C. 185 to A.D. 85.] He had a census made, and found that 21,976,965 persons were able to cultivate the lands.
1013. The learned, magistrates, eunuchs, bonzes, and those who live on the rivers in
1014. floating towns, were not included. A kind of militia was established, to which the people had so great an aversion that some persons mutilated themselves in order to
1022. avoid serving in it. The arts of women and men who pretended that they could see

spirits (spiritualists ?) were prohibited at Canton. He had the ancient books reprinted and distributed throughout the empire. And yet Chinese commentators have made this reign the starting-point in the decline of the original worship of CHANGTI, the Great God of all.

1022. GINTSONG, fourth emperor. In this reign a great drought occurred; it was followed by plentiful rain. By the timely aid sent to the localities visited by famine the lives of five hundred persons were saved. He submitted to 'peace at any price' with the Tartars. In the early part of his reign the taxes on tea and salt were repealed. An edict was passed, under which the laboratories of 'magicians, *spiritualists*, and other impostors' were destroyed, who had practised so much on the credulity of the people that doctors had to give up their profession, as all who were sick consulted these
1033. charlatans instead of the regular medical faculty. The imperial army was daily drilled 'after the fashion of the Chinese Manual.' He re-established the colleges on their ancient footing under the Tangs. He caused colleges to be erected in every town. He raised the standard of public speaking, and gave prizes for excellence in recitation.
1060. He took steps for the publication of a great history of the Tangs; it filled 225 volumes. The learned obtained an influence in public administration.

1063. YNG TSONG, fifth emperor. In this short reign *Sou ma quang* flourished. He compiled a history from above 2,000 volumes. Canton was walled round as a defence
1067. against the people of Cochin China. Previous to that date 'the people all lived in the fields.'

1084. CHINTSONG, sixth emperor. In his reign there flourished several authors of 'a new philosophy.' One of these, named *Vang ngan*, began to entertain atheistical principles; he described all events as being the work of chance. *Wan gan chi*, one of his ministers, was a reformer. He declared that 'The State should take the entire management of commerce, industry, and agriculture into its own hands, with a view of succouring the working-classes and preventing their being ground to dust by the rich.' This measure was tried in Shensi, but 'the cultivated land became greatly reduced in area and impoverished in quality, partly through the unskilful management of the small holder, partly from the dislike inherent in man to protracted labour for which he does not see an immediate return. The statesman *Ssemakwang* denounced these views as chimerical; but the majority of the people favoured the system of *Wan gan chi*, until experience led to its failure. A councillor thus addressed the emperor: 'Bad men are fond of stirring up and creating a piece of work, because in the midst of commotion they have something to hope for. It will be found true that speculative universal innovators, who think that the ancients were universally right in everything'—or, like some modern Europeans, who think they were right in nothing—'are either bad or weak men, and enemies of the peace of mankind.'

1100. TCHE SONG, seventh emperor. An attempt was made to expel useless ministers from the court, but it failed. Floods occurred in Chehkiang and Kiangnan, nearly a million of persons perishing. Eunuchs were recalled to power.

1125. HOEITSONG, eighth emperor.

1127. KINTSONG, ninth. The indolence of the Chinese led to their easy defeat by the Tartars in this reign, as in previous ones. From 970 to this date the capital was at Loyang.

KAOTSONG, tenth emperor. He removed his court from Nanking to Hangchow.

He encouraged learning. He submitted to a humiliating treaty with the Tartars. In-
1144. competence of the eunuchs to command troops, cowardice on the part of the men, led to defeat and downfall of the ruling power. In this reign great attention was for a short time paid to the disciplining of the cavalry, and to the formation of a special corps of charioteers. *Kaotsong* placed himself in the power of inexperienced courtiers; from this false step his downward course was rapid. He (a scion of the *Sungs*) made an ignominious peace with the *Kins*.

1161. Hiaotsong, eleventh emperor. During this reign *Tchu hi*, or *Chow hi*, one of the most celebrated interpreters of ancient books, flourished. The Chinese army was, in this reign, overwhelmed by the Tartars.

1194. Quangtsong, twelfth emperor.

Ningtsong, thirteenth. He accepted power unwillingly. He prohibited private
1202 individuals from writing or publishing any annals of the empire without special license
to of Government. The wars against China, of the Tartars under *Genghis Khan*, took
1210. place. His entrance through the Great Wall was procured by bribery. Twenty years
1211. were required to complete his conquests. His army consisted of about 30,000 men.
1226. An important battle took place on the frozen waters of the Hoangho, the year before
1227. the death of Genghis Khan. The city of *Kaifong*, when captured by the Mongols,
1232. was estimated to contain 7,000,000 people. The *Sungs* allied themselves with the conquerors, in the hope to recover some of their lost possessions from the *Kins*. *Ningtsong* reigned thirty years.

