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A MEDICAL HANDBOOK OF TRAVEL

HEALTH ABROAD

A MEDICAL HANDBOOK OF TRAVEL

BY

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1899

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PREFACE

THE main object of this book will have been fulfilled if it enables the ordinary traveller to preserve his health whilst travelling in unknown climates, to be familiar with the various emergencies which may arise when medical aid is not forthcoming, and to treat them to the best advantage. It is only incidentally that the book deals with matters which invalids ought to know but often forget. With the great increase in the range of travel and the number of travellers, when people often visit two or three continents and experience half a dozen different climates in as many months, it seems desirable that the traveller should have all the requisite information, not only in a compendious form, but also drawn from sources which are absolutely trustworthy. With these objects in view this book has been compiled; the articles have all been written by those who have personal experience of their subject, and it has been sought to make the work as complete as possible by special inquiry as to those places which were not large enough or not sufficiently visited to need special articles.

It cannot be too strongly impressed on the reader that this work is not intended to obviate the necessity of

seeking medical aid. Matters which at home are of small moment are, in a new climate and under unaccustomed conditions of travel, often apt to be either serious in themselves from the beginning, or to become serious if left untreated or treated improperly, so that no time should be lost in seeking skilled advice.

Too often foreign travel, instead of restoring health, is the means of sowing the seeds of disease in those previously strong and healthy, when a couple of days' rest or a few simple precautions might have saved a life from being wrecked by chronic ill-health or destroyed by fever.

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The list of books which follows does not include a tithe of those which exist on the subjects mentioned, but it is believed that it includes enough to give the reader ample information, if he desires it.

Those who are going to settle or make a long stay in a colony or foreign country are strongly advised in the first case to apply at the London agency of the colony in question, which will give them valuable literature and information gratis, and in the second to get hold of the Foreign Office Consular reports, which may be obtained at the Consulate of the Country, also through one of the parliamentary booksellers.

The Blue Books of the different colonies, issued annually, also give various information, reports, meteorological statistics, &c. ; permission can generally be obtained to see them in the Colonial Office Library, or they may be bought as above mentioned.

With regard to the reports issued by the colonies themselves, though the figures are accurate enough, it should be said that the accounts of the climate, resources, and prosperity of the land in question are generally of a somewhat rosy hue, and need to be accepted with some reservation, the best side of the picture being, naturally enough, put uppermost ; this applies also, and in far greater degree, to any accounts of transatlantic Edens, whether in California or elsewhere (*vide* the report of the Consul-General at San Francisco in 1896).

For the benefit of invalids, reference is made to novels by well-known authors, with special local colouring, under the

heading of the countries in which the scene is laid; time on board ship, which often hangs heavy, is not ill spent in reading such works, and thereby gaining some knowledge of the country which is in view.

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For medical readers, medical missionaries, and those who may have to live in the Tropics, far from medical aid, *a Handbook of Tropical Diseases* (Dr. P. Manson, London, 1899) gives all necessary information in a small compass, and up to date.

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HEALTH ABROAD

The chief difficulty which presents itself in compiling a book of this kind is one that is not obvious at first sight, viz., that on the whole there is a great similarity between the conditions which are unfavourable to health in various parts of the world, and between the diseases which are in fact chiefly prevalent. There are, on the one hand, certain epidemic diseases, such as the plague, yellow fever, and cholera (the two latter endemic in some countries), which are only widespread at certain times, and which the traveller can best avoid by staying away; and, on the other hand, there are numerous local diseases, or varieties of disease, too numerous and too circumscribed in their distribution for detailed notice in such a volume as the present.

When we come to the diseases with which the traveller is likely to find himself face to face, the question resolves itself into very small proportions—malaria in its various forms and dysentery in tropical climates, and typhoid fever in all climates, forming by far the largest part of the avoidable diseases. Civilisation in many countries, e.g. America, has done much to limit the range of malaria by drainage and tillage, though the first effect of turning up the soil is a virulent outburst of the disease; but wherever it has created new centres of population it has brought its

own diseases with it, quite apart from those due to intemperance and vice, and amongst these typhoid fever and diphtheria take the most prominent place. It is especially in the new towns of rapid growth, with no drainage system or with one unequal to the needs of the population, that the former finds conditions most favourable to its development, in Coolgardie, Johannesburg, and Dawson City, where the race for wealth too often ends in premature death. Moreover, besides the fact that the traveller finds the same diseases abroad for the most part as at home, and partly for that very reason, the advice that can be given is limited, and there is apt to be a wearisome iteration in the few main precepts which are the gospel of physical life. To be temperate in meats and drink, to wear wool next the skin in all climates, to keep the head cool, the body warm, the feet dry, to boil all doubtful water and milk: if he obey these simple commandments, he may fare far and wide and pass unscathed through many perils.

Above all, let him who travels in the tropics be temperate in the matter of alcohol, and let him not take as his standard what he finds suitable for a foggy day in England.

It is a hard saying, but probably true, that very many Englishmen of the well-to-do classes habitually take more alcohol than is physiologically good for them, without even approaching to what is ordinarily called intemperance. England is essentially a climate in which alcohol is well borne—i.e. its effects are not rapidly or sensibly felt; elsewhere, whether in the Arctic circle or the tropics, or in the more stimulating and exciting climates such as the Riviera and North America, alcohol avenges itself surely and swiftly on those who abuse it.

Quâ physical labour and endurance the total abstainer will bear both arctic cold and equatorial heat better

than even the moderate drinker,[1] far better than he who drinks at all freely. The casual whisky and soda, which seems a negligible quantity in a club at home, may mean a fatal attack of heat apoplexy under an Indian sun, or sleep without awakening in a North American blizzard; bad at any time, it is fatal under such conditions. No alcohol between meals, and very little at them, is the only safe rule in great heat or cold, and the best anywhere: its great value in disease will then be more readily felt.

As regards the eating of meat, too, Englishmen will find their standard much higher than that of most other lands, and in hot countries will need to lessen their consumption considerably. In the matter of food and dress, generally speaking, it may be said that an approximation to the customs of the inhabitants, settled as they are often by centuries of experience, is the safest rule and the one most conducive to health, those changes being made which European habits necessitate.

With respect to climate, to which this book does not pretend to be more than a rough guide, it may be as well to say that there is no such thing as a perfect climate. If a climate is equable, it must necessarily be moist and for the most part wanting in invigorating properties; if it is dry and bracing, it will have considerable and rapid changes of temperature, and almost certainly much wind and dust. The traveller therefore must choose whichever presents the least evils for himself, and not expect to find a climate which is at once dry, equable, invigorating, and windless, or he will assuredly be disappointed.

Finally, let it be remembered that no travelling of any extent can be done without constantly meeting with small

[1] For the amount of alcohol which constitutes moderation see Appendix.

hindrances and disappointments, even if serious peril be happily avoided. Those who cannot bear with an even mind the various annoyances that beset the traveller, inferior hotels, bad cookery, late trains, lame horses, broken-down bridges, washed-out roads, sea fogs, custom houses, especially Transatlantic, petty thefts and extortions, with a thousand other ills, had better stay at home. If they travel far they will assuredly encounter all these at one time or another, and to worry over them takes away all the pleasure and destroys all the good of travelling. Hurry and worry are the twin curses of the latter-day pilgrim, who has to learn, especially in Oriental countries and Africa, that, contrary to the teaching of physicists, the equatorial and tropical regions move more slowly than the rest of the earth, and that he will best preserve his equilibrium who accommodates his pace to that of the moving masses around him.

It will be found that, though undesignedly, the different countries have been treated in different ways by the contributors according to the reasons for which travellers chiefly go thither.

Thus Egypt and the Riviera are chiefly health resorts, and are looked at principally from that point of view; India from that of the semi-permanent Anglo-Indian resident; Australia, New Zealand, and South Africa, partly from the invalid standpoint and partly from that of the would-be settler. Life in West Africa is a serious matter, sought by none who have not business, official or mercantile, to take them thither; hence the article on West Africa is more purely medical to meet the more obvious needs of those who have to live and work in one of the worst climates on the face of the earth, often far from skilled medical advice and with few of the comforts of home around them.

It is hoped that in this way the needs of most travellers will have been met, though there are doubtless many omissions.

The different articles have been left almost as written; hence there are some repetitions, notably in the two articles dealing chiefly with the tropics, viz. India and South Africa. It was thought better to leave the two accounts of malaria and dysentery, as they represent somewhat different points of view, and the subject is so important that a little repetition of the main facts does no harm.

For those whose imperialist instincts lead them far afield, a very few words have been added about the more obscure British colonies and military stations. There are some sections at the end on the traveller's medicine chest, and general medical topics of importance to the traveller, such as the treatment of wounds, &c.

Accounts of the chief continental spas have been deliberately omitted, as they require a volume to themselves and are best dealt with separately.

Any corrections will be welcomed by the Editor, or notices of omission: in a work which has involved an immense number of references, many such will doubtless be found. The Editor is responsible for all statements not contained in the separate articles.

Those going on long expeditions, sporting, exploratory, or scientific, should consult the 'Hints to Travellers,' issued by the Royal Geographical Society, and embodying the results of much experience.

E. H.

September 1899.

NORTH AFRICA AND EGYPT

By Leigh Canney, M.D. (Lond.)

On examining a physical map of North Africa we observe that the N.W. corner is occupied by an irregular rectangle surrounded on three sides by the sea, and rising as a great upland country, consisting of plateaux and bordering ranges, and extending from Cape Juby in the west to Cape Bon in the east opposite Sicily, a distance of some 1,500 miles, with a mean breadth of 200 miles. This portion of the continent comprises the three states—the Sultanate of Marocco, the French colony of Algeria, and the French protectorate of Tunis.

Through this area pass a series of ranges of mountains running S.W. and N.E., parallel to the ranges in the Iberian peninsula, and named correctly by the French 'Atlas,' though this term is usually limited to the highlands in Marocco.

We may compare the western Marocco division—Great Atlas—with its unbroken succession of high peaks and N.E. trend, with the eastern division of the same range in Algiers and Tunis, where it broadens out to form extensive plateaux, 90 to 100 miles broad, with N. and S. escarpments. The N. escarpment—the so-called 'Tell'—is a coast range with picturesque valleys.

The N. and S. ridges end respectively N.E. at Cape Bon and S.E. at the head of the Gulf of Cabes.

The heights of this range are greatest in the western extremity in Marocco, where the Great Atlas range rises to perpetual snow level, which is 11,000 ft. for this latitude, and Tamjurt is probably 14,500 ft.

The general elevation falls rapidly as we proceed eastwards, until the hills are of quite a low elevation in Tunis. The southern ridge, called by the French the border range, descends abruptly to the south or Saharan plains in the south of Algiers.

Proceeding eastward of Tunis, along the North African coast, we come to the sparsely populated Tripolitana ; here the climate is drier than in the hilly country we have just noted, and the whole of the seaboard from the Gulf of Cabes to Egypt may be considered an essential part of the Sahara. We have now met the northern limit of the vast rainless, or nearly rainless, zone of arid plateaux and deserts which stretch across the northern division of the eastern hemisphere from the Pacific coast to the Atlantic, where the rain is less than 10 inches. In the African portion of this area from the Mediterranean to the Sudan it is much less than 5 inches on the average. Onwards towards Egypt, and through Egypt to the Suez Canal, we are actually in the Sahara climatically, the cultivation of the Egyptian delta being almost entirely dependent upon the Nile. Everywhere along this seaboard the rainfall diminishes very rapidly as we proceed inland. At Alexandria the rainfall is $8\frac{1}{2}$ inches, at Cairo this has decreased to $1\frac{1}{3}$ inch, and further south at Luxor and Assouan it is hardly measurable. The same may be noted in Algiers and Marocco; the rainfall in Algiers is about 30 inches, whereas at Biskra, 200 miles S.E., it has fallen to $6\frac{1}{2}$ inches, and at El Golea, 450 miles further S., it has fallen to a little over 1 inch. If we take the route to the Sudan from Tripoli southwards through Mourzouk, this

practically divides a very dry, practically rainless, flat eastern portion of the Sahara, including Eastern Tripoli and Egypt, from the western portion traversed by short watercourses from the central uplands.

It is observed that El Golea, in about the same latitude as Cairo, has a rainfall almost identical, and also it is not surprising to find that Biskra, 5° further N. of the latitude of Cairo, should have a rainfall not much less than that of Alexandria.

The principal cause of the heavy rainfall (about 30 inches) on the mountainous seaboard of Marocco, Algiers, and Tunis, is the moisture-laden W. and N.W. winds coming across the Atlantic, striking the hills, and depositing moisture in heavy rains during winter. At Algiers in January, when the wind is prevalent from the direction of the Atlantic, the rainfall is the heaviest. At Biskra the prevailing wind is N.W. in winter, and at El Golea N., and though the hilly seaboard of the coast of these three countries condenses most of the moisture, and the Great Atlas heights a still further amount, yet the low winter temperature on the Saharan side of these hills, and some way into the desert, is able to condense a further amount, though in rapidly diminishing quantity. We still have a rainfall at El Golea, 450 miles south of Algiers, equal to that of Cairo; and at Biskra, 200 miles S.E. of Algiers, five times as great as Cairo. The rainfall at Algiers is twenty-five times that of Cairo, and four times that of Alexandria.

In considering the individual countries of North Africa, we shall observe the corresponding natural effects produced by the varying rainfall. As would be expected, we find the northern seaboard side of the Atlas region supplied with numerous rivers and well-watered forests; on the southern side we have numerous oases and a

vegetation variable in amount and extent as the rains are more or less extensive. Further eastwards, in Tripoli and Egypt, we find vegetation more and more scanty, trees rapidly disappearing, till in Egypt we have the apparently lifeless desert only rendered fertile where the Nile waters have been able to penetrate. In comparatively rainless Upper Egypt the soft sandstone hills bordering the Nile valley, and mud-brick buildings thousands of years old, which would rapidly disappear in a country with only a few inches of rain annually, remain practically intact.

Marocco.—The Sultanate of Marocco, occupying the N.W. corner of Africa, and only separated by the Straits of Gibraltar from S.W. Europe, has many similar characteristics; it is mountainous, fairly well watered, and has many forests on its northern side. One of its rivers, the Sebu, though not navigable, is the longest river of N. Africa next to the Nile, but differs from that river in being dependent upon the climate for its volume, whereas the Nile is entirely dependent upon the Sudan, gaining nothing in volume as it passes across the Sahara to the Mediterranean.

Towards the southern slopes of Atlas the rivers show a tendency to drying up, but the outlines of the river systems which passed across the Sahara to the Niger may still be made out.

Climate.—Marocco has been divided up into five zones climatically.

1. Seaboard, with mild moist winters and cool summers moderated by sea breezes—the Great Atlas protecting from the hot desert winds of summer, the N.W. and W. winds prevailing in winter. The range of temperature between the cold and hot seasons is not more than 10° F.

2. The first terraces on the northern slopes of the main

range. The summer is cool and the winter frosty with snow.

3. The inland plains, the old marine bed forming the great plain of Marocco, surrounded by high peaks; very hot in summer, and very rainy in winter.

4. The Alpine climate on Great Atlas and Anti-Atlas, snow-covered for much of the year.

5. The desert climate of the Maroccan Sahara; heavy rains of winter flood the otherwise waterless oases. In summer the heat is great.

On the northern slopes the mean annual temperature would be not over 64° F.

There is much more rain than in Algiers, and it extends further inland. The rains begin in October and extend through the winter. A short spring and early summer are followed by a long drought. Barley is reaped in March. The climate of the upper terraces and plateaux is practically that of S.W. Europe, with which it is so closely connected. The climate as a whole is health-giving, and free from malaria, except in marshy depressions.

Tangier.—Tangier, bounded on three sides by the sea, has a marine sedative equable climate, and, though not as bracing as that of Algiers, it is rather milder and moister. Tangier is exposed, however, to damp cold winds from the Atlantic. The temperature is uniform, and there is very slight daily range. The mean annual temperature is 67° F. The following statistics were observed by Mr. W. C. Greig, M.B., C.M. Edin.:

The mean maximum temperature of winter in the shade is 60° F.

The difference of temperature between sun and shade is great, and therefore will require much caution on the part of invalids. The mean minimum temperature (November–April) is 51° F.

The rainfall here is 32 inches, there being 30–35 rainy days [probably this does not include days on which there are 'spots only'], chiefly in February and March.

The prevailing winds are S.W. and E.

Heavy dews are frequent.

The relative humidity is greater than Algiers in the winter months, being 80° at 9 A.M.

Tangier is the only place on the north coast of Africa which is a comfortable summer resort, the heat never being felt to be excessive, and it is tempered by Atlantic breezes, the temperature rarely being above 82° F.

Tangier is colder than Las Palmas and warmer than Algiers in winter, and in spring and summer cooler than Algiers.

Residents stay from October to June, and the hotel season is from November to May.

The early autumn is a very agreeable time for ordinary visitors.

The advantages of the climate for invalids are to a great extent neutralised by many drawbacks; the barbarous government gives a sense of insecurity, though probably without danger. The absence of means of locomotion, of roads, of police, and the presence of foul narrow streets render it necessary always to ride.

The climate is suitable for cases of bronchitis and asthma, insomnia, those 'out of health' and requiring change of surroundings.

Tangier has the advantage of an English doctor.

The hotels are moderate, and living is cheaper than in Algiers or Egypt. The situation of some hotels in the crowded city must be condemned.

A few villas may be had, and the same conditions must be observed in selecting a villa as are referred to in treating of villas at Algiers. Sanitation does not exist,

and the drinking-water from variable sources can only be used on reliable authority.

Clothing.—Warm clothing is required for the winter. Thick boots are useful.

Mogador, on the west coast, is rather more healthy and clean as a town, and the climate is equable, bright, warm, and pure, but there is no accommodation.

Tetuan is more sheltered, but accommodation and food are bad.

Travelling in the Interior.—This is done by camping and with horses. A Moorish military escort is required. Information would have to be obtained from the British Consul.

Outfits can be obtained at Tangier, and should include a few drugs such as quinine, as malaria is not uncommon, and chlorodyne in cases of diarrhœa due to chill or dysentery.

The following diseases are present in the country: Ophthalmia, elephantiasis Arabum, leprosy, and all forms of tubercular diseases. Malaria exists in certain districts.

Routes: P. and O. or Orient to Gibraltar, and thence by local steamer service to Tangier.

ALGERIA AND TUNIS.

ALTHOUGH Algeria and Tunis are situated like Egypt on the north coast of Africa, it must not be supposed that these countries have similar climates. It must be remembered that the whole of Algiers and Tunis as far south as Biskra lies far north of Alexandria. Algiers itself is 6° of latitude, and Biskra 4° north of Alexandria, whilst El Golea, the most southern point in the Algerian Sahara, far south of Biskra by some 250 miles, is still only in the

latitude of Cairo. Hence we shall find that, though Biskra in Algiers is in the desert and Helonan near Cairo is in the desert, so great is the difference in latitude that corresponding marked differences are to be noted in the climate. Again, Algiers is in the same latitude as Malaga, the south of Sicily, and the south of Greece, and its climate resembles the climate of these countries more than that of North Africa generally. The Atlas mountains reach in this country 7,000 ft., and add much to the scenery, affording the fastnesses of the Kabyle people.

An imaginary line, passing E. and W. through the country in about latitude 35° N., divides the country into a northern district called the Tell, that to the south being part of the Sahara. The Saharan district may be again divided into one part directed northwards, consisting of pastured slopes well watered, gradually ascending, and more inhabited, the other to the south having some characteristics of the great desert, with scattered oases.

There are three longitudinal divisions: Oran in the west, Algiers in the centre, and Constantine in the east.

The cold on these African mountains in winter is excessive, resulting on one occasion (January 1846) in great loss to the French army during a retreat, leaving 208 dead on the road, and 530 having frozen extremities.

In the flora of Algiers there is an intermingling of tropical and sub-tropical forms on the northern slopes of the plateaux, and the date palm is in the southern oases; on the mountain slopes, prickly and scrubby plants, cactus, thorny cytisus, Barbary fig, aloe, and dwarf palm. Forests have largely gone from Algiers. The vegetation is verdant, with all kinds of trailing flowers, mingled with notes of the nightingale, linnet, blackbird, and goldfinch.

The town of Algiers is situated at the western end of a bay, and therefore has an exposure N.E. and N., which,

as regards sun, is unfavourable, as at noon the fronts of many houses in Mustapha Supérieur are in the shade. The position of the city is favourable as regards the protection afforded by the Sahil Hill against the W. and N.W. winds.

Climate.—The winter climate of Algiers is mild, bracing, and tonic, and it has been the subject of much discussion. It has been described as the Torquay of Africa, and not inappropriately. Its situation and the prevailing winds give it the characteristics of a marine climate, with marked evenness of temperature and small variation between the day and night temperatures, though considerably more than at Alexandria (12·5° to 8° Fahr.). The fall at sunset is less marked than on the Riviera. Algiers is considerably colder than Egypt, and rather colder than Tangier or Madeira, but warmer than the Riviera by several degrees, though less dry. Algiers is warmer and more bracing than Pau, and less exciting than Nice or Cannes.

It is damp and chilly in the wet weather, and snow may rest as low on the hills as 1,600 ft., though the temperature rarely reaches the freezing point.

In the months of October and November, with April and May, the weather may be compared to the best summer weather in England. May is the best month of the year, as it is in Greece, Sicily, Corfu in about the same latitude. December, January, February, and March are like an English autumn, with twice the sunshine and rain, though not so damp. There is nothing like the mistral in Algiers. There is not the luxuriance of vegetation that is present on the Riviera, and the nights are warmer.

The Algerian and Tunisian coast-lands have two seasons—the rainy winter season from October to March, and the dry summer from April to September. The rain-

fall diminishes from west to east on the north coast of Africa, being most in Marocco, half surrounded by sea, and least in Egypt, which, meteorologically, is part of the Sahara.

On the coast of Algeria this order is reversed, owing to local conditions, so that the annual rainfall rises from 16 in Oran to 32 inches in Algiers, and to 48 to 50 inches in Bona, adjacent to Tunis. The heat of summer is moderated by refreshing breezes directed landwards from the sea from 9 A.M. till the afternoon. During the summer months the sirocco, or hot S. or S.W. wind, is frequent, blowing like a hot dry blast, which, however, has not altogether acquired the enervating oppressive effects on men and animals which are observed after it has crossed the Mediterranean.

The climate is on the whole, in Algiers and Tunis, salubrious except in the marshy depressions of the plateaux, the coast, and lowlands, and is well suited to Europeans.

The city of Algiers, being built on a rocky slope, soon dries after rain, which is generally heavy and of short duration; the intensity of sunlight and the purity of the air are notable features.

If we consider the climate of the Algerian and Tunisian coast-lands as a whole, we find the conditions varying with the distance inland, and with the elevation. Thus it will be seen later that the climate of Biskra, 200 miles inland, is totally different from that of the city of Algiers, and the climate of the seaboard differs widely from the almost Alpine conditions 60 miles inland.

There are at least four distinctive climates in Algeria: (1) Maritime or littoral, cool from November to April, and hot from May to October; mean temperature, 64° F.; extremes, 28·4° and 86°. (2) The mountainous climate of the Tell; the influence of the sea is less noticeable; mean temperature, 61° to 62°; extremes, 23° and 89°. (3) The

high plateaux; here continental influences predominate; mean temperature, 66°; extremes, 23° and 100°. (4) Saharan, with great differences; mean temperature about 75°; extremes, 23° and 113°.

In passing from the littoral to the Saharan climate, there is an increasing daily range of temperature, until we have a climate which will be seen to have the characteristics of the desert to some extent.

We will now give a few of the data of the climate of Algiers itself, taken by the Bureau Météorologique, in two consecutive winters, 1893–4 and 1894–5, for the four winter months December to March, and these figures will subsequently be compared with the readings recorded by automatic recording instruments during the same period, taken by the author at various stations in Egypt, p. 28.

Mean maximum temperature, 62·5°; mean minimum, 50°; mean temperature, 56° for the four months.

The average relative humidity for the same months (7 A.M., 1 P.M., and 5 P.M.) was 64·2°.

Wind.—The average force of the wind was 3·5 (Beaufort scale), increasing from 2·9 at 7 A.M. to 3·8 for the rest of the day. The wind is strongest in March.

The average direction of the wind (for the six months November to April, recorded at the hours of 7, 1, 5 of the day) was W. predominating (half the time), then N. (one-third), E. (one-quarter) and S. (one-sixth). The S. wind is fairly prevalent at 7 A.M., but during the day it is rare, except in November.

The W. and N. winds largely prevail; thus Algiers is essentially a marine climate, and the influence of the Saharan desert on the climate in winter is almost nil; the hot sirocco is reserved chiefly for the summer; any S. or S.W. breeze off the snow-clad mountains in winter is of course cold.

The W. wind reaches its maximum in January with the heaviest rains.

Rain.—About 24 inches out of an annual 30 to 32 inches fell between November and April. The number of rainy days in the same period was ninety-four, out of which 'spots only' fell on fourteen. The rain is heavy and soon over, and the ground rapidly dries. The air is much cooler after rain, and the invalid must be prepared.

Algeria, in addition to the capital, offers two other possible health resorts, sufficiently developed to be able to offer most of the requirements of invalids; these are (1) Biskra, (2) Hamman R'irha.

Biskra is situated in lat. 35° 27′ N., and long. 3° 22′ E., at an altitude of 111 metres above the bed of the Oued Biskra. It is about 410 ft. above the sea. It is surrounded by gardens and palm groves covering some four or five square miles. It is an oasis immediately on the northern borders of the Sahara, and the southern side of the Chaîne Saharienne. It is situated about 200 miles to the S.E. of Algiers, and is about 5° of lat. N. of Cairo.

From its position it will be found to have a climate partaking of the characters of the great desert, but modified by the fact that it is in the midst of a cultivated oasis, and that it is not sufficiently far inland to be removed from the influence of the Mediterranean Sea. It is reached by rail from Constantine, by Balna and El Kantara, a distance of 140 miles. This Trans-Saharan railway is to be continued to Touggourt, 130 miles due S. The attraction of Biskra is the delightful desert scenery and life, with the advantages offered by a desert climate to the invalid. Although the luxuries and comforts needed by an invalid (together with the advantage of English medical advice) are not to be obtained to the extent they have been provided on the Riviera or in Egypt, yet for the more

hardy class of invalids these considerations may be of less importance. The transition and contrasts as the train emerges from mountains, running waters, trees, and deep shade into the intense light and blaze of the desert is very marked. Biskra will be found by some dull and devoid of amusements.

Climate.—Biskra is a desert climate, not sufficiently far removed, however, from the influence of the Mediterranean and Atlantic winds to be a typical desert climate. The mean winter temperature for the four months December to March (the average of the three winters 1888–91) was 53·2° F., that is 3° colder than Algiers (7° than Helouan, and 10° than Luxor).

The average minimum temperature for the same period was 43·5° F., or 6·5° F. colder than Algiers, 6° colder than Luxor or Helouan, and 11° colder than Assouan.

The average maximum temperature was 63°, about the same as Algiers, but 9° colder than Helouan, 15° colder than Luxor, and 19° colder than Assouan.

The range of temperature daily is 19·5°, compared with 12·5° at Algiers (8° at Alexandria, 22° at Helouan, and 27° or 28° in Upper Egypt).

The increased range or daily variation of temperature at Biskra, as compared with Algiers, is due to the greater depression of the thermometer at night at the former place, especially just before sunrise, the conditions during the day being about the same. This condition is typical of desert influence, and will be seen to be greater still in Egypt, where the influence of the desert is greater; it depends upon the amount of moisture in the air, and so we should expect to find the air of Biskra drier than that of Algiers or Alexandria, but less dry than any of the stations in Egypt, and such is the case. It must be remembered that the temperature of a desert resort always

feels colder than the same temperature in a damper climate.

With regard to the temperature, it has been stated in an excellent guide book to Algiers[1] that 'Biskra is caressed by the rays of a glorious sun developing a heat of 70° to 80° F. in the shade. Indeed, the record of last year's Bureau Météorologique, which never registered during the winter of 1889–90 less than 70° in the shade, has greatly contributed to encourage tourists and delicate persons to repair to the Desert City.' Such indeed would be, as the author states, a climate assuredly without parallel. Unfortunately, such is not the case; there obviously is some serious error here, and we have drawn attention to it, as we find the latter portion of the same statement occurring in another leading work.[2] Now the records of the Bureau Météorologique, quoted for the winter referred to, give the average minimum temperature for the four months, December to March, 43·5° F., and the average maximum temperature 62° F.; in other words, on the average the thermometer recorded in the shade 26° lower than that stated, and never in December, only twice in January, twice in February, and four times in March, reached even 70° F.

The relative humidity of Biskra is 60°, whereas that of Algiers is 64° (and Cairo 59°).

Rain.—Six and a half inches of rain falls annually at Biskra. The rainy days (including those on which 'only drops' fall) are 65 compared with 94 at Algiers, 17 in Cairo. (The Biskra averages are for the years 1888–91.) About two-thirds of the rainy days occur in the six months November to April.

Wind.—The *average* force of the wind at Biskra was

[1] *The Practical Guide to Algiers.* Geo. W. Harris.
[2] *Mediterranean Winter Resorts.* E. A. Reynolds-Ball, F.R.G.S. 1896.

2·4 for the four months December to March (average of three winters), that is rather less than Algiers, which on the Beaufort scale would be between a light and gentle breeze. There are, however, frequent heavy winds, and they are considered the drawback to the climate. Unfortunately, the hotels have not been built on a plan to obviate the effect of winds and dust storms, which, owing to faulty architecture, are felt as badly indoors as out; the open galleries, staircases, and central court being unfortunate features, only suitable to the hot summer, when these hotels are deserted. The prevailing direction is N.W. and next S.E., though occurring only half as frequently.

Sunshine.—The amount recorded at Biskra is rather less than Algiers. It is not until one has passed far into the interior of the Sahara at such stations as El Golea, 250 miles S. of Algiers, in about the latitude of Cairo, that he reaches a true Saharan climate analogous to that near Cairo, with far more sunshine, only a little over 1 inch of rain, and only 18 days on which rain or drops were recorded, with a prevailing N. wind, and many days of calm, and with a relative humidity of 55·5°—conditions closely resembling those of Cairo. Biskra is the only available desert climate in North Africa west of Egypt.

Season.—The best time for invalids to reside at Biskra is from the beginning of November to the end of May—the best months being November, April, and May. Invalids who have stayed through the winter at Biskra would find Hamman R'irha a delightful change for the month of May before returning home.

The *hotel accommodation* at Biskra is varied. The two larger hotels, the Royal and the Victoria, are especially Anglo-American in their *clientèle*. The cost of living

(12–14 francs) is higher than at the other hotels, such as the Oasis and Sahara, where there are many French guests. The former hotels have been well spoken of. The great drawback to Biskra is the absence of an English physician; there is, however, an English chaplain.

An article in the 'Fortnightly Review' (March 1895), by Major Arthur Griffiths, should certainly be consulted, as a very good and useful account of life at Biskra, by those intending residing there.

Routes.—There are two ways of reaching Biskra from the Continent: (1) Marseilles to Philippeville; (2) the overland route viâ Algiers, a railway journey of two days; both by the General Transatlantic Company, which is the best line. Either route is trying for an invalid. The route to Philippeville by sea has slower and worse steamers. If connection is duly made on the route viâ Philippeville, it is possible to reach Biskra on Friday evening, having left London at 11 A.M. on Tuesday.

The route from Algiers by train is very inconvenient, Algiers being left at 7.10 A.M. and Constantine reached at midnight, where there are good hotels, however, and the journey is continued at 9.25 A.M., and after a change of carriages Biskra is reached at 6.31 P.M. These railway journeys over the elevated plateaux are often intensely cold, and invalids must be amply provided against the cold.

Amusements.—Carriages and driving can be had at Biskra. The drives are often shaded by numerous palms. Riding and excursions to surrounding places of interest, camping out on desert excursions for some days, can be done less expensively than in Egypt.

Hamman R'irha.—This health resort is beautifully situated on a plateau about 2,000 ft. above the sea, 60 miles S.W. of Algiers, and 15 miles from the coast. To the

north are tree-clad hills, and to the N.W. is an adjoining pine forest of nearly 2,000 acres, where good shooting may be had. In fact, in all directions there are beautiful views of surrounding heights, and the hotel stands in the midst of beautifully laid-out grounds. There are good walks, and horses and donkeys are available for riding. The additional attraction of thermal baths and therapeutic waters induced the French Government to select this spot as a health resort for army invalids. The modern establishment is built on the site of the Roman town and baths, known as Aquæ Calidæ.

Climate.—During the winter the climate is rather colder than that of Algiers. Often the cold is very marked, and the climate too variable for delicate invalids in winter, though in spring the conditions are delightful. The air is mild, tonic, and free from dust, which is a considerable recommendation. The proximity of the sea and the prevailing winds bring the climate under similar influences to that of Algiers, but the elevation and somewhat inland position offer a colder climate, especially at night. The absence of a large town and the purity of the surroundings enhance the value of the climate to the invalid. There is generally a cool breeze in the afternoon. The amount of moisture in the air is less than at Algiers, and the air less oppressive (Dr. Brandt). The climate has been compared to the Scotch highlands in autumn, though drier. Hamman R'irha is a delightful summer resort for those who cannot leave the country.

The Baths.—The baths, which are conveniently situated in the hotel buildings, are supplied by hot springs, having a temperature of 113°, and a composition allied to the water of Bath or Baden in Austria. There are two swimming baths, with temperatures respectively of 99° and 109° F. The temperature of 99° is reached by the other

hot-spring. Dr. Lauder Brunton has given[1] a very good description of these baths. Invalids stay about 10–15 minutes in the bath. The bath is followed by slight languor, and the patient lies perspiring in the hot room. The water is clear and bright, and the white floor appears blue through the water. The most important constituent is sulphate of lime. An analysis of a litre of water gave the following result:

Carbonate of lime	·207
Carbonate of magnesia	·030
Sulphate of lime	1·303
Sulphate of magnesia	·172
Sulphate of soda	·017
Sodium chloride	·439
Potassium chloride	·091
Silicate of soda	·069
Alum	·002
Peroxide of iron, small quantity.	
	2·330

The baths are indicated in cases of chronic articular or muscular rheumatism, stiff tendons, gout, and gouty associated conditions. In periostitis and caries, painful cicatrices. In obstructed lymphatics, varicose veins, chorea.

Cold Chalybeate Spring.—This is situated a mile away, and contains bicarbonate of iron and free carbonic acid gas and salts. As there is only $\frac{1}{10}$ grm. of iron per litre, the taste is not disagreeable, and the carbonic acid gas gives it a pleasant effervescing quality. The water is rather laxative and useful in certain cases of chronic constipation, anæmia, and in dyspepsia. The water is taken internally, with cold douche externally in certain liver diseases and malaria. It is possibly useful in renal calculus.

[1] *Practitioner*, April 1881.

This water is often taken at table by itself or with wine.

Season.—The best time to visit or stay at Hamman R'irha is between October and May—the first and last months being the best. In April and May the conditions of climate are excellent for invalids, and Hamman R'irha would be an excellent intermediate station on leaving Egypt for the latter half of April and during May.

Route.—Hamman R'irha is reached by train from Algiers to Bon Medfa station, and the thermal establishment is 8 miles further, and is reached by omnibus or carriage previously arranged for. The train takes $3\frac{1}{2}$ hours, and the carriage 40 minutes.

Hotels.—The Grand Hôtel des Bains is a huge hotel, with very large rooms. It accommodates 250 people, and is supplied with all modern requirements. The terms are 12 to 14 francs a day for good rooms looking south, but much less is charged at the *dépendance* (Hôtel Bellevue). There is a good library of English and French works. A glass-covered terrace, warmed and ventilated, and 300 ft. long, affords a good means of exercise in bad weather.

Hamman R'irha is mostly of use as a health resort in cases of chronic rheumatism and gout, and further reference will be made to it after we have considered the conditions at the somewhat analogous health resort, Helouan in Egypt.

The purity of the air and the excellently built hotel offer attractions to cases of phthisis and bronchitis, though in these cases the uncertainty of the climate, and the possibility of bad weather for days together, with considerable cold, must not be lost sight of.

To archæologists, sportsmen, and artists, Hamman R'irha offers an excellent centre for numerous excursions.

Routes to Algiers.—For invalids not expecting to derive

any benefit from a sea voyage, the best route is viâ Marseilles, by the Transatlantique line to Algiers. Algiers can thus be reached in 2¼ days from London, but the invalid will probably rest a day in Paris before proceeding to Marseilles. In the case of invalids whose illnesses are benefited by sea air, the Papayanni and Moss lines from Liverpool offer very fair accommodation, and the passage takes 8 days. It is now possible to reach Algiers by P. & O. or Orient to Gibraltar, and then changing into the American or North German Lloyd lines. For invalids travelling to North Africa by sea, the end of October, and especially the homeward passage in May, are both found to be times during which calm passages are frequent.

Accommodation.—The hotels of Mustapha Supérieur, which form the principal residential quarters of winter visitors, are large, situated in beautiful gardens, and about 2 miles from the city. These hotels are good and of the first class, though they do not compete in size or in the luxury of their appointments with the palatial hotels in and near Cairo. The Continental Hotel (with lifts), the Hôtel d'Orient, Hôtel Kirsch, the new hotels, St. George and Splendide, both beautifully placed, the English-managed Grand, and the Hôtel Pension, Villa Olivage, are all in this quarter, and the charges vary for pension from 12 to 15 francs a day.

There are numerous other excellent hotels in the town itself, which are useful for passing travellers, such as de la Régence, des Etrangers, de l'Oasis, and de l'Europe.

Speaking generally, the sanitary condition of Algiers, and of the hotels and villas, though improving, is not so advanced as in Cairo and Egypt generally. In the latter case it must be remembered the sanitation is English, in the former French, and the two things are not identical.

Villas.—These are numerous, and of various classes.

A large number are modified Moorish houses, and so may not be suitable for many of the invalids who wish to reside the whole season on account of health.

In the selection of a villa for such purposes, the aspect (preferably S.E.), light and ventilation, drainage, water supply, terraces or balconies sheltered from wind, are all points of great importance, and as to which many villas would be found very deficient. We presume that for an invalid, after obtaining from the agents (Messrs. Dunlop & Tustes, 15 Rue d'Isly) a list of otherwise suitable villas, the opinion of the patients' resident physician as to the suitability of the selected one would be obtained before making a final decision.

A furnished villa in Mustapha Supérieur would cost about 250*l.* for the season, November to May.

Men-servants can be obtained, but English maid-servants should be brought.

If possible, the advice of a friend on the merits of a villa should be obtained.

Few of the villas are good, and one could not do better than follow the advice of Mr. Knox in selecting a villa: [1] 'Avoid Moorish houses. . . . If you can, get a good vulgar modern house, with high wide windows, rooms large and lofty, plenty of air and sunshine.'

Villas should not be too near the sea.

Dress.—Clothing required for Algiers is much the same as for the Riviera—that is, one must be prepared for both hot and cold weather.

For men, suits of flannel and Norfolk jacket suits are useful. Thick boots for walking, generally of brown leather. Underclothing of two thicknesses, the rather thinner one put on in the morning and the thick at night, before dinner. In the morning, before 11 A.M., some extra cloth-

[1] *The New Playground.*

ing. Either an overcoat or extra waistcoat is worn. A shooting cape or golf cloak is put on at sunset, or after exercise. For ladies, short blue serge skirts, or washable linen skirts, white or other colour for hot weather, cotton shirts, vests of two thicknesses, sailor hats. Side saddle if intending to ride.

The clothing suitable for Biskra is somewhat different, and will be much the same as in Egypt, to which paragraph reference may be made.

The precautions necessary as to water and food will be discussed later, when treating of the same question in Egypt.

With regard to sleep, the windows may be kept open at night at Biskra and at Hamman R'irha, at Mustapha Supérieur if so advised by the physician. At Biskra, cold will be felt after 3 A.M. if the windows are open, requiring extra blankets for the rest of the night. Malaria exists in some parts of Algiers, and precautions must be taken when travelling.

Algiers as a Health Resort.—The cases that are chiefly benefited by wintering in Algeria should be divided into two classes : those that the climate of Algiers (or Hamman R'irha) would assist, and those that Biskra would assist. There are in addition special cases that would derive benefit from the baths at Hamman R'irha.

Bronchitis or chronic bronchial catarrh, if accompanied with irritable dry cough, the moist marine climate of Algiers would benefit, in the same way as Madeira or Torquay.

Emphysema with dry cough ; asthma also, if the cough is dry and irritable.

Biskra.—The cases that are specially benefited are similar to those we recommend to winter in Egypt. Con-

sideration of the climates of Egypt and Biskra will be found at p. 18.

The cases that we have noted as suitable for Algiers may with rather less advantage stay at Hamman R'irha. In addition, the baths have been found of benefit in cases of chronic rheumatoid arthritis, and in allied conditions, as we have noted. These latter cases, of course, will not stay at Algiers, but afterwards at Biskra.

The Diseases of the Country.—Malaria is common in the provinces. Phthisis is rare, but rapid when occurring. Scrofula, tubercular bone disease. Disease of the spleen. Ophthalmia.

Excursions.—If wintering in Algiers, the only excursion to be undertaken in January or February is that to Biskra, on account of the bad weather in Algiers at this period. The excursion to Fort National and the Kabyle country is best made in November, and only requires two or three days. All the other excursions would be better undertaken in April or May.

Sport.—Gazelle, moufflon, hare, and rabbit; and in the eastern portion, wild boar, hyæna, jackal.

The capital, Tripolis, is on the S.W. side of a bay; it has narrow streets, and huge Turkish prisons, barracks, and houses. There is a belt of palms and sandhills round the ramparts.

EGYPT.

Egypt is part of the Sahara—at least climatically. Physically speaking, Egypt is that part of the Sahara through which the Nile has cut for itself a valley, and the delta is the low-lying Mediterranean shores which in the course of ages the Nile in flood has been able to cover with a deposit

of Nile mud, gradually causing recession of the Mediterranean shore further and further northward. Between Cairo and Khartoum practically no rain falls, so that there is no addition to the Nile waters as they cross this vast desert. The statement that Egypt, climatically, is part of the Sahara will be found to require modification. Such is indeed practically the case during the summer months from April to the end of August.

But after the Nile flood (August to October) and during the winter months when the water has receded and the crops cover the land (till the middle of March in Upper Egypt, and April in Lower Egypt) Egypt no longer has the same climate as the Sahara or desert closely adjoining it. It is found, as the Author has shown fully from an extensive series of observations and records,[1] that wide differences are produced by cultivation in the conditions of the desert climate adjoining, and that those places which by their position or by prevailing winds are brought under the influence of the cultivated area have a climate which we may call 'Egyptian' as opposed to 'Saharan' or desert. Of the places commonly visited as health resorts in Egypt, Cairo itself approaches closely to the 'Egyptian' type, and Assouan to the 'Saharan;' intermediate are Mena House, Luxor, and Heloûan, the former tending towards the 'Egyptian,' and the two latter to the 'Saharan' type.

The climatic factor that has been the agent in inducing the medical mind to send so many invalids to Egypt, who in times past would have been sent to nearer stations, will be found in the statement of an eminent meteorologist:[2] 'Low pressures in the Mediterranean, along with high pressures to the north, are the conditions of the worst

[1] *The Meteorology of Egypt and its Influence on Disease*, 1897.

[2] *Encyclopædia Britannica:* art. 'Climate,' by A. Buchan.

winter weather in Southern Europe. A cyclone in the Gulf of Lyons or Genoa, and an anti-cyclone over Germany and Russia, have the mistral as their unfailing attendant, blowing with terrible force and dryness on the Mediterranean coast of Spain, France, and Northern Italy. It follows from the courses taken by the cyclones, and the anti-cyclones that attend on them, that Algeria, Malta, and Greece are liable to violent alternations of temperature during the cold months. No place anywhere in Europe, or even in Algeria, offers an immunity from the risks arising from the occurrence of cold weather in winter at all comparable to that afforded by the climates of Egypt and Madeira.'

In addition to the attraction afforded by the winter climate, Egypt offers the great interest of its very extensive remains of bygone greatness in its majestic temples and pyramids, its museum of antiquities, yearly replenished with successive 'finds.' Then there is the interest of Egypt's coming greatness—a greatness that can only be relative to its recent past condition. The summer climate, the lack of ideal aspirations, not yet even to be described as nascent amongst the people, the desire for wealth and show, are some of the factors that will prolong the interval before the people can take any share in the progress of the world. Fortunately for Egypt, it has the advantage of having fallen in the sphere of influence of the British Empire, and it is now understood everywhere, and in England less vaguely, that that influence will be abiding until England is broken to pieces. From a government unsurpassed for corruption, reckless and cruel, with the vast majority of the people the slaves practically of the pachas and the rich, and with no hope of ever rising to anything better, this people has passed to a state of freedom and justice, wealth, happiness, and contentedness that

had never entered the fellah's mind as possible from before the time his ancestors built the pyramids.

Then there is the interest of the Egyptian life; the cheerful, happy, quiet people; the interest of the irrigation schemes and agricultural processes, and all the schemes in progress for further improvement.

In fact, it is this entire change, the fact that there is nothing like Egypt in Europe or elsewhere, that constitutes one of its chief attractions.

In winter, Egypt, as we float on its waters, is a country of distant hills of orange or yellow sand or chalk, and nearer stretches of deep green waving cornfields dotted with islets of palm trees, under a cloudless sky, with a warm exhilarating air, in which one seldom gets tired.

The many and varied attractions of Egypt account for the ever-increasing numbers of visitors during the winter.

Egypt attracts, as does no other country, the archæologist and antiquary. The climate affords relief to a larger variety of illnesses than any other winter resort. Egypt irresistibly attracts the overworked European requiring entire change of ideas, mental rest, and peace—a country where he will forget the things that go up and down in the city, and will consider the price of cotton with equanimity.

The Climate.—Egypt is situated further south than Algiers or Marocco, Cairo being 7° further south than Algiers; so that the climate of Egypt is warmer than the rest of North Africa.

Upper Egypt comes within the very driest area of the Sahara, and consequently has a rainfall that is hardly measurable. On coming further north, Cairo has a rainfall of 1½ inch, and at Alexandria there is six to seven times as much rain.

Considered broadly, Egypt has a markedly desert

climate, influenced by two factors: (1) the N. wind bringing the Mediterranean Sea conditions over the north of Egypt; (2) the cultivated land. The former practically removes Alexandria from desert conditions, and gives it a marine climate, more equable than Algiers, with a warm night temperature; the latter has the effect of producing marked cold and increased humidity soon after sunset and through the night at all those places which are under its influence.

The characteristics of the winter climate of Egypt are dryness, warmth, marked diathermancy or power of transmitting heat, continuous and strong sunshine and light, with constancy of these conditions from day to day.

The drawbacks are wind and the extent of the daily range of temperature; with regard to the former, it may come chiefly in January and February, and is generally from the N.W. and cold. It is perhaps rather less at Luxor than elsewhere in Egypt. With regard to the daily range of temperature, this depends upon the relative dryness of the air, and is therefore greatest in Upper Egypt at Assouan and Luxor (28°), and least at Alexandria (8°); Helouan and Mena, 22°. The range, however, is not so important as it would seem at first sight, most of the change occurring at night in the open air only. In a room with the windows and door open day and night the range of temperature is only about 5° to 6°. Rooms are always cool by day and warm by night, though not quite warm enough to be pleasant.

If we take the four months (December—March), Egypt errs on the side of being too cool rather than too hot, especially Cairo and the surrounding resorts. The climate, as regards temperature in North Egypt, is about the same (after January) as that of the previous month in Upper Egypt.

April is the most pleasant month in Cairo, and March in Upper Egypt; the conditions are then those of the most beautiful summer days in England. In Egypt, the mornings are fresh and cool or cold, especially in the shade and it is not until 11 o'clock that the temperature begins to feel pleasantly warm, during the four winter months. The evenings are cold, too cold to sit out, except in February and March and before the middle of December in Upper Egypt, and during April in Lower Egypt.

There is no fall of temperature at sunset in the desert (unless it is influenced by neighbouring cultivation); there is a considerable fall in the fields under cultivation. Any place that is near cultivation will have a proportionate fall at sunset, and places without cultivation, such as Assouan or Helouan, have hardly any fall. The lowest temperature is just before sunrise (at about 6 A.M.), and after sunrise it rises rapidly till 11 A.M., and then slowly to the maximum, 2 to 3 P.M., and then gradually falls to 6 A.M. In the cultivated fields the temperature may go very much lower at night than in the desert near (as much as 20° difference), and this often results in injury to certain crops by frost. In Upper Egypt 4° of frost has been recorded in January in the fields.

With regard to the higher temperature, experienced in Egypt at certain times in the six months November to April, it must be remembered that it requires the temperature to be at least 10° (in the neighbourhood of Cairo) and 15° (in Upper Egypt) above the temperature of a pleasant English summer day before the same effect is felt in Egypt. A maximum of 75° to 80° F., in and near Cairo, represents the most pleasant weather, such as during November and the latter part of March and April. A maximum of 80° to 85° F. in Luxor and Assouan is found to be the most pleasant, as in November,

the first half of December, and the month of March. The rest of the winter, especially in Lower Egypt, will be found rather colder than is pleasant. Owing to the dryness of the air, temperatures of 60° to 65° in Lower Egypt and 65° to 70° in Upper Egypt, if there is wind blowing, are felt to be decidedly cold.

Dryness of the Air.—The dryness of the Egyptian climate, both relatively and absolutely, is the most striking feature. There is no easily accessible or habitable place in any other part of the world the climate of which can compare, as regards dryness, with that of Nubia and of Assouan, or in fact of Upper Egypt generally. This dryness adds an elasticity, a peculiar lightness, and invigorating freshness to the air, no matter how high the temperature may be, which cannot be experienced elsewhere, except perhaps in the high Alps or on a glacier. Especially is this the case in the deserts of Southern Egypt, and to breathe this air has been compared to drinking champagne. The relative humidity is least at Assouan ; at Luxor it is greater ; at Helouan it is rather higher than at Luxor, though less than at either Mena House or Cairo. We may here mention that the relative humidity of Biskra is a little above that of Cairo, so that it is obvious that there is no place in Algeria which can at all compare with Egypt in point of dryness.

Egypt generally is drier than Tenerife, and Upper Egypt is considerably drier than the high altitudes of Colorado.

With regard to the absolute amount of moisture in the air, the writer has shown that the air of the desert near Luxor and at Assouan is almost as dry absolutely as that of the Engadine in winter. This fact is of great importance in cases of phthisis, seeing that in other advantages offered by the desert, such as continuous open-

air treatment, a warmer climate, absence of snow and rain, and the absence of any difficulty with regard to intermediate stations, and also in other ways, Egypt has the advantage over the Engadine.

Rain.—There are 17 days of rain in Cairo (on 5 of which only drops are recorded), and 39 days at Alexandria. The total rainfall at Cairo is $1\frac{1}{2}$ inch, and six or seven times as much at Alexandria.

Little rain falls at Mena House and Helouan, extremely little at Luxor, perhaps soft rain for a few hours, or spots only once a year. Less still at Assouan, often none.

Dew.—Dew is abundant in Cairo and the cultivated fields. It never falls in the Nubian or South Libyan deserts, nor at Assouan. Dew seldom falls at Luxor, never in the Valley of the Tombs of the Kings, very rarely at Helouan, frequently at Mena House.

Wind.—The prevailing winds in Egypt in winter are N. and N.W. At Alexandria, in summer, the N. wind blows almost exclusively; in winter and spring there is a certain amount of wind from the S.W. At Cairo, in winter, the S.W. wind is nearly as frequent as the N.W. or N., and this wind is cold in winter. Between March and May the S.W. wind is rarer, occurring about once in two or three weeks, and is now a hot dry wind called 'khamseen.' Before the end of March it occurs about once or twice, and may last a day or two, sometimes blowing strongly with either a sand-storm or haze. The effect is stimulating, owing to the great dryness of the air. A 'khamseen' affects the whole of Egypt, though arriving a day later in Cairo and Alexandria than at Assouan in Southern Egypt. At Luxor the winds are generally light from the N. or N.W.; a W. wind in January and February may often be very cold. The force of the wind is probably rather less at Luxor than elsewhere in Egypt.

The Nile.—The Nile flows northwards across the Sahara without any tributary for hundreds of miles. By July it has fallen very low. About the last week of July it begins to rise, and rises rapidly till the middle of August; the remaining third of the rise takes another month or six weeks till the end of September. During October, Upper Egypt as far N. as Cairo is under water, the basins (large areas of land surrounded by banks) being filled from the Nile; in the delta the canals are full, but the amount of water on the land is less than in Upper Egypt. The Nile is now, as seen from the bridges near Cairo, a rushing volume of water. About the middle of November it has fallen one-third of its usual rise.

The Time for Visiting or Residing.—(*a*) *In the case of travellers or tourists not visiting Egypt specially for their health*, any part of the time from November 1 to April 30 is very pleasant. Those intending to ascend the Nile by steamer should do so between November and March—the best time being by the first steamers up the Nile in November and early December, and from the latter half of February to the first half of March. The remainder of the winter will be felt cold in steamers on the Nile, especially in returning northwards against the wind.

November and the first half of December are not the healthiest times of the year in Cairo, and it would be an additional reason for proceeding southwards at once. Helouan and Mena House are delightfully healthy places of residence in the month of November, and it is possible to visit Cairo from either of these resorts. On the return from Upper Egypt, Cairo will be found drier, and it can then be seen thoroughly. Ascending the Nile in November has the following advantages: less crowded steamers, the best weather imaginable, a high river affording good views, with the interest of the flocks of

migrating birds passing southwards at this time, absence from Cairo when it is perhaps rather dull and certainly damp, and the avoiding of a cold return.

(*b*) *Those visiting Egypt for their health.*—The best time to arrive is the beginning of November, and proceed at once to Helouan or Mena House. Those intending to spend the winter at Assouan or Luxor should leave Cairo by steamer about the middle of November (or by train about November 20) for either health resort. Rooms should be engaged at Assouan or Luxor in advance, if possible, as good rooms for invalids are limited and rapidly occupied. It is necessary again to draw attention to the fact that in November and early December the presence of fever (either malaria or dengue) makes it quite undesirable that invalids should sleep in Cairo (a city which at the best of times cannot be considered a health resort) during this period. It seems absurd that such beautifully appointed houses as Mena or Helouan Hotel should exist close by and have climates free from these conditions, and yet be only occupied at this time by a few, who have come out from Cairo to recruit *after* the attack.

Invalids who want to stay a little in Cairo should do so in April, when the conditions are far better. It is not wise for invalids to leave Luxor or Assouan before the third week in March, both on account of that month being the best time for invalids in Upper Egypt and also that they will thus meet with better and safer weather for the return by steamer.

Invalids should not leave Egypt before the third week in April, and then not proceed far northwards. It is advisable to stay at Helouan or Mena House on the return from Upper Egypt. Most invalids would do well to stay in Egypt till the first week in May.

Intermediate Stations.—The voyage home by 'long sea'

after the first week in May is usually accompanied by calm weather, which is not so usual at an earlier date. Those leaving in the middle of April would arrive in Athens, Corfu, Sicily (Taormina), Capri, Algiers, or Hamman R'irha for the best month of the year at any of these stations, all of which will offer very good accommodation for invalids.

Special Health Resorts.—There are four special health resorts in Egypt, two near Cairo, Mena House and Helouan, and two in Upper Egypt, Luxor and Assouan. Before discussing these stations we will first refer to Alexandria and Cairo.

Alexandria.—This city was a health resort of the Romans. The ancient Roman physicians advised patients suffering from phthisis to sail to Egypt and then reside at Alexandria.[1] It is now little visited on this account, though San Stefano at Ramleh, a few miles out by rail, is a delightful resort in April, being placed directly on the sea coast, and the accommodation is very good, and Ramleh will be found convenient for those returning to Europe by Alexandria. In the summer it is the fashionable resort of many whose occupations necessitate their remaining in the country.

Climate.—The temperature is lower in summer and higher in winter than at Cairo. The climate is more equable than Algiers, the daily variation being only 8° (Algiers 12°). The mean winter temperature is 60° F. Alexandria is warmer by night than Cairo. Alexandria is a little drier (relatively) than Algiers or Cairo in winter, though, if we take the record of the day only, Cairo has the advantage.

The wind is N. in summer, N.W. (and occasionally S.W.) in winter. The wind is far stronger than at Cairo.

[1] Strabo, xvii. 1, 7.

Rain (including drops) is recorded on 39 days, and amounts to 7–8 inches annually.

It will thus be seen that, though Alexandria is little visited by travellers or tourists, except for a few hours, yet it enjoys a winter climate that is superior to that of Algiers in every respect as a dry, bracing marine climate under the influence of the Mediterranean almost entirely. There is a large colony of English residents, both at Alexandria and its suburb Ramleh, and life is made pleasant in consequence, and not without several interests.

Cairo.—This is the headquarters of the winter pleasure seeker or traveller in Egypt. Being the capital and seat of government, it has a large official list of residents, and is the headquarters of both the English army of occupation and the Egyptian army when these armies are not away in the Sudan. There is no city in Europe or Africa that in winter offers such varied interest and amusement as Cairo. Seven or eight large hotels (some very large), and numerous smaller ones, pensions, villas, &c., are overcrowded with visitors, who have fled from the harder conditions of northern climates to a land of nearly continuous sunshine and outdoor life. The visitor will find many days occupied in the interest of the splendid museum at Gizeh, the Arab Museum, the Zoological Gardens, the Khedivial Sporting Club at Gezireh (when a game at golf, tennis, or a ride is required), the numerous mosques, the Citadel, the Pyramids, Sphinx and ruins of Memphis and Sakkhara, not to speak of dinner parties, dances, and desert rides.

Climate.—Cairo has a delightful climate during the winter, but is hot and close in summer. Cairo is situated 7° of latitude further south than Algiers, and 5° further south than Biskra, and about 130 miles S.E. of Alexandria. During November and the latter part of March and

April the temperature is very pleasant; the rest of the winter is generally too cold to be pleasant (especially before 11 A.M. and after 4 P.M.), so that fires and artificial means of warming rooms are necessary. The climate of Cairo is drier than Algiers, and slightly drier than that of Biskra, though not so dry as that of Mena House or Helouan at any time of the year. Gezireh Palace Hotel, situated in the fields just outside Cairo, is of course damper still.

Rain falls only on 17 days, on several of which only 'spots are recorded.' $1\frac{1}{4}$ inch falls annually.

Winds: N.W. and S.W. are the usual winds in winter, about equally frequent, and both are cold winds, except in March and April, when the S.W. wind is hot and dry, and is known as the 'khamseen.' The khamseen, however, only occurs twice or three times in these months.

Sunshine is almost constant, though of course there is more cloud than in Upper Egypt, and the sky is often pale blue.

The climate is on the whole warm, soft and pleasant, and bracing (compared with that of Alexandria, Algiers, or Sicily), but enervating compared with that of the health resorts to be considered.

The reasons that render Cairo unsatisfactory as a health resort are:

1. Its position immediately at the apex of the delta of cultivated land, exposing it to the N. and N.W. winds after they have passed over nothing but cultivated land for a hundred miles or more. Even the S.W. wind passes over some miles of cultivation, and thus Cairo possesses very little of the true elements of a desert climate. This applies also to the site occupied by the Gezireh Palace Hotel.

2. The presence of a great city, surrounding on every side the hotels, and so making it almost impossible for in-

valids to get into the desert for exercise either on foot or by riding, and the drawbacks of the dust, dirt, and germs whipped up in every street by the crowded traffic, making driving harmful to many invalids.

3. The fact that much of the city is built on low-lying land, filled in with rubbish of the most unsuitable kind, which, after the high Nile, and up to Christmas at least, is soaked by infiltration water, thus accounting for the occasional presence of fever in October and November, and early December.

4. The unsatisfactory life of Cairo from an invalid's point of view, and the entire absence of special arrangements for invalids, such as have been made and thought out at the health resorts on the suggestions of the physicians resident there.

Hotels.—It is usual for visitors to live in hotels in Cairo, and very few take houses or flats, which necessitate much trouble. The hotels of Cairo are very excellent; no special arrangements are, however, made for invalids. The large hotels, Shepheard's, Gezireh Palace, Angleterre, Savoy Hotel, and the Grand New Continental are the most frequented. For a short stay, Shepheard's from its balcony, and the Grand New Continental, afford the best view of Cairene life passing as a stream before the hotels. For a long stay many prefer the other hotels. The Gezireh Palace is in beautiful gardens out of Cairo, and is very pleasant in spring, though the evenings and early mornings in winter are colder than Cairo. The Savoy Hotel, lately opened, is fitted with warming apparatus, which will prove a step in advance in Cairo. The average cost at these hotels is 14*s.* to 16*s.* a day. Hotel expenses, however, generally reach 1*l.* a day in Egypt. There are several smaller hotels and pensions where the cost of living and general comfort is less. The cuisine, service, and

general luxury of the Cairo hotels are more uniformly excellent than is the case at the hotels on the Riviera.

Routes.—Cairo is reached from London by the P. & O., Orient, and numerous other lines direct by sea, landing at Port Said or Ismailia. From Marseilles by P. & O. or Messageries Maritimes, the former being far superior.

From Venice by P. & O. to Alexandria.

And by numerous other routes.

The 'long sea' route is perhaps the best, and least trouble for invalids, especially if not returning till early in May.

The route viâ Marseilles by P. & O. is a very good one, especially as the landing and route viâ Alexandria are superior to the route viâ Port Said or Ismailia. To land at Port Said means a long and disagreeable train journey to Cairo, and to land at Ismailia often means being put ashore in the middle of the night after a cold trip on a small launch.

An invalid not going by 'long sea' from London should leave London at 11 A.M. and dine in Paris; then, if not fatigued, proceed direct by sleeping car to Marseilles. Then by P. & O. to Alexandria (which is usually reached in the morning), possibly in time for the morning train (9 A.M.) to Cairo, and after lunching at one of the hotels, Mena House or Helouan can be reached comfortably in an hour. On arrival at Cairo station, Messrs. Cook's agents, who meet the trains, will make the necessary arrangements for forwarding baggage at once to the station for Helouan or to Mena House. Cairo is thus reached in six days. Leaving Alexandria by the afternoon express (4 P.M.), the invalid dines and sleeps in Cairo, and proceeds the next day.

Special Health Resorts.—These at present consist of four: Helouan and Mena House near Cairo, Luxor and Assouan in Upper Egypt.

Situation.—Mena House is 8 miles W. from Cairo, and is situated immediately on the edge of the desert a few feet above the cultivated land which extends between it and Cairo. It is about 300 yards to the north of the Great Pyramid. It is reached from Cairo by carriage in 40 minutes along an excellent road. It is also connected with Cairo by an electric tramway.

This hotel was originally a private house built by an invalid, and has subsequently been enlarged and beautifully appointed by the present owner, Mr. Locke-King, to accommodate about 150. Mena House as an hotel is one of the best managed and most pleasant to reside in in Egypt. The cuisine is very good, and the wants of invalids have been carefully considered. Here, as at the other health resorts of Egypt, nearly every one is an invalid, or the friend or relation of an invalid, and yet to look round the dining hall (perhaps the most beautiful in any hotel) one would not imagine such to be the case. If Mena House as an hotel has a fault, it is the lack of a system of artificial ventilation ; the same drawback exists at every hotel in Egypt, however, but it is not so noticeable in the capacious corridors of such hotels as that at Helouan. There is a magnificent swimming bath, a good library ; golf is sometimes played ; a good billiard room, and a band ; lawn tennis, good riding, shooting, and races. A resident physician, English nurse, and chaplain are at Mena House during the winter. The sanitation is excellent, and the drinking water good.

