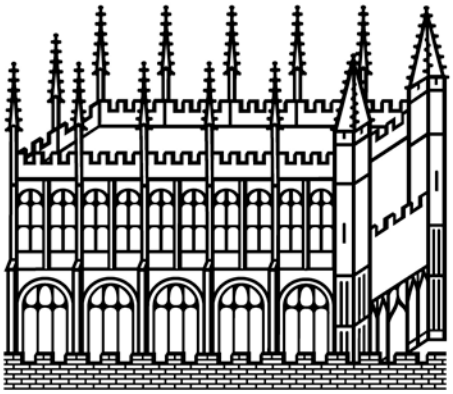

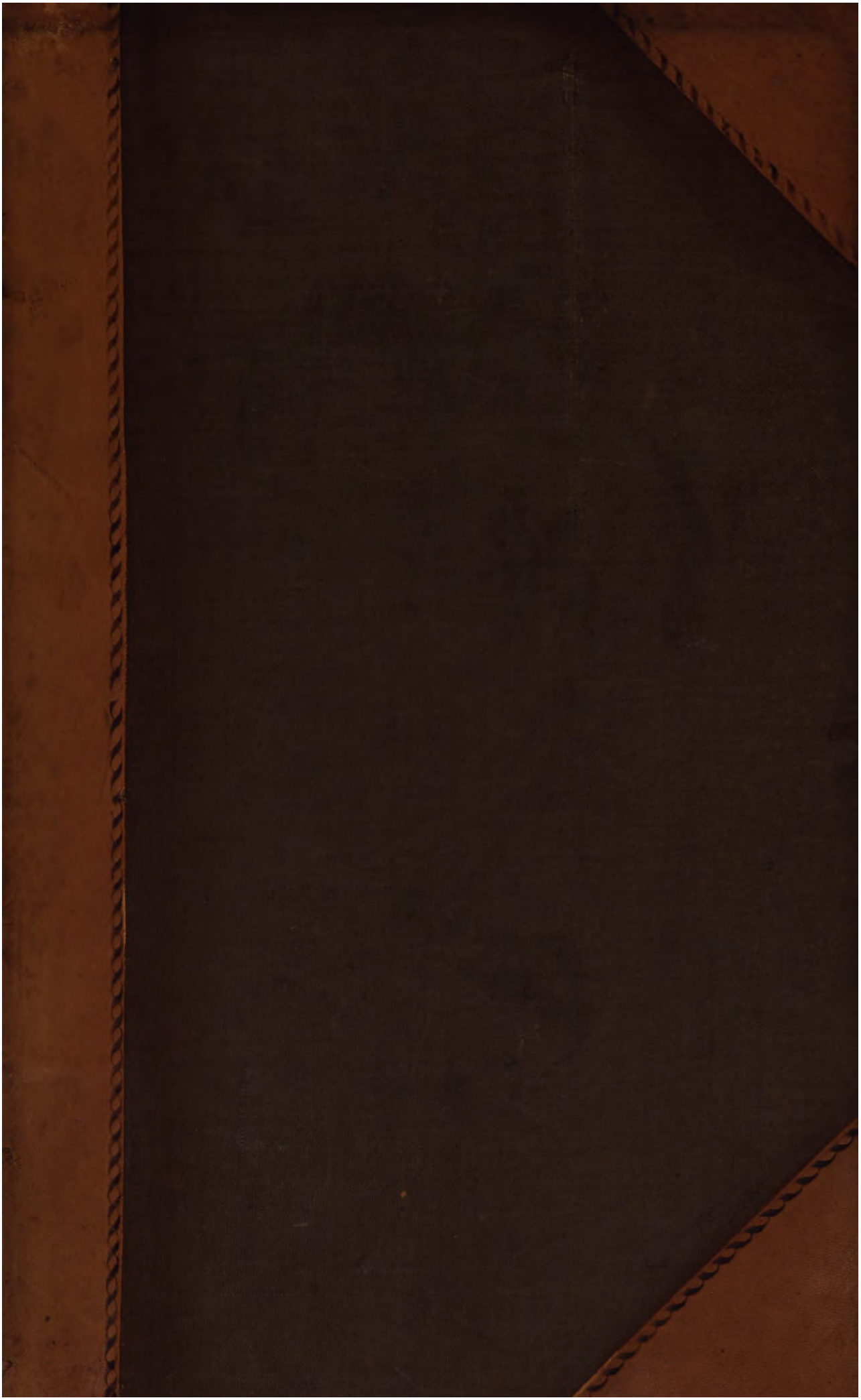

OBSERVATIONS

ON THE CLIMATE OF

NEW ZEALAND.

OBSERVATIONS

ON THE CLIMATE OF

NEW ZEALAND;

PRINCIPALLY WITH REFERENCE TO

ITS SANATIVE CHARACTER.

By WILLIAM SWAINSON, Esq.

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OBSERVATIONS,

&c. &c.

CHAPTER I.

Introduction—Emigration—New Zealand, a new Emigration Field—Object of the Author—Plan of the Inquiry.

The subject of Emigration has for some time excited a considerable share of public attention. Each succeeding year seems to have given it additional importance. The difficulty of retaining *caste* in the social scale, owing to the high refinement, and artificial state of society, and the want of eligible occupation, and profitable employment for the rising generation, have at length brought the subject home to every branch of the community, and invested it with deep and powerful interest.

For several years after the colonization of our Australian possessions, the tide of emigration was almost entirely confined to Canada and the United States. Their great distance — the imperfect information we possessed respecting them, and

the circumstance of their being made the place of banishment for convicted felons, naturally raised a prejudice against the Penal Colonies as a field for emigration; but as authentic and favourable information on the subject of their soil, climate, and productiveness, became known, as the expense and difficulty of the voyage were diminished, New South Wales and Van Diemen's Land gradually attracted the stream of emigration, and are now the resort of the majority of those who are impelled to quit their native country.

But within the last few months, another emigration field has been made available to our superabundant population. Measures have for some time been in progress for erecting New Zealand into a British Colony—a country, which from its position—insular character—climate—and natural productions, is calculated to become a valuable addition to our colonial dependencies.

It is not our intention, nor does it fall within the scope of our investigation to inquire into, or to offer any opinion upon, the comparative commercial advantages of the infant colony: the character of its climate will form the exclusive subject of the present inquiry.

It is almost unnecessary to observe that the people of this country are subject, in a more than ordinary degree, to diseases of the chest and lungs, and that greater mortality arises from this than from any other class of disease. Now whatever

difference of opinion may be entertained as to the extent to which this peculiar liability is attributable to the unequable character of the English climate, the influence of climate on pulmonary disease is universally admitted to be by no means inconsiderable.

From recent official returns, it appears that in the course of the past year, the emigrants to the Australian Colonies amounted to upwards of fourteen thousand. Amongst the intending emigrants then, it is obvious, there must be thousands to whom the subject of climate is of vital importance, and who, *cæteris paribus*, would naturally select for their future home, that country whose climate may be most congenial to their constitutional peculiarities.

Having had occasion to form an opinion on the character of the climate of New Zealand in comparison with that of our other colonies in the same hemisphere, we were at some pains to make ourselves acquainted with every available source of information connected with the subject. Finding in the course of the inquiry a considerable diversity of climate even among our settlements on the coast of New Holland from Sydney to Swan River—that of Van Dieman's Land too presenting a widely different character—and the climate of New Zealand, in all its most important qualities, assuming a well marked, and in most respects, favourable contrast with that of the neighbouring colonies:

seeing too, as has already been stated, that among the thousands who are compelled to expatriate themselves, but too large a portion must be deeply interested in the character of the climate of the country of their adoption; and knowing that the diversity of climate amongst the colonies already mentioned, is too considerable to justify its being overlooked, in deciding on their several claims to selection, we have thought that in laying before the public, in a plain and simple manner, divested of technicalities, all the information we have been able to meet with in the course of our investigation on the character of the climate of New Zealand, we should be doing some service to the public, and be the means of drawing attention to a subject of considerable practical importance.

Although intended chiefly for the general reader, the following pages may not be without interest to the members of the medical profession, as affording some information, in a convenient compass, on a subject on which they are not unfrequently consulted: and should further observation, which it is our object to excite, confirm the conclusion which our present information would seem to warrant, that the climate of New Zealand is inferior to none in its preventive and remedial effects, they will not only be called upon to advise those who have already resolved to emigrate, as to the choice of their future home; but as the colony of New Zealand is calculated to afford profitable employ-

ment in almost every branch of commercial and agricultural enterprise, cases will not unfrequently present themselves to the medical practitioner, in which he will feel himself called upon to recommend an early removal to that country as the most probable and effectual means of averting the development of disease.

In pursuing our inquiry we shall, in the first place, point out some of the dangers of hasty generalization on subjects connected with vital statistics, and after endeavouring to ascertain what are the elements of climate which are supposed to be most influential in relation to disease, proceed to inquire into the character of the climate of New Zealand, to be deduced from the physical peculiarities of the country, and from its animal and vegetable productions, and the descriptions which have been given of it by numerous authorities from its discovery to the present time. It will then only remain to consider, when compared with that of the Australian Colonies, how far the climate of New Zealand is entitled to the preference of those to whom the question of climate is of material importance.

CHAPTER II.

Danger of hasty generalization on subjects connected with vital Statistics—The climate of Italy and the South of France overrated—Superiority of the South-west Coasts of Devonshire and Cornwall—The description of Climate most suitable to the Invalid.