1195 Litsong, fourteenth emperor. Devoted to science, and to the ceremonies of the
to Taoists, at the time when military talents were of the utmost consequence. He ex-
1225. empted the descendants of Confucius from paying taxes. Wars against the Mongols were vigorously prosecuted, their cities besieged, and their garrisons driven by hunger to eat human flesh. *Litsong* had only the southern provinces of China under his dominion; the Western Tartars had the empire of the north. Their king, *Ho-pie-lie* studied the sciences, and encouraged learning. War was begun against
1251. Litsong. Under Kublai Khan, the Mongols marched *via* Szchuen and Yunnan to Upper Burmah, he engaging auxiliary corps as he proceeded. The city of *Hochau*
1258 in Szchuen being besieged by *Mangu*, epidemic dysentery broke out in the Mongol
to camp; *Mangu* died of the disease, and the siege was raised. *Kublai Khan* having
1259. gained the submission of *Litsong*, and proclaimed himself as 'Great Khan,' adopted many native Chinese customs, and attached to his person Chinese advisers. He took the Buddhist priests under his protection, employing some of them politically. He showed special consideration to literary men.

1264. Toutsong, fifteenth emperor. Vicious himself, supported in his follies by a courtier, the ministers tried, but unsuccessfully, to check his vicious indulgences. Discontent and disaffection pervaded the provinces; the cities readily received the Western Tartar invaders, while *Toutsong* was 'dissolved in pleasures.' In this reign *Marco Polo* travelled in China. The heroic defence of the city of *Sianyang* on the river Han was an important event in this reign.

1277. Kong tsong, sixteenth emperor. A child. *Pe Yen*, the Tartar general, advanced with an army of 200,000 men; took *Kong tsong* prisoner, and shortly afterwards the latter died in the desert of Kobi.

Touan tsong, seventeenth emperor. Fled before the Tartar armies to the coast of
1276. *Quang tung*, near Canton.

Ti ping, eighteenth emperor. The Chinese fleet destroyed by the Tartars. *Li sieou se*, who had care of the emperor, took the young prince in his arms, and with
1278. him jumped into the sea. Thus ended the dynasty of *Sung*, the last of the Chinese
1281. emperors. The custom of colouring the nails red with the Fung-seen flower (Lawsonia ?) was begun, apparently from the Mahomedan women. From 1127 to 1280 the capital was at Hangchow, Chêhkiang province.

Chitsou—that is, Kublai Khan—the first emperor of the twentieth dynasty, called Yuen. On coming to the throne he made no alteration, either in ministry or laws. He conformed to Chinese customs, and protected their men of letters. He ordered that there should be only one calendar throughout the empire. He destroyed the books of the Taoists. He caused a great Canal, three hundred leagues long, to be made, which still remains one of the wonders of China. His troops failed in an
1286. expedition against Anam, 'heat and damp' of that climate being the cause of the failure. For the same cause he was dissuaded from sending a fresh expedition to that country. Subsequently an expedition was sent, and failed. Anam obtained its independence
1294. His reign is remarkable as being the climax of the triumph of the more vigorous race over the weaker.

Ching tsong, *i.e.* Timor, second emperor. Noted for his clemency. He mitigated the severity of punishments, and moderated taxation of his people. He withdrew from semi-independent nobles the power of life and death. An expedition sent to *Papesifu*, believed to be *Laos*, perished by climate before it reached its destination. In this reign, storms, earthquakes and violent tempests were unusually frequent; a
1306. great famine occurred in Northern China.

Wou tsung, third emperor. He bestowed his favours only on those who did some considerable service to the State; and he rewarded them liberally. He prohibited the export of gold, silver, grain, and silk. Personally, he was gluttonous and debauched.

1311. Gin tsong, fourth emperor. He applied himself wholly to the well-governing of his dominions. He prohibited hunting from the fifth moon in each year to the tenth, to prevent doing damage to the country. He endeavoured to get wise men into his council.

1320. Yng tsong, fifth emperor.

1324. Taiting, *i.e.* Yesun Timour, sixth emperor. In this reign various calamities happened in China, as earthquakes, falling of mountains, inundations, droughts, etc. He prohibited Buddhist monks from begging from house to house.

1329. Min tsong, seventh emperor.

Wen tsong, *i.e.* Tou Timour, eighth emperor. Showed favour to the Lamas.

1332. Chunti, ninth emperor. Effeminate, indolent, given to pleasures. Female dancers
1345. introduced into the palace. The Grand Canal was deepened and lengthened. A suc-
1368. cessful rebellion led to his flight; and so ended the family of *Yuen*, and the Tartar dynasty. A famine occurred during this reign, resulting in the death of thirteen
1351. millions of people; the Hoangho overflowed, and great earthquakes occurred in Kiangsi; and subsequent to the falling-in of the mountains of Ki-Ming-Chan, a lake was formed of more than a hundred leagues in circumference, where thousands found their grave. The course of the Hoangho was altered.