Climate.—The temperature and range of temperature are much the same as in Cairo, and what has been said under Cairo, in this respect, applies to Mena House. The mean temperature for four months (December to March) is 59·5° Fahr., or about 1° colder than Helouan, about 4·3° colder than Luxor, and 8·8° colder than

Assouan. The average maximum for the same period is 70·4°, or 7·7° colder than Luxor, and 11·7° colder than Assouan. The average minimum is ·7° colder than Helouan, ·9° colder than Luxor, and 5·8° colder than Assouan. The range of temperature is 22°. The mean temperature in December, 59·5°; January, 56·5°; February, 60·2°; March, 61·8°; April, 67·8°.

Relative Humidity.—The relative humidity (mean of 2-hourly readings) is 69·1°. The average of five readings from 10 A.M. to 6 P.M. was 51·7°, or 9 per cent. less dry than Helouan, 15·4 per cent. less dry than Luxor, and 21·2 per cent. less dry than Assouan.

Mena House is, however, at all times, drier than Cairo, and the air is far purer and fresher.

The prevailing winds are N.W. and S.W.; they are often very strong and cold. The S.W. wind does not become a hot wind till late in February, and in March and April, as at Cairo.

Season.—November 1 to the close of April. The best months at Mena are November and April, and invalids coming for the winter should not miss these times. The months December, January, and February are generally colder than is pleasant, as also is the case at Cairo and Helouan.

Helouan is situated in a broad wady in the eastern desert, 15 miles south of Cairo, 2 miles from the cultivated land, and 3 from the Nile, and it is 115 ft. above the plain of cultivation. It is reached by frequent trains from Cairo in 20–30 minutes.

It is associated with, and arose in consequence of, the natural sulphur waters which spring to the surface here.

Helouan has a population of some thousands, and consists of a number of detached villas or houses, each in its own compound or garden of stones and sand. The

roads are broad and clean and the town is well kept. The houses are the villas of people (chiefly Egyptian) who for the sake of the climate prefer to live here, although their occupations may be in Cairo.

The houses surround a kind of central park or Casino grounds, where an English band frequently plays, and in which is situated the Grand Helouan Hotel, a large well-constructed building with capacious bedrooms and a fine dining hall. The hotel faces S.E. Good tennis courts adjoin the hotel; there is a billiard room, an excellent library, and good golf links. The two latter advantages owe their presence to the energy of Dr. Page May, the English physician residing at Helouan. Situated about half a mile south of the hotel are the sulphur springs and the new baths, which have been built on a palatial scale. Close to the baths is the large comfortable Hôtel des Bains, built on an excellent plan, and where the cost of living is much less than at the Grand Helouan Hotel.

There are numerous pensions, several of which are very good, and a pension-hotel (Heltzel's), managed by and largely patronised by Germans.

There are several villas that may be hired furnished for the winter at varying prices. Few people or visitors live at Helouan for the pleasure of living there only. The *raison d'être* of Helouan is the imperative need of a comfortable, well-appointed resort for invalids, who wish to be near Cairo and yet have the advantage of a pure desert climate, and in certain cases access to the baths. This has been accomplished, and for those invalids who do not ascend the Nile the advantages thus afforded cannot be over-estimated.

The Thermal Waters. — One of the advantages of Helouan, from the invalid's point of view, is the presence of sulphur, saline, and chalybeate springs. Lately, excel-

lent baths have been built on plans suggested by Dr. Page May, and in every detail meeting the most recent medical requirements.

The sulphur waters usually used in the baths rise from the earth at a temperature of 91°, are very abundant, and are stronger than any natural sulphur water used in baths in Europe, whilst at the same time they contain a large percentage of salt. The composition of the sulphur water is as follows:

	Grains per gallon.
Potassium Chloride	20·46
Sodium ,,	354·83
Calcium Sulphate	4·85
,, Carbonate	57·75
Magnesium Sulphate	35·48
Iron and Alumina	1·12
Silica	2·03
Sulphuretted Hydrogen	6·42

The indications for the Helouan waters are cases of gout and lithæmia. Also in bronchial and pharyngeal catarrh, engorged liver and other organs, dyspepsia, rheumatoid arthritis, sciatica, rheumatism and stiff joints.

The sanitation of Helouan is excellent and the drinking water very good.

Climate.—The climate is much the same as at Mena House, but differs from Mena chiefly in the course taken by the relative humidity, especially at night. The mean temperature at Helouan is about 1° F. warmer than Mena House, and 7·8° colder than Assouan. The minimum temperature is about the same as at Luxor, and 5·1° colder than at Assouan. The temperature at Helouan is, like that of Cairo and Mena House, decidedly cold in the latter half of December, in January, and part of February; the rest of the season is very pleasant.

The mean temperature is in December 59·9°, January 56·4°, February 61·8°, March 64°.

The relative humidity is 55·5°, that is drier than Cairo, and drier than Mena House, though not quite so dry as Luxor, and not nearly so dry as Assouan. The position in the desert has the advantage of affording an even and graduated change from hour to hour, which is of value to invalids. As in the rest of Egypt, there is occasionally more wind than is pleasant, but shelters are afforded. The rainfall is probably much less than that of Cairo.

The Season.—Invalids should arrive early in November, and should remain till near the end of April. However, Helouan does not fill up until about the middle of December, and many people leave at the end of March.

Luxor.—For years past Luxor has been well known as a delightful winter resort. The life is essentially a country life. Plenty of excursions and donkey-riding by day, and very comfortable quarters for the weary by night. The great attraction of Luxor is that it is the very best centre for Egyptology. It is in the midst of perhaps half of the most interesting Egyptian antiquities, and these temples and tombs afford great interest to the winter residents. Now that the railway places Luxor within about 14 or 15 hours of Cairo, it will doubtless be frequented by many more visitors. Its situation close to the right bank of the river affords much interest in the way of passing steamers, dahabeahs, &c.

Luxor is 450 miles S. of Cairo, 241 ft. above the sea, and is in the midst of the Theban plain, which is cultivated for 3 or 4 miles each side of the river here.

Luxor can be reached direct from Cairo by train and by steamer. Messrs. Cook & Son have (1) a costly, rather more luxurious, line of tourist steamers, on each of which an English doctor travels; and (2) the less pretentious though very comfortable and far less expensive post boats.

By either of these boats Luxor and Assouan may be reached with comfort and pleasure. In addition, there are two other companies running occasional boats, the Anglo-American and Tewfikieh Co.; the former company is well managed and possesses very good steamers.

Hotels.—There are three hotels: The Luxor Hotel, by far the best, accommodates about 120 people, has a beautiful garden of palms and mimosa, with broad shaded sand walks. It is 100 yards from the river on the south side of the town. A small church has been built in the hotel grounds, and an English chaplain resides here in the winter. The cuisine is good, and much attention is given to invalid cooking, which is indeed excellent. The earth system is employed throughout, and is efficiently carried out. The drinking water is filtered through Pasteur-Chamberland and Berkefeldt filters. The hotel is well managed; there is electric light, billiard room, and an excellent library, belonging to the Luxor Sporting Club, is located in the hotel.

An English physician and trained nurse reside here in winter. Pension: 12*s.* to 16*s.* a day.

The Karnak Hotel, partly under the same control, is situated on the river front, accommodates about 40 or 50, is only on the ground floor, and the passages are covered in by a verandah only; the hotel is well managed, cuisine and sanitation good.

The Tewfikieh Hotel accommodates about 80, and is well managed; has a garden; the passages are covered in, and the bedrooms large; sanitation fairly good; prices as at Luxor Hotel.

Climate.—The climate of Luxor is more equable than that of Northern Egypt. The wind is rather less than elsewhere in Egypt. The maximum temperature (average of 4 winter months) is 6·4° warmer than Helouan, and the

minimum is the same as at Helouan. The extra warmth of Upper Egypt is a considerable advantage to many invalids. The mean temperature is in December 62·4°, January 59·7°, February 63·3°, March 69·9°.

The relative humidity is 52·2° (average of 2-hourly readings December to March for 3 years), that is rather drier than Helouan, though much less so than Assouan. Rainfall amounts to about one shower a year, often very light. Dew rarely falls except in the fields.

Season.—The season at Luxor for invalids is from the beginning of December to the end of March. The latter part of November is very pleasant, and March is the best month. Luxor is full by the end of December as a rule. There is good quail shooting in February and March.

Assouan.—Situated at the 1st cataract, about 680 miles S. of Cairo, is practically in the Nubian desert, as there is no cultivation on the western bank for many miles N. and S., and very little on the E. The town consists of a long frontage of about three-quarters of a mile, with a broad stone embankment running the whole distance —the houses being situated in groups of palm trees, with a beautiful view of the entrance to the cataract and of its islands. The high sand-covered hills on the western side come close to the river bank. Assouan is the most beautifully situated town in Egypt. Its immediate access to the desert for riding, and to the river and cataract for sailing, are the two prominent attractions for residents and invalids, unequalled elsewhere in Egypt. There is also much of interest in the ancient remains, especially at Philæ, and the great barrage being built across the cataract. Assouan is reached in about 22 hours from Cairo by train, and also by all the steamers of the various companies.

Hotels.—There is one good hotel, the Grand Hotel, Assouan, accommodating about 100 people, although two

new large hotels are to open this winter. A site for one, called the 'Cataract House' Hotel, has been obtained extending up the cataract, and the other is placed on the Island of Elephantine, belonging to the Anglo-American Hotels Company. The 'Grand' Hotel is well managed; the charges are about 14*s*. to 16*s*. a day for pension; the cuisine is good, and invalid cooking is well carried out. The sanitation is good, and all drinking water is carefully filtered on the most approved methods. There is a billiard room and small south garden. The library of the Assouan Society, generously subscribed for by visitors, is located in the hotel.

The English physician resident at Assouan in the winter stays at these hotels and at his house. There is a trained nurse. An English church is being built, and a chaplain resides at Assouan. There is also a Roman Catholic church.

Season.—Invalids should secure rooms some time beforehand, as there is a very great demand, and the hotel is full early in December. The best time to arrive is about November 20, and to leave not till near the end of March—the best months at Assouan being the first and last of this time, the remainder being a little too cold at times, though warmer than any other resort in Egypt.

Climate.—The necessity for this resort is the superiority of the Nubian climate to any in North Africa, which warrants invalids in seeking a resting-place 11° south of Biskra, and so far S. of Cairo.

Temperature.—The great dryness of the climate of Assouan necessitates a much higher temperature to be experienced as pleasant than would be the case in Europe. At least 15° must be added to temperatures in England to arrive at the same degree of comfort. The average maximum of the 4 winter months is 10·4° warmer

than at Helouan, and owing to the greater dryness of Upper Egypt the daily range is greater than in Lower Egypt. The minimum temperature is about 5° warmer than Helouan or Luxor by night; this is in itself of great importance to invalids, especially to the large class of cases, such as Bright's disease, gout, bronchitis, &c., requiring a high temperature. The mean temperature in December is 65·6°, January 64·3°, February 67·4°, March 75·8°. The average maximum for these months is 82·1°, and the minimum 54·5°. There is no chill or fall at sunset, and the mornings are not so cold as elsewhere in Egypt. The absence of any cultivation or influence of cultivation prevents the occasional changes of temperature observed at other stations, as at Mena House and Luxor. The change is always gradual and similar from day to day.

Humidity.—Assouan is the driest accessible health resort in the world. The relative humidity is 40·9° (mean of 2-hourly readings December to March for 3 years), being 11·3 per cent. drier than Luxor, 14·6 per cent. than Helouan, and 28·2 per cent. than Mena House. To this Assouan owes its bracing stimulating qualities. The air is exceedingly pure, being brought directly by the prevailing wind across hundreds of miles of the Libyan desert without crossing any cultivation.

Rain is very rare, often none falls, and dew never occurs. The dryness and warmth of the air at night at Assouan is a most important feature for invalids, who may often be out till late in the evening with advantage.[1] There is no malaria, and patients are often sent here for the cure of malaria. From the point of view of absolute humidity, Assouan is nearly as dry as the Engadine; 10 cubic ft. of

[1] *Meteorology of Egypt and its Influence on Disease*, Leigh Canney, able vii. p. 69.

Assouan air can take up from the lungs 160 grams of water, compared with 175 in the Engadine; the superiority in other respects of Assouan over the Engadine is shown in the work referred to.

The Nile as a Health Resort.—Before the existence of Luxor and Assouan as health resorts, sailing up the Nile in a dahabeah was doubtless the best means of obtaining the advantages offered by the climate of Upper Egypt. As a means of seeing Egypt leisurely, it is doubtless most pleasant though somewhat costly. These dahabeahs are beautifully fitted, and accommodate six to eight people, and cost about 400*l.* to 600*l.* for the season. For certain classes of cases, especially nervous cases, the Nile (either by dahabeah or by the excellent Nile steamers) affords a very good way of passing the winter in Egypt. However, in cases of chest disease, Bright's disease, bronchitis, gout, and the majority of invalids to whom it is important to pass their time out of the wind and in an even temperature, the Nile can only be used as a means of transport to one of the health resorts of Egypt, and even then every precaution must be taken to avoid chill, especially in going down the river. With care the ascent of the Nile before the commencement of December, and the return after the third week in March are free from risk, but care is absolutely necessary. At the health resorts of Egypt a chill is far less frequent and its consequences can be limited by medical care and nursing at once, and on the river this is not always possible. However, both on the Nile and elsewhere in Egypt, no invalid or traveller can afford to be ignorant of the nature of the climate he has come to live in, and of the precautions he should take to accommodate himself thereto.

Clothing.—The clothing for all places on the seaboard of North Africa is about the same as on the Riviera—that

is, thick clothing and thin are both required. What is now said of Egypt applies equally to Biskra. The traveller or invalid must be prepared for some cold days, and always for cold nights in Egypt. For most of the day the same clothing is required as for an English summer, but there are two portions of the day—the morning and the evening—which require special care. It is not usual to refer to the morning, but the writer believes it to be of importance, especially to invalids. We will suppose, then, that thick underclothing (especially the vest) is worn throughout the days of December to the end of March in Lower Egypt and Biskra, and from the middle of December to the middle of February in Upper Egypt; the remainder of the season in Upper and Lower Egypt a moderate thickness only is worn in the day, but on changing for dinner a thick vest is always put on. Then a cloak or light overcoat is worn in the morning till 11 A.M. in Lower Egypt, and till 10 A.M. in Upper Egypt during the cold period referred to. At sunset no special precaution is necessary, but shortly after (varying with the amount of cultivation near, therefore much later in the desert than in the fields) a cloak is acceptable. For the majority of invalids and others it is a mistake to wear too much clothing, especially over the lower limbs, the object being not to perspire unduly; but should this take place, the next step is to see that the body itself does not cool down too quickly, and this is attained by the merino or flannel vest over the body, with the addition of an abdominal belt or bandage round the abdomen—the part that is almost certain to suffer first in the case of 'chill' in Europeans. The keeping the limbs cool, especially the lower limbs, limits this tendency to undue perspiration. Another very useful means of cooling slowly is to cool down in the sun, or between blankets after hard exercise in the afternoon, or in an overcoat or

cloak. In the case of certain invalids to whom free and continuous transpiration is of importance, an entirely different method of dressing is necessary. In Egypt or Biskra avoid the morning shade without extra clothing or standing in the wind. At night it is always better to sit under an awning than under the open sky. The above remarks will be found of the greatest value, simple as they may appear, and often contrary to methods followed at home, being the outcome of many years' experience in Egypt; and the Author finds the late Surgeon-Major Parke, with a large general African experience, lays equal stress on attention to this subject. Probably no traveller in Egypt or Africa has neglected this subject with impunity.

Ladies will find the following useful: sailor hats, parasols, cotton shirts (short capes to be worn over these till 10 or 11 A.M.); blue serge skirts are useful for walking or riding (a riding habit is required in Cairo only); white or coloured linen skirts, dust-proof skirts are useful for walking in some places. Walking skirts should be short on account of the dust. Thicker dresses and cloaks for evening; evening dress, rather frequent in Cairo, optional in Upper Egypt. Brown boots or shoes; gaiters to keep out the sand if walking; underclothing on the basis of the remarks made above.

Gentlemen: hats straw, soft felt, cloth caps, knickerbocker suits. Stockings with short gaiters to keep sand out of the boots. Flannel, tweed, and dress suits, riding breeches and gaiters for horse riding, brown boots; vests of two or three thicknesses. Golf cloak, or light overcoat, and an ulster or fur coat.

General Medical Remarks.—For most invalids the windows in Egypt and the north coast of Africa may be kept open through the night. But for certain cases (e.g. Bright's disease, bronchitis, asthma, and some cases of

phthisis) it will be found that, if the resort is in the cultivated land (as in Cairo or the Gezireh Palace) or on a dahabeah or steamer close to a steep bank and in certain parts of Algeria, the night temperature is too low, and there are frequent waves of very cold air entering the room, so that it is necessary to keep it closed.

Drinking-water should always be efficiently filtered through Pasteur-Chamberland filters. As a rule drinking-water may be drunk with safety in Cairo (at the large hotels), at Helouan, Mena, Luxor, and Assouan. Inquiry must be made previously throughout Algiers and Marocco, and it must be remembered that there are only three efficient filters—that named above, the Duff, and the Berkefeldt. Water boiled for two or three minutes is always safe. Typhoid in Egypt is rare, unless introduced into the country. In taking precautions about drinking-water in a doubtful case, it must be remembered that it is also necessary to boil the toilet water used for the mouth, and to avoid raw vegetables, salads, butter, &c., that have been washed in water.

In Egypt, smoked glasses for the eyes are useful, owing to the strength of the sunlight, especially when looking at ruins for long.

A dusting powder of equal parts of boracic acid, zinc oxide, and starch is indispensable in cases of roughened or sore skin from riding, &c.

Boracic acid solution, 10 grains to an ounce, is very useful as an eye lotion.

In all cases of diarrhœa in Egypt it is advisable to be under medical treatment as soon as possible, as this will often save some days or weeks of illness.

North African resorts compared.—This article on North Africa would be incomplete unless a general review and comparison were made of the climates and facts already given.

The impression that one often expects to find prominent in the minds of most people is that the climate of North Africa is much the same everywhere—one vast and continued blue sky, rarely clouded over, seldom affording rain, fiercely hot under an all-scorching African sun. They associate the climate of North Africa with the apparent all-pervading Saharan desert. Such, however, is by no means the case, as will be shown directly. The fact is that very few of the health resorts of North Africa are entirely situated in or under the influence of the great Sahara desert, though some such, as Assouan, are almost entirely under its influence, and even Biskra might be so considered were it not for its oasis, surrounding the town with a vast garden covering several square miles. Then it must be remembered that North Africa and the Sahara in winter are the reverse of hot. The health resorts of North Africa, Tangier, Marocco, Algiers, Hamman R'irha, Tunis, Tripoli, Alexandria, are all practically on the northern fringe of this desert and chiefly under the influence of either the Atlantic or Mediterranean Sea, and hardly at all under the influence of the desert, as we have shown. Then we have a group of resorts practically in the Sahara but to a large extent under the influence of cultivated land, in the following order: Biskra, Cairo, Mena House, Helouan, Luxor, Assouan—the former being most and the latter least under this influence. The influence of the cultivated land is about the same at Biskra, Cairo, and Mena House; at Helouan and Luxor it is about equal, though much less than at the first three mentioned. At Assouan it is least of all. The influence of the desert over these places is in the inverse order, being least at the first three. The absence of uniformity is observed in several ways; the heavily dewed Algiers differs widely from the desert-surrounded

Assouan, where dew never falls. The elevated and pure-aired Hamman R'irha differs again from low-lying, busy Cairo; rainy Algiers and Tangier under Atlantic breezes differ from comparatively dry Alexandria, where the rainfall is only a little in excess of Biskra; and, again, flat Egypt and Tripoli differ in their climates widely from snow-capped Marocco.

The following table shows the maximum, minimum, and mean temperatures, the relative humidity, and the annual rainfall at the various resorts.

The temperatures and relative humidity are the averages of 4 months (December to March) for 3 years, the relative humidity being the average of three daily readings, 7 A.M., 1 P.M., and 5 P.M.

If we take the individual classes of cases which are benefited by a warm dry climate, they are found to consist of a long list, embracing various pathological conditions.[1] In all those cases where especially dry warm air is required, in asthma, phthisis, chronic bronchitis (some cases), convalescents from pneumonia, pleuro-pneumonia and pleurisy, Bright's disease, rheumatoid arthritis, gout and associated lithiasis, and sciatica, the best health resorts in North Africa or elsewhere are those in Egypt, under the influence of the desert, where the air is driest, both relatively and absolutely (see table, p. 58). Out of these resorts Helouan may perhaps be chosen for the early part of the winter, on account of the baths for cases of rheumatoid arthritis, gout, and sciatica; the remainder of the time in these cases and all the time in the remaining cases would be best spent at Assouan, which is undoubtedly the driest and most bracing resort known, with a warm climate in winter.

[1] *Lancet*, October 27, 1894, and *Meteorology of Egypt and its Influence on Disease*, p. 65.

Station			Temperature				Relative Humidity	Rainfall	
			Max.	Min.	Mean	Range		Days	Inches
Marine Climates		Algiers . .	62·5	50	56	12·5	64·2	94	31
		Alexandria . .	65·5	56	60·7	8	63	39	8
Desert Climates	Influenced chiefly by cultivated land	Biskra . . .	63	43·5	53·2	19·5	60	65	$6\frac{1}{2}$
		Cairo . . .	70	48	59	25	59	17	$1\frac{1}{4}$
		Mena House .	70·4	48·7	59·5	21·7	60·5	? Rather less than Cairo	Rather less than Cairo
	Influenced chiefly by desert	Helouan . .	71·7	49·4	60·5	22·3	49·7		
		Luxor . . .	78·1	49·6	63·8	28·4	46·1	1	Slight
		Assouan . .	82·1	54·5	68·3	27·6	37	0 or 1	Trace only

From this Table of comparable figures will be seen

1. The superiority of the mean and minimum temperatures of the Egyptian health resorts, especially in Upper Egypt.
2. The superiority, as regards dryness of the air, of the desert climates, influenced by desert chiefly, over those influenced by cultivation chiefly.

With regard to cases of phthisis, those deriving the greatest benefit are: (1) non-erethic cases; (2) hæmorrhagic cases; (3) non-acute cases of the first or second stage; (4) chronic quiescent phthisis; (5) cases associated with bronchitis, especially if there is a gouty tendency, or of a fibroid character. Hæmorrhage is no bar to Egypt, but such cases, and indeed all cases of phthisis, would do well to avoid the river life on dahabeahs or steamers, and should spend the winter in the driest resorts under the influence of the desert. It has been shown in another place that a resort as dry absolutely as Assouan compares very favourably with the Engadine in winter for cases of phthisis, as the air is nearly as dry, and desert Egypt possesses the following advantages over the Engadine:

(1) Constancy of climate from day to day.

(2) Absence of snow or rain.

(3) Air as bracing as the Engadine, yet warm, with almost unbroken sunshine.

(4) The hours spent in the open air are twice as long.

(5) Absence of any difficulty in Egypt for the months of March, April, and half of May.

(6) Rarity of dyspepsia in patients of all classes in Egypt.

If we consider Algiers and Biskra, in such cases, although in the presence of the Egyptian desert resorts we cannot recommend Biskra, yet most of the above arguments would strongly induce physicians to select Biskra in preference to Algiers.

We have certain cases of bronchitis with irritable cough which do well at Algiers, Las Palmas, Madeira, Alexandria, or Ramleh; chronic nasal or pharyngeal catarrh does well in Upper Egypt or at Las Palmas;

cases of mental strain or breakdown, especially if associated with gout or kidney disease, would do best in Upper Egypt or on a Nile steamer; insomnia does well in Egypt, especially at Mena House, Helouan, or Assouan, and some cases at Las Palmas. In cases of Bright's disease or albuminuria, one cannot insist too strongly on the necessity of the climate of the desert, especially that of Assouan, on account of the extra dry warmth and absence of sudden changes in the temperature or humidity; dyspepsia at Mena House, Luxor, or the other health resorts of Egypt, or at Biskra; hypochondriasis and neurasthenia, Upper Egypt or a Nile steamer, or at Biskra; neuralgia at Helouan or Assouan; valvular heart disease possibly at Las Palmas; malaria at Assouan or Helouan; after-attacks of rheumatic fever also at Assouan or Helouan; laryngitis at Las Palmas or Mena. For fuller details refer to the works already quoted. Hamman R'irha is an alternative resort to Helouan in rheumatoid arthritis and gout, but not so good.

GRAND CANARY

Grand Canary, 120 miles from the mainland of Africa, in the latitude of the Sahara desert, possesses some of the characters of a desert marine climate, if we may use the expression, as compared with the sedative moist climate of Madeira.

The average mean temperature (November to May) at Las Palmas is 63°, about the same as Luxor. The daily variation in temperature is less than in Egypt, as at all marine stations. The relative humidity is of course far greater (67°) than in Upper Egypt, and more than at Algiers or Alexandria. About 10 inches of rainfall per

annum, spread over 41 days, represents a condition intermediate between Alexandria and Algiers, probably rather like Tripoli.

The air is bright, dry, bracing, owing to the prevailing wind (N.E.) coming across from the African continent.

The climate is suitable for certain cases of tuberculosis of the lung, such as those recommended for Algiers. Certain cases of lung trouble complicated with heart disease. Asthma is better in Upper Egypt by far. Certain cases of bronchitis may do well here, though better probably in Upper Egypt.

The season is, for invalids, from October to June. Clothing must be as warm as in England in an ordinary summer.

The sanitary arrangements at the Santa Catalina Hotel, Las Palmas, are very good. There is a highly qualified English physician resident at this hotel.

Almost without exception those invalids who in the past have wintered in Madeira would do well to go a little further to obtain this climate's advantages.

MADEIRA

This once famous resort has of late years fallen somewhat into obscurity owing to the change in public and medical opinion; but it still presents many attractions to those who do not mind the sea voyage of $3\frac{1}{2}$ days from England, which can now be made in the luxurious Cape steamers, with every comfort possible at sea. From Lisbon the journey is only 48 hours. It has all the charms of a semi-tropical vegetation and absence of

winter. The climate is very equable, the mean annual temperature being about 65°, in winter 61°, the lowest night temperature being rarely below 45° F. The rainfall is small, and the number of wet days few, yet there is great freedom from dust. The climate, however, is not invigorating, but sedative—to many distinctly depressing.

It is well suited to sufferers from chronic bronchitis, chronic catarrh, heart and kidney troubles, but only to those consumptives who cannot stand cold, especially the elderly. Loss of appetite and diarrhœa are apt to supervene during any long stay and undo all the good gained, and it is generally recognised now that a vast majority of consumptives do better in drier and more bracing climates. For the overworked and nervous a few weeks' rest in Madeira is excellent. The sanitation and water supply have been improved recently, and there is good accommodation to be got in Funchal, the chief town. Warm clothing is needed for the voyage, but in Madeira itself summer clothing is the chief need, with woollen underclothing. There are no special risks if the water supply be good; no malaria and no mosquitoes.

The Union Steamship Company have weekly steamers calling at Madeira, and the Castle Line fortnightly.

SOUTH AFRICA

By B. J. Guillemard, M.D., Cape Colony.

There is perhaps no country at the present day which is attracting travellers to its shores in greater numbers than Southern Africa. Tourist, colonist, and invalid alike crowd the steamers every week, and it is not too much to say that many of these start upon their journey with but slight knowledge of the nature of the land to which they are bound, whether out of curiosity to see for themselves a country of such increasing interest, or to settle in lands whose mineral wealth and fertility have enlisted them as recruits in the army of pioneers and settlers, or again as invalids hoping to find in the pure air of the inland plateaux alleviation or cure of their maladies.

For all these some guide to health is requisite to prevent disappointment and to avoid the disasters which too often befall the inexperienced. For this purpose it is proposed to take the area lying south of Portuguese West Africa, the Congo Free State, and German East Africa, excluding the German territory on the west, and endeavour to give a clear view of the climatic and hygienic conditions of these regions, which may be useful to the intending traveller.

Countries described.—South Africa, therefore, as described in these pages will be taken to include Cape Colony, Pondoland, Natal, Zululand, Amatongaland, Por-

tuguese East Africa, the Orange Free State, the Transvaal, Bechuanaland, and Rhodesia. This country being chiefly entered from southern ports, we find that the further north we go the more sparsely populated it is, and the less accurately known to the explorer, so that attention will be chiefly directed to the more southern districts, and those parts trending northwards, which recent developments are bringing under general notice.

Physical Features.—The physical features of South Africa must be sketched in broad outline, so that when considered in relation to its various climates, and what is known of its meteorology, a fairly accurate picture may be portrayed of the different districts visited by the traveller. All round the coast is a belt of country varying in width from a few miles to about sixty, and reaching an elevation of 600 ft. This belt is widest on the west coast, and narrows gradually towards the south and east, till it almost disappears in the south-east, widening again northwards, as Portuguese East Africa is reached, into the dangerous fever belt of the east coast.

From this coast belt the land rises in a series of terraces till the inland plateaux are reached. Thus, in Cape Colony, the Southern, Central, and Northern Karroo rise in succession one above the other, fenced in and divided one from the other by mountain ranges.

To the west, Great Bushmanland, with the Kalahari desert stretching northwards towards the centre, presents dry plains with sparse vegetation; while through the north-eastern provinces of Cape Colony, the Orange Free State, and the Transvaal, occur the rolling grass plains of the High Veldt, succeeded still further north by the grassy uplands of Rhodesia and Nyassaland.

The same terrace formation is met with in Natal, but is less distinct in Portuguese East Africa.

Mountains.—The mountain ranges of South Africa present many interesting features, and amidst their peaks and kloofs some of the grandest and most beautiful mountain scenery is to be met with. Beginning with Table mountain and its spurs, dotted with its own peculiar flora, and crossing the sandy flats between it and the mainland, we come to the first barrier between the coast and the interior, the Drakenstein and Hottentots Holland range; towards the north-west lie the Olifant and scattered mountains of Namaqualand; eastwards the barrier line is continued in the Zondereinde, Langebergen, and Lange Kloof mountains. Crossing the Southern Karroo, we are opposed by another wall of ranges, the Zwartebergen, and the Groot River heights, with the Winterhoek and Zuurberg mountains trending in succession eastwards. Passing northwards over the Great or Central Karroo, we come to the Nieuwveld and Great Sneeuwberg ranges, reaching to an altitude of 7,800 ft., and forming a wall continued eastwards in the Banluberg, Great Winterberg, Elandsberg, and Amatola mountains to the Great Kei river. Slightly further inland the line is then extended eastwards to the north, by the Stormbergen, separating the High Veldt of Cape Colony from the Transkei; the Quathlamba range, dividing Pondoland from Basutoland, and the Great Drakensberg mountains, cutting off Natal, Zululand, and Amatongaland from the north of the Orange Free State and the Transvaal. Inland are more isolated and less extensive ranges, such as the Maluti mountains in Basutoland, the Witwatersrand in the Transvaal, the Langebergen, separating the Kalahari from Griqualand West, the Zoutspansberg at the extreme north of the Transvaal, and the Matoppo hills in Matabeleland, while throughout the interior of the different countries of Southern Africa more or less elevated rocky hills are to be met with.

Geology.—But a slight sketch can be given of the geology of South Africa, about which it is to be hoped that further discoveries may be made, bearing as it does upon the important questions of water supply, and the mineral resources of the country.

The primary, secondary, and tertiary formations are all represented in South Africa. The underlying strata are chiefly composed of clay slates through the southern districts, with granite or metamorphic rocks, which is found at the surface in various parts, such as the Paarl, Bushmanland, Witwatersrand, and Mashonaland. Sandstone and quartzite are found in many of the mountain ranges, while a remarkable conglomerate formation extends southwards and eastwards from near Kimberley to Grahamstown, Natal, and Zululand. Carbonaceous shales in the Karroo will possibly afford coal in the future, as they have yielded the diamonds of Kimberley and other diamondiferous regions. Sedimentary deposits are thus found over extensive regions, these deposits being cleft by igneous outbursts, such as caused the great upheaval of gold-bearing rocks in the Witwatersrand, and are constantly met with in the Karroo and High Veldt, forming the trap dykes which are so constant a feature in the landscape. Many of the sandstone ranges are rich in fossils, especially of reptilian vertebrates, and these occur in such numbers in some of the rocks of the central plateaux as to contribute greatly to the fertility of the plains, which have been formed by the detritus washed down from them.

Old volcanoes occur, as Telemachus Kop in the Stormberg range, and other evidence of volcanic agencies on a grand scale abound. Columnar basalt gives the grand precipices of the Katberg, and limestone the far-famed Congo caves of the Zwarteberg.

Coal has been found in numerous districts of Southern Africa, and, indeed, this country gives promise of becoming in the future one of the great coal-producing countries of the world. Cape Colony, Bechuanaland, Natal, the Orange Free State, the Transvaal, Zululand, Rhodesia, and Zambesia—all yield coal in more or less abundance, some of which will bear comparison with the best steam coal of Europe.

Diamonds, silver, gold, lead, copper, zinc, antimony, tin, iron, and other valuable minerals are found in different parts of the country, and there can be little question that mining in South Africa is still in its infancy; for, with the exception of gold and copper, the metals have received scarcely any attention.

Thus the invalid will find, in the high plateaux and mountain slopes, the healthful climates which he is in search of, while the colonist will be attracted by the wonderful mineral wealth, which at present has been but superficially touched.

Rivers.—The rivers of South Africa deserve a brief notice. Their beds, except in the low-lying swampy districts, are usually deep with precipitous banks, and they act chiefly as great drains to carry off the heavy rains. Few are navigable, the Pungwe, Shiré, and Zambesi excepted, while the Buffalo, Cowie, and St. John's rivers are navigated for short distances inland. With the development of Rhodesia towards the north, the Zambesi will certainly play an important part, when it has been surveyed and its capabilities for navigation are known. Scarcely any attempt has yet been made to use the various rivers for irrigation, for which they are well adapted, as their waters in the rainy season are thick with the rich washings of the countries through which they pass.

In the Kalahari and west central dry regions remark-

able rivers are met with, which, like the Malopo and Hygab, after running some distance, disappear inexplicably underground.

From the health point of view, it is wiser for the traveller to avoid camping close to rivers, especially in the valleys and low countries of the semi-tropical and tropical districts. It must also be remembered that, after heavy rains, watercourses, which have been almost dry, quickly become impassable, and are converted into deep rushing torrents, in which many a life has been lost from rash attempts to ford them.

Climate.—Turning now to the consideration of the climate and seasons, it may be well, in the first place, to give a general outline, and then to enter at greater detail into the characteristics of the different divisions of the country.

The climate of South Africa depends to a great extent upon the great eastern and western ocean currents—the warm current which influences the east coast, and the cold current from the South Atlantic which flows round the west coast. This brings about the incidence of rainfall at different seasons, a large area of country receiving its rain in the winter months of May, June, and July, while another and still larger division has its rainy season during the summer months, especially in January and February. In autumn and winter the western districts receive rain from the north-west, while midland and eastern districts are dry; and in the warmer months moisture from the Indian Ocean causes rain over the eastern side of Cape Colony and the elevated regions of the interior, with the countries to the east and north. It will readily be seen that for invalids the districts which are free from moisture during the winter will be most suitable, while in the tropical parts the rainy season makes the climate

unhealthy and dangerous to the health of the most robust.

Rainfall.—In the west, north of Olifants river, in Cape Colony, and bounded on the east by the eastern border of the Kalahari, there is a large district which has an annual rainfall of under 10 inches. A great central band of country, comprising the western half of Cape Colony, and the western part of its eastern provinces, together with the western part of the Orange Free State and Transvaal, has a rainfall of between 10 and 20 inches; while the Cape Peninsula, the Knysna district, and the remaining portions of the country to the east, Eastern Cape Colony, Basutoland, Natal, and the east coast countries average over 25 inches, Table mountain sometimes receiving as much as 70 inches annually.

Snow falls on many of the high ranges of the interior nearly every winter, and over the Northern Karroo and the high uplands of the interior frosts occur almost nightly during May, June, and July, the temperature sometimes falling as low as 14° F. In Southern Africa an immense variety of climates is to be met with, and these must be carefully studied by the traveller, especially if he is an invalid.

As compared with India and the distinctly tropical countries, South Africa cannot be regarded as having a hot climate. Except along the north-east coast and adjacent interior, excessive moisture and depressing heat are not encountered. The hottest days in Europe are more oppressive than those of the South African summer, while the pure cool air of the mountain slopes and high plains gives a bracing and delightful atmosphere.

The seasons, too, are less sharply defined than in Europe, especially along the coast, and merge one into the other without extremes, while, as they come in exactly the

reverse order to the seasons in Europe, the traveller can choose the climate most agreeable to him without difficulty. In the midlands there is encountered a cooler, drier climate, with greater range of temperature, and in the mountain regions still further extremes of temperature with a dry invigorating air.

For all Europeans elevation may be taken as a guide to a suitable climate, and this is more to be remembered the further north the traveller proceeds; in the highlands at an altitude of 4,000 ft. a temperate climate being met with, while in all valleys and low-lying plains fever should deter invalids and indeed most travellers from making any stay.

Dust is one of the disagreeables of South Africa, and is met with everywhere, the spring months being the most dusty.

The prevailing wind is the south-east, which on the Cape Peninsula is often very violent and causes much discomfort, but on the whole is a healthy wind; up country it is a thin cold wind, which is pleasant at the end of a hot summer's day, but is dangerous to invalids, who are very prone to sit out of doors to enjoy it at sunset time. Sometimes it is intensely cold, like an English east wind. The west wind is frequent and always dry, rain scarcely ever falling while it blows. The north-west wind brings the heaviest rains, but varies a good deal in temperature. Sometimes it is very hot and exhausting during seasons of drought. On the open veldt there is often a cool breeze while it is hot in the towns.

Approaching now the question of climate in greater detail in connection with some description of the different towns and villages, it will be well to begin with the Cape Peninsula, which is most frequently the first spot to be visited. Here a temperate climate, corresponding to that

of the Riviera, is met with. The mean annual temperature is 64·5° Fahr. In summer the mean is 71·5° Fahr., in spring 64·5°, and in winter 54° Fahr. The heat is never excessive, and there is a large amount of sunlight, with clear sky and dry atmosphere. Before the Suez Canal was opened, the Cape Peninsula was much resorted to by Anglo-Indians, who were invigorated and refreshed by a stay in its delightful climate.

Cape Town.—Cape Town itself can, perhaps, be hardly recommended as a place of residence, on account of the heat and exposure to the south-east wind, though the higher slopes above the town are now being built over, and will offer a more agreeable quarter to live in. It will, however, always attract visitors, on account of its being the centre of government with the winter residence of the High Commissioner, and being well supplied with fine shops and places of amusement. Its spacious streets are lighted with electricity, and there is a capital service of electric trams. Accommodation is to be obtained in many comfortable hotels. The water supply is excellent, and the sanitation of the city is carefully attended to.

Sea Point.—Sea Point, a suburb at the north-west arm of the bay, is much frequented, and has a cooler climate than Cape Town. Stretching south along the slopes of Table mountain, and extending some way over the white sandy flats, there is a long line of beautiful suburbs laid out with fine modern houses and gardens, nestling in groves of oaks and pines. The lovely scenery, well-kept roads and gardens, and handsome residences combine to make this part of the Peninsula one of the most charming spots in the world, either for a visit or for a prolonged residence. Were it not for the long voyage and distance from Europe, the Cape Peninsula would be thronged from September to May with numbers of visitors.

The chief drawbacks are the heavy rainfall in May, June, and July. This varies in different parts of the Peninsula; near Wynberg as much as 80 inches has been known to fall in a year, while at Sea Point as little as 19·61 inches were registered in 1891. Thus Wynberg may be chosen as a summer residence, and Sea Point would be more agreeable in the winter.

An unpleasant feature, also, is the south-easter, which, especially in the spring months, sometimes blows in violent gusts, powdering everybody and everything with clouds of red dust. The wind, however, though disagreeable in excess, is undoubtedly healthful and useful in purging away impurities in the air.

Wynberg, Plumstead, False Bay, Muizenberg.—Wynberg is perhaps the most beautiful suburb, situated on a finely wooded eminence, and containing Wynberg Camp, an Aldershot in miniature. Adjoining it are the famous vineyards of Constantia, noted for its wine farms and fine fruit. South of Wynberg, the flats of Plumstead and Diep River are traversed with their farms and villas, and then False Bay is reached. This lovely bay offers unique attractions; on its northern shore is Muizenberg, with its white sands and Italian sea, a queen of watering-places, now being rapidly built over and frequented by shoals of visitors for its unrivalled sea-bathing. Following the coast line south towards Simons Bay, there are several pretty villages on the mountain side much resorted to by visitors in the summer months for sea-bathing.

Simonstown.—Simonstown, with its naval station, is finely situated, and is becoming yearly more taken up by fresh residents. The Cape Peninsula offers a sanatorium for many invalids; but sufferers from phthisis, though often benefited, do better on the high inland plateaux, and should not remain here long. Convalescents from the acute

diseases common in Europe and the malarial affections of the tropics do well, and sufferers from chronic bronchitis and asthma and anæmia generally derive great benefit.

Cholera, yellow fever, and malaria are unknown, and hydrophobia never occurs.

There are several good hotels and boarding-houses in the different suburbs, but there is not yet sufficient accommodation for visitors.

Caledon.—Within a few hours' journey from Cape Town by rail and cart are the hot baths of Caledon. At an elevation of 800 ft., with a rainfall of 21·5 inches, Caledon offers a pleasant and somewhat bracing climate. There are seven springs, most of which are hot (temperature 120° Fahr.), and they yield 150,000 gallons daily. The constituents are ferrous carbonate with alkaline sulphates and chlorides. Sufferers from rheumatic affections derive great benefit from the cure here. There is a capital Kurhaus, frequented by increasing numbers of visitors every year. The wildflowers, especially heaths and everlastings, are noteworthy. Somerset West Strand, on the north-west shore of False Bay, is rapidly becoming a fashionable watering-place.

In the summer Stellenbosch is pleasant with its vineyards and fruit orchards. It is an important educational centre, especially for the Dutch Church. Its climate is rather damp.

Malmesbury.—Malmesbury, to the west, has tepid springs suitable for rheumatism.

Worcester.—Through Bain's Pass, with its magnificent mountain scenery, Worcester (794 ft.) may be reached. It is noted for its wine and wagon machinery industries, and is a prettily wooded town, especially worth visiting in the spring.

O'okiep.—The districts stretching north-west to the Orange river are arid, and as yet unfit for health visitors; but the copper mines near O'okiep (3,025 ft.), in Namaqualand, are noticeable. They are reached by steamers from Cape Town to Port Nolloth. The exceedingly dry climate of this region may in the future be turned to account for health purposes.

Ceres.—Leaving the rail at Ceres Road Station as we go north on the western line, Ceres is reached by way of Mitchell's Pass, amidst fine mountain scenery. Ceres (1,493 ft.) is a health resort of repute. The climate in summer is delightful and suitable for pulmonary affections, but it is not so favourable in winter; rainfall, 40 inches. There is very fair accommodation, and this pretty town may well invite a stay of some weeks for the invalid on his way to the High Veldt, while it is a favourite resort in summer for visitors from the warmer regions in the south.

Matjesfontein.—Following the western railway northwards, the traveller will be struck with the fine engineering of the line which climbs the Hex mountains, rising 2,400 ft. to the table lands of the Karroo. We now begin to pass from the area of winter rains, and to enter the dry districts of the uplands with a summer rainfall. A height of 3,588 ft. is attained before reaching Matjesfontein. This village has many advantages as a resort for invalids with pulmonary disorders: it is near enough to Cape Town, 195 miles, to prevent a feeling of isolation, while many of the comforts of life can be readily obtained from the coast, for the express trains from the north and south stop here for meals, and the invalid finds interest in their constant coming and going. The climate is dry and bracing, with a rainfall of 5·5 inches, and there is almost perpetual sunshine. Having now reached the first health

station in the Great Karroo, let us retrace our steps to the southern districts between the Karroo and the coast as it extends eastwards.

Riversdale, Ladysmith.—Riversdale, 200 ft., is an important farming district, and is noted for its ostriches and wools; the heat is considerable here in summer. From it Ladysmith may be reached at an altitude of 1,860 ft.; this town is in the South Karroo, and with a rainfall of 14 inches possesses a dry healthy climate.

Mossel Bay, George, Knysna, Humansdorp.—Mossel Bay, where many steamers call, has an equable climate with a rainfall of 18 inches. From it we may reach George, 620 ft.; this is a pleasant town in a rich district, and mild pulmonary cases are likely to do well here. The scenery in this tract of country presents a beautiful combination of forest, mountain, and lake; and Knysna, some 60 miles distant, is a good centre for exploring the beautiful forest scenery. The virgin forest extends some 150 miles, and a large timber industry is carried on here. Still further east along the coast lies Humansdorp, a small village with healthy climate, some 60 miles from Port Elizabeth.

Calitzdorp, Oudtshoorn.—In the Southern Karroo, Ladysmith has been already mentioned, and from it Calitzdorp, a small healthy town, may be reached on the way to Oudtshoorn. This town, 1,063 ft., is at present only accessible by road, but a railway is in course of construction. The climate is favourable for cases of lung disease, though somewhat warm. It is situated in a very rich and populous district. Tobacco, brandy, and ostrich feathers are produced, and fruit is grown in abundance. In the limestone of the Zwartberg, nearly 20 miles to the north, are the Cango Caves. These caves rank amongst

the most famous caves of the world. As yet they have not been fully explored, but are known to extend for over a mile, and the various chambers present all the beautiful and remarkable shapes in pure white limestone which are common in similar formations. When the line from Graaff Reinet, passing through Willowmore, Oudtshoorn, and George to Mossel Bay, is completed, all this country will be more accessible to travellers.

The country described above is practically that in which the rain falls in the winter months and dry weather prevails in summer; and as the traveller advances from the districts of winter rains, the less distinct is the difference between the seasons of rainfall; this is the case in the Southern Karroo, where the rainfall is small, and the range of temperature becomes greater. In the high country of the interior there is practically no rain at all in winter, and the extremes of temperature are well marked in the summer and winter seasons.

Great Karroo.—Let us now take for our consideration the Great Karroo, which may be divided into Central and Northern Karroo. It extends from Calvinin on the west to Middelburg on the east, and is bounded on the south by the Zwartebergen, and on the north by the Orange river. This extensive area has a rainfall varying from 10 to 20 inches annually, the rain falling almost entirely during the summer months in heavy thunderstorms. The average elevation of the plains above sea-level is 3,000 ft. but many towns are situated at a higher level, and the mountains rise in some instances to a height of 7,000 ft. Great dryness and rarefaction of the air characterise the climate, which is hot in summer, the heat, however, being easily borne, owing to the fine air, while even in summer the nights are fairly cool. The winter season is delightful, still frosty nights being succeeded by bril-

liantly fine days, with bracing air and cloudless blue skies, making mere existence a pleasure and inspiring the invalid with hope and vigour. The Karroo is a great sanatorium for cases of pulmonary disease, and most encouraging results have been obtained by a prolonged residence. The mountain slopes are to be preferred in the summer, when the greater heat and frequent wind and dust prevent the invalid from living continuously out of doors, and render the conditions of life enervating; but in winter these plains afford a fresh and exhilarating climate.

While fairly comfortable quarters are to be found in the villages of the plains, there is a want of mountain resorts, to which the invalid could retire during the summer months. The aspect of the landscape is monotonous and barren, scarcely any grass being seen, while, as far as the eye can reach, nothing is visible but dry ground, dotted over with the different Karroo bushes, which afford pasture to stock of all kinds throughout the year. Rising out of the plains are sandstone ridges and trap dykes which relieve the flatness of the view. On the mountain slopes grasses abound, and wherever water exists there is found a more luxuriant vegetation. An increased supply of water would transform this desolate region into a smiling garden, as the soil is rich and returns marvellous yields wherever water can be obtained.

For detailed description, the Central Karroo may be taken first. This extends nearly 400 miles east and west, and is bounded south by the Zwartebergen, and north by the Nieuwveld and Sneeuwberg mountains. We have already noticed Matjesfontein, passing which we reach Laingsbury, 2,126 ft., a clean rising town, where invalids may make a profitable stay.

Beaufort West, Willowmore, Jansenville.—Beaufort

West, 2,792 ft., on the main line from Cape Town, is resorted to by many invalids. The town is well laid out, and is supplied with water from a large reservoir close to the town. Rainfall is about 10 inches. It is chiefly to be recommended for its winter climate; during the hot summer the invalid will do well to retreat to the neighbouring cool slopes of the Nieuwveld. Eastwards there are no towns to be met with but Willowmore, Jansenville, and Graaff Reinet. The first two towns have good dry climates, but are somewhat isolated.

Graaff Reinet.—Graaff Reinet, reached from Port Elizabeth and Rosmead by train, is a considerable town, 2,500 ft. above sea-level, with a rainfall of 17·15 inches. In winter it affords a pleasant residence for lung cases, but in summer it is too hot. It is, however, well supplied with water, and is luxuriant with flower gardens, orchards, and vineyards.

Wagenaars Kraal.—An excellent health resort, Wagenaars Kraal, must be noticed, lying westward from the rail between Beaufort West and Victoria West road. Altitude, 4,000 ft.; rainfall, 14 inches. In summer the mean maximum of the three hottest months is 82° F., and the mean minimum of the three coldest months 35·5° F. Very comfortable accommodation is to be found in the private house of an English family, and I have known several invalids who have benefited by their stay. In common with so many of the Karroo resorts, it has the disadvantage of isolation. Northwards to the Orange river, and west of the western railway system, there are no towns to be noted, except Hopetown (3,600 ft.) near the river, with a rainfall below 10 inches, and a bracing climate.

Eastern Provinces.—Bounded east and west by the midland and eastern railway sytems, there is a populous district between the coast and the Orange river.

Port Elizabeth.—The fine commercial town of Port Elizabeth is a good landing-place for the traveller proceeding northwards to the Eastern Karroo, Orange Free State, and Transvaal, but it cannot be recommended for invalids on account of its warm moist climate. It offers every advantage in the way of comfortable hotels and fine residences.

Uitenhage.—Uitenhage, 20 miles north, is a pretty town in beautiful surroundings, and is well worth a visit, though it is not suitable for invalids to reside in.

Grahamstown.—Grahamstown demands closer attention, lying at an altitude of 1,750 ft. It is easily reached by rail from Port Elizabeth. It is situated in a sheltered position, surrounded by hills, and is one of the pleasantest residential towns in South Africa. The traveller can imagine himself to be in some pretty English cathedral town, and he will be delighted with the beautiful houses and gardens, and the hospitality of the citizens. The rainfall is about 30 inches annually, and the rain falls evenly throughout the year, so that the climate is not dry enough for some lung cases. Many, however, do well in the early stages. There is excellent accommodation for visitors, and the good schools and pleasant English society invite a prolonged residence.

Port Alfred.—Within easy reach of Grahamstown by rail is the charming watering-place of Port Alfred on the Cowie river, which is navigable for about 16 miles amidst beautiful wooded scenery. There are extensive sands, and the sea-fishing is very good. The chief drawback to the coast-lands here is the presence of ticks in the saline grass flats, which cling to the clothing of the pedestrian, and by burrowing under the skin of the feet and legs often cause painful sores. The climate here is too damp for pulmonary cases.

Cradock.—Cradock, 180 miles north of Port Elizabeth, at an altitude of 2,856 ft., with a dry Karroo climate and rainfall of 15 inches, is a good station for phthisical patients, who can reside here throughout the year. In the heat of summer it will be advisable for most cases to seek cooler mountain resorts.

Tarkastad.—Tarkastad, 4,280 ft., is reached by cart from Cradock, and can be recommended for its invigorating climate as an excellent health resort. Further north the traveller turns aside at Rosmead Junction for Middelburg (4,000 ft., rainfall 14 inches). This is one of the best Karroo health resorts, and is well adapted for a prolonged stay.

De Aar.—The railway line running east from De Aar on the western system roughly divides the bush Karroo from the grassy uplands of the High Veldt.

Naauwpoort, Hanover.—From the important railway town of Naauwpoort, Hanover is reached by a branch line from De Aar. It lies at an altitude of 4,500 ft., and is very dry and bracing.

Somerset East, Bedford, Adelaide, Fort Beaufort.—Between the coast and Tarkastad the towns of Somerset East, 2,400 ft., with good climate and fine scenery ; Bedford, 2,450 ft. ; Adelaide, and Fort Beaufort afford suitable resting-places for less advanced cases of lung disease.

East London.—Turning again to the coast further east, we start north from East London along the eastern system of railway. East London is a rising commercial port, and also a favourite watering-place much frequented in the winter months of May, June, and July. Rainfall, 30 inches; mean maximum temperature, 73° F.; mean minimum, 57° F. There is excellent sea-bathing, and delightful excursions can be made by boat amidst the beautiful scenery of the Buffalo river.

Queenstown, Molteno.—Queenstown, 3,544 ft., with a rainfall of 22 inches, at a distance of 150 miles from the coast on the main line, enjoys a climate well suited for cases of lung disease. It is attractively laid out, the fine English church is to be noted, and it offers good quarters to the invalid in several hotels and boarding-houses; it is well watered from a large reservoir, and is one of the most attractive up-country towns. The rail now climbs the Stormberg range. The highest point on the line is attained at Molteno, 5,183 ft. Here a health resort might be established for the summer months, as the air is cool and exhilarating, but the winter is very cold and the winds are keen.

Burghersdorp.—Burghersdorp, 4,550 ft., 30 miles to the north, is a pleasant little town, where many invalids have done well, and have been able to reside throughout the year. Its position at the mouth of a kloof with high rocky ridges close to the town makes it rather hot and airless in the summer, but it is certainly to be classed among the best health resorts in the high grass veldt, and enjoys almost perpetual sunshine.

Aliwal North.—At the end of a branch line from Burghersdorp, Aliwal North, 4,330 ft., is well situated on a slope above the Orange river.

The country round consists of rolling grass plains with high sandstone ridges and trap dykes. The rainfall of 25 inches occurs from November to April, the greater fall being in January and February. The town is well watered by water which is led from the hot springs into the streets and gardens. Owing to this constant water supply, Aliwal North looks cool and refreshing, with its fruit gardens and well-planted streets, which make it a green oasis when the surrounding country is burnt up. Three miles above the town the Kraal river falls into the Orange river, and at the same distance from its junction is a comfortable hotel,

prettily situated on its bank, and well provided with accommodation for invalids. The hot springs of Aliwal North are situated about a mile and a half from the town; the water bubbles up in two basins in the black peaty ground, discharging about 2,000,000 gallons daily. The temperature at the orifice of the spring is 98° Fahr., and the water contains alkaline salts charged with carbonic acid gas. Sulphuretted hydrogen is also evolved, and can be smelt in the air round the springs. Relief has been obtained in cases of chronic rheumatism, and some forms of cutaneous disease derive benefit. These springs await proper development, and would be greatly improved by the erection of a modern bathing establishment at the spring head. The climate is agreeable with almost perpetual sunshine, and though in hot summers and cold winters the extremes of temperature are felt, this town is a health resort of unquestionable value, where many cases of lung disease have derived great benefit. Aliwal North is the starting-point for travellers proceeding to Herschel, Barkly East, and Basutoland, and these districts may be described here.

Basutoland.—Basutoland, a British Protectorate, has been termed the Switzerland of South Africa. It is a region of mountains, valleys, and waterfalls. The climate is deliciously cool in summer, with rainstorms, and extremely cold in the dry winter months, snow falling on the mountains. No better country could be found for the establishment of health resorts, especially for pulmonary complaints; but at present there is practically no accommodation for invalids, and even the necessaries of life are in parts obtained with difficulty, while the unsettled state and uncertain future of Basutoland scarcely recommend this beautiful country as a place of residence for Europeans in search of health.

Kaffraria, Umtata, Cala, Kokstad, St. John's.—A brief notice must now be given of the eastern districts between the Drakensberg and the coast, which may be included under the name of Kaffraria. The Transkei, along the coast eastwards of the Great Kei river, with Tembuland to the north, has no important towns with the exception of Umtata, 2,100 ft., the capital of Tembuland, and head-quarters of the Cape Mounted Rifles. Here, and at Cala, where coal has been found, the climate is pleasant, but both places are difficult of access. Griqualand East stretches along the southern slopes of the Drakensberg, north of Pondoland. Kokstad, 4,300 ft., is the principal town. This country has a fine mountain climate, but it is out of the beaten track. Pondoland has but recently been annexed. The port of St. John's will certainly play an important part in the future. The scenery here is most beautiful, and the river is navigable for 10 miles.

Natal.—Natal offers to the traveller in search of health a variety of delightful climates, with beautiful scenery. Health resorts are to be found, which will prove beneficial in a wide range of diseases. There is no malaria on the coast, where a warmer climate is experienced than in the eastern provinces of Cape Colony. From the coast a series of terraces rise towards the Drakensberg and Quathlamba ranges, affording a climate dry and cool in the lower, and cold and bracing in the higher, elevations.

Port Shepstone.—In the south country, between Durban and Pondoland, the only town of note is Port Shepstone, at the mouth of the Umzimkulu. The surrounding district is a rich one, and is gaining in commercial importance.

Durban, Pietermaritzburg.—Landing at Durban, the most beautiful perhaps of South African towns, the visitor is tempted to make a prolonged stay. The towns and suburbs, especially those on the Berea, are well laid out

with charming palms and gardens, fragrant with exquisite flowers and producing all kinds of fruits. There is a rainfall of 39·5 inches distributed over the summer months, when the moist temperature is somewhat oppressively hot. May, June, and July are dry months, and then the climate is delightful. Then, on still higher ground, we arrive at Pietermaritzburg, the capital of Natal and seat of government. At an elevation of 2,225 ft., this town can be commended as a health resort for sufferers from bronchial affections. There is a rainfall of 35 inches, but May, June, and July are dry months. It is a pleasant residential town with fine buildings; outside the town, at Fort Napier, are barracks for the garrison. From Pietermaritzburg some of the best scenery in Natal can be visited.

Howick, Newcastle, Charlestown.—Howick, 3,500 ft., has many attractions as a health resort; the climate is cool in summer and bracing in winter, with a freedom from dust storms. The fine falls of the Umgeni river, and beautiful forest and river scenery, are within easy reach. Estcourt, 3,800 ft., enjoys a climate equally good. To the north, Ladysmith, 3,280 ft., is a rising town with some reputation as a hill resort. A military station is being formed here. Nearing the slopes of the Drakensberg, we reach Newcastle, 3,890 ft., and at the extreme north-east corner of Natal, on the border, is Charlestown, 5,386 ft. Both these towns are associated with the Boer war of 1881, Majuba Hill being only four miles from Charlestown. The invalid will find in these towns a fine mountain air. It is probable that Natal will be much frequented by invalids in years to come. The scenery is less bare and more varied than in the Karroo and High Veldt. In the lower districts the vegetation is semi-tropical, while the uplands are covered with grass.

Zululand, Amatongaland.—The cool climate of the higher parts attracts visitors from the coast, while the bracing climate in winter is very beneficial to many forms of pulmonary disease. Zululand cannot be recommended to the traveller in search of health. The absence of towns and the restrictions upon the occupation of land, and the sporting regulations keep away visitors. There is no mountain country above 2,000 ft., and malaria prevails in the valley of the Umfolozi, and in the flats near St. Lucia. The country is rich in minerals, but these have not yet been worked to any extent. The same remarks apply to Amatongaland, where there is much fever in summer.

Orange Free State.—North of the Orange river, the wide plains of the Orange Free State, stretching northwards to the Vaal river, constitute a continuation of the grassy uplands of the north-east provinces of Cape Colony, and form a plateau considerably higher than the Karroo. The climate can be confidently recommended for cases of phthisis, and greatly resembles that of the Karroo, except that the rainfall is rather greater and more distributed. The winter is quite dry and clear, with frosty nights and still, cloudless days. The summer heat is considerable, but is tempered by thunderstorms, which are most frequent in January and February. The prevalent winds are the dry hot west and north-west winds, and the cold wind from the south-east. Dust causes much discomfort, as in all parts of South Africa, and August is generally marked by dust storms. The railway lately taken over by the Free State Government affords ready access to many health resorts. There are several small towns frequented by invalids, but much is still to be desired in the way of comfortable accommodation, as is the case with nearly all the villages in South Africa.

Rouxville.—Rouxville, within three hours' drive of

Aliwal North, and Smithfield and Wepener to the north-east, are thriving townships with fair hotels and excellent climatic conditions.

Jagersfontein, Bloemfontein.—Jagersfontein must be noticed for its diamond mines, the largest excepting those of Kimberley. The town which has for many years enjoyed the highest reputation as a resort for phthisical patients is Bloemfontein, the capital of the Republic. Its reputation has been somewhat tarnished of late years by the prevalence of typhoid fever, and other diseases depending upon want of sanitation. This state of things is shared by nearly all the larger towns in South Africa resorted to by invalids, and demands closer attention to hygienic details throughout the whole country. It has a population of about 7,000, and lies at an altitude of 4,518 ft. It is the centre of the Orange Free State Government and is well laid out with fine buildings. The residence of the Bishop of Bloemfontein with the Anglican cathedral is here, and there are several churches of various denominations, with good schools for both boys and girls, and a well-equipped hospital. On some of the farms round Bloemfontein good quarters for invalids are obtainable. The visitor will find much that is attractive at Bloemfontein and a warm Alpine climate.

Boshof.—Near the western border of the State, the village of Boshof, not far from Kimberley, has many qualifications for a good health resort.

Ladybrand.—Ladybrand is situated in interesting country on the border of Basutoland, and benefits by the cool winds from the Maluti mountains.

Bethlehem, Harrismith, Kroonstad, Klerksdorp, Transvaal.—Bethlehem and Harrismith have an elevation of more than 5,000 ft., and the latter is much visited by invalids from Natal. Both have a fine mountain climate, fairly

free from dust, as also have Kroonstad, 4,500 ft., on the Valsch river and Klerksdorp. Crossing the Vaal river, the South African Republic is entered, stretching northward to the Limpopo river. The unsettled condition of the Transvaal will probably deter many visitors in search of health from paying more than a passing visit. The plateau of the Transvaal has a very considerable elevation, many of the villages being situated at 6,000 ft.; the climate is therefore cool and bracing, in spite of its being in the semi-tropical zone. Speaking generally, the plains of the south are healthier than the northern districts, which the invalid should avoid in the summer months, owing to the prevalence of malaria. In the winter, however, the climate is dry and healthy. Severe thunderstorms are frequent during the summer, and the winds of winter blowing from the mountains on the southern border are keen and disagreeable.

Potchefstroom, Johannesburg. — Potchefstroom, 4,100 ft., the oldest town in the Republic and the former capital, has a good but rather moist climate. Johannesburg, 5,689 ft., has grown in the last ten years into a fine city with a mixed population of about 100,000; but its rapid growth has militated against its natural advantages as a health resort. It has a climate marked by rapid changes, which render great care necessary on the part of the invalid. In summer it is often pleasantly cool and bracing, but the heat is sometimes great, while heavy rains with thunderstorms occur between November and April, the rainfall averaging about 30 inches. The winter is dry and occasionally very cold. The frequency of dust storms, imperfect sanitation, and sudden climatic changes prevent Johannesburg from being placed in the rank of the health resorts, though many pulmonary cases have unquestionably benefited by a residence here. The death-rate is very

high, and on the whole it cannot be recommended for invalids. It has the great advantage of being well provided with all the comforts of civilisation, including a good hospital; but living is very expensive. The suburbs are well laid out with fine houses, and constitute the healthiest part of the town.

