

On Australasian climates and their influence in the prevention and arrest of pulmonary consumption / S. Dougan Bird.

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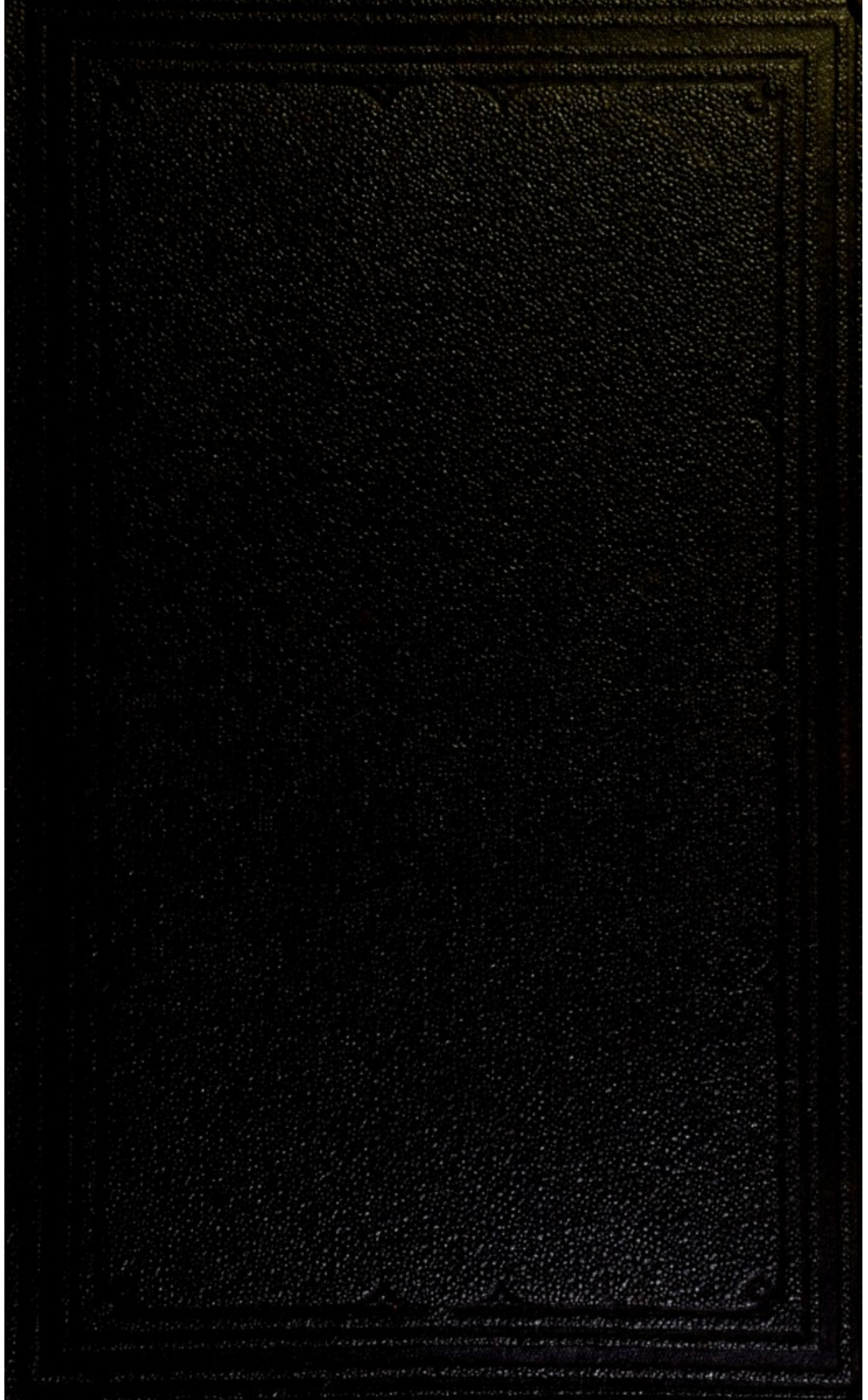
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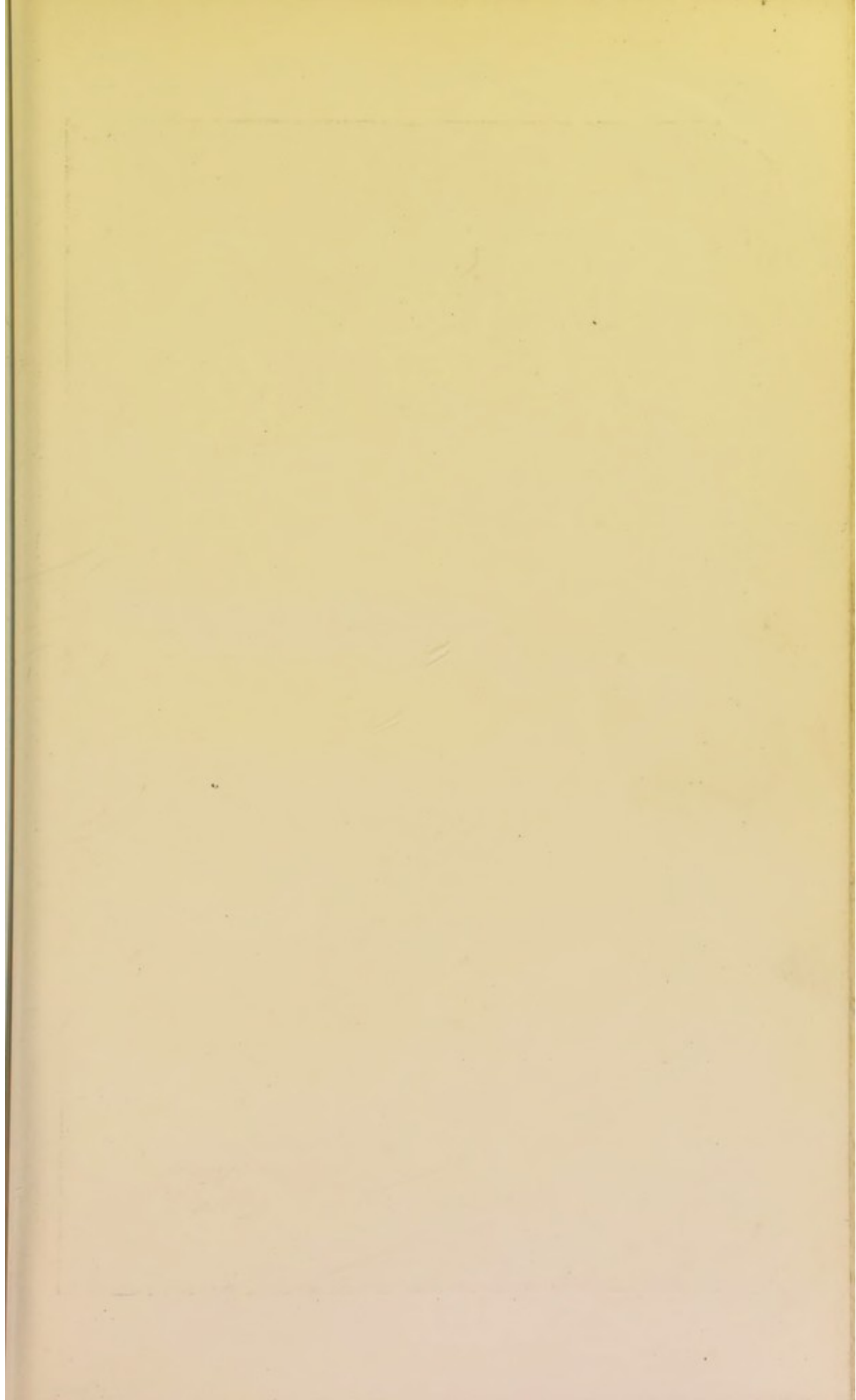
AUSTRALASIAN CLIMATES