1366. HONG WOU, or TAITSOU, first emperor of the twenty-first dynasty, named *Ming*. The easy overthrow of the preceding line of monarchs was due to their enormous robbery of the people, and by their lavish issue of paper money, which had now become worthless. Taitsou ordered that eunuchs should have no official employment, civil or military; that no person under forty years of age should become a bonze. Among the presents brought to him was a lion, the first seen in China.

1384. He granted great privileges to the Imperial College, and assisted in person at the examinations for the degree of Doctor. One of his sayings was that: 'As heaven and earth produce all things necessary for the support of man, so a wise emperor should only study how to provide for the wants of his subjects; and though, with this view, he might lessen the imposts and moderate public expenses, he should always fear his subjects might want necessary provisions.' He directed the codification of the laws; he thus gave definite form to the regulations by means of which society was kept together in China. He revived the ancient law of gratuitous national education. He ordered the formation of public libraries at the expense of the State. He impressed upon his officials the duty of attending to the wants of the poor, the weak and the sick; the poor and the sick 'could feel sure of receiving from the authorities the amount of food or other assistance necessary for their support.' His army having returned from Tartary laden with 'loot,' he ordered all to be sent to treasure-houses, 'so that it might serve to alleviate the people's wants.' He estab-

1387. lished facilities for the people to obtain salt at a moderate price. He raised a militia, consisting of 58,000 men, to watch the coasts nearest to Japan. In 1368 he established his capital at Nanking. From 1280 to that date the capital had been at Peking. An expedition was sent to discover the source of the Hoangho. During the reign of the Yuen dynasty the Grand Canal originated. 'Stone-throwing-engine-makers' from the West were employed.

1394. KIEN WENTI, second emperor. He remitted a third portion of the people's taxes. In reference to defeats inflicted by his uncle's forces, 'a fashion came into vogue by the Government to obscure its defeats by mystical statements.'

1403. CHING TSOU, or YONGLO, third emperor. A mine having been discovered in Chansi, he ordered it at once to be closed. 'These stones, however valuable they might be, they could neither feed not clothe his people in a time of scarcity.' He caused five bells to be cast, each 120,000 lbs. in weight. He appointed forty-two doctors as commentators in ancient classics. Their combined work was entitled '*Sing la tsuen*,' that is, 'Natural Philosophy.' In it, while they preserved the ancient doctrine, they endeavoured to make it agree with 'the fictions of an empty system.' He removed his capital from Nanking to Peking, where it has ever since continued. Tonquin was incorporated as the province of *Kioachi*; its population estimated at 32,100,000 persons, in addition to 2,087,500 wild tribes in the mountains. The following orders were issued to the commander of the forces sent against that tributary kingdom: 'Be careful not to commit the crimes which you are going to punish. Maintain care-

1406. fully discipline among the troops. Respect the burial-places and the houses of the inhabitants, their goods, their wives and daughters. Spare the lives of those who surrender.' A code of laws framed during this reign has from that time to the present remained the basis of administration.

1423. GIN TSONG, fourth emperor. A famine prevailed in this reign. The officials charged

with the duties of relief having proved dilatory in their mission, he declared that, 'When my people are distressed, we must fly to their assistance with as much speed and readiness as we would to extinguish a fire, or stop a sudden inundation. Orders were issued regarding the improvement of the breed of horses, and against the export of tea. A horse of the first quality was considered to be worth eighty pounds of tea.

1424. SUEN TSONG, fifth emperor. He forbade the degree of Licentiate to be conferred on any of the learned under twenty-five years of age. He nominated as such the King of
1428. Cochin-China. He subsequently declined to send an army thither, on the ground that it could not be done without inflicting a great charge upon his subjects. His palace having been destroyed by fire, a great quantity of gold, brass, and pewter, of which ornaments and vessels were made, became fused together, and the alloy thus formed was afterwards used in the manufacture of others, which are still highly valued.

1444. YNG TSONG, sixth emperor. He marched at the head of an army against the Tartars, but his forces, 'very much weakened by want of provisions,' were easily defeated, and he taken prisoner.

1450. KINGTI, or CHIN WANG, seventh emperor.

1458. YNG TSONG, restored as seventh emperor. Conspicuous in his palace and among his ministers. Earthquakes and inundations characterized his reign.