Heidelburg, Pretoria.—Heidelburg, to the south of Johannesburg, is better suited for invalids, who resort to it from Pretoria and Johannesburg. Within a short distance by rail from Johannesburg, Pretoria, 4,500 ft., the present capital of the country, lies in a basin surrounded by hills. The rainfall is about 27 inches, and the climate in the summer is moist and hot. In winter it is cool and pleasant. Sanitation leaves much to be desired, and invalids do not do well here. The public buildings are costly and pretentious. The cathedral of the See of Pretoria and the residence of the Anglican Bishop are situated here.

Middelburg, Wakkerstroom, Barberton.—Middelburg, 5,090 ft., has a better climate, and is an important coal centre. Wakkerstroom, near the Natal border, at an altitude of 6,000 ft., if better provided with accommodation, would form a satisfactory health resort. It is well situated and has a fine exhilarating climate. Barberton is visited by many, attracted to its gold-fields; but malaria, though less prevalent than formerly, and the tsetse fly render the climate undesirable in this neighbourhood.

Portuguese East Africa.—From a health point of view, Portuguese East Africa demands notice, chiefly for the purpose of warning travellers of the dangerous nature of the climate. As it is of great and increasing political importance, many will be attracted to it, for from its coast run the shortest routes to the Transvaal by Delagoa Bay, and to Rhodesia *viâ* Beira; while by the Shiré river

British Nyassaland is reached, and the great waterway of the Zambesi to the interior cannot fail to be of the greatest importance in years to come. Some mention, therefore, must be made of the climate in general and of the characteristics of its chief towns. Along the coast and in much of the interior, as in the lowlands along the Zambesi, malaria is constantly prevalent and is very deadly, especially to the newcomer. No one should visit this part of Tropical Africa who is at all unsound in constitution, and whose family history is not good. The European should avoid all country below 4,000 ft., and must never think of travelling in the rainy season. The tsetse fly is the bane of the traveller up to an altitude of 3,000 ft., above which it is rarely encountered.

Lourenço Marques.—Lourenço Marques, with the important harbour of Delagoa Bay, is only 395 miles from Johannesburg. It has a very high death-rate, and, until it has been properly drained and improved in sanitation, will maintain its character for unhealthiness, and should be shunned by invalids.

Beira, Quilimane.—Beira seems likely to be the chief port for Rhodesia, and about 30 miles of railway have already been completed to the north-west. Here the Pungwè river is navigable for nearly 100 miles. Fever prevails, and the climate is quite unfitted for invalids. Quilimane, some little distance to the north of the mouths of the Zambesi, has a prospect of becoming of importance in the future, as there is a scheme to connect it by rail with Blantyre in Nyassaland. The usual unhealthy climatic conditions of this coast prevail here.

Griqualand West, Barkly West, Kimberley.—Turning now to the territory north of the Orange river and to the east of German East Africa, after crossing the river at Orange River Station, we enter Griqualand West. Here

the small towns of Griquatown and Barkly West require little notice; they have an altitude of 3,500 ft., and before the rise of Kimberley were the chief towns of the district. Barkly West has a sanatorium, and good results have been obtained in pulmonary cases. Kimberley, 4,042 ft., with a rainfall of about 25 inches, and a population of 28,000 of mixed races, lies in a flat unpicturesque country. Its famous diamond mines bring many visitors, and as there is comfortable accommodation with agreeable society, invalids are tempted to make some stay. But while the climate in winter is pleasant and dry, resembling that of the Karroo, in summer the heat is often very great, and dust is a serious inconvenience. A mild form of malaria also prevails. These disadvantages prevent Kimberley from taking a place among the best health resorts. Many slight pulmonary cases benefit, and can reside here, and a fine sanatorium with somewhat expensive tariff has been recently opened.

Vrijburg.—Following the railway north, Vrijburg, 3,890 ft., and Mafeking, 4,190 ft., in Stellaland, are gaining in importance. The climate is healthy, but the invalid will scarcely care to visit these towns after enjoying the comforts of Kimberley.

Bechuanaland.—Bechuanaland, consisting of the portion south of the Molopo river, now annexed to Cape Colony, and the large district stretching north to the Zambesi, comprising the Kalahari desert and Khama's country, is a great plain with an elevation of 4,000 ft., and a rainfall varying from about 10 inches in the west to 25 inches in the eastern parts.

Kalahari.—The Kalahari district is not entirely desert; grasses, bushes, and trees are to be found over a considerable area, and it is occupied in parts by white and native farmers. Much of the desert, however, consists of large

tracts of sand dunes and limestone flats. Water is very scarce, and if it were not for the tsoma plant, which furnishes man and beast with drink from its melon-like fruit, life could not be supported. Underground reservoirs of water probably exist, and if these could be opened up the face of the desert would be completely transformed.

The climate of this region was many years ago recommended by Dr. Livingstone for patients with lung disease, but the ordinary traveller in search of health will find here no resting-place. Patients of good physique and only a tendency to pulmonary affections might profitably spend some months in making sporting expeditions into the interior, choosing Vrijburg or Mafeking as a starting place. The railway now runs as far as Buluwayo in Rhodesia.

Rhodesia.—This wide tract of country, bounded on the north by the junction of the Congo Free State and German East Africa, on the east by Portuguese territory, and west by Khama's country and German West Africa, is at present the country of the pioneer and explorer. No invalid can be advised to venture so far north, though the climatic conditions offer a reasonable prospect of health resorts being opened up when the country has been settled and reliable meteorological statistics have been obtained. With care, persons in good health, with proper attention to the rules of health which govern life in semi-tropical countries, can live and do well. Many young men, who might fall a prey to lung disease in Europe, can in the healthy outdoor life of this country become robust, and develop into strong men, but they will have to live temperately and wisely. The hill districts have a cool winter climate, and in summer the heat is not excessive. In the lowlands and valleys fever prevails, and it is unhealthy except in the dry months of the year. The

rainfall is more evenly distributed than further south; comparatively little rain falls during May, June, July, and August. The wet unhealthy season lasts from December to April. The south-east wind blows frequently, and is very cold in winter.

Buluwayo, Victoria, Gwelo.—Buluwayo, Victoria, and Salisbury are the principal towns at present in Rhodesia. Buluwayo has an altitude of 4,600 ft., and a population of nearly 5,000. Fair accommodation at high rates is to be obtained. Though its future position is undecided, it will always be an important town. Victoria has a bad climate during the rains, but it is a rising town in a good mineral district. The ruins of Zimbabwe can be visited from here, those of Great Zimbabwe being of extreme interest. Gwelo, on the road between Buluwayo and Salisbury, will very probably become one of the chief towns in Rhodesia, and is rapidly rising in commercial importance.

Salisbury, Nyassaland.—Salisbury has an altitude of nearly 5,000 ft., and is healthier and drier than the towns above mentioned. The rainfall is about 33 inches. It will soon be reached by rail from Beira. The cost of living is naturally high. Many public buildings have been erected, and its prosperity is assured. A few remarks may be made upon Nyassaland, now a British protectorate. The climate above an altitude of 5,000 ft. is good, but at lower levels fever of a bad type prevails. The rains to an extent of 70 inches fall principally between December and March. The tsetse fly prevails below a level of 3,000 ft. Europeans with temperate habits and robust constitutions will be able to live on the mountain plateaux.

Routes.—South Africa can now be reached from Europe by several lines of steamers. Of these the Union and Castle lines hold the first place. Their steamships, mail and intermediate, are splendid vessels, supplied and

equipped in a manner that leaves nothing to be desired. The best season of the year for leaving Europe is the early winter or late autumn. The Cape is then reached at the beginning of summer. The cold and wet weather of Europe is avoided, and the traveller enters a delightful warm climate before the heat of summer commences. This applies especially to those who intend to visit those parts of the country where the rainfall is in the South African winter; but out of this region, in the High Veldt and also in tropical and semi-tropical South Africa, where the rain falls chiefly during the hot weather, winter is the healthiest season for the visitor.

It has been the custom to recommend a sea voyage to invalids as a universal panacea for every ill, but it must be strongly insisted upon that it has very real risks to the invalid, and for want of precautions many have arrived in Table Bay in a worse state of health than when they started.

For the convalescent from acute disease, and the over-worked man with tired brain, no sea voyage is pleasanter than that to South Africa; but all voyagers, whether well or ill, should be alive to certain risks. Chills are very easily taken on board, and the clothing should be adapted for meeting this risk. Flannel is the most comfortable and safest material for wear, either for suits or underclothing. The chilliness of the channel and bay and the warmth of the tropics are alike better borne in this dress. The evenings are often damp, especially in the tropics, while, as the ship approaches Cape Town, the south-easter makes it advisable to put on an extra wrap.

The invalid had better avoid the various sports held during the voyage, and the dances on deck in the evenings, for it is tempting to sit in the cool wind when overheated, and a chill is very easily taken. Regular exercise on deck

is beneficial, and the traveller is recommended to retire in good time and rise early. On arrival at Cape Town, the suburbs on the slopes of Table mountain are easily reached by an excellent train service, and all visitors should spend a week or two in this beautiful district before going north.

From Cape Town, those on their way to the west and north will travel by the western system of the Cape Government railways. The through trains are provided with dining cars and lavatory accommodation, and all the carriages are arranged for sleeping in.

If it is wished to visit the midland Karroo districts, it is better to go in the steamer to Port Elizabeth, and then proceed north by the midland railway, while visitors to the eastern provinces and Orange Free State will avoid a long dusty railway journey if they remain in the vessel till it arrives at East London. Travellers to Natal will proceed to Durban in the same ship by which they have voyaged from England. If a longer sea voyage is dreaded after reaching Cape Town, all these parts can be reached by rail from the Cape. Along the various systems of the Cape railways very fair meals are served at the different refreshment stations, and throughout the colony the civility of the railway officials is noticeable. In the Orange Free State the railway has been recently taken over by the Dutch Government, and in the Transvaal the Netherlands Company manage the traffic. In Natal the railway runs from Durban through Pietermaritzburg northwards to Ladysmith, where the line branches off to Harrismith in the Free State, and also through Newcastle and Charlestown to Pretoria and Johannesburg. In the west of British possessions the railway has been completed as far as Buluwayo, giving access to Bechuanaland and Rhodesia from the south. Mashonaland will soon be connected with the east coast by the railway from Beira, which has been

carried as far as Chimoio. Places inaccessible by rail are reached by Cape cart wherever the roads permit, and there is a very fair service of post carts throughout the country, by which travellers are carried at a tariff which is not excessive when the nature of the roads is taken into consideration. Off the rail, all heavy goods must be carried by wagons drawn by oxen, mules, or donkeys. The ravages of rinderpest in 1897 have made it difficult to get teams of oxen, while other forms of cattle disease and, in Tropical Africa to the east, the tsetse fly add to the difficulty of transport. Good useful horses can be bought at prices ranging from 12*l.* to 25*l.*, but animals which have recovered from horse-sickness, and which are therefore termed 'salted,' will fetch three or four times this sum. A saddle horse is essential to all who travel off the line of rail, and in long journeys by cart the change to the saddle offers an agreeable rest. It must here be mentioned that in nearly all cases of lung disease, where the invalid is able to mount a horse, the greatest benefit is to be obtained from rides on the veldt. By this means he gets out of the heat and impurities of the town, and fills his lungs with the pure cool air of the plains. Every invalid who is strong enough to ride should invest in a pony as soon as he has settled down, and take long rides daily in the open country.

With regard to residences, all who are travelling about from place to place will put up at the hotels which are to be found in every town and village. In Cape Town, Kimberley, Port Elizabeth, East London, Johannesburg, and Durban, and in a few more of the larger towns, there are fine commodious hotels with every comfort. In the smaller hotels inland, very fair accommodation is to be found; and though many a one fresh from home may complain of the fare and grumble at the deficiencies in bed

and board, yet he must remember that his host has many difficulties to contend with in supplying his guests with the comforts of life; and though sometimes showing a spirit of independence new to the visitor to South Africa, he is usually anxious to please him and to do all he can to meet his wishes. Boarding-houses are to be found here and there in the towns, and many invalids prefer them as being quieter and more homelike than hotels. It is very usual for invalids to board on farms, and this is often a good plan, care being taken to select a farm in a healthy position, managed preferably by English people; for though a number of Dutch farms are fairly comfortable, in very many the food is unsuitable and the rooms ill adapted for invalids. If an invalid is going out with the intention of making a long stay in the country, and in the majority of cases not much improvement in health is to be looked for from a short visit, he is strongly advised to take a house and settle down. There is no comparison between the comfort of a private house and that of up-country hotels and boarding-houses. Housekeeping difficulties, often of an exasperating nature, have to be encountered, but home life and home pursuits, such as gardening, poultry-keeping, &c., make life brighter and more full of interest, and have a distinctly advantageous influence upon the health.

Cost of Living.—The cost of living varies greatly; in the large towns near the coast, the hotel and boarding-house tariff is about 10*s.* 6*d.* a day, but up country prices increase with the distance from the coast and the cost of transport; thus the above tariff may be quite doubled at Johannesburg and trebled at Buluwayo. Boarding fees are at lower rates. On the small hotels and boarding-houses up country arrangements may be made for board and lodging at prices varying from 6*l.* to 8*l.* a month. The rent of private houses varies in the coast towns from

6*l.* to 10*l.* per month. In Johannesburg houses are more expensive. In the small towns and villages, cottages can be rented at from 5*l.* to 8*l.* a month.

Dress.—All who go to South Africa must pay particular attention to the question of clothing. At sea flannels are always useful, and ordinary morning suits with deck shoes. Ladies will find thin washing dresses cool, but less suitable than serges, flannels, or similar materials. An evening dress should be taken. For wear ashore, generally speaking, it may be said that ordinary English clothing can be worn by the invalid and visitor. Woollen underclothing is strongly advised: this can be worn at all seasons, quite thin in summer and thicker in winter, especially at high elevations, where several degrees of frost occur and at night the cold is severe. The frequent changes of temperature make it imperative for all to be watchful, and adapt their clothing to the variations that must be expected. Tweed and flannel suits of different thicknesses and soft felt hats are most comfortable. Flannel sleeping suits must not be forgotten. For ladies, the same remarks apply as regards underclothing, and they will find light walking dresses preferable in the hot weather; but in winter thicker materials, such as tweeds, flannels, serges, may be worn. In the warmer parts, as on the coast and in semi-tropical Africa, thin clothes are a necessity; but even then fine woollen underclothing must be worn. Sportsmen and explorers who may have to camp out should equip themselves with rough tweed, strong kharkee, or moleskin suits, with cashmere for hot districts. Flannel shirts should be worn, and thick stockings and socks and strong nailed boots; soft felt hats and gaiters, or, better still, puttees. A waterproof sheet and a few blankets are necessities. Every traveller should take a waterproof and a great coat. Any deficiencies

in the outfit can be supplied in the larger towns of the country.

Dietary.—Some hints may be of use as regards dietary. No water should be drunk that has not been boiled, and in many districts a filter is necessary. With this precaution typhoid fever, malaria, dysentery, and different parasitic diseases may be avoided. Stimulants are quite unnecessary, and he who abstains will enjoy the greatest freedom from illness. For medicinal purposes it is well to carry a small supply of good brandy. Food should be simple and nutritious, all meat being thoroughly cooked to avoid tapeworm, which is not infrequent. Wherever malaria prevails, no one should sleep on the ground when camping out, and in houses there should be an upper story for bedrooms, and windows should be closed at night. But in the dry healthy regions of the Karroo and High Veldt there is little risk in sleeping in the open air, and bedroom windows should be left open all night.

It may here be noted that the uplands of Cape Colony, Free State, Natal, and Transvaal are peculiarly well adapted for the open-air treatment of pulmonary phthisis. If sanatoria were established in these districts, well equipped for carrying out this treatment on proper disciplinary lines, a much higher percentage of cures might be confidently expected than is now gained in these countries, where the conditions of life are but ill adapted to invalid life.

Diseases.—A consideration of the various forms of disease prevailing in Southern Africa must not be overlooked, for want of attention to apparently trifling precautions has been known to admit the seeds of serious and even lifelong mischief. Malaria is the chief enemy to be dreaded, but it can scarcely be said to exist in any of the regions recommended as resorts for invalids. It is well, however, always to be forewarned and forearmed.

In all districts winter is the season in which it is least to be dreaded. At altitudes of 4,000 ft. and over, malaria is very seldom contracted even in Tropical Africa, but all low-lying moist lands are dangerous. The coast belt of British Namaqualand, Cape Colony, and Natal may be said to be free from it, but along the coast in Portuguese East Africa it is constantly to be met with. Inland Cape Colony is practically free from malaria, except in Kimberley, where a mild form called 'camp fever' is met with; and even in the uplands, camping in the valleys and in damp flats, particularly near land which has been recently turned up, must be avoided. In Natal malaria is seldom to be met with. In Zululand it prevails in the low-lying lands of the coast, especially near St. Lucia. In the Orange Free State it is rare, but may be contracted here and there in low-lying moist lands. In the Transvaal the high districts in the southern portion are free from malaria, but throughout the northern districts it is common in the warm rainy season.

In Portuguese East Africa malarial fever is rife, and the worst forms of the disease occur.

In the Kalahari, after rains, malaria may be contracted in low-lying tracts, especially towards the north. Rhodesia, at altitudes over 4,000 ft., is free from malaria, but throughout the rainy season the disease is very prevalent in the lowlands and valleys. In British Nyassaland malarial fever of a bad type is met with in the lower parts, but altitudes of 5,000 ft. and over are exempt. The rules to be observed by those who wish to escape from malaria are: to avoid all malarious districts, at any rate during the rainy season; if travelling through dangerous parts, to camp on ground as high and dry as possible, away from damp flats and soil that has been recently turned up; to protect the brain and spine from

the sun, and never to drink any water that has not been boiled; to take wholesome food and little or no stimulant. Sunset time is particularly dangerous. Flannel clothing should be worn, and wet clothes be changed as soon as possible. A supply of quinine must be carried in malarious districts, and daily doses taken as a prophylactic.

Dysentery and dysenteric diarrhœa may be contracted in many parts, but is more prevalent towards the north as the tropics are entered. A flannel belt worn over the abdomen is a useful precaution, and the rules as to food and drink noted above should be observed.

All travellers in Southern Africa will do well to pay some attention to the care of their eyes. The very drying character of the air and desert wind, often very hot and laden with dust, is liable to bring on irritation and inflammation of the eyes and eyelids. The dust of cattle kraals is peculiarly hurtful. For long rides on the veldt and when dust storms are blowing, smoke-tinted spectacles are a great comfort and protect the eyes from the glare of the sun and the hot wind and dust. It is a good plan, after exposure to sun, wind, and dust, to bathe the eyes with cold water, to which a little boracic acid may profitably be added.

In the waters of the lakes and rivers of South Africa certain parasites are found, which may find entrance into the body. Of these Bilharzia, various forms of Filaria, and the Dracunculus medinensis, or guinea-worm, may be mentioned. If care is exercised in always boiling water before drinking, it is not likely that infection will occur.

Snakes exist throughout the whole of South Africa, about fifty varieties occurring in the temperate regions; but, considering their numbers, it is remarkable how few deaths occur from snake-bite. They are rarely seen on

frequented paths and roads, even in country districts, and hardly ever enter towns or houses.

In Cape Colony a patent medicine known as Croft's tincture has a great reputation. The bile of poisonous snakes is an antidote, and a rough tincture may be made by shaking up some of the bile with spirit. Medical men, or those who are accustomed to the use of hypodermic remedies, might carry a supply of Calmette's serum for emergencies.

Scorpions are plentiful under the stones of the rocky ridges, but they are easily avoided, and their sting is not dangerous.

Mosquitoes are troublesome in most parts, and nets are advisable, especially when it is borne in mind that they may act as introducers of blood parasites, such as filaria, and also of malaria. The tsetse fly must be reckoned with by all who travel with cattle and horses in the northern or tropical parts, such as Portuguese East Africa, Nyassaland, and Northern Rhodesia; it is not often encountered below an altitude of 3,000 feet.

ITINERARY

It may be helpful to the visitor to South Africa if some routes are sketched out for his guidance during a summer or winter tour.

If he lands at Cape Town in the summer, a few weeks can be spent at Newlands or Wynberg; while, if the weather is hot, Muizenberg and Kalk Bay can be resorted to for sea-bathing and cool breezes. The Cape Peninsula cannot be recommended during the winter months on account of the dampness then prevailing.

Following the western railway system northwards,

the traveller might well rest for a time at Ceres during the summer months, turning his steps northwards to Wagenaars Kraal or Beaufort West to avoid winter rains. During the heat of summer cooler quarters can be found at Lemoenfontein, close to Beaufort West, on the mountains.

Kimberley may be visited in winter, but it is too hot and dusty for a summer residence. Further north the invalid should not venture, though many visitors will be attracted to Buluwayo, where the climate is healthier during the winter season.

If Port Elizabeth is chosen as the landing-place, the visitor will do well to spend a few days there, unless he is an invalid on his way north, in which case he will start northward after a look round the town.

Grahamstown, a few hours from the port, should certainly be visited, but it cannot be reckoned as a good health resort for consumptives. Following the midland railway to the north, Cradock and Middelburg are excellent winter health resorts, while during the heat of summer cooler quarters can be obtained at farms near these towns. The same remarks apply to Bloemfontein, which is less healthy in the summer than during the dry winter. Johannesburg and Pretoria, lying northwards along the same line of rail, though not health resorts, are visited by most travellers, and the winter season will be found the most agreeable.

East London is another landing-place, and the port for the eastern districts. In summer the visitor should not delay here after visiting the town and neighbourhood, but in winter the climate is delightful, and much will be found in this pretty rising town to attract the traveller. On the way north along the eastern system a brief visit should be paid to King William's Town, which lies a short

distance from the main line. Here again winter is the best time of the year, and it is no place for consumptives.

Cathcart is rather windy, and mists from the mountains detract from its otherwise excellent climate. Queenstown, a few hours further north, is one of the pleasantest up-country towns. The health-seeker should do well here in winter or summer, though a move to one of the farms may be advisable during the heat. Molteno is high and bracing, but too exposed for many. Further on, Burghersdorp has a good reputation, and many invalids do well. The visitor branches off at this place to Aliwal North, one of the prettiest of the High Veldt towns, and very suitable for invalids, though some find the heat of summer trying, and these will do well to seek quarters at farms on the mountains near. From Aliwal a trip can be made into the Free State to Rouxville, Smithfield, or Wepener by road. These villages have dry climates, but have few social attractions. For Basutoland and New England, Aliwal is the starting-point, and these districts offer cool resorts in summer. The difficulty is to find comfortable quarters, and visitors will have to lead a camp life in huts in most parts of Basutoland. At Lady Grey and Herschel and Barkly East quarters can be obtained at hotels and traders' houses.

If Natal is chosen for a visit, Durban should be approached in winter, as it is too hot in the summer. This beautiful town tempts the traveller to stay, but it is not a place of cure for consumptives, who will do well to pass northwards to Pietermaritzburg, where a few weeks may be spent during the cool months; and, when summer compels a move, Howides will offer cooler quarters. Estcourt and Ladysmith and Newcastle are all dry healthy towns; but, as in nearly all South African places, the heat in summer is considerable.

Speaking generally, the coast towns are to be avoided by health-seekers, who should seek a high elevation—3,000 to 5,000 ft. Many invalids, even at this height, complain of the heat in summer, and certainly the winter season is the time when improvement is found to occur in chest cases.

He who is cheerful and not deterred by discomforts not met with in Europe, and, being blessed with good digestion, can face the somewhat rough dietary of the country, and determine to keep out in the veldt air and not loaf on the hot draughty stoeps of hotels and boarding-houses in the dusty streets, will best gain the health advantages which he has come to South Africa to seek.

CENTRAL AFRICA

By C. F. Harford Battersby, M.D., Principal Livingstone College.

1. Climate and Seasons.—Climatic influences in that vast tract of Africa included in the tropical zone are exceedingly varied. If, however, we limit the scope of our inquiry to that part of the continent which lies roughly between 15° of N. latitude and 15° of S. latitude, there is sufficient similarity between the conditions of climate in different parts to allow of some general considerations being advanced which may be of service to the traveller. At the same time it must not be forgotten that there are in Central Africa snow-capped mountains, and lofty plateaux where the heather grows, and other plants characteristic of colder climes; but such are exceptional, and we shall confine our remarks almost entirely to the more unhealthy districts.

A combination of circumstances renders travelling, not to speak of residence, in Tropical Africa difficult and often dangerous. Amongst others we recognise the influence of (*a*) heat; (*b*) sun; (*c*) moisture; (*d*) soil; (*e*) winds; (*f*) climatic diseases. These we may take in turn and endeavour to trace the effect of each.

(*a*) **Heat.**—The extremes of heat which are often met with in subtropical countries, or even in some parts of the temperate zone, are not the great difficulty in Equa-

torial Africa. During the hottest seasons, in such different parts as New York in the north or South Australia in the south, the thermometer has been known to rise to 110° F. in the shade or higher.

The great difficulty in Central Africa is the constant high temperature. The average mean temperature is said to be about 80° F. in the shade; and when it is realised that during some parts of the year the thermometer falls little if at all below 80° even at night, there is little wonder that a European finds it difficult to live for any length of time in such a climate, when his constitution has been accustomed to the bracing effects of the cold weather in his own country. In addition to this, sudden changes of temperature, which occur at certain times of year, especially in the tornado season, are sources of danger.

(*b*) **Sun.**—It is not, however, heat alone that is to be feared. The direct rays of the sun have a considerable influence, and exposure to them during the middle of the day may have serious results; for besides special symptoms, which are more or less directly traceable to the influence of the sun's rays, forms of malarial fever are often developed as a consequence of exposure to the sun.

(*c*) **Moisture.**—In low-lying regions particularly, the dampness of the atmosphere combined with the heat acts prejudicially, and tends to the development ot disease. This may be the case even in the absence of actual rain. The rainy season itself may sometimes be rather a healthy time of the year than the reverse, owing to the lowering of the temperature, but it has generally been found that the commencement and close of the rains are unhealthy times. This is probably due to the evaporation which takes place when the rain falls upon the heated earth on

the one hand, and the drying up of the ground when the rainy season is over.

(*d*) **Soil.**—The condition of the soil is often a source of serious danger, the disturbance of virgin soil and the clearing of bush being frequently attended with grave results; nor is this only the case in marsh lands, or in the mangrove swamps which abound in West Africa, but in all kinds of undrained country. Those who remember the fen district of England as it used to be will realise the truth of this statement, to say nothing of other more recent examples.

(*e*) **Winds.**—How far winds affect the healthiness or otherwise of a district it is difficult to say; but Sir Henry Stanley has pointed out the unhealthiness of a certain station on the Congo, which he attributes to its position on the side of a gully between two hills, and which therefore is exposed to draughts of air.

(*f*) **Climatic Diseases.**—Climatic diseases are, however, responsible more than anything else for the conditions which have rendered the development of Africa so difficult. Of these the principal is undoubtedly malarial fever, and a proper understanding of this disease in all its various forms will probably do more to make African travel possible than anything else. Liver diseases, dysentery, and other bowel complaints are exceedingly common, and, with malarial fever, form the chief diseases which trouble Europeans in Africa.

Such are a few of the influences which combine to form the great obstacle to progress which we find in the African climate. Yet even these are not insurmountable. The experience of the past has taught us much concerning the proper precautions which should be taken under these circumstances, and by the application of the simple laws of health, and particularly by the introduction of drainage,

cultivation, and the establishment of a suitable food supply, great improvements have taken place.

2. Best Time of Year for Residence or Travel.—The choice of a time for travel must be regulated more or less by the occurrence of the rains. Where a journey has to be taken on foot, it is obviously inexpedient to travel during the rainy season, for not only is there the risk of getting wet through without the opportunity for obtaining dry clothing, but the paths are often rendered impassable. The dry season must therefore be selected for this purpose.

If it is a matter of residence, there is little to choose between different seasons of the year, though it is generally considered that the beginning and close of the rainy season are the most unhealthy months.

The best time for arriving in Africa is probably about the middle of the dry season, or, if no marching is necessary, the middle of the wet season may be chosen, as the temperature is then rather cooler than in the dry season.

The wet season north of the equator corresponds generally with the summer months, from May to October, while south of the equator it would coincide with our winter months. The wet season is ushered in by a series of tornadoes.

On the coast, especially in the river districts, rain may occur at any season of the year.

3. Suitability of Individuals for Tropical Residence or Travel.—Before going further, it may be useful to indicate briefly some of the points which are of importance in deciding whether an individual is likely to be a suitable or an unsuitable subject for tropical travel. It almost goes without saying that any one who has any serious organic disease should not venture into an unhealthy climate, nor one who is subject to digestive or nervous disorders. It is generally considered better that a person should be

spare than stout and full-blooded. Of course travellers in a hot climate should be temperate in all their habits, and people who have fads, or who are particular about their food, are not generally suitable.

It is not necessary to be exceedingly muscular. Sometimes those who appear most delicate, and yet are wiry in constitution, do better than those of more robust appearance. There are other points which may have to be considered by medical men who are responsible for passing candidates for work in Africa, but those already given may be useful for those who are contemplating travel or residence in this climate.

It may be noted that women seem to stand the African climate quite as well as men, if not better. European children, on the other hand, suffer severely if any attempt is made to rear them in Tropical Africa.

4. Modes of Travel.—Railways are gradually finding their way into Central Africa. These may be found in varying stages of completion on the road to Uganda, near the mouth of the Congo, reaching to the main river above the cataracts, in Lagos, the Gold Coast and Sierra Leone, and in Senegambia.

On most of the great rivers steamers can be obtained, though in some parts recourse must be had to a native canoe. A journey by canoe is very tedious, but the larger canoes can be made comfortable, and protection can be obtained from the sun either by awnings or by a grass roof, as is the custom of the people in some parts.

Except where Europeans have penetrated there are no roads, and, of course, no wheeled vehicles. Travelling must therefore be chiefly on foot, which is perhaps the most healthy mode of progression, as it insures good exercise. Horses can be obtained in certain parts, but they are not generally suitable for long journeys. Donkeys are

sometimes available, and may be useful in emergencies. A hammock should be taken with every party in case of illness or for occasional use.

Bicycling is a possibility in some parts, and is the only kind of vehicle possible on the narrow native paths. There are, however, difficulties as regards tyres, which need to be carefully considered.

5. Clothing.—To attempt to lay down hard and fast rules as to costume would be futile, for even in Africa some respect must be paid to prevailing fashions, and 'the proper thing' in Zanzibar, in Uganda, on the Upper Congo, or in Lagos, varies considerably. In the matter of underclothing, however, owing to the free action of the skin in warm climates, and the consequent danger of chill, it is important to wear some light woollen or other absorbent material. Cellular cloth, which, though it is made of cotton, yet allows of free evaporation, may safely be employed, and it has the advantage of being less liable to shrink. For night wear light flannel pyjamas are recommended, and as there is special risk of chill, owing to the sudden changes of temperature in the early hours of the morning, a sleeping sack is advisable. This can be obtained at Jaeger's depot, but sheets of similar woollen material can be purchased elsewhere, and a sleeping sack, constructed by sewing up three sides with an arrangement for gathering the sheet round the sleeper's neck, will answer the purpose.

A flannel belt is generally worn next the skin, but this is often replaced by a long sash, known as a 'cummerbund.'

For marching or other rough wear khaki, a form of cloth manufactured in India, is useful. White drill is suitable for ordinary suits, whilst tweed suits may be worn if not too heavy.

The protection of the head is a matter of first importance; probably the best form of headgear is a helmet of pith or some other light material, taking care that the back of the neck is well shaded. Some prefer, instead of a helmet, to use what is known as a 'terai' hat. In any case a light coloured umbrella lined with green should be used when going out in the sun.

Some recommend the wearing of a spinal pad, which consists of a band of cotton wool about three inches wide, sewn into the back of the coat over the spine. For those who are likely to have long marches this may be advantageous.

For the feet, woollen socks will generally be found most useful, and the boots or shoes required must be adapted to the conditions of each locality. Where it is usually dry, light canvas shoes or light brown leather shoes with leather soles will be found convenient; but for wet weather or for much marching, stouter boots may be required, and possibly leggings, whilst in very damp districts top boots will be needed.

Habits of Life.

(*a*) **Diet.**—The food question has probably more effect on the health than is generally supposed, and when it is remembered that the chief diseases of warm climates attack the digestive system, it is well to be careful; and it is worthy of note that the healthfulness of certain towns even in West Africa has been materially improved by the bettering of the food supply.

Animal food is often difficult to obtain, and inferior in quality—perhaps a wise indication that it should be eaten sparingly in the Tropics. Beef, mutton, and goat's flesh are the usual varieties, and care needs to be exercised in the choice of meat to insure that it is in good condition.

The inevitable fowl can generally be obtained and cannot be despised, although 'the African runner' cannot be compared to the ordinary table fowl at home.

Of vegetables there is not a great variety. The yam is a good substitute for the potato, and can be obtained over a wide area. Sweet potatoes are often available, and English vegetables can be grown. Tomatoes and cucumbers usually do well; cabbages and lettuces are more difficult to obtain.

African fruits are readily obtained. Bananas and plantains, the latter of which is more commonly used as a vegetable, are the staple food of some African races. The pawpaw is both palatable and an aid to digestion, though its properties in this respect have been somewhat exaggerated. Pineapples, mangoes, guavas, Avocado pears, oranges, &c., have a more limited distribution. The early morning is generally regarded as the best time for taking fruit, and the popular prejudice against taking uncooked fruit at night is no doubt well founded.

Indian corn is extensively grown, and the form of porridge prepared from it by the natives is wholesome and not unpleasant. Wheat has not been largely grown in Central Africa, so that it is usual to employ imported flour.

Milk is often difficult, if not impossible, to obtain, and condensed milk is needed to take its place. Some of the unsweetened variety is useful in case of illness, but the sweetened milk keeps better. Cow's or goat's milk should always be boiled before using. Opinions differ as to the best hours for meals, but the following arrangement will probably be found most convenient:

6 A.M.—Early cup of coffee or cocoa, with bread and butter, toast, or biscuit, and possibly an egg; also a banana or orange.

10 to 10.30 A.M.—A substantial meal, usually called 'breakfast,' with soup, meat, and vegetables, and sweets.

1.30 or 2 P.M.—A cup of tea with bread and butter or jam, and possibly a little fruit.

6 or 6.30 P.M.—Dinner, the second substantial meal of the day, of the same character as 'breakfast.' It is generally considered advisable not to eat uncooked fruit at this meal.

The reason for the arrangement of the meals given above is that from 6 A.M. to 10 A.M. is the best time for work in the day, and it is better that the principal meal be taken after than before the heaviest work of the day. As to the question of what should be drunk with the chief meals, there is no question, in my opinion, as to water being the right beverage if it is properly purified. As to the supposed necessity of taking alcohol in some form or another as a beverage, and particularly spirits, I regard such advice as absolutely contrary to common sense. The use of alcohol medicinally is another matter, and may be referred to elsewhere. As an occasional refreshing drink the juice of a fresh lime with a glass of water will be found pleasant.

(*b*) **Drinking-Water.** — Difficulties concerning water supply are very common, and need most careful attention. The best source from which water can be obtained is a good spring; next, rain water, though there is always risk in the method of storage; and, thirdly, water from artesian wells. Surface wells are generally a source of danger. Failing these sources, river water may have to be used, but, owing to rivers being usually employed in Africa as a means of carrying off all the refuse of the villages on the banks of the river, the water is often much polluted. If water must be obtained from rivers, it is worth while taking the trouble to draw it from some distance from the bank

in the midst of the stream from a boat or a canoe; *in any case*, the water should be boiled before using; the matter of filtration is a minor consideration. It is a question whether any filter can be relied upon to render water free from germs, at any rate after a short time. It is therefore safest to rely upon boiling as the best means of purifying water, though preliminary filtration may render it more pleasant and free from gross impurities; but the filter should be used *before* and *not after* boiling, as the filter may actually become a source of pollution. There are many simple kinds of filters which may be used for this initial purification, but on no account should the filter be relied upon, the water being boiled and then stored in some scrupulously clean receiver, which should have a close-fitting cover. It is important that this process should be frequently supervised, otherwise the servant boys are likely to be careless. It may be worth while to set apart a fixed time for the water supply for each day to be boiled and stored, a strict routine being insisted upon, some responsible person taking care that it is properly carried out.

In the case of long marches a small quantity of water, boiled the night before, might be carried in water-bottles, but it will probably prove most convenient and palatable to drink tea, coffee, or cocoa whilst travelling.

(*c*) **Sleep, Exercise, &c.**—Regularity of habits is important in any climate; it is doubly important in hot climates. Meals should be at regular times, whatever system may be adopted with regard to them. Rest should be taken at regular times. Some are in favour of sleeping in the middle of the day. Personally, I am inclined to suggest that whilst there should be a certain amount of relaxation during the hottest hours, too much sleeping in the daytime may interfere with the night's rest, which is all

important. 'Early to bed and early to rise' is the motto for the Tropics. Nine o'clock or thereabouts is a good time to retire to rest. The late evening is not a time when much can be done. The insects make it too unpleasant to be comfortable; besides, it must be remembered that, as it will probably be necessary to rise at about 5.30, this does not allow an abnormal amount of time for sleep, and sleep is essential to good work and sound health.

Good mosquito curtains are all important. Art muslin is probably the best material, as this will exclude sandflies and other insects. During the day they should be carefully folded so as not to admit insects. The curtains should be let down before dark and tucked in under the bedclothes to prevent mosquitoes from gaining entrance.

Regular exercise should be taken, as this will be found the best means of keeping the liver in proper order; and it should be regarded not as a luxury, but as a necessity. The best time for it will probably be the early morning or the late evening. Riding, walking, lawn-tennis, &c., will be found suitable. Care must be taken, however, not to exhaust the system, and over-exertion is as serious a mistake as failure to take exercise at all.

The daily action of the bowels should be carefully maintained, and this will be best attained by keeping to a fixed hour, by the use of fresh fruit and vegetables, and by exercise. Occasional constipation may be remedied by a dose of from one to three rhubarb pills, or one or two tabloids of cathartic compound, or of Livingstone's Rousers. Habitual constipation should be treated, if the suggestions given above are not successful, by one of the anti-constipation tabloids twice or three times a day, as required; or the cascara compound tabloids, taken in the same way,

gradually reducing the number as the bowels become regular.

It has been wisely put forward by a medical man of experience that it is desirable in Africa to cultivate the philosophic temperament. This is fully in accord with the African caution, 'softly, softly.' It requires a man of some energy to resist the enervating influence of the climate, but over-excitement is much to be deplored. Patience is a virtue, which has to be learnt sooner or later, and the sooner the better. Delays, disappointments, even disasters may have to be met; calmness of mind under all circumstances will be helpful in every emergency, and one who is too easily excited is unfit for the trials, and the minor worries as well, of a hot climate; common sense is needful in putting into practice every rule of health, and without it none will be of much avail.

House Accommodation.

Although travellers passing through a country have not much opportunity for building a permanent house, yet what is said here will apply generally to the choice of a camping ground or the selection of a suitable residence, and some who read this will probably be resident for a time in one district. The following hints may therefore be of some service.

Site for a House.—It is well known that certain positions are more likely to be malarious than others, such as low-lying ground on the seaboard, and especially near the mouths of rivers. Mangrove swamps are specially unhealthy, but malaria is not by any means confined to marsh land, as was at one time supposed. The drainage of the soil is, however, of great importance, and land at the foot of high hills has often proved unsuitable for a settlement.

If, then, it is possible to choose the position for a house, some consideration should be given to such well-known facts as those just mentioned.

It is obvious, however, that in carrying on work in unhealthy climates we cannot avoid all possible causes of evil, though at the same time we may do much to counteract the evil influences of our surroundings. Attention should also be paid to practical experience of particular localities.

Places which at first sight have given good prospect of being suitable for residence have sometimes, from unknown causes, proved to be peculiarly unhealthy, so that we need to avail ourselves of all possible evidence before choosing a site, which may have so much influence upon the health and life of all who may in the future be called upon to work in that spot.

It is obvious, therefore, from what we have already said, that we should seek, if possible, a dry and elevated site for our house, not too close to the sea or to banks of rivers.

It will be inferred, from what has been said, that the interior of Africa is likely to be more healthy than the coast regions. As a rule this is the case, but until railways are in working order, and means of transit more easy, it is difficult and dangerous to express too dogmatic an opinion as to the healthiness in general of up-country stations.

Position of House.—The surroundings of the house itself must be determined by various considerations. It is generally advisable not to build too close to the houses of a native town, as the people have, as a rule, no ideas of sanitation, and in many cases it is the habit to bury the dead in the ground under the houses. The neighbourhood of burial-grounds, if such exist, should, of course, be

avoided, especially when it is known that Africans generally bury their dead very close to the surface.

Sufficient space should be allowed around the house, and the position of out-houses settled before the house is actually built. The question of water supply is a matter of primary importance, and in many cases it may be necessary to adopt plans for the storage of rain-water. Galvanised iron tanks are the best for this purpose. They should be fitted with suitable lids and cleaned at regular intervals. It is good to have culivated land around a house, and arrangements should be made for adequate drainage, especially important in view of the heavy rains of the wet season.

The bush should be cleared away from the neighbourhood of a house, for, if this is not done, it will become a place for the disposal of all kinds of refuse. As to the building of the house itself, it will not be possible to enter into many details. A few general principles should be borne in mind:

1. It is generally best that the living, and particularly the sleeping, rooms of a house should be raised above the ground, but this is essential in low-lying districts.

2. Where possible, stone or brick will be found the best material for building, as wood necessitates very frequent repairs.

3. The great problem in Africa is how to keep a house cool without being draughty. In order to attain this result two points should be specially attended to: (*a*) the roof, and (*b*) the verandah.

(*a*) Since corrugated iron is the simplest and most useful method of roofing, a wooden ceiling should be erected, having a considerable air-space between it and the iron, and a further improvement consists in a lining of felt underneath the iron.

(*b*) An African house without a verandah is a serious mistake, and it is worth while expending pains and money in order to secure a good verandah, which, if well arranged with mats or blinds to protect it from the sun, may form a comfortable sitting-room in the daytime, and render the bedrooms tolerable for sleeping in at night.

Closets should never be attached to the house, but should be in out-houses. The dry earth system is the best, and it should be noted that in this system the earth acts as a disinfectant, but that sand is useless for this purpose. They should be situated on the side of the house away from the prevailing winds, and should be emptied daily.

On the March.

The rules which should be observed in marching must no doubt vary according to the part of the country to be traversed, the nature of the path, and many other circumstances. There are, however, certain special suggestions which may be of value to the traveller who has much marching to undertake, in addition to the general hints already given as to health precautions, some of which could not be carried out on the march. It is difficult to separate the distinctly medical hints for marching from those which are chiefly matters of convenience, but probably most of the points here dealt with have an important bearing upon health.

Clothing.—Head gear and underclothing should be as already described. Trousers should be worn rather than knickerbockers, and they may be made of gabardine, a most useful material for rough work. If the path is thorny, moleskin trousers may be used. Woollen socks should be worn, stout boots and short leather gaiters. The special form of boots manufactured by Southall & Co.,

Kirkstall Road, Leeds, are recommended, and in order that they should be impervious to moisture it is important to see that the uppers are made of whole (as opposed to split) leather.

It is a very good plan to change the boots and socks in the middle of the march to guard against becoming footsore.

Camping, &c.—Almost as important as clothing rank the arrangements for camping. A good tent (concerning which Benjamin Edgington, Limited, are the best advisers), a folding camp-bed (preferably of iron, such as can be obtained at the Army and Navy Stores), also a folding-chair and table are far from needless luxuries.

The choice of a camping ground will probably be made according to the facilities for obtaining water. Granted that this is secured, attention should be paid to the choice of a site, as has been already described; the sanitary arrangements, such as the arrangement of latrines, must not be neglected.

Time of Marching.—Details as to the time of marching must be regulated so as to fit in with the size of the caravan, and the length of the march which must be taken. It should be arranged that the march shall be completed before the sun is hot, and in long marching no attempt should be made to make more than one march in the day, as this prevents the possibility of cooking a proper meal, which is one of the first rules of health.

Food.—It would be futile to attempt to draw up an elaborate list of stores for general use. This must be made out in each case to suit the length of the journey to be taken, and must depend to a great extent upon the possibility of getting fresh food. The arrangement, however, of the food and cooking utensils for daily use is a matter of considerable importance.

A basket, fitted up with plates and knives and forks, in addition to tea-things of enamel iron-ware, is designed by the Army and Navy Stores for travellers, and is preferable to the bucket canteens. This must not be confused with the ordinary tea-baskets which are used so much at home and which are not serviceable enough for rough wear. This basket should have a canvas cover and should be kept entirely for clean utensils. It should not contain a kettle, nor should any food materials be allowed in it, with the exception of tea, and possibly sugar and biscuits, if in well-fitting boxes. These may be made of aluminium.

Cooking-pots should be carried separately in some rough box or basket, which may, in all probability, be obtained locally. A steamer can be obtained at the Army and Navy Stores, which is specially useful on the march.

A food box should be carried, consisting of a wooden box (size, 2 ft. 6 in. × 1 ft. × 1 ft.), with a well-fitting lid with a padlock to fasten it. This box should be regarded as the travelling larder, and should contain several jars with fixed covers and a few screw-top, wide-mouthed bottles. In the jars might be kept American corned beef, when removed from the tin, or tongues, or even occasionally cooked meat or fowl, if found necessary to keep till the next day. Condensed milk, after opening a tin, butter, and jam should be kept in bottles, as also sardines when removed from the tin. In addition there should be included about 7 lbs. each of flour and oatmeal, 4 lbs. of pea flour for soup, also some cornflour, arrowroot, baking-powder, dried vegetables, &c.; salt, pepper, and condiments, bovril, tea, coffee, cocoa, and sugar. The greatest care should be taken as to the arrangement of this box. No food should be allowed to remain in it from day to day, and it need hardly be said that the box

and every receptacle in it should be kept scrupulously clean. Slovenliness in this respect is unpardonable. There are quite sufficient risks to life in Central Africa without running the risk of poisoning by putrefying food.

Malarial Fever.

Of all the foes to European influence in Africa malarial fever is the greatest, but perhaps the chief danger lies in the fact that so few travellers take the trouble to adopt the well-known precautions; many, for the want of a few simple directions, fall victims to preventible disease. Some are paralysed with fear at even an ordinary attack of fever, and this condition of panic has had much to do in bringing about a fatal issue in certain cases, whilst others refuse to believe in the necessity of care in slight attacks of fever, which they endeavour to 'work off,' a practice fraught with the greatest peril. Neither of these two classes are fit for African travel, to undertake which it is necessary neither to fear nor despise climatic disease.

Ordinary Ague.—The more usual forms of fever differ much from similar attacks in India and the East. There an attack of fever is usually ushered in by a violent shivering fit or rigor, followed by what is known as the *cold stage*, succeeded in a short time by the *hot stage*, and terminating in the *sweating stage*, the whole attack often lasting only a few hours, but liable to be repeated on the next day, or on the second or third day following, according to the type of fever. Similar attacks may occur in Africa, but in the majority of cases the three stages are not nearly so strongly marked.

Simple African Malarial Fever.—The onset of an attack is generally shown by headache and pain in the back, a feeling of weariness and general discomfort, whilst even at

this early stage a clinical thermometer reveals the fact that the temperature has risen, and the pulse is found to be accelerated.

There may or may not be a sense of chilliness; at any rate, two or three blankets will probably be appreciated, although the atmospheric temperature may be between 90° and 100° F. This stage, which we may call the *cold stage*, may last from one to three hours, and then gradually passes into the *hot stage*.

In the *hot stage* the skin is hot and dry, the urine is scanty, there is thirst, a furred tongue, probably constipation, and other symptoms of fever, the temperature often rising to 103° or 105° or more. During this state vomiting is often a distressing symptom. Unless the case is treated promptly, the *hot stage* is very likely to be prolonged. In ordinary cases, however, and where proper treatment has been adopted, the patient passes in a few hours from the *hot stage* to the *sweating stage*.

The relief of the *sweating stage* is very great, the symptoms abate, the temperature falls, and in a few hours it may have become normal again.

This attack frequently recurs on the following day, or not for a few weeks, but there is not the same regularity as would be expected in cases of malaria in other parts of the world.

Complicated Forms of African Malarial Fever.—It is usual to divide malarial fever into two chief classes—those which may be called intermittent, and those which may be termed remittent. It is much more difficult to do this in the case of African fevers, which are often irregular in type. There are certain modifications, however, of the form of fever already described which render one attack more serious than another. As examples may be mentioned cases of persistent vomiting, or of extreme tem-

perature, or the continuance of the fever without remission for several days.

The treatment of the complicated forms of malarial fever is given under 'Blackwater Fever.'

Treatment of an ordinary attack of Malarial Fever.—Immediately you are sure that you have got an attack of fever, go to bed, put on flannel pyjamas, and get between the blankets. Take a hot cup of tea, and a purge such as two tabloids of Cathartic Co. U.S.P., or two tabloids of Livingstone's Rousers, or, at any rate, a pill containing calomel. At the same time give three 5-grain tabloids of antipyrin or two 5-grain tabloids of phenacetin, or half an ounce of Warburg's tincture (equivalent to eight 5-grain tabloids of Warburg's tincture), or some other drug to cause sweating. This should take action in a few hours' time.

If there is no sign of the bowels being opened at the end of four or five hours, a saline purge may be given either in the form of Epsom salts or effervescing citrate of magnesia, and accompanied by an enema. At the same time, if there is no sign of sweating and if the temperature has not begun to fall, the dose of antipyrin or phenacetin or other antipyretic may be repeated.

If this is successful, and the sweating is induced and the temperature begins to descend, a dose of 10 grains of quinine may be given in the form of two 5-grain tabloids. This is the best time for giving quinine during the attack, but if the temperature remains high the administration of quinine must not be delayed more than six hours, as quinine is the definite antidote to the malarial poison, and nothing really takes its place. The same dose should be repeated every four hours during the day so long as the fever lasts, but it is better not to give it at night, as there is a tendency to interfere with sleep. On the day fol-

lowing the attack 10 grains of quinine may be taken three times in the day, and twice on the next day after that.

If there is any definite sign that the fever is periodic—i.e. that it recurs at definite intervals—a dose of 10 grains of quinine should be given three hours before the attack is expected. The administration of quinine after an attack of fever, or between successive attacks, should never be omitted.

Blackwater Fever.

This form of fever may be regarded as a complication of malarial fever, but from its importance it may be well to give it a separate description. Very little seems to have been known of this fever until quite recent years, and then it was chiefly found in West Africa and in the Niger and Congo regions, and it is still most common in these districts, but lately a number of cases have been noted in all parts of East Africa.

Before proceeding to describe the usual character of this fever, there are a few points which are worthy of attention. Reference has been made above to the two dangers which are most serious in encountering malarial fever, and these apply with special force to this particular form—they are panic and foolhardiness.

The overdrawn pictures of the fatality of this fever have had such an effect upon the vital powers of some patients as to lead them to fall an easy prey to the disease. On the other hand, there are people who do not realise the very great care that needs to be taken, not only during the treatment of the fever, but in after-treatment during convalescence.

One factor which has given rise to grave apprehensions in the case of some individuals is the idea that bleeding is taking place from the kidneys, and that they are in danger

of bleeding to death. When, however, it is understood that the black urine is only a symptom of the disease, which, apart from other grave symptoms, is not of very serious import, it is hoped that the minds of many travellers may be reassured.

General Symptoms.—The onset is often precisely the same as in an ordinary case of malarial fever, and sometimes for a whole day there may be nothing to distinguish it from one of the attacks already described; then suddenly a fit of shivering comes on, the temperature usually rising to about 103° or 104°, and the urine which is next passed is noticed to be of a port-wine colour. A little later on the urine becomes darker, and soon will be found to be opaque and porter-coloured, and may be thick and difficult to pass. Almost at the same time the skin becomes tinged with a yellow or orange colour, and several of the more serious symptoms included under the head of 'Complicated Forms of Malarial Fever' may be found. There may be vomiting, more or less persistent—perhaps tenderness of liver and spleen. Very frequently there may be delirium, or at any rate mental excitement; and if the bowels are opened, some dark fluid may be found in the motions somewhat similar to the colour of the urine.

If the case is carefully treated from the first, it is probable that at the end of 24 hours after the first passing of dark urine the urine will begin to change to a lighter colour, and, if all goes well, in a few days the colour will be normal again. The temperature is variable, as in most cases of severe malarial fever, but excessively high temperature is not common.

Special Notes.—Two main points may be taken as indicating the gravity of a particular case:

(1) Where persistent vomiting or delirium renders the taking of food or medicine difficult.

(2) Where there is a very great reduction in the amount of urine passed in the 24 hours, which probably indicates definite disease of the kidneys.

Treatment.—Seeing that certain theoretical considerations have recently been advanced with reference to the treatment of this affection, among other things questioning the value of quinine, the writer desires to lay great emphasis on the treatment here recommended. He has adopted it with the greatest success in his own person during three attacks of Blackwater fever, and he believes that in the main it is borne out by the experience of almost all medical practitioners who have dealt with the disease in Africa itself.

General Measures.—The system of treatment is the same as in other forms of malarial fever. The skin must be made to act, the bowels opened, and quinine given at the proper time. At the onset the patient should at once go to bed and get between the blankets, taking 15 grains of antipyrin and a hot cup of tea. In ordinary cases of malarial fever two tabloids of cathartic compound would be taken at the same time; but if the urine had already assumed the characteristic appearance described above it might be well to give 5 to 10 grains of calomel instead; or if the occurrence of black urine comes at a later stage of the disease, the calomel might be given then, if the bowels were not opened. In any case, if the purge does not act within 5 or 6 hours, an enema of soap and water should be administered.

Quinine.—Quinine is best given when perspiration has set in and the temperature has begun to fall; but should the temperature remain high the administration of quinine should not be delayed longer than 6 hours after the onset of the fever. The dose which should be given is 10 grains, and this should be repeated every 4 hours during

the day, not more than 40 grains being given in the 24 hours, and being discontinued at night. Tabloids of bisulphate of quinine may be used, but should there be any difficulty about taking them, or should they appear undissolved in the motions, then they should be dissolved in water, two or three drops of dilute sulphuric acid being added if necessary to dissolve them.

If there should be persistent vomiting, it may be necessary to give medicine as well as food by enemata. In that case the quinine must first be dissolved, and may be given with the food.

The hypodermic injection of quinine is hardly to be recommended to any one who has not been carefully instructed in the method of performing this simple, but at the same time delicate, operation. Most important of all treatment, however, is the feeding and nursing of the patient.

Nourishment.—In ordinary fevers, starvation is sometimes the best prescription; but in the severer forms of fever, fluid nourishment given frequently, say every hour, in small quantities, is of the utmost importance. The stomach is liable to be exceedingly irritable in these cases; hence any overloading of it may lead to disastrous results. Fresh milk, if obtainable, forms the safest diet, but it should always be boiled; in its absence unsweetened condensed milk may be given. Horlick's malted milk is a convenient and not unpleasant substitute for milk as an invalid diet. Benger's preparations will often be found useful.

To relieve thirst, weak lemon or lime water made from fresh fruit may be allowed. Barley water makes a refreshing drink, either by itself or combined with milk.

Treatment of Special Symptoms.—In cases where there is any tendency to diminution in the amount of urine

passed, simple drinks of this kind should be freely administered, and, when suppression of urine is feared, mustard leaves should be applied to the loins.

Mustard leaves or poultices should be applied over the liver and spleen when there is tenderness over these organs.

In cases where persistent vomiting occurs, a simple emetic may sometimes be of use, as tepid water, or a few teaspoonfuls of ipecacuanha wine. Effervescing drinks occasionally relieve vomiting, and some build great faith on champagne for this purpose. External applications, such as a mustard leaf or a few drops of chloroform on flannel applied to the pit of the stomach, are often helpful.

In cases of excessively high temperature over 105°, or continued temperature for several days over 102°, a cold pack should be administered, or in extreme cases the patient should be put into a cold bath, and many lives have been saved by this treatment. Antipyrin, Warburg's tincture, and other drugs which are exceedingly valuable at the onset of the disease, may be very dangerous when the physical strength is much enfeebled at the height of the fever.

Nursing.—Attention to the comfort and cleanliness of the patient helps greatly towards a successful result. Washing of the hands and face with warm water, and occasional sponging of the whole body under a blanket are a distinct relief.

Eau de Cologne or Florida water applied to the head, and ice if it can be obtained, conduce to comfort, and may give rise to refreshing sleep, which is perhaps the best restorative.

After-Treatment.—One attack of Blackwater fever renders the patient predisposed to a recurrence of the same fever. Consequently the greatest care should be taken to avoid chill, exposure to the sun, or over-fatigue. A tonic,

such as the tonic compound tabloids, one being taken three times a day after meals, or 10 grains of citrate of iron may be administered. Quinine also taken three times a day should be given for a few weeks at least.

A few weeks' rest in the nearest health resort, or a short sea trip, should, if possible, be taken, or if the attack be exceedingly severe, or a second attack has occurred, the patient should return to England, only bearing in mind that there is need of great caution in coming to a cold climate after an attack of Blackwater fever.

Causes and Prevention of Malarial Fever.

It has been abundantly proved of recent years that malarial fever is due primarily to a parasite known as the Plasmodium Malariæ, which exists in the blood, and the investigations which are being carried on as to the life history of this parasite are likely to have an important bearing on the treatment of malaria. The suggestion that mosquitoes are in some way concerned with the propagation of this parasite affords an additional reason for seeking protection from the onslaught of this troublesome insect.

But there are secondary causes which influence largely the production of attacks of malarial fever, and a proper understanding of these is the safest guide to the prevention of the disease.

Chill.—(1) Chill in a person living in a malarious climate most frequently brings on an attack of fever, and it is therefore essential to avoid draughts, sitting in damp clothes, and other common causes of chill. The risk of chill owing to sudden changes of temperature in the early hours of the morning has been alluded to under the head of Clothing, and on this account the sleeping sack has been recommended.

Parke lays special stress on the fact that a wetting always caused fever, both in man and beast—e.g. in crossing rivers or from heavy rain.

Exposure to the Sun.—(2) Exposure to the sun is very liable to bring on malarial fever in addition to the special kind of feverish attack which is commonly known as sun fever.

The Turning over of Virgin Soil.—(3) The turning over of virgin soil has over and over again proved most injurious in malarious districts, and Europeans engaged in this work are exposed to special risk.

Want of Exercise.—(4) Want of exercise is responsible for a great deal of fever. Walking, riding, or even such games as cricket and tennis, where judiciously carried out during the cooler parts of the day, will be found excellent preventives of fever.

Over-Exercise.—(5) Over-exercise, on the other hand, is equally injurious, and Europeans cannot expect to be able to do the same amount of physical work as they can in their own country.

Spirit-Drinking.—(6) Spirit-drinking specially predisposes to malarial fever, chiefly by lowering the constitution, so that it easily falls a prey to the influences of the climate.

Over-Eating.—(7) Over-eating, and especially excess in the use of animal food, is a serious evil, and probably, from its effect on the liver, leads to attacks of malaria.

It is in the recognition of these common causes of fever that we may best hope for its prevention; but there are other points that need to be observed. Proper house-building, attention to sanitary laws, and the cultivation of soil should be carefully attended to. But, in addition, we have placed within our reach a drug which is a definite antidote to the fever. It has been abundantly

proved that the taking of quinine daily, whilst in a malarious climate, is of the greatest possible advantage.

Different theories prevail as to the method of administration, but the writer desires to recommend the adoption of the plan which he adopted throughout his last visit to Africa, during which he had no attack of fever. Quinine should be taken in a dose of 3 grains every morning with a cup of coffee or cocoa for a fortnight before reaching a malarious country. After entering the country 5 grains may be taken every morning in the same way, or, if special risk is to be encountered, such as an inevitable march during the heat of the day or a visit to some specially pestilential district, or if new soil is to be dug up, 10 grains of quinine may be taken in the morning.

There is probably no foundation for the suggestion most commonly put forward that quinine thus taken interferes with the proper action of quinine in time of fever. There are very few people who cannot tolerate quinine. It would be wiser for them not to venture into a malarious climate.

Bowel Complaints.

The tendency to derangement of the bowels which exists, particularly in warm climates, indicates that particular attention should be paid to any irregularity of action of the bowels. This has already been referred to and suggestions given as to the prevention of constipation. But there remains a still more serious question, and that is the occurrence of diarrhœa or looseness of the motions, which may occur in a variety of ways.

Three distinct forms may be dealt with here as of special importance to travellers in Africa, which we may speak of under the heads of (1) diarrhœa, (2) enteric or typhoid fever, and (3) dysentery.

Diarrhœa.—On the occurrence of diarrhœa the greatest attention should be paid to diet, and, if the attack is at all severe, only milk should be taken, or possibly arrow-root made with milk. The best medicine to rely upon, and to continue taking during the attack, is bismuth in a dose of 20 grains, three or four times a day. If the tabloids are used, it would be well to crush them before use. At the acute stage of the attack 20 minims of chlorodyne may be administered, or 10 grains of Dover's powder, or 20 grains of aromatic chalk powder with opium. These, however, should not under ordinary circumstances be continued for more than a day at a time, nor repeated more than three times in one day. For the avoidance of diarrhœa great care should be taken as to drinking-water, the character of fruit and vegetables, and all kinds of food, and in particular of preserved foods.

It is impossible to deal at all fully with this most important subject, but a few hints may be given as to its recognition and treatment, as well as the prevention of its occurrence.

Enteric or Typhoid Fever.—Enteric fever usually begins most insidiously with symptoms common to many feverish conditions. For several days the temperature is found to be gradually rising, each evening showing a rise of about 1° over the temperature of the previous evening. There is headache and general feeling of illness and usually diarrhœa, though in certain cases there may be constipation. This condition continues for about a week, when the symptoms are often greatly aggravated. At this stage some small rose-coloured spots may be noticed on the chest and abdomen, occurring in crops of a few at a time for a few days, and gradually disappearing. With this there are often severe nervous symptoms, delirium, and grave depression of the system. This condition may

continue for a considerable time, a week or more, and then gradually the symptoms may abate.

If a case of fever is noted of this kind, and which does not seem to be influenced by the administration of quinine, enteric fever may be suspected, and the case should be treated as such.

Treatment.—The patient should be kept absolutely at rest in bed, a bed-pan being employed, and great care being taken to disinfect the stools with carbolic or Jeyes's powder, and disposing of them in such a way as to avoid possible contamination or extension of the disease. The most scrupulous attention should be paid to cleanliness, both with reference to the patient's person and bed-clothes, and the hands and person of the one who is nursing the patient. As there is a tendency to bed-sores in addition to cleanliness, the dependent parts of the body, especially the chief prominences, may be rubbed over with any kind of spirit. Nothing but strictly liquid nourishment must be given. Milk is the best diet, but it should always be boiled. If fresh milk cannot be obtained, condensed milk must be used. It may be well to be provided with some unsweetened condensed milk of a good brand for this purpose. Horlick's malted milk is also to be recommended. Meat extracts, such as Valentine's meat juice, may be given in teaspoonful doses in cases of great exhaustion, and beef-tea or invalid bovril might be allowed as a variation from a strictly milk diet. No thickening, however, must ever be allowed, nor must beef-tea be given when there is much diarrhœa.

The strictly fluid diet must be maintained until the temperature has remained for a whole week normal or below the normal. No drugs are of much use, but doses of 5 or 10 grains of quinine may be given three times a

day when there is any possibility of the case being complicated with malarial fever. Alcohol should not be given unless there is danger of collapse, when 2 or 4 teaspoonfuls of brandy may be given occasionally according as the patient is or is not accustomed to its use; but this should be discontinued as soon as the dangerous symptoms are passed, and reliance placed on careful feeding.