"THERE is scarcely any well-informed person," says Sir John Herschel, in his admirable 'Preliminary Discourse,' "who, if he has but the will, has not also the power, to add something essential to the general stock of knowledge, if he will only observe, regularly and methodically, some particular class of facts which may most excite his attention, or which his situation may best enable him to study with effect." The truth of this observation is so obvious, and the practical value of its general application so great, that it cannot be too frequently repeated, or too strongly pressed upon the attention of the public. How much might not the stock of human knowledge have been augmented, had Governments and individuals, availing themselves of the means at their disposal, endeavoured to add "something essential to the general stock of knowledge?" The former, by requiring from their agents at home and abroad, systematic and periodical statistical reports on

all subjects of practical importance connected with the business of their respective departments; the latter, by carefully noting that particular class of facts " which their situation might best enable them to study with effect."

In investigating a subject like the one before us, in which the elements of the inquiry are manifold, and the sources of error scarcely less numerous, the number and variety of facts on which the inquiry is based, can scarcely be too numerous, or the accuracy with which they should be observed too minute.

According as it embraces numbers or individuals, the value of human life is the safest or most uncertain subject of calculation. Experience has proved, that out of a given number of individuals, the proportion who shall die at any period of life, may be foretold with wonderful precision. But beyond this, our knowledge cannot penetrate; the value of the life of any particular individual is above all human calculation. Of any given body of men we may be able, with considerable accuracy, to state the number who shall be living at the end of 20 years: but the most intimate and minute acquaintance with their several temperaments, habits, and constitutions, will not enable the most skilful and experienced to select from among them the few who shall survive.

The progress which has been made in the practice of medicine within the last century, the great

improvement that has taken place in the quality of the food, clothing, and habitations, of the labouring population of this country, have had a striking influence on the general value of life. A century ago, the annual number of deaths out of every 1000 persons was 40 : out of the same number, the annual number of deaths does not now exceed 20. Thus the expectation of life, to use the language of the Actuary, to every member of the community has been doubled. As the character of our climate during that period has undergone but little variation, it must be obvious that though the influence of climate is unquestionably considerable, it is but one of many circumstances to be taken into consideration in accounting for the varying rates of mortality observable among the people of different countries: indeed there is scarcely any subject on which more fallacious results have been obtained, and more erroneous opinions entertained. In investigating the rates of mortality in different communities, therefore, it is not sufficient to compare the ratio of the deaths to the population, but regard must also be had to age, sex, and a variety of circumstances, before any reliance can be placed upon the result.

Admitting to the fullest extent the proposition with which we set out, that by a careful observation and collection of facts, it is in the power of all to contribute something to the stock of knowledge, yet to draw correct conclusions re-

quires an acquaintance with the various bearings of the subject, and a philosophical habit of mind possessed only by a few. As it is our object not merely to lay before the reader the information to be derived from our present sources of knowledge on the subject before us, which for many purposes is far from being complete, but to awaken attention, and to induce those who may hereafter have it in their power to supply the particulars still needed, it will be desirable to shew the danger of drawing conclusions hastily and on an imperfect knowledge of the essential elements of the inquiry, and the utter worthlessness of results so obtained.

The ratio of mortality to the population is in England about 1 in 50. Now suppose that on inquiry it should be found that in New South Wales the ratio is 1 in 100 only, it might be inferred that the latter country is twice as healthy as our own: but this conclusion cannot be relied on unless it appear that in both countries there is the same proportion of persons living of the same age: this, however, is far from being the fact: in England the number of children greatly exceeds the adult population, but in New South Wales, especially whilst it was a penal colony only, the whole population was adult. Now it will be found that in this country one-half of the number born, die before they reach the age of maturity; no opinion therefore, it is evident, can

be formed of the comparative rates of mortality merely from the proportion the annual deaths bears to the whole population.

Again, if we were desirous of ascertaining the comparative healthiness of a town and country life on persons between the ages of 20 and 50, it would not be safe to decide in favour of a country life, because the number of deaths out of a given number of the whole population would be found to be considerably less. Out of 1000 individuals of all ages in London, the deaths are 241, but out of the same number in the counties of Hertfordshire, Bedfordshire, and Buckinghamshire, they are only 192; but then it seems that of 10,000 persons living in London, there are 4522 between the ages of 20 and 50, while the number of the same age in the adjoining counties, is only 3581—an unequal relation therefore existing in the proportion of persons living of the same age.

With this caution against hasty generalization, let us proceed to inquire how far the different degrees of liability to pulmonary disease existing among different countries, is supposed to be influenced by the character of their climate. An opinion is generally entertained, that cold is the most fruitful cause of tubercular disease; it may be stated however as the result of extensive observation, and on the authority of the profession at large, that the extent to which it prevails increases with the variableness of

the climate, and that it is but little influenced by the *degree of temperature*, in either extreme of heat or cold, provided it be uniform, or at all events, not liable to frequent or sudden vicissitudes.

In connection with this subject, and indeed with reference to all statistical inquiries of a similar nature, we cannot but regret the want of a general and authentic system of registration. It is impossible to say how far it is well founded; but the mortality arising from Phthisis is commonly stated to be about 25 per cent. in England, Austria, Prussia, Switzerland, and Belgium; 23 per cent. in France; 17 per cent. in St. Petersburgh and New York; while in some parts of Africa, in Egypt, and amongst various tribes of mankind in the torrid and frigid zones, the disease is almost unknown. The numerous cases in which its progress has, for a time at least, been arrested by an *early* removal to a climate, free from frequent and sudden vicissitudes of temperature, confirm the opinion as to the influence of climate, and that its preventive and remedial effects must be measured rather by its equability, than by the degree of its temperature.

In most of the countries to which it is the practice in England to recommend the removal of invalids, Lisbon, many parts of Italy, and in Madeira itself, the disease is supposed to be as prevalent and fatal as with us; and in consequence

of the unfavourable opinions that have from time to time been expressed by high medical authorities within the last few years, their superiority over some parts of our own country, is now, and not without reason, generally doubted. The north of Italy and the south of France have been objected to from their liability to sudden gusts of cold wind from the mountains; several high authorities condemn Malta and the islands in the Mediterranean.

Assuming the accuracy of our information, and comparing their several mean temperatures, the climate of the southern coast of England, in the most essential qualities, is not inferior to that of any of the most celebrated places of resort in Europe. The mean temperature for the whole year is certainly somewhat lower, and its vicissitudes may be more frequent in England; but what is, perhaps, more important, these vicissitudes are more limited in their range—the general temperature is more *equable*. The temperature is highest in Devonshire and Cornwall, the annual mean being 52° 50′; in the winter, 44° 50′; in the spring, 49° 60′; in summer, 60° 50′; and in the autumn, 63° 50′. While in the northern counties the mean for the year is only 47°; winter, 37° 50′; spring, 44° 50′; summer, 59° 50′; autumn, 48° 65′.

In variability and uncertainty, so far at least as is indicated by thermometrical observations, the advantage is decidedly in favour of the climate of the more favoured parts of England. At Penzance,

and along the coasts of Cornwall and Devonshire, the mean *range* during the twenty-four hours is only 8°; while at Naples, the daily range is 13° 5′; at Rome, 11°; at Montpelier, 12°. It varies also considerably with the season of the year; being much greater in England in June than in January.

The annual *range* of the thermometer in the south-eastern division of the kingdom is about 67°, and still more limited in the south-west coast, being little more than 50°; but even in the former, considerably less than in Nice, Naples, and the most reputed continental places of resort.

But the difference in favour of England appears most striking, when we compare the mean temperature of their coldest and hottest months, which in Cornwall is only about 18°, almost double in the south-east of France; 31° in the south-west of France; and 32° in Italy. We cannot be surprised, therefore, at the condemnation of the south of France and the north of Italy, by Crichton, Portal, Morgan, Hawkins, and Johnson. In point of general salubrity, there can be no comparison between those parts of the Continent usually resorted to, and our own country. The duration of life in the least healthy districts of England exceeds considerably that of the most favoured parts of the continent, and that very disease, once considered almost peculiar to this country, being in fact no less prevalent in the latter than the former. In the time of Celsus even, we

find a removal *from* Italy recommended. "Quod si mali plus est, et vera phthisis, inter initia proti nus occurrere necessarium est; neque enim facile is morbus cum inveteraverit, evincitur. Opus est si vires patiuntur, longa navigatione, cœli mutatione, sic ut densius quam id est ex quo discedit æger, petatur: idioque aptissime Alexandriam ex Italia itur."

It has already been stated, that among the Egyptians tubercular disease is unknown; it will be desirable, therefore, to ascertain the general character of the climate of those countries which are wholly or comparatively exempt from the disease. Alexandria is described "as at all times excessively damp; the atmosphere is saturated with a saline vapour which condenses on the walls of the houses in small crystals of nitre, muriate of soda, and muriate of ammonia; the soil is everywhere coated with these saline particles, and although it is quite impossible to keep any articles made of iron free from rust, yet the constant breathing of this saline atmosphere does not appear prejudicial to health; diseases of the lungs are unknown. "I have not," says the writer, "seen one case of consumption among the Arabs." This saline dampness of the climate is attributed to the prevalence of the wind from the Mediterranean, which for a great part of the year carries the clouds towards the mountains in the interior, and also to the great evaporation from the Nile.

In the Channel Islands, also, it is comparatively rare, less prevalent in a very marked degree than in England, a greater portion of the cases, too, arising among those who have visited the country already tainted with the disease, than among the islanders themselves. In its peculiar dampness, the climate of these Islands bears a striking resemblance to that of Alexandria; its temperature, however is not more than 5 or 6 degrees higher than our own. In reference to the great humidity of the atmosphere in Jersey, Dr. Scholefield observes —" Besides its insular position, the island is everywhere thick-set with wood, an imperfect system of drainage or no drainage at all, the prevalence of winds from the south-west blowing directly up the channel, from across the Atlantic Ocean, impregnated with moisture and with saline particles that cause the moisture to be more slowly dissipated into vapour, the great secession of the tide at low water, leaving all around the island a vast extent of bare rocks and sands, from which saline vapours largely arise, in consequence of the comparative warmth of the temperature even during the winter months, while these vapours are scattered in all directions by currents of air arising from the great diversity of the island in hill and dale."