1465. HIEN TSONG, eighth emperor. A palace conclave of eunuchs became the terror of the land, and the emperor, who originally established it, had to suppress it. He bestowed territorial possessions upon some members of his family. In so doing, he caused discontent among the people, in whose eyes 'it was a flagrant interference with the laws of Providence to assign to one man a district which could supply the wants of a hundred families.' Extravagance at court brought about pecuniary embarrassment; the mines were re-opened; large numbers of persons were employed upon them; many lives were lost by fever; no more than thirty ounces of gold were obtained, and the undertaking was abandoned. The canal between Peking and the Peiho was made. The germ of an efficient military field-transport was laid down in an organized system established for the conveyance of grain from the central provinces to the capital. The
1474. Great Wall was repaired by means of military labour, 50,000 soldiers being thus employed. Military settlers in its vicinity were appointed to keep it in repair. These settlers raised abundance of grain, while elsewhere there was scarcity.

1487. HAITSONG, or HONG TCHI, ninth emperor. He was blamed 'for his adherence to the superstition of the bonzes, for being fond of chemistry, and for his love of flattery.' In his reign great famine prevailed. Plague, which was, until then, scarcely known in China, ravaged all the eastern parts of the western provinces, and earthquakes buried alive several thousands of people.

1505. WOUTSONG, tenth emperor. Famine laid waste the provinces of *Shantung* and *Honan*. The people, driven to despair by heavy imposts, and alienated on account of dissolute life at court, rose in rebellion. It was suppressed for a time. Inundations happened in this reign. The first European who landed in China arrived at Canton
1511. in this reign, namely, Raphael Perestralo; a second very shortly afterwards arrived,
1517. namely, Don Fernand Perez d'Andrade. He arrived with a squadron, and was subsequently appointed Portuguese ambassador at the court of Peking.

1520. CHITSONG, eleventh emperor. Leaden bullets were first introduced into China.
1522. About the same time, muskets were introduced. In times of scarcity, he gave large sums out of his treasury for the relief of the afflicted people. He repaired the Great Wall. Two young maids perceiving that their father's indigence inclined him to sell them for prostitutes, they drowned themselves. The emperor caused a monument to be erected to their memory, with the inscription, 'The two illustrious virgins.' He caused diligent search to be made for 'the liquor of immortality.' A Tartar army of 60,000 men, which advanced against Pekin, was destroyed by the
1553. Chinese. St. Francis Xavier died in this reign on the island of Sancian, near Macao,
1564. in the province of Quangtung. A memorial was presented to the emperor, in which 'he was advised to be more regular in his conduct, and to take more care of public affairs;' he was also reminded, that he employed men to command his army who were unskilled in war; that the finances of the country were squandered by means of 'ridiculous expenses,' one of which was 'seeking after the pretended liquor that bestows immortality, which, as those impostors (the priests) declared, was come down from heaven, as if there had been any person who could prevent the fatal necessity of dying.' He
1566. himself drank this 'liquor of immortality;' and so died, full of remorse for his shortcomings.

MOUTSONG, twelfth emperor. He released a certain number of prisoners. Some of his ministers having offered him unwelcome and unsolicited advice, he degraded them to inferior rank. He could never bear that his ministers should give him advice. He appointed certain 'Inspectors of Learning,' and also tax-gatherers in their native countries, notwithstanding that the laws of China forbade the employment of any person in the magistracy in his own country.

1571. CHINTSONG, or WANLEH, thirteenth emperor. He paid so much respect to his tutor, *Tchang kiu tching*, that he visited him when sick, and gave him food and medicines with his own hands. He desired to make himself master of the Chinese sciences. Michael Roger, the first Jesuit missionary to China, arrived. A great famine in the province of Chansi; sixty pits were dug, into each of which a thousand bodies of the victims were
1579. thrown. A great defeat of the Tartars. The Government, in employing men, paid no regard to their personal rank; and the empire being roused by the hope of rank and
1585. nobility, the human intellect at once rose above mediocrity. Matthew Ricci came to China. A great dearth having occurred, the emperor remitted part of taxation; he sent inspectors to the regions affected. Certain ministers who accepted bribes were degraded. The gold-mines of *Honan*, *Chensi*, and *Shansi* were opened again, but after being
1597. worked for six years had to be re-closed. The Christians in Japan were massacred. The Manchu Tartars again approached Peking. The missionaries already named corrected the Chinese calendar; their observatory at Peking flourished, and they drew correct maps of the provinces. At the date of *Wanleh's* death, NOORHACHU was
1620. preparing his armies of the Manchu Tartars for the conquest of China.

QUANG TSONG, fourteenth emperor. His death was attributed to the neglect and ignorance of his physician.

HITSONG, or TIENKI, fifteenth emperor. He was much in the power of his eunuchs, of whom there were 12,000 in the palace. Wars by land and sea continued through this reign.

1627. HOAITSONG, or TSONG TCHING, sixteenth emperor. A great lover of the sciences.

He suppressed growing luxury. The capital being captured by LI TSE CHING, commander of disaffected bodies in the provinces, and leader of a revolutionary party, the
1644. emperor committed suicide. Thus ended the *Ming* dynasty. During this reign, famine added to the horrors of civil war.