Dysentery.—Dysentery may appear at first as if it were an ordinary attack of diarrhœa, but soon the characteristic signs of dysentery show themselves. The desire for relief is very frequent, and though there is a good deal of straining, often quite painful, very little is passed, and this differs from the ordinary character of the motions, being mixed with blood, the motions being commonly described as consisting of blood and slime. Meanwhile general symptoms of depression are present, and griping pain in the abdomen. Often the calls to stool are so frequent that the patient hardly gets any rest.

Treatment.—Entire rest and fluid diet, as prescribed under enteric fever, should also be carried out in cases of dysentery during the continuance of the symptoms. In this disease, however, we have a remedy which may be regarded as a specific, viz., ipecacuanha. It is given in the form of a powder, in doses of 20 grains; but as ipecacuanha is an emetic, great care needs to be taken in the mode of administering it. It should be given on an empty stomach, no food or drink having been taken for 2 hours previously, nor being taken for 2 or 3 hours after. If there is any tendency to vomit after the taking of the ipecacuanha, a mustard leaf may be applied to the pit of the stomach. Should the first dose be vomited, there should be an interval of about 2 hours, and then a dose of 20 minims of chlorodyne may be given, followed in about 20 minutes by 20 grains of ipecacuanha. The

dose should be repeated once or twice a day for 2 or 3 days, or until the acute symptoms have passed away.

As an alternative 1 teaspoonful of a strong solution of Epsom salts may be given every quarter of an hour until the purgative effect is produced.

Prevention of Dysentery and Enteric Fever.—It should be distinctly understood that both of these diseases are preventible. Most frequently they are due to a polluted water supply. A rigid attention to the boiling of water and milk, and general sanitary precautions as already recommended, should be a safeguard against such diseases.

Parasites.

To attempt a detailed description of the parasites which may be taken into the system in Tropical Africa would require almost a book to itself; but inasmuch as most of these are taken in through drinking-water, an additional reason is afforded for the most scrupulous care in boiling all drinking-water.

Filaria.—Perhaps the most formidable of tropical parasites is the filaria, which leads to that most horrible disease, elephantiasis, producing extraordinary deformities in the tissues of the legs and lower parts of the body. It may be noted in its early stage by lumps in the groin or in other regions, which are otherwise unexplained, and possibly by the passing of milky urine. If there is any suspicion that the disease has been contracted, medical advice should be sought as soon as possible. In this disease there is little question that the mosquito is responsible for the development of the parasite outside the human body. On the death of the mosquito over pools or even rain-water tanks, if exposed, the parasite may be set free. It appears to be through drinking-water that the

human being is again infected. It is important to mention this, as it is sometimes thought that rain-water stored in tanks may be drunk without boiling. No exception should be made as to the rule of boiling all drinking-water.

Guinea Worm.—Guinea worm is probably taken into the system in the same manner—through drinking-water. It finds its way to various parts of the body, but especially to the lower limbs. Here it burrows its way to the surface, and, after forming a small blister, a minute sore is produced. If a little water is allowed to trickle upon the sore, as might be done in all cases of ulcer, the worm may be seen protruding from the sore, or a milky fluid may be discharged from the small opening in the skin, this milky fluid consisting of minute embryos of the worm.

It is unwise, by any forcible means, to endeavour too quickly to remove the worm. The opening should be protected by a simple dressing, and the part bathed frequently with cold water. In this way the worm will be naturally extruded in from 15 to 20 days. Towards the latter part of this time gentle traction may be employed.

Round Worms.—Round worms, similar in shape, though lighter in colour than the ordinary garden worm, are found very frequently among natives in Central Africa, and Europeans may also be infected. A dose of 3 to 4 grains of santonin given in the morning on an empty stomach will effectually deal with this parasite. For a child, ½ to 1 grain of santonin will be sufficient.

Other intestinal and blood parasites may be met with. One particular form produces profound anæmia, another causes the occurrence of blood in the urine. It is impossible, however, to enter into a description of these.

Jiggers.—One external parasite which is responsible

for a great deal of suffering is that which is known as the jigger or chigger. It is a small insect, common on the West Coast of Africa, and now penetrating further into the interior, which burrows under the skin of the foot, where it remains and forms a small cyst or swelling. This produces a considerable amount of itching. If this is found, it should be carefully removed from the surrounding tissues by a clean needle (which should be boiled before use). Care should be taken to separate the cyst from the tissues without rupture. After removal the wound should be carefully washed and dressed with antiseptic gauze.

The neglect of these cases among natives often leads to extensive ulceration of the foot. The jigger appears to live in the dust, so that rooms should be carefully swept, and where jiggers are found it is dangerous to go about with bare feet.

Skin Diseases.

Africa furnishes us with many forms of skin diseases —some parasitic, some of less definite origin.

Prickly Heat.—Prickly heat is the name given to a peculiarly irritating rash, consisting of minute pimples and vesicles, due chiefly to excessive sweating. It may develop all over the body, but especially in folds of the skin, such as the armpits. The avoidance of anything which is likely to lead to excessive perspiration is most important—e.g. the copious consumption of fluids, and particularly hot fluids, violent exercise, and so forth. The temptation to scratch the skin should be resisted, as by this means troublesome ulcers are sometimes produced. There is no specific for this troublesome affection, but the application of some spirit lotion such as Florida water, or even, if nothing else is at hand, methylated or any other kind of spirit, may

be useful, or toilet vinegar may be used, or, on the other hand, the application of a little lanoline may be a relief. Cleanliness should be strictly attended to. A little Sanitas or Jeyes's fluid in the early bath, using soft soap, drying the body carefully, and powdering the armpits, groins, and abdomen with a powder consisting of equal parts of boracic acid, zinc oxide, and starch, will allay the irritation.

Boils.—Boils are often a source of great annoyance. This and, to a less extent, prickly heat seem to have some relation to malaria. This should be remembered and quinine should be administered. The bowels should be regulated and the digestion attended to. The boils should be washed with some strong antiseptic lotion, such as corrosive sublimate in the proportion of 1 in 1,000, or carbolic acid in the proportion of 1 in 20 parts of water. They should be protected from injury and irritation by a dry antiseptic dressing. A small piece of gauze kept in place by two strips of plaster will probably be sufficient.

Stings of Poisonous Insects.

The application of a solution of carbolic acid, 1 part to 8 of water, is recommended. Strong liquor ammoniæ applied to the spot diminishes irritation.

Mosquito bites sometimes give rise to great irritation; the application of strong liquor ammoniæ may also be used in these cases.

MAURITIUS.

This island will probably be visited by few except those who are obliged to go there. It has many beauties, but the climate is tropical and the rainfall 150 to 160 inches. Moreover it is highly malarious and is liable

to be visited by tremendous hurricanes and storm waves which from time to time have done great damage.

The chief diseases besides malaria are acute bronchitis, pneumonia, tuberculosis, and dysentery. Fevers such as scarlet, &c., are almost unknown, but liver troubles are very common. For advice to travellers see under Central Africa and India.

Mauritius is reached by steamer from Aden and the Seychelles, another group of tropical islands belonging to Great Britain, and known chiefly for spices, big turtles, and the peculiar double cocoanut, *coco de mer*.

The Castle Line Steamship Company also run round the Cape to Madagascar and Mauritius monthly.

NORTH AMERICA

By the Editor.

In a country so large as North America, which includes for our purposes Canada, the United States, and Mexico, and extends from the Arctic circle to the Tropics, naturally every variety of climate is to be found, and the needs of the traveller will vary accordingly. Notwithstanding, however, the recent popularity of Klondyke, the number of travellers penetrating to the Arctic zone will always remain small, and the preparations to be made for such a journey are so special that they need hardly be considered here. Further, the requirements for the tropical belt will be found to be sufficiently dealt with elsewhere, so that there remains only the intermediate region, which, however, is still of enormous extent and of the most varied character.

But first a few words may be said as to the means of reaching America from these shores, and the best season of the year for visiting it when the object is sport or pleasure. Practically, this resolves itself into a question of the merits of the rival lines to New York, for an immense proportion of Transatlantic travel—whether the ultimate destination be Montreal or Mexico—goes by New York on account of the vastly superior size, speed, and comfort of the steamers, the facilities for land travel from that point, and the fact that, as compared with the St. Lawrence

route, the sea is open all the year round. There is practically no passenger traffic to the more Southern American ports, though some of the better-class cargo boats carry a few passengers, and Mexico can be reached in the same way by those who have leisure and do not mind visiting West Indian and perhaps some Central American ports *en route*.

Even to those visiting Canada the New York route presents great advantages in point of speed and comfort, but a new era will probably soon be inaugurated in Canadian travel, and in summer the St. Lawrence route is very delightful; the period of open sea being much shorter and the scenery magnificent in the river, whilst the New York route has no attraction till New York itself is reached.

As to the merits of the different lines to New York the traveller must decide for himself. The White Star, Cunard, American line, North German Lloyd, and Compagnie Transatlantique—all have very fine boats, and the maximum of comfort possible at sea can be obtained on any of the best of them: he will have to consider the date and place of embarkation, the particular boats running at the time, the accommodation available, and many other points.

As regards the voyage he will have to be prepared for some cold at most seasons of the year, in winter sometimes very severe cold; and in summer he will probably experience great heat nearing New York and in the city itself. In winter, furs should always be taken for the voyage, both rugs and coat, though they may not be needed at all, even in January. If possible, a cabin on the port side in winter, and on the starboard in midsummer, should always be selected on the outward voyage, and, of course, the reverse on the homeward journey. Where money is no object, a

deck cabin, in which the ports can be open save in the heaviest weather, is an enormous boon, and for invalids much should be sacrificed to get this luxury. A few days in the foul atmosphere below decks when the weather is bad may do incalculable harm, especially in pulmonary cases.

As regards the season of the year to be chosen, there can be no doubt that the pleasantest time is the autumn. Leaving England late in September, the voyage is generally made in fine weather, and the intolerable heat of summer in New York is avoided, though occasionally there is a short period of great heat in that month. In October begins the Indian summer, and the beautiful weather which that brings may last up to Christmas. At no time can the fine scenery of the American rivers and mountains be seen to greater advantage or more thoroughly enjoyed than in the cool bright days of that most delightful season.

During the summer months the heat of the towns in the Eastern and Central States is unbearable, and railway travelling a nightmare of dust and discomfort; but in October this is all changed, and even the journey across the great prairies can be made with tolerable comfort.

The time of the year chosen will of course depend largely on the objects of the traveller; both for health and pleasure, the autumn is the best time, and after that the spring months—April, May, and June—are the pleasantest. If the trip be taken for the sake of sport, it will of necessity be made in the late summer or early autumn, for the chief sporting season is from September 1 to January 31. The regulations vary in every State in the Union and in Canada, but big game shooting is nowhere permitted except during those months or some part of them. Duck shooting (and other birds) and fishing can be obtained at other times, varying according to the locality.

It is useless and foreign to the purpose of this article to attempt to mention even a tithe of the beautiful and interesting places which the traveller may visit in the United States, but it may be of some value to sketch out a plan by which he may employ, say, a year in seeing something of the great continent. If he arrives in October he can spend a couple of months in seeing the North-Eastern States, the Hudson, Niagara, and the Adirondacks all at their finest with the gorgeous tints which characterise the northern scenery at this time.

Returning to New York, he will then turn south to Philadelphia, Baltimore, Washington, and so into the Southern States proper, which are best visited in winter, as there is less risk of fever, and the summer heat is intolerable except in the mountains. Passing through Virginia, the Carolinas, and Georgia, he can then go down into Florida or on to New Orleans, one of the most interesting towns in America.

From New Orleans the journey south into Mexico through Texas is not difficult, and the early spring is the most delightful season in that country, which teems with objects of interest and natural beauties, and has a delightful climate. Thus, if two months are spent coming through the Southern States from New York, Mexico may be reached in February, and then the more western line taken through New Mexico and Arizona to Southern California, where April is a very beautiful month and the sudden outburst of spring flowers wonderful. In May, expeditions into the Yosemite valley are possible, after which the traveller can cross the Sierra Nevada to Utah, see Salt Lake City, and then go north, *viâ* Ogden, to the Yellowstone National Park, with its extraordinary geysers and other volcanic phenomena.

The summer months can be well spent in exploring

this and other parts of the Rocky Mountain range, the heat of the plains being thereby avoided. By going north, and reaching the Canadian Pacific, much beautiful mountain scenery can be seen, and excellent sport of various kinds, such as bear, elk, deer, and mountain sheep shooting, obtained with a little trouble. Banff is a place well worth a visit, and one of the chief sanatoria in Canada. By taking one of the northern routes back, the eastward journey can be made in fair comfort at the end of August.

Either the Canadian Pacific can be taken, which brings the traveller to Winnepeg, and so north of Lakes Superior and Huron to Ottawa, Montreal, and Quebec, whence a day's journey lands him again in New York, or the Northern Pacific will bring him to Chicago *viâ* St. Paul, whence he has his choice of several routes to the east. By taking the route indicated in this order, each region will be visited at the best season, all extremes of heat and cold may be avoided, and even the semi-invalid will be able to travel without risk, if he is able to avail himself of the best accommodation which the railways and hotels afford. For those who come out as invalids the matter is different, as they will spend their winters in Colorado or California, in order to get the full benefit of the climate.

Clothing.—With regard to the character of the clothing required by travellers, it is clear from what has been said that it will vary, according to the regions visited and the season of the year, from the thinnest tropical suits to the heaviest furs during the Canadian winter, with headgear and boots to match.

In a general way, much the same clothing as is worn in England is suitable, with extra warmth in winter, and extra cool things in summer. For the latter, nothing

is superior to the washing tweeds made by Indian outfitters in London for comfort and healthiness. They take up very little room, and the writer has found them of the greatest comfort in all hot countries. Warm clothing is required by those wintering in the west at any elevation, and even in California too much warmth in winter is not to be looked for.

In summer sunstroke is not uncommon in the Eastern and Southern States, but it is unknown in the dry elevated regions of the West, as Colorado and Arizona, despite the intense solar heat, and the precautions used in tropical countries are unnecessary. In the Northern States and Canada, and all over the mountain region, frostbites may occur in winter, especially in riding or driving, and nose-guards and ear-muffs are a necessity.

For sportsmen doing rough work and camping out, khaki, drill, or corduroy suits are the best wear, and they will do well to remember that the nights may be very cold on the mountains even at midsummer, and dress accordingly. When after big game, most of the work has to be done on horseback, and strong breeches and gaiters or puttees, if preferred, are the best. When there is much exposure to cold in riding, a leather coat and leather Mexican leggings are the best protection, as they are almost impenetrable to the wind, though nothing will keep the cold out when the temperature is much below zero.

Sportsmen should take an ordinary belt with hunting knife in sheath and revolver holster, also a cartridge belt.

It is well to have an inside pocket in the waistcoat and in the pyjama jacket, for carrying money, &c., as thefts in Pullman cars are not uncommon, and it is unsafe to put pocket-books under the pillow.

Many small articles are very troublesome in American

travelling as well as expensive; porters are almost unknown, and the express companies who deliver luggage charge for everything, even the smallest articles, by the piece. For those who are going to travel much by rail in the United States, it is really cheaper to buy a large common American trunk in New York, and store portmanteaux there, as they very soon get knocked to pieces by rough handling. Travelling rugs are useless on the cars, which are generally over hot.

In summer a light straw hat is the best wear for ordinary purposes, but for hunting expeditions a terai or sombrero is the most useful; in winter, if much outdoor work is to be done, a fur cap with ear flaps, and coming well down over the neck behind, is a necessity.

Strong boots coming well up the leg, or ordinary jack boots, must be provided by all sportsmen. All boots except one pair had best be brown.

Saddlery.—This may hardly seem to come within the medical scope, but riding is much recommended for invalids in Colorado, and the comfort of the rider will largely depend on his being forewarned. If going for a prolonged stay—e.g. in winter—saddles and bridles had much better be taken by those likely to ride. In at all out-of-the-way places, a lady is not unlikely to find that the only available saddle is a thing more like a howdah, with an acre of seat covered with crimson or green plush and portentous pommels. Ordinary bits may be taken, but the broncho is often unmanageable save on that to which he is accustomed.

A man had better take a light saddle for ordinary riding, but for mountain expeditions involving much up and down work, constant crossing of fallen timbers, and rides of 30 to 50 miles daily, he will find the Mexican saddle much less tiring, cumbrous as it appears, when he is once accustomed to it.

Moreover, he will be able to carry his rifle and etceteras more easily on it, and to shoot from it if necessary; with bucking horses it is also of value.

It should be remembered that in very dry climates such as Egypt, Australia, and Colorado, leather tends to deteriorate very rapidly, and in hiring it is well personally to test the stirrup leathers, girth straps, and reins before embarking on a long expedition.

The consequences of rotten leather not unfrequently come under medical inspection, sometimes too late to be of much use to the victims, and the writer has good reasons for remembering the results of a broken girth strap and dangling buckle.

In using hired tackle, it is impossible to avoid occasional accidents, but the risks may be minimised by care.

It is best to take saddles, &c., which have been used, as there is then less difficulty at the Custom House.

Medical Precautions, Malaria.[1]—There is not much to be guarded against in ordinary travel on the North American Continent. In the Southern States malaria is very prevalent, especially in the autumn, but there is not much risk to the casual visitor unless sport takes him into the swamps. In places which are notoriously subject to malaria, a daily dose of quinine is a good prophylactic.

Malaria also occurs to a considerable extent in the Eastern and Central States, but diminishes gradually towards the North, though still found in Minnesota and Wisconsin. It is common on the shores of the great lakes except Lake Superior, which is exempt from it, and Lakes Michigan and Huron, which are partly free.

Malarious districts should not, of course, be visited during the fever seasons, nor low ground chosen for camping out.

[1] *Vide* Central Africa and India. Dysentery, p. 149; diarrhœa, p. 133.

Yellow Fever.—Yellow fever occasionally appears in the Southern States, but need not be reckoned with by the ordinary traveller unless he goes to Cuba, where it is almost endemic, or to ports on the Gulf of Mexico, or the West Indies, which seem to have been its original home; it can only be avoided by not visiting affected localities, strangers being particularly liable to its attacks. With these two exceptions the diseases of North America are very much the same as those of Europe; typhoid and diphtheria being the two greater scourges, so far as communicable disease goes. There can be no question that the drainage and water-supply of many American towns are very defective, and the traveller will do well to beware of the water he drinks. If there is any suspicion he should drink none that is not boiled, or else take one of the natural table waters which are usually to be procured. The same precaution also applies to milk.

It should be remarked that in the hot summers dysenteric diarrhœa and true dysentery are not uncommon, especially in the Southern States; in Baltimore, e.g., outbreaks occur every summer and autumn, and occasionally severe epidemics have overspread the whole of the Eastern States, including Canada; but the disease has diminished of late years, owing to improved sanitary conditions. The chief precautions to be taken are the avoidance of impure water and milk, unripe and unsound fruit, and chill, especially after exertion. For those predisposed to such trouble the wearing of a flannel belt is a necessity. Infantile diarrhœa of a very fatal kind is extremely prevalent in the great Eastern towns, and great care must be taken of young children and their food during hot weather. The mortality in New York has been greatly diminished by the provision of sterilised milk for the poorer classes.

In the Rocky Mountains there is at times a good dea

of what is called mountain fever, but it is very doubtful whether cases so called are not merely cases of typhoid fever, modified by the circumstances under which they arise. Furthermore, it should be noted that very fatal epidemics of pneumonia occur in places with great elevation, such as Leadville, the fatality being due probably to the extreme rarefaction of the atmosphere, which renders it impossible for the patient to get a sufficient supply of oxygen with a large area of lung crippled. With these exceptions there remains very little to be said of the diseases of North America, and nothing which is of practical importance to the traveller. The diseases which are rife at home are common here—pulmonary tuberculosis, the specific fevers, typhoid and diphtheria as already mentioned—and the wards of an American hospital are, with the exception of malaria, filled with much the same cases as we see at home.

There are two American habits which the traveller will do well to avoid if he wishes to preserve his health: one is the habit of drinking enormous quantities of iced water, the other that of taking cocktails of raw spirits before meals—both very injurious in their several ways to the digestive powers. Alcohol is seldom taken in any form with meals except among the fashionable circles, but frequently taken beforehand, when it stimulates appetite but injures digestion.

Houses, Hotels, &c.—In the chief American towns the hotel accommodation is of the most luxurious description in the best houses, and on a scale far exceeding what we are accustomed to in Europe, though English people do not always find the comforts they look for at home. In the smaller Western towns, the character of the accommodation becomes more and more limited, until in the villages, for they often are not much more, we come

down to mere log cabins with a bar and perhaps a bedroom or two attached.

For the invalid the range of travel is much limited by the difficulty of finding good accommodation in any except the well-known health resorts, where there are generally one or two good hotels. In California the hotels are often of palatial size, and those, for instance, at Coronado Beach, near San Diego, and at Monterey, are among the largest in America.

It cannot be said that Western hotels, even of the better class, are very well suited for invalids, though well enough for those in sound health with good digestions and appetites. In the first place, the cooking is often inferior, and rich sauces and seasonings are much in vogue. Moreover, the food and, especially in winter, the vegetables are often canned goods, and the fish, which no hotel manager dare omit from the *menu*, has to be brought 1,000 miles, the only fresh fish being the somewhat tasteless trout found in the Rocky Mountain rivers and lakes. Secondly, as the meals extend over a long time, the food may be prepared some time before it is eaten, and, being brought up in small dishes, is often cold before it reaches the table. Thirdly—a very important point for invalids—it is generally very difficult, often impossible, to get anything, even a glass of milk, between meals.

Moreover, in winter, the public rooms and the house generally are kept at a temperature which is intolerable to English people, 70° F. being usually the minimum. This applies also to clubs and public buildings, and to most private houses, and is a great danger to those whose lungs can ill stand the shock experienced in passing from a temperature of 70° F. or more to zero outside.

For those who can afford it and who wish to winter in Colorado or California, far the best way is to take a private

house, where they can regulate their own cookery and temperature. For a family the expense is hardly greater than an hotel, if at all, but the great difficulty is the domestic servant. In the West they are scarce, bad, unreliable, and very expensive, the most untrained Irish girl getting about $25 or 5*l.* a month.

The cost of travelling in America is considerably higher than in Europe, and in most places cannot be put down at less than $10 or 2*l.* per diem, including railway expenses. In the first-class New York hotels this rate may be indefinitely exceeded, but at the average hotel in the large towns the rate is usually $4 to $5 a day, on the American plan, for board and lodging.

In health resorts rates can generally be made for a prolonged stay. If a private sitting-room be taken, the expenses are very much increased, usually doubled. Railway travelling, on the whole, is cheap, especially in the East, owing to the severe competition, the rate rarely exceeding 3 cents (1½*d.*) per mile on Eastern lines; but to this has to be added about $4 to $5 daily for the luxury of the Pullman car, which is the only way of doing long journeys with any comfort.

Night travelling is almost a necessity, and the traveller must get accustomed to the life on Pullman cars and the ways of negro porters. Separate compartments are now in vogue on the chief trains of the main Eastern lines; otherwise no privacy can be obtained, except in the drawing-room compartment that exists on every Pullman car. This must be engaged beforehand, and adds considerably to the expense, unless two are travelling together.

Most English people find the cars intolerably hot, and care should be taken to select a berth in the centre of the car, if possible, or at the far end from the stove. Ventilation at night can only be secured, as a rule, by sleeping

with the head to the engine and inserting a thick wedge of paper under the heavy window, sufficient to allow a small current of air to come in at the foot of the bed. By this means the severe headache and lassitude, which often follow a night on the cars owing to the foul air inhaled, may be avoided.

Dining cars are now almost universal on all the Eastern lines, and buffet cars on which light meals can be obtained are attached to many trains; but on some of the Western lines it is still desirable for the traveller, especially if an invalid, to have some light food with him, for meals are only provided at certain stations, and, if the train is three or four hours late, as it well may be, breakfast or dinner is proportionately delayed.

It may be remarked here that tips are universal in America, and that, especially with black servants, the traveller's comfort depends largely on his recognising this fact.

Climatic Division.

As regards climate we have several different divisions which can only be dealt with roughly. Beginning from the North and including the Canadian territory, the severity of the winter in which is almost proverbial, we have a great group of States, including Idaho, Montana, Wyoming, the Dakotas, Nebraska, Minnesota, Iowa, and Michigan, which have generally very severe winters, the thermometer usually registering at some period from 20° to 40° below zero. The summer is short but hot, and not unfrequently prolonged by fine autumn weather, the springs usually late, the frost often not breaking up till May. There are, of course, great differences in such a vast area, but, speaking generally, the winters are severe

and the ground frost-bound for a considerable period. South of this—i.e. speaking roughly, south of lat. 41°—there is an area in which any great degree of cold is unusual and does not last for very long, though temperatures of 1 to —10° F. are not uncommon. This includes Nevada, Utah, Colorado, Kansas, Missouri, Illinois, Indiana, Ohio, Pennsylvania, and also the more North-eastern States, the climate of which is milder than that of the Western States lying in a corresponding latitude, being modified by the presence of the Atlantic. The summer in these regions is often very hot, especially in the more central area, temperatures of 95–100° F. being common during part of the summer months.

South of this belt the climate is much milder, and, though frosts are common in winter, they are not usually of great severity except in unusually elevated or exposed places. This includes Arkansas, Indian Territory, Kentucky, Tennessee, Virginia, Maryland, and North Carolina. The remainder of the Southern States, properly so called, viz. Louisiana, Alabama, Mississippi, Georgia, South Carolina, and Florida, with, in addition, Texas, New Mexico, and Arizona, have a decidedly warm climate and a mild winter, the climate of Florida being in fact semi-tropical. But the Florida climate differs very widely from that of Arizona and Texas, since, owing to its being a peninsula, it is very moist, whilst Arizona, New Mexico, and Texas are all very dry for the most part.

The great inland plateau of North America, which comprises the States of Colorado, Utah, Nevada, Arizona, and New Mexico, extends from the eastern foothills of the Rocky Mountains, where they slope down to the Missouri and other tributaries of the Mississippi, to the ranges of the Pacific coast. It has an average elevation of 4,000 ft., and is characterised by the great dryness of the

climate, clearness of atmosphere, and large amount of sunshine.

It is these characters which made this region the great sanatorium of the United States for pulmonary invalids, the air having peculiarly stimulating and bracing qualities; but we shall return to this subject later.

The last region which remains to be considered is the Pacific coast and western slope of the great mountain ranges extending from British Columbia to Southern California. All along this belt the climate is much modified by the propinquity of the Pacific Ocean and the great warm current corresponding to the Gulf Stream which comes from the shores of Japan and is known as the Japanese current.

The climate of the Pacific coast is, in fact, a mild one, and south of San Francisco snow rarely falls. The climate of Southern California is famous for its mildness and sunniness, and the orange, lemon, and other fruits flourish here, making it the chief market garden of America.

British Columbia.—The current specially affects the western Canadian shores and makes the climate of British Columbia very different in winter from the semi-Arctic conditions which prevail on the eastern side of the Rocky Mountains in the same latitude.

There are, however, great differences owing to the division of the country by these mountain ranges, the Coast Range, the Selkirks, and the Rocky Mountains. On the coast the meeting of the Japanese and Arctic currents causes a great condensation of moisture. The rainfall is 70 in. (in the north 100 in. and over), the vegetation very luxuriant, and forests everywhere—the climate mild and equable. Between the Coast Range and the Selkirks is the interior plateau, with, on the average, an elevation of 1,500 ft., on which the climate is dry and

bracing, the average precipitation only 7 to 12 in., and the winters comparatively short with 8 or 10 weeks' frost, though occasionally short spells of severe cold, with a temperature well below zero, are felt; the summers are warm, but with cool nights. This climate resembles that of the American plateau, and is very delightful.

In the Kootenay district and Columbia valley the winters are considerably more severe, temperatures well below zero being common; the precipitation is much greater—the total, with a snowfall of 1 to 3 ft., being some 20 in. The summers are hot, but with cool nights. This district corresponds with the Selkirk range, so that the mean elevation is high.

Of the climates mentioned, that of the interior plateau is the one which is most suitable for those who are in search of health, and it is admirably adapted for early cases of consumption who need to lead an open-air life.

We have regarded the climate hitherto chiefly from the point of view of seasonal temperature; as regards rainfall, there is a great difference between the eastern and western section of the country, the division following pretty closely the line of long. W. 100°, which passes through the middle of the great prairie States of Nebraska, Kansas, and Texas. Eastward of this the rainfall is of moderate extent, averaging 30 to 40 in. annually, though higher in the most southern States, where it reaches 50 to 60 in. in many places; west of it the rainfall diminishes greatly, and over the great inland plateau is comparatively small, rarely reaching 20 in., except actually in the mountains. The south-west corner of Arizona and the adjoining portion of California, including the Mohare desert, is one of the most arid regions on the globe, the rainfall barely averaging 5 in. annually. As regards the Pacific coast, whilst the rainfall in the northern region, including British

Columbia, is fairly heavy—70 in. and over in many districts—it diminishes gradually towards the south, and in Southern California rarely exceeds 15 in. to 20 in. annually, in many places falling below 10 in.

AMERICAN HEALTH RESORTS.

When the mild winter climates, such as Madeira and the Canaries, were in vogue for consumptives, Florida had some reputation as a resort for similar cases; but since the advantages of the higher localities have been proved it has fallen into disfavour, still retaining its uses, however, for those who are unable, from various reasons, to tolerate the cold of the mountain regions. Sufferers from chronic bronchitis, from disease of the heart or kidneys, with or without pulmonary disease, and from nervous troubles, who cannot bear the dry cold and elevation, will find in Florida at least some alleviation of their troubles during the winter, though its only advantage over that of South California is that it is more accessible from the East, the journey from New York occupying only some 24 hours. In other respects Southern California has many advantages; it has much less rainfall, and, though the summers are hot, it is quite habitable all the year round, and is free from malaria. The mildness of the winter is attested by the fact that oranges and lemons flourish there, showing that frost, though not unknown, is infrequent and not severe. The places which are most frequented by invalids in South California are Monterey, Santa Barbara, and San Diego (close to the Mexican border) on the coast, and Riverside, Redlands, and Los Angeles inland. Near Los Angeles, but more elevated, is

Pasadena, with a very large hotel, which is filled in the winter. The seaside places labour under the disadvantage of being frequently visited by sea fogs, which extend some distance inland; the most picturesque and charming is Santa Barbara, but, owing to the proximity of the mountains, it is somewhat wet.

Los Angeles is a considerable place of 60,000 inhabitants, and the capital of South California; it is an active business centre, where it is possible, though not easy, to find employment.

San Diego is also a fair-sized town, and possesses the mildest and most equable climate.

Riverside is the centre of the orange industry, and a flourishing town; in and around it there is a considerable English colony, mostly engaged in farming or fruit-growing, and, indeed, there are a considerable number of English all through South California engaged in the same pursuits. On some of these fruit farms it is quite possible to find a home; and those who are well enough to work will get the most advantage from the climate by leading an open-air life on one of them.

The scenery of South California is in many places very beautiful, and it possesses many remains of the Spanish occupation, in the shape of old monasteries and churches, which are picturesque and of great interest. It remains to be said, however, that the climate of South California has but little of the invigorating and stimulating properties which high altitudes afford, and the Medical Director of the United States Army Hospital at San Diego recommended that it should be closed, as after some years' experience he saw but little benefit accrue to the patients, mostly consumptives in the later stages, who were sent thither. In his opinion it made the end of their lives easier, but did not materially lengthen them.

For consumptives (though not those in the last stages, the sending of whom to health resorts far away from home, and especially in high altitudes, cannot be too strongly deprecated) the plateau of Colorado, New Mexico, Utah, and Arizona is certainly the best locality. The dryness, the remarkably invigorating air, and the sunshine have made this region famous; but here, too, there are great differences in different localities. The eastern side of the Rocky Mountains has these properties in the highest degree, and Denver and Colorado Springs are the resort of hundreds suffering from pulmonary disease in some form. At present it is only here and in Salt Lake City that really suitable accommodation for invalids can be found, though the moderately strong can make themselves comfortable in many of the smaller places if they are prepared to lead a very dull existence and do not need society. Those who go out intending to reside and find permanent occupation must, of course, go where they can get it; but it may be said by way of warning that the chief avenues of employment are very crowded even in the comparatively large towns such as Denver, Salt Lake City, and Colorado Springs, and none should go who have not some capital to fall back on, or a very definite opening ready for them.

The great drawbacks to the climate of Colorado, especially on the eastern side, are the winds (due to the disturbing influence of Pike's Peak, in part) and the dust, an inseparable incident of very dry climates. In the spring, which is often very protracted and is the worst season of the year, the winds are often very bad and snowstorms frequent, occurring even in May and June at times. The autumn and winter are generally delightful, especially the former, when a long spell of fine weather is almost certain. There are occasional snowstorms, but the cold is rarely extreme, the thermometer seldom falling to zero—a

degree of cold which is but little felt in such a dry climate unless there be a high wind.

The electrical phenomena are often very remarkable; in certain atmospheric conditions quite unpleasant shocks being experienced on touching metallic objects, brushing the hair, &c.

Too prolonged residence at these altitudes is very apt to be accompanied by great nervous exhaustion and insomnia, especially in women, and the reaction which follows the first stimulating effects of the climate leads to severe depression and hysteria. The writer believes that a more frequent change than is usually advocated is desirable for those who can bear the fatigues of journeying easily, and a delightful change can be got in the bad spring weather by a trip of six weeks or so to Mexico or South California; but it has to be remembered that the change from the great dryness of Colorado to the comparatively moist climates of these two countries may be severely felt.

As Dr. Solly points out in his book, we must not estimate the dryness of a country by the mere rainfall, which in South California is low, but by the relative humidity of the air, which is high. The fact is that, owing to the proximity of the ocean, the air of South California is moist, especially at night, and the delicate invalid cannot sleep with windows open in the same way as in the dry climates, though, as the experience of open-air sanatoria for consumptives shows, many invalids of this class can become habituated to doing so with impunity.

The summer heat of Eastern Colorado is not excessive, though considerable, and is easily borne owing to the dryness. Many, however, like to escape it, and therefore seek higher regions, and especially the parks or large open valleys situated high up in the mountains, at elevations varying from 7,000 ft. to 9,000 ft.

Fair accommodation is to be got in some of them, but many will prefer camping out under tents. The writer has no hesitation in saying that this is one of the best possible lives for pulmonary invalids, and it is wonderful how well they bear it even at altitudes of 10,000 ft., where the nights are always cold. Cases of fairly advanced chronic disease, which have been stationary in the hot Colorado summer, pick up health and strength in a wonderful way on going up to an altitude of 8,000 ft. or more, and living entirely in the open air—a fact which is quite in accord with the most modern principles of treatment.

Suitable camping ground can be found in the parks above mentioned, of which South and Middle Park and Maniton Park can be reached from Colorado Springs, and Estes Park, though with more difficulty, from Denver. The latter is a very lovely spot and well worth a visit; owing to its being sheltered on all sides, it has a comparatively mild climate even in winter, despite its elevation of 7,500 ft., and very fair sport can be got there. If it were made more accessible and suitable accommodation provided, it might become a great sanatorium. New Mexico and Arizona have a much milder climate in winter than Colorado, but the summers are very hot, and good accommodation for invalids is hard to find, whilst of society, in the ordinary sense, there is almost none. Utah, being on the western side of the great Continental Divide, has a moister and more changeable climate.

Colorado Springs.—Of the individual towns in this region, Denver and Colorado Springs are those which attract by far the largest number of visitors; in addition to having, on the whole, the best climate, they offer more attractions in the way of society and amusements.

Denver is, in fact, the great centre of the West, and is

a busy town of 120,000 people with large manufactories, and the converging point of several lines of railroad. It has an elevation of 5,200 ft., and a delightful climate during a great part of the year. It is about 36 hours from Chicago by rail, and 2 hours from Colorado Springs, which is 800 ft. higher.

The latter has only 20,000 inhabitants, and is chiefly a pleasure and health resort, though it has become an active centre for the great gold camp of Cripple Creek, some 36 miles distant in the mountains.

Salt Lake City.—Salt Lake City, Utah, with 70,000 inhabitants, is an active business centre and a pleasant residential town. It has a less elevation (4,300 ft.) than either Denver or Colorado Springs—an advantage to some invalids—but the climate is not so good, being hotter in summer, colder in winter, and somewhat damper. It is a good residence for those who are anxious to engage in some active business.

Besides these towns, Pueblo in Colorado, a manufacturing town of considerable size with 36,000 people, has very fair accommodation, but is very hot in summer.

In New Mexico, Santa Fé (7,000 ft.) is an old Mexican town of considerable interest and with a good climate, but with poor accommodation; and the same applies to Albuquerque, El Paso, and Silver City, which are less elevated and have a mild winter climate.

In Arizona, which is still milder and drier, the comforts of civilisation are hard to obtain even in the principal town of Phœnix with 10,000 inhabitants.

Owing to the mildness of the climate a considerable fruit-growing industry is springing up, aided by the necessary irrigation works.

Besides the great plateau of the West, which must always be regarded as the chief sanatorium of North

America, there are several places in the East which are much frequented by Americans, though comparatively little known to Europeans.

The summer resorts and spas of the United States are innumerable; the best known of the former are Newport in Massachusetts, Bar Harbour in Maine, Long Branch and Atlantic City in New Jersey, Norfolk and Old Point Comfort in Virginia. These are all on the sea. Inland, the New Hampshire mountains and the Adirondacks in New York State are much frequented. Of the spas, Saratoga Springs in New York State are a world-famed resort of fashion, and the White Sulphur Springs of Virginia are a very favourite spot in the South; both are worth a visit during the season to those who wish to study the social life of America. Arkansas Hot-springs are much frequented, but more by those in search of health than pleasure. The United States army have a hospital here, in which rheumatic cases chiefly are treated and with considerable success, though the chief feature of the water is its heat. The place itself is not attractive.

Besides the famous resorts of Colorado and California, there are several in the Eastern and Southern States which have a considerable reputation. Of these the best known are Lakewood, New Jersey; Asheville, North Carolina, situated at 2,200 ft. on an inland plateau with a mild winter climate; and Aiken, South Carolina. Augusta, Georgia, is also a good deal frequented; it is an attractive place with 35,000 inhabitants. All have considerable reputation as resorts for pulmonary invalids, but they are not often visited by travellers from Europe, who generally prefer Colorado or California if travelling in search of health. The mild winter climate of Florida attracts many visitors, and amongst them numbers of invalids;

it is not ill suited for the same class of cases as Southern California, but is much moister and less stimulating, and the country suffers from the disadvantages of being marshy and malarious in parts; in fact, malaria is common in most of the Southern States, especially along the banks of the Mississippi. Mention should be made here of Dr. Trudeau's Sanatorium at Saranac in the Adirondacks in the north of New York State, which has now been in existence many years and is probably one of the earliest institutions in which the open-air treatment of consumption is carried out. There are hundreds of other health resorts of various kinds scattered through the length and breadth of the United States, and especially innumerable watering-places, of which the most famous are Saratoga Springs in New York State, Arkansas Hot-springs in Arkansas, and the White Sulphur Springs in Virginia, the favourite resort of the rank and fashion of the South. All these are worth a visit during their season, which for the first and last is in July and August, and for Arkansas Hot-springs during the winter months.

CANADIAN HEALTH RESORTS

Canada is such a healthy country that, with the exception of Banff Hot-springs, it has almost no professed health resorts. Banff is a place which everybody who has the time should visit for its beauty and interest. It is situated in the Rocky Mountains, 2,340 miles from Montreal and 560 miles from Vancouver, at an elevation of 4,500 ft. It is in the Canadian National Park, with very fine scenery all round, and good sport of various kinds in the neighbourhood. The hot sulphur springs are

very useful for rheumatic troubles, and the Government has for some years had a sanatorium here which is resorted to by hundreds annually. The season is from May 15 to October 1, during which time the Canadian Pacific Railway Hotel is open and affords excellent accommodation. In winter, of course, everything is snowed up and the cold is very severe.

Kamloops.—Kamloops in British Columbia, 250 miles from Vancouver, has a good climate and moderate elevation, about 1,200 ft. It is very suitable for pulmonary affections, and many go thither for this reason. It is beautifully situated on the fork of the Thompson river.

In Eastern Canada there are no health resorts properly so called; the climate has been briefly described with that of the United States; it may be added that the winter in Canada is a bright invigorating season for those who are able to bear great cold, and that many who are somewhat delicate are considerably benefited by it. Sleighing, skating, and other out-of-door sports are in vogue, and it is the season of activity and enjoyment in the towns, the summer being very hot.

MEXICO.

The lowlands of Mexico, and especially the parts near the coast, are tropical in character and very malarious; the prevalent fever is of a very severe type, and proved extremely fatal to the Spaniards when they landed in Mexico. On the other hand, the elevated region in which the city of Mexico is situated has a delightful climate, though malaria is very prevalent in some places—not, however, so virulent as that of the lowlands. The city of

Mexico itself is situated in the valley of Anahuac, at an elevation of 7,400 ft., and has 350,000 inhabitants. The dry season is from November to April, when only 2½ in. of rain fell on 24 days; during the other months the rainfall is about 22 in., falling on 115 days. The thermometer rarely rises above 86° or falls below 35°, but the daily range is often considerable. The amount of wind is not great.

Owing to the numerous lakes, above which the city is but slightly elevated, it is damp, and there is great difficulty in getting proper drainage or a good sewage system. Hence both malaria and typhoid are rather prevalent, but the latter will no doubt be diminished by the new drainage works now being carried out.

There are some good hotels, and though it cannot be considered as a resort for those who are seriously ill, any one with moderate health will find it a delightful place to stay in, but care is needed for the reasons given above.

There is, of course, much of historical interest and great natural beauty in the city and its neighbourhood.

Guadalajara, 5,100 ft., is warmer than the city of Mexico, and has a larger rainfall, viz. 35 in. It is a large city with 100,000 inhabitants, and has good accommodation for travellers, of whom a considerable number come in the winter from the United States.

Besides these places there are several towns in Mexico more or less frequented by travellers during the winter months, of which a brief account will be found in Dr. Solly's 'Medical Climatology.'[1]

The climate of these varies according to their situation and general position, and the accommodation is also variable, the Mexican standard of comfort being hardly in

[1] The writer has to express his indebtedness to Dr. Solly for allowing him to make use of his work, in which most of the climates of the world are described and the available meteorological statistics given.

accordance with European ideas. In all of them care should be taken as to the water and the sanitary conditions generally, which are very primitive.

In the future, as civilisation spreads in Mexico, and the sanitary conditions and accommodation for travellers are improved, very valuable sanatoria may be found in some of the Mexican towns, where the conditions are very favourable for some classes of invalids.

BERMUDAS

THESE islands, situated in the North Atlantic, about 550 miles east of Cape Hatteras, and between latitude 30° and 35°, have a moist but equable and healthy climate. The mean temperature is in January 61°, in July 79°; the rainfall 50 inches. There is said to be a good deal of damp fog in summer.

It is a good deal resorted to in winter by Americans, and is a good recruiting ground for those suffering from nervous strain and overwork, also for chronic rheumatic and gouty patients during the dry weather.

Malaria is quite unknown, and persons suffering from it benefit greatly. Yellow fever has not been seen since 1864, when it was imported during the civil war.

Tuberculous patients do not improve, and there is no high ground for them to resort to.

The summers are too hot for the young, who should be sent home early, as they grow up weedy and ill-developed.

Reached from New York and North American ports.

WEST INDIES

By the Editor.

The Royal Mail Steamship Company run fortnightly from Southampton, and the West India and Pacific from Liverpool.

These islands are scattered over a wide area, but are all within the tropics, and have, therefore, a tropical climate, though modified by insular conditions. The climate is quite healthy for adult Europeans in ordinary times, and from being regarded as a mere cemetery for our troops, they have now come to have as low a death-rate as in England, owing to improved sanitation and modes of living.

They are, however, all liable to outbreaks of yellow fever, which may be regarded as an endemic disease, always potentially present, and liable to become epidemic under certain conditions not fully understood.

Also all the islands that are marshy are malarious, some very markedly so.

They are also liable to devastating hurricanes in the summer months, and occasionally to storm waves of a most destructive nature.

The best time for visiting them is during the dry season—December to March—when the climate is delightful. During that time they are a very pleasant resort for the overworked and weary, the convalescent

from acute disease, the gouty, rheumatic, and bronchitic invalid, and sufferers from kidney disease. Except the highlands of Jamaica, they are quite unsuitable for consumptive patients save in the mildest cases.

Besides the diseases mentioned, there are certain diseases prevalent among the black population which need cause no alarm to visitors, especially parasitic diseases such as elephantiasis and the guinea worm.

If care be taken as to the drinking-water, these can be easily avoided.

'Jiggers' are common and troublesome; they can be avoided to a large extent by not going about the room with bare feet. An account of them will be found elsewhere (see West Africa). If the ordinary precautions as to tropical travel be taken (see India and West Africa), the West Indies will be found a healthy place for Europeans, far more so than most tropical countries.

JAMAICA

has a warm, moist, equable climate, tropical in character, but modified by its being an island, and also by its having a good deal of high land rising in the Blue Mountains to 7,500 ft., which, of course, affords a much cooler climate than the plains; the chief barracks are at Newcastle, 4,000 ft. Kingston, the capital, on the coast, is not healthy; it has a mean annual temperature of 78° Fahr., and a rainfall of 50 to 60 inches.

The chief diseases are malaria, dysentery, kidney, rheumatism, and non-tuberculous diseases of the lungs; typhoid is fairly common. Yellow fever appears periodically.

BARBADOES

has much the same climate as Jamaica, but is almost free from malaria. The highest hill is 1,100 ft.

TRINIDAD

Trinidad lies 10° N. of the equator in longitude 61° W., and is therefore tropical. Climate humid; average rainfall 70 inches. Wet season lasts five or six months, beginning towards the end of June.

Temperature: mean annual, 78·3°; maximum, 87·2°; minimum, 69·4°.

Parts of the country are hilly, rocky, and comparatively healthy; others clayey, some parts swampy and highly malarious. The climate of the towns is enervating, but the hills (highest 3,000 ft.) are healthy.

Common diseases: the malarious troubles of every form, acute dysentery, acute diarrhœa, and pneumonia among the badly fed, and enteric fever. Amongst chronic diseases: chronic Bright's disease, heart disease, chronic rheumatism, and phthisis.

SOUTH AMERICA

[The enormous area of South America, and the comparatively small number of English travellers who go there, make it impossible and unnecessary to deal with the country in detail. The Argentine Republic is the most visited area, and this is described at some length, while brief accounts are given of Paraguay, Uruguay, Chile, and Peru. Brazil is entirely tropical, and the traveller will get all the information he needs of a general character from the articles dealing with other tropical climates. The only disease needing special mention is yellow fever, which is almost endemic in Rio Janeiro, an unhealthy but beautiful spot, well known as one of the finest harbours of the world. The best advice to be given regarding it is to avoid it, which is easily done, as its range is limited. Once taken, the best medical skill is likely to be of little avail, as it is particularly fatal to newcomers, though different epidemics vary greatly in intensity. Unless there is a general epidemic the traveller in the interior of Brazil is little likely to be troubled by it, but he will do well to learn something about it from local medical authorities in Rio if intending to go up country.

Malarial fever and dysentery are as prevalent in Brazil as in other tropical countries, and all over Central America, where the former is often of a very virulent description, but the precautions and treatment to be adopted do not differ from those described elsewhere in this book.—Ed.]

ARGENTINE REPUBLIC.

By G. Herbert Pennell, M.D., F.R.C.S.,
Buenos Ayres.

Extending as it does from the tropic of Capricorn to Cape Horn, the Argentine Republic, comprising an area of over a million square miles, presents naturally great varieties of climate.

So extensive a country can only be considered when subdivided into separate zones or areas, and these will be some four in number.

Firstly, the sub-tropical zone, comprising the northern provinces, the great *Chaco*, and the territories of Formosa and Missiones. In this area the summer is the rainy season, and the winters are very mild.

Secondly, we may group as a temperate zone the riverine provinces of Santa Fé, Entre Rios, and Buenos Ayres, the province of Cordoba, the Pampa Central and Territory of the Rio Negro. In this area the climate is that of the Cape or of New South Wales or Victoria. The rainfall is not confined to one season exclusively, the summer heat is not excessive, and the cold in winter is never extreme, snow being rarely seen except in the very south of this area.

Thirdly, all the vast stretch of territory lying south of the Rio Negro may be included under one heading as a zone where the winters are severe and the summers shorter; but being very sparsely populated, and in great part composed of as yet unproductive land, the climate of this area cannot be defined with exactitude. Along the coast are some settlements, and again among the foothills of the Cordillera are a few more, but the intervening land is as yet a desert.

Lastly, the so-called Cuyo provinces, being those that include the foothills of the Andine chain, present a distinct climate of their own, modified and varied according to the situation under consideration. The provinces of Mendoza, Rioja, San Luis, San Juan, and Catamarca are essentially the grape-growing provinces, and although the temperature is high in summer and the rainfall may be heavy at times they are remarkable for the salubrity of their climate. In these provinces, instead of the alluvial stoneless soil of the *pampa*, the country is hilly and rocky and the vegetation scanty, except where watercourses exist or have been led. The winter in these provinces is dry and in some almost rainless, and the summer rainfall is intermittent, though heavy. The temperature naturally varies with the altitude, but is on the whole somewhat higher than that of the provinces situated further to the east.

Casual visitors to the country, landing as they must at Buenos Ayres, confine their wanderings for the most part to the second of these zones, unless called by business to the interior; consequently the interior is little known to such, and a very incomplete idea of the country is gained from Buenos Ayres. As has been said above, the climate of this temperate zone is much that of the Cape or of Victoria. In winter frosty nights are common in the province of Buenos Ayres, and snow falls nearly every winter in the southern parts, though unknown in the north of this province. In the summer there are some three months of heat, which, though not excessive, is oppressive and enervating by reason of the humidity of the air. From the middle of December till the middle of March the thermometer will, as a rule, register from 27° C. (80° F.) to 31° C. (88° F.) of an afternoon in the shade. At evening a slight fall occurs, and in the city of Buenos Ayres there is generally a cooler evening breeze

from the great estuary of the River Plate. The summer of Buenos Ayres does not, however, pursue this even course throughout, but is, as a rule, diversified by periodical invasions of north wind. When this occurs the temperature rises and the atmosphere becomes more and more oppressive, the air is loaded with moisture, and, one would fancy, with the emanations of the swamps of the Chaco and of Brazil. There is no remission at sunset and the river breeze does not rise. The electrical conditions of the atmosphere are such as to produce a sense of irritable lassitude, so much so that one can tell of a morning that a north wind is blowing even before looking at the weathercock. This state of things may persist for three or four days, the heat getting more and more oppressive, though actually not excessive, and each evening heavy banks of cloud rise around the horizon. At last matters reach a culminating point. The north wind dies away in the afternoon, leaving the atmosphere hazy and heavy, dense clouds gather in the south, and these towards sunset are illuminated by brilliant flashes of lightning. Still the heat remains oppressive and the stillness is remarkable. Looking to the south, however, one sees the clouds rising slowly at first, and then more rapidly. Short, uncertain gusts of wind arise, and then of a sudden comes a blast from the south, slamming every door and banging every window. The air is black with dust and everything is enveloped in darkness. Suddenly the rain begins to fall, and the distant thunderstorm has reached us and is overhead. The lightning, thunder, and downpour are incessant. The temperature falls perhaps some 20° Fahr., and in an hour or two all is over, and the storm has hurried on northward, carrying relief to our neighbours. On the following morning the sky is

cloudless, the air is clear and exhilarating, and the summer warmth is delightful. This happy state of things may last for some five or six days, and then the cycle is probably repeated.

Such are the disagreeable and the pleasant sides of a summer in Buenos Ayres, lasting, as said, from mid-December till the middle of March; but as soon as the summer is over the lovely autumn weather begins with a second crop of flowers in the gardens and a cloudless sky overhead. Till June there is no cold weather, but delightfully warm days and cool nights succeed each other. By June the winter sets in with more frequent rains and chilly days. Those who live in the more modern houses can make themselves comfortable with fires, but in the old-fashioned houses where fireplaces are unknown the cold is penetrating and cruel. An occasional week of bright crisp weather may occur, but as a rule rain falls every week for a day or two. Spring begins about September, with a diminished frequency of rain and the return of warm weather. The growth of the vegetation is rapid and luxuriant, and every garden is overrun with flowers. The cloudless skies and balmy breezes are uninterrupted, and one feels that life is indeed worth living till with the month of December the heats of summer return.

Such are the seasons in the province of Buenos Ayres, and in what has been spoken of above as the temperate zone. Those who are not tied down to the city may easily escape the disagreeable seasons without leaving the republic. In the summer they may go to the mountains in Mendoza, where an altitude is easily reached, ensuring cool nights, or even closer at hand in the *sierras* of Cordoba the same can be gained, while in winter the traveller may

go to any of the northern provinces and find a pleasant temperate climate. The subjoined table will give some idea of the climatic conditions of various parts of the republic.

Towns	Latitude	Altitude (metres)	Temperature C°					Barometr'c Pressure	Relative Humidity	Annual Rainfall in Millimetres
			Maximum	Minimum	Summer Average	Winter Average	Annual Mean			
Buenos Ayres .	34·36	20	39·5	−2	22·5	11·3	17·16	760·5	74·4	894
Rosario . . .	32·56	39	38·7	−0·9	22·5	12·2	18·5	759·4	77·3	950
Corrientes . .	27·27	77	37·1	+5	26·5	15·7	21·4	756·28	72·0	1301
Cordoba . . .	31·25	439	44·0	−9	23·0	9·0	16·8	725·36	63·4	600
San Luis . .	33·18	759	38·6	−7·2	24·63	8·1	17·0	694·40	54·1	550
Mendoza . .	32·53	805	41·5	−7·5	23·0	7·5	16·0	695·0	72·0	160
Tucuman . .	26·50	465	40·0	−0·9	24·3	13·3	19·5	722·71	73·4	970
Salta	24·46	1202	43·0	−5·8	22·0	12·0	17·5	661·55	71·7	550
Catamarca . .	28·28	572	44·0	−0·4	26·3	13·2	20·0	715·40	52·6	250
Bahia Blanca .	38·42	22	38·0	−0·8	22·2	8·5	15·2	758·00	63·3	488

Those visiting the country may come either on business or merely on pleasure, or else in search of health. Those of the first of these classes can seldom choose the date of their visit or their staying-place while in the country. Those in search of health will be guided by what is said later in this article. Those, however, who are travelling merely for pleasure and have plenty of time at their disposal should endeavour to arrive about the end of March, when the heat of the summer is over and the 'home provinces' can be visited in comfort, and as winter comes on they could extend their travels northward to the sub-tropical provinces, such as Tucuman, and yet run no risk of malaria. Those who come for sport would do best to select the same seasons, avoiding the close season. In the winter months the home provinces swarm with partridges and duck of every sort, and there are very few *estancias* where good shooting cannot be had, while for those who aim at larger game there is the great Chaco, which can only be visited comfortably in winter, or all

the Cuyo provinces, where guanaco and deer will provide splendid sport.

The disadvantages of visiting the country in the winter are the lack of ordinary comforts away from the capital. The cold, though not intense, is trying to those who have to stay in badly built houses, where no door shuts and a fire is the exception; and, moreover, the winter is the 'slack' time in the country, and the traveller who wishes to study the industries of the country, its shearing season, its harvest season, and its sugar-growing, will do better to make his visit in the summer, in spite of the heat and dust.

Although Argentina has so large a seaboard, there is practically only one port of entrance, namely, that of Buenos Ayres, the traveller landing either in the city itself at the Madero Docks, or else at the port of La Plata, which is only an hour by train from the capital. The latter has a deeper channel, and the larger mail boats, as a rule, make it their port. There are many lines of steamers running from Europe to the River Plate, such as the Pacific, the Royal Mail, the German, the French, and the Italian packets, and, owing to the competition, the service is fairly good, though not to be compared with the North American or the great Oriental lines. Of the lines whose vessels start from British ports, the Royal Mail and the Pacific are the best known, the former running to the La Plata port, while the latter drop their Argentine passengers at Monte Video, whence they come up to Buenos Ayres in the river boats. A word of warning must be given to those who intend to land in Buenos Ayres in the summer months, say between November and April, and that is that they would do well to find out whether the vessel they select is likely to touch at Brazilian ports, and if so, whether yellow fever is rife in those

ports at the time. If this be so, they are very likely to find that quarantine is being imposed by the Argentine and Uruguayan republics on all vessels that hail from Brazil, and they may find themselves stranded on one of the quarantine islands of Martin Garcia (Argentine) or Flores island (Uruguayan), where they will be treated as lepers were treated in the middle ages, and charged exorbitantly for the privilege. In this matter more enlightened views are gradually beginning to prevail, but any summer a panic may seize the health authorities, and the traveller will wish he had never seen the Brazilian coast or that of the River Plate. On the other hand, if travelling in the winter months, the visitor would be sorry to miss the Brazilian ports and the opportunity of seeing the tropical glories of Bahia, and the famous bay of Rio Janeiro.

Turning now to the consideration of the Argentine as a country to be visited by invalids travelling in search of health, it may be stated offhand that it is not a country to be selected by an invalid, unless he duly considers his plans beforehand; whereas, if these plans are thought out, he may derive the greatest benefit from a stay in the country.

Every day one sees invalids landing in Buenos Ayres who have been vaguely shipped off from home, instructed to 'make a voyage.' They land in a country where they know no one, and where a language is spoken that they do not understand; they gravitate to some hotel or boarding-house in the city where English is spoken, and cannot move from thence because of the difficulty of language, and the result is either that they return to England the worse for their stay, or that eventually they find their way to the British hospital. The majority of these invalids are suffering from pulmonary troubles, and it cannot be too strongly insisted on that neither the

city nor the province of Buenos Ayres is suited for such cases; yet such are continually being despatched to these shores with a want of thought that is little less than criminal.

On the other hand, certain parts of the Argentine Republic are admirably suited for the convalescence of pulmonary complaints, and we see here every day men enjoying robust health who a few years back were on the down grade. The difficulty is that the regions suited for such invalids are in the interior of the country, and these parts are as yet in an early stage of their development. In the Argentine we have not as yet the highly developed health resorts of Europe or of North America, and for English invalids there is always the difficulty of the language. In order to obtain the benefits that can undoubtedly be gained in this country the invalid should not be in the last stages of his malady; he should be in a condition to leave the coast soon after landing, and stand the strain of a long railway journey; he should be ready to put up with many minor inconveniences, and either have a smattering of Spanish or be accompanied by a friend who can help him. Whereas a man in health can pull through with half a dozen Spanish phrases and reach his destination without *contretemps*, this is difficult and wearing for an invalid. In the second place, an invalid should have his plans made before landing, and be furnished with a few letters of introduction. Under these circumstances he may confidently look forward to a profitable and not unpleasant visit.

The main health resorts in the republic are the *sierras* of Cordoba and the foothills of the Cordillera, in the province of Mendoza, though these are by no means the only or even the best sites for such purposes. The former are some 24 hours' journey from the capital, with a

chance of breaking the journey in the city of Cordoba. Leaving Buenos Ayres in the evening, and dining and sleeping on the train, Cordoba is reached early in the following day, and in that city there is very fair hotel accommodation. The journey on to the mountains is short and interesting, and there are several villages in which hotels have been built for the accommodation of visitors. The best known are Cosquin, Huerta Grande, and Capilla del Monte on the North-Western Railway, and San Jorge on the Central Northern Railway. In most of these a certain amount of English is spoken, the proprietors being Germans or Swiss ; and besides the hotels a few *pensions* exist, the proprietors being in certain cases English. The cost of living varies considerably with the season and the class of house, but on the whole is moderate. In the summer expenses are higher and the crowding greater, since large contingents arrive of families escaping from the heat of the capital.

Mendoza, on the other hand, is much further from Buenos Ayres, it taking some 30 hours' consecutive railway travelling (two nights and the intervening day) to reach the city, and then some hours more by the trans-Andine line to reach any spot among the foothills, where cool nights may be expected in summer.

In both these districts those suffering from pulmonary tuberculosis in its early stages, as a rule, do very well. The climate is good, the air dry and invigorating, and the altitude averages between 700 and 1,000 metres above sea-level (2,300 ft. to 3,300 ft.).

In the winter months the cold is sharp, though not intense, and any invalid passing the winter in these spots should see that he finds quarters where a fire is obtainable. Special delicacies are unobtainable, and the diet will be only plain but good ; consequently, as health resorts these

spots are only suited to those who are prepared to adapt themselves to their surroundings. As regards amusements, the visitor will have to create his own ; but the country is very picturesque, and horses or mules can easily be hired for excursions, while fair rough shooting is abundant.

The above-named regions are those to which any casual visitor might go, but they are by no means the only sites in the republic suited for invalids or even the best. In the provinces of Catamarca, Rioja, and San Juan, are spots that provide an ideal climate, but such things as hotels are unknown, and a knowledge of Spanish is absolutely necessary. If the invalid be so fortunate as to be the friend of any of the few European families settled in these provinces, and is prepared for 'backwood' life, he is indeed to be congratulated. The day will no doubt come when the climate of Catamarca will be known in all quarters as one suitable for consumptives, for there in winter one can live down on the warm dry sandy plains, and in the summer migrate up the mountains, carrying the climate of an English summer with one, and meanwhile enjoy the most glorious scenery conceivable.

Besides the health resorts for pulmonary complaints there are numerous mineral springs in the interior of the country that enjoy a local reputation, and in some cases are already being exploited, as, for instance, the thermal spring baths at Puente del Inca in Mendoza, and Rosario de la Frontera in the province of Salta, but for many years such health resorts are not likely to appeal to European invalids.

Turning to the mode and cost of living in the country, it is, of course, impossible to speak otherwise than generally. In the city of Buenos Ayres the best hotels are run on entirely European lines and are on the whole very

good. In the more modern ones fireplaces and the other ordinary appliances of civilisation can be found, while in the older hotels a dark room, with no fireplace and no window (all the light and ventilation coming from the glazed door), is all that can be obtained. Besides the hotels there are numerous boarding-houses where indifferent accommodation and indifferent food are provided. In the interior the same holds good, only it becomes harder to find good accommodation. The cost of living also varies widely. In the best hotels of the capital the cost of board and lodging will vary from $7 to $10 (paper currency) per diem, the paper dollar being worth at the present moment about 1*s.* 5*d.* In the boarding-houses the cost of living is naturally considerably lower, as is also the case in the hotels of the provincial towns. Living is for the householder more expensive than in England, since anything beyond the necessaries of life is dear. Food is cheap, but house-rent, firing, wages, dress, &c., are all dear. Visitors should, accordingly, bring with them all articles of dress that they may require, instead of having to buy imported goods. The dress required will be neither more nor less than that required in Europe, bearing in mind that here the summers are rather more hot and the winters rather more trying than in England. In the capital one dresses as in an English or European town, while in the country a more *négligé* attire is permissible, and the British 'globe-trotter,' who appears from time to time in the streets of Buenos Ayres with a pith helmet and a striking suit of 'dittoes,' is as out of place as he would be in Regent Street. Even in the country pith helmets and puggarees and drill suits are not needed, light tweeds or flannels and a straw hat being sufficient for the hottest days, whereas in winter good warm underclothing is essential, and an overcoat most acceptable.