In England the situations found to be most congenial to phthisical constitutions, are the south-west coasts of Devonshire and Cornwall; the parts most frequented by invalids are Penzance, Tor-

quay, Dawlish, Sidmouth, and Salcomb. From their proximity to the sea, and the prevalence of westerly winds loaded with moisture exhaled from the Atlantic, the air is remarkably soft, humid, mild, and equal. Torquay and Penzance, perhaps, enjoy the highest reputation: the very limited *range* of their daily and annual temperature, and the peculiar softness of the atmosphere, renders them most desirable for the residence of persons suffering under pulmonary disease; and now that the climate of Italy and the south of France is better known, the south-west of England is considered superior to any part of the south of Europe, and inferior only to that of Madeira.

With reference, therefore, to the influence of climate, it would seem that in the temperate zone at least, the circumstances which characterise those climates that exercise the most beneficial influence are a temperature equable, or limited in its range, and an atmosphere holding in suspension a considerable quantity of saline moisture.

We have dwelt, it may be thought, at undue length on this part of the subject, but as it is not strictly technical, and as our observations are intended principally for the general reader, who, with the facts before him, may form a sound opinion on its merits, it has been thought desirable distinctly to point out the danger of arriving at erroneous conclusions, and some of the more common sources of error incident on the in-

vestigation of the comparative rates of mortality in different countries, and the degree in which the duration of human life is affected by atmospheric influence. Seeing too, that hundreds are still found, who every year seek relief from the preventive, or remedial influence of a continental climate, it would be unjust to the public and to our own country, to omit any opportunity of reiterating the fact, that considering the disadvantages, to an invalid necessarily great, arising from foreign habits, and the absence of the commonest comforts of home, there is not any country in Europe, the Channel Islands perhaps excepted, more suitable for the residence of the invalid than the more favoured parts of our own.

CHAPTER III.

Cause of diversities of Climate—Character of the Climate of New Zealand to be looked for from the Physical Peculiarities of the Country, and from its Animal and Vegetable productions—Description of the Climate by Cook, &c. &c.—Evidence before the Committee of the House of Lords—Effects of the Climate on the English Constitution—Diseases of the Aborigines—The Climate compared with that of New South Wales and Van Diemen's Land—Suggestions for more minute Information—Conclusion.

HAVING seen the influence of climate, and noticed some of the characteristics which are supposed to exercise a favourable influence in preventing, or retarding the development of disease, we may now proceed with the immediate subject of our inquiry, and endeavour to ascertain, as far as our means of information will admit, the true character of the climate of New Zealand, and how far it is calculated to prove congenial to the English constitution.

The founding of colonies has now become a subject of commercial speculation. The colonization of New Zealand has been principally promoted by the instrumentality of a large and influential body of persons, in the nature of a trading company. Numerous individuals, in one way

or other, directly or indirectly, are consequently interested in promoting its prosperity. Exonerating them entirely from any intention wilfully to misrepresent, their natural bias will lead them to place before the publlc, in the most favourable light, the leading features of the infant colony. Common prudence therefore would require that we should exercise some caution, in receiving the representations which may have been made on the subject of the climate of New Zealand, subsequently to the projection of its colonization, and especially if proceeding from any quarter likely to be interested in the result.

Though determined in a great measure by its distance from the equator, Climate is dependent upon, and materially modified by local circumstances. In order to ascertain, with as much accuracy as possible, the true character of the climate of New Zealand, we will in the first place consider to what conclusion we should be led by a consideration of the local peculiarities of the country, testing this again by its animal and vegetable productions—afterwards examining the descriptions which have been given by the older writers, and then, and not till then, admitting the accounts that have been published since the colonizing of the country was first projected, and then only, so far as they confirm the conclusions warranted by undoubted authority. We may appear to display an overweening caution on the

subject, but considering its importance, the serious responsibility that would justly attach to any misrepresentation, however unintentional, and the too frequent instances of expectations disappointed, we cannot be too careful of misleading the public by inaccurate information.

The term Climate is used in its ordinary acceptation, expressing that combination of temperature and moisture existing in the atmosphere, in all their variety of vicissitude, clearness, pressure, and electrical condition. The circumstances exciting the most powerful influence in determining the character of climate, are the situation of the country as regards the equator, elevation of the land above the level of the sea, position with respect to the sea, nature of the soil, the degree of cultivation, and the prevalent winds.

The fact that all places equi-distant from the equator do not experience the same mean annual temperature, sufficiently proves that climate does not depend solely upon the direct action of the sun. From a variety of circumstances, the temperature of the southern, is found to be lower than that of the northern hemisphere, differing in degree (within certain limits) according to the distance from the equator. The climate of an island too, differs essentially from that of a great continent, and that of the sea coast from that of the inland parts of the country. The effect of the sea is to equalize temperature; its waters are

of an equable temperature, and affect that of the atmosphere passing over it — imparting warmth or cold to the winds that agitate its surface according as their temperature exceeds or falls below its own. Unlike that of the land, the surface of the water cannot become powerfully heated, and add to the heat of the surrounding atmosphere: of two places, therefore, in the same latitude, insular and inland, the summer will be cooler, and the winter milder, in the former than in the latter. The vicinity of the sea too, affects the humidity as well as the temperature of the atmosphere; the air passing over the ocean is loaded with vapours, but sweeping over a large continent, is rendered dry and parching—the difference between a south-west and an easterly wind in England is thus accounted for; the comparative warmth and softness of the south, south-west, and west winds, being caused by their passage over an extensive ocean of equable temperature.

A mountainous country too is almost always more subject to rain than an open champaign country. The hills attract vapours, which, being condensed, descend in frequent showers: in this respect, the difference is very considerable in various parts of England. In the neighbourhood of London, the annual quantity of rain varies from twenty to twenty-five inches, while in Cornwall and the mountainous districts of Westmore-

land and Cumberland, the quantity is almost double.

In the absence then of all practical information on the subject,—had New Zealand never been landed upon, and were our knowledge respecting it confined to some of the physical circumstances most influential in the modification of climate,—if we were told that it consists of a group of islands in the South Pacific Ocean extending from the 34th to the 48th degree of south latitude, and from the 166th to the 179th degree of east longtude, at a distance of twelve hundred miles from the nearest main land, the Continent of New Holland, and having an undulating, and in many places a mountainous surface, we should be led to expect a climate 8° or 10° cooler than that of the south of Portugal in the corresponding latitude of the opposite hemisphere—moderate in its extremes of temperature—of a humid atmosphere—with frequent changes of weather, and in general mild, equable, and showery.

So far too as Climate may be judged of by its effects upon the human constitution, we should be led to form a favourable opinion of the climate of New Zealand from the mental and physical character of its native population. By almost all writers, they are described as tall, active, and well made, with active and inquiring minds. There is considerable difference however in personal appearance among the various tribes; the free

population too, being in all respects superior to the Cookees or slaves. Mr. Anderson, who accompanied Captain Cook, speaking of the natives of Queen Charlotte's Sound, says "The natives do not exceed the common stature of Europeans, and in general are not so well made." Major Cruise says, "The inhabitants of New Zealand are in general tall, active, and well made;" and remarking the difference between the chiefs and the slaves, observes, that "many of the latter are almost black, and below the middle size." Lieut. Breton, after giving several instances of their activity and strength, observes, that "They are a fine race of people, being well made, athletic, and active." "The natives," observes Mr. Savage, "are of a very superior order, both in point of personal appearance and intellectual endowments. The men are usually from five feet eight inches to six feet in height, well proportioned, and exhibit evident marks of great strength. And in comparing them with the natives of New Holland, Mr. Earle speaks still more favourably of them: "They are," says he, "cast in beauty's perfect mould: the children are so fine and powerfully made, that each might serve as a model for a statue of the infant Hercules: nothing can exceed the graceful and athletic forms of the men, or the rounded limbs of their young women, while the intellect of both sexes seems of a superior order;—all appear eager for improvement, full of energy and indefa-

tigably industrious. In short, all the accounts we have of the New Zealanders agree in ascribing to them that natural quickness and intelligence, and that physical conformation, which, in some degree, are attributable to the effects of a temperate climate.

But it is rather from the vegetable productions of a country, that we can expect to form an accurate opinion of the character of its climate. Vegetation in New Zealand is uniformly described as luxuriant. Describing the country in the neighbourhood of Queen Charlotte's Sound, Captain Cook says, "The hills are one continued forest of lofty trees, flourishing with a vigor almost superior to any thing imagination can conceive, and affording an august prospect to those who are delighted with the grand and beautiful works of nature." Mr. Yate, on the same subject, "In spring and summer, and autumn and winter, there is no visible change in the appearance of the woods; they are as beautiful in the depth of winter as in the height of summer; leaves no sooner fall to the ground than others directly assume their station; no branch withers from its trunk, but another and more vigorous one puts out in its stead; the fairest and most tender shrubs shrink not from the southern blast, nor faint beneath the rays of the sun."

In comparison however with our own, the character of the climate will be best ascertained by

observing its effects upon those fruits and vegetables planted in New Zealand, which are known to thrive only in equable and temperate weather.