1644. SUNCHI, first emperor of the twenty-second dynasty, named *Tsing* or *Manchu*. All the Chinese were ordered to adopt, as a sign of submission, the Tartar mode of shaving the front part of the head and braiding the hair in a long queue. The (probable) origin of the custom among the Tartars themselves is very peculiar. The Tungusians (according to Pallas) allowed their hair, which is long and black, to hang in its natural state and of uniform length, except a lock longer than the rest on the top of the head, which was left in order that they may fasten in it their bows and keep them dry, when obliged on long journeys or the chase to swim over deep rivers.—(Prichard, vol. iv., p. 409.) *Si Wang*, a rebel prince, in order to render his army more mobile, ordered the murder of all soldiers' wives and female followers in camp. It is said that 400,000 women were thus destroyed. SUNCHI established the supreme administrative council of the empire. He accepted from the hands of the priest, Adam Schaal, the astronomical system in force in Europe, and appointed him President of the Mathematical Board, and Director of the Board of Ordnance. He devised measures for the suppression of abuses in the public examinations. Candidates who failed a second
1656. time were banished, together with their families, to Tartary. The naval troops of *Koshinga*, prior to an intended attack on Nanking, spent the night in drunkenness and revelry. A sortie from the city ended in their easy defeat, and thus the siege was raised. The Russians and Dutch had each a Resident in Peking. This emperor
1661. is believed to have died of small-pox. In this reign the Chinese obtained possession of Yunnan by the violent expulsion of the aborigines.

1666. KANGHI, second emperor. Tea first used in England. Eunuchs were expelled from the palace, except about 1,000 to perform the most menial offices. A great many churches were destroyed. A succession of severe earthquakes at Peking caused
1679. the loss of very many lives. The emperor bestowed large sums of money for the relief of persons who had suffered therefrom. The imperial palace was destroyed by fire. KANGHI devoted himself to learning Chinese and European. Of the Western sciences he studied geometry, algebra, natural philosophy, astronomy, physic and anatomy. He employed Father Parennin to translate into the Mantchu language
1720. a complete system of anatomy and medicine. A severe earthquake occurred at Peking; shocks occurred during twenty days. Père Verbiest succeeded Schaal as President of the Astronomical Board. An admirable postal service was established.
1690. During the prosecution of war against *Galdan*, a rebel Eluth prince, KANGHI sent to
1696. him a large sum of money for the alleviation of the sufferings of the people. In raising an army to make a second attack on Galdan, the emperor ordered that 'special pay and provision for the widows and orphans of the slain' should be granted to volunteers for the war. A corps of specially trained commissaries was appointed. In the advance to the upper course of the Kerulon, several thousands of lives were lost on the march through the desert, and before they had met the enemy.
1692. KANGHI being attacked with fever, he recovered under the treatment of Jesuit (medical) missionaries, after his life had been despaired of by the Chinese physicians belonging to the court. Quinine was the medicine administered by the Jesuits.

'The new drug was tried on the persons of several of his courtiers before the Sovereign was permitted to taste it; the result of these experiments proving satisfactory, he was allowed to take it.' His recovery led to the Proclamation of the same year, which has been looked upon as 'the charter of Christianity in the Chinese em-
1722. pire.' Shortly before his death he published an edict against the exportation of rice
1717. from China. A survey of the empire was made by Romish missionaries, and a great Thesaurus of the Chinese language published. In this reign, an imperial order directed the public officers in each province of the empire to superintend public contributions, and await voluntary subscriptions towards the formation of foundling hospitals. Among the officers appointed to these establishments were physicians and apothecaries. It was considered 'important that the state of the wet nurses should be ascertained.' The state of the children's clothing and food was to be supervised; mosquito curtains provided for the children's beds.