In a country where sudden atmospheric changes are so common it is wise to make a rule of wearing some form of woollen underwear, and a woollen band over the abdomen is advisable in all seasons, and should be worn by night as well as by day. It is by no means uncommon in the city to find it impossible to sleep during the early hours of the night, owing to the temperature being somewhere between 85° and 90° F., and then when one has at last managed to close one's eyes to be suddenly awakened by a banging of windows and doors and find a storm in full progress and a cold wind raging through the room. Even if this be exceptional, the fact remains that a drop of ten or more degrees may occur suddenly any hot summer night, and it is on these occasions that it is of advantage to have the abdomen protected by a woollen waistband, by which many an attack of gastric disturbance may be avoided. Those who wish to travel in the interior, leaving the ordinary routes, will need to provide clothes suited for the part of the country which they intend to visit. If travelling far south in the summer, they may encounter persistent rains, and in the winter extreme cold, whereas, if travelling in the provinces of Catamarco or Rioja, they may meet with only an occasional thunderstorm, or, again, in these same provinces they may be approaching the snow-line on the Cordillera and encounter severe cold. The writer some years back in the month of February left the plains of Catamarca, where the temperature was averaging over 100° F. of an afternoon in the shade, and over 90° F. all through the nights, and after some eight hours' travelling had reached an altitude on the mountains where one was glad to sit over the fire at night, and on the following day while hunting he was able to quench his thirst with handfuls of snow which lay under the shady rocks. For travelling in such regions it is best to

adopt the system of the country, and while retaining one's ordinary clothing to carry *ponchos* which can be put on when necessary. The *poncho* is simply a woollen blanket or rug, of about the size of a railway rug, in the middle of which is a slit some 18 inches long, through which the head is thrust. This forms an ideal covering for riding, since it covers the thighs and knees, and when not needed it can be simply folded and placed under the saddle, forming part of the saddle gear. It might be worth while to bring from Europe a piece of waterproof cloth of this size and convert it into a *poncho* to be worn during a storm, and it would serve as a waterproof sheet at night; but the want of ventilation in such a garment would be a disadvantage, and, moreover, it would have to be of an exceptional quality to withstand the climate, which quickly ruins all ordinary 'mackintosh' materials.

Those intending to shoot in the upper provinces should be reminded that the *moute* or underwood is composed almost entirely of thorny trees and bushes, and that in many cases these thorns are not merely sharp spikes, but are curved backwards with two points in the shape of the letter T, which catch in the clothing and will tear anything but the stoutest stuff. For guanaco shooting in such country it would be well to have a suit of strong canvas, or, better, of khaki of a suitable unobtrusive colour. Besides the thorny brushwood through which one has to pass, one has to be provided also against the thorny cactus which covers the ground, and the sharp stones which tell quickly on the boots. For general work a stout shooting-boot reaching nearly to the knee is the most convenient, being suitable both for work on foot and for travelling on muleback. On the other hand, if shooting guanaco or deer higher up on the mountains, above the level of the brushwood, lighter dress can be worn and less

heavy boots are desirable, especially if one is tramping at an altitude where the *puna* or air-hunger makes every extra ounce a burden.

In the lower provinces, for duck or partridge shooting in a country where a bush is unknown, of course such precautions in the matter of dress are unnecessary, the shooting ground being like an English stubble or a grouse moor.

In the Argentine Republic the main railway lines provide comfortable coaches built on North-American principles, and the main 'through trains' have good dining-cars attached. At about sunset dinner is provided in this car at a moderate price, and, meanwhile, the sleeping berths are made up. A man travelling alone will probably get a berth in the body of one of the main cars, there being some half-dozen lower or some half-dozen upper berths, the former of which are always preferable. Besides these there are separate compartments containing two or four berths for the use of families and of ladies. It is well to take one's railway ticket and secure one's berth a day beforehand, if possible, so as to get the choice of a suitable berth. There is a small extra charge for the berth ticket. At daybreak, coffee or tea and bread and butter can be got on the train, and arrangements are generally made for a stoppage at some station at midday. The casual traveller will find it less trouble thus to get his meals on the train, though those who travel much on these lines may prefer to take their own luncheon-basket and provisions. In the winter it is well to take a warm railway rug, and above all, at all seasons of the year, to take a dust coat of some sort or other. Unless there has been a heavy shower of rain very recently, the dust is the annoying feature in railway travelling in this country. It forces its way in fine clouds through every chink and

renders travelling in the summer almost unbearable. In dry summer weather the traveller had better not consult appearances while in the train, but envelope himself in a roomy dust coat reaching to the ankles, and tie a silk handkerchief round his neck to keep out the dust as far as possible.

As soon as the main lines and the 'through' trains are left, railway travelling in this country becomes more primitive, and the acme is reached on some of the state-owned lines. Though there is a large mileage of railways in the republic, the country is so large that most journeys will entail leaving the railway and doing the last part of the journey in a coach or in the saddle. Stage coaches run on certain days from various railway termini in different directions, and the traveller will most likely have to make use of one of these. These *galeras* or *mensagerias* are stoutly built, but very rough coaches drawn in the lower provinces by horses and in the upper provinces by mules. Even for a healthy man they are tiring, and for ladies they are exhausting, while they are impossible for invalids. The roads are bad, and the springs of the coaches are of the stiffest. In the winter they are very cold and in the summer stiflingly hot and dusty. For travelling in them one should be well provided with wraps to serve as cushions and to keep off the cold in winter and the dust in summer. If the traveller is particular about his food, he must take his provisions with him, though it is easier to get one's meals on the road.

If the stage coach does not bring one to one's destination, the remainder of the journey will be done in the saddle, on horseback in the lower provinces, and on mule-back in the mountains.

In the former case it would be well to take with one an English saddle, but in the latter case special saddle

gear will be needed, which can be either hired or bought. Unless the journey is short and it will not be needed again, it is far better to buy the necessary gear, all of local manufacture, the cost being nothing great. There may be difficulty in hiring mules, unless it be for a short journey, and for anything else it is better to buy one's own animals. Of course mule dealing is like horse dealing, and the *gringo* or foreigner is looked on as fair game. The price of a good saddle mule should be from $80 to $100 (paper currency), while a serviceable cargo mule should cost about $40. A *peon* can generally be got without much trouble to serve as guide and to control the vagaries of the cargo mule, and he should provide his own mount and his gear.

Taken as a whole, the Argentine Republic is remarkably healthy, the only really endemic diseases being the malarial diseases of the northern provinces. The province of Tucuman bears the worst reputation in this respect, the summer rainfall being heavy and the soil being much disturbed in the cultivation of sugar. In the winter months the risk of contracting malaria is very slight, and even in the summer those who take reasonable precautions and travel judiciously need not have much fear. Those who suffer most are those who have to travel in all weathers and sleep out, as, for example, the men in charge of the mule troops that carry wine from the adjoining provinces to Tucuman.

Though in the Gran Chaco the heat is as great, and the forests are often converted into huge swamps and abound with mosquitoes, malaria (or, as it is locally called, *chuchu*) is not known. In the same way no risk of malaria is run by those travelling on the River Paraná, though the shores are lined by swampy forests for long distances.

In the temperate regions the diseases that have an almost endemic character are typhoid fever and diphtheria, these diseases always existing with greater or lesser virulence in different localities. Of course they only develop an epidemic character in towns, for in the country the population is so extremely sparse that their propagation is difficult.

Cholera and yellow fever have each effected their lodgments in the country in bygone years, but of late have been prevented an entrance, though undoubted cases of each have arrived on our shores.

From the traveller's and visitor's point of view, the only diseases that need be taken into account are the two above named, viz., typhoid fever and diphtheria, and in both instances these appear in this country to be propagated almost exclusively by contaminated drinking-water. In the city of Buenos Ayres the water supply is derived from the River Plate, and is decidedly good. Though the filtration system that has been adopted does not provide a perfectly clear water supply, the water nevertheless is quite fit for drinking purposes. The dangerous drinking-water is that which is taken from surface wells in the suburbs of the city and in the country towns. In so flat a country efficient drainage would be costly and difficult, even if it had been attempted, and at present the city of Buenos Ayres, and perhaps that of Rosario, are the only towns that have any adequate drainage system. In the ordinary country town the surface of the soil is, so to speak, pitted with alternate wells and cess pits, sunk to the same level a few yards apart. Consequently the traveller would do well to eschew drinking-water such as can be got in the smaller towns, without previous boiling and, if possible, thorough filtration.

Food is cheap and abundant in the greater part of the

republic, meat forming the larger part of the dietary. An invalid may, however, miss, outside the larger cities, the ordinary accessories. In *estancias* situated at any distance from a township, it is not uncommon to find that bread and vegetables are unobtainable, or at the best that dry hard 'camp' biscuits and pumpkin take their place.

Dangers from wild beasts practically are non-existent in the republic, though jaguars are to be found in the Chaco and the northern forests, and pumas in most of the outlying regions. Snakes are not very common, and it is extremely rare to hear of a case of snake-bite. Sharks are not to be feared by bathers, though, on the other hand, a small voracious fish swims in shoals in certain rivers of the Chaco that has to be driven off before bathing, since they greedily attack 'the human form divine,' each member of the shoal taking, if not his pound of flesh, at all events his morsel.

It is in the matter of parasites and noxious insects that the country may boast a bad pre-eminence. In most parts of the country the common house-fly is a great pest during the summer months, and during the same period mosquitoes are very troublesome wherever there is stagnant water, a mosquito net being a necessity in most houses in the capital. In the islands of the delta of the Paraná and in the Chaco the plague is still worse. The ordinary flea abounds in all houses that are not scrupulously kept, and is, unfortunately, not rare in public conveyances.

Among the parasites peculiar to the country the *binchuca* deserves especial notice. This insect is about the size of the ordinary blackbeetles we know in England, and much resembles them in configuration; the *binchuca*, however, flies as well as crawls, and is possessed of a cunning that is diabolical. During the daytime he hides in the cracks and crevices of the wall, or remains quiet on

the ceiling of the room. At night he sets out, flying or crawling in pursuit of human blood. He is intelligent enough to know when his victim has fallen asleep, and, alighting on the pillow, quickly crawls beneath the sheets. The sufferer wakes with a smarting pain, it may be on his neck or it may be on his foot, and strikes a light to look for his enemy; but the *binchuca* is nimble and wary and hard to catch. If successfully stalked and killed with the heel of a slipper, the result is an unsightly mess, for the insect has filled himself with a considerable amount of his victim's blood. The site of a *binchuca* bite is painful for some time and apt to swell, resembling an exceptionally severe mosquito bite. These pests are unknown in the city of Buenos Ayres and not common in that province, but in the northern provinces are very abundant. A good mosquito net, well arranged, will of course protect the sleeper, but failing this it is preferable to sleep out of doors on a summer night rather than in a room infested with them. They abound especially in the up-country houses, built of *adobe*, with roofs made of wattle and mud. Their bites are best treated with ammonia, like the sting of a bee. Another parasite found in some parts of the republic, though far more common in Paraguay, is the 'chigoe' or 'jigger,' a parasite that burrows beneath the skin of the feet or toes and there deposits its eggs, giving rise to painful little abscesses. As soon as their presence is recognised they should be removed by means of a needle, and the small wound washed with a carbolic lotion.

The next insect pest to be mentioned is one that is the most likely to attract a visitor's attention, being at times as troublesome as the mosquitoes themselves. This is the *bicho colorado*, a minute insect abounding in the grass and on the foliage of certain trees during the summer months.

The insect can barely be seen with the naked eye, resembling in this the English harvest bug. Those who injudiciously walk in grass with low shoes, or who sit in the summer under *ombu* or *paraiso* trees, are nearly certain to suffer. The itching they cause is intolerable, and the resulting scratching, if it breaks the skin, is nearly certain to cause unpleasant ulcerating sores. If the skin is not broken by the sufferer, no ill results will follow, and the insect can be easily killed while on the surface of the skin by sponging with spirits of wine, and the itching allayed by the use of a stiff flesh brush. As has been said, however, if the skin be broken very nasty sores may be formed, especially round the ankles. The best measures to take are prophylactic, and consist in avoiding walking through the grass without high boots. If sores do form, they should first be well mopped with a solution of carbolic acid (1 in 40), and then treated with a simple zinc ointment.

There remains only to be mentioned the parasitic disease known under many names as anthrax, malignant pustule, charbon, or in the vernacular as *grano malo*. It is due to the invasion of the system by the bacillus anthracis, and is the cause of large mortality among the cattle in this country. Those most liable to infection are those who have to deal with the tainted animals or with their hides, but there is no doubt that the infection can be conveyed by flies and mosquitoes, and that in this way any casual traveller may be poisoned if staying in a district where *grano malo* is rife.

Though the risk is thus remote, the danger is, on the other hand, so great, if infection does occur, the disease tending almost always to a fatal termination, that the traveller should be forewarned. The diagnosis will probably be made for him by those who are only too well

acquainted with the symptoms, but the malignant pustule can be recognised by the following description. It commences as a small painful red papule, occurring almost always on the face or hands, and often on the site of a mosquito bite or previous abrasion. The papule rapidly increases in size and is surrounded by a dark dusky red area that is considerably hardened and brawny. The patient will early feel feverish and probably have slight shivering attacks. On the summit of the red brawny swelling a black spot appears, surrounded by sundry little vesicles, about the size of the head of a pin, containing watery fluid, but no true pus or 'matter.' If it be remembered that there is no pus (matter) in a malignant pustule (so miscalled), there is little risk of a simple boil or pustule being mistaken for the malignant. If attacked by the latter a man's life is in imminent danger until the pustule be *freely* destroyed without a minute's loss of time. The *gaucho* realises this, and will unflinchingly allow the spot to be freely cauterised with a red-hot iron, and failing the surgeon's knife there is no doubt that such cauterisation is imperative, after which a pledget of lint soaked in a strong solution of carbolic acid (1 in 20 of water) should be kept for some hours in the wound.

After extirpation of the site of infection the patient should be liberally fed and stimulated.

As has been said, the risks of this disease for the casual traveller are remote, but the danger is so extreme that it has seemed well to direct the reader's attention to the symptoms and to insist on the absolute necessity of immediate radical and heroic treatment.

REPUBLIC OF URUGUAY

LITTLE can be said of this country in distinction from what has been said of the Argentine Republic, for both geographically and ethnologically it belongs to the same group as the adjoining Argentine provinces of Buenos Ayres and Entre Rios. There is, however, a difference geologically between the undulating Uruguayan soil with its granitic rocks, and the dead alluvial plains of Buenos Ayres, and owing to this undulating surface the former is blessed with many streams, and is more wooded than the latter, being far more picturesque. The northern departments of Uruguay, abutting on the Republic of Brazil, enjoy a sub-tropical climate, while the southern coast in its climate is identical with the northern coast of Buenos Ayres.

Taken as a whole, the country is remarkably healthy at all times of the year.

Monte Video, the capital, is easily reached from England by several lines of steamers, such as those above mentioned in speaking of the neighbouring republic, and for the return voyage the traveller can also avail himself of the New Zealand Shipping Company's boats, which make this a port of call.

The currency is on a gold basis, and, owing to the wretched political state of the country that strangles all progress, living is far more dear than on the other side of the River Plate.

The railways are not extensive, but a good deal of the country can be reached by the small coasting steamers that run from Monte Video up the River Uruguay, touching at many points.

THE REPUBLIC OF PARAGUAY

PARAGUAY may be described as 'the same as' the Argentine, 'only more so.' The heat is greater in summer, and the discomforts on a cold winter's day are more marked. The grade of civilisation attained is lower than that of the republics of Argentina and Uruguay, and life is more primitive. Those in the enjoyment of rude health have described Paraguay as a paradise, where one can live on sunlight and oranges, but more exacting travellers find it very dull and uncomfortable. It is not less healthy than the Argentine for the strong, but invalids would find the summer very trying, and though the average climate in the winter is agreeable, the want of civilised comforts renders it unfitted for invalids. The capital, Asuncion, is reached by the river boats sailing from Buenos Ayres or Monte Video, but the service is poor, and, owing to frequent delays in the shallows, the voyage up river will often take a week, and possibly transhipment may be necessary.

The best months for visiting Paraguay would be from May to July, but even during these months a variation of 40° F. may be experienced within 24 hours.

The water supply in the city of Asuncion is either rain water collected in tanks (*algibes*), or water drawn from a deep-boring well and sold by the bucketful at the house door.

A place named S. Bernardino, a few hours from Asuncion, is very picturesquely situated on the shore of a lake, and is the fashionable pleasure resort.

The mean annual temperature is 23° C. (=73° F.) On the exceptionally cold days in winter the thermometer may fall nearly to the freezing point, while in the summer the temperature frequently reaches 102° F.

Throughout the year one may expect 45 cold days, 96 hot days, and 224 days of temperate heat.

The rainfall is heavier in summer than in winter, the heavy rains falling from October to April, whereas August is the driest month. The average rainfall is about $1\frac{1}{2}$ metre per annum (57 inches).

The north wind is hot and very disagreeable, but rarely lasts long, being generally followed by a heavy rainfall and a cold south wind.

There is plenty of sport to be got away from the towns, but local information alone is of use on these points.

Paraguay is far less cosmopolitan than the other republics of the River Plate, and a knowledge of Spanish is almost essential, and away from the main towns even this is insufficient, and for a shooting expedition a knowledge of a certain amount of Guarani is necessary.

REPUBLIC OF CHILE

THE territory of Chile consists of a narrow strip between the Cordillera of the Andes and the Pacific Ocean, and presents very different climates in different parts. In the north are the desert districts, with hardly any rainfall, abounding with nitrate deposits, while to the south are densely wooded districts with a very humid climate.

The following table gives the mean temperature of some of the more important towns in the various seasons, in degrees centigrade:

—	Santiago	Copiapo	Talca	Puerto Montt
Winter .	7·40°	13·00°	7·88°	8·44°
Spring .	13·06°	17·78°	14·42°	11·72°
Summer .	18·47°	22·69°	—	15·43°
Autumn .	12·68°	17·18°	14·01°	12·00°

In the city of Santiago the maximum temperature is 30·7° C., and the minimum 2·1° C.

In the northern districts the absence of humidity is extreme, and the summer heat is very trying. The average annual rainfall in millimetres at different points is as follows:

Santiago . .	275·7 mm.	Valdivia . .	2,557·4 mm.
Valparaiso .	359·6 ,,	Corral . .	2,745·2 ,,
Copiapo . .	1·9 ,,	Puerto Montt .	2,263·0 ,,
Serena . .	38·6 ,,	Ancud . .	1,320·9 ,,
Talca . .	526·5 ,,	Punta Arenas .	494·3 ,,

It will be seen that the rainfall is greatest at the level of Corral, and diminishes again further south in the Straits of Magellan.

The best time of year to arrive in Chile would be in the autumn, and the winter in Santiago is very pleasant. In summer Santiago is unpleasantly hot, and Valparaiso is more pleasant.

From England, Chile can be reached best either by the sea route passing through the Straits of Magellan, or the traveller can land at Buenos Ayres, and thence cross the Argentine Republic by rail, reaching Punta de Vacas, in the province of Mendoza, and then, taking mules, cross the pass and pick up the railway on the Chilian side. The latter route is slightly quicker, and gives more variety, but is not suited to invalids, owing to the long railway journey and the inconvenience of having to cross the pass on muleback; moreover, this route is impracticable during the winter months, the road being blocked by snow, and even in the summer it is not suitable for a traveller having with him much baggage.

Whichever route is determined on, the traveller cannot do better than take a passage by the Pacific Navigation Company's line, and even if he determines to cross by land he can leave the boat at Monte Video, crossing to

Buenos Ayres by the river boat, while he can let his heavy luggage go on by sea to Valparaiso. If, however, he is travelling with little baggage, he can take a passage by the Royal Mail line to Buenos Ayres, landing at La Plata.

Chile is not to be recommended as a country for invalids, nor, as yet, are there any health resorts there worthy of the name. No doubt many spots in the country are as healthy as could be desired, but the same cannot be said of the main towns, and it is only in these that the comforts of civilisation are to be expected. The class of houses and hotels in these is much the same as in the Argentine Republic, and the cost of living is about the same. In the matter of dress the same remarks here hold good that have been made on this subject while speaking of the Argentine Republic, and the same applies to the question of travelling in the interior. The railway system is limited in extent, and any travelling beyond the range of the railways will generally have to be done in the saddle, since roads suited for wheel traffic do not extend far.

The water supply in the towns still leaves much to be desired, though it is being improved. Till lately, the imperfect water supply gave rise to much dysentery, generally attended with severe hepatic complications, and in this matter the city of Santiago had an especially bad reputation. The city of Valparaiso on the coast is in no better a sanitary condition, and visitors would be wise to insist on having their drinking-water boiled and filtered.

THE PERUVIAN REPUBLIC

CLIMATICALLY, Peru may be divided into three zones: first, the north-eastern provinces inside the Cordillera, where the climate is tropical, and resembles that of Brazil; secondly, the mountain zone, consisting of the section of the Cordillera that traverses the republic, where the climate is that of high altitudes; and lastly the coast region, with a mild enervating climate that is almost *sui generis*. The city of Lima is situated about 6 miles from the coast, and about 500 ft. above the level of the sea, and is more or less shut in by the surrounding ranges of mountains. The temperature rarely, if ever, rises above 30° C., nor falls below 10° C. The rainfall is practically nil, but the atmospheric conditions are most peculiar. In the winter damp fogs are common, and in the summer a canopy of cloud covers the country for a large proportion of time, the morning mist being locally known as the *camanchaca*. Thunderstorms and electrical disturbances are practically unknown in Lima. In the mountainous regions, on the other hand, the rainfall is very heavy, especially from December to March, but it is noticeable that the rain generally falls between 3 A.M. and 6 A.M., and the remainder of the day is bright and warm, and the air fresh and invigorating.

From what has been said above, it will be seen that the coast district is not a region to be visited for pleasure at any time of the year, but it cannot be said to be worse at any particular season as regards danger to health; but as regards the mountain region, a season other than the rainy season (December to March) should be chosen.

Callao may be reached from England by two routes: either crossing the isthmus of Panama, taking the boats of the Royal Mail Steam Packet Company, the journey

being of some 30 days, or changing steamers may be avoided by taking a passage by the Pacific Steam Navigation Company, and passing through the Straits of Magellan, this route taking some 45 or 50 days. The former route entails crossing the yellow fever district in Panama, but the risks are slight in so short a transit.

In Peru there are various health resorts of great local reputation, but as yet little known abroad. The writer is indebted to Mr. J. W. Stokes, of Lima, and to Dr. Camino, for the following particulars of the best known of these.

Jauja, situated about 10,000 feet above the sea-level, and about 40 miles from the Oroya railway station by the direct road. An invalid would, however, find the easier route to be *viâ* Farma, making two stages of about 25 miles each. Though not extensively known, the medical profession of Peru and Chile consider Jauja unrivalled as a health resort for those suffering from pulmonary tuberculosis. Mr. Stokes writes: 'No place in this country, or any other I have ever heard of, can be compared to Jauja. Doctors here do not agree as to the reasons for the beneficent influence of the climate of this place on tuberculosis; but as this disease is extremely prevalent on the coast, they have plenty of opportunities of proving it.'

Huacachina, about 3 miles from Yca, has sulphurous springs that are utilised in the treatment of chronic rheumatic affections.

The baths of Yura, some 20 miles from Arequipa, but close to the Arequipa-Puno railway, are of the same character, and are said to be even more efficacious. Yura is situated at an altitude of some 8,500 ft.

In Peru, as in the other South American countries, a fair amount of comfort can be found in the chief town, but a primitive stage of civilisation is soon reached outside

of this. Any invalid going to one of the health resorts would do better to take a small house and furnish it to suit himself than try any hotel, even if such a thing exists.

In Lima and on the coast, living is not dear, and in the interior the necessaries of life are absurdly cheap, though, of course, articles that have to be imported are expensive.

On the coast, clothing such as would be worn in England in the summer can be worn all the year round, but in the interior (the mountain district) warm clothing and waterproof *ponchos* or overcoats are essentials.

As regards travelling, any modern map will show the extent of the railways, and beyond these all travelling has to be done in the saddle, wheeled traffic being unknown.

As in all these countries the traveller should view with suspicion the water supply in the towns and the neighbourhood of dwellings, but otherwise there is an abundant and good water supply, though in some places such as Arequipa the water is saline. The sugar and rice districts of the republic show a very large mortality from malarial disease, while on the coast pulmonary complaints, and especially tuberculosis, are very rife. Fevers—a mixed form, apparently typho-malarial—are common, and in the mountains in certain spots the terrible disease known as Peruvian wart is endemic. Fuller particulars of this can be found in Hirsch's 'Handbook of Geographical and Historical Pathology,' published by the Sydenham Society. Dysentery is also a disease that causes over 2 per cent. of the total death-rate.

BRITISH GUIANA

A TROPICAL country, the southern end of which almost touches the equator. It has the usual tropical climate, and all the low-lying ground is very malarious. Georgetown, the capital, on the coast, has a mean annual temperature of 82° and a rainfall of 70 to 80 inches. The chief diseases there are malaria, anchylostomiasis (a parasitic disease affecting the intestine and causing intense anæmia), dysentery, Bright's disease, pneumonia, and phthisis.

For hints see 'Tropical Travel in India.' Reached by various West Indian Steamship lines from Liverpool and Southampton in about 24 days.

SOUTH ATLANTIC GROUP

Ascension Island.—Ascension Island in the South Atlantic, about latitude 7° S., some distance from the West African coast; a healthy climate in the Green Hills with a mean annual temperature of 73° F.; in Georgetown, the town of the island, 84° F.

St. Helena.—St. Helena is 830 miles S.E. of Ascension and a good deal cooler. It has an agreeable climate with a temperature ranging from 50° to 80° F. The rainfall in Jamestown, the capital, is 28 to 30 inches; on the uplands it is 50 inches.

Falkland Islands.—Falkland Islands, a small group 250 miles north of Tierra del Fuego; they share in the wind and storms for which Cape Horn is famous; the climate is chiefly noted for the incessant rain and wind, but is not very cold in winter.

AUSTRALIA AND NEW ZEALAND

By the Editor.

Visitors to these countries, who go either for health or pleasure, unless they are acquainted with similar conditions elsewhere, are apt to expect far too high a standard of comfort and social life. They must remember that the total population of the Australian colonies is well under 4,000,000, or considerably less than that of London, and of New Zealand about 700,000, the same as that of Glasgow.

Exclusive of the five capitals, of which Sydney and Melbourne have populations of nearly half a million each, Adelaide one of 150,000, Brisbane nearly 100,000, and Perth about 20,000, there are only three towns in Australia with populations over 20,000, viz., Sandhurst, Ballarat, and Geelong, all in Victoria, of which the two first are mining towns, and the third a seaport. Besides these there are four towns in New South Wales, with populations over 10,000, and two in Queensland. Except the two mentioned, Sandhurst and Ballarat, there is only one up-country town with a population of 10,000 souls, viz., Bathurst in New South Wales, and this is the only one of those mentioned which has any pretensions to be a health resort. The population in New Zealand is more evenly distributed, but outside the four principal towns there is nothing that would rank above a third-rate country town in England.

The traveller who is anxious to see the country, and constantly on the move, will find plenty to interest and amuse him; but the invalid, for whom the coast towns are utterly unsuitable, will find it very difficult to get a suitable abode. In the up-country towns he will find poor accommodation, very little amusement, and scant society; unless he can get on a station, and is strong enough to join in all that goes on there, or has special interests, he will run the risk of dying of ennui. Nor need he hope to find employment unless his qualifications are very exceptional; most of the openings are in the big towns on the coast; there are numerous competitors, and preference is usually given to native-born Australians. Therefore he had better, in the majority of cases, stay at home, or, if he has the money to spend and can enjoy the travelling, he may make the tour of the various health resorts, so called, in Australia and New Zealand, on the lines sketched out later in this article, staying a few days in each.

It cannot be too strongly insisted on that to send out invalids to Australia, New Zealand, or, in fact, any new country, as if they were going to the Riviera or Egypt, is sheer cruelty, and even those with ample means are very likely to suffer. Only those should go who have some definite opening before them or friends to go to, or young men with a very clear prospect of restoration to health and work, and able to wait till that time comes, or those with the means to travel and the health to enjoy it.

Hecatombs of victims have been sacrificed to the crazy idea that only a sea voyage is needed to put them right, and that on landing in a new country they will get health and wealth without the necessity of working for it.

There are no organised health resorts and no provision

for invalids, who will have to put up with such accommodation as a small town of 5,000 people affords, and all the deficiencies of colonial life in the way of domestic service and cooking.

Lastly, it must be remembered that, in Australia at least, the distances are enormous according to English standards, and that if a man lands in Adelaide who has friends in Queensland, he may not be any nearer to them than if they were in New York and he in London; yet this is not an unfair sample of the reasons for which people go or are sent to the Australian colonies. The writer would repeat here that invalids from pulmonary troubles should not linger in the coast towns, but make their way to one of the localities known to be healthy, as the Riverina or Darling Downs. Numerous places, such as Orange (where a Government sanatorium is to be or has been established), Bathurst, Bourke, Deniliquin, Hay, Tamworth, are mentioned in the Itinerary. The best plan is to consult a physician of repute in Melbourne or Sydney.

ITINERARY

(*Arriving about the end of October.*)

ALBANY (Perth and Coolgardie), 1 week.

ADELAIDE to Melbourne (482 miles, 29 hours by rail) (3 days).

MELBOURNE to Gippsland and Ballarat, excursion (1 week); to Sydney, 576 miles (31 hours); to Tasmania (1 week), return to Melbourne, thence to Deniliquin, 320 ft., 2–3 days. From Deniliquin, return, and take the loop-line to Albany, 531 ft., 2 days; to Wagga Wagga, 615 ft., 2 days (Hay on a branch line, 305 ft.); to

Young, 1,416 ft., 2 days; to Bathurst, 2,200 ft., 3 days; to Katoomba, 3,349 ft., 3–7 days. Branch line from Bathurst to Orange, 2,843 ft.; to Bourke, branch line, 375 ft., 400 miles; to Sydney (4–6 days).

SYDNEY to Brisbane, 723 miles (2 days); Tamworth, about 2,500 ft.; Armidale, 3,333 ft.; Glen Innes, 3,518 ft.; Brisbane.[1]

The first point at which the traveller arriving by the Red Sea route touches in Australia is Albany, the port of Western Australia. Few probably will disembark there except for business purposes; but they can, if they wish it, get off and wait for another vessel, which entails a stay of at least a week. To the scientific man, and especially the botanist, Western Australia is of considerable interest, as, owing to its having been separated from the rest of Australia for a considerable period of geological time, it contains a very large number of plants (2,500 species according to Von Mueller), not found elsewhere, and some distinct species of animals.

A week will permit of a visit to Perth, the capital, with about 20,000 inhabitants, some 340 miles from Albany, and from thence on to Coolgardie, about the same distance by rail to the east; but no one not in robust health should undertake the latter journey, as accommodation is not good, though the visit to the gold-fields is of interest. If the arrival be timed for October, no great heat will be experienced.

By far the majority of travellers will go on straight to Adelaide, whence they have the choice of going by boat or rail to Melbourne and Sydney. The traveller who wishes to see as much as possible of the country will probably stay a night in Adelaide, and go on by

[1] The times in brackets are those actually occupied in transit; others include the times taken up in seeing the place.

rail, 509 miles; but the invalid had better go on straight to Melbourne in the ship.

From Melbourne an excursion should be made to Gippsland by all who wish to see beautiful scenery and trees which rival if they do not surpass the huge Californian pines in magnitude, rising to a height of 400 ft. and over. This excursion is for those only who are in fairly good health; it will take three or four days at least, and probably involve some roughish travelling.

Returning to Melbourne, the traveller, whether sound or invalid, can go up to Deniliquin by rail—a place which has some reputation as a health resort, and, though in New South Wales, is best reached from Victoria; it has an elevation of about 300 ft. There the health-seeker may stay a few days or longer according to his tastes, but he will have to retrace his steps considerably in order to get on the main railway system of New South Wales. From Melbourne also an excursion may be made to Ballarat, the famous centre of the Victorian gold-mining, and only a few hours from Melbourne by rail.

The journey from Sydney to Melbourne by rail occupies about 30 hours. The main line, on which the fast trains run, turns south at Murrumburrah and goes through Goulburn; but those who wish to see more of the country can turn off there and take the northern line, passing through the Riverina country, which is one of the healthiest parts of Australia. Halts may be made at Albury, Wagga Wagga, Young, and Bathurst, or the traveller may turn off at Junee junction and go down the valley of the Murrumbidgee to Hay, which also has a reputation as a health resort.

On the Murrumbidgee he will see some of the most characteristic river scenery of Australia, and some very picturesque spots.

From Bathurst it is an easy journey to Katoomba, a spot which no one should fail to visit who wishes to see some of the most picturesque and remarkable scenery in the world. In the spring, i.e. in November and December, the beauty is enhanced by the multitudes of spring flowers, many unknown to the newcomer, some familiar as hot-house plants in England.

From Katoomba it is a short journey down to Sydney.

Instead of going to Katoomba from Bathurst the traveller may turn north and go up to Bourke, 500 miles from Sydney, and the centre of a great pastoral country, draining into the Darling, the longest tributary of the Murray (Orange, a well-known health resort, is on the way). This region is very dry and healthy, and is admirably suited for the consumptive invalid, especially those who wish to settle. From Sydney, those who wish to spend the winter in Australia may continue their journey up to Brisbane, 723 miles from Sydney; but in the summer, i.e. from December onwards, they will find it oppressively hot, and the best plan for those who come for health is either to take up their abode at one of the up-country towns before mentioned, or to go on to New Zealand for the next two or three months.

Numerous expeditions can be made from Sydney to points of interest or beauty, e.g. up the Hawkesbury valley, to Parramatta, and various other places round the harbour and in the neighbourhood.

Routes.—Little need be said as to the various ways of reaching these countries; they are practically three in number, viz. by the Red Sea, round the Cape of Good Hope, and across the American continent. Owing to the great heat of the Red Sea the first should not be taken by those who have the choice earlier than the end of October or later than the middle of May, though of course

many traverse it with impunity during the other months of the year. More risk is incurred in going southward than in coming north, as the prevailing wind in the Red Sea is northerly, and with a head wind on a vessel moving at the rate of fifteen to seventeen knots an hour there is rarely any great risk of oppressive heat. Those who bear heat badly, or are very plethoric, or have constitutions enfeebled in any way by disease, should certainly avoid this route in the summer if possible. Owing to the regular character of the winds in the Indian Ocean, the voyage in the late autumn can generally be reckoned as a fair-weather passage, and bad sailors can avoid the risks of stormy weather in the Bay of Biscay and Gulf of Lyons by going overland to Brindisi or Naples, and there taking ship. It is perhaps the most interesting in some ways of all the routes, as, in addition to the halt at Gibraltar, the boats stop at Port Said, Colombo, and often at Aden, affording glimpses of the life of the East and in Ceylon, and not infrequently the opportunity of visiting some of the greatest curiosities and most beautiful scenery of the island. On the outward passage a cabin on the port side, and on the homeward one on the starboard side, should be chosen, the heat of the afternoon sun being thereby avoided.

In the tropics the usual precautions as to food, drink, and clothing, described elsewhere in this book, should be observed.[1] At the right time of year more fresh air can be enjoyed by this route than by any other, both by night and day, and with a cool cabin the somewhat risky plan of sleeping on deck in the tropics is unnecessary. I have known the ports to remain open from the time of leaving Port Said till within 48 hours of reaching the Australian coast. On the voyage round the Cape, great cold and very bad weather are often experienced

[1] *Vide* pp. 111, *et. seq.*

between that point and Tasmania, owing to the dip into high southerly latitudes making this, in winter at least, an undesirable route for the delicate. All should be provided with very thick clothing and, if possible, furs, as it is a very difficult matter to keep warm on board ship, owing to the lack of exercise and the difficulties of warming ships effectually. Snowballing on deck is not an occupation suited for invalids, and is not usually associated with a voyage to the Antipodes, but it is one which has been known to be resorted to for exercise and warmth. When the weather is both rough and cold, rendering exercise impossible, warmth is scarcely to be obtained except in bed, and it is better for the delicate to remain there.

The halts at Teneriffe and the Cape show beautiful and interesting spots, but not the same complete change of civilisation as the Eastern route. On the return voyage the boats stop at Rio Janeiro, one of the finest harbours in the world, but generally afflicted with yellow fever. The passage round the Horn is even more likely to be cold and stormy than that round the Cape, and the fine scenery of the Straits of Magellan is rarely seen.

On the transcontinental route also great heat or great cold may be met with according to the time of year, but in the autumn even the long land journey is not unpleasant. An unlimited time may of course be spent on the American continent by those who have leisure; and usually there is time at Hawaii to see something of one of the most beautiful tropical countries of the world.

Merely for the enjoyment of the pleasures of travelling, the route by the Red Sea is the one to choose, at the right season of the year. In summer the long sea route has its advantages; but no one will choose the transcontinental route who does not wish either to arrive in the shortest possible time, or to visit some special places *en route*.

The time best suited for visiting the Australian colonies depends a good deal on the objects which the traveller has in view. If he desires merely to escape the English winter, he will of course choose the months from October to April; and if he wishes to see the country, he will find in New Zealand much greater facilities for travelling and excursions in the summer months, viz. December, January, and February, when all the arrangements are made for the crowds of tourists who come from the Australian colonies.

In the winter, excursions to the Sounds, to the southern lakes, and up into the New Zealand Alps, are impossible, and the means of conveyance generally are more limited.

In Australia, on the other hand, the great heat of summer causes much discomfort in travelling, and visitors will lose little by choosing the cooler and healthier winter months, which are often very delightful, especially on the uplands of the interior.

The great size of the Australian continent must always be borne in mind, and the diversity of climate resulting from this. The northern tropical parts of Australia are rarely visited by the ordinary traveller, Brisbane being usually the northernmost point attained, where the climate is semi-tropical; there is also a vast area of arid desert, which is only penetrated by the hardiest explorers or gold-seekers. The region, therefore, which has to be considered from the point of view of the travelling public is comparatively limited. It consists mainly of the coast line of South Australia, Victoria, New South Wales, and Queensland, as far as Brisbane, with the corresponding hinterland, including the mountain ranges which run more or less parallel with the coast, but at a varying distance inland, and the plateaux behind extending up to the great central deserts.

Of the large towns, Adelaide and Melbourne are considerably the driest, and Brisbane and Sydney the dampest; in both the latter the air is often completely saturated with moisture, and the damp heat is very enervating. The thermometer in Adelaide, in average years, actually reaches a higher point, and the mean temperature is greater, but the heat is much less trying. The coldest of all is Melbourne, where the thermometer usually falls a degree or two below freezing on some days in winter, whereas in the others frost is unknown.

None of them are really desirable as places of residence for pulmonary invalids—Melbourne being the furthest south and, climatically speaking, probably the healthiest, but it is peculiarly liable to very sudden variations of temperature; cold winds sweep up suddenly from the south, locally known as 'southerly bursters,' and the temperature falls many degrees in a few hours. These cold southerly storms are felt along a great part of the south coast, and even in Sydney, but nowhere so much as in Melbourne. To show the rapidity of the change, it may be mentioned that one evening even the thinnest evening clothes were very oppressive, and the next all the thickest winter clothing and a thick ulster were needed before leaving the harbour. These changes are dangerous to invalids, and must be carefully guarded against by those who are at all delicate, though it is a difficult matter to foresee their arrival.

The briefest account of the Australian climate would be incomplete without a mention of the north wind or 'brick fielder,' which blows in summer over an enormous area with a temperature of 100° F. It is very frequent in Victoria and South Australia, but much rarer in New South Wales, owing to the height of the mountain ranges dividing that country from the torrid central plains,

whence it springs. It feels like the blast of a furnace, and when accompanied, as it is not infrequently, by severe dust storms, is a most unpleasant experience. The traveller is fain to turn the other way, or seek the shelter of the nearest wall or building, as he feels the hot gusts sweeping up and taking his breath away, even when the choking dust is absent. Except when the hot wind is blowing, the summer heat on the inland plateaux, though very great, is not oppressive or unhealthy, owing to the extreme dryness of the air. There is also almost complete immunity from sunstroke, as is usual in very dry climates, and, unlike the tropical regions of India and elsewhere, when a great part of the day during the hot season has to be spent indoors, in Australia, outside the tropical zone, white men carry on their outdoor employment even during the heat of the day. I have ridden for hours during the day even with the temperature at over 100° F. in the shade, and felt no bad effects except parching thirst, and that without any of the extra protection to head and neck necessary in the tropics. Even in the coast towns sunstroke is rare; except during very short periods of exceptionally hot weather, it may be said never to occur. For the most part, people do not take more precautions against the sun than in hot weather in London; and the puggarees, solar helmets, and other forms of protective head-gear common in tropical climates are almost unknown in Australia. Outside the tropical regions a light straw hat or a single terai is all that is necessary during the summer months, i.e. during December, January, and February.

The rainfall of Australia varies to an extraordinary degree in different years, and it is pre-eminently a land of disastrous floods and equally disastrous droughts, especially the latter. It is this fact which makes it such a heart-breaking country for settlers, as its history shows; one year

they may see their flocks dying by thousands for want of pasture, and even the birds falling parched from the trees, and the next all that remains may be swept seawards by a devastating rush of waters.

In Adelaide the rainfall ranges from 13 in. to 30 in., and inland on the great plains the variations are far larger—the rainfall of one year being four, five, or six times that of another. Further, the amount that falls in a short time is very great, daily falls of from 4 to 6 in. being not at all rare in New South Wales, at least in the coastal districts, and 2 to 3 in. quite common. On the western plains, i.e. W. of 146° E. longitude, the average rainfall is a small one, ranging from 10 to 17 in. annually, so that this region must be ranked among the driest portions of the earth's surface, while the elevation helps to make it one of the most healthy. At Sydney the average rainfall annually is 51 in.—a good deal higher than that of London, and indeed most places in England; at Adelaide the average is just over 22 in., and at Melbourne about 25 in.; both, therefore, are distinctly dry places. Roughly speaking, the rainfall may be said to diminish from east to west, but the S.W. corner of West Australia has a fairly heavy fall of from 40 to 50 in. The southern and central portions of South and West Australia, until the coastal belt is reached, are among the most arid regions of the globe, the annual rainfall in many places not exceeding 5 in. These facts make it easy to understand why the Australian rivers are such very uncertain quantities, at one time disappearing altogether, at another running down in heavy floods. They have no steady source of supply, such as a high mountain range with a heavy rainfall and perhaps perpetual snow, affords, but are dependent chiefly on the uncertain quantities of rain falling on the central plains and low mountain ranges. Though there is a con-

siderable mountainous region, the elevation is low; and the highest mountain on the continent, Kosciusko, in Victoria, attains an elevation of only 7,308 ft., or 700 ft. below the line of perpetual snow at that latitude.

The great lakes in the centre of the land are fed by rivers, but give rise to none, and they are themselves so drained by evaporation as to be intensely salt, and of very varying area, according to the season.

The history of Australian exploration has shown that the chief risks are due to the difficulties of getting water and fodder for beasts and water for men, and the sufferings of many of the earlier explorers from thirst were terrible. Recently the exploring expeditions have been provided with camels, and thus much of the difficulty of providing water for the beasts was obviated.

The ordinary traveller will probably not have to face any of the difficulties of the bush; but if he goes at all into the interior and joins in kangaroo hunting or sport of that kind, he should certainly carry a compass, and try to practise using it. It is a very easy thing for a man to get separated from his party and 'bushed;' in the endless monotony of the bush he will find little to guide him, and may have the greatest difficulty in finding his way back to civilisation. Even those of long experience get 'bushed' when they are in country with which they are unacquainted, and numerous stories are told of men who, finding themselves lost in this way, have gone out of their minds, and been discovered at last in a state of complete insanity.

The horrors of spending 18 hours without water in a temperature of 100° in the shade can only be realised by those who have endured it, and this may happen to men even in country with which they are fairly familiar.

Means of Conveyance.—Most travellers probably will

not go much beyond the reach of the railway; where that ends there are coaches going in various directions, varying in quality from a fairly well-appointed 'stage' to a rickety omnibus, but most of them carrying the Queen's mails.

Beyond the limits of coaches, all travelling has to be done on horseback, and the wise man will do well to substitute horse for coach in any case, leaving the latter to carry his luggage where he can.

No one who is not at least a fair rider can go much out of the beaten track in Australia; distances between the smaller towns and stations are great, and riding is the universal way of getting about, though it is wonderful what roads the light buggies, made on the American pattern, can get over.

Clothing.—For the Australian summer months thin clothing is essential; in the towns straw hats are usually worn, and the top hat is not much used except on state occasions; but otherwise dress is much the same as is worn during hot weather in England.

In the country very thin tweeds, such as the washing tweeds made by Indian outfitters, with a flannel shirt, are the best wear; strong riding breeches with top boots, or strong leather gaiters, are essential for those who wish to go out in the bush and join in the sports of the country, such as kangaroo or emu hunting. If flannel be not worn, thin woollen or silk and wool underclothing should always be worn, especially in the coast towns, where, as has been mentioned, changes of temperature are often very sudden. The best hat for general wear is a light single terai or broad-brimmed felt. In winter, ordinary English clothing of moderate thickness is very suitable. Outside the tropical region no special forms of protection are needed; some travellers hold that it is safer in all hot climates to wear the so-called cholera belt, but it is in

Australia not a necessity for most people, and once worn it is difficult to dispense with it again. Those, however, who are specially susceptible to diarrhœa and internal derangements due to chill, or who have suffered from dysentery in any form, will do well to have one with them, and wear it if necessary.

Medical Precautions.—No special medical precautions are necessary in ordinary travelling in Australia, except in the drinking of water. A good and efficient water supply is a difficulty in most Australian towns, and consequently some of them have had an unenviable notoriety for typhoid fever. Undoubtedly the only safe thing, as in travelling abroad in Europe, is to insist on water being boiled; but this is a very difficult matter to carry out efficiently, and it is useless if done intermittently. There is the further difficulty in Australia that natural mineral waters, such as Apollinaris and St. Galmier, are only to be got at very great expense. If the traveller can adopt the colonial habit of drinking tea with every meal, he will certainly be much more secure from the chances of infection, whatever the effects on his digestion; he will also discover that with the thermometer at 100° or more in the shade, hot water flavoured with tea is one of the most refreshing drinks possible.

It may be as well to remark here that it is a pure fallacy to suppose that the addition of wine or spirits to water renders it safe by destroying germ life; the effect is absolutely nil; so far as is known, the germs which are at all injurious to human beings are absolutely untouched by it, and equally so by freezing.

The diseases prevalent in Australia scarcely differ at all in kind from those which are found in England, and there is absolutely no disease special to the country, or even more conspicuously found there than elsewhere, with

the sole exception of hydatids, a parasitic disease, the prevalence of which is explained by the fact that dogs, especially dogs engaged in shepherding, are the principal carriers of the infection; it is well known in England, though comparatively rare. There are also, of course, more deaths from sunstroke than in England, but the number is never great, and the cases occur chiefly in the towns; malarial fever is also found, and is said to be somewhat prevalent in Queensland, even outside the tropical regions, but it is not of a very severe type as a rule.

The diet of Australians so closely resembles that of the ordinary Englishman, that no trouble is likely to be found on this score; but the habit of incessant tea drinking, already alluded to, is one which presents considerable risks to those with weak stomachs and weak nerves; it is, however, vastly less injurious than any form of alcoholic indulgence.

Parasites. Wild Beasts.—With the exception of the parasitic disease already mentioned, which scarcely affects the traveller, there is not much danger to be apprehended in Australia from living pests. The chief plagues of life are the flies and mosquitoes; and some kinds of the former in certain districts are specially vicious. In all the colonies there are three or four varieties of poisonous snakes, some of which are among the most deadly known; but the number of deaths by snake-bite is a very small one; it probably does not exceed ten annually for all the Australian colonies.

One or two varieties of spiders are poisonous also, and occasionally, in the susceptible, their bite causes very serious symptoms or even death. On the other hand, the terrible and, to human beings, invariably fatal diseases of hydrophobia and glanders are not to be found on the Australian continent, while anthrax, which is commonly

known in England under the form of woolsorters' disease, appears also to be absent, curiously enough, though cases have certainly occurred in New South Wales among animals.

Unless sharks and, in Northern Queensland, alligators are to be reckoned, there is no large animal of any kind in Australia dangerous to life.

Now that bushranging is an extinct profession and the aborigines no longer troublesome, save occasionally in Western Australia, because almost extinct, the traveller may pass through the length and breadth of Australia unarmed, and with no more fear for his life than in England, though he may have to depend on his gun for food if he ventures on any exploration.

The only other remark which has to be made with respect to Australian travelling is that the hotels almost without exception are very inferior, though not expensive. Men travelling alone, and having introductions, will do well to secure rooms at the clubs, which are most hospitably open to strangers and very comfortable. The badness of the hotels is one of the great drawbacks for invalids going to the country, and the further they go from the large coast towns the worse they will find them, so that an up-country hotel is almost impossible for ladies. In all such, both in Australia and New Zealand, it is common for men to be put in a room two or three together, an arrangement which does not commend itself to English minds, and the request for a single room is not infrequently looked upon as a mark of aristocratic exclusiveness. It may not be amiss to remark that both the countries named are essentially democratic, with a corresponding freedom in manners and customs, and that more comfort is to be gained by respecting these social prejudices as far as possible than by offending them.

NEW ZEALAND

Itinerary.

Sydney or Melbourne to Bluff (4 days)[1]; Bluff to Sounds and back, 8–10 days; Bluff to Lake District, 5 days.

Invercargill to Dunedin: Dunedin, 2–3 days; Dunedin to Timaru.

Excursion to Mount Cook, 4–5 days.

Timaru to Christchurch: Christchurch, 2–3 days; Christchurch to Nelson, viâ West Coast, Otira Gorge, and Buller, 6 days; or Christchurch to Wellington by sea (30 hours).

Wellington, 3 days (Wellington to Nelson by sea in 12 hours, or *vice versâ*).

Wellington to Napier by rail (1 day); Napier to Taupo and Rotorua by coach, 3 days; Rotorua, 4–6 days (hot-springs district): Rotorua to Auckland, coach and rail (1 day).

Auckland, 3–4 days.

Leave Sydney about the end of December and arrive at Auckland or the Bluff (4 days' passage); some boats go direct to Wellington.

From the Bluff or Dunedin the Sounds trip can be made, if arrangements are made beforehand for a berth. This takes at least a week. Several trips are made during January and February, special steamers being run by the Union SS. Company. It is the only way to see the magnificent scenery of the West Coast Sounds, which are not accessible from the land side.

From the Bluff also the trips to Lakes Wakitipu and

[1] The times placed in brackets indicate those actually consumed in transit; the others include the time occupied in seeing the place.

Wanaka can be made, but should be undertaken only by those in fairly good health; the scenery is very fine.

Return to Invercargill and from thence to Dunedin by land or sea.

Dunedin to Christ Church.—Dunedin to Christ Church, 300 miles by land or sea.

Timaru, the point for making an excursion to Mount Cook.

Christ Church.—Christ Church to Nelson by land viâ the west coast, Hokitika, Greymouth.

Those who wish it can return from Auckland to Sydney viâ Russell, the northernmost port of New Zealand.

Those who have more time to spend in New Zealand and wish to return to Wellington, whence the long-sea steamers start, can go to New Plymouth by boat from the western port of Auckland, Manukau (about 15 hours in a small steamer), and thence by Wanganui, Marton, Palmerston, and the Rimutaka rack and pinion railway to Wellington; the 26 miles between Woodville and Eketahuna being done by coach. From Wanganui expeditions may be made up the Wanganui river, which is very beautiful, and into the King country, where the Maoris may still be seen in force, but not under their old conditions.

It must be remembered that the weather in New Zealand in the summer is almost as uncertain as in England, and the coach journeys are impossible for delicate persons when it is bad. This especially applies to the mountain districts of the South Island and the west coast, which is very wet. The expedition to Mount Cook should be undertaken only by those in robust health.

The long coach drives are very tiring, but the beautiful scenery well repays those who are able to stand the fatigue, and comparatively little can be seen without them; for bad

sailors they are preferable to the steamers, which often experience very severe weather off the coast.

If the coaching is feared, the hot springs at Rotorua can be reached from Auckland with only a short drive, and a good deal of the wonderful volcanic district seen from thence.

Numerous other expeditions can be made from various points by coach, canoe, or on horseback, by those who have more time and wish to see a singularly interesting and picturesque country. The details of all these can best be found in Murray's 'Guidebook to New Zealand.'

The greater part of what has been said with respect to travelling in Australia applies also to New Zealand, but in the matter of health there is perhaps less to be guarded against. There are no snakes and no wild beasts, though in the old days the wild cattle and wild pigs were at times a certain source of danger. The worst enemies of man are the mosquitoes and the sand-fly—a small black fly which in the South Island is at times a perfect pest, and makes the life of the unhappy traveller who is unprotected by nets and gloves a burden. A bag net covering the head and neck, though uncomfortable, is a necessity, especially on the trip to the Sounds, to those who wish to escape their vicious bites.

The great difference is, of course, that of climate. New Zealand is very much cooler than Australia, and the climate at any season much less certain; even in the summer months the traveller should not omit to have fairly warm clothing with him, as cold rainy periods are not uncommon, and much of the travelling has to be done on coaches or in steamers. The rainfall at times is tremendous, and thoroughly waterproof things are essential for any comfort. Speaking generally, there is very little

difference between the clothing required in New Zealand and in England at corresponding periods of the year, but severe cold is very rare in any part of the former, even in winter, except, of course, in the mountain regions. The lowest temperature recorded at any of the six stations where regular observations were made during 1890 was 26° Fahr., and that at an elevation of 1,000 ft., while the highest at the same station was 90° Fahr., reached on one day only.

New Zealand is essentially a temperate climate, the range of temperature being lower than any other country in the southern hemisphere except Tasmania; it has a fairly heavy rainfall, the general average in the Northern Island being over 40 in. annually; in the Southern Island there is a very heavy fall on the west coast, 120 to 140 in. yearly, but the eastern side is protected by the Southern Alps, and in consequence the rainfall in the provinces of Canterbury and Dunedin may fall as low as 14 and 23 in. respectively, though Dunedin sometimes shows twice that. The falls are frequently very heavy, 2 to 3 in. and more daily being not very rare; and for this reason the New Zealand rivers are particularly liable to sudden floods, the more so that their courses are very short and their beds shallow. It is important to remember this in travelling, as a few hours' rain may render a stream quite impassable, and it is not uncommon to find the whole course of a river shifted afterwards. It is largely owing to this that the number of deaths by drowning is considerable, amounting on an average to 150 annually in a population of 700,000.

It is a healthy country with a very low death-rate per 1,000, not more than 12·5; but it must be remembered that the towns are small and grinding poverty rare, while the rural population is proportionately considerable.

For the traveller seeking health, the best districts are the provinces of Canterbury and Nelson, and the central part of the North Island, where some elevation is attainable.

The regions which are of the greatest interest to travellers are situated at the extreme ends of the islands, viz. the Sounds at the southern end, and the hot springs at the northern end. Besides these there are the large southern lakes, the range of New Zealand Alps, and the very fine passes between the provinces of Canterbury and Nelson. In the Northern Island also there is some fine scenery, but not equal to that of the Southern; the whole of the volcanic district, which is not much under a hundred miles long, is of great interest.

All this district is filled with hot springs and volcanic phenomena of various kinds; but the most varied collection of hot springs probably in the world is to be found at Rotorua, in the province of Auckland, where a government sanatorium has been formed for the treatment specially of rheumatism and skin diseases. Within a small area are found thermal waters, having the most extraordinary variety of temperature and chemical composition. An excellent account of them has been written by Dr. Ginders, who has for many years been in charge of the sanatorium. It is penned in a temperate and critical spirit, and points out clearly what cases are and what are not suitable for treatment there. Dr. Ginders says that not a twentieth part of the springs of the district has been analysed yet. The ground for miles round is literally honeycombed with these springs, and it is dangerous in many places to go off the beaten track for fear of falling into a boiling caldron.

Travellers need not be afraid of visiting this weird region on account of the active volcanic agencies, which are always *en évidence* there; it is certain that before

any great eruption there would be a considerable period during which premonitory phenomena occurred, as before the great outbreak in 1886, which destroyed the wonderful white and pink terraces.

To see this country, the best way is undoubtedly to go by coach from Wellington or Napier, but it cannot be said that it is a journey suitable for invalids or even very nervous people. The latter had better go to Auckland by steamer, and thence by rail, though a few hours by coach is inevitable even by that route, the railway at present only extending as far as Oxford.

One great disadvantage of travelling in New Zealand is that much of it has to be done by steamer; the sea is very frequently rough on the coast, and the steamers, even the best of them, not over comfortable, though there are now some of two and three thousand tons. A bad sailor will find it uncomfortable except in the very finest weather, and should, if possible, always secure a deck cabin, though this is not an easy matter unless engaged beforehand, as the steamers are apt to be very crowded.

For invalids New Zealand is more suited as a place of residence than for travelling in, owing to the difficulties of transit and the lack of really good accommodation, though any one who is fairly robust can travel without any hardship, and will be amply repaid by the novelty and beauty of the scenery. Open-air life in the New Zealand climate, with its light clear atmosphere and large amount of sunshine, is admirably suited for sufferers from pulmonary troubles.

From the medical point of view there is practically nothing to be said, as there are no dangers to be apprehended in New Zealand except such as are common to all travelling; but the same remark applies here as in Australia, viz., that care should be exercised in the drink-

ing of water, as at times typhoid fever is prevalent in some of the towns.

New Zealand is a country which is very well suited for the development and growth of the Anglo-Saxon race; it more closely resembles England than any other English colony, and there is not that distinctive stamp about the New-Zealander which the great heat of the climate gives to the native-born Australian. If an ideal climate is one in which there is the smallest possible amount of variation, the palm must probably be awarded to Tasmania, which, climatically speaking, resembles New Zealand more closely than Australia. Such climates, however, while tending to long life, do not tend to the increase of human energy and enterprise, but seem rather to foster the *laissez aller* type of character: the necessary stimulus, which a variety in the climatic conditions brings with it, is wanting. On the other hand, the climate of New Zealand presents sufficient variations to prevent man from being too contented with his own lot, and obliges him, as does that of England, to pit his skill and forethought constantly against the forces of nature, while imbuing him with the necessary vigour for doing so.

TASMANIA

THE climate of Tasmania is of a moist equable character, very different from that of mainland Australia, and somewhat resembling that of Madeira, though cooler. Except during the three winter months it is decidedly sedative, if not enervating, but very pleasant; the climate of the considerable mountainous district is bracing enough, though the accommodation for visitors is scanty, and camping out is the only resort in many places. To sun-

baked Australians the island affords a delightful change in summer, and a fair amount of sport; the scenery and vegetation are beautiful.

The mean annual temperature is 55° F.; that of January, the hottest month, 63° F.

The annual rainfall is about 25 inches, and there are in Hobart about 100 wet days annually.

Hobart, the chief town, has about 20,000 inhabitants, a pleasant society, and fair accommodation; it is on the coast.

Some consumptives do well in Tasmania, and those who from weakness of other organs desire to avoid the chill of a northern winter. Tasmania is reached from England direct by the New Zealand Steamship Company's steamers in 40 days, or viâ Australia by steamer from Melbourne in 2 days, or Sydney in 3 days, the former being the chief line.

FIJI

THE islands of Fiji may be taken as a sample of the very numerous islands of Polynesia, situated in the southern tropics, but they differ in this respect, that they are almost absolutely free from malaria, and are therefore unique among tropical countries. The climate of Fiji is of course tropical in character, and the vegetation corresponds, orchidaceous and other tropical plants abounding. The average temperature at sea-level at 9 A.M. is between 72° and 83° F., and the mean relative humidity is 75°; so that the air is very moist.

Despite these facts it is not an unhealthy climate for Europeans, the annual death-rate for 10 years, 1881–90, being as low as 15·5 per thousand. As has been said,

malaria, the great curse of the tropics, is almost unknown ; but dysentery used to be very common, though now much reduced in frequency owing to improved modes of life. Tropical anæmia, general loss of tone, and digestive troubles are the main ailments. European children here, as elsewhere, do well for the first year or two of life, but after that grow up weedy and delicate, the digestion generally suffering. Tuberculosis is moderately common, and runs a rapid course.

Among the natives a disease known as yaws, of a very chronic character, is extremely prevalent, also the filarial disease, which is probably conveyed by mosquitoes. The ordinary febrile diseases are almost entirely absent, but there was a terrible epidemic of measles some years ago, which killed 50,000 natives, reducing the population by one third.

Leprosy also affects a considerable number of the population.

Lately a small hill station has been established at 2,700 ft., but it is very inaccessible, and consequently not much used.

Fiji is reached either from Auckland, New Zealand, or from Sydney by steamer, the voyage occupying about 5 and 8 days respectively.

EUROPE

[As this book is not intended to serve as a guide-book, and the limitations of space preclude the whole of Europe being dealt with, those parts have been taken which are chiefly frequented by invalids or those who merely need an invigorating change. These are principally Switzerland, Italy, and the Riviera. France (except the Riviera, which climatically stands apart), Germany, and Austria are mainly visited by travellers for sight-seeing, or for their baths. The latter are fully described in special books (*v.* Bibliography), and could not be adequately dealt with here. Many of the general hints on travel in the following article are applicable to other parts of Europe and may be read with advantage. As regards Germany, Austria, and Northern France, it should be remembered that the summers are hotter and the winters colder than in England, as a rule, owing to the climate being continental in character. In Northern Germany and Austria the cold may be very severe in winter, and visitors should beware of the sudden change from overheated houses, restaurants, and hotels, to the cold air outside. The conditions of travel generally present nothing that needs remark.—Ed.]

TRAVEL IN EUROPE

By Stuart Tidey, M.D. (Lond.)

In the course of eight years' practice in Switzerland and Italy it has been a matter of some surprise and considerable instruction to me to observe the very general misapprehensions which exist on matters of everyday hygiene and self-preservation. On the one hand, the traveller is often nervously alive to imaginary or remote dangers, while, on the other hand, he is guilty of indiscretions, both of omission and commission, which often lead to most serious results.

It is the object of this article to proffer such hints as may help the traveller to pursue his wanderings among Swiss mountains and valleys and through Italian towns in comfort and safety, such as ordinary precautions can afford.

I purpose to divide my subject into two parts. The first will contain advice to the traveller on the subject of what he shall eat and what he shall drink, and wherewithal he shall be clothed. The second will contain a general review of the geography, topography, and climate of Switzerland and Italy, together with brief sketches of health or pleasure resorts, educational centres, and places of general interest in Switzerland and Italy, but chiefly confined to such as I have personally visited.

I shall assume that I am addressing myself to the inexperienced traveller who is leaving home for the first time to roam abroad. Still, if perchance the seasoned globe-trotter should consult my homely suggestions, he may find conclusions at variance with his own which may afford him food for contemplation, and possibly throw new light on old matter.

Sea-sickness.—One word of personal advice from a fellow-sufferer to those who need it on this painfully interesting subject. For twenty-four hours before starting be very moderate in your diet, take no wine or beer, and ask your medical adviser to give you a mercurial pill overnight and a dose of salts in the morning. When on board, put on a tight belt, with an extra pad beneath it, over the pit of the stomach, and wear it till you land. From personal experience I can vouch for the great comfort of this plan, which, moreover, was brought before the Italian Medical Congress in Turin this year by Dr. Calliano, who has devised a special belt for the purpose.

Diet when travelling by Train.—When travelling by train for long journeys be moderate in your diet, and do not be tempted to drink the sour wines which are offered at the halting-places. As a rule it is better to take provision with you or buy it at the railway restaurants, and eat it at leisure in the train, than to eat it in haste and anxiety at the railway buffets.