Captain Cook, on revisiting a spot on which during a former voyage he had landed, and planted many of our English vegetables, observes, "Our gardens had fared somewhat better; every thing in them, except the potatoes, had been left entirely to nature, who had done her part so well, that we found most articles in a flourishing state. A proof that the winter must have been mild" * * * "We found almost all the radishes and turnips shot into seed, the cabbages and carrots very fine, and abundance of onions and parsley in good order. The thriving state of our European pot-herbs, gave us a convincing proof of the mildness of the winter, in this part of New Zealand, where it seems it had never frozen hard enough to kill these plants which perish in our winters." Major Cruise, who visited New Zealand in 1823, alluding to the suitableness of the climate to the production of European vegetables, says, "It was evident that two crops of potatoes might be very easily raised in the year: such is the fecundity of the climate, that peas and other European vegetables which have been sown by different individuals in the depth of winter spring up with great rapidity, and were now and had been some time fit for consumption." "Every diversity of European fruit and vegetable," says Mr. Yate,

"flourishes in New Zealand" * * * "All the fruits and plants introduced by the Missionaries have succeeded wonderfully. Peaches and water-melons are now in full season; the natives brought baskets full of them to my door every day, which they exchanged with us for the merest trifles, such as a fish-hook, or a button." For the growth of wheat and other grains the climate appears to be favourable. Mr. Montefiore, in his evidence before a Committee of the House of Lords, to an inquiry whether wheat would be sent from New Zealand to Australia, replies, that "There is a great deal now shipped. I see from some of my letters, we had last year several thousand bushels of maize from Poverty Bay." "When sown with English grasses," says Dr. Lang, "The New Zealand fern land produces excellent pasture. The English clover in particular grows luxuriantly. The potatoes are proverbially excellent; they are cultivated most successfully by the natives, without manure of any kind; they come to maturity in fourteen weeks; and two crops of them are obtained in the year."

The description of one of the missionary establishments given by Mr. Darwin, who accompanied Captain Fitzroy on the surveying expedition, and who paid a brief visit to New Zealand in 1835, proves that almost all our English fruits and vegetables are suited to the climate. "On an adjoining slope, fine crops of barley and wheat in

full ear were standing; and in another part, fields of potatoes and clover; but I cannot attempt to describe all I saw; there were large gardens with every fruit and vegetable that England produces, and many belonging to a warmer clime. I may instance asparagus, kidney beans, cucumbers, rhubarb, apples, pears, figs, peaches, apricots, grapes, olives, gooseberries, currants, hops, gorze for fences, and English oaks, and many different kinds of flowers, (of these he enumerates several.) At Pahia it was quite delightful to behold the English flowers in the platforms before the houses: there were roses of several kinds, honeysuckles, jasmines, stocks, and whole hedges of sweet-briar."

Captain Fitzroy too appears to have noticed the English character of the districts, that have been cultivated by the missionaries and other European settlers. "Passing on over rounded hills covered with fern, I almost started at a thoroughly English scene suddenly exposed. In the valley beneath, a quiet little village, a church-like building of stone, with a clock in the tower; an English cutter at anchor with her ensign flying, in the arm of the sea before-mentioned; close to the village, gardens full of flowers surrounding the neatly built and white-washed cottages; cattle grazing about the surrounding hills; and a whole school of little English children hallooing and screaming to one another as they played in a field, quite trans-

ported me in imagination to the other side of the world."

We have every reason to believe therefore, from the situation of New Zealand—its insularity, and mountainous character—the nature of its vegetable productions, and the success with which our more tender and delicate fruits and vegetables have been cultivated, that its climate fully deserves the character it enjoys for equability, mildness, and salubrity.

We will now lay before the reader, the actual descriptions which have been given of the climate by those who have visited the country. Seventy years have elapsed since Captain Cook first explored it; he appears to have visited it several times, and at different seasons of the year, and to have had sufficient opportunity of forming an opinion of the general character of its climate. As to New Zealand, as well as other newly-discovered countries, of which he has left us any account, the great accuracy of his observation has been confirmed by all succeeding writers. Nor can his testimony be impeached on the ground of interest; he seems to have had but a distant prospect of the colonization of the country; still he observes, though "New Zealand may be far remote from the present trading part of the world, we can by no means tell what use future ages may make of the discoveries made in the present." He appears to have been much struck with the

genial character of the climate. "The agreeable temperature of the climate," says he, "no doubt contributes much to the uncommon strength in vegetation: for at this time, though answering to our month of August, the weather never was disagreeably warm, nor did it raise the thermometer higher than 60°. The winter also seems equally mild with respect to cold, for in June 1773, which corresponds to our December, the mercury never fell below 48°, and the trees at that time retained their verdure as if in summer."

And on another occasion, speaking of the weather, he observes, "it is in general good, but sometimes windy, with heavy rain, which, however, never lasts above a day, nor does it appear that it is ever excessive; for there are no marks of torrents rushing down the hills as in many countries, and the brooks, if we may judge from their channels, seem never to be greatly increased. The north-west winds are the most prevailing: and though often pretty strong, are almost constantly connected with fine weather. In short, the only obstacle to this being one of the finest countries upon earth, is its great hilliness." And again, inferring the character of the climate from its vegetable productions, he remarks, "The hills and mountains are covered with wood, and every valley has a rivulet of water; from the vegetables we found here, there is reason to conclude that the winters are milder than those in

England, and we found the summer no hotter, though *it was more equally warm*, so that if this country should be settled by people from Europe, they would, with a little industry, be very soon supplied, not only with the necessaries, but the luxuries of life in great abundance."

Allowing for the distance at which his observations were made, the account given by Mr. Yate, one of the missionary body, who was for some time resident in New Zealand, confirms in a remarkable manner that given by Captain Cook nearly seventy years before; and is, we are inclined to think, the most accurate description that has been presented to us of the general character of the weather. For this reason, though not next in order of date, we will insert it here. "North of the Thames," he observes, "snows are unknown, and frosts are off the ground by nine o'clock in the morning. The country during six months in the year, is subject to heavy gales from the east and north-east, which generally last for three days, and are accompanied with tremendous falls of rain. These gales generally commence in the east, and gradually haul round to the north-west, where they terminate in a violent gust, almost approaching to a hurricane; the clouds then pass away, and the westerly wind blows again with some violence. In the winter season, the moon rarely either changes or wanes without raising one of these tempestuous gales; and during the whole year,

the wind is sure to blow, though it may be only for a few hours, every fall and change of the moon."

"The spring and autumn," he continues, "are delightfully temperate, but subject to showers from the west-south-west. Indeed, however fine the summer may be, we are frequently visited by refreshing rains, which give a peculiar richness to the vegetation, and fertility to the land. The prevailing winds are from south-west to north-west, which within this range, blow upwards of nine months in the year; more frequently the wind is due west. During five months, sea breezes set in from either coast, and meet each other half way across the island."

Compared with the climate of New South Wales, Mr. Earle, who visited both countries in 1827, remarks, that though "situated in the same latitude as Sydney, we found the climate of New Zealand infinitely superior. Moderate heats and beautifully clear skies succeeded each other every day. We were quite free from those oppressive feverish heats, which invariably prevail in the middle of the day at Sydney, and from those hot pestilential winds, which are the terror of the inhabitants of New South Wales. Nor were we subject to those long droughts which are often the ruin of the Australian farmer. The temperature here was neither too hot nor too cold, neither too wet nor too dry." "Reflecting," he continues, "on this

country—its situation, inhabitants and *climate*—I felt convinced, that if it were the object of our government to form a colony, they could not select a more desirable spot than New Zealand." It is necessary to remind the reader, that Mr. Earle saw the climate at the most favourable season of the year, having been resident in the country during the summer and autumn only, from October to April; his description therefore must not be taken to represent the general character of the weather for the whole year, but only for the season at which it was made—the height of summer. In this, as in all inquiries depending upon human testimony, we ought to satisfy ourselves not merely of the veracity or credibility of those upon whose evidence we are to depend, but that their opportunities of observation were such as to enable them to arrive at a correct conclusion.

Dr. Lang, who touched at New Zealand during the summer (January and February) of 1839, institutes the same comparison, and almost in the same words. After remarking upon the healthy appearance of the children of the Europeans settled at the Bay of Islands, he concludes by saying, "At all events the climate of New Zealand is undeniably superior to that of New South Wales and Van Diemen's Land in one most important particular, viz., in being free from droughts and hot winds; its insular character, its chain of lofty

mountains running from north to south along the whole extent of the islands, and its distance from any large continent, ensuring it a constant and copious supply of rain." Dr. Lang's opportunity of personal observation was very limited, but having for many years been connected with New South Wales as Principal of the Australian College, he is not likely to have been unduly biassed in favour of a neighbouring colony, destined, in all probability, to become a formidable rival.

The evidence which we now propose to lay before the reader is collected from the "Report of the Select Committee of the House of Lords appointed to inquire into the present state of the Islands of New Zealand," and the Minutes of Evidence taken before that committee in 1838. At that time a company had been formed called the "New Zealand Association," with a view to obtain from Government the extension to New Zealand of the system of colonization which had been in the first instance applied to, and was then in operation in South Australia. There is no reason to believe that the witnesses who gave evidence before that committee were personally interested in promoting the colonization of New Zealand; it may however be presumed that those who were engaged in furthering that object, would not bring forward any evidence calculated to prejudice their case, and would therefore take care that those only who

had favourable evidence to give should go before the committee.

With reference to the tone of the evidence, it certainly has the appearance of being highly coloured, and as if proceeding from willing witnesses; and if standing alone, unsupported by undoubted authority, not to be received without some caution. It is but fair, however, to observe, that some of those who gave their evidence had visited New Zealand during the finest season only, when, there can be no doubt, the climate fully merits the glowing terms in which they have described it.

Mr. Liddiard Nicholas, who accompanied the Rev. Mr. Marsden to New Zealand, in the year 1814, touched at various places on the East coast, between the Bay of Islands and the river Thames, and remained there about ten weeks, from the middle of December to the end of February, comprising a period corresponding with June, July, and August in England. In answer to an inquiry whether he had any opportunities of forming a judgment as to the climate of the place, he says, "We were there in the middle of summer, and nothing could exceed the salubrity of the climate as it appeared to me, nor the beauty of it. The heat was very moderate. A thermometer belonging to one of the missionaries, as I was informed by him, never rose higher than 73° or 74°, nor went below 64°.