YUNGCHING, third emperor. Edicts were published against Christians and Christianity. It was said of this emperor that, 'You cannot do him a greater pleasure than to present him with a plan which tends to promote the public welfare.' The
1731. city of Peking was almost overturned by an earthquake, the most extraordinary that was ever felt in China; in less than a minute, 100,000 inhabitants were buried in the ruins, and a greater number in the country, where whole towns were entirely destroyed. 'The emperor sent large sums of money for the relief of sufferers thereby.
1732. Many missionaries were expelled to Macao. Great floods occurred in the provinces of Pechihli, Shansi, and Shensi. The emperor devoted all his energy and resources to the task of alleviating the prevalent distress, and of mitigating the public misfortune; rice was imported from the south; taxation decreased, and at Peking, above 40,000 persons were daily fed for four months. In this reign, notwithstanding these misfortunes, the exchequer was full; the people were contented; the population greatly increased, to such a degree in certain parts, especially Yunnun and Kweichow, as to cause alarm on the score of the rice supply. A partial remedy was applied by the distribution of large tracts of waste lands among the poorer classes. Another remedy was the offering of special rewards to such widows as did not marry again, and to bachelors who preserved their state. After the example of his father, he issued doles to the aged. These he divided into three classes: those above seventy; those above eighty; and those who had exceeded ninety years of age. Women as well as men were thus included. In the province of Hoopeh, a salt spring burst forth suddenly. Importation of ivory at Canton was prohibited, with the object of repressing
1735. 'luxurious elegance.' The death of YUNGCHUNG occurred suddenly.
1752. KIENLUNG, fourth emperor. In celebrating the sixtieth birthday of his mother, he issued benefactions to the poor and aged. The remark occurs in reference to the one-storied houses of the Chinese, that *Kanghi* thought 'Europe must be a very small and a very poor country, since there is so little land to extend the cities that they are obliged to build their habitations in the air.' KIENLUNG described his empire as being the most thickly populated and wealthiest in the 'universe;' his coffers full to overflowing; his arsenals stored with all kinds of provisions; that he had the means to furnish without stint the requirements of the largest war, or to comfort his people under unforeseen calamities, or to employ multitudes of workmen by placing them on public or other works. During certain expeditions sent across the desert to Ili,

the sufferings of the troops had been so great and their losses so severe as to cause the failure of the expeditions. On several occasions during this reign, the northern provinces were desolated by famine, which depopulated in a few weeks large tracts
1785. of country. One such famine was of especial severity. On all such occasions the emperor ordered the gratuitous distribution of grain; but the remedy was imperfect on account of the great extent of the suffering; partly also from the peculation of officials. Having reigned through a complete cycle of sixty years, he abdicated in
1796. favour of his son. At the date of his accession to the throne the population of the Chinese empire is said not to have exceeded 60,000,000. In 1753 it had risen to 100,000,000; and in 1792 was returned at more than 300,000,000. Much of this increase was due to extension of territory; much also to natural increase, notwithstanding the recurrence of famines already noticed.

1796. KIAKING, fifth emperor. He was dissolute and superstitious. Combinations against his government and insurrections characterized his reign. Piratical fleets infested the
1810. coasts, especially the Pearl River.

1820. TAUKWANG, sixth emperor. A rebellion in Turkestan was attended with great cruelty and treachery on the part of the Chinese. Other insurrections also took place.
1828. Opium-smoking had greatly increased; three of his sons died from indulgence in
1837-38. it. The acts of Commissioner Lin brought about war between England and China.

1851. HIENFUNG, seventh emperor. The Taiping rebellion took place; also a second war
1857-60. with England.

1862. TUNGCHI, eighth emperor. The Taiping rebellion and the 'rising' in Yunnan were suppressed. Diplomatic intercourse opened with the Treaty Ports. He died from small-
1875. pox, otherwise 'heavenly flowers.'

1875. KWANGSU, ninth emperor, the present monarch. With regard to the Manchus, during
1884. this dynasty the industry and resources of China have increased, 'of which the population, loyalty, and content of the people are the best evidences.'—('Middle Kingdom,' by Williams, vol. ii., p. 180 *et seq.*)

With reference to the general regulations for, and conditions of the empire during the Manchu dynasty, the following particulars are taken from Morrison's 'View of China,' viz.:

'Every district has its appropriate officer, every street its constable, and every ten houses a tithing-man. They have all the requisite means of ascertaining the population with tolerable accuracy.

'A regular army is maintained. Every Tartar is a soldier.

'At Canton, and province of Quangtung generally, the Tan-hoo, a people who live in boats, are considered a separate race, whose origin cannot be traced. Since 1730 they have been permitted to live on shore, and to cultivate the land.

'Ranking as twenty-fourth among the administrative departments of the supreme Government at Peking is the *Tae-e-yuen*, or Imperial Medical Board. It is composed of a president, an assistant, and a certain number of imperial physicians.

'Among the civil officers of provincial governments, the seventh in order of enumeration is the Superintendent of the Public Granaries. With him is a granary-keeper.

'The present dynasty, which takes great pains in training a standing army, has introduced competitive examinations, and titles distinctive of degrees of proficiency in these ordeals, among officers and others composing it.

'Among "the most noted divinities" of the sect called Shĭh, or Fuh-keaou, are "the sacred Mother," who superintends children ill of the small-pox; a second named "the patroness of barren women," worshipped by those who desire children; and a third, "who presides over the birth of children." [Not alone in China is a special deity assigned to a particular disease. In Europe St. Vitus is, or was, the patron saint of those affected with the dancing-plague; St. Martin, the succourer of persons in small-pox; St. Anthony of those suffering from erysipelas; St. Margaret, the Juno Lucina of pregnant women. 'Mylitta, or the child-bearing goddess, appears in India as Devaki, nursing her child Krishna. The mother and child are also found among the idols of Mexico.'—'Herod.' by Rawl., vol. ii., p. 540.] There are also "gods of the door and of the upper story, of the four corners of the house, of the centre," etc. At the dedication of these the eye is painted with animal blood, for the reason assigned that "the life is in the blood."