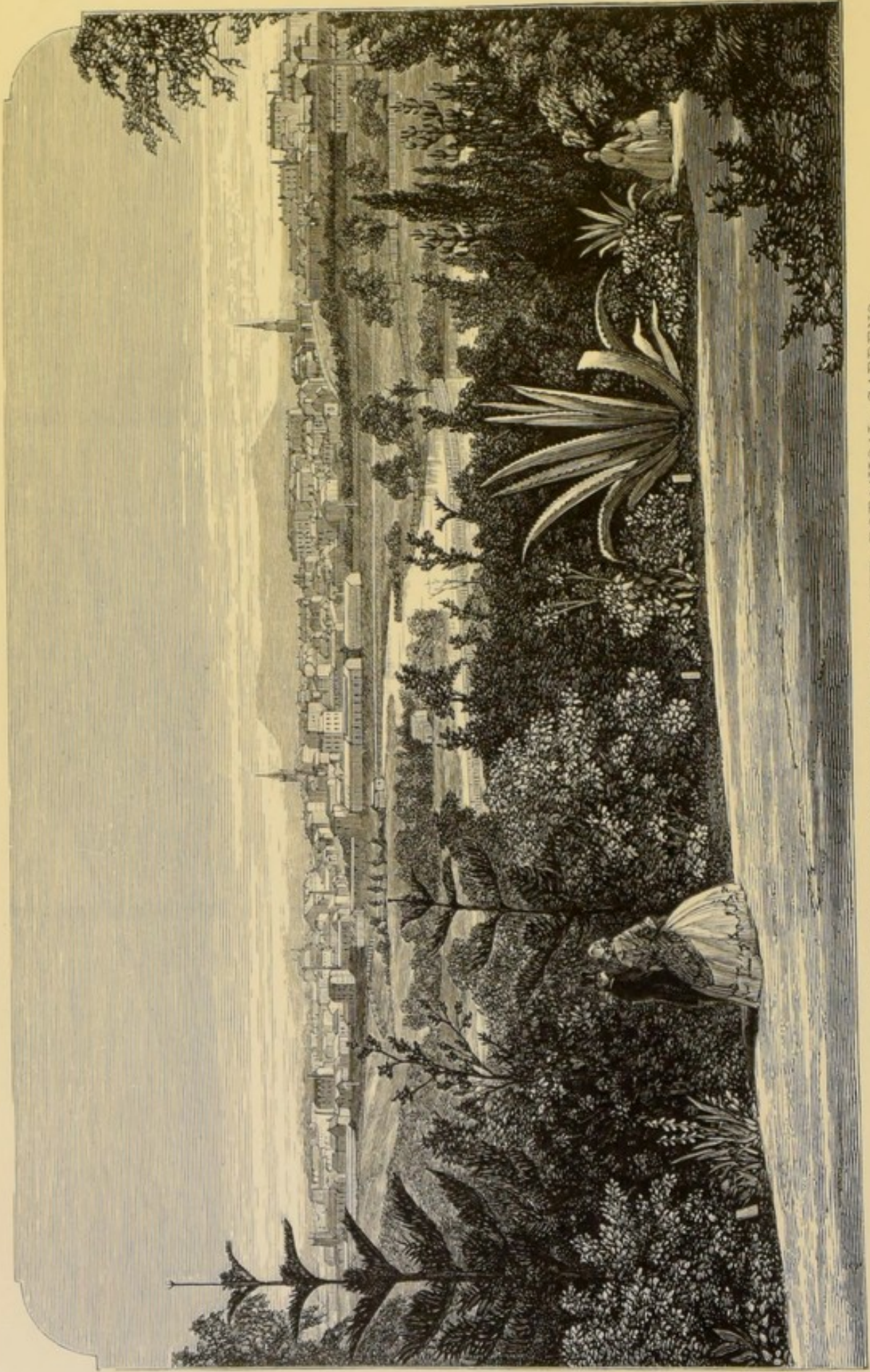
AND THEIR INFLUENCE ON

PULMONARY CONSUMPTION.

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DISTANT VIEW OF MELBOURNE FROM THE BOTANICAL GARDENS.

ON
AUSTRALASIAN CLIMATES

AND THEIR INFLUENCE IN THE PREVENTION AND ARREST OF

PULMONARY CONSUMPTION.