The account given by Mr. Watkins is very similar; he appears to have visited New Zealand on several occasions as surgeon of a trading vessel, in March and April 1833 (our September and October), and in January 1834, and again in May (our July and November.) After describing the climate as very delightful and *very equable*, and being asked whether, having been there at different periods of the year, the vicissitudes appeared great as compared with European climates, observes, "that it is not anything like our climate. The frost was there at one time—a very gentle frost indeed; the ice was not entirely over a small pool of water; they told me that they saw ice sometimes in the Bay the thickness of a shilling, but I did not see anything of that thickness."

But by far the most glowing description of New Zealand given before the Committee is to be found in the evidence of Mr. Montefiore; he appears to have been enchanted with the beauty of the country. We should certainly consider the description too highly coloured if it had been intended to apply to those parts of the island most commonly frequented by Europeans, and which are certainly not entitled to the praise lavished upon the harbour of Kaffea. "The climate is very beautiful; I thought so highly of the country, that when I went out to New South Wales, his Majesty George the Fourth granted me five thousand acres of land. I

would readily have changed it for one thousand in New Zealand. I have visited the Brazils, the whole of Van Diemen's Land and New South Wales, and been on the Continent, but I never saw a country in the world that equalled it; in scenery, *climate*, and productiveness, it is a perfect paradise." Mr. Montefiore's evidence on the subject of climate is too general to be of much value in our present investigation; but we have thought it right to introduce it here, as it refers to a part of the country hitherto but little known.

The evidence of the Rev. Mr. Wilkinson, who accompanied the Rev. Mr. Marsden on a visit to New Zealand in 1837, confirms the accounts given by Mr. Yate and Dr. Lang, of the general character of the weather, and particularly as distinguished from that of New South Wales. Mr. Wilkinson was for some time resident in Sydney as Chaplain. He remained in New Zealand from February to the middle of May (the summer and autumn). On being asked, "How is the climate?" says "It is a beautiful climate. It is never so hot as New South Wales, nor is it so cold; it is *more moist*," and adds, "the summer was just over, and the stormy season was beginning when we left the island."

It will be observed that all the witnesses who gave evidence before the Lords' Committee on this subject, had been in New Zealand during the most favourable seasons of the year only, not one

of them having had any opportunity of forming an opinion of the general character of the climate for the whole year. A stranger visiting England during a season of settled weather in June or September, might describe our climate, and with the most perfect truth, as "most beautiful and salubrious;" "beautifully clear skies succeeding each other every day." It must therefore be obvious that to obtain a correct impression on the subject, we must have the testimony of those who have been resident in the country during the whole year, or who have had an opportunity of judging of its various seasons. We have already had the opinion of Captain Cook, who appears to have been in New Zealand in every season of the year, of Mr. Yate, who was resident there for several years continuously, and of the several individuals whose evidence has just been given. To complete the picture, we will now lay before the reader by far the most valuable account that has been published,—that of Major Cruise; it is the more valuable, because it applies to a period of the year of which our information has been hitherto the most incomplete. The author was not in New Zealand during the summer months, but during the autumn, winter, and spring of the years 1823 and 1824. His narrative is in the form of a Journal, in which he gives no vague and general descriptions of the climate, but daily notes down the temperature and state of the weather.

That the reader may at a glance make himself acquainted with the state of the weather during the period of the author's residence, we have been at some pains to collect from his Journal the result of his observations, and have thrown them into the form of a Weather Table. It is to be regretted that Major Cruise has not stated at what time of the day his thermometrical observations were made, or whether they were always taken at the same hour. It appears, however, that they were not always taken at the same place, the Major during his residence having visited various parts of the country on the West, North, and East coasts, between the river Hockianga and the Thames.

MARCH.

DATE.			RAIN.	THER.
1	Fine	...	...	69°
2	Fine	...	...	69
3	Fine	...	...	68
4	Fine	...	...	68
5	Fine	...	...	68
6	...	Strong gales	...	71
7	...	Strong gales	...	70
8	...	Strong gales	Rain	69
9	...	Breezes	Showery	
10	...	Gales	Rain	
11	...	...	Rainy	74
12	Fine	...	...	74
13	Fine	Close	...	74
14	...	Dark	...	67
15	...	Strong gales	Rain	68
16	...	Blowing hard	Rain	68
17	Fine	...	...	69
18	Fine	...	...	71
19	Fine	...	...	71
20	Fine	...	...	68
21	Fine	...	...	71
22	Fine	...	...	67
23	Fine	...	...	65
24	Fine	...	...	68
25	Fine	...	...	67
*	...	...	...	
*	At sea	...	...	
*	...	...	...	
29	Fine	...	...	66
30	Fine	...	...	69
31	Fine	...	...	69

APRIL.

DATE.			RAIN.	THER.
1	Fine	...	...	69°
2	Fine	...	...	68
*		...	...	
*	At sea	...	...	69
*		...	...	
6	...	...	Showery	69
7	Fine	...	...	69
8	Fine	...	...	64
9	Fine	...	...	62
10	Fine	...	...	62
11	Fine	...	...	65
12	Fine	...	...	63
13	...	...	Showery	61
14	Fine	...	...	60
15	Fine	...	...	60
16	Fine	...	...	62
17	Fine	...	...	57
18	Fine	...	...	58
19	Fine	...	...	69
20	Fine	...	...	58
21	...	...	Rain	68
22	Fine	...	...	61
23	...	...	Showery	66
24	...	Heavy squalls	Showery	67
25	...	Heavy squalls	Showery	63
26	Fine	...	...	61
27	...	Stormy	...	61
28	...	Squally	Showery	64
29	...	Heavy squalls	Showery	61
30	...	Squally	Showery	60

MAY.

DATE.			RAIN.	THER.
1	Fine	...	...	60°
2	Fine	...	...	60
3	Fine	...	...	62
4	Fine	...	...	60
5	...	Dark weather	Rain	65
6	Fine	...	...	60
7	Fine	...	...	60
8	Fine	...	...	52
9	Fine	...	...	52
10	Fine	...	...	58
11	Fine	...	...	58
12	Fine	...	...	54
13	Fine	...	...	65
14	Fine	...	...	69
15	Fine	...	...	61
16	...	Hazy	Showery	58
17	Fine	...	...	62
18	...	Hazy and squally	...	64
19	Fine	...	...	62
20	...	...	Showery	65
21	Fine	...	...	60
22	Fine	...	...	54
23	...	...	Showery	54
24	Fine	...	...	55
25	Fine	...	...	50
26	Fine	...	...	68
27	Fine	...	...	54
28	Fine	...	...	55
29	Fine	...	...	54
30	Fine	...	...	56
31	Fine	...	...	56

JUNE.

DATE.			RAIN.	THER.
1	...	Blowing hard	Rain	65°
2	...	Dark, hazy	...	64
3	...	Foggy	Rain	64
4	...	Hazy	...	64
5	Fine	...	...	68
6	Fine	...	...	56
7	Fine	...	...	55
8	Fine	...	...	60
9	...	...	Showery	55
10	Fine	...	...	52
11	Fine	...	...	52
12	...	Heavy squalls	Showery	50
13	...	Squally	Showery	58
14	Fine	...	...	58
15	...	Squally	Rain	55
16	Fine	...	...	63
17	...	Squally	Showery	53
18	...	Heavy squalls	Rain	51
*		...	...	...
*		...	...	...
*	At sea	...	...	...
*		...	...	...
23	Fine	...	...	52
24	...	Hazy	...	52
25	...	...	Rain	...
26	...	Hazy	Rain	...
27	...	Hazy	Rain	58
28	Fine	...	...	60
29	...	Foggy	Rain	60
30	...	Foggy	Showery	60

JULY.

DATE.			RAIN.	THER.
1	Fine	...	...	50°
2	Fine	...	...	42
3	Fine	...	...	40
4	Fine	...	...	40
5	Fine	...	...	59
6	...	Squally	Showery	50
7	...	Squally	Showery	50
8	...	...	Rain	58
9	...	...	Rain	51
10	...	...	Rain	60
11	...	Squally	Showery	58
12	Fine	...	...	62
13	Fine	...	...	60
14	...	Heavy squalls	Showery	58
15	...	Very heavy squalls	Rain	50
16	...	...	Showery	58
17	Fine	...	...	50
18	...	Heavy squalls	Showery	50
19	...	...	Showery	52
20	Fine	...	...	50
21	Fine	...	...	58
22	Fine	...	...	48
23	Fine	...	...	50
24	...	Squally	Showery	50
25	...	Heavy squalls, thunder	Rain	58
26	Fine	...	...	50
27	...	Squalls	...	48
28	...	Squalls	Rain	58
29	...	Heavy squalls, thunder	Rain	
30	...	...	Showery	60
31	Fine	...	...	58

AUGUST.

DATE.			RAIN.	THER.
1	Fine	...	Rain	60°
2	...	...	...	56
3	...	Heavy squalls	Rain	60
4	...	...	Rain	58
5	...	Squally	Showery	60
6	...	Squally	Showery	60
7	...	Squally	Rain	58
8	...	Heavy squalls	Showery	54
9	Fine	...	...	48
10	Fine	...	...	56
11	Fine	...	...	56
12	Fine	...	...	58
13	...	...	Showery	58
14	Fine	...	...	58
15	...	Strong gales	Rain	58
16	...	Strong gales	Rain	58
17	...	Squally	...	58
*	...	...	...	
*		...	...	
*	At sea	...	...	
*		...	...	
*	...	...	...	
22	Fine	...	...	58
23	Fine	...	...	58
24	Fine	...	...	56
25	Fine	...	...	60
26	...	Dark	Rain	58
27	Fine	...	...	64
28	...	Squally	Showery	58
29	...	Gale	Rain	60
30	...	...	Showery	58
31	Fine	...	...	60

SEPTEMBER.