Continental travelling generally is a much more dirty and dusty undertaking than travelling at home. The coal in general use is of inferior quality, and the engines emit dense volumes of smoke, charged with soot and grit. To avoid this, you must close the windows and rebreathe breathed air, possibly charged with all sorts of horrors in the shape of microscopic organisms left by your travelling predecessors. The better alternative, therefore, is to submit to the begriming process, which at least has the merit of being aseptic, and provide yourself with a wet sponge in an indiarubber bag to sponge your face and hands, and with an atomiser containing paroline with a little menthol and eucalyptus to spray into your mouth and nostrils from time to time. This latter is a most grateful measure and espe-

cially useful when travelling with children. The preparation suggested is emollient, antiseptic, and refreshing.

Food.—It is impossible to lay down the law with regard to a subject in which the individual element enters so largely. Some cannot eat this, some cannot eat that, some cannot take rich food, and I have come across those who get upset if reduced to a simple diet, apparently because its introduction into the stomach gives that organ a moral shock which it forthwith resents. The best advice on the subject was given by Shakespeare, viz., to 'let digestion wait on appetite.' To the many I would say, feed *down*, but unfortunately the few likely to follow it are those who are inclined to feed down too much already. Hotel diet, as a rule, is varied, plentiful, and somewhat rich, added to which the change of scene and mountain air stimulate the appetite; consequently, if the traveller yields to the promptings of his palate, it will probably lead him into difficulties, and in the course of a week or so the digestive organs will come out on strike and reduce the health-giving output of the holiday.

In Switzerland scarcely a summer passes without one hearing of some sudden hotel epidemic of vomiting and diarrhœa. In my experience it occurs generally during the prevalence of the south wind, known in Switzerland as the 'Föhn,' and in Italy as the Sirocco. The victims have generally partaken of fish, and are attacked within a few hours of the meal. I believe the south wind favours fermentation in the sea-fish, which in Switzerland cannot possibly be quite fresh, that a special poison is formed as a result, and this upsets those who by chance take portions of fish containing an extra large quantity of poison, or whose digestions are not abnormally strong. The safest line is to adopt an attitude of suspicion in respect of sea-fish, especially in heavy weather.

The hotel rolls on the Continent are generally palatable, not to say fascinating, but they are artificially whitened, and the inside is puffy. Brown bread can generally be obtained on request, and is much more wholesome and nutritious, besides being an aid to digestion.

Milk is generally rich and good in Switzerland, and with the continental who takes a good supply with his coffee it replaces our meat for breakfast. It should be regarded as food rather than drink, and therefore not to be taken with meat meals. In Italy, most of the large towns afford good dairies, where the cows are inspected periodically, and are kept in good airy stables. As an extra precaution milk may be boiled when the source of supply is doubtful, and invariably for children.

Drink.—This much-vexed question I have solved for myself in the following way. Water is necessary for the well-being of the individual, and in itself is harmless, although, when impure, it may be the means of conveying infection. Wine is unnecessary, and in itself injurious to the economy in varying degrees, though not a known means of conveying specific infection. It is not a corrective for impure water any more than are brandy and whisky. The wine of the country, or 'vin ordinaire,' is the worst beverage for the visitor whose stomach is not educated up to the standard demanded by rough acid wines.

The table wines best adapted to the Anglo-Saxon race are the Rhine wine, Moselle, and good sound French wines. Of Italian wines, some are less acid than others, and of these I may mention Pomino, Orvieto, and Capri, while the wines made in Tuscany on the French system, and mostly by English growers, are generally sound and of good quality.

My advice to the traveller, therefore, is to drink water for his health and wine for his pleasure.

In Switzerland the water is generally good, and, in mountain districts, excellent. If, however, there be any cause for suspecting the purity of the water, it may be boiled as a precaution, or one of the many table waters may be used instead.

In Italy it is advisable to boil the drinking-water unless the town supply is above suspicion, or to drink one of the bottled waters with which all Italian towns are inundated. These waters are all bottled with every sanitary precaution, and many of them are very palatable. A stick, in the shape of a spoonful of whisky or brandy in the water, makes it a more interesting table beverage, and is generally more wholesome than wine.

Beer does not enter much into competition with wine and water in Italy. It may be classified with wines generally in its dietetic effects, especially if taken regularly, though an occasional glass of beer does no appreciable harm.

The Digestive Organs.—These long-suffering friends lay claim to more than ordinary attention during our wanderings. On them our happiness in a great measure depends; if they strike work or their functions flag, the whole economy responds with creaks and groans.

The teeth should be thoroughly overhauled before the start, for any tendency to decay is rapidly developed in mountain air. A good antiseptic tooth-powder or paste should form an essential part of the outfit and be used freely.

The throat should also receive special attention. Throat troubles are of frequent occurrence in the less sanitary hotels, especially at or after the crowded season. Besides the ordinary septic throat or tonsillitis, many diseases gain access to the blood by way of the throat and tonsils. In order to guard against such contingency it is

desirable to be provided with an antiseptic gargle, or, better, paint and use it every morning as part of the toilette.

The atomiser, mentioned above (railway travelling), answers the same kind of purpose, but it is not so efficacious as a good application with the brush.

Constipation.—This is the great bugbear of the travelling public even more so than at home. The reason of this is difficult to understand; but, probably, in many cases it is due to the greater dryness of continental air, which causes increased loss of water from the surface of the body and consequently withdraws it from the internal organs and causes a hardening of the contents of the bowel.

At high altitudes this is undoubtedly the case, and the simplest remedy is to increase the intake of water.

Thus, a glass of water on rising in the morning, a second half an hour before dinner, and a third on going to bed will often help appreciably to secure thorough evacuation of the bowels. Should the water alone not prove sufficiently potent, one or two teaspoonfuls of effervescing saline, such as sulphate of soda or magnesia, may be added to the morning draught. In addition to these measures, fruit, either new or cooked, jam, brown bread, green vegetables, &c., should be partaken of freely. The bilious or gouty are generally provided with a mercurial, in some form or another, which brings great relief to the irritable senses.

Diarrhœa is often a symptom of the preceding condition, when a dose of castor oil is the best remedy.

The laudanum, recommended by otherwise reliable guide-books, is not a desirable remedy in the hands of the laity. It should be taken only when pain is great, and then it is best taken under medical advice. Apart

from any actual danger from an overdose, it readily upsets the digestion and replaces stomach-ache with head-ache, by locking up in the system poisonous excretions which were being discharged by the timely attack of diarrhœa. Warm clothing, a flannel abdominal belt, hot applications for accompanying pain, and rest are both safer and more rational measures. As to drugs, a few powders of bismuth and salol take little room and are comparatively safe. The diet should at the same time be of the simplest and taken in small quantities. Warm milk with Ems water or barley water, Benger's food, arrowroot, bread and milk, or, for less urgent cases, plain meat or chicken with rusk or toast. Above all things rest and warmth, both general and of the abdominal organs.

Colds.—This term embraces a multitude of mild maladies as well as the early stages of more serious ones. Its use here will be limited to cold in the head or rhinitis. This affection, which I regard as a highly infectious specific disease, is best treated by quinine, or quinine in combination with camphor and belladonna. The remedy is very portable in the shape of pills or tabloids, and the *atomiser* is a most useful adjunct to the treatment.

Colds are much less prevalent at high altitudes, where the temperature is relatively low, than at or near the sea-level.

Wet feet and cold winds, especially when striking the back, undoubtedly predispose to rhinitis and help to prolong its duration.

The Feet.—On walking or climbing expeditions, especially in Switzerland, where at times one has to walk downhill for hours in succession, it is most essential to keep the feet cool and at the same time free from sores and excoriations. Apart from the question of boots and socks or stockings, which will be considered in a subsequent

paragraph, there are several little points to which attention should be directed. In the first place, before starting for a climb or long walk, the socks or stockings should be turned inside out and the foot portion well rubbed over with a piece of soap moistened by occasional immersions in water. This insures coolness to the feet throughout the day and prevents that feeling of scratchiness which comes on after a few hours' walking and which often indicates actual excoriations. In addition to this, if there is a special tendency to excoriations, a few bunion- or corn-plasters cut in halves, and one half each applied so as to protect the most prominent parts of the toes, will be found a source of great comfort. It protects the prominent point not only from boot-pressure, but also from the friction of the sock or stocking, which of itself, if prolonged, may produce chafing. The parts of the foot most often injured are the back of the heel from the boot working up and down, and the joints of the toes which are thrust forward in the boot during descents.

These precautions are most important on walking expeditions, as the occurrence of excoriations may entail several days' enforced rest. Should they occur, they should be thoroughly cleansed, protected, and dressed with some antiseptic such as boracic or ichthyol ointment.

Frost-bites.—Frost-bites may occur on long climbing expeditions in Switzerland, and the toes or fingers are the parts most frequently affected. They become absolutely numb and bloodless, and to restore the circulation they should be rubbed with snow and then swathed as warmly as possible. They should on no account be put into warm water.

Sprains.—Sprains are of all grades of severity, and the best immediate treatment is to bandage the part and keep the bandage continually wet with cold or iced water.

Bruises.—Bruises should be treated as described for sprains, and hazeline may with advantage be added to the water.

Cuts.—The wound should be thoroughly cleansed, preferably with an antiseptic solution, such as carbolic acid five per cent. solution, and the edges should be brought together and held in position with strapping or sticking plaster. The latter should be cut in strips and applied at right angles to the wound, so as to draw the edges together and prevent scarring.

Broken Limbs.—If a limb is rendered absolutely useless through an accident, it is best to assume that it is broken, and to insure perfect rest of the fragments by means of extempore splints. These may be made with walking-sticks, umbrellas, alpenstocks, bits of toboggan, or any available material which is stiff enough to give rigidity to the limb. If the leg be broken, it should be bound to the other leg and an additional support tied on the outer side. Handkerchiefs, neck-ties, strips of shirt or cloth will answer the purpose of bandages. A person with a broken leg must necessarily be carried, and on climbing expeditions the best method is to make a hammock with alpenstocks and coats or wraps, and bear him down on it with as little jolting as possible. There is no time to send for assistance, for at high altitudes a person with a broken leg would soon die from the combined effects of shock and exposure.

Mountain Sickness.—Mountain sickness comes on generally at an altitude of eight to ten thousand feet. Rest, food, and stimulant are the best restoratives. The condition soon passes on descent to a lower level.[1]

[1] The onset of mountain sickness probably depends a good deal on the amount of exertion requisite to reach any given altitude. In the Rocky Mountains, where levels of 10,000 feet are reached by railway,

Headache and Vomiting.—Headache and vomiting sometimes come on during long expeditions, apart from mountain sickness. I believe these may be prevented by proper attention to the digestive organs before the start and by frequent little drinks of water on the way. The advice not to drink water on the way is bad. The large amount of water both perceptibly and imperceptibly lost by the skin, especially at high altitudes, must be replaced or the blood will increase in density and become charged with a large quantity of effete matter, of which some of the symptoms are those already mentioned.[1]

Sunstroke.—Sunstroke in its milder forms sometimes occurs in Switzerland and Italy. It is predisposed to by biliousness and constipation, and rarely occurs independently of some such condition. It is best avoided by strict attention to the digestive organs and by keeping the neck and back cool, and protected from the direct rays of the sun.

mountain sickness is almost unknown below 12,000 feet, but is not uncommon among those going up by rail to the top of Pike's Peak, 14,400 feet, with the accompanying symptoms of severe breathlessness, oppression in the head, and sometimes hæmorrhage from the nose or ears.

Breathlessness on exertion begins to be felt between 5,000 and 6,000 feet by most people, and is due, of course, to the rarefaction of the atmosphere and diminished supply of oxygen. It is compensated for by deeper and somewhat more rapid breathing, and a more rapid action of the heart. With healthy people, and especially those who have been resident for some time at a level of about 5–6,000 feet, it does not become at all urgent until 12,000 feet is reached; but is soon felt with a little extra exertion. Over 15,000 feet nearly every one is considerably affected.—Ed.

[1] I learn on good authority that drinking water, especially snow and glacier water, when climbing, is very generally condemned by guides and others of great experience. It seems to produce a sudden weakening of the muscles most in use. Possibly this effect would not be produced if the practice of drinking small quantities of water were persevered in from the commencement, instead of being resorted to only when driven to it by great thirst and dryness of the mouth.

Climbing and Walking Expeditions.—On arriving at high altitudes it is desirable that adults who are not already in good training should, for the first few days, undertake only short expeditions involving little fatigue. The heart and lungs have to accommodate themselves to the extra work they are called upon to perform on ascending to regions of more rarefied air. The effort of walking up a slight incline at an altitude of 6,000 feet will sometimes cause a strong, heavily built man, even if he be accustomed to an outdoor active life, to puff and blow as if he had been running a 100 yards flat race. Most healthy adults take from a week to a fortnight to find their wind at this altitude. Children, having more highly elastic tissues, do not suffer in the same way, but seem to adapt themselves readily to the decrease of atmospheric pressure. The difficulty increases in direct ratio to the rigidity of the arteries and chest wall, and in inverse ratio to the strength of the heart, so that persons with very rigid arteries or an extremely weak heart should not venture to high altitudes unless with extreme precautions against even slight fatigue.

By an exercise of self-control for the first week or ten days, the man or woman of ordinary physique will be able to undertake long, fatiguing expeditions in the invigorating air of the Swiss mountains.

Another valuable lesson which one gains by experience is to go slowly at the start and not to waste breath talking when you have three or four hours' uphill work before you. You will then be fit to make a brave finish, when unforeseen circumstances may call for an effort of speed and good staying power.

When exhausted after a long outing, do not indulge immediately on your return in a heavy meal or cold bath with a view to restoring your powers. Take a biscuit

and some warm tea or milk, and lie down and go to sleep if you can. An hour's rest will render your stomach fit to do its duty.

Clothing.—The body, legs, feet, and arms down to the wrists should be clothed in wool. Two sets of under-clothing are desirable, the one thick and the other thin, to be worn in cold and hot weather respectively. When in doubt, wear the thick and reduce the thickness of the outer clothing. For those who are the subjects of diarrhœa or lumbago, a flannel or knitted woollen abdominal belt is most desirable, and should be worn continuously at high altitudes and in cold weather. The object of woollen clothing is to prevent rapid evaporation from the surface of the body, for evaporation abstracts heat. Winds are dangerous because they cause rapid evaporation or drying, and thus cool the surface of the body quickly. A *wetting* does no harm in itself; it is the subsequent *drying* by evaporation and consequent chill which is dangerous.

Wool, though it may increase the amount of perspiration, prevents rapid evaporation and so maintains warmth of the body.

The outer clothing may be left to the demands of fashion and the taste of the individual.

It is better, however, to err on the side of over-clothing than under-clothing. Cold probably affects the body more through the back than through the chest, and it is a good plan to sew an extra thickness of flannel or chamois leather into the back of the vest so as to give extra protection to the spine. In men the chest is usually protected enough, if not too much already, by double-breasted coats, waistcoats, and shirt-fronts.

Boots.—Walking boots should be wide enough in front to admit of the toes spreading out when the weight of the body is thrown on them. The great toe should

have room to spread out somewhat in the fashion of the thumb, but to a less extent. The toe of the boot should be high and roomy, so as to avoid coming in contact with the toes when going downhill for long distances.

It would be better if boots were made to allow of free ventilation, and for this reason: the modern impervious boot with a sock beneath it acts like a poultice and renders the feet sodden and tender, especially if there is a tendency to perspiration. Sandals are more healthy, but at the present day fashion will have none of them. Nails are necessary for climbing, but can always be added in Switzerland. For purposes other than climbing, or playing golf, shoes are preferable to boots. New boots should be tried on the flat first for some time before climbing.

If the feet tend to perspire, the *streupulver*[1] of the German army is a good preparation to use in the socks. It consists of salicylic acid, oxide of zinc, and talc.

Socks with toes are found comfortable in the case of a tendency to cracks between the toes.

Hats.—The modern broad-brimmed light felt hats are the most generally useful for men, with a cap for travelling by train or driving.

Gloves are most comfortable in train travelling to keep the hands from getting begrimed. For high mountain work woollen or lined gloves are most desirable.

Spectacles.—Coloured glasses are essential for snow travelling, and those in the form of goggles with a broad rim of stiff wire gauze to cut off side glare are best. The metal rims should be covered with velvet or some such material to prevent the metal coming into contact with the skin. They can be obtained at all climbing centres in Switzerland.

Veils.—A coloured veil protects the face from the

[1] Salicylic acid, 3; zinc oxide, 10; talc, 87.

glare of the snow, and may prevent most unpleasant blistering.

Knickerbockers.—Ladies who intend to climb had better provide themselves with loose knickerbockers, which can be worn with or without a skirt.

Trousers.—For climbing purposes, trousers are preferable to knickerbockers, as they protect the leg better, both from insects and the irritation of the snow. Gaiters can be worn with knickerbockers as a protection, but they keep the leg too warm. Trousers tied at the ankle or tucked beneath the sock do not encase the leg too closely, while they form an efficient protection. For long climbing expeditions, gaiters of Swiss homespun are most useful. They are easily carried, and waterproof, while they can be put on when going through deep snow.

Fly-bites.—In some parts of Switzerland and in Italy horse-flies are very numerous, their bite, which is most painful at times, giving rise to considerable local inflammation and constitutional disturbance. The immediate application of liq. ammoniæ, a small bottle of which may be carried in the pocket, neutralises the effect of the sting.

Mosquito Bites.[1]—The surest protection against mosquitoes at night, when they are most troublesome, is to have the bed protected with a mosquito net. As a remedy, the application of oil of pennyroyal or cajuput gives considerable relief, besides tending to keep away the mosquitoes. Newcomers into a mosquito-infected district suffer most severely.

Open Windows.—Wherever the visitor may be in Switzerland or Italy, he will always be advised by the local authorities to keep his windows shut at night on account of some mysterious peculiarity of the night air. My experience is that windows may with advantage, espe-

[1] *V.* Central Africa.

cially in the case of delicate people, be kept open at night everywhere except in marshy districts where malaria is prevalent. Exceptions must also be made during the prevalence of boisterous weather, when the street noises or the roar of mountain torrents prevents sleep, or when, as in some Italian towns, a succession of sewage carts is slowly trailing along the streets and emitting strong odours.

At most health resorts and special sanatoria the value of a continual supply of fresh air is thoroughly understood and appreciated, but this simple physiological need is but little recognised in the stagnant strata of decadent civilisation.

SWITZERLAND

SWITZERLAND occupies a central position in the map of Western Europe. It was aptly described by Tyndall as the roof of Europe; its form is that of a lean-to roof, the supporting wall of which is formed by the successive ranges of the Pennine, Lepontine, and Rhætian Alps, springing abruptly from the alluvial plains of Piedmont, Lombardy, and Venice. The giants of the Alps extending from Mont Blanc at the western extremity to the Oertler at the eastern, together with their connecting ranges, form the ridge of the roof and the main watershed of Western Europe. Here, in close contiguity, are the sources of the Rhine, the Rhone, the Inn, and the Po, whose waters flow to as many different seas, distant from each other as the breadth and length of Western Europe.

The ridge of the roof or watershed thus formed ranges in altitude from 15,730 ft. (Mont Blanc) to 5,960 ft. (Maloja Pass); it includes some of the loftiest peaks and

most massive mountain groups in Europe ; it is crossed by a number of high passes and is tunnelled by the St. Gothard railway.

The Rhine is the main gutter which drains the roof of Europe; subsidiary gutters are the Rhone, the Inn, and the Po. The latter drains cisalpine Switzerland, or that portion which lies on the southern slopes of the Alps and encroaches on to the Italian lakes. Locarno, 680 ft., at the head of the Lago Maggiore, is actually at the lowest level of any part of Switzerland.

It will be convenient in the present sketch of Switzerland to divide it into districts corresponding to the four river systems. Two of these districts—viz., the basin of the Rhone and the basin of the Rhine—are visited with the following objects, viz., health, pleasure, and education ; the remaining two, viz., cisalpine Switzerland and the Engadine, for health and pleasure only. Added to these, the moderate cost of living is frequently a determining factor in the choice of Switzerland as a place of sojourn or residence.

Switzerland as a Pleasure Resort.—The beauty of the scenery, the joy of penetrating into remote valleys, of finding new passes and ascending virgin peaks, together with the charm of a free and easy life and the comparative freedom from tiresome official interference, were undoubtedly the attractions which drew the pioneers of the modern army of invasion towards Switzerland. Since that day, however, when the tourist was wont to shoulder his knapsack and tramp for days together over the by-ways of the Alps—when Tyndall wrote his 'Rambles,' and when Lord Francis Douglas and his fated companions made the first ascent of the Matterhorn—a complete revolution has taken place in the nature of the reception which Switzerland offers its many-tongued guests.

Roads and railways penetrate the erst peaceful valleys, hotels with modern improvements have sprung up by hundreds in place of the simple hostelry or shepherd's hut, restaurants and caravansaries have taken possession of many a mountain summit to which access is gained by a funicular or rack-pinion mountain railway.

Corresponding changes have taken place in the accoutrements of the visitor; in some parts of Switzerland the golf club and tennis racket have replaced the alpenstock and ice-axe, the cycle has eclipsed the walking boot, and visitors *en grande toilette* discuss the merits of the hotel band in a palatial concert room, where formerly, clad in rough homespun, they weighed the prospect of the morrow's climb or discussed the incidents of to-day's over a blazing wood fire in the common room of a cosy hostelry.

The movement is still proceeding, and even gaining in momentum. The Swiss engineer is having a good innings; he has turned his attention to the giants of the Alps, and has selected the Jungfrau for desecration; the lovely Engadine is also doomed, and in the course of a very few years will be brought to the commonplace level of the Zermatt valley.

The business of the Swiss is to facilitate access to his mountain fastnesses and place them at the disposal of the crowd. In this he is most successful; he is not exacting at the frontier; he provides comfortable travelling accommodation; he is a solid, serious, law-abiding person, and is not given to picking pockets or rifling trunks, which is unfortunately too common a practice south of the Alps; and, in conclusion, as an hotel-keeper, he is *facile princeps* among his European prototypes.

Whether he is wise to exploit his country for the stranger it is for him to decide; doubtless he will continue

to draw increasing numbers of visitors by increasing the facilities of access; but he will lose a large class of old friends, who will seek, either at home or further afield, the repose of undefiled Nature which they once found in Switzerland.

Switzerland as a Health Resort.—For the last thirty or forty years Switzerland has been increasing in favour as a recruiting ground for the overworked and convalescent, and as a resort for invalids of various kinds, but most especially for those suffering with catarrhal and tubercular affections of the lungs.

The advantages offered by Switzerland for the above classes of visitors are: 1st, the comparative dryness of the air; 2nd, the stimulating and exhilarating effects of the air; 3rd, the supposed advantage in some cases of diminished atmospheric pressure at high altitudes; and 4th, the freedom from dust which is most complete at high altitudes where the ground is covered with snow for months together. These climatic and physical conditions are rendered available by the ready means of access and excellent accommodation afforded by hotels, pensions, and private dwellings at the numerous resorts throughout Switzerland.

In addition to such highly advantageous climatic features, Switzerland is rich in mineral waters and thermal springs, in connection with which well-appointed hydropathic establishments have sprung up.[1]

While many visitors frequent Switzerland in winter for pleasure and in summer for health, yet Switzerland is essentially a health resort in winter and a pleasure resort in summer, and it is in this light that the reader is invited to interpret the following considerations.

[1] *Vide Handbook to Health Resorts of Switzerland*, by H. Loetscher, M.D.

In order to consider the influence of altitude on the organism in disease, it will be convenient to divide Switzerland into three climatic zones, as follows: 1, Low altitudes ranging from 700 to 2,000 ft.; 2, medium altitudes ranging from 2,000 to 4,000 ft.; and 3, high altitude stations ranging from 4,000 to 7,000 ft.

The low altitudes are characterised by dryness of the air, the prevalence of considerable cold in winter—except in especially sheltered spots such as Montreux and Locarno—and by the occurrence of mists which, especially in lake districts and in some years, are very prevalent, and may shut out the sun for days together. Still the air generally is invigorating and fairly free from dust.

The low altitudes, therefore, offer suitable climatic conditions for a large class of invalids and persons in sub-active health, while they do not exercise the same marked beneficial influence on the progress of a limited number of definite diseases as are effected at high altitudes. (For special indications, &c., see p. 250, under Montreux.)

The medium altitudes are characterised by a more prolonged and greater degree of cold and by greater freedom from winter mists than the low altitudes. The snow lies longer, and therefore there is a longer period of complete freedom from dust—a most important consideration from the therapeutic standpoint, for dust is not only irritating in itself, but is a ready means for the dissemination of micro-organisms.

The medium altitude stations are adapted to a large class of invalids who, while they require the stimulating effects of mountain air and sunshine combined with freedom from dust, are at the same time unfitted to risk the extreme cold and low barometric pressure of high altitudes. The indications are much the same as those for low altitudes, but the beneficial effects are more pro-

nounced ; while unsuitable cases, such as sufferers from low vitality, fatty heart, and Bright's disease, must be more rigidly excluded.

High altitudes (4,000 to 7,000 ft.) afford most beneficial conditions for a considerable number of patients, especially for those affected with diseases of the lungs, by reason of the stimulating effects on the organic functions. These are due partly to the effects of decreased atmospheric pressure, which causes increased action of the skin, partly to decreased amount of oxygen, calling for increased action of the heart and lungs, which in suitable cases respond to the demand, and generally to the bracing effects of the cool air and sunshine, so that the appetite is increased and a general sense of well-being is experienced. In addition to these advantages there is a long period of freedom from dust, owing to the carpet of snow.

The dangers of high altitudes are co-related with their advantages, and arise chiefly from the side of the circulatory system. On the one hand, the increased action of the heart may give rise to hæmorrhage where there is a tendency to high arterial pressure or degenerating arteries in all forms of Bright's disease, and in elderly people of gouty tendency ; on the other hand, the heart may not be able to respond to the call for increased action, and may fail. This danger is greatest in elderly people whose cardiac muscle has undergone fatty degeneration, either from overstrain or disease, and it is to this class that the cases of sudden death from cardiac failure belong.

The danger of high altitudes generally is least at the beginning of life, greatest towards the end ; the greater the elasticity of the arterial system, the less the danger.

LAKE OF GENEVA

Montreux, 1,200 ft.—Montreux may be taken as the type of Swiss low-level stations. It is deservedly one of the most popular, both on account of its own climatic features and of its vicinity to numerous stations of varied therapeutic importance.

Montreux is distant about 22 hours from Charing Cross, travelling by way of Paris, Dijon, Pontarlier, and Lausanne. It is situated on the north shore, and near the eastern extremity, of the Lake of Geneva in the basin of the Rhone. Protected from the north winds by rocky barriers, exposed to the full power of the south sun, endowed with rare beauty of mountain scenery, its climate softened by the influence of a broad expanse of water, Montreux has been steadily increasing in importance for many years, and is perhaps in danger of being choked by the exuberance of its own growth.

The majority of English and American visitors come to Montreux to pass the winter in a comparatively mild and dry climate, where they can spend part of most days out of doors and enjoy the varied social and educational advantages which the place affords, either at a moderate cost or with every luxury which modern hotels provide, according to their means.

Anglo-Indians find there congenial surroundings; English families often come out for a winter or two—many find a permanent residence there; some come during the winter for skating and tobogganing; young Englishmen come to study for the army or services at coaching establishments; convalescents regain their strength quickly under the influence of the change and good air; while the following is a list of diseases, sufferers

from which may look to derive benefit from a prolonged sojourn or permanent residence at Montreux :

Diseases suitable for Treatment.—Phthisis, not too far advanced ; heart disease, both functional and structural ; bronchitis ; asthma ; resolution of pulmonary effusions ; rheumatism and allied forms of neuralgia ; nervous exhaustion ; chronic catarrhal affections and discharges. The *hôteliers*, as elsewhere, are endeavouring to keep away cases of advanced phthisis on account of the increasing popular dread of infection.

The following should not come to Montreux for the winter :

Unsuitable.—I. Cases of acute eczema, because the water is hard and the air dry and stimulating.

II. Cases of great debility, with weak circulation and cold extremities, should winter further south.

III. Elderly persons with tendency to nose-bleeding and attacks of giddiness should seek lower levels in winter.

IV. Cases of nervous irritability and sleeplessness should seek a less stimulating climate.

V. Cases of general tuberculosis or advanced phthisis should stay at home.

VI. All sufferers with Bright's disease should winter further south, but may come to Montreux for the spring, summer, and autumn.

Having briefly sketched this most important health and pleasure resort in the basin of the Rhone, I shall take it as a starting-point and enumerate the chief places of interest which are in the same district, commencing with those nearest Montreux and terminating with the most distant.

Glion, 2,300 ft.—About 1,000 ft. above the level of Montreux. Season : spring, autumn, and summer. Some

of the hotels are open in winter, but as it is often enveloped in the Montreux mist it has little advantage over Montreux in that respect.

Caux is situated on the same mountain spur as Glion, about 1,500 ft. higher. It is above the level of the mist, and the hotel accommodation is excellent. It is, therefore, a useful accessory station in winter.

Les Avants, 3,230 ft., is a favourite resort at all seasons. It is situated at the head of the Chandron valley in extensive grounds, it is above the level of the mist, is a centre of lovely walks, and has a plentiful supply of delicious water.

Clarens is situated on the lake near Montreux; it is more exposed than the latter place. The range of temperature is slightly greater on account of longer hours of sunshine and greater exposure to the wind. Mists are less frequent.

Villeneuve.—The Hôtel Byron, which is close to the head of the Lake of Geneva, has much the same climate as Montreux. It is suitable for the same class of patients as Montreux, and is less gay and noisy, and more rural.

Vevey.—Before entering the Rhone valley it will be better to enumerate the chief places on the Lake of Geneva. Beyond Clarens comes the bright little town of Vevey. By invalids it may be visited in the spring and autumn; it is too much exposed to the bise to make a good winter sojourn.

Lausanne is the capital of the Canton de Vaud, and is a university town. It is a good place of residence for educational purposes, but too cold in winter for the majority of invalids.

Geneva is at the outlet of the Rhone from the Lake of Geneva. Like Lausanne, it is a university town, but is less Swiss and more cosmopolitan.

It is essentially up to date, and has a good opera

house. It has, moreover, good schools, libraries, reading-rooms, and suchlike town conveniences.

In winter it is bitterly cold during the prevalence of the bise, and mists are not uncommon.

RHONE VALLEY

Rhone Valley.—The Rhone valley is about 80 miles long from Villeneuve to the neighbourhood of the Furka pass. It separates the main range of the Alps from the Bernese Alps and Oberland. In addition to several important places in the main valley, there are many pleasure and health resorts in the valley leading into it and on the sides of the neighbouring mountains. The Rhone valley is the Swiss entrance to the Simplon pass, and when the tunnel through the Simplon range is finished it will probably become the main highway into Italy. At present the railway terminates at Brigue, whence diligences run to Domo d'Ossola and viâ the Furka to the St. Gothard route.

Aigle, 1,378 ft., is situated at the entrance of the Ormount valley, and, besides affording good accommodation, it is the Rhone valley starting-point for the sanatorium of Leysin, 4,127 ft. It is well wooded, affords good walks. Hydropathic establishment open all year. To Château d'Oex, 3,498 ft. Diligence, 5¼ hours.

Bex, 1,476 ft., is charmingly situated in chestnut groves, and has good hotel accommodation and hydropathic installation for brine and sulphur baths. It is too hot as a summer resort, though it is open all the year.

Sierre, 1,765 ft., about 45 miles from Montreux in the Rhone valley. Accommodation is good at the Hôtel Bellevue (English landlady), which is open all the year

round. Sierre is the starting-place for St. Luc (carriage) and Zinal (carriage) in the Val d'Anniviers, both summer resorts of some importance for climbers and tourists. From Sierre, moreover, Montana on the north side of the Rhone valley is reached by carriage. Montana is both a pleasure and health resort, a separate sanatorium having been built for tubercular patients. It is situated on a lovely expanse of meadow land dotted over with clumps of pine trees and tiny lakes.

Leukerbad—Loèche-les-Bains—4,641 ft., is in the valley of the Dala, which enters the north or left side of the Rhone. It is open to the south and enclosed by a semicircle of precipitous and lofty mountains to the north-east and west. It is chiefly noted for its hot springs of earthy mineral waters, which have been used in the treatment of chronic skin affections and rheumatism for two centuries. It is approached from the station of Loèche on the Rhone Valley Railway (3 hours 6 minutes from Montreux), by diligence 4 hours, or over the Gemmi pass from the Thun side 5¾ hours, bridle-path.

Visp or Viège, 1,620 m., 5,313 ft., 4 hours 5 minutes from Montreux, is the Rhone Valley station for Zermatt, a summer pleasure and climbing centre, situated in a valley on the left or south side of the Rhone valley; it is reached by mountain railway from Visp in 2 hours 25 minutes.

Above Zermatt are the hotels Riffelalp, 7,314 ft., and Riffelhaus, 8,430 ft., both exhilarating mountain stations open in summer only. Mountain railway from Zermatt.

About halfway between Visp and Zermatt the valley of Saas meets the Zermatt valley at Stalden. Saas-Fee and Saas-Grund are both favourite summer recruiting and climbing stations. They are reached by carriage or mule from St. Nicolas in 4 or 5 hours.

Simplon Pass, Brieg.—Forty-seven and a half miles,

4 hours 20 minutes from Montreux, Brieg, 2,244 ft., is the present terminus of the Rhone Valley Railway, and the starting-point of the diligence service to Domo d'Ossola viâ the Simplon, 6,590 ft. (41 miles, 10 hours).

Berisal, 5,006 ft., on the Simplon route, is a favourite summer resort with English visitors. Accommodation good and charges moderate.

The descent into Italy through the Gonda gorge is very fine, especially by moonlight.

Domo d'Ossola is the present terminus of the railway from Milan, 4¾ hours. The railway runs through Gravellona, whence a diligence service runs to the Lago Maggiore in about one hour, and Orta, 950 ft., an intermediate station on the banks of a lovely little lake.

CENTRAL SWITZERLAND, OR BERNESE OBERLAND

THE Bernese Oberland is that portion of central Switzerland which slopes away from the watershed of the Bernese Alps towards the plains of Freiburg and Bern. The chain of Bernese Alps which form the southern boundary of the Oberland extend from the Wetterhorn at the eastern extremity, in a south-westerly direction, to the Wildhorn at the western extremity. This range affords some of the best climbing in Switzerland. The Oberland is bounded on the north by the river Aare and the lakes of Brienz and Thun. These lovely mountain lakes are fed not only by the Aare, but by a number of streams which drain the eastern half of the Bernese Oberland. The entire length of the lakes from Thun to Brienz is about 21 miles. They formed at one time a continuous sheet of water; the deposits of the Lütschine and Lombach torrents, however, coming from opposite sides of the Aare

valley, gradually raised the lake bed, and now a tract of dry land, on which Interlaken stands, is interposed between the two lakes.

This district is almost exclusively a summer recruiting and climbing ground, with the exception of Gründelwald, which attracts a *clientèle* of visitors for skating and tobogganing in winter.

LAKE OF LUCERNE AND ST. GOTHARD RAILWAY

Central Switzerland, or Basin of the Rhine.—Lucerne (1,437 ft.) is the great tourist clearing-house of central Switzerland. It is the crossway of railway lines coming from north, south, east, and west, besides being a town of much beauty and interest, and the most important place on the Lake of Lucerne. It is not frequented by foreigners as a place of residence, but chiefly as a place of sojourn for a few weeks, or even for one or two months, in summer. It is a favourite spot to break the journey for travellers on the St. Gothard line, or for those on their way to mountain summer resorts. Visitors should not fail to visit Thorwaldsen's Lion and the glacier mills in the adjacent gardens, as well as the old bridge, the museums, and the two points of view known as the Gulsch (1,722 ft.) and the Drei Linden (1,810 ft.), all within easy reach of the railway station.

Wasen, 3,055 ft., 55 miles from Lucerne. A large village with good old-fashioned hotels. This is a useful recruiting station for travellers from Italy who wish to make a stay on their homeward journey without getting away from the main line. It is near the point of exit of the long St. Gothard tunnel on the northern side of the main Alpine watershed, and therefore one of the most

bracing stations on the line, although Airolo, on the south side, is somewhat higher, as is also Göschenen on the north side. Göschenen is situated immediately at the exit of the tunnel coming from Italy, and affords in that respect similar advantages to Wasen (see above), being, moreover, at a somewhat higher altitude (3,640 ft.). It is more bustling and perhaps not so well adapted to invalids as Wasen. The curves and bridges of the St. Gothard line are well seen from Wasen.

We now leave the railway at Göschenen, where it enters the tunnel, and proceed by road to Andermatt—4 miles—diligence 1 hour (1½ fcs.), on foot 1½ hour. The scenery is wild and rugged, especially about the Devil's Bridge, which spans the Reuss, about 3 miles above Göschenen.

Andermatt (4,738 ft.) lies in a wind-swept valley of some extent, and is at the point of junction of the Oberalp with the St. Gothard passes. It is cold and bleak, and not adapted to a prolonged stay, although frequented by invalids as a winter health resort.

Hospental lies 1 mile from the summit of the pass, about 1½ mile from Andermatt. It is at the junction of the Furka pass with the St. Gothard road, and is the last place on the northern side of the watershed.

THE ENGADINE.

The Engadine is an extensive and broad upland valley in the canton of the Grisons. It is about 60 miles in length, and stretches from the Maloja near the Italian frontier to Martinsbruck on the Austrian frontier. It may justly be awarded the palm among Swiss mountain districts for beauty of scenery, variety of attraction, and comfort of living.

The Engadine is the cradle of the Upper Inn; we will therefore join the baby river at its birthplace in the Lake Longhin, and follow it down to the confines of Austria.

As you stand on the steps of the Maloja Palace facing the Silser-See, the brook which, emerging from the hidden lake 2,000 ft. above, dashes down the rocks far above you, on the left is the infant Inn hastening to join the Danube and find its way into the Black Sea. The torrent rushing down the valley on your right from the Forno glacier and Muretto pass is the Ordlegna, a tributary of the Moira, which flows to the Lake of Como and thence to the Adriatic; while one of the sources of the Rhine rises in immediate proximity to the Inn and pays tribute to the North Sea.

The lovely Silser-See before you, a sparkling mirror of azure blue set in emeralds and dotted across with tiny sails, is the cradle in which the infant Inn sleeps its first sleep before entering on its long career. Behind you, at a distance of half a mile or so, is the precipitous descent into the Bregaglia valley or Bergel, the outlet of the Engadine towards the sunny south. The Maloja may be approached from central Switzerland, Italy, or Austria. During the season (June to September) it may be reached from London in 32 hours, by the Engadine express to Thusis, and on by extra post over the Julier pass (diligence about 10 hours).

By ordinary express train the traveller leaves London at 11 A.M., and reaches Thusis at 4 P.M. the next day. He may then proceed by diligence as far as Mühlen the same night, arriving at 9.40 P.M. He starts again by diligence at 7 the next morning, and reaches the Maloja at 12.20.

An alternative route is by the St. Gothard to Lugano,

thence by steamer to Porlezza, and train across to Menaggio on the Lake of Como; from Menaggio by steamer to Colico at the northern extremity of the Lake of Como, by train to Chiavenna, and carriage or diligence to the Maloja. This is the easiest and best route for invalids, as it does not involve crossing any of the high passes. The best stopping-places are Lugano, Menaggio, and Chiavenna. To avoid the many changes by this route, the traveller may go direct to Milan by the St. Gothard, and thence by train to Chiavenna. Leaving Milan at 10 A.M. you arrive at the Maloja at 7 P.M.

Other routes are: (1) viâ the Albula from Chur to Samaden by carriage or diligence, and thence up the Engadine by the same means; (2) viâ the Fluela from Davos and up the Engadine from Sus; (3) up the whole length of the Engadine, starting from Landeck on the Arlberg railway; (4) over the Bernina from Tirano, or the (5) Ofen pass from Meran.

A railway from Thusis to Samaden is now in course of construction viâ Bergün and the Albula pass. From Samaden it will be continued to St. Moritz, which in four years' time will be in railway communication with the rest of Europe. Eventually it is proposed to carry the railway up and down the Engadine. When this act of vandalism is accomplished, the Engadine will be brought to the commonplace level of Zermatt or Grindelwald. At the present time the Engadine is the only extensive district in the Swiss Alps not invaded by the railway engineer, and this feature is doubtless a great attraction to many. Would that the authorities might realise and appreciate this unique position, and set their faces against the proposed desecration!

Isolated in the most lovely portion of the Engadine is the comfortable and homelike Maloja Palace. After

toiling up the serpentine post-road from the Bergel or Bregaglia valley, you reach the Maloja Kulm, or ridge of the watershed, when a lovely picture of the Silser-See, backed by snow peaks of the Bernina range, bursts into view. In the foreground is the Maloja Palace in the midst of its many acres of pleasure-grounds and pastures. In June the latter are besprinkled with flowers of brilliant hue; prominent among them are the sulphur anemone and large blue gentian.

Campfer is a favourite summer resort with English visitors, and somewhat cheaper than the more fashionable stations. Silvaplana also affords fairly good accommodation.

St. Moritz-Bad is the fashionable centre of the Engadine. It is open in summer only, and it is devoted entirely to catering for visitors. It consists of numerous first-class hotels, with two hydropathic establishments, many smaller hotels, and some villas, besides a variety of shops and other attractions.

Here the Inn runs into the St. Moritz lake, a pretty sheet of water almost a mile in length.

St. Moritz-Bad, 5,804–6,090 ft., is at its upper end, built on the old lake bed; perched high above on the left is the Old St. Moritz village, long frequented as a winter resort for phthisical patients, and of late years much frequented both as a summer and winter health and pleasure resort. Golf links near the Kulm Hotel.

The village is connected with the bath by an electric tram, which enables visitors staying at the village to enjoy the advantages of the hydropathic establishments at the bath without incurring the fatigue of climb afterwards.

There are several first-rate hotels and numerous less pretentious houses at the village.

The acidulated iron waters at St. Moritz-Bad are espe-

cially beneficial in the treatment of anæmia, and the baths, douches, &c., are of considerable value, in combination with the fine air and mountain climate, in the treatment of nervous prostration, and convalescence from acute maladies. An omnibus runs during the summer season between the Maloja and St. Moritz, in addition to the regular diligence service.

Pursuing our way down the Engadine, we leave the chain of lakes, of which the St. Moritz lake is the last, and descend by a sudden drop of 400 or 500 ft. into the broadest portion of the valley.

Emerging from the larch groves, the plain which lies before you bears unmistakable signs of having been in bygone ages the bed of an extensive lake.

On the right debouches the Bernina valley, the bed of a considerable torrent rising from the Black lake on the summit of the Bernina pass and draining the slopes and valleys on either side by means of innumerable tributaries, chief among them being those from the Roseg and Morteratsch glaciers and from the Heuthal. About 2 miles up this valley, on the right or east bank of the torrent, lies the picturesque village of Pontresina, 5,915 ft. This is a good centre for walks, climbs, and glacier excursions, besides being a favourite recruiting ground. The accommodation is good, but all the principal hotels are closed in winter.

Samaden, 15 miles from the Maloja, is the posting centre of the Engadine. It is the terminus and starting-point of all the principal Engadine diligence services, i.e. to and from the Lower Engadine, to and from Chiavenna and the Maloja, to and from Chur by the Julier or Albula, and to and from Tirano viâ the Bernina.

Samaden affords good accommodation, and there is a golf course in the valley within a mile of the village.

The portion of the Engadine thus far rapidly sketched, viz., the first 15 miles of the Upper Engadine, is what is usually intended at home when speaking of 'the Engadine.' The Upper Engadine, however, extends for about 11 miles below Samaden, so that its entire length is about 26 miles, while the length of the Lower Engadine is about 34 miles from the boundary stream, named the Puntota, between Zutz and Zernetz to Martinsbruck on the Austrian frontier; so that the length of the whole Engadine is about 60 miles. The continuation of the Inn valley on Austrian territory to Landeck, where the post road joins the Arlberg railway, is about 32 miles in length, making the drive from Landeck to the Maloja 92 miles in point of distance. The road, like most of the Swiss post roads, is excellent for cycling.

Tarasp-schuls, 49 miles from the Maloja, is an important hydropathic station. There are both alkaline and iron waters, the former indicated in diseases of the digestive organs and bladder complaints, the latter in anæmia. These baths are chiefly frequented by Swiss and Germans, though a certain number of English visit them. Accommodation good—summer season.

At Nauders, 4,468 ft., beyond the Swiss frontier, the road to Meran branches off to the right.

FROM WEST TO EAST SWITZERLAND VIÂ OBERALP PASS

TRAVELLERS wishing to see a good deal of Switzerland in a short time cannot do better than start from Geneva at the western extremity, travel up to the source of the Rhone, cross the St. Gothard route at right angles, follow

down the Vorderrhein to Chur, and then cross one of the passes into the Engadine, and finally make their way into Austria by the Ofen pass to Münster. By this route they will travel the entire width of Switzerland from W. to E., and pass through some of the finest scenery, avoiding railways for the greater part of the time.

If following this route, it would be well not to travel direct through, but to break the journey, as well as visit some of the places lying near the main route, as, for instance, Zermatt, Eggishorn, Dissentis, Thusis (visit Via Mala), Maloja, Pontresina.

Chur (1,936 ft.) is the capital of the Grisons, and the point of junction of the diligence routes from the Engadine with the Oberalp pass and the Zurich railway. The mountain railway from Davos to Thusis also runs through Chur, and takes through passengers as far as Thusis *en route* for the Engadine.

Ragatz (1,702 ft.) is an important intermediate station for invalids on their way from Davos and St. Moritz after the winter season. It is also a much frequented watering-place, with well-appointed hydropathic and massage institutions.

Davos (5,160 ft.) is almost unrivalled as a winter station for tubercular patients; it is also visited in summer as a recruiting and pleasure resort.

Arosa (6,035 ft.) is a winter resort for tubercular patients, and a summer station for recruiting and climbing; it is reached by carriage from Chur viâ Langwies.

CISALPINE SWITZERLAND

CISALPINE SWITZERLAND is that portion of Switzerland which is on the southern slopes of the Alps, bordering on Piedmont and Lombardy, and running down into the Italian lake district. As a general rule its climate is more genial than that of the rest of Switzerland, and even softer than that of the northern parts of Italy, as it is protected from the north by the lofty barrier of the Alps, and the sun's rays fall more vertically on to the southern slopes of the hills than on to the plains below.

Cisalpine Switzerland, therefore, occupies an intermediate position, both geographically and climatologically, between the warm Riviera and south Italian winter stations and the bracing Alpine resorts. Its active seasons, moreover, viz., the spring and autumn, intervene between the Riviera or Italian winter season and the Swiss summer season. Furthermore, there is one considerable town at the northern extremity of the Lago Maggiore, which is eminently adapted both in point of climate and accommodation as a winter resort, viz. Locarno.

This portion of Switzerland is almost entirely included in the Canton Ticino, the only exception being one or two limited districts in the Canton of the Grisons—viz. the Bergel and the Poschiavo valley.

Reference was made to the former when speaking of the Engadine. It is important as an intermediate halting-place between Italy and the Engadine.

Promontogno (2,685 ft.), 8 miles from Chiavenna, is the most important station in this valley. It is prettily situated, but much enclosed by the flanking hills on either side.

High above Promontogno, on the northern slope of

the valley, is the village of Soglio (3,570 ft.), within an hour's walk or drive of Promontogno. The situation is open, and accommodation is simple and comfortable at the old De Salis château.

Stampa (3,300 ft.) is about 2 miles higher up the Bergel than Promontogno, the situation is more open, and, in point of altitude, it makes the best division of the ascent to the Maloja, but the accommodation at the Hôtel Piz Duan is limited and simple.

Vicosoprano (3,566 ft.) is somewhat higher than Stampa, and offers somewhat primitive but comfortable accommodation at the Hôtel Prévosti.

Le Prese (3,156 ft.), on the Bernina post-road, is the only important station in the Poschiavo valley, which forms the southern slope of the Bernina pass. It is frequented for its sulphur baths, and forms a good intermediate station on the way to or from the Engadine viâ the Bernina pass, It is reached by diligence from Samaden in about $5\frac{1}{2}$ hours. or from Colico, on the Lake of Como, to Sondrio by train (1 hr. 35 mins.), then by diligence to Tirano ($2\frac{3}{4}$ hrs.), where the Bernina route commences on the Italian side.

The drive from Tirano to Le Prese takes about 2 hours. The hotel at Le Prese is open from May till October. Accommodation is good, and it is on the banks of a picturesque lake.

We left the St. Gothard railway at Göschenen, where it enters the long tunnel; we will rejoin it at Airolo, where it emerges on the southern slopes of the Alps.

Airolo (3,755 ft.) is a medium altitude station, convenient for a sojourn in spring or autumn on the way from Italy to Switzerland or *vice versa*. It is a centre for mountain excursions of various kinds.

Lugano, 19 miles from Bellinzona, is an important town of Italian character and climate, situated at the point

where the St. Gothard railway first touches the Lake of Lugano. It is beautifully situated on the lake and forms a good place of sojourn between Switzerland and Italy, or by the St. Gothard route to the Lake of Como and the Engadine. The hotels are numerous and well appointed, and it affords lake bathing, boating, and various points of interest in the town and neighbourhood. Lugano is not adapted to any special class of invalids, but is a suitable resting-place in spring and autumn for almost any.

ON THE SWISS-ITALIAN FRONTIER

Lanzo d'Intelvi (3,117 ft.), 15th May to end of September.

The Hôtel Belvedere overlooks the Lake of Lugano and commands a wide view of Monte Rosa and the Oberland Alps. It is well appointed; pension, 10–14 fcs. The temperature is equable, and there are numerous shady walks. Special attention is given to the milk supply, all the cows being inoculated with tuberculin. It forms a good intermediate station between the higher Alps and Italy. It is reached from Argegno, on the Lake of Como, in 2½ hours by carriage, or from Osteno, on the Lake of Lugano, in 2¼ by carriage, and by bridle-path from Monte Generoso, 2 hours.

Monte Generoso (5,500 ft.) is situated high above the southern extremity of the Lake of Lugano, on a spur of the Alps running down between the Lakes of Como and Lugano. It is reached by a rack and pinion railway from Capo Lago.

The Kulm commands a most extensive panorama of the Alps from Monte Viso to Monte della Disgrazia, a

wide stretch of the plains of Lombardy with the distant Apennines and a bird's-eye view of the lake district, including the Lakes of Lugano, Como, Maggiore, and Varese. The Kulm Hotel is well appointed.

The Hôtel Bella Vista (4,000 ft.) is situated on the railway some 1,500 ft. below the summit. It is a good intermediate and summer station, well wooded, with pleasant walks in birch, oak, beech, and chestnut groves. The accommodation is good, though not up to the standard of first-class modern hotels.

This is practically the last place of importance in Switzerland on the main St. Gothard route.

We will now retrace our steps to Bellinzona and take the train for Locarno (45 mins.).

Locarno (680 ft.) is at the lowest level of any part of Switzerland. It is situated at the northern extremity of the Lago Maggiore, close to the delta of the river Maggia, part of which is used as a golf-course. Locarno is protected from the N. winds by spurs of the main Alpine range, it is fully exposed to the S., and enjoys a special immunity from lake mists. The Grand Hotel is furnished with every modern convenience, and may be ranked as a first-class Swiss hotel. The grounds are planted with the most luxuriant tropical-looking plants, indicating a climate characteristic of lower latitudes. Locarno is thus well adapted as a winter station for those who require a soft climate, while it is most frequented in spring as an intermediate station. It is less fashionable than many of the well-known winter resorts, and on that account is better suited to certain classes of invalids.

Dr. Vivanti, the local physician (English), informed me that the proprietors of the Grand Hotel exclude, as far as possible, cases of advanced phthisis.

With Locarno we will close our brief sketch of Switzer-

land. It is impossible to have done justice to our subject in so short a sketch. An endeavour has been made to conduct the traveller through the most characteristic parts of Switzerland, leaving him to discover many of the by-ways for himself. Among the omissions are the numerous hydropathic establishments and watering-places, of which a complete account is a desideratum, but neither time nor space will admit of it in the present brief survey. The Jura district has also been omitted for the same reason.

ITALY

WHILE Switzerland is essentially sought as a health resort, recruiting ground, and summer holiday centre on account of its natural features, Italy, on the other hand, is visited chiefly on account of its art treasures, historical associations, and architectural records of mediæval and ancient times. Still, there are parts of Italy which attract visitors and residents on account of their climatic or social advantages, and there are seasons of the year when Italy becomes an intermediate climatic station for travellers to and from other parts.

Italy may be roughly divided into four parts from the traveller's point of view:—

1. The Italian Riviera, which is described elsewhere, and will not be considered in this article.

2. Northern Italy, including the lake district, Turin, Venice, and Milan.

3. Central Italy, which includes most of the towns of mediæval interest, of which Florence is the centre.

4. Southern Italy, including Rome and other cities of antiquity, and the islands of Sicily, Capri, Ischia, Sardinia, &c.

As it is entirely beyond the scope of this work to treat of art treasures and historical monuments of Italy, we shall confine ourselves to a consideration of the climatic characteristics, sanitation, seasons, special advantages and drawbacks, supposed or real dangers of the more important stations in each of the divisions of the kingdom as above subdivided.

Before, however, treating of individual places, it may be well to make some general remarks on the subject as a whole, more especially as various misapprehensions are current as to the climate and sanitary conditions of Italy.

On the one hand, there is a widespread impression that the climate of Italy is like one long summer, that the land is bathed in perpetual sunshine, and canopied by a vault of perennial blue sky ; on the other hand, Italy is regarded as the hotbed for typhoid fever, malaria, and a variety of peculiar pestilential diseases, it is considered unsafe to drink water anywhere in the kingdom, and the towns generally are represented to be in a condition of mediæval squalor.

Both views are equally incorrect. A winter passed in one of the towns of Northern or Central Italy will go far to dispel the former preconception. Many of the towns of Italy are extremely cold and not at all calculated to enervate even the hardiest northerner. It should be borne in mind that a rigorous climate tends to harden the physique, and that it is only for the weaklings that a soft, equable climate is necessary or even desirable.

From this point of view the towns of Northern Italy are quite suitable as winter residences for the healthy and strong. Not so, however, for persons with weak chests and poor circulation, nor for those subject to rheumatism or neuralgia. It is not because the cold is intense, for the same class of people thrive at high altitude stations in Switzer-

land, but on account of the cold, cutting winds which rapidly extract heat from the body by evaporation. Moreover, these drying winds effectually desiccate and pulverise the dirt in the streets, which is then carried in the air in the form of fine dust, and probably conveys with it a host of disease germs. These are inhaled and find a suitable soil for development in the respiratory organs of susceptible subjects. It must be thoroughly understood, however, that dust and dust-borne disease are not peculiar to Italy, but prevail in all dry and windy places where there is much traffic, or where the soil is sandy or easily pulverises. The misconception as to the insanitary condition of Italian towns in general is, at least in the case of those more frequented, a tradition based on the sanitary deficiencies of bygone years. The municipal authorities in all the larger towns have thoroughly well-appointed sanitary departments. These are under the direction of medical health officers, each of whom devotes his whole time to the subject, and has a staff of technical experts and employees to analyse food-stuffs, prepared vaccine, and antitoxins, investigate outbreaks of disease, provide for the isolation of infectious cases, carry out the disinfection of habitations, bedding, &c., and compile statistics, besides constantly ordering and supervising sanitary reforms where required.

The result of this sanitary system is that the majority of Italian towns are undeniably healthy, as may be ascertained from the various municipal statistics which have been kept for the past fifteen or twenty years, and show a universally steady decrease in the death-rate. The average death-rate for ten of the most important Italian towns was 22·49 per 1,000 (1897), which average includes the numerous cases of deaths from serious diseases brought into the city hospitals for treatment.

In large Italian towns, as elsewhere, typhoid fever is always present in the more crowded districts, but among visitors it is becoming a rare disease.

The cesspool system for the removal of sewage is common to many Italian towns ; but, though malodorous if not carefully supervised, it is not necessarily bad from the sanitary standpoint.

With regard to the question of water, many of the Italian towns, notably Turin, Venice, Florence, Rome, and Naples, are supplied with good drinking-water, but as a precaution it may be boiled, or one of the many bottled waters selected for habitual use ; these are above suspicion, and moderate in price. Again let me remind the reader that such precautions are not more necessary in Italian towns generally than they are elsewhere.

The wine of the country is rough and acid, and liable to give rise to digestive disorders and lead to manifestation of gout and rheumatism.

Visitors who come to Italy during the winter, spring, or autumn should be provided with warm clothing.

Mosquito nets are frequently a desideratum and should be asked for when writing for accommodation or on arrival. Mosquitoes are not universal in Italy, and they vary greatly in number from one year to another. If numerous they are most destructive of sleep, and give rise to considerable discomfort, especially in the case of newcomers.

Malaria exists in all the marshy parts of Italy, notably along the Maremma, between Leghorn and Civita Vecchia and in the Pontine marshes ; but as there is little inducement to sojourn in these districts, and as towns generally are free from malaria, it rarely occurs among visitors to Italy, although those who are already subject to the disease may get a recurrence after even a brief exposure to the infection.

As a practical hint to delicate travellers into Italy by the Mont Cenis and St. Gothard tunnels, and in their further progress from North to Central Italy, where tunnels are frequent, it is a great source of comfort to have a bag of oxygen in the carriage for use in the longer tunnels where the oxygen of the air is deficient.

A word of warning about churches and picture galleries is necessary, as many delicate persons get severe chills from frequenting them, owing to the difference of temperature between them and the outer air, which in winter is usually colder, in summer warmer. An extra wrap should be taken to put on, on coming out or going in. Further, much mischief (rheumatism, sciatica, and internal chills) arises from prolonged standing on stone or marble floors. It is a most dangerous practice, and all visiting these places should have cork or india-rubber soles in the boot to prevent the chill.

THE LAKE DISTRICT AND NORTHERN ITALY

THE Italian lakes intervene between the foot of the Alps and the plains of Lombardy. They act as reservoirs for the mountain torrents, and probably in bygone ages extended as one continuous sheet of water from the Adriatic. Little by little the deposit of Alpine detritus raised the level of the soil and converted the shallows and marshy tracts into fertile plains, through which the rivers now pursue their course confined in narrow channels.

The Lake of Como is entirely within the Italian frontier, Maggiore is nearly so, while a tongue of Switzerland runs down between them and includes nearly the whole of the Lake of Lugano.

The Lake of Como may be approached by rail from

Milan to the town of Como or to Lecco. Como is on the main St. Gothard line, while that to Lecco skirts the lake and runs on to the terminus at Chiavenna, where it connects with the diligence services over the Splügen and viâ the Bregaglia to the Engadine.

A branch line from Colico, at the upper end of the lake, runs to Sondrio, whence the diligence starts for the Engadine viâ Le Prese and the Bernina pass.

Another route to the Lake of Como is from Lugano by lake steamer to Porlezza, and then by mountain railway to Menaggio.

The Lake of Como is essentially a spring and autumn resort for foreigners and a summer resort for Italians.

The most important places of sojourn on the lake are Villa d' Este near Como, Cadenabbia, Bellaggio, and Menaggio.

Villa d' Este is an old Napoleonic château in beautiful grounds extending down to the lake ; it is somewhat shut in and close, and is more frequented by Italians than by foreigners. Bellaggio is at the apex of the promontory which runs up between the two southern horns of the lake ; it is a very favourite Anglo-Saxon resort.

Cadenabbia is on the west shore of the lake, opposite Bellaggio, and has the important feature of being shaded from the afternoon sun.

Menaggio is somewhat to the north of Cadenabbia and is the terminus of the Porlezza railway. The above three places are lovely in themselves, and afford good hotel accommodation. They are suitable places of sojourn from the middle of March till the end of June and during the month of September ; in summer they are too hot, and in winter they are damp and misty. They are much frequented as intermediate stations between the winter and summer seasons in the Engadine.

Bormio is a high-level (4,016 ft.) climatic and hydropathic station on the southern slopes of the Lombardy Alps. The waters have a temperature of about 100° Fahr. Reached from Colico on the Lake of Como, viâ Sondrio. For Lanzo d' Intelvi (see Switzerland), 3,093 ft., reached in 2½ hours from Argegno on Lake Como. A good intermediate and summer station.

The Lago Maggiore has already been mentioned in the section on cisalpine Switzerland (see Locarno). There are many lovely villages on the shores of the lake, while those of most importance are grouped together about the widest part around the bay in the neighbourhood of the Borromean Isles. The four places most sought by visitors are Intra, Pallanza, Baveno, and Stresa, while Laveno on the opposite shore is important as being the terminus of several lines of railway which give access to the lake.

Intra and Pallanza are open in winter and are chiefly frequented by Germans. Accommodation is good, and Pallanza has a southern aspect and is extremely sunny. They are also much frequented during the rest of the year, especially in spring and autumn.

Baveno is prettily situated on the opposite side of the bay to Pallanza and is close to the Borromean Isles. It is much frequented by English visitors, but for some reason it seems to have lost ground of late years, while Stresa has become more popular.

Both Stresa and Baveno are centres for expeditions on the lake, and lovely walks on the mountains at the rear, across which the Lake of Orta is accessible.

The Lago Maggiore, like Como, is a good recruiting ground, especially in spring, after the fatigues of sight-seeing in the mediæval and ancient cities of Italy.

The Lago Maggiore, 646 feet, may be reached by train from Bellinzona, by the line to Locarno or by that which

skirts the whole length of the eastern shore of the lake and goes on to Milan; or from Lugano, by boat or carriage to Tresa, and then by tram railway to Luino, which is on the branch St. Gothard line above mentioned; or from Milan and Como viâ Varese (see below); or, after crossing the Simplon to Domo d' Ossola, by train to Gravelona and carriage to Pallanza. In fact there is a network of railways connecting the lakes with each other, and with Milan and the south.

Arona, 738 ft., is the railway terminus at the south end of the lake. To Milan, 2½ hours.

Varese is an important intermediate station in spring for invalids coming from the south and from the Riviera and on their way to Switzerland; in the autumn again it is a valuable intermediate station. There is a special station (Casbeno) on the line from Milan (2 hours), and Como to Laveno (½ hour), for the Excelsior Hotel. The hotel is at an altitude of 1,200 ft. above the sea-level; it is situated in beautifully shaded grounds and is well appointed in every way (English physician in spring and autumn). There are golf links near the lake, about 2 miles from the hotel. This is one of the best intermediate stations for invalids in Northern Italy.

Entering Italy by the Mont Cenis line, the traveller will probably be on his way south, for there is little to detain him in Turin.

Turin is the fourth largest town in Italy, containing 350,000 inhabitants. Owing to the activity of the sanitary authorities, to the broad open streets, and to the good water supply, it boasts a very low death-rate, viz. 16·99 per 1,000 for the year 1897. In this connection it may be remarked that the tramway service is so complete in Turin as to have reduced the carriage traffic in a remarkable degree, which fact doubtless contributes to the sanitary excellence of the city.

The regular quadrilateral plan of Turin is due to the perpetuation of the lines of an ancient Roman camp, and is not of modern design.

The climate of Turin is cold and trying in winter.

From Turin to Genoa, about 3½ hours—tunnels on approaching Genoa.

Acqui, near Alessandria, is an important hydropathic establishment for the treatment of painful articular affections. Thermal waters 178° F., containing iodide and sulphate of lime.

Genoa.—Death-rate, 24·45 (1897); 140,000 inhabitants. Beautifully situated on the Gulf of Genoa. Is important as one of the two ports at which various lines of steamers touch, and also as being the point where the railway from Turin joins the Riviera line.

Continuing south, we skip the Riviera di Levante and pass on to Florence. There are a great number of tunnels on this line between Genoa and Viareggio.