'Persons (women) wearied of a life of prostitution, who can pay for their own support, are sometimes received into nunneries belonging to the Taoist sect.

'Among the "benevolent causes" is that of making education as general as possible, and giving to moral science a decided preference to physical science in the education of youth.'

RECAPITULATION.

DYNASTY.	EMPERORS.	FROM	TO
'The Three Sovereigns' . .	9	B.C. 3369	B.C. 2208
1st. Hia	17	2217	1756
2nd. Chang	28	1743 or 1729	1137
3rd. Chow	35	1137	243
4th. Tsin	4	243	A.D. 202
5th. Han	25	A.D. 202	226
6th. Later Hans, or Hans of Chow	2	226	244
7th. Tsin	15	265	416
8th. Sung	8	419	473
9th. Tsi	5	473	496
10th. Leang	4	496	552
11th. Tchin, or Chin . . .	5	557	584
12th. Souy	3	584	622
13th. Tang	20	622	908
14th. Heo Leang	2	908	913
15th. Heo Tang	4	913	926
16th. Heo Tsin, or later Tsins .	2	926	937
17th. Heou Han, or later Han .	2	938	941
18th. Heo Chow	3	941	950
19th. Sung	18	950	1278
20th. Yuen	9	1281	1368
21st. Ming	16	1366	1644
22nd. Tsing, or Manchu . .		1643	

The ninth emperor of the Ta-tsing dynasty is now reigning (1884).

XXXVIII. TABLE OF CHINESE WEIGHTS.

Chinese weights are mostly decimal. Although English weights and measures are used to a considerable extent in trade with foreigners, being legalised in Hongkong for that purpose, the following are also recognised by Ordinance 22 of 1844:

	1 li	or *cash*	= ·0013 oz. avoir.
10 li	= 1 fan,	or *candareen*	= ·0133 oz. avoir.
10 fan	= 1 tsin,	or *mace*	= ·1333 oz. avoir.
10 tsin	= 1 leung,	or *tael*	= 1⅓ oz. avoir.*
16 leung	= 1 kan,	or *catty*	= 1⅓ lb. avoir.
100 kan	= 1 tàm,	or *picul*	= 133⅓ lb. avoir.
120 kan	= 1 shek,	or *stone*	= 160 lb. avoir.

The words *candareen, mace, tael, catty, picul,* are not Chinese.

Almost all commodities, even liquids, are sold by the above weights amongst Chinese.

XXXIX. TABLE OF CHINESE MEASURES.

English measures are legal, but so are also the following Chinese:

10 fan = 1 tsün,	or inch	= about 1·41 English inch.
10 tsün = 1 chek,	or foot	= about 14·1 English inches.
10 chek = 1 ch'eung	or fathom	= 4 yards (nearly).

The treaty of Tientsin fixes the ch'eung at 141 English inches.

1 li,	or mile	= ⅓ mile English.
10 li = 1 pò,	or league	= 3 miles English (about).

Land is measured by the *mau* or acre, equal to about $\frac{5}{1\,3}$ of an English acre.

XL. TABLE OF CHINESE MONEY.

This is almost entirely represented by *weights* of silver, accounts being kept in *leung, tsin, fan,* and *li* (taels, mace, and candareens), as given above. Their values may be taken to be the following:

1 li	or *cash*†	= ·064d. or $\frac{1}{10}$d.	1 tsin	or *mace*	= 6·4d. or 6d.
1 fan	or *candareen*	= ·64d. or ½d.	1 leung	or *tael*	= 5s. 4d.

Not one of these weights is represented by any coin, unless we may take the cash to represent the value of a li of silver.

Silver is used uncoined in ingots or shoes sometimes called *sycee;* small sums are paid in what is called broken silver. At the Ports this generally consists of the fragments of Mexican or Spanish dollars, hammered to pieces by the Shroffs in their process of *chopping.* This broken silver is weighed by means of small steel-yards called *li-tang.*

Cash may be said to be the only coin of China. The Chinese call them *tsin.* They are bronze coins, not unlike thin farthings with a square hole in the centre for stringing together. The Hong Kong Government cash or *mils* are smaller, and the hole is round. The value of cash fluctuates greatly, and is very much a matter of bargain. About 1,100 to a Mexican dollar is an average quotation.

* The tael actually in use is 1·351 oz.

† The li when representing *weight* is never spoken of as a cash, but probably the original value of a cash was 1 li of pure silver.