DATE.			RAIN.	THER.
1	...	Squalls	...	58°
2	...	...	Showery	51
3	Fine	...	...	54
4	Fine	...	...	56
5	Fine	...	...	58
6	Fine	...	...	57
7	...	...	Showery	60
8	...	Dark. Cloudy	...	62
9	...	Strong gales	...	66
10	Fine	...	...	62
11	Fine	...	...	61
12	Fine	...	...	59
13	Fine	...	...	60
14	Fine	...	...	58
15	...	Dark. Gales	...	58
16	...	...	Rain	64
17	Fine	...	...	64
18	Fine	...	...	60
19	Fine	...	...	60
20	...	Dark and hazy	Rain	62
21	Fine	...	...	60
22	Fine	...	...	60
23	Fine	...	...	60
24	...	Cloudy	...	62
25	Fine	...	...	56
26	...	Squally	Showery	60
27	Fine	...	...	58
28	Fine	...	...	58
29	...	...	Showery	54
30	Fine	...	...	54

OCTOBER.

DATE.			RAIN.	THER.
1	Fine	..	...	56°
2	...	Strong gales	...	62
3	...	Dark	Rain	56
4	...	Squally	Showery	51
5	...	Squally	...	54
6	Fine	...	...	59
7	Fine	...	...	60
8	...	Gales	Rain	62
9	Fine	...	...	64
10	...	...	Showery	62
11	Fine	...	...	64
12	...	...	Rain	60
13	Fine	...	...	63
14	Fine	...	...	62
15	Fine	...	...	62
16	Fine	...	...	56
17	Fine	...	...	64
18	Fine	...	...	62
19	Fine	...	...	58
20	Fine	...	...	60
21	...	Hazy	...	56
22	Fine	...	...	66
23	Fine	...	...	64
24	Fine	...	...	68
25	Fine	...	...	68
26	...	Squalls	...	62
27	Fine	...	...	56
28	Fine	...	...	56
29	...	Cloudy	...	56
30	Fine	...	...	62
31	Fine	...	...	64

NOVEMBER.

DATE.			RAIN.	THER.
1	...	Hazy	...	58°
2	Fine	...	...	60
3	...	Gales	...	64
4	...	...	Rain	60
5	...	...	Showery	64
6	Fine	...	...	60
7	Fine	...	...	60
8	...	Squalls	...	60
9	Fine	...	...	66
10	Fine	...	...	66
11	Fine	...	...	62
12	Fine	...	...	62
13	...	Gales	Rain	60
14	...	Gales	Rain	60
15	...	Squalls	Rain	62
16	...	Heavy Squalls	Rain	64
17	...	Gales	Rain	64
18	...	...	Showery	66
19	...	...	Showery	66
20	...	...	Showery	64
21	...	...	...	
22	...	...	Rain	62
23	...	...	Rain	69
24	...	...	Showery	77
25	Fine	...	...	60
26	Fine	...	...	62
27	Fine	...	...	69
28	Fine	...	...	66
29	Fine	...	...	60
30	...	Hazy	...	68

Of the quantity of rain that falls in New Zealand, we have no information: it would seem however from our Table, which it must be remembered excludes probably the *dryest period of the year*,—the three summer months,—that out of 257 days, rain fell on 87 days, which after the same ratio would give 124 days for the whole year. In England, the number of rainy days is considerably greater, especially in the South-Western districts. The number of rainy days in Cornwall being about 180: in Bristol, however, the number is not more than 140.

Of the summer temperature it will be observed we have only general statements, but it appears that in the Northern division of the country (that nearest the equator) where these observations were taken, the summer, or rather the three warmest months, (for the summer comprises at least three-fourths of the year), are somewhat hotter than in England, and that the spring and autumn have the temperature, and settled weather of a fine English summer, and that the three coldest months have the wet, broken, tempestuous weather of an English March, but with the temperature of our October.

In comparison with the much-boasted climate of Madeira, that of New Zealand, in its most essential quality, cannot be said to be unfavourable. In Madeira the mean temperature is higher, but not more limited in its range, and in many respects, not so suitable to the English constitution. "In

the winter," says one writer, "the mercury seldom descends below 55°, or rises higher than 65°, and the usual range in summer is from 66° to 76°." The reader can scarcely fail to be struck, on referring to the table, at the extraordinary resemblance of the two descriptions. Taking June, July, and August, the three coldest months, he will find the highest point of the thermometer 65°, and that it did not fall below 50° more than six times during that period, and that the mean temperature is about 56°.

Another writer states the temperature of Madeira to be considerably higher. "The climate of Madeira," he observes, "is very mild. The mean temperature of the year does not exceed 68°. In the months of December and January the thermometer rarely sinks below 60°. The mean temperature for that season being 63°. The mean temperature of the hottest months (August and September) is between 73° and 74°, but when eastern and south-eastern winds bring to the island the hot air from the African desert, the thermometer rises sometimes as high as 85° and even 90°."

But in connection with the immediate subject of our inquiry, an important point still remains to be considered. We have already seen that, judging from the physical peculiarities of the country, we should be led to expect a temperate and equable climate, and that all who have had opportunities

of observation, concur in ascribing to the climate of New Zealand the character of salubrity. We have still, however, to inquire, what are its actual effects upon the English constitution? Our information on this subject is somewhat imperfect, and is given in very general terms. Captain Cook is the first whose remarks we will transcribe. "Our people," he says, "who were daily exposed to the rain, felt no ill effects from it; on the contrary, such as were sick and ailing when we came in, recovered daily, and the whole crew soon became strong and vigorous, which can only be attributed to the healthiness of the place, and the fresh provisions it afforded." An account confirmed by Mr. Yate, who observes that "Those who come here sickly are soon restored to health; the healthy become robust, and the robust fat."

Mr. Earle appears to have noticed the healthy appearance of the missionaries and their families. Giving an account of a visit to one of their stations, he remarks, "the chubby children who peeped at us from all corners, and the very hearty appearance of their parents, plainly evidenced that theirs was an excellent and thriving trade."

The freedom in New Zealand from "those oppressive, feverish heats" which prevail during the summer in Sydney, seems to be satisfactorily proved by the rosy appearance of the European children noticed by Dr. Lang. "I was particu-

larly struck," he observes, "*with the glow of health* exhibited on the cheeks of the children of Europeans at the Bay of Islands, compared with the pale faces of children of the same age at Sydney, in much the same latitude. It was quite remarkable." The same thing seems to have been noticed by Capt. Fitzroy. "In the village of Keri-Keri," he remarks, "we had an English welcome and an abundance of happy looking *and healthy children.*"

By a return given to the committee of the House of Lords, it appears that in the year 1838, there were upwards of forty persons, besides children, connected with the Missionary Establishment in New Zealand, some of whom had been resident there upwards of twenty years. Mr. Watkins being asked by the Committee, whether he was aware that the children of the natives had been swept away in great numbers by disease introduced into the country by the vicious and debauched habits of the sailors who touch there, says, "I have heard of that since I was there; but I have not met with any fact. When I was there, *there had been no instance of Europeans dying there;* but since I have left, Mr. Davies' wife has died. The missionaries have been there nearly thirty years, and the natives particularly spoke of that, and drew my attention to it several times—that they thought *that Europeans had wonderful health, and their constitution was admirably*

adapted to the country, but that I attributed to the mildness of the climate; it is very mild."

But after all, although the opinion we should be led to form of the character of the climate of New Zealand, from our knowledge of the physical circumstances of the country, has been fully corroborated by the testimony of all who have had the opportunity of personal observation; and although the result has been still further verified by the fact that it has been found suitable to the English constitution, so far as we have yet had any opportunity of testing its effects, there is one circumstance which, unexplained, might reasonably lead us to doubt whether the climate is calculated to exert a beneficial influence on constitutions predisposed to tubercular disease.

It had been stated by several writers, that scrofula, in its various forms, is one of the prevailing diseases among the New Zealanders. It will be necessary, therefore, in the first place, to ascertain whether such is the case; and if so, whether the fact is inconsistent with the supposed salubrity of the climate.

That the reader may form his own opinion on the subject, we will continue the course we have hitherto pursued, and lay before him the statements alluded to, in the words of their author.

"Consumption, violent rheumatism, and sore eyes," says Major Cruise, "seem to be the prevailing diseases of the New Zealanders." Mr.

Earle remarks that, considering the nature of the climate, "it seems unaccountable that the New Zealanders should be subject to so fatal a disease as galloping consumption." In his examination before the committee, Mr. Watkins speaks of scrofula as one of the prevalent diseases. "Their diseases are something like our diseases, with the exception of scrofula being, perhaps, more abundant there." Mr. Tawell, too, in his evidence, states, "that scrofula is the prevalent disease among the natives."

But assuming that consumption is prevalent among the New Zealanders, it does not by any means follow, that the circumstance is to be attributed to the nature of the climate. Climate does unquestionably exert considerable influence on the development of this disease: it is, however, but one of many exciting causes. In a country which enjoys a total exemption from *the disease*, we should rightly conclude in favour of the climate: but the converse does not hold; we cannot conclude that the climate is necessarily unfavourable, because the disease is found to prevail. And this is so with reference to New Zealand, for two reasons: in the first place, because there is ground to believe that it is of recent origin; and because, within the last fifty years, causes have been in operation calculated to produce and spread the disease to a degree far beyond the preventive or remedial effects of climate.

There is scarcely an instance in which the first unrestrained contact with civilization has not proved injurious to a barbarous people. Before the effects of his own expeditions had time to show themselves, Captain Cook describes the New Zealanders as almost free from disease of any kind; "as there is no source of disease," says he, "either critical or chronic, but intemperance and inactivity, these people enjoy *perfect and uninterrupted good health;* we never saw a single person among them who appeared to have any bodily complaint." "As a further proof," he continues, "that human nature is untainted with disease, is the great number of old men that we saw, many of whom, by the loss of their hair and teeth, appeared to be very ancient, yet none of them were decrepit; and though not equal to the young in muscular strength, were not a whit behind them in cheerfulness and vivacity." Even in 1814 we find no mention made of the disease by Mr. Nicholas, who, after Capt. Cook, is the oldest authority on the subject. On being asked whether he had observed that they had any peculiar disease, says, "Generally speaking, they appeared to be a remarkably healthy people; we saw a few, but very few, afflicted with cutaneous diseases, and some appeared to be subject to sore eyes; but they appeared generally a remarkably strong, healthy people."