Milan, the third largest town in Italy, has a population of 458,000 inhabitants, with a death-rate of 21·73 per 1,000. It is clean and well up to date in sanitary matters. Of Italian towns it is said to be the hottest in summer and the coldest in winter. It is essentially a town of great manufacturing and commercial activity; it is little sought as a residence by foreigners, although it possesses many works of artistic and historical interest.

It is the Italian terminus of the St. Gothard railway, as well as of the Austrian line.

About 9 hours to Florence viâ Bologna; numerous tunnels between Bologna and Florence.

About 5½ hours to Venice.

Venice.—The following notes on Venice were kindly furnished by Dr. E. Van Someren :—

Venice has two seasons—one lasting from March till

June, the second from September to early in November. At these seasons it forms a good intermediate station, in spring for travellers going north, and in autumn on their way south. An intermediate summer season is chiefly Italian, though travellers from the southern States come at this time for the sea-bathing at the Lido, which is the finest and safest in the Mediterranean. English and American visitors should seek quarters on the north side of the Grand Canal, Riva degli Schiavoni, Zattere, and in any open *campi*, as such positions only have a good sun exposure.

For nervous affections, and for all lung complaints save phthisis, Venice is beneficial. The absence of noise and freedom from dust are two enormous advantages. The effects of the atmospheric and climatic advantages are distinctly soothing. Cases of insomnia find great relief. Many Austrians frequent Venice as a health resort.

There are two tides during the 24 hours, and as the drains for the most part empty directly into the canals, they get a double cleansing each day. The tide is more ample here than in the rest of the Mediterranean, for two reasons: First, there is a tidal wave up the Adriatic; second, there are six rivers emptying into the lagoons, which are stemmed back by the incoming water, and give added impetus to the outgoing tide. The average rise and fall of the tide is $3\frac{1}{2}$ feet. Spring and neap tides are generally 6 feet.

The many odours are, I am assured, harmless, being caused by the decomposition by drainage of the sulphates of the salt water into sulphides, than which there are no worse smelling gases. The canals are cleaned out once in twenty years. The freshwater supply is perhaps the second best in Italy.

The Municipal Department of Hygiene has recently

been working on the bacteria of salt water. It was shown that a large excess of salt water effectually diffuses, decomposes, and disinfects all matter thrown in by the city drains. There is a marked absence of diseases due to bad drainage in Venice, especially among foreigners.

The declivities of the Carnic Alps are being gradually and very successfully used as sites for sanatoria. Sheltered from wind in winter and opening or facing south, they afford delightfully mild climates, while their contiguity to the great snow mountains renders the more closed-in valleys very cool in summer. Belluno, Feltre, Asolo, Bassano, and Vittorio are delightful summer resorts at present unknown to the travelling public. The accommodation is not luxurious, but simple: good food and good air are to be found easily and at moderate prices.

Death-rate for 1897, 20·40 per 1,000.

TUSCANY

THE province of Tuscany not only inherits many of the noblest works of mediæval genius, but is richly endowed by nature with physical features which should render it a land of opulence. Traversed by a lofty chain of mountains which offer shelter from the N.E. winds, and whose sunny declivities afford innumerable sites at varying altitude for health and summer resorts; rich in mineral ores; abounding in springs, vapours, and muds of high therapeutic value; clothed with luxuriant vegetation, Tuscany needs but an effort of individual enterprise backed by a strong administration to convert it from a land of promise to a land of realised success.

The mountain resorts are mere summer stations, affording a means of escape from the great heat of the cities; the mineral wealth is neglected; the methods of cultivation recall the vivid descriptions contained in the works of Virgil; the mineral springs alone have, in some cases, been developed by the efforts of the medical profession, but they too are available in summer only, while their main chance of attracting foreigners would be by opening their doors in spring and autumn, if not in winter. An Italian Karlsbad or Aix, open in winter, would probably draw a class of suffering humanity, who in summer prefer to seek old haunts in more northern latitudes.

Many of the smaller Tuscan towns and some of the summer stations are suitable as summer resorts for certain classes of patients for whom the Swiss mountain stations are unsuited, viz. (1) Elderly persons with bronchial affections or general debility; (2) cases of weak and fatty heart or atheromatous arteries; (3) cases of chronic Bright's disease who have wintered in a warm climate, and for whom high altitudes are contra-indicated.

For such, the seaside resorts, cooler towns, such as Siena and Perugia and the lower Apennine stations, are suitable.

FLORENCE

FLORENCE is the most important Anglo-Saxon residential city in Italy. Lovers of art, architecture, and historic lore are drawn to it by the wealth of material concentrated in the city and scattered around throughout the length and breadth of Tuscany.

The city lies in the valley of the Arno, towards which

outlying spurs of the Apennines incline their olive- and vine-clad slopes, like emissaries from the parent range, laden with tokens of peace and plenty, come to pay homage to the fair city of the plain.

The climate is healthy and invigorating for the sound in wind and limb, though it is too hot for the majority of visitors in the months of July, August, and September, and the winds are too cold in winter for the less robust, unless they make their abode in one of the more sheltered districts. In short, Florence lays no claim to being a winter health resort for invalids; they should either go further south or to the Riviera from the middle of December till the middle of March, or find well-furnished quarters exposed to the south and sheltered from the N.E. winds, and keep indoors during their prevalence. As an autumn and spring resort, on the way out or returning from Egypt and the south of Italy, Florence is unrivalled.

The country around is entrancing, especially in spring and early summer, and the villas which occupy the hillsides in all directions are very generally tenanted by English and American residents.

The Golf Club recently (1899) organised under the patronage of H.R.H. the Duke of Connaught and His Excellency the Marchese Torrigiani, Syndic of Florence, will prove a great boon to residents as well as an additional attraction to visitors.

A great deal of the commercial activity of Florence is devoted to the accommodation of visitors. There are good hotels and pensions, flats, furnished and unfurnished apartments, and villas to meet all requirements.

The sanitary condition of the town is generally good, and the death-rate has decreased from 28 per 1,000 in 1881 to 23·29 per 1,000 in 1897. The *acqua potabile* is

good, and is supplied to the greater part of the town, including all the principal visitors' quarters. A further scheme for the supply of spring water from Garfignano will be completed in three years' time, when all the wells will be closed. The enterprise is financed by an English company. In addition to this the market is flooded with a variety of good bottled waters. In private houses the sanitary arrangements should be inspected, preferably by an English sanitary engineer, and modern fittings should be made a *sine quâ non* of tenancy where they do not already exist. Well water should not be used for drinking purposes unless previously boiled.

Winter residents should make a point of choosing apartments facing south, and placed so that the winter sun will not be cut off. It should be borne in mind that a given apartment may be bathed in sunshine during the early autumn while neighbouring buildings may cut the sun completely off in winter. For this and other reasons it is a good plan to take apartments near the top of the house. There are better sun exposure, less noise, and less dust. The rooms should be well carpeted, the doors be furnished with portières, and there should be a good supply of stoves, fireplaces, or other forms of heating apparatus.

The declivities running down from the range of hills extending from Fiesole to Settignano offer the most sheltered and warmest sites either in the town or suburbs.

From Florence as a centre we will briefly sketch the more important health and summer stations in the neighbourhood and indicate the sanitary conditions of some of the remaining Tuscan towns of interest.

In this connection it will be well to make some observations on the incidence of infectious diseases in Italian towns. An examination of the municipal reports of a number of Italian towns shows that as a rule their per-

centage of deaths from infectious diseases is less than that of London. An analysis of the tables shows this to be due chiefly to the larger proportion of deaths from measles and scarlatina at home, while in Italy, and, I believe, on the Continent generally, measles and scarlatina occur in a far milder type, and are generally considered trivial diseases. Typhoid fever, on the other hand, is very general and very fatal among the native poor population, whereas it is becoming very uncommon among visitors. The reason is obvious, viz., that the poorer classes in Italy derive their water supply from wells which are frequently in juxtaposition with the cesspool; whereas the richer quarters have good water supplies and visitors are alive to the necessity of obtaining pure drinking-water. Sanitation is well understood by the municipal authorities, but is not appreciated by the mass of the people, who will not take the precaution of boiling their drinking-water when obtained from wells, and suffer in consequence from water-borne disease. Although some Italian towns have excellent water supplies and others are now providing them, yet, as a rule, it is a wise precaution to boil all drinking water of which the source is not above suspicion, or to drink bottled waters.

While the summer resorts in the Apennines are less expensive than those of Switzerland and the Tyrol, they are at the same time less invigorating, the accommodation is often indifferent, and the sanitary arrangements inadequate. The latter reproach, however, is rapidly vanishing in response to the demand of the visiting public, who are the true arbiters of sanitary reform.

We will start on our tour in Tuscany by visiting the more important summer and hydropathic stations lying to the N.W. of Florence, among the Apennines between Florence and Bologna.

Covigliaio, 2,952 ft., on the Bologna road, 5 hours

from Florence (reached by train to San Piero or Sieve 1 hour 10 minutes on the Faenza line, and thence by carriage 3 hours). A quiet summer resort with fine mountain air, good cycling roads, a variety of mountain excursions, and especially good water. Well-appointed hotel, with good sanitary arrangements.

Many of the most important Tuscan summer resorts are reached from the station of Pracchia, about two hours from Florence on the Bologna line of rail. Several of the pensions and hotels in this district are branch establishments of Florence houses, and some are held by English ladies. In either case the sanitation is more or less reliable.

Above 4,000 ft. are Boscolungo and the Abetone, high up on the ridge of the Apennines among larch forests. Boscolungo and the Abetone are perhaps the nearest approach to Swiss mountain resorts in the Apennines.

On the slopes of the Apennines, which run down towards the valley of the Arno from the Abetone, are the following hydropathic stations :

Monsummano.—Hot sulphurous vapour grotto, suitable for the treatment of gout and rheumatism.

Monte Catini, the Karlsbad of Italy, much frequented by Italians for liver complaints and rheumatism. Well-appointed establishment.

Bagni di Lucca.—I am indebted to Dr. Herbert Danvers for the following brief account of Bagni di Lucca:

'Picturesquely situated in a valley of the Tuscan Alps 600 ft. above sea-level, the Bagni di Lucca affords five springs of indifferent thermal waters, ranging in temperature from 90° to 130° F., and most closely resembling the waters of Bath in chemical composition and therapeutic action.

'The climate is equable, and the temperature averages,

during the months of June, July, and August, 70° F. during the day, and 50° F. at night.

'Season: May 15 to September 15. The hotel accommodation is good; all give pension from five to eight lire a day. Means of access: branch line from Viareggio station on Genoa-Pisa line.'

The sulphurous baths and muds of Porretta, on the line to Bologna, are also much frequented in the summer months for the treatment of articular affections.

To the S.E. of Florence are the summer resorts of Vallombrosa (3,468 ft.), frequented by Italian families from Rome; Badia a Prataglia (4,265 ft.), and Camaldoli in the Casentino or upper valley of the Arno.

To the west of Florence, in the province of the old-fashioned winter resort of Pisa, is the hydropathic station of Bagni di Casciana, whose waters are of therapeutic value in the treatment of rheumatism, sciatica, and other forms of neuritis.

The chief Tuscan sea-bathing resorts are the Ardenza, Bocca d' Arno, and Viareggio, near Leghorn on the Mediterranean, and San Giorgio and Rimini on the Adriatic. The two latter are not in Tuscany.

As a general rule they are too hot and crowded in summer, and are more agreeable to the foreigner in spring and autumn.

San Gemignano is a favourite summer sketching centre on the line from Empoli to Siena.

Siena crowns a hill on one of the subsiding ranges of the Apennines. Situated at an altitude of 1,200 ft., its air is cool and bracing, and it is a favourite spring recruiting ground for residents in Florence, besides being much frequented by visitors. The accommodation is fairly good, as are also the sanitary arrangements in some of the hotels. The water is derived

from wells, and bottled waters are habitually supplied at the hotels.

Perugia occupies much the same position as Siena, both as a health resort and from the sanitary point of view. The local authorities are making provision for a supply of good water from the Apennines.

ROME

Rome is essentially a winter resort for visitors. The season is from December till the end of April, while many visitors come in October and stay till June. A few foreign residents pass the summer in Rome, when it is perfectly healthy, but unpleasantly hot during the months of August and September.

The mean temperature, taken over a period of twenty years, for the months of December, January, and February, is as follows in the cities of Florence, Rome, and Naples:

	F.		Mean Diurnal Range
Florence,	42·8		December, 12·5 F.
Rome,	45·32		January, 12·9 F.
Naples,	47·66		February, 14·2 F.

The difference of sensible temperature, however, between Rome and Florence is greater than shown by the actual figures on account of the marked absence of high winds in Rome. This circumstance, in conjunction with the absence of smoke and dust, renders Rome a suitable winter station for a class of patients for whom Florence is contra-indicated, viz.: those suffering with throat, bronchial, and pulmonary affections, Bright's disease, diabetes, gout, and rheumatism. The climate of Rome has a soothing influence in cases of overworked and irritable nervous systems and insomnia.

The water supply of Rome is entirely derived from sources distant from the city. In the visitors' quarter there are three different supplies, all guarded from pollution along their course by closed aqueducts:

1. Acqua Marcia: pleasant pure drinking-water, but hard.

2. Acqua Vergine (Trevi) is softer, but has not sufficient head to reach the higher parts of Rome.

3. Acqua Felice: good and palatable.

The Trastevere is supplied by the Acqua Paoli.

The water supply is constant and practically unlimited; it supplies all domestic requirements, numerous large fountains, and is used for flushing the sewers.

An elaborate system of sewers carries all the drainage of Rome into the Tiber. The domestic sanitary arrangements are of the modern type in all the good hotels, and in many of the private apartments. There are no cesspools.

Thanks to its good water supply and elaborate sanitary arrangements, the death-rate of Rome is remarkably low (17 per 1,000 in 1897), which ranks it second only to Turin (death-rate 16·7 in 1897) in general healthiness of the twelve principal towns in Italy.

In addition to its position as a winter health resort, Rome makes a good intermediate station for those returning to England from the East, and indeed a suitable permanent residence for many who have spent their life in hot countries and dread the severity of more northern climes.

The following stations in the neighbourhood of Rome are suitable for change of air or for recruiting, viz.: Frascati, Tevoli, Albano, Castelgandolfo, Porto d' Anzio, Perugia.

The term 'Roman fever' has been discarded by the

medical profession, but the travelling public still cling to it, and speak of anything from typhoid fever down to an ordinary cold as 'Roman fever.'

Malaria contracted by visitors in Rome is unknown to foreign physicians practising in the city. Such cases as occur have been sent into the hospitals from unhealthy spots in the Campagna and Pontine marshes.

Visitors wintering in Rome should habitually wear the same amount of clothing as they are in the habit of wearing at home. Sight-seers often suffer from over-fatigue by attempting too much in a limited time. Care should be taken not to enter cold churches and galleries when overheated. Those unaccustomed to the use of wines should drink them very sparingly in Italy, and not habitually.

As elsewhere in Italy, outdoor recreations are few. The fox-hunt meets twice a week during the season at different points in the immediate neighbourhood, and a golf-club has recently been started which promises to be a success.

There are several English nursing institutions in Rome, some of which receive patients, while all supply trained nurses for private nursing. A scheme is now on foot for inaugurating a visitors' hospital.

SOUTHERN ITALY AND SICILY

By the Editor.

The health resorts of Southern Italy are limited, with the exception of Amalfi, to those round the Bay of Naples, of which the chief are Castellamare, Sorrento, and the island of Capri.

Naples itself is now far more sanitary than it used to be, and endowed with a good water supply and good hotels, but the lower parts of the town are not well suited for a prolonged stay by invalids. There is, of course, a great deal of interest in the town itself, and beautiful excursions in the neighbourhood. Consumptive patients in the more chronic stages, and those whom a climate suits resembling the Riviera, but milder and somewhat moister, should avoid the parts of the town lying low and near the harbour. Castellamare is within easy reach and possesses a very fair hotel well situated, as also does Sorrento, but the exposure is mainly to the north. Capri is somewhat moister, the climate being of an island character. In all this region frost and snow are rare, especially the latter, which falls only in very severe winters.

Amalfi is a lovely spot with a good hotel, formerly a monastery, but so situated on the hillside that invalids can reach it only in a vehicle or on donkey-back. It is on the southern coast of the promontory which forms the bay, and reached in a few hours from Naples, the drive from Salerno being very beautiful.

Palermo, the capital of Sicily, is most beautifully situated, and has a pleasant equable winter climate, moister than that of Naples, and with a good many rainy days; the rainfall, however, is only 21 inches. The great drawback to this and other Sicilian resorts, such as Catania and Taormina, has been the fear of brigands, anything like an excursion in the neighbourhood of Palermo being impossible without an escort of cavalry to within the last few years, if not now. Except at Palermo, the accommodation is not good, and unsuitable for any really delicate person, though well enough for the robust. Taormina, on the east coast, is one of the most lovely spots in

the world, but somewhat primitive, the hotels being, however, better than they appear at first sight.

Aci Reale has mineral springs and a fine bathing establishment; it is also on the east coast between Catania and Taormina.

The whole of Southern Italy and Sicily are delightful for the merely overworked and worn-out, and, with the limitations stated, for many pulmonary invalids whose disease is chronic or stationary. Sufferers from chronic bronchitis and asthma often get through the winter well here. For visitors only the spring months of March and April are the best time; they must be prepared, however, to face the sirocco occasionally.

GIBRALTAR

This town cannot be classed as a health resort, but is a sort of halfway house for those coming from the East, and is much visited by tourists in the winter in search of pleasure and those who are merely ordered to take a short sea voyage. The climate resembles that of Southern Spain, and is naturally very hot from May till October; the winter months are pleasant, with much sunshine and little rain; but owing to its position Gibraltar is very much exposed to the winds, and especially to the Levanter, or east wind, which blows very frequently, in summer especially, and is a veritable curse, making the place quite unsuitable for invalids.

Temperature: mean annual, 66°; minimum, 36·8°, January; maximum, 94°, July. January mean, 53·1°; August, 78·6°. Rainfall, 32·6 in.; maximum in Novem-

ber, 4·9; rainy days, 68. May, June, July, and August are all rainless.

Gibraltar is best reached by steamer, the journey through Spain being very long and tedious.

MALTA

The island of Malta is more of a social resort than an invalid station, as it is very windy, and entirely lacking in trees or shade. A few invalids do go thither, but it cannot be recommended for such. The season lasts from November to April; except in those months it is far too hot to be comfortable, and almost rainless from May till the end of September.

The difference between the extremes of temperature in winter is not very great, so that it is an equable and mild climate. Mean maximum, 77° (July); minimum, 57° (January). Rainfall, 24 inches. The chief amusements outdoors are driving and riding, but there is not very much range, owing to the size of the island. Clothing of medium thickness, with summer things for early November and April, is required.

There is some malarial fever in Malta, but not much, and the disease known as 'Malta fever' is prevalent, but not very extensively. It has been disputed whether this is other than a modified typhoid, but it is quite certain now that it is a separate disease, and prevails also to a less extent in Gibraltar, Sicily, Cyprus, and other places round the Mediterranean. The disease known in Gibraltar as 'Rock fever' is partly this disease and partly typhoid.

With these exceptions Malta is a healthy spot, though not a pleasant residence except during the winter months.

CYPRUS

Cyprus has a climate very much like that of Malta, with a hot and rainless summer. The temperature is a good deal higher all the year round, the July mean temperature being 82°, and January 54°. 'Malta fever' is found there, and there is a great prevalence of malaria in the low districts, which was very fatal to our troops when we first took over the island. There is a considerable mountainous region, and the high military station, Mount Troados, 5,720 ft., is healthy. Few, except those whom duty compels, go to Cyprus, though the winter climate is pleasant.

Sanatoria for Consumption

(Reprinted by kind permission of the Authors from 'Mineral Waters and Health Resorts,' by Sir H. Weber, M.D., F.R.C.P., and F. Parkes Weber, M.D.)

Sanatoria for the Treatment of Phthisis.—Of even greater importance than these are the sanatoria for pulmonary tuberculosis which have been erected in different parts of Europe, chiefly in Germany and Switzerland, since the late Dr. Hermann Brehmer introduced this method of treating consumptives by founding his private sanatorium at Goerbersdorf (Prussian Silesia) in 1859. The private sanatorium at Falkenstein in the Taunus, founded at the instigation of Frankfurt doctors in 1874 and opened in 1876, came next, and here Dettweiler, a former assistant of Brehmer, introduced certain modifications in the treat-

ment, especially the various arrangements to enable patients to rest, lying down in the open air, in nearly all weathers, and during the greater part of each day. The excellent results obtained at these two establishments led to the foundation of a number of different private sanatoria in various parts of Europe, mostly conducted by pupils of Brehmer or Dettweiler on very similar lines. We need only mention that of Hohenhonnef on the Rhine (Dr. Meissen), others at Goerbersdorf, Dr. Turban's and another at Davos, others at Arosa and Leysin in Switzerland, at Nordrach and St. Blasien, in the Baden Black Forest, at Reiboldsgruen in the kingdom of Saxony, &c. Of course the newer sanatoria, those built since the tubercle bacillus and its rôle in consumption have been understood, possess certain advantages in regard to facilities for keeping the walls and floors clean, and preventing any possible infection through bacilli contained in the dust of corners, &c.

The results obtained at some of these places prove beyond doubt that even with comparatively indifferent climates great successes in the treatment of pulmonary tuberculosis may be obtained by strict attention to regulations of diet and regimen and the constant personal supervision of each patient. The main characteristics of all such institutions depend on their 'open air' or rather 'pure air' treatment, their diet, and the personal medical supervision of each patient, which comforts him, gives him courage and hope, prevents him overfatiguing himself, remaining too long without food, or otherwise diminishing his chances of recovery; the medical man likewise regulates the amount of exercise and so-called 'pulmonary gymnastics' (such as deep inspirations) which the patient may take, and the amount of stimulation by

hydrotherapeutic processes. By residence in an institution of this kind the patient acquires hygienic knowledge and habits ('disciplinary treatment' or 'educational treatment') which must be very useful subsequently for himself, and possibly also for his family and others he comes in contact with.

In France a sanatorium for consumptives, instituted by Dr. Ch. Sabourin on similar principles to the foregoing ones, has existed since 1890 at Vernet-les-Bains on the Canigou Mountain, but it has not been regularly kept open throughout the year. We hear from Dr. S. Bernheim[1] of Paris and the 'Société des Sanatoria de France' that the erection of fresh sanatoria in various parts of France is being contemplated. Two new French ones have already been inaugurated, the Trespoey Sanatorium, near Pau in the Pyrenees, and the Durtol Sanatorium, near Clermont-Ferrand in the Auvergne.

According to Dr. S. Unterberger[2] private sanatoria for consumptives exist in Russia, namely at Halila in Finland and Lindheim in Livonia. There is also one at Tonsaasen between Bergen and Christiania in Norway.

In England small private sanatoria for the 'open-air' treatment of consumptives have been instituted by Dr. Pott and Dr. Johns at Bournemouth, and Dr. Burton-Fanning[3] has carried out the same principles at a locality near Cromer, about a quarter of a mile from the sea and 250 feet above sea-level. As Dr. H. Weber has long maintained, there are many other places in England where

[1] *Les Sanatoria pour Tuberculeux en France.* Communication by Dr. S. Bernheim at the International Congress for Climatology held at Clermont-Ferrand, 1896.

[2] St. Petersburg *med. Wochenschr.*, 1896, No. 32.

[3] See The Open-air Treatment of Phthisis in England,' by F. W. Burton-Fanning, in the *Lancet*, March 1898.

sanatoria for consumptives might be erected (for instance, on the slopes of the sandhills to the south of London), and Dr. A. Ransome, Dr. R. Walters, and others have advocated the introduction of a regular sanatorium system of treating consumptives in England. The educational influence of such measures amongst the public in general would likewise undoubtedly have a most potent effect, not only in the successful treatment of consumptives, but in the prevention of consumption.

The disease can, however, only be efficiently combated when means have been provided for dealing with its poorer victims. In this respect England has led the way by the early establishment in London of special hospitals for the poorer class of patients, and by the erection of the well-known 'Royal National Hospital' (1869) at Ventnor in the Isle of Wight, and the 'National Sanatorium for Consumption,' instituted in 1855 at Bournemouth. This example has been followed abroad; a sanatorium for poor consumptives was established in 1892 at Falkenstein close to the celebrated private sanatorium, and now sanatoria for poor consumptives exist at Ruppertshain in the Taunus (opened in 1895), at Rehburg (for the town of Bremen) and St. Andreasberg in Hanover (Harz Mountains), at Goerbersdorf, and at other places in Germany; likewise at Davos in Switzerland, at Heiligenschwendi near the lake of Thun, &c. In fact, largely owing to the constant exertions of Pfarrer W. Bion of Zürich and his friends, nearly every Canton of Switzerland will soon have its special sanatorium for the treatment of its consumptives. Others are being erected at various localities, amongst which we may specially mention that of Alland near Baden in Austria, which owes its foundation to the enthusiastic efforts of Professor von Schroetter of Vienna. In Hungary Koranyi, Kuthy, and others are endeavouring to

bring about the establishment of similar public sanatoria. Norway possesses a sanatorium of this nature, near Molde, and we hear from Dr. Klaus Hanssen of Bergen, that in place of the old St. Jorgens Hospital for lepers (one day's journey from Bergen), a new sanatorium is being erected for the treatment of the consumptive poor.

RIVIERA

By the Editor.

From its proximity to this country the Riviera must always remain a favourite resort for English people; there is no place within easy reach where sunshine and comparative warmth in winter are so easily to be obtained, or where accommodation so good, even luxurious, can be got by those able and willing to pay for it.

It is unnecessary to say much about the means of reaching the Riviera, which are of the easiest. The railway journey viâ Paris and Marseilles is of course far the simplest, and for invalids the best, because it avoids the necessity of crossing the Alps, on which, in winter, the cold is severe, and the exposure at the Custom House may be prolonged. For the Western Riviera it is also considerably shorter, and there need be no change of carriage between Calais and Ventimiglia. Those, however, who are going to the Italian resorts, and who are willing to spend more time and change rather more frequently, may go either by the Mt. Cenis or St. Gothard routes to Genoa, and from thence along the coast. It is almost a necessity in this case to stay one night *en route*, and there is always some risk of delay in winter from heavy snowfalls. For those who prefer the sea, or for whom a sea voyage is desirable, there is the alternative of going round by sea to Genoa or Marseilles, and thence proceeding by land;

but this involves spending a week or ten days on the journey.

The season for the Riviera is from November to May inclusive, though comparatively few visitors stay on into May, and not many now arrive before the middle of November. In the intervening months it is a desert as far as visitors are concerned, and most of the hotels are closed. Invalids often make a great mistake by leaving the Riviera too early, when the weather in England is still too cold, and the journey may be a serious risk. Much depends on the season, but as a rule those who have come for health should not leave before the middle of April at the earliest. It is somewhat difficult to find a suitable halting-place on the return journey, as the Italian lakes and the lower Swiss resorts may be both wet and cold at that season, though often delightful.

With regard to accommodation there is a wide choice, and the wealthy need have no difficulty in getting either villas or apartments in hotels of the best. For a family of any size going for the winter a villa is the least expensive, but this involves housekeeping, and the question of servants is not always an easy one. It is best not to take a villa without a personal inspection; hence it is generally desirable to go to an hotel first and look round for a suitable dwelling. If the heavy luggage is sent by *petite vitesse* or sea, consigned to an agent, a period of at least three weeks must be allowed, which may be well employed in looking at different places and choosing a suitable abode; in this way probably greater comfort will be insured in the end, as nothing is more disappointing than to find that an unsuitable house has been chosen, in which it is impossible to be comfortable.

It is most essential that all invalids should have both bed and sitting rooms facing south; without this all the

benefit of the climate may be lost, even if the consequences be not more serious. It must also be remembered that French and Italian houses in this region are built for heat and not for cold, and consequently are much more difficult to warm than English ones; the only means of heating being as a rule an inadequate wood fire.

The heating arrangements must therefore be carefully looked to in all cases where it is essential to maintain a certain degree of warmth; if necessary a stove can generally be added, in which case the ventilation must be well looked to.

Many people who come to the Riviera for the first time are apt to think that they will only get warm weather, such as that of an English summer, and they provide themselves with clothing accordingly. This is a grievous mistake, and one which they will undoubtedly repent. Thick clothes, such as are worn in an ordinary English winter, are a necessity, and for driving thick wraps or even furs are essential; but after March begins, thinner things are generally needed, and the sun may be very hot by the middle of April. It is always desirable for invalids to carry an extra wrap, as the changes are very sudden from sun to shade, and a severe chill may be incurred going out of the sun into a shady street, or driving along a shady bit of road. Care must also be taken not to be out at sundown, or, if that cannot be avoided, to have wraps ready; as, whatever be the truth about the fall of temperature at that time, there is no doubt that a delicate person may suffer severely from neglecting this precaution. In these two respects the Riviera is a treacherous climate, and there is also the further drawback of cold winds in the spring from the north-east and north-west, the latter being the well-known and dreaded mistral.

The climate[1] of the Riviera first attained notoriety in the treatment of pulmonary diseases, especially consumption, and for more than forty years Mentone has had a world-wide reputation as a resort for such cases, though some prefer other towns on the littoral. The high Alpine resorts have of late years somewhat replaced the Riviera in popular esteem, and the extension of travel has opened out more distant fields, Egypt, Colorado, California, and even Australia and New Zealand being frequently visited during the winter months by invalids. But the Riviera still attracts, and will always attract, those who do not wish to wander far from home, and especially that large class of travellers who, without any very definite ailments, wish to exchange the damp and fog of an English winter for that warmth and sun which, if not always present, are found in much greater degree on the shores of the Mediterranean.

The different localities, as will be stated more in detail later, vary slightly but decidedly in temperature, stimulating properties, nature of prevalent winds, and other meteorological conditions, according to their aspect, the amount of shelter they get from the mountains, &c. Speaking generally, however, the temperature of the Riviera is about 10° F. higher than that of London during the winter months, snow very rarely falls, fog is almost unknown, and the number of rainy days is very much smaller than in England. The heaviest rains usually fall in September and October, but sometimes March is a wet month. It must be remembered that the seasons vary greatly from one year to another; as a rule the winter weather follows in some degree that of the more northern countries of Europe, being mild if that is

[1] For detailed accounts of the climate of the various resorts, see *Mediterranean Winter Resorts*, by Reynolds Ball.

mild, and *vice versa*. Thus, for example, the winter of 1894-5, which was very severe in England, was also very cold on the Riviera, snow falling heavily all along the littoral, whilst on the other hand, in 1895-6, which was very mild in the north, there were only three days out of 120 at San Remo on which rain fell, the rest being almost unbroken sunshine. Here, as elsewhere, the climate can only be judged of by observations taken over a considerable number of years, from which the average character of the seasons may then be deduced.

Looking to these facts, the Riviera climate may be described as bright, dry, warm, as compared with other districts in the same latitude, and stimulating: even at Mentone it cannot be described as relaxing, though people occasionally find it so. The drawbacks are the high winds which prevail in the spring, the great difference between the sun and shade temperatures, and the chill at sunset. Furthermore, to those of a nervous temperament this stimulating quality, which benefits many, is very detrimental, and those suffering from great nervous irritability, from insomnia, or from mental depression will generally find their condition aggravated by residence on the coast.

Sufferers from chronic bronchitis and chronic catarrh of various kinds, and those with affections of the heart or kidneys, often find much relief from spending the winter on the Riviera, as also do some rheumatic patients; but those with so-called rheumatic gout are not always benefited, the sea sometimes increasing their pain. In gouty cases the benefit is doubtful, some doing well, whilst those with acute gout may suffer severely; in cases where acute attacks come on, it is best to get away from the coast as soon as possible.

All invalids should learn to regulate their lives according to the exigencies of the climate; they should not

neglect to consult a physician on first coming out, as they will save themselves much trouble by so doing. The temptation to unintentional excess at *table d'hôte* often leads to dyspeptic troubles, and, above all, it must be remembered that less stimulants are required than in England. Not infrequently the red wines of both France and Italy are found to disagree with those unaccustomed to them, and they should be used sparingly, especially by the gouty.

Moreover, the medicines taken in England are often unsuitable, and should be replaced by milder preparations, so that on all grounds it is desirable to consult some one acquainted with the local conditions and their effects.

If this were done more regularly, fewer people would go home disappointed with the effects of a winter on the Riviera.

Taking the individual resorts, the most sheltered are Mentone and San Remo, and they also have less of the exciting quality which is one of the chief features of the Riviera climate. Cannes has, on the whole, the most stimulating climate, but this is less felt in the more inland parts of the town. Nice is more of a social centre and less of a health resort than formerly; it is frequented by large numbers of wealthy visitors, English and American, both on account of the amusements always to be found in the town itself and its proximity to Monte Carlo, to and from which expresses run daily. Nice is, in fact, the metropolis of the Riviera, and has the advantages and disadvantages of such a position—the former attracting those travelling chiefly for pleasure, while the latter weigh most with those who are in search of health.

In truth, for the invalid, the evil outweighs the good: the social distractions are a positive drawback in many cases, where the temptations of society are hard to resist, while the town itself is both dusty and windy in winter.

In the suburbs of Mont Boron and Cimiez (the latter now well known owing to the Queen's yearly visit) these inflictions are greatly mitigated, and they are much more desirable as residences for invalids than the town itself.

Steamers leave Nice every week for Corsica, but the service is not very reliable and the boats not of the first class; also the journey from the Corsican port Bastia to Ajaccio has to be performed by diligence.

The winter climate of Corsica is very pleasant, and the scenery lovely, but there is practically no accommodation except at Ajaccio, and few invalids go thither.

Grasse, which is about 11 miles inland from Cannes at a considerable elevation, is a place which presents advantages to those who find the sea-coast unsuitable. It is beautifully situated in the mountains, and has a bracing climate; it suffers rather from the spring winds, but on the whole is well sheltered, and affords a pleasant change from the coast towns, though the hotel accommodation is rather limited, and consequently the number of visitors.

Of the more western towns Hyères was formerly very popular, and is one of the oldest resorts on the Riviera, being the first to be reached by the railway from Marseilles. The suburb of Costabelle has of late years become rather popular, and the place has many attractions for the quieter class of visitors who do not require social distractions.

The same applies to the small town of St. Raphael, halfway between Hyères and Cannes, with Valescur 2 miles distant, both of which places have recently been much visited by English people. For those who desire absolute quiet and repose, Valescur is one of the best places on the Riviera, but the accommodation is limited. The chief attraction of the district is the beautiful walking and driving on the slopes of the Esterelles, amidst the pine forests which here clothe them thickly.

Besides the places already mentioned, there are several of smaller size, viz., Antibes, Villefranche, and Beaulieu on the French side, all with good hotels, but no other accommodation ; and on the Italian Bordighera and Alassio. The former has many attractions, and accommodation of all sorts can be found ; it is more bracing and rather more exposed than San Remo, except to the east.

At Alassio the accommodation is poor, and the hotels situated in exposed positions on the shore, but the surrounding scenery is beautiful.

Pegli, the last place going east on the Riviera di Ponente, scarcely needs mention as a health resort, and presents few attractions to the ordinary traveller.

The Riviera di Levante, which stretches from Genoa to Pisa, is picturesque, but less suited for invalids than the Western Riviera, being moister and less sheltered. The best resort is Nervi, which has a good hotel, but many go to Rapallo, Santa Margherita, and Spezzia, where, however, the accommodation is not first-class. The prices are considerably lower than at the more fashionable western resorts, and, speaking generally, they are less on the Italian than on the French Riviera, though in the larger towns accommodation can be got at all prices.

Most of the precautions which should be observed by those travelling on the Riviera have been mentioned incidentally, but it may not be amiss to recapitulate the principal points, which are briefly :

1. Winter clothing and thick boots should be taken, as there may be some weeks of cold weather.

2. Invalids must be careful about being out at sundown or going suddenly into cold sunless streets ; in any case they should carry an extra wrap.

3. Care must be exercised in partaking of the red wines, and also of the over-liberal *tables d'hôte*, it being

remembered that less stimulant and food are needed than in the damp and chilly north.

The water supply of the Riviera, though much improved, is not above suspicion in some places. No well water should be drunk, and, if there is any doubt, it is best to adhere to natural mineral waters, such as St. Galmier, Apollinaris, natural Seltzer water, and, in Italy, Nocera and Cinciano, both good table waters. The ordinary siphon is no protection whatever, being made on the spot.

4. If there be persistent insomnia, a move may be made either to a place with a somewhat less stimulating climate or to one a little distant from the sea. If this do not suffice, there is no remedy but to get away from the coast altogether, where other reasons do not forbid. The same applies to those who find the climate intolerably irritating to their nervous systems.

5. There are no special diseases to be guarded against on the Riviera, but there seems to be some liability to occasional epidemics of sore throat, which are not due to drainage, and also of diarrhœa. Both troubles may prove obstinate, and it is best to have medical advice at once when the symptoms are at all severe.

It is safer not to let children wander into the poor quarters of the town where these exist, as the ordinary epidemic diseases are frequently rife there, unknown to visitors.

If these precautions and the ordinary dictates of common-sense are observed, those who go for health may look for benefit, and those who go for pleasure may hope for uninterrupted enjoyment of sunshine and scenery which, at their best, are unrivalled in Europe.

INDIA

By W. J. Simpson, M.D., F.R.C.P., D.Ph.

Nature of Climate and Seasons.—India, which includes Burmah and Assam in its empire, presents much variety in its tropical climate. The vastness of the country, its situation within the tropics, by which it is brought under the influence of a tropical sun, its high table lands, its great plains, its immense extent of sea coast, and its separation from the northern continent of Asia by the highest mountains in the world, are sufficiently striking features to give variety to the climate. The variation, however, is chiefly influenced by the amount of humidity in the air. In Southern India and near the coast the climate is not exceedingly hot; but is steamy, damp, and oppressive. In Northern India the variations are extreme. In summer the heat is intense; during the day a dry wind like the breath of a furnace prevails, which dies down at sunset, and is succeeded by a dead calm. In winter the cold at night freezes large sheets of water. Between the dryness and extremes of heat of the north, and the dampness and more uniform temperature of the south, there is every kind of climate, approximating more or less to one or the other according to the situation of the locality.

The climate can be broadly determined by the kind and nature of the vegetation found in different localities.

In Southern India and near the coasts, the influence of a powerful sun, perennial warmth, great moisture, and equable seasons is displayed in an endless variety of luxuriant tropical vegetation not to be seen in any part of Europe. Away to the north the influence of a powerful sun, parching winds, and a small amount of rain is distinctly unfavourable to vegetation, and large tracts in the Punjaub and Scinde remain arid and uncultivated.

The seasons, dependent for their temperature and humidity on the position of the sun in the northern and southern hemisphere, and on the periodical changes in the direction of the winds which follow the course of the sun, are divided into the hot, the rainy, and the cool. From October to March the N.E. monsoon prevails; it is a cool and dry wind, having passed over vast tracts of land. From April to October the S.W. wind predominates; it is a hot wind, and for 3 or 4 months in the year brings rain to the greater part of India. When the sun is vertical in the northern hemisphere, there is a gradual heating up of the land until it becomes in Northern India like a fiery furnace. With this intense heat the barometric pressure is gradually lowered, and air currents from the southern seas rush into the vacuum; and, unless when deflected by mountains, they preserve in the main a south-westerly direction. Laden with moisture, they in due time bring deluges of rain, which regularly appear on the Malabar coast at the end of May. This is the beginning of the rainy season or rainy monsoon, and is ushered in everywhere by thunderstorms and heavy showers. The rainfall varies enormously in different parts of India, ranging from an annual average of a few inches to almost as many feet. It is greatest along the Ghats in the Deccan and in the Khassia hills in Assam, and least in Central and Northern India. To the east of the

Ghats and in the interior, the S.W. monsoon appears later than on the coast, and it generally reaches Bengal by June 15. It is retarded by the Ghats and Nilgiris in reaching Madras, and the chief rainy season here occurs with the setting-in of the N.E. monsoon and lasts till the end of November. During the rains the temperature is cooler; but, should there be any interruption for a few days, the sun asserts its power, and the heat becomes oppressive.

When the sun passes into the southern hemisphere, the barometric pressure is no longer low in Northern India, and the seat of lowest pressure is transferred to the regions south of the equator. With this change the aerial currents reverse, the N.E. monsoon sets in, and with it the cool season.

The intense heat of the north, followed by its prolonged cold and bracing weather, is healthier and less trying to the constitution than the long-continued heat and dampness of the south. The temperature in Bengal, unlike that in Northern India, seldom rises above 95° in the shade, but the large amount of moisture in the air makes it much more relaxing to the system. For nearly 7 months in the year the body is in a sort of Russian bath, owing to the saturation of the air with moisture and the copious transudations from the skin. September and October are the worst months in this respect, when the south wind has lulled down and the air is stagnant. At this time the whole place teems with the lower and smaller forms of life; insects, flies, and beetles of every description abound, and it is with difficulty they are kept out of the food at table. The first signs of change are to be noticed in the early mornings, when the wind veers round to the north, and the air is keen. Once the cold weather has set in, the mornings are cool and fresh, the

days are warm and dry, and the nights are cold and damp. The minimum temperature may reach 45° at night, while the thermometer registers a little under 80° during the day. For the healthy resident and for visitors who are accustomed to a temperate climate, the cold season of Bengal is delightful and healthy; but for those who are delicate, and who have been long resident in the tropics, the cold weather is not without its discomforts and dangers. The skin, which was excessively active during the hot weather and rains, has its functions curtailed, greater work is thrown on the kidneys, and a large amount of blood accustomed to circulate near the surface of the body is diverted to the internal organs. Owing to these physiological changes, headache, torpidity of the liver, and a feeling of fulness and congestion of the internal organs are often produced; and should there be any weakness of these parts, the slightest exciting cause may lead to derangement or disease. In Calcutta, the cold weather sets in in November, and continues till the end of February. In Bombay and Madras the cool weather makes itself decidedly felt early in December. In Southern India, December to February is essentially the cool season, while in Northern India the cold season begins earlier and ends later, and is more marked in its character, the bracing cold of Upper India thoroughly contrasting with the damp cold of Bengal. During the hot weather and rains, punkahs, thermantidotes, and khuskus tatties are brought into use to keep the inside of the dwelling-rooms cool.

The Hill Climates.—The hill climates are, as a rule, damper and cooler than those of the neighbouring plains; they suit the physically sound, the fever-stricken, and the debilitated, but they do not agree with patients suffering from bowel complaints or internal congestions. Even to the

healthy the high altitude and cooler climate is at first a strain to the constitution, and is attended with suppressed action of the skin, increased activity of the kidneys, a quickened pulse, and not infrequently with diarrhœa. Still, the hills, for the European, are healthier and more congenial than the plains, and it is to the sanatoria established there that Europeans resort, whenever they can, for health and for pleasure. Among resident Anglo-Indians there is a regular movement of the women and children to the hills on the approach of the hot season, and a return to the plains at the commencement of the cold weather. The chief officers of Government, Imperial and local, have their offices in the hills. Many of the hill stations are 7,000 ft. high and well above the fever level, and of these Simla and Mussoorie serve as the sanatoria of the north, Darjeeling for Bengal, and Ootacamund, the most delightful of them all, for Madras. Of hill stations not nearly so high in altitude, Poona, Mahableshwar, and Lanowli are convenient resorts for the residents of Bombay. The hill climates are at their best in October, November, and December. It is then that they are most bracing.

The Effect of a Tropical Climate.—The effect of a tropical climate on a European constitution is to gradually bring about a change in the customary physiological functions of certain organs of the body. The change is an effort on the part of the system to adapt itself to the new conditions, and until this process of acclimatisation is fully attained, the individual is highly susceptible, from the slightest indiscretion, to disorder and disease. A strain is also placed on the nervous system, which is alternately stimulated and depressed, and is consequently more easily affected by external impressions which tend in those who are highly strung to nervous irritability. In this unstable condition a sudden chill may deprive the nervous system

of its regulating and controlling power over the supply of blood to any part and cause a slight or serious congestion.

In residents of the tropics there is usually slight congestion of the internal organs, owing to the relaxation of the blood-vessels; and when this congestion, however slight, is continued for years, it tends gradually to disorder and impairment of function. Sudden transference to a cold climate after a long Indian service aggravates this condition, and is generally unsafe to the elderly Anglo-Indian, who has cautiously and gradually and under medical supervision to get acclimatised to England.

The best Constitutions for India.—There are two constitutions which adapt themselves to the climate of India better than others. The first is characterised by spareness of habit, dark features, quick intellect, and a wiry but active muscular frame. This type withstands well the effects of heat and the alternating fluctuations of temperature. The second is the opposite of the first, and is indicated by a fair and ruddy complexion, strong muscles, large chest, an active and full-blooded circulation, quick brain, and restless energy of body and mind. It resists for a long time the deterioration of blood which sooner or later overtakes every European in the tropics, but it is liable to break down suddenly, and is particularly apt to suffer from inflammations and congestions due to chill. It is a matter of experience also that people with a tendency to constipation stand the climates of India better than those whose bowels are inclined to be relaxed. The constitution which is most unsuited for the tropics is undoubtedly the highly nervous. It can neither bear the exhaustion of the climate nor the vexatious incidents of an Indian life, and soon breaks down under the strain. Very stout people also stand the climate badly, and with them there is a danger of heart failure and apoplexy.

The Effect of a Tropical Climate on Women.—Women, as a rule, are much more readily affected by the climate than men. This is due partly to the loss of muscular tone and abdominal congestion ordinarily produced by the climate tending to bring on or aggravate the maladies peculiar to women, and these in their turn causing other illnesses, and partly to the mode of life which the heat of the tropics compels European women to adopt if they remain in the plains during the hot season. At this period they lead more or less a zenana life, being shut up in their houses during the greater part of the day with closed windows and darkened rooms, while their evenings are often spent in social duties involving dinner parties, late hours, and the wearing of clothing which does not sufficiently protect the sensitive skin against chill. Further, the demands made on the constitution of women by child-bearing in a climate which otherwise has marked deteriorating influences naturally tell greatly against them, and are a frequent determining cause of breaking down. Young girls ought not to proceed to India before their growth and development are matured; otherwise the life to which they are subjected, combined with the climate, will probably injure their health in a very short time.

Age.—Age is an important factor in Indian life. To the newcomer nothing is more observable in the European community than the absence of old and of very young people. Official life is completed in India at the age of fifty-five, and the planter and merchant have at this age generally retired or succumbed to hard work and the effects of malaria and climate. India is for Europeans essentially a country of adults between the ages of eighteen and fifty-five, and of children up to five years of age. Up to the age of five and six children appear to thrive in India as well as in England, with the additional advantage

of the ailments of childhood being milder and of escaping scarlet fever, which is not a disease of the country. Above that age they begin to droop, and their proper development is interfered with. Similarly, very young people are affected injuriously by the climate of the plains and by the surroundings, social and moral, while for them the dangers are increased many times because they do not know how to take care of themselves. One of these dangers is typhoid fever, to which they are peculiarly susceptible and which causes a high mortality. A very large percentage of cases of typhoid fever, both in the civil and military population, occurs in persons under thirty years of age, and who have been less than five years in the country. It is unadvisable for people over fifty years of age to visit India for a longer period than the cold weather, unless they spend the hot season and rains in the hills, and then only when they have been examined by a medical man and declared physically fit.

India not a Country for Invalids.—It will be gathered from the preceding that India is not a country for invalids. Still there are many people who are not very strong, and decidedly benefit by a change to the tropics. They are the weak-chested and the scrofulous, and those who suffer from the cold in England on account of a languid circulation. The heat agrees with them, and they are more active and brighter, and enjoy better health than they do in the winter in England. With these exceptions, none but those who are sound in body and mind ought to risk a hot season in the tropics. Consumptive patients ought not to go to India. The voyage is harassing to them, and only harm will be the result of their visit. Neither should people with asthma, gout, rheumatism, heart disease, or uterine affections proceed to India, for the climate will only tend to aggravate these diseases.

The best Time for visiting India.—No one should visit India for the first time during the hot weather and rains. It may be done with impunity, but it is accompanied by considerable risk. Between May and November heat apoplexy, liver affections, fevers and bowel complaints are prevalent in the plains. The best time to travel in India is from the middle of November to the end of March. By selecting this period nearly five months of charming and healthy weather can be secured, and the heat, discomforts, and dangers of the other seven months avoided. With ordinary prudence, as regards the avoidance of chill, and careful attention to food and drink, the European will enjoy excellent health, and will find a trip to India at this time of year one of the pleasantest that can be undertaken.

In the early period of the English rule the passage to the East was long and perilous, and the families interested in India were few. These conditions have now changed. Steam has in a measure annihilated the distance and brought our great dependency nearer. Bombay can be reached in a fortnight, the time that was ordinarily occupied at the beginning of the century in voyaging from London to Aberdeen. The voyage is full of interest; its dangers have been reduced to a minimum; its discomforts are limited to a few days in the Red Sea, and the sea in November, December, January, and February is usually smooth, and accidents are of exceptional occurrence. Every year the connection between India and England becomes more intimate, and the great ocean steamers that go to and fro are, during the season, filled with passengers whose business, official work, or pleasure takes them to India.

Outfit.—Visitors to India have often friends and relations there, and on that account make a more protracted

stay; others for different reasons may desire to remain in the country over the summer. For these a larger and more extensive outfit is necessary than for those whose stay is to be for the winter months only. A mistake is frequently made in buying an outfit much larger than will ever be required. Suits of clothes and underlinen enough to last for years will likely be pressed on the prospective traveller, as if India were a land where no clothing was procurable. Even if the traveller should intend to extend the journey further East, only a moderate stock of clothes is required. Every endeavour should be made to bring it within the smallest compass, for nothing in travelling is more vexatious, cumbersome, or expensive than a large amount of luggage. Three or four light, airy, and loose flannel or serge suits, some Jaeger underwear and flannel sleeping suits, several Jaeger cholera belts, a silk cummerbund, a pair of tinted spectacles, protected at the sides, a sun helmet, and a white umbrella lined with green, should under every circumstance form part of the outfit. A terai hat and puggery should be avoided; they are very hot and uncomfortable, and nothing like so good as an Ellwood helmet. For the voyage change of linen for three weeks is required. Ordinary clothes can be obtained as cheaply in India as in England—the native *durzee* or tailor being quite an expert in making clothes from any pattern. It is only in Calcutta and Bombay, during the cold season, that smart dressing is required. The usual summer clothes that are worn at home, with a few heavier things to put on when evening comes on, will carry the traveller through the winter, and during the hot dry weather there is nothing better than light Indian gauze or merino underwear, a Jaeger belt, and Assam silk or soft loose-fitting flannel or fine serge clothes. The light summer clothing worn in England does excellently well for the cold season

in India, but it is wise in the later part of the afternoon to change this for a thicker suit. A thick overcoat is needed in the evening, especially when driving. On the approach of the warmer weather the upper clothes must be changed for lighter material, such as Assam silk or light serge, the underclothing being kept on for some time longer. Wool should always be worn next the skin, summer and winter. Wool absorbs the moisture from an active skin, allows a freer circulation of air through its fabric than any other material, and prevents rapid conduction of heat from the body. It is pleasanter, healthier, and more comfortable than either cotton or linen, because it preserves an equable temperature around the body, thus preventing chill, and it is cooler, because it permits a healthy interchange between the gases on the surface of the body and the atmospheric air. Silk has similar properties to wool. Cotton and linen, on the other hand, are not absorbent, and are only half as permeable to air; and in consequence, under the slightest exertion, the perspiration passes through the material, evaporates rapidly, and produces chill, while the absence of a healthy bathing of the skin with the atmospheric air may cause oppression and discomfort.

By wearing woollen material next the skin, many of the conditions conducive to chill or heat-stroke are avoided, and it is the best precaution against prickly heat. Coarse flannel will irritate the skin, and is impossible. Nothing but the finest should be bought. For those who cannot wear wool, even of the finest, silk is a good substitute; or, perhaps even better, the material called 'Cawnpore twill lining,' which is almost as absorbent as merino, and is to be had in Calcutta.

It is of the greatest importance to health and comfort that the undergarments be as loose as possible, and that

the Jaeger cholera belt be constantly worn, one during the day and another at night, in order that the parts particularly susceptible to cold and chill shall be protected. Many owe their first illness to the neglect of this simple precaution. In order that the cholera belt shall not shift its position, it is best to have it attached to the pyjamas or under-drawers. During the hot weather and rains the body perspires on the slightest exertion, and it is necessary to change the clothes several times a day, and especially so before sundown. Damp clothes require to be regularly aired and dried before being put on again, and in the rains they should always be dried every night. A good bearer will do this over an 'angaitee,' but it is necessary to give the order, otherwise it may not be done, and the wearing of damp clothes is apt to cause chill and bring on fever. The colour of the clothes is of some importance. White absorbs the sun's rays least, black and blue the most. Grey comes next to white in its absorbing powers. The coolest garments are white, and the next coolest are grey. For travellers doing rough work, and liable to exposure, grey flannels are probably the most suitable. Tinted coloured spectacles, shielded at the sides, are useful as a protection for the eyes from fine and irritating dust, and from the glare of the land and sea, especially when passing down the Suez Canal, through the Red Sea, and at Aden. They are also useful, immediately the hot weather commences, in preventing headache due to the intense light of the sun. The head-dress most suitable to the tropics is a light and well-ventilated *solah topee* or pith hat. The ordinary Ellwood helmets can be worn in the colder part of the cool season, but they are not safe or serviceable for the hotter months, when it is absolutely necessary to wear a broad hat, which shall protect the temples and nape of the neck; and if there is to be much

exposure to the sun, a spine pad sewn into the back of the coat ought to be worn, as the spine is sensitive to the rays of the sun. To be provided with a good white umbrella lined with green is an additional protection from the sun, and for travelling in the hills or jungles puttees, which are woollen bandages worn over the trousers or with knickerbockers, will be found comfortable and supporting, and also a good protection against leeches and the bites of insects.

The Hotels.—The hotels in India are not good. Even in Calcutta, Bombay, and Rangoon they are inferior to those of Cairo or Colombo. Possibly, as visitors become more numerous, the much-needed improvements will be made. They are not expensive, 10*s.* to 12*s.* being about the daily cost. They are to be found at all the places of interest on the main lines of travel, and in the winter are likely to be crowded. It is always advisable to secure a room in advance in the hotel at which it is proposed to stay. When the ordinary track is deserted for some place in the country, it is necessary to make arrangements beforehand and secure accommodation at one of the Dak bungalows of the district, which are a sort of rest-houses, dotted over the whole country, at which shelter and a meal can be obtained. It is also necessary to be provided with bedding, consisting of blankets, pillows, sheets, and a quilted *razai*. These should be packed in a hold-all, separate from the other baggage. If the routes of the railway or river be left, the traveller must be prepared for rough roads and many inconveniences. Camping out is very delightful in some parts of India, but before any stranger to the country attempts it alone he should accompany others who are familiar with camp life.

Food.—As regards food, the European has to avoid the tendency to over-indulgence. The climate throws

a strain on the kidneys and liver in getting rid of effete matters in a concentrated form, and it is not a good thing to add to that strain by eating too much animal food. The days of heavy luncheons and heavy drinks in the middle of the day have, for the most part, disappeared, and with them many of the diseases that were attributed to climate. On the other hand, it is unwise to be too sparing in one's diet, especially if there is a fair amount of work to be got over. It is well to conform at once to the custom of Europeans in the country, who take a light breakfast, consisting of tea or coffee, bread, butter, and fruits in the morning before going out, and a good breakfast about eleven in the morning; some light refreshment at tea-time, and an ordinary dinner at night. Meat three times a day in the hot weather will sooner or later do harm. Except in the large towns, there will not be much choice in regard to the kinds of meat; but if beef or pork should be offered it should be declined, as both are liable to be infested with parasites. A simple fare is the best for India; made dishes and *réchauffés* are to be avoided, as they are likely to cause indigestion. Fish must always be fresh, as indicated by the pink appearance of the gills. Tainted or putrid fish is dangerous, and is apt to give rise to a poisoning which simulates cholera in its symptoms. The fruits as a rule are delicious and wholesome, but it is better not to take them at night. They should be always ripe and sound. Watercress, salads, and raw vegetables should be eschewed unless they are specially prepared, and by a reliable and particularly clean person, for they may take up germs and parasites of disease from the water or soil from which they have been gathered; and in this connection it should be borne in mind that the water used for washing raw vegetables should be boiled, otherwise parasites and germs

of parasites may be added in this way. Milk in tea or coffee, or as a drink, requires special care. It is best to follow the native custom, and always to cook the milk. Boiled milk is more digestible than unboiled, with the additional advantage of being perfectly safe. Raw milk, on the other hand, owing to the adulterations to which it is subjected in the East, the unclean state of the cowsheds and milk utensils, and the unsanitary conditions connected with the business, is very liable to contain the germs of disease. Native *goalas* or cowkeepers have no compunction in diluting the milk from the nearest pond. After the milk is boiled it should be protected from dust or possible reinfection. As a resident, it is not enough to be careful in the selection and cooking of food, but it is important to maintain a certain amount of supervision over the kitchen. In all well-ordered English houses the kitchen and cooking utensils are regularly inspected, and the first inspection will, as a rule, impress the necessity of a systematic inspection, for cleanliness will be found to be at a discount, and the pots and pans will probably be discovered to have been mended with lead.

Water.—It is impossible to be too particular about the water drunk in the East, for it is the medium in which many parasites flourish or remain quiescent, which, when swallowed, set up disease, sometimes of a most serious nature. Among the diseases induced in this way may be mentioned cholera, typhoid fever, diarrhœa, dysentery, malarial fever, intestinal worms, producing poverty of blood (*anchylostomiasis*), guinea worms, inflammations of the lymphatics (*filiariasis*), and painful affections of the urinary system (*Bilharzia* disease). Every one, therefore, who desires to escape the risk of being attacked by the above-mentioned diseases, should never drink water that has not been first boiled, and, if possible,

afterwards filtered. Even in the larger towns, where a public water supply is provided, though there is not the same necessity as in other parts of the country, where water is liable to all forms of pollution, yet it is still advisable to boil and cool the drinking-water. Next to boiling, filtration is the only other fairly safe method of treating the water before drinking, and the best filters for this purpose are the Pasteur-Chamberland filters, of which there are several kinds, portable and convenient in size. The Berkefeld is also a good useful filter. All other kinds should be discarded, for they are difficult to keep clean, and, instead of purifying, not infrequently add their own impurities to the water. Water should never be drunk from a *mashak* or leathern vessel, which is never clean, and, however pure the source from which the water may be drawn, the *mashak* is sure to contaminate it. Where the water is muddy, a preliminary addition of two grains of alum to every quart of water will in a short time clear the fluid, the impurities gradually falling to the bottom of the vessel. The clarified water can then be decanted, boiled, and filtered. The natives frequently clear muddy water by rubbing the inside of the earthen vessel with one of the seeds of the *strychnos potatorum*, called by them *Nirmulla*. A quantity of permanganate of potash in crystals is always a very useful chemical to be provided with. It possesses the power of destroying organic matter, and thus rendering water more drinkable. A few grains of permanganate of potash, when added to a vessel of dirty water, produces a pink tinge, which gradually disappears, and more quickly so when the water is heated. The more organic matter in the water, the more quickly does the pinkish colour disappear. If the process of alternately adding a few grains of the permanganate of potash and heating is continued until a slight pinkish

tinge remains for ten minutes, much of the organic matter will have been got rid of, and the water may then be thoroughly boiled, allowed to cool, and then filtered through an ordinary stoneware filter bottle, which can be obtained in India if no other filter is obtainable. A clean napkin should always be placed over the jug or vessel which contains the boiled water, both while it is being cooled, and afterwards in order to protect it against flies, dust, &c. If ice is used in drinking-water, none but that from the most unexceptionable sources should be employed. Ice from native bazaars is dangerous. Iced drinks, though very pleasant at the time, should not be indulged in to excess, for they tend to weaken the digestive processes already somewhat impaired by climatic influences.

The preparing of water for drinking purposes should always be supervised by the traveller himself, otherwise the necessary precautions will not be taken. If dependent on others, it is best to drink tea or coffee rather than water, and this is the case whatever part of the tropics one may be in. When travelling across country in India by rail, soda-water prepared from pure water can always be obtained at the principal stations from the refreshment-rooms, and in the hot season a supply of ice and soda-water is, as a rule, carried on the train. Soda-water from native factories should not be drunk.

The Illnesses of the Tropics.—The illnesses of the tropics, with the exception of those that are caused by parasites and microbes, are essentially of a nervous and congestive nature, due mainly to climatic causes. Heat and exposure to sun, wind, and rain in the tropics are apt, in a very special manner, to disturb the functions of the body, causing illnesses which are characterised by high or low fever lasting for a few days or for several

weeks, or by well-marked derangement of some internal organ. In the one class, in the slightest forms, the nervous system loses its tone and its firm governing power over the heat-regulating centres of the body, and, in the severe forms, sustains a shock from which it may not wholly recover. In the other class, the action of chill on a sensitive and perspiring skin suddenly drives the blood from the surface of the body into the interior, and there induces congestive disorders specially affecting the liver and bowels. It is unnecessary to enter into these illnesses further than to state that they are to be avoided by the same precautions which have been laid down against malarial fever and against chill.

Sunstroke.—Under the general term of sunstroke there are several varieties of illnesses known by the names of heat exhaustion, heat stroke, and heat apoplexy. They may all be produced by exposure to the direct rays of the sun or to high temperature even in the shade when it is combined with certain known and unknown conditions of the atmosphere and intensified by stagnant and impure air. It occurs more frequently in persons suffering from exhaustion, physical and mental, from ill-health, from the effects of drink or over-eating, and in those wearing tight-fitting and unsuitable clothing. In the case of direct exposure to the sun, the chemical rays are believed to be even more injurious than the heat rays. There may be every degree of sunstroke, from the mildest form, in which it is indicated by giddiness and faintness, headache, fever, intolerance of light, and perhaps vomiting, to the gravest, in which there is shock and sudden death; or serious congestion of the head and brain mischief; or difficulty of breathing, high temperature reaching to 106° or even 110°, livid countenance, unconsciousness, contracted pupils, convulsions, and death in a few hours. The milder illnesses

caused by the effects of the sun or heat may be completely recovered from without any after-effects, but it is seldom that the severer forms do not leave their traces in impaired health, sleeplessness, nervous disorders, and sometimes more or less loss of intellectual powers and mental derangement.

Treatment of Sunstroke.—Until a medical man arrives the treatment of sunstroke should consist in placing the sufferer in a cool, shady place loosening the clothes, and applying ice and cold water to the head and back of the neck. In exhaustion, which may be brought on by the heat of the sun or by a hot and close atmosphere, and which terminates in a fainting fit, the patient becomes pale and giddy, falling to the ground, becoming almost pulseless and very cold. The treatment is that which is adopted for an ordinary fainting fit, viz. laying the body on the back in a cool and airy place, loosening the clothes, applying ammonia or smelling salts to the nostrils, and dashing a little water on the face and chest. As a rule, in a short time the patient recovers and is not much the worse, but in stout persons and in those with heart disease the faint may be most serious.

Precautions against Sunstroke and Heat-stroke.—Those who have once suffered from the sun appear to be less able afterwards to resist its injurious effects, and their only safety is in removal to a colder climate. The precautions to be taken against sunstroke and heat-stroke are simple, and it is generally new arrivals who are imprudent in their food and drink, careless in their habits, and recklessly expose themselves to the sun in the months of May, June, July, August, and September, that are affected.