XLI. TABLE OF HONG KONG MONEY.

A legal tender in Hong Kong consists of bank-notes of one of the chartered banks; Hong Kong or Mexican dollars; 20, 10, or 5 cent silver pieces to an amount not exceeding two dollars; or bronze cents or mils to an amount not exceeding one dollar. Spanish and South American dollars are also in circulation, as well as Spanish quarter dollars, American half and quarter dollars, shillings, sixpences, francs, the Japanese silver coinage (identical in value and accepted indifferently with that of Hong Kong), and the 10 and 20 cent pieces of the Straits Settlements, which are accepted in the same way.

Four shillings is now (1880) a high average value for a dollar. It has lately seldom been over 3s. 10d.

Mexican dollars *weighed at* 7.1.7. mean coins which contain 7 mace, 1 candareen, and 7 li of silver (see weights given above). Clean coins of this weight command a premium, lighter ones are taken at a discount.

The Hong Kong bronze coinage is always more or less at a discount, which has sometimes been as high as 30 per cent. in the case of cents, and 50 per cent. in the case of cash. Servants avail themselves of this discount to make a profit whenever they are entrusted with silver for purchasing anything that can be paid for in copper.

XLII. TABLE OF SIAMESE MONEY.

4 P'eis	make	1 Fu'ang	=	$0·076.
2 Fu'ang	,,	1 Sálü'ng	=	0·150.
4 Sálü'ngs	,,	1 Bät or Tical	=	0·600.
4 Bäts	,,	1 Tämlü'ng	=	2·400.
20 Tämlü'ngs	,,	1 Ch'äng	=	48·000.
50 Ch'ängs	,,	1 Häp	=	2,400·000.
100 Häps	,,	1 Tära	=	24,000·000.

XLIII. NOTE ON SIAMESE WEIGHTS.

The standard of weight being the coin of the country, weights are designated by the same terms. A Tical weighs 236 grains Troy.

The Siamese standard of weight is just double that of the Chinese, and goods are bought and sold in Bangkok more by the Chinese than the Siamese standard.

XLIV. TABLE OF SIAMESE MEASURES.

Long Measure.

1 Niw ...	...	... ...	=	$\frac{13}{16}$ inch.
12 Niws	make	1 K'ú'p	=	$9\frac{3}{4}$,,
2 K'ú'ps	,,	1 Säwk	=	$19\frac{1}{2}$,,
4 Säwks	,,	1 Wah	=	78 ,,
20 Wahs	,,	1 Sën	=	130 feet.
400 Sëns	,,	1 Yot	=	$9\frac{7}{8}$ statute miles.

Note.—Timber is bought by the Yök, which is 64 Säwk in length, by 1 Säwk in width =36,864 Siamese inches, being equivalent to 169 square feet.

Dry Measure.

1 Tänan... ... ... = 1½ pints. | 25 Tänans make 1 Sat.
20 Tänans make 1 Táng = 15 „ | 100 Tángs or 80 Sat 1 Keean (Coyan).

Note.—A Keean is 20 Piculs. A Picul is 133⅓ lbs. avoirdupois.

XLV. TABLE OF EXCHANGE.

SALUNGS PER DOLLAR.	FOR $100.	CENTS TO EACH TICAL.	SALUNGS PER DOLLAR.	FOR $100.	CENTS TO EACH TICAL.
6· =	150· Tls. or	66·66 ₱ Tl.	6·6 =	165· Tls. or	60·60 ₱ Tl.
6·025	150·62½	66·39	6·625	165·62½	60·37
6·050	151·25	66·11	6·650	166·25	60·15
6·075	151·87½	65·84	6·675	166·87½	59·92
6·1	152·50	65·57	6·7	167·50	59·70
6·125	153·12½	65·30	6·725	168·12½	59·48
6·150	153·75	65·04	6·750	168·75	59·27
6·175	154·37½	64·71	6·775	169·37½	59·04
6·2	155·	64·51	6·8	170·	58·82
6·225	155·62½	64·26	6·825	170·62½	58·61
6·250	156·25	64·	6·850	171·25	58·39
6·275	156·87½	63·74	6·875	171·87½	58·18
6·3	157·50	63·50	6·9	172·50	57·97
6·325	158·12½	63·24	6·925	173·12½	57·76
6·350	158·75	62·99	6·950	173·75	57·55
6·375	159·37½	62·74	6·975	174·37½	57·34
6·4	160·	62·50	7·	175·	57·14
6·425	160·62½	62·26	7·025	175·62½	56·94
6·450	161·25	62·	7·050	176·25	56·73
6·475	161·87½	61·77	7·075	176·87½	56·54
6·5	162·50	61·53	7·1	177·50	56·33
6·525	163·12½	61·30	7·125	178·12½	56·14
6·550	163·74	61·07	7·150	178·75	55·94
6·575	164·37½	60·83	7·175	179·37½	55·74
			7·2	180·	55·55

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THE END.

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