A few years afterwards, however, as will be

seen, a different picture has been drawn ; nor is it difficult to account for the change. " Of the character of the European population, now permanently settled in New Zealand," says Dr. Lang, " it is scarcely necessary to inform your Lordship. With a few honourable exceptions, it consists of the veriest refuse of civilized society— of run-away sailors—of run-away convicts—of convicts who have served out their term of bondage in one or other of the two penal colonies—of fraudulent debtors who have escaped from their creditors in Sydney or Hobart Town—and of needy adventurers from the two colonies, almost equally unprincipled. In conjunction with the whalers that occasionally visit the coast, the influence of these individuals on the natives is demoralizing in the extreme. Their usual articles of barter are either muskets and gunpowder, or tobacco and rum. Most of them live in open concubinage, or adultery, with native women ; and the scenes of outrageous licentiousness and debauchery that are ever and anon occurring on their premises, are often sufficiently revolting to excite the reprobation and disgust of the natives themselves."

The consequences to the New Zealanders of this sort of intercourse, have been what would naturally be expected. Great depopulation is supposed to have been going on among them for some years. " Scrofula," says Watkins, " is very prevalent among them ; but I think it is very much in con-

sequence of having no medical treatment: it appears that the swelling of the glands comes on, and is allowed to proceed without medical interference, till it becomes a very formidable disease. I have seen the effects of medicines in arresting the swelling in several instances when I was there. I have had a great many come to me to ask my assistance as a surgeon." This disease, in its several forms, is attributed to the spread of syphilic disease, insufficient diet, and neglect. "If syphilic disease," say the Committee, "is allowed to continue in the state to which you say it was, that not one out of fifty women was free from it, will not that have the effect of very much deteriorating the population of that country?" "Without doubt," replies Mr. Watkins; "for that disease weakens the constitution. I do not know of any disease that weakens it more—and other diseases are produced by it. It must have a very great effect upon the people; it has more effect in destroying the constitution of the natives, than perhaps any other disease to which they are subject."

Alluding to the timber trade in New Zealand, Mr. Tawell, in his evidence, observes, "that, previous to this trade being carried on to any considerable extent, the attention of the natives had been directed, to a considerable degree, to the cultivation of the soil, the rearing of pigs, and similar occupations. Since this has occurred, that has been in a

great measure neglected; and in several instances, the natives of the northern part of the northern island have had to be supplied from Cook's Straits and that neighbourhood, with actual sustenance, such as Indian corn, potatoes, and so forth. The exhausting nature of the trade itself," he adds, " involving an immense exertion of animal power, with the depressed diet, consisting, instead of a quantity of animal food, that is, pork, almost entirely of potatoes, has introduced a disease which, till this trade occurred, was completely unknown, —a general glandular affection. I attribute it to the extremely depressed diet, in connection with the increased labour; this affection has now become almost universal."

When sick, the New Zealanders, from some superstitious feeling, are removed into the open air, exposed to all the changes of weather, day and night, and all but left to starve. Mr. Davis, one of the missionaries, in his journal, (extracts from which were read before the Committee,) remarks that "much of their sickness may be traced to their careless manner of life, and their want of common necessaries, many of which are really within their reach: for instance, many of them are without a house which will shelter them from the stormy blast, whereas materials for building are always within their reach." By an extract from the first Report of the Surgeon recently sent out by the Church Missionary Society,

it would seem that to the want of proper medical treatment, much of the sickness prevalent among them is to be ascribed. "During the time I spent at Waimate, (about five weeks,) the calls upon my time have been incessant. The influenza has been prevailing universally among them; its character has been very severe; and notwithstanding the greatest attention that could be paid to them, it has in many instances terminated in consumption, and thus carried off its victims. But while we have reason to lament that in many cases it has proved fatal, yet I would be grateful to God in being able to record that signal benefit has been derived from the regular attendance of a medical man, and a proper exhibition of medicine. As proof of this I need only tell you that during my visits around Waimate, the Pas were crowded with sick; and you could scarcely enter a single house among the whole, but you would find some of the inmates 'down,' as is the emphatic expression of the New Zealanders when a person is taken ill. It was quite discouraging to view the universal extent of disease among them, combined with their extreme helplessness and discomfort under such circumstances. *As soon as they are taken ill they at once give themselves up to despair, and make use of no means for their recovery.* Their impression during this late visitation of sickness among them has been that God's wrath was now coming down

upon them for their atrocious sins, and that he was about to sweep them off as a nation. I was however going to observe that in my late attendance upon them, so completely have the majority recovered, that I have visited many of the Pas in quest of my patients, and have found not a single individual in them, all being engaged in attending their plantations."

Mr. Earle is of the same opinion. After expressing his surprise that with such a climate, consumption should be a prevalent disease, he says, "The only cause to which I can attribute such an affliction is their indifference to lying out all night exposed to every change of weather—to cold and rain—which in young and tender constitutions must induce the most pernicious consequences. If some few are rendered hardy and robust by this process, many no doubt are killed by it. I endeavoured to impress upon the minds of all my female friends the great danger of thus exposing themselves to cold, but they only laughed at my precautions, and said, "If Atua wished it, so it must be; they could not strive with the Great Spirit."

Considering then the vicious and debauched habits of the greater part of the Europeans with whom the New Zealanders have been brought into contact for the last seventy years, and the fatal diseases that have been introduced into the country during that period, it is unnecessary to go further

in order to account for the complaints now observed to prevail among that unfortunate people. Though now stated to be prevalent, the fact that for many years after Captain Cook's first visit to the country, nothing like tubercular disease was known to exist among the New Zealanders, is sufficient to satisfy us that its present prevalence (*assuming it to be the fact*) cannot be ascribed to any thing unfavourable in the character of the climate. The opinion, therefore, which we should be led to entertain, upon all the evidence we possess on the subject, of the genial, temperate, and salubrious character of the climate of New Zealand, and particularly of its suitableness to delicate constitutions, would not be in the slightest degree shaken were it proved that phthisis is one of the prevailing diseases among the natives of the country.

It now only remains to be considered whether there is any, and what difference, with reference to this point between the climate of New Zealand and that of the neighbouring Australian Colonies; whether there is that superiority in the former which should induce persons of delicate chest and lungs, intending to emigrate to the Antipodes, *cæteris paribus,* to select for their residence New Zealand in preference to any of our settlements on the coast of New Holland or Van Diemen's land.

The general salubrity of the Australian Colonies has been long ago established on the most satis-

factory evidence. To institute any inquiry into the comparative *general salubrity* of the two countries is beside our purpose, but if the opinion be well founded, that a climate is suitable to delicate constitutions in proportion as its temperature is equable and limited in its range, and free from frequent and sudden vicissitudes, there can be little doubt that the advantage is decidedly in favour of New Zealand.

Although, as we observed in our introductory remarks, a considerable diversity of climate is found to prevail in the different settlements on the coasts of New Holland, and between the climate of New Holland and that of Van Diemen's Land, there is one feature which is common to all—a liability to frequent, sudden, and very considerable variations of temperature. There are frequent instances of the thermometer varying 25 degrees in 50 minutes. This sudden transition from heat to cold is attributed to the sudden change of the wind from the north-west to the south-east. The north-west wind passing over the heated sandy deserts in the interior is always warm, and sometimes becomes heated to an almost intolerable degree, the thermometer not unfrequently rising from 80° to 110° in a few hours. The south-east wind, on the contrary, is generally cold and piercing, more particularly when shifting suddenly from the north-west.

But although the thermometer generally indi-

cates a high temperature in New South Wales, very often ranging from 90° to 100°, the effect upon the feelings is much less oppressive than would be experienced in India with the same high temperature. Owing to the extreme dryness of the atmosphere on the continent of New Holland, it is less oppressive and debilitating at 100°, than the more humid climate of India at 80°. Indeed, as far as the feelings are concerned, the thermometer is a very imperfect indication of the temperature of the air: on this point we cannot arrive at a correct comparison without knowing the state of the atmosphere indicated by the hygrometer.

In speaking of the climate of Sydney and the neighbourhood, Mr. Cunningham, who visited that colony on several occasions as surgeon-superintendent of convict ships, remarks that the south-east winds "are at times particularly piercing; and when there is a sudden shift from a roasting north-wester to one of these chilling winds, you will find a close buttoned surtout over your every-day garb a very comfortable sort of commodity. "These hot north-westers," he observes, "are produced by a long range of bare sandstone hills in that direction, which are heated by the strong perpendicular summer rays to a pitch rivalling the sands of the African deserts; while the wind in blowing over them, being freed of its moisture, arrives among us with a breath too scorching to

be pleasant to either animal or vegetable temperament. I have seen the thermometer in the shade rise instantly through the effects of this wind from *eighty to a hundred and ten.*" Dysentery seems to be the most prevalent and fatal disease. "Children," says the author, "are very subject to the *teres*, or round worm, so common in warm climates: and on reaching the age of puberty, *phthisis* is liable to supervene from the rapid sprouting out in stature of our youths at this period; but the European phthisis is uniformly cured, or at least relieved by a removal hither, if early resorted to. An epidemic influenza carried off a number of the old Europeans some years ago, and also not a few of the aborigines, while many of our younger individuals occasionally feel the effects of it to this day."