It is a wise rule in the summer not to go out during the hottest part of the day, which is from eleven to four, or

later in the afternoon. If compelled to do so, it is better not to walk, but if this cannot be avoided, then it is necessary to be provided with a white umbrella lined with green, a pair of dark-coloured goggles, and a broad-brimmed topee, which will protect the head and neck and allow of free ventilation around the head. The natives are fond of yellow and orange-coloured garments, which are considered to be protective against the chemical rays of the sun. Europeans usually have their topees lined with green. If in a conveyance, it is advisable that the carriage-hood be covered with wetted straw or matting, and if in a train, that the tattie be constantly kept wet, and that there be plenty of ice or ice-water to sip occasionally and to bathe the head with, when feeling uncomfortable. When indoors the rooms should be darkened during the hottest part of the day. If the windows are closed in the morning before the heat is great, the temperature of the rooms may be kept much cooler than it would otherwise be. The punkahs, thermantidotes, and tatties should be kept going day and night, and especially at night, for they are even more necessary then than during the day. The clothing requires to be light and loose-fitting, and of wool, to permit of the freest breathing and perspiration, and it must be sufficiently permeable to the air to allow the removal of the heat which accumulates on the body. Excess of animal food, exhaustion, fatigue, and alcoholic drinks must be avoided.

Precautions against Chill.—Precautions against chill are particularly necessary on account of the sensitive state of the skin, which is peculiarly susceptible to external impressions of cold. Anything that disturbs the equable temperature of the surface of the body is apt to cause a chill and to interfere with perspiration.

Violent exercise, followed by a drive in the evening

before changing the clothes, may be the cause of a severe attack of diarrhœa, inflammatory dysentery, or congestion of the liver. After lawn tennis or golf, a thick overcoat, sweater, or cloak should be immediately put on, and the clothes should be changed as soon as possible. The sitting in a draught, or under a punkah, or opening one's jacket to enjoy the coolness of the evening breeze whilst in a state of perspiration or exhaustion, is to be avoided. It is a precaution which is at first not easy to remember; but the enjoyment, though ever so pleasant, is fraught with the most serious risks. When heated or fatigued, a cold bath ought never to be taken; a warm bath or a good rub down with a rough towel is more refreshing and devoid of danger. At night in the hot weather there is special liability to chills. Then the body is apt to become drenched with a profuse perspiration, which is due to exhaustion; and if the night clothing is not thoroughly absorbent the result is apt to be a chill.

To prevent the effects of a chill developing when unavoidably exposed to one, it is advisable to take a hot bath, go to bed, take a warm drink, an aperient, and 10 grains of quinine.

Malarial Fever.—Malarial fever is the disease of all others which is the most common in India. Its several forms are caused by a minute parasite which gains an entrance into the body and lives in the blood of the patient. This parasite, which was discovered by Laveran, a French physician, in 1880, attacks the red corpuscles of the blood and destroys them; and were it not that the human body has a means of defence against the parasite, and that it is affected by medical treatment, every red corpuscle in the body would be destroyed, and the result would be anæmia and death. When the parasite enters the corpuscle it is comparatively a small organism, but it soon undergoes

definite changes at the expense of its host, it increases in size and fills up the whole corpuscle, a mass of dark pigment accumulating in the centre; it then becomes segmented or rosetted, each segment acquiring a spherical form; finally, the corpuscle breaks down and allows the segments or spores to escape into the blood. Each spore, being free, is now ready to attack another red corpuscle, to undergo the same development, repeat the cycle, and discharge another brood into the blood. It is at the time of sporulation, when the young spores of the parasite become free in the blood, that the hot stage of the fever occurs, and it is at this time that an extraordinary phenomenon may be seen to take place in the blood. There suddenly appears on the scene, and in a state of great activity, a large number of white corpuscles supported by a number of giant companions, that rush on the young brood of parasites, attack, absorb, and digest them. A similar destruction of parasites goes on in the liver, spleen, and marrow. Shortly before these disturbances in the blood, the patient begins to feel cold, and seeks warmth by extra clothing or exposure to the sun; he then begins to shiver, has headache, is thirsty, and vomits. No amount of clothing or hot baths will make him feel warm. This is the cold stage, and may last from a few minutes to two or three hours. After this, transitory flushes alternate with the shivering, the feeling of cold diminishes, and then the face becomes flushed, the skin hot and dry, the pulse strong and rapid, the headache increases, and there may be delirium and, in children, convulsions. The temperature, if taken, will be found to be 103° or even higher. This is the hot stage, and may last from two to eight hours. It is followed by the sweating stage, in which the feverish symptoms subside and the patient perspires profusely. The headache passes off, the thirst lessens, and the patient,

exhausted, falls into a sleep, from which he wakens free from fever.

The character of the fever is determined by the length of time taken by the parasite to pass through its life cycle. A fresh crop of spores matures after an interval of 24 hours, or after an interval of 48 hours, or after an interval of 72 hours, and there are corresponding types of fevers. In one type there is an attack of fever every 24 hours, with an interval perhaps of 10 hours' normal temperature; in a second type there is an attack of fever every 48 hours, with a day of health intervening; and in a third type an attack every 72 hours, with two days of health intervening. These are the intermittents. The longer the period between the attacks, the milder is the variety of fever, and the shorter the intermission the more severe is the form of fever. In India, the severer forms are the more common, and not infrequently assume a continuous type or only slightly remit, not reaching the normal for a long period. These are the remittents. Newcomers are more generally attacked by the remittents. Whatever may be the character of the fever, whether intermittent or remittent, and there are many varieties, quinine or cinchona bark in one form or another is the proper remedy. Some persons, however, are unable to take quinine, and for them arsenic in minute doses often proves useful. It is unsafe, however, to attempt to treat oneself when suffering from these fevers, and medical assistance, when procurable, should be at once obtained. If a doctor is not available, then during the cold shivering stage give hot drinks with ginger and apply hot bottles to the legs and body and cover with warm blankets. In the hot stage, bathe the head with vinegar and water or ice, and in the sweating stage give 10 grains of quinine in lime juice, to be repeated next day a few hours before the expected attack, followed

for a few days by 5 grains night and morning. An aperient should also be given at the commencement. The diet also must be light, and during any period of the attack only liquid food ought to be taken.

Precautions against the Disease.—The precautions against the disease are by far the most important, for once a traveller has become infected with fever, he is liable to recurrent attacks from the slightest cause. A chill, exposure to the sun, or a cold wind will be sufficient to revive the germs of the disease, which may be latent in the system for months or for years. It is the recurrence of fever more than any other cause which produces in European residents of the tropics that poverty of blood, debility, and deterioration in health which is seen in so many on their return to this country. Suitable woollen clothing is indispensable if *chill* is to be avoided. It is much easier to catch cold in India than in a cold climate, and those who are careful to remember this fact, and to act upon it, preserve as a rule the best health. Chill frequently results from violent exercise, and then sitting under a punkah or out of doors without changing or putting on a woollen jersey or overcoat. It occurs also from driving in the evening too lightly clad, or from exposure to a cold wind. The precautions previously mentioned against the sun's heat must be strictly observed.

Fatigue should be specially avoided, for it relaxes the whole system, which then becomes highly susceptible to injurious influences. Dampness or wetness from heavy dew or rain is also liable to bring on a recurrence of fever, which may be avoided by taking a hot bath, a hot drink, and 5 grs. of quinine immediately on reaching the house.

The parasite of malaria is believed to inhabit the soil and water in malarious districts, and the mosquito is considered to act as an intermediary host between man and

the water and soil. The term 'malaria' indicates the most commonly received view that air is the chief medium by which the parasite gains an entrance into the body; there is evidence, however, that water is sometimes another medium. And there is further evidence that certain varieties of infected mosquitoes will by their bites inoculate the disease. It is after sunset, when the night vapours prevail, that malaria is most likely to be contracted. During the day even some of the most malarious districts are healthy. Malarious districts are generally characterised by being marshy or badly drained, or subject to floods or heavy rains, and containing in their soils much organic matter, from old or recent decaying vegetable deposit. The districts may be low-lying in the plains near the coast, in the deltas of rivers, near the foot of high hills, or on high table lands, or in the mountain valleys. Presence of decaying vegetable matter and dampness is the common feature. This may not always be apparent, for on a soil which on the surface is dry and bare of vegetation, the humidity may be due to temporary stagnation and fluctuation of the ground water, and the decaying vegetable matter may be mixed up in the soil, being the remains of a former period. A rise in the subsoil water produced by obstruction to drainage caused by the construction of railways, irrigation works, tunnels, and embankments, is apt to cause malaria, while extensive disturbance of soil by the carrying out of public works in tropical climates is generally accompanied by the prevalence of fever. Wherever the residents of a locality are seen to be anæmic with prominent bellies, which are due to enlarged spleen, there can be no doubt of its unhealthiness from malaria. The most unhealthy seasons for malaria are at the beginning of the rains and when the rains are drying up. The spring fevers occurring in Northern India in the hot dry

months are usually not malarial, but due to exposure. When fever shows itself to be exceptionally prevalent a month or two earlier than usual, it is as a rule the sign of the advent of a bad and unhealthy season. In malarious districts, towns are less malarious than villages. Houses and huts sheltered from the winds by trees or by higher ground, raised well above the ground, with grass plots around them, and with no ditches, pools, or puddles near them, are less malarious than others with opposite features. Kitchen gardens and flower gardens close to the dwelling-house are objectionable, for any disturbance of the soil favours malarial emanations. Grass plots are preservative against malarial exhalations, and clearing them away is often followed by malaria in a house which has been previously healthy; and, for the reason that it is better to be removed from the ground emanations at night, upper-storied houses are more healthy than one-storied bungalows. There are certain general precautions that should be taken to avoid contracting fever, whatever part of India one is in. It is necessary to live temperately, regularly, and well, to be careful that no irritating or indigestible food is eaten, to take no alcoholic stimulants before sundown, always to take tea or coffee and something to eat before going out in the morning, which should not be before sunrise, to wear flannel next the skin, to wrap up warmly at night, to avoid fatigue, to change the clothes after exercise or whenever they have become wet or even damp, not to sit in a draught to get cooled, and not to expose oneself in the hottest part of the day without a good topee and an umbrella. Exposure to sun, wind, and rain will not only cause fever, but tend also to depress the system and render it more susceptible to malaria; and if the subject has once had malaria, any of them is sufficient to bring on a fresh attack. When in a

malarious district, in addition to the ordinary precautions mentioned, it is important not to be exposed to the night air, but to return home before sundown, not to sleep near the ground, or in the verandah, or with the windows open, and to sleep always under a mosquito net.

In camping out, the tent should not be pitched near swamps, or muddy creeks, or half-dried-up rice-fields, or half-dried-up beds of rivers; and, if it is impossible to avoid these, the leeward side should never be selected; and when there is no choice, then, in order to secure protection against the winds blowing over the marsh or malarious area, shelter, if possible, should be sought behind a clump of trees or sloping ground, and the back of the tent should be opposed to the dangerous side. The camp bed should always be well raised, and mosquito curtains should never be dispensed with. Ladies should also wear their veils. Other sites to be avoided are spots which have been recently cleared of brushwood and jungle, also ravines, and especially their mouths where the wind is strong, and the foot of the hills where the grass is greener, and the vegetation ranker, than elsewhere. On no account should the night be spent in any of the terai jungles, for it is in these that the most deadly remittents are contracted. It is in these localities also that the drinking-water is dangerous, and should always be boiled. When travelling in malarious districts, it is advisable to take 2 to 5 grains of quinine daily, which renders the system more resistent against the lodgment of the malarial parasite.

Cholera.—Cholera is another disease of the tropics, against which precautions require to be taken. It is caused by a microbe, curved in shape like a comma, which, when swallowed in considerable quantities in infected water or food, multiplies in the bowels, and, in the process of multiplication, produces a poison. This poison, becoming

absorbed in the system, gives rise to vomiting, purging, and collapse. The microbe can grow under favourable conditions outside the body as well as in the bowels of man. It grows in the soil of certain tropical regions in which the disease is endemic, and it can be conveyed elsewhere beyond these endemic regions by the agency of infected articles or persons. If it finds suitable conditions of temperature, of soil and water in the new locality into which it has been carried, the microbe will multiply, and convert this new locality, for the time being, into an epidemic area. The transportability of the germ and its power of growth in a new soil are features which enable cholera to spread in epidemics, while the plant nature of the germs renders these epidemics subject to seasonal influences.

A cholera patient is not dangerous to others if care is taken to disinfect and destroy the bowel discharges and soiled linen; but should this precaution be neglected, and the microbes gain access to food or drinking water, then the patient becomes a source of danger, not only to the household but also to the neighbourhood. An attack of cholera may be preceded by diarrhœa for a few days, or it may occur suddenly in the early hours of the morning; and, unless immediate treatment is adopted, and, not infrequently, in spite of treatment, the patient rapidly becomes collapsed and dies in a few hours. No diarrhœa, however slight in its nature, should be neglected in a cholera country or at the time of cholera epidemics. Medical assistance should be sought for at once, in order that the diarrhœa may be checked. In the case of cholera, medical assistance should be sent for immediately. Every moment is of importance, and in the meantime, until the doctor arrives, an anti-cholera pill should be taken or a dose of chlorodyne, or 10 drops of laudanum and the same

number of drops of dilute sulphuric acid in a little water. If these are not in the house, a wineglassful of vinegar and water taken in sips at short intervals may prove useful. Keep the patient in bed and warm, apply a mustard plaster to the abdomen, and give small pieces of ice to relieve thirst. Drinks should not be given, as they only aggravate the vomiting. To prevent any contamination of food and water, the discharges should be received in a vessel and then covered with carbolic acid and, if possible, boiled; if they cannot be boiled, they should, after disinfection, be buried deep in the ground, far away from any well; they ought on no account to be thrown into the latrine, or on the surface of the ground. Soiled linen and clothing, utensils, spoons, &c., used by the patient or nurse, or which have been in the sick-room, should be boiled; those articles of clothing that cannot be boiled should be burnt. The hands of the nurse and patient should be washed in water, to which carbolic acid has been added.

Precautions.—The precautions against cholera resolve themselves into drinking no water or milk unless it has been thoroughly boiled, eating no food or vegetables unless fresh and properly cooked, and being careful as to the sanitary arrangements of the house. To prevent its spread when it does occur in a house, a careful destruction of the infective matter must be carried out in addition to the other precautions recommended. In the event of being obliged to go into a cholera district during an epidemic, it is advisable to be inoculated against cholera. The operation is simple, and consists in injecting a specially prepared vaccine under the skin. The prophylactic causes a slight indisposition with fever and headache, and pain at the seat of the inoculation for 24 hours, but this is not greater than that caused by an

ordinary vaccination against smallpox. The protective effect of the cholera inoculation is secured in from 4 to 7 days, and continues for at least 6 months, and usually much longer.

The method of inoculation against plague, and the action of the plague prophylactic, are similar to those of the cholera vaccine. And now that Western India has plague added to the list of diseases which it is necessary to be careful against, it is advisable that those who intend to spend any considerable time in the plague-infected districts should protect themselves by getting inoculated against the disease. There is no danger or inconvenience attached to this operation, and there can be no doubt as to its protective effect.

Dysentery.—Dysentery is a disease of the tropics which increases in frequency as we approach the equator, and which, owing to the serious consequences that may ensue after an attack, it is important to guard carefully against. The disease is essentially an inflammation of the inner lining of the large bowel, and is caused, it is believed, at all events in its more aggravated forms, by a specific microbe. Anything that disturbs the nutrition and circulation of the blood in the bowels is apt to predispose to dysentery. Thus, a chill brought on by inattention to the ordinary rules of living, or by exposure to the vicissitudes of the weather, the eating of coarse and indigestible food, a defective diet, drinking polluted water, and dwelling on an excreta-polluted soil, are all probably exciting causes of the disease. It is not infrequently associated with intermittent and remittent fevers, and with derangements of the liver. Sometimes it assumes an epidemic form, due to the pollution of drinking-water by the specific germ; while at other times it is due to the germ being communicated from one person to another by insanitary

latrines. In these instances the type of the disease may be mild or severe, but there is a tendency for the cases to increase in severity. Dysentery in its severe form produces serious lesions in the bowels, which, when the illness is recovered from, may interfere with comfort and health, rendering the sufferer more or less an invalid for life.

The disease may come on suddenly, but is usually preceded by ordinary diarrhœa, to which are soon added griping and straining. The character of the motions then alters, and, though the urgency and desire to go to stool are incessant, little is passed, and that chiefly mucus or serum mixed or streaked with blood. The straining and griping are most distressing and painful, and the small quantity of blood and mucus passed gives no relief.

Treatment.—From the preceding it will be gathered that dysentery is a disease which should be attended to at once, and its course cut short as soon as possible. There should be no delay in sending for a medical man.

Until the doctor arrives an enema of warm water may be used to wash out the bowel; the patient should go to bed, and a mustard plaster or fomentation should be applied to the abdomen, and only liquid food taken.

For mild cases of dysentery one to two teaspoonfuls of castor oil with 20 drops of laudanum, or a similar dose of castor-oil emulsion, may be given night and morning with good results; but for the severer forms in which there is no solid matter, but only blood and mucus, in the evacuations, then either ipecacuanha or magnesium sulphate must be given. If no doctor is at hand, 10 drops of laudanum may be taken, followed in half an hour by 20 grains of ipecacuanha in capsules or pills. These should be taken on an empty stomach, and the patient should remain as quiet as possible in order the better to resist any tendency

to sickness which the drug is apt to produce. In those cases, however, in which vomiting occurs, it is better to substitute sulphate of magnesia or sulphate of sodium in teaspoonful doses for ipecacuanha. A teaspoonful of Epsom salts dissolved in an ounce of water to which 5 drops of dilute sulphuric acid and a little cinnamon have been added, given four or five times a day, and continued for one or two days until the blood and mucus have disappeared from the stools, has, as a rule, a most excellent effect. The pain, griping, and straining will quickly disappear, the stools lose their offensive character, and the slime and blood give way to pale rice-watery-looking motions, which soon assume a yellowish colour. During the illness, and until the motions become solid and natural, the diet should be sparing in quantity and consist mainly of thin soup, barley or rice water, boiled milk, and sago.

The most important consideration, however, is prevention of the disease, and for that purpose the same precautions are to be taken as set down against malarial fever, chill, and cholera.

Fevers and chills must be avoided, for they are important factors in the causation of dysentery, owing to the engorgement of the internal organs which they induce. Special attention must be paid to securing digestible and suitable food and warm clothing, while every care should be taken to protect the system against the weather, especially cold and damp, and the more so if fatigued or in a low condition of health.

Diseases of the Liver.—In the tropics the liver of Europeans is particularly susceptible to disorder, climatic influences throwing a strain on its functions, which at first become more active, and later tend to a condition of exhaustion. In the one case there is an active congestion,

and in the other a chronic congestion, which may be increased to a dangerous extent by changes of temperature driving more blood into the already congested liver. Every meal produces physiologically a certain amount of active congestion of the liver, which is intensified if the diet is rich and excessive in quantity and alcohol is taken. Formerly, when the conditions of healthy life in the tropics were less understood, when little was done to mitigate the injurious effects of the heat or to avoid chills, when heavy and frequent meals consisting of meat and rich curries were washed down with beer and strong wines, liver diseases were common. A painful and tragic experience has but too well demonstrated the fact that it is necessary for a European, when transferred to a warm climate, to modify his mode of life and adapt it to his new environments. European habits of life must at all events be partially discarded if good health is to be enjoyed in the tropics, and in proportion to the extent to which this adaptation has been effected, tropical liver affections and tropical liver abscess have lessened in frequency. Regular exercise, attention to the bowels, proper protection against the sun, well-ventilated houses, the dispensing with heavy tiffins at midday, and the more moderate use of alcohol have worked a wonderful change in this respect, and none more so than the substitution of a very moderate use of alcohol for its former abuse.

Alcohol in the tropics has a much more rapid and injurious effect on the liver and on the system generally than it has in a temperate climate, and in the days when 'nipping' and 'pegging' were in vogue at all times of the day, much was attributed to climate which was really caused by this pernicious habit.

All alcoholic drinks should be rigidly shunned until the sun goes down, and then they should be only partaken

of in the smallest quantities—3 oz. of whisky, or a pint of the lighter wines such as claret or hock, should be the limit. Even this quantity for some persons is too much. Young people going to India will enjoy far better health as abstainers, and it is only when long years of residence in the tropics cause torpidity and impairment of digestion that a moderate use of alcohol at dinner is of benefit.

It is unnecessary to enter here into the several forms of liver disease which may be contracted in the tropics. They may be summed up as mainly the effects of acute and chronic congestions ending at times in abscess. Abscess of the liver may, however, also follow an attack of dysentery, which renders the early adoption of treatment for dysentery all the more important.

The acute congestions are usually brought on by a chill, contracted, it may be, by exposure to rain, or to a cold wind or draught after violent exercise, or in a state of fatigue, or exposure to night air in unsuitable clothing after the hot and impure air of a public assembly or dance, or to a cold bath when exhausted, or to any other cause which suddenly checks the perspiration and drives the blood into the internal organs. Pain and uneasiness on the right side, discomfort in breathing on lying on the left side, yellowishness of the eyes, sleepiness, and slight fever are the more prominent symptoms. If medical advice is not within easy reach, palliative measures of a simple nature may be taken until the doctor arrives. The patient should have a warm bath, go to bed, and have applied to the right side a mustard plaster, or poultice mixed with mustard, or a hot fomentation sprinkled with turpentine. These, together with an aperient pill, followed by a dose of Hunyadi Janos or Apenta water in the morning, and the strict maintenance of a low diet,

mainly of milk and light puddings, for several days, will often cut short an attack which would otherwise proceed to more serious consequences. Chloride of ammonium in 15 to 20 grain doses, combined with an aperient, has been found particularly useful in inflammations of the liver.

Chronic congestion, leading to enlargement of the liver, is more common among older residents of India, and is due to long-continued high temperature aggravated often by a too stimulating diet and a sedentary habit of life, or by repeated attacks of malaria. Where great heat and much malaria prevail, the worst forms of this disease occur. When the ordinary remedies begin to fail, change, for a time at least, to a more temperate climate or a sea voyage is absolutely necessary. And when the patient comes to Europe his recovery is frequently expedited by a careful course of mineral waters and baths under medical advice at one or other of the health resorts in Europe. Of those in Britain, Strathpeffer is rapidly coming into repute among Anglo-Indians.

Snake-bites and their Treatment.—The danger of snake-bite to a European visiting India in the cold season is practically *nil*, and it is very slight at other times. The great majority of snakes in India are harmless, except the sea-snakes, which are all poisonous. The cobra, hama-dryad, krait, Bungarus fasciatus, and Daboia Russelli, or Indian viper, are the most common venomous snakes, and cause the largest number of deaths. The cobra is not more than 6 ft. long; it is found all over India, and is distinguished by its hood and single or double ocellus, and is usually to be found in jungle or paddy fields, or in rubbish heaps and old buildings. The hamadryad is also hooded, and may be as much as 14 ft. in length; it inhabits damp and jungly places, and its tendency is to

attack when disturbed. The krait is from 3 to 4 ft. in length, is of a blue-black or brown colour, striped white, and has a single row of hexagonal scales running along the centre of its back. The Bungarus fasciatus, like the krait, has a row of hexagonal scales along its back, and has alternate bands of blue and yellow running across its body. The Daboia Russelli, or Indian viper, is about 4 ft. long, with a triangular-shaped head and distinct neck; it is grey or brown, with a chain of white-edged rings running along its back.

In cases of snake-bite in which the snake is not identified, an examination of the wound will generally determine whether the bite is that of a poisonous or harmless snake, for a venomous snake, with its two poison fangs, leaves a different mark from a harmless snake with numerous teeth. If it is a poisonous snake, there will be two red punctures on the skin about an inch or more apart, corresponding with the poison fangs of the snake; if it is harmless, there will be a row, or double row, of punctures. The symptoms of snake poisoning are not long in manifesting themselves. They differ somewhat in the cobra and in the viper. The local pain is more severe in the latter, and if only a small amount of poison has been injected the symptoms may not come on for a day or two, and are likely to be followed by blood-poisoning, from which it takes a long time to recover. In recovery from cobra poisoning there are no such after-effects. The chief symptoms in both are pain and swelling at the seat of the wound, gradually spreading higher up, faintness, sickness, vomiting, inability to stand, difficulty in breathing, gradually slowing down to suffocation, death occurring either by suffocation or convulsions.

Treatment.—Unfortunately no antidote against snake-bite is known. If any persons who have been bitten by

venomous snakes recover, it is not so much due to the treatment as to the quantity and virulence of the poison that has been injected with the bite, or been allowed to enter the system. Medical assistance should be sent for immediately, but the local treatment should be applied at once, while waiting for the doctor, and on no account should there be any delay until the constitutional symptoms set in; celerity is of vital importance. The great object to be attained is to prevent the poison reaching the circulation, and as the bites are usually on the hands, legs, or feet, a piece of cord should be bound tightly round the fingers, toes, or limb a few inches *above* the wound, between the bite and the heart, and a second ligature should be bound round the limb a little higher up. Time should not be wasted looking for cord. If none is at hand, a handkerchief, bandage, piece of cloth torn from a garment or from a sheet, may be bound round the limb, and the necessary tightness can be secured by putting a stick between it and the limb and twisting the stick. After the ligature or bandage has been applied the wound should be freely cut into, and smeared with caustic or acid. If Condy's fluid or crystals of permanganate of potash are at hand, they should be used for cleansing the wound. If no chemicals are at hand the wound may be sucked, the blood and poison sucked from the wound being immediately spat out, and the mouth thoroughly washed; for though snake poison taken by the mouth frequently produces no effect, yet there is considerable risk if there exist any abrasions in the mouth.

If constitutional symptoms set in before the arrival of the doctor, the patient should be given some aromatic spirit of ammonia or some brandy. Antivenene, which is the blood serum of an animal protected against large doses

of snake virus, is now being used by medical nen for the treatment of snake-bites.

The sting of the scorpion, of the bee and wasp, and the bite of the centipede are also accompanied by the injection into the wound of a poison which causes much local irritation, pain, and swelling. Possibly, in delicate persons these wounds may be followed by more serious results, and, where the stings are numerous, as in the case of a person attacked by a swarm of bees or wasps, they may be dangerous. To relieve the pain, the wound, if possible, should be sucked and a poultice applied. A good application is a paste prepared by mixing ipecacuanha powder with a little water and smearing it over the wound or wounds; it rapidly reduces the inflammation and eases the pain. If this is not at hand, some vinegar, eau de Cologne, alum, tobacco juice, or ammonia may be applied. The sting of the wasp may be extracted by pressing the opening of a watch-key over the part. Irritation of the skin and painful swellings caused by ants, spiders, beetles, sand flies, or mosquitoes may be treated with ammonia, vinegar, ipecacuanha, or kerosene oil. A little camphor or lime juice or eucalyptus applied to the skin appears to render the person less liable to the bites of mosquitoes.

Useful Medicines.—To attempt to treat oneself when ill is, as a rule, highly imprudent and seldom successful. There are occasions and circumstances, however, in tropical countries when the illness is sudden and of a character needing prompt attention, and when the traveller or resident is at a distance from a medical man, in which the resort to some simple medicine until skilled advice can be obtained is valuable. In the preceding pages several drugs have been mentioned, and the traveller or intending resident in the tropics can easily obtain a small pocket-case fitted up with half a dozen

bottles containing what is required, the most convenient form for medicines when not liquids or crystals being usually tabloids, palatinoids, and pills.

The following are recommended:

(1) Tabloids or palatinoids of quinine containing 2 and 5 grains.

(2) Anti-cholera pills or palatinoids (Indian Government formula), with instructions how to use them.

(3) Compound aloes pil. in palatinoids.

(4) A bottle of chlorodyne.

(5) A bottle of permanganate of potash.

(6) A bottle of ipecacuanha in powder.

HONG KONG

THIS very important military and naval station has a bad reputation for health. It is within the tropics and has its full share of tropical diseases and others. Malarial fevers, Beri Beri, phthisis, bronchitis, pneumonia, Bright's disease, and dysentery are all common.

Of later years the evil reputation of Hong Kong has been enhanced by the plague. The rainfall is 100 inches; maximum mean temperature, 86·2° in July; mean minimum, 52·7° in January.

SINGAPORE

SINGAPORE is situated almost on the equator. It rejoices in much the same diseases as Hong Kong. It has a rainfall of 92 inches and 168 wet days, with a mean annual temperature of 80°.

BRITISH BURMA

British Burma (Rangoon capital) is another warm moist tropical climate, resembling that of Singapore and unhealthy for Europeans.

ADEN

Aden is perhaps the least attractive spot under British rule; it is described in a well-known geographical manual as 'indescribably barren and desolate, a hotbed of the most deadly diseases, altogether one of the most uninviting and unhealthy spots on the face of the globe,' a description which every one who has been there must cordially endorse, though it is perhaps not quite so unhealthy as it is made out. It has but one drive, to the Tanks, and one good thing, viz. coffee, being largely the port for the Mocha trade.

It is in the rainless zone, no rain falling perhaps for two or three years, and the heat is terrific.

Most Indian steamers touch at Aden.

TREATMENT OF WOUNDS ETC.

By the Editor.

Directions as to broken limbs, sprains, &c., will be found in the separate articles—*vide* Index.

Medicine Chest.

The question of what medicines and appliances the traveller should take with him depends on how far he intends going off the beaten track. This book is not intended for those who wish to make long expeditions and must of necessity be fully provided for.

But even those who go a little way off the beaten track may find themselves in places where such things are not readily obtained, and a short list has been appended of things which, while not encumbering the traveller overmuch, may prove of great service in emergency.

Drugs should always be taken in the solid form, where possible, as they keep better, are not lost when the bottle breaks, and do not injure other things. Sal volatile is almost the only drug of importance which cannot be taken in this way. Quinine should never be taken in pills, which generally become insoluble, and therefore useless, on keeping.

Some instruction in the use of the clinical thermometer is desirable, otherwise there may be needless alarms.

Some remarks on the administration of various drugs in different cases may be found in the separate articles: the chief caution requisite as to those recommended is that opium should never be given to children without medical advice (*vide* Index).

Lint, 1 roll; 4 bandages 2½ inches wide; cotton-wool; rubber strapping (Seabury & Johnson), which is impervious to wet and can be used for bringing together small cuts.

One bottle of 25 tablets of corrosive sublimate for making an antiseptic solution to wash out wounds (very poisonous), 1 tabloid in boiled water, 1 pint.

Packet of mustard leaves.

Safety pins to fasten bandages.

Vaseline.

Higginson's enema syringe.

Clinical thermometer.

One stick (in case) of silver nitrate (lunar caustic) for dog-bites.

Measuring glasses in case, a minim glass, and 2 oz. glasses.

Drugs.

Quinine in 5 gr. tablets which can be broken up.

Dover's powder gr. 5 (contains opium 1 gr. in 10).

Warburg's tincture for tropical fevers, malaria, &c., in tabloids. 1 tabloid = 30 ♏ (contains opium).

Cascara tablets about gr. 2.

Calomel gr. 5.

Compound rhubarb tabloids.

Tinct. camph. co. in 15 min. tabloids (paregoric) contains opium.

Tinct. opii, 5 min. tabloids (laudanum).

Epsom salts, 2 oz.

Pulv. ipecacuanhæ, 5 gr. (for dysentery).

Phenacetin and caffeine, 5 gr.
One bottle of Livingstone's pills.
One bottle of chlorodyne.
One bottle of sal volatile, 2 oz.
Bismuth subnitr. tabloids, 10 gr.
A small flask of brandy for medicinal use.
Cocaine tabloids gr. 5
Boracic ditto } see Ophthalmia.
Boracic acid ointment.

Ophthalmia.

Inflammation of the membrane covering the eye and eyelids internally, due to various forms of irritation, such as cold winds, sand, &c. The eyes are bloodshot and feel as if there was sand in them, and run profusely at first with thin watery fluid, and afterwards with thick matter. They should be treated at once with warm solution of boracic acid, about gr. 5 in 1 oz. of water, and the edge of the lids smeared with boracic ointment to prevent their adhering. Or zinc sulphate gr. 1 in 1 oz. of tepid water, best boiled first, may be used. The eyes should be protected by goggles with wire sides to prevent the access of flies &c. in tropical countries, and to keep out the light, which is often very painful. In severe cases medical advice should be at once obtained, if possible.

Foreign bodies in the eye should at once be removed, if possible; a few drops of cocaine (half a 5 gr. tabloid dissolved in a teaspoonful of water) will render removal much easier. If nothing is found, and no cocaine is at hand, a drop of castor oil will often relieve the pain greatly.

Snow and Night Blindness.

These are produced respectively by the exposure of the eyes for a long time to the glare of snow or a tropical

sun. They are guarded against by wearing goggles of a smoked colour with wire sides. If these are not to be had, the trouble can be much mitigated, if not prevented, by blackening the skin all round the eyes and on the cheeks with burnt cork.

Piles.

These are common in tropical countries, and when inflamed may be very painful and troublesome. Constipation must be guarded against by mild purgatives. Frequent ablutions with cold water will often reduce the inflammation, especially with rest; a leech or two applied close to the inflamed part will relieve the pain if severe.

Burns and Scalds.

The chief point is to protect them from air. If available, a mixture of linseed or olive oil and lime water is the best application with lint (smooth side to the wound) above it, and a layer of cotton-wool bandage on outside. Lint with vaseline spread on the smooth side is a very good application.

Failing these, oil with flour dredged on it, or flour alone, is very useful, and the parts should be protected as above.

If there be blisters, they should be pricked and the fluid drained off, but the skin not removed.

Frost-bite and Chilblains.

Frost-bitten parts should on no account be brought near the fire or have anything hot applied to them; they should be rubbed with ice or snow until the circulation returns, and protected afterwards with cotton-wool or flannel. The nose and ears are most often affected, often without the victim being aware of it. In a North

American winter it is no breach of etiquette to seize a stranger suddenly by the nose in the street and rub it hard, the reason being perfectly understood.

In driving, when the temperature is very low, it is absolutely necessary to wear ear-muffs made for the purpose and a face mask; otherwise frost-bite is inevitable.

Chilblains may be checked by painting with tincture of iodine; if ulcerated, they should be protected by lint spread with boracic acid ointment, or, failing that, vaseline. Tight boots and gloves, and warming cold feet at the fire, cause many chilblains.

Blisters and Sore Feet.

These are often caused by ill-fitting boots and socks, whether too large or too small—the one is as bad as the other.

New boots should never be worn at first for long walks or climbing. Blisters should be pricked and then protected by adhesive plaster firmly applied.

The application of soft soap to the inside of the socks is often very effectual. Naturally tender feet should be bathed in tepid salt and water night and morning.

For long marches a powder may be used with much benefit resembling that used by the German army: salicylic acid 3 parts, potash alum 15, powdered talc 82.

Wounds.

Wounds of any size and depth, especially if severing muscles, tendons, &c., should have surgical attention as soon as possible.

The most urgent symptom is of course hæmorrhage; if the blood come in jets, and is bright red, the bleeding is arterial, and a ligature (a bit of india-rubber tubing

is best) should be tied tightly round the limb, where possible, between the wound and the heart; if this fail, another should be tied below the wound, as venous bleeding sometimes comes in spurts. Ligatures should not be kept on longer than possible, or the part deprived of blood will become gangrenous. Those who have a little anatomical training, such as is now given in ambulance lectures, may find the main blood-vessel, and apply pressure to that by a soft pad, which is preferable, if effectively done, as the whole limb is not then deprived of blood. If the bleeding is only moderate, washing out the wound with water at 110° F. often arrests it. The water, if not absolutely pure, should be boiled first, and then cooled down to avoid infection of the wound, not by adding cold water unless that too has been boiled. An antiseptic soloid should be added to the water used.

The best way to control hæmorrhage, if it can be managed, is by compression with the finger or thumb until medical aid arrives. The main artery for the arm can be controlled by pressing deep down above the inner half of the collar-bone; that for the leg by pressure over the middle of the fold of the groin. If this be kept up for some time by relays of assistants, time will be allowed for the formation of clot, which may suffice in the less serious cases.

The patient should be kept absolutely still in the recumbent position, and no stimulants administered; he should not be allowed even to raise his head.

In some cases a pad of lint firmly bandaged directly over the spot will suffice. This is generally sufficient in venous hæmorrhage, if properly done, but a watch must always be kept to see that the bleeding is not going on underneath.

Small clean-cut wounds, if there be no dirt in them,

may be brought together by strips of rubber strapping, which should be fastened first to skin on one side of the wound, and then pulled tightly across, taking care that the edges are brought carefully together. The wound should then be carefully covered up, especially in hot countries, to exclude the air, insects, &c. Intervals should be left between the strips of strapping to allow of discharge finding vent, if there be any. It is important in hot countries not to neglect even small wounds, which may otherwise become unhealthy and ulcerate. Irregular ragged wounds, in which the tissues are bruised and torn, and dirty wounds, also bites by horses, wild animals, &c., should be washed as clean as possible with a warm antiseptic solution,[1] and protected by lint dipped in warm boracic acid solution. In the case of bites especially, washing out the wound with a strong solution of zinc chloride (40 grains in an ounce of water) will often prevent unpleasant consequences, and enable the wound to heal in a healthy way. This should only be done once, and then the wound covered up. It is somewhat painful, but often very effective. Dog-bites, if there be any suspicion of madness, should be freely cauterised with a hot iron or lunar caustic (nitrate of silver).

Drowning.

In attempting to restore those who are apparently drowned, the mouth should first be cleared of all foreign substances. The body should then be raised for a minute or two with the chest well above the head and the face on one side, so as to allow any water that may have got into the air-passages to run out; the tongue drawn well forward. Then it should be laid flat on the

[1] *Vide* p. 345.

back on the ground or a table, with a pillow under the shoulders, and artificial respiration systematically done for some time, an hour or two at least, until there are active signs of life. As soon as there are any signs of life, a few drops of brandy or whisky should be poured down the patient's throat with very great care, or suffocation may ensue.

Artificial respiration is practised by standing or kneeling behind the patient's head, grasping the two arms above the elbow, then bringing them slowly up above the head to their full extent, holding them there for a second, and then returning them slowly to the patient's side, pressing them in close. This should be repeated 15 to 20 times a minute. If there be assistants, one should press in the lower ribs with the flat of both hands, kneeling over the patient, as the first raises the arms, and release the pressure as the arms are brought down.

At the same time wet clothes should be removed and the body rubbed from below upwards with warm dry towels or cloths if available. These measures should be proceeded with until consciousness is restored, or at least one or two hours have elapsed.

As the patient revives, he should be put in a warm bed, with hot bottles, and well covered up, so as to maintain the circulation, which is always feeble after the shock of immersion.

The same method of artificial respiration may be employed in the case of those struck by lightning, in whom animation is sometimes only suspended.

DIPHTHERIA AND SORE THROAT.

By the Editor.

Diphtheria is one of the most widely diffused diseases in the world, and, after typhoid fever, the most likely to be contracted by travellers, not, however, in places where medical aid is far to seek. It is an infectious disease characterised by fever, sore throat, and the presence of a greyish-white membrane on the tonsils or back of the throat, with swelling of the neighbouring glands. Recent discoveries have shown, however, that many sore throats are diphtheritic, which do not appear to be so at first sight, and though other kinds of sore throats are infectious and tend to occur in epidemics, it is very desirable to have medical advice where sore throat is persistent or spreads in a family, or many around are suffering from the same thing. Those epidemics which spread very rapidly and attack large numbers in a day or two, as occasionally in continental hotels, are very rarely, if ever, true diphtheria.

The chief danger of diphtheria is that due to mechanical obstruction of the air-passages; hence it is vastly more fatal to children than to adults, in proportion as the air-passages are smaller and more apt to be completely blocked by the membrane formed. A common form of sore throat is characterised by the appearance of small white dots on both tonsils, but this is not diphtheria, in which the patches of membrane are usually much larger, and there is rarely more than one on each tonsil, which may, however, cover the whole surface.

Treatment.—The special treatment of diphtheria, viz., the injection of antitoxin, and, if necessary, surgical measures, cannot be carried out except by a medical man. Failing medical aid, directions can only be given for the treatment of suspicious sore throats. The throat should be sprayed or swabbed out with a brush dipped in solution of corrosive sublimate in the proportion of one tabloid in four pints of water, *i.e.* four times as weak as that used for washing out wounds.

If carbolic acid be at hand this may be used very much diluted, not stronger than one part of pure acid in eighty of water. In either case, the brush must not be too wet, so that the solution may not run down the patient's throat.

Some glycerin, half a tea-spoonful in an ounce of the solution, may be added with advantage.

The swabbing or spraying may be repeated every two hours; but these measures are not recommended unless advice is not to be got, and the case seems bad. A simple gargle of chlorate of potash, 4 gr. in water 1 oz., with a tea-spoonful of glycerine, is often very effective in ordinary sore throats.

Where the patient seems seriously ill the strength should be kept up with nourishing food and stimulants; in true diphtheria large quantities are often necessary. In ordinary sore throats an extra glass of wine, preferably port or burgundy, is often of great use, and quinine, 2 gr., may be taken by an adult twice or thrice in the day in any form of sore throat.

As it is never certain that sore throat, even if mild, is not infectious, it is better that patients should not kiss others, especially children, and should have separate eating and drinking utensils, which should be well washed, if possible, with a disinfectant afterwards; nor should they sleep with children.

APPENDIX ON ALCOHOL

It may reasonably be asked what amount of alcohol daily constitutes moderation. The answer to this is best got from Parkes's classical work on Practical Hygiene. Parkes, as an army surgeon, had the best opportunities of testing and observing, and the whole of his chapters on alcohol are well worth reading, illustrated as they are by the account of many campaigns.

The conclusions which he quotes and agrees with from his own observation are that a strong healthy man, accustomed to a moderate amount of alcohol, cannot take more than ℥jss of pure alcohol daily without injury.

This amount is represented approximately by 1 small wineglassful of spirits, or 3½ wineglassfuls of sherry or port, or 7 wineglassfuls (equal to 3 claret glasses, 3 champagne tumblers) of claret, or hock, or champagne, or a pint and a half of beer daily.

The experiments on which these conclusions were based were made on strong healthy men accustomed to a moderate amount of alcohol. Many men and all women are better with less, and healthy children should have none whatever.

Parkes believed in the value of alcohol in disease fully, and it may be said that one of the reasons against taking it freely in health is that it greatly lessens its immense value in disease.

Unfortunately, on the question of alcohol, the moral and the physiological laws are, though in no wise opposed, somewhat at variance. Morally the great evil is drunkenness, even if only occasional; physiologically, the greatest injury is done by the constant imbibition of more alcohol than the system can effectively dispose of, an amount which, if only slightly greater than the proper mean, in most cases causes no loss of self-command, and no immediate bad effects, but a general deterioration of the tissues, only apparent perhaps after many years, or when serious illness comes.

Hence the importance of being very precise as to the amount of alcohol. Much over-drinking comes simply from ignorance, the average man not knowing what amount is bad for him and not being guided by his sensations. It is to meet this difficulty, especially in climates where over-indulgence is of so much greater importance, that this section has been inserted with the table of amounts as given by Parkes.

It may be added that alcohol should never be taken undiluted as spirits, or apart from meals, except medicinally.

Owing to the fact that travellers and others are misled at times as to the presence of an English physician in the locality, it has been thought advisable to append a complete list of English physicians practising in foreign countries.

REGISTERED PRACTITIONERS RESIDENT ABROAD,

Local List, arranged under the heads—Europe, Asia, Africa, America (North, Central, and South). Islands are grouped with nearest continent.

Extracted from 'The Medical Directory,' by the permission of Messrs. J. and A. CHURCHILL.

EUROPE

AUSTRIA—
Vienna—R. E. Bickerton; C. H. Waterhouse.

BELGIUM—
Brussels—G. P. Nicolet; P. J. Thomson.
Ghent—J. Sparrow.

DENMARK—Marie K. S. Holst (*Kolding*).

FRANCE—
Aix-les-Bains—S. M. Rendall; W. G. W. Sanders.
Beaulieu—H. J. J. Lavis.
Biarritz—S. Mackew; D. D. Malpas.
Billancourt—C. E. Ashton.
Boulogne-sur-Mer—A. A. Carr; J. A. Philip.
Cannes—C. H. Battersby; G. C. Bright; A. A. Carr; T. De Valcourt; D. W. Duke; F. W. Giles; J. A. Macdougall; Mary A. Marshall; W. G. W. Sanders.
Dieppe—L. P. de Mirimonde.
Dinard—W. P. Biden; R. H. Browne; J. A. Menzies.
Hyères—W. P. Biden.

FRANCE—*continued*
La Bourboule—A. W. Gilchrist.
Mentone—J. W. Campbell; S. M. Rendall; D. W. Samways; J. A. Sewell; J. L. Siordet.
Neuilly-sur-Seine—A. Kirwan.
Nice—G. J. Amy; S. S. Ashmore-Noakes; J. E. Brandt; A. H. Douglas; A. W. Gilchrist; H. J. J. Lavis; M. A. de B. C. Stevens; W. A. Sturge.
Paris—D. E. Anderson; J. H. Barnard; E. E. Barret; W. H. G. H. Best; J. A. Cree; W. O. Jennings; J. G. Middleton; L. P. de Mirimonde; L. N. Robinson; E. Vaillant; A. A. Warden.
Pau—I. Bagnell; W. H. Bagnell; F. L. Brown.
Puy de Dôme—J. E. Brandt.
St. Etienne—W. H. Burroughs.
Vue—H. de Fonmartin.

GERMANY—
Baden—A. L. Kellgren.
Berlin—F. Oppert.
Coburg—G. de P. Nicholson.

GERMANY—*continued*
Dresden—P. B. Giles.
Freiburg—C. G. H. Bäumler.
Halle on Salle—A. A. F. Rasch.
Kissingen—A. Rosenau.
Munich—Mrs. H. B. A. Lehmann.
GIBRALTAR—J. Abrines; A. C. Baca; J. Cortes; J. E. Ker; P. F. Lyons; N. D. I. Oman; J. Patron; A. J. Triay; W. Turner; L. L. Verano; J. Wheeler.
ITALY—
Alassio—E. G. Boon.
Baths of Lucca—H. Danvers.
Baveno—H. Grey.
Bordighera—H. Danvers; J. A. Goodchild; G. Hamilton; D. L. Hubbard.
Cadenabbia—Dr. Symonds (spring and autumn).
Florence—A. R. Coldstream; T. Henderson; L. Jones; J. P. Steele; W. H. Sturge; S. A. Tidey; Sir W. F. Wade.
Genoa—J. R. Spensley.
Menaggio—Dr. Holland (autumn).
Milan—J. Hill.
Naples—J. Horsfall; G. E. Scholefield.
Rapallo—W. T. Beeby.
Rome—T. Bonar; G. S. Brock; F. H. Burton-Brown; A. R. D. Carbery; T. E. Charles; J. J. Eyre; R. Wilkinson (not in practice); D. Young.
San Remo—M. G. Foster; A. J. Freeman; H. Grey; L. E. Kay-Shuttleworth; P. B. Smith
Sorrento—H. B. T. Symons.
Varese (spring)—A. J. Freeman.
Venice—A. Evershed; E. H. Van Somerin.
MALTA—H. L. Geoghegan (*Florianna*); A. E. Mifsud (*Valetta*); S. A. Pisani, C.M.G. (*Valetta*);
MALTA—*continued*
R. Samut (*St. Julian's Bay*); R. P. Samut.
MONACO—J. H. Barnard; T. H Fagge; W. A. Fitzgerald; C F. Hutchinson; R. P. Mitchell R. E. Rouse.
PORTUGAL—W.F. Colclough (*Oporto*).
ROUMANIA—A. I. Bolton (*Kustendjie*).
ROUMELIA—P. I. Shopoff (*Philippopolis*).
RUSSIA—F. G. Clemow (*Cronstadt*).
SPAIN—
Huelva—W. A. Mackay; A. Y. Morton.
Linares—R. C. Macdiarmid.
Malaga—C. Visick.
Rio Tinto—I. Macdonald; R. R. Ross.
Santander—R. R. B. Taylor.
Seville—J. S. Langdon.
SWITZERLAND—
Bern—M. Walthard.
Choisy—T. Clarke.
Davos Platz—F. Buol; W. R. Huggard; A. Schnöller; A. J. Wharry.
Geneva—A. E. Cordes.
Lausanne—R. S. Taylor.
Maloja—S. A. Tidey.
Montreux—A. Gamgee; A. T. T. Wise.
Ragatz (spring)—Dr. Holland.
Riffel Alp—A. Gamgee.
Rolle—A. de Watteville.
St. Moritz—J. F. Holland.
Territet—A. L. Leeson; T. A. White.
Zermatt—A. Gamgee.
TURKEY—
Constantinople—R. A. G. Constantian; R. Hannington (*Galata*); J. Patterson; R. Sarell (*Pera* and *Therapia*).

ASIA

ARABIA—
Aden—J. R. Morris; J. C. Young.
Perim—T. Irvine.
ASIA MINOR—*see* TURKEY IN ASIA.
BORNEO—
Kotie—F. C. Sutherland.
Kuching—A. J. G. Barker.
Kudat—J. Campbell; W. W. Hoare.
Labuan—R. E. Adamson.
Sandakan—G. W. Johnstone; J. H. Walker.
CHINA—
Amoy—H. McDougall; A. L. Macleish; M. Sandeman; Ethel N. Tribe; T. D. Wingate.
Canton—B. S. Ringer.
Chao-Chow-foo—P. B. Cousland.
Chao-Tong—L. Savin.
Chefoo—W. A. Henderson; J. F. Molyneux; J. R. Watson.
Chin-Chew—B. L. Paton.
Chin-Chou—B. L. Livingstone-Learmouth.
Chinkiang—G. A. Cox; J. A. Lynch.
Chung King—R. Wolfendale.
Fatshán—Rev. R. J. J. Macdonald.
Foo-Chow—Florence M. Cooper; Mary Harmar; T. Rennie; B. van S. Taylor; J. J. Underwood.
Fuh-Ning—S. Synge.
Hankow—A. L. Cousins; Elizabeth M. Gillison; T. Gillison; Ethel M. Gough; S. R. Hodge; A. T. Kember; D. D. Main; A. Morley; F. H. Taylor; J. D. Thomson; E. F. Wills.
Hinghwa—A. T. Sampson.
Hokchiang—Mabel C. Poulter.
I'chang—D. Rankine.
Kai Yüan—D. C. Gray.
Kien Ning—H. R. Pakenham.
Kirin—J. A. Greig.
Kiukiang—F. T. D. Clindening.
Kwanchengtse—R. J. Gordon.
CHINA—*continued*
Lao-ho-kou—G. F. Bergin; A. G. Parrot.
Liaoyang—J. M. Grieve.
Moukden—D. Christie; Mary C. Horner; Kate K. Paton; Ethel L. Starmer; T. M. Young.
Newchwang—C. C. de B. Daly; Sarah B. McMordie; D. D. Muir.
Ningpo—H. Hickin; R. Smyth.
Pakhoi—A. S. Deane; L. G. Hill.
Pao Ning—W. L. Pruen.
Pekin—S. W. Bushell; E. Curwen; J. Dudgeon; Alice K. Marston.
Swatow—F. H. Cantlie; J. M. Dalziel; H. Layng; A. Lyall; W. Riddel.
Tientsin—J. Frazer; F. W. Marshall; H. R. Robertson; G. P. Smith; W. M. Wilson.
Wênchow—A. Hogg.
Wuchang—C. J. Davenport.
Yauchau—F. H. Judd.
COREA—
Chemulpo—W. A. Carden.
Seoul—E. H. Baldock; Louisa R. Cooke.
CYPRUS—
Famagusta—B. B. Tahmisian.
Larnaca—G. A. Williamson.
Nicosia—R. A. Cleveland.
FORMOSA—
Chiang-hoa—D. Landsborough.
Taiwanfoo—P. Anderson; Elizabeth Christie-Ferguson.
Takow—W. W. Myers.
Twatutia—A. N. Wilkinson.
JAPAN—
Hakodate—W. W. Colborne.
Hiogo-Kobé—J. Larwill; R. S. Miller; T. C. Thornicraft.
Nagasaki—M. E. Paul.
Sendai—J. N. Seymour.
Shichōme—M. Takayasu.

JAPAN—*continued*
Tokio—Y. Saneyoshi; S. Suzuki; K. Takaki.
Tonk—Amelia N. De Souza.
Yokohama—P. J. Hatton; N. G. Munro.
JAVA—J. G. Scheurer (*Solo*).
PALESTINE—*see* TURKEY IN ASIA.
PERSIA—
Julfa—M. S. P. Aganoor; D. W. Carr; Emmeline M. Stuart.
Shiraz—J. Scott; D. Scully.
Teheran—H. Adcock; M. M. Basil; J. H. Casson; G. Cormick; T. F. Odling, C.M.G.
Yezd—H. White.
PHILIPPINE ISLANDS—
Manila—S. O. L. Potter.
San Miguel—J. O'C. Donelan.
Ylo-ilo—J. Maye.
SIAM—
Bangkok—J. F. Lees; P. A. Nightingale.
SUMATRA—J. C. Graham (*Deli*).
SYRIA—*see* TURKEY IN ASIA.
TURKEY IN ASIA—
Acca—J. Cropper.
Aleppo—C. C. Piper.
Bagdad—P. S. Sturrock; H. M. Sutton.
Beyrout—J. J. Hannen; J. V. Young.
Brumana—A. J. Manasseh.
Damascus—P. W. Brigstocke; F. I. Mackinnon.
Gaza—R. Sterling.
Hebron—A. Paterson.
Kerak—F. Johnson.
Nablous—G. R. M. Wright.
Jaffa—J. Melville-Keith.
Jerusalem—P. C. E. D'E. Wheeler.
Safed—W. H. Anderson; G. Wilson.
Smyrna—R. L. Bolton; H. M. Chasseaud; W. Chasseaud; A. Gelebian; J. McCraith; G. N. Stephen.
Tiberias—Rev. D. W. Torrance.

AFRICA

ALGIERS—C. H. S. Stevens.
BASUTOLAND—*see* CAPE COLONY.
BENGUELA—W. Fisher (*Bihé*).
CANARY ISLANDS—
Las Palmas—S. Harris; B. Melland; J. C. Taylor.
Puerto Orotava—F. Lishman; G. V. Perez.
Teneriffe—J. K. D. Ingram.
EGYPT—
Abbasiyeh—J. Warnock.
Alexandria—P. Demech; W. T. Grant; A. A. Morrison; M. A. Ruffer.
Assouan—H. E. L. Conney.
Cairo—A. J. M. Bentley; H. M. Crookshank; Henrietta K. Cornford; H. E. Goodman; A. C. Hall; F. J. Harpur; F. A. S. Hutchinson; H. P. Keatinge; F. C. Madden; F. R. S. Milton; H. M. N. Milton; A. A. W. P. Murison; H. Nolan; H. T. Parker; F. M. Sandwith; K. Scott; W. St. C. Symmers; S. G. Toller; W. H. Wilson.
EGYPT—*continued*
Helouan—W. P. May.
Port Said—E. Cuffey; W. B. Orme; J. Williams.
Port Tewfic—V. J. Hodgson.
Suez—J. E. Creswell.
MADAGASCAR—
Antananarivo—C. F. A. Moss; W. Wilson.
Antsihanaka—J. G. Mackay.
Fianarantsoa—G. H. Peake.
MADEIRA—B. R. Conolly; M. C. Grabham; F. J. Hicks; R. E. S. Krohn.
MASHONALAND AND MATABELELAND—*see* RHODESIA.

MAURITIUS—
Mesnil—A. L. CASTEL.
Port Louis—E. L. De Chazal; J. M. Lincoln.
Rose Hill—J. I. Paddle.
MOMBASA—*see* BRITISH EAST AFRICA.
MOROCCO—
Daralbaida—G. M. Grieve.
Mazagan—R. de Reyna.
Rabat—R. Kerr.
Tangier—G. R. S. Breeze; J. H. D. Roberts; P. C. Smith; C. L. Terry.
MOZAMBIQUE—
Beira—C. Todd.
Lebombo—Rt. Rev. W. E. Smyth.
Quilimane—J. Dodd.
NIGER COAST—F. Cargill; W. H. Langley; F. N. Roth; S. W. Thompson.
Asaba—E. E. Craster.
Akassa—F. E. Cook; A. A. Smith.
Bonny—R. A. Shekleton.
Burnutu—E. C. Adams.
Old Calabar—R. Allman; E. G. Fenton.
Onitsha—A. E. Clayton.
Uñwana—P. Rattray.
Warri—F. P. Hill.
NYASSALAND—*see* BRITISH CENTRAL AFRICA.
OIL RIVERS—*see* NIGER COAST.
ORANGE FREE STATE—
Bethlehem—H. H. Browne; G. F. Reid.
Bloemfontein—C. H. Bidwell; J. G. Croghan; J. W. Dalgliesh; Rt. Rev. J. W. Hicks; W. Johnson; S. R. Savage; W. R. Scott.
Bushmanskop—R. G. D. Speedy.
Edenburg—W. E. G. Duthie.
Fauresmith—J. M. Key; A. E. W. Ramsbottom.
Ficksburg—J. Brown; H. S. Taylor.
Harrismith—B. A. Heathcote; E. F. B. Wilson.
Heilbron—J. E. Clayton; E. P. R. Tregaskis.
Hoopstad—V. Werdmüller.
Jacobsdal—H. Osborne.
ORANGE FREE STATE—*continued*
Jagersfontein—G. Michie; R. E. F. Pearse.
Koffyfontein—T. G. Hall.
Kroonstadt—E. Symonds.
Luckhoff—G. H. H. Fuller.
Parijs—T. B. Brodie.
Reddersburg—T. G. J. Lavers; J. Polson.
Reitz—W. Porritt.
Rouxville—S. Smyth.
Senekal—G. Davis; H. C. Dixon.
Springfontein—J. Tillie.
Sterkfontein—G. P. Brownlow.
Ventersburg—J. R. Leech.
Vrede—T. M. Bentley; H. S. Reynolds.
Wepener—B. G. Brock.
Winburg—R. H. Leigh; C. Schnehage.
SIERRA LEONE—O. Horrocks; J. C. Maxwell.
British Sherbro'—M. L. Jarrett.
Freetown—T. Bishop; J. B. H. Davson; W. M. Graham; E. J. Hayford; G. V. T. Manly; W. R. Miller; W. T. Prout; W. Renner; H. Ross.
SOUTH AFRICAN REPUBLIC OR TRANSVAAL—
Barberton—A. N. Grieve; W. H. Haw.
Boksburg—T. J. Crean; J. Cunningham; J. S. Morton; T. Pitt; J. F. Ziervogel.
Buffelsdoorn—E. S. T. Towert.
Doornfontein—W. Squire.
Ermelo—H. N. Everard; R. Maxwell; R. J. Stirling.
Eureka City—A. R. P. Sanderson.
Fordsburg—W. D. Frazer; J. C. McNeillie.
Germiston—J. W. Hall; T. Lund; J. A. Robertson; R. Strachan.
Johannesburg—W. Alexander; J. Allan; C. L. Ashby; G. Bell; A. D. Bensusan; W. Bourke; J. Boyd; W. H. Brodie; J. H. Clarke; H. B. Currie; R. L. Daly; D. P. Duirs; W. Feather-

South African Republic—*contd.*
stonhaugh; J. A. Foulis; K. Franks; T. M. Frood; A. D. M. Grant; A. P. Green; T. A. Haig; A. H. S Hallidie; E. T. E. Hamilton; R. Hamilton; F. A. Harger; H. L. Hatch; D. Horwitch; L. G. Irvine; J. Keenan; R. E. Kerr; H. Knowles; G. Leslie; C. J. Lyons; N. Maclean; J. W. Matthews; P. Mitchell; G. A. E. Murray; J. E. Neale; A. J. van Niekerk; A. S. Patton; M. G. Pearson; W. Robertson; W. G. Rogers; W. M. Russell; C. W. Shaw; F. H. Simmons; C. P. Spink; W. Squire; F. P. Trench; T. C. Visser; J. H. Whitehead.
Kielfontein—T. H. F. Evans.
Klerksdorp—W. C. Allan; J. E. Dyer; F. J. Fehrsen.

South African Republic—*contd.*
Krugersdorp—P. L. Nettleship; E. S. Snell.
Letaba—R. H. Wilkinson.
Lydenburg—W. F. Oakeshott; W. Stokes.
Middelburg—P. A. Green.
Nigel—H. B. Maunsel.
Pietretief—T. S. Dunn.
Potchoefstroom—W. H. Dixon.
Pretoria—P. C. de Wet; J. A. Kay; J. B. Knobel; T. L. Laxton; G. B. W. Messum; H. P. Veale.
Randfontein—W. Adam.
Roodepoort—J. G. Milne; M. Polson.
Rustenburg—F. T. Auden.
Springs—T. L. Parry.
Standerton—F. N. Blood; W. G. Parkinson; H. C. Simmons.
Vryheid—J. G. Anderson; C. J. Davey.

AMERICA

NORTH AND CENTRAL AMERICA

Mexico—T. S. Bulmer (*Chihuahua*); R. Nichol (*Guerrero*); W. H. P. Vickers (*Coahuila*).
Nicaragua—L. F. H. Birt (*Granada*); F. V. Sandford (*see London*); T. R. Wiglesworth (*Granada*).
Sandwich or Hawaiian Islands—E. H. Armitage (*Wailuku*); J. Atcherley (*Honokaa*); D. Campbell (*Waimea*); G. Herbert (*Honolulu*); F. H. Humphris (*Honolulu*); G. A. Ings (*Honolulu*); T. McMillan (*Naalehu*); R. Oliver (*Kan*); H. C. Sloggett (*Honolulu*); C. L. Stow (*Kukaiau*); St. D. G. Walters (*Lihue*); H. C. Watt (*Kauai*); J. Weddick (*Wailuku*).
United States—
Aberdeen, Da.—R. M. Elliott.
Alameda, Cal.—C. Gunn.

United States—*continued*
Alleghany, Pa.—A. Orr.
Altoona, Pa.—J. Sheedy.
Anchorage, Ky.—C. Thompson.
Ann Arbor, Mich.—A. R. Cushny.
Ardmore, Pa.—A. H. Jago.
Arlington Place, Cal.—F. J. Carter.
Asheville, N. Carolina—F. Willis.
Ashton, Rhode Island—N. O'D. Parks.
Atlanta, Georgia—A. W. Stirling.
Bakersfield, Cal.—R. A. Fergusson.
Baltimore, Maryland—T. C. Gilchrist; A. Whitehead.
Berlin, N.H.—M. O'Carroll.
Boerne, Texas—J. F. Weatherhead.
Boston, Mass.—M. F. Gavin; M. C. Kennedy; F. L. F. E. Pfaff; Margaret C. Porter; J. H. Thurlow; H. C. Williams.

UNITED STATES—*continued*

Brookline, Mass.—H. V. Maclaughlin.
Brooklyn, N.Y—C. Abbott; W. Wallace.
Buffalo, N.Y. — L. Howe; H. Mickle; J. Middleton; R. L. Patteson; J. Stoddart.
Charlestown, Mass.—P. N. Roy.
Chicago, Ill.—J. W. Blampied; J. H. R. Bond; F. G. Bonynge; W. H. P. Evatt; H. W. Gentles; P. O. Jones; J. H. Slayter; D. C. Trott.
Cincinnati, Ohio—H. C. Juler.
Cleveland, Ohio—G. N. Stewart.
Cleveland, Tenn.—J. W. MacQuillan.
Clifton, Arizona—A. Davidson; T. Davidson.
Colorado Springs, Col.—J. O. Reddie; S. E. Solly.
Council Bluffs, Iowa—D. Macrae.
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