Dr. Lang, in his work on New South Wales, after describing the beauty of the climate for at least eight months in the year, alludes to the occurrence of sudden variations in the temperature, "The most singular phenomena," says he, "in the meteorology of New South Wales, is the occasional prevalence of hot winds from the northwestward. These winds occur on an average four times every summer, and blow from twenty-four to thirty-six hours each time, the atmosphere all the while feeling like a current of heated air from a furnace, and the thermometer generally standing at from 90° to 100° of Fahrenheit. It has even

stood as high on one occasion within my own experience as 112½°." * * * "When the hot wind has spent its strength it is usually succeeded instantaneously by a violent gust from the southward, which immediately envelopes the town of Sydney in a whirlwind of dust. I have observed the hot wind terminate instantaneously in a hail-storm of a few minutes' duration from the south-westward, which of course, caused the mercury in the thermometer to descend with surprising velocity, the difference of elevation, after a short interval, being on one occasion, when the wind had been unusually hot, not less than 40°."

"The three forms of disease," says Dr. Lang, "are ophthalmia, dysentery, and influenza or catarrh." * * * "Catarrh or influenza is sometimes almost epidemic in the colony. It seldom proves fatal to persons in the prime of life, but old people and children are apt to sink under it." * * * "Cases of consumption have occasionally occurred and terminated fatally among the native youth of this colony (children of Europeans); and Europeans who have brought the genuine *phthisis pulmonalis* along with them to the colony, sink at last under the fatal influence of its deadly virus, though humanly speaking, they may be said to add three or four years to their lives by going to New South Wales."

On the subject of the vital statistics of the colony generally, he expresses his belief, "That the pro-

babilities of life for any number of children born in the colony, are higher than for a similar number born in England, but that fewer of that number are likely to reach extreme old age in the colony than in Great Britain. In short, the lamp of life in the salubrious climate of New South Wales is like a taper immersed in a vessel filled with oxygen gas; it burns more brightly than in common air, but is sooner extinguished." * * * "I have also had frequent occasion to observe," he adds, "that diseases in New South Wales are more frequently attended with a speedy and entire prostration of the intellectual powers than in England, and the diseases that do attack the human frame in the colony, are generally more acute, and arrive more speedily at their crisis."

But although subject to much greater and more frequent variations of temperature than New Zealand, New South Wales seems to enjoy very nearly the same mean temperature during the autumn, winter, and spring; the mean for the corresponding nine months being about 3° higher in Sydney.

The monthly means for Sydney in the following table are taken from a diary kept by Major Goulbourne in the year 1821, and indicate the temperature at noon:—

	Sydney.	New Zealand.
March . . .	71½°	68°
April . . .	68⅓	62
May . . .	61	58
June . . .	58½	57
July . . .	54	53
August . .	56	58
September .	62	59
October . .	64½	59
November . .	67	63

The climate of Western Australia, though resembling that of Sydney, in being subject to considerable variation of temperature, is more moist and less liable to draught.

For eight months in the year, the climate of South Australia is uniformly described as delightful and salubrious, but during the summer months the heat is greater than is agreeable to English constitutions. "I have seen," says Mr. James, "the thermometer in a dark room, nearly closed up, and with a thick roof of thatch over it, as high as 96°, not once, but a dozen different days." "As to climate," says a recent emigrant to South Australia, "you cannot as yet look for my experience. We landed in the middle of summer, and it certainly was disagreeably warm, if not oppressively so; the thermometer in our wooden house standing occasionally at 110° or 112°, but by night falling to 80°, 70° or even 60°. The

heat, after all, is certainly *not so oppressive as might be expected from the height of the thermometer.*" * * * "I would say, generally, that it is warmer than the descriptions led me to expect; but with this you may enjoy the peculiar satisfaction, I may say always, of an agreeable coolness during the night. The only objection I have to the climate *is the extreme changes of temperature,* generally three times a-day, increasing greatly the difficulty of escaping colds. At present, for example, the thermometer in the morning may be about 66°, 96° or 98° at mid-day; and 66°, or even lower again by night."

The climate of Van Diemen's Land differs considerably from that of the continent of New Holland; it is cooler, more changeable, subject to heavy gales of wind and rain, and free from drought. We will avail ourselves of the description of the climate, given by a gentleman visiting that country to recruit his health, after a lengthened residence in India. "Our summer days are most uncertain; on Tuesday the thermometer was 92°, with a real hot wind; on Friday it was 52°, with rain, and we were glad to have a roasting fire. From season to season, the changes are less extreme. There is little or no snow in winter; the climate is dry. But let those withered Indian frames, which a whistle of the wind almost blows to atoms, beware of Van Diemen's Land. The breezes here are generally gales; and when

they come from the south, which is almost daily, they are more cutting and cold than the easterly puffs we used to dread across Brunswick Square, London." * * * "During one hundred and thirty days that I kept a meteorological journal, from October 16th to February 23rd (the summer in Van Diemen's Land) there were—

Rainy days . . .	42
Strong winds . . .	24
Fine and pleasant .	28
Very fine	29
Wind too hot . . .	7

"Hottest day, 25th of January, thermometer 99½ in the shade; coldest day, 16th October, thermometer 56°." It is obvious then, that in point of *equability*, at least, the climate of New Zealand has a decided advantage over that of the neighbouring Australian Colonies.

We have now laid before the reader, fairly and impartially, all the information we have been able to obtain on the subject of our present investigation. How far it may be desirable to resort to a change of climate as a preventive, or remedial measure, we have, it will be observed, carefully abstained from offering any opinion. As a general question it is foreign both to our profession and to the scope of our inquiry: its expediency in particular instances can only be determined upon

an accurate acquaintance with all the circumstances of each individual case. There is one observation, however, pertinent to the subject, which is here called for; in no case is the adage, that "prevention is easier than cure," more strictly applicable. Until very recently, change of climate was never resorted to until disease had not merely commenced, but had all but run its course. Under these circumstances, it is scarcely to be wondered at, that the most genial climate failed to prevent a fatal termination. It is stated by Dr. Renton, that between 1827 and 1830, nineteen patients labouring under *confirmed phthisis* arrived at Madeira, *the whole of whom died,*—the greater number on the island, the remainder after returning to England. The legitimate conclusion from such a fact would be, that after reaching a particular stage, change of climate is ineffectual to arrest the progress of the disease. But as is generally the case under similar circumstances, an opinion was beginning to be formed, that change of climate is wholly inoperative, either to prevent or to cure. It is now resorted to at an earlier stage, and with very different results. We learn from the same authority, that of thirty-three cases of *incipient phthisis,* which arrived at Madeira during the same period, *twenty-three* are now at home (June 1830) apparently in good health —two remain in the island, one apparently well, and the other consider-

ably better since his arrival, but still in a doubtful state—two died in the island, and another after leaving it; and that the fate of the remaining six is not known.

Although abundantly sufficient to establish the general salubrity of the climate of New Zealand, the evidence that has been adduced, with the exception of Major Cruise's observations, is of a more general nature than we could wish, especially when made the ground on which a judgment is to be formed of the character of the climate, in relation to a particular class of disease. Be it favourable or otherwise, it is important that we should know the truth. The general opinion is decidedly favourable, and has already been acted upon to a considerable extent. Dr. Evans, LL.D., who has taken an active part in promoting the formation of the New Colony, on being asked by the Lords' Committee, whether he could state why the great number of persons of different classes, who were anxious to emigrate to New Zealand, preferred New Zealand to any other Colony, distinctly states, that "we consider *the climate to be superior to that of any other British Colony;* more favourable to the British Constitution than Australia, or any other. I have suffered myself," says he, "under symptoms of pulmonary disease; and I am satisfied that it is the best for myself and others similarly affected. That is our reason." It is obvious, therefore, that, if ill-founded, the

public cannot be too soon disabused of the impression. But on the other hand, if further experience should confirm the opinion at present entertained,—if it should be found by experience that the climate of New Zealand is more congenial than that of any other British Colony, and hardly inferior to that of Madeira itself,—no time should be lost, and no pains should be spared in giving publicity to a fact so deeply important to a large portion of the British public. A mere voyage to Madeira, and a temporary sojourn there is within the means of few; a permanent residence, almost entirely out of the question. Admitting it, therefore, to possess all the advantages claimed for it by its warmest advocates, it is practically valueless to the British public.

Not so, however, New Zealand—an English Colony, peopled by our own countrymen, the greater number from the most respectable class of society, carrying with them English habits, customs, comforts, and conveniencies; and from its insularity, position, and natural productions, calculated to afford a wide and profitable field for every branch of commercial enterprise, it appears to present to the people of this country a *sanative station* accessible to all classes of the community.

As these observations will probably fall into the hands of some of those who are about to embark for the New Colony, we will take this opportunity of suggesting, that a minute system of meteoro-

logical observation should be immediately instituted, directed principally to the state of the atmosphere, as indicated by the hygrometer and thermometer. As regards temperature, the *mean annual temperature* may be ascertained by adding together the temperatures of all the months. The temperature of the months is the average of the daily temperatures. The daily temperature may be ascertained by repeated observations taken during the twenty-four hours: the shortest method, however, is to ascertain at what time during the twenty-four hours, taking one day with another, the thermometer stands at its mean height for the day. But with reference to our present inquiry, much more particularity is required; and we would suggest, that the observation should be taken at stated periods, at least three times during the day, from a thermometer placed in the shade, freely exposed to the open air, and where there are no surfaces sufficiently near to reflect the sun's rays.

To the medical practitioner resident in the Colony, we would suggest the propriety of a minute investigation into the previous history of each case of pulmonary disease which may fall within his notice, and a careful record of its future progress; by these means only can we arrive at that certainty with regard to our present inquiry, which the serious practical importance of the subject imperatively demands.

In conclusion we would observe, that we shall consider our object in the foregoing remarks to have been successful, not in proportion to the number who may have been determined by them, to select New Zealand as their future home, but rather in proportion as their general accuracy shall be confirmed by further experience. And should the anticipations we have formed of its climate be fully realized, we may then take some credit to ourselves for having had a share in directing the attention of our countrymen to a subject of serious and increasing practical importance.

FINIS.

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