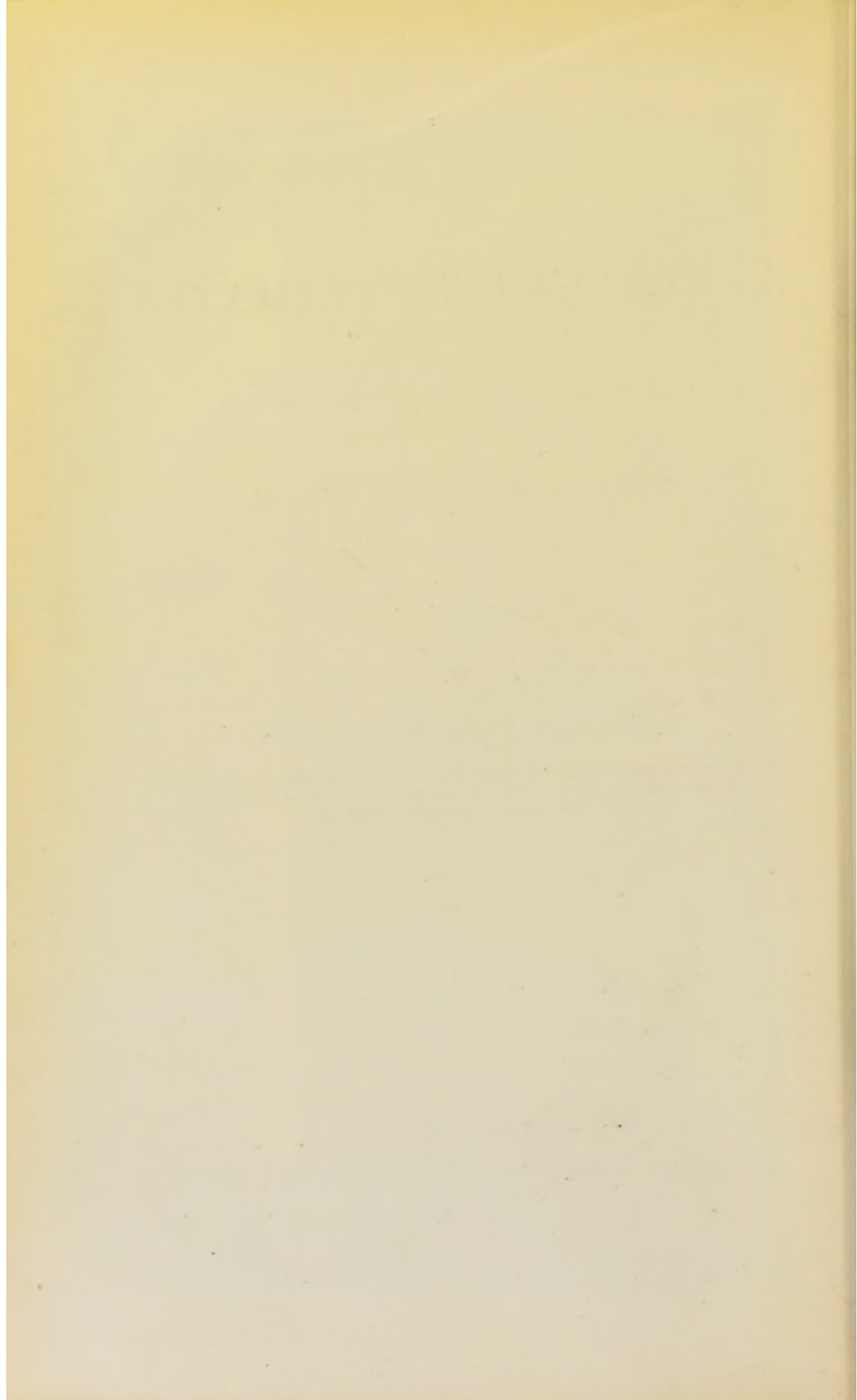
BY

S. DOUGAN BIRD, M.D., L.R.C.P.L.

PHYSICIAN TO THE BENEVOLENT ASYLUM, MELBOURNE, AND ALSO TO THE IMMIGRANTS' AID SOCIETY;
LATE STAFF-SURGEON IN THE CRIMEA; AND FORMERLY RESIDENT PHYSICIAN'S-ASSISTANT
AT THE HOSPITAL FOR CONSUMPTION, BROMPTON.

LONDON:
LONGMAN, GREEN, LONGMAN, ROBERTS, & GREEN.

1863.



INTRODUCTION.



THIS book aspires to no higher place in medical literature than that proper to a rough sketch of the main features, the broad lights and shadows, of the subjects of which it treats. The minuter details and finer touches will, doubtless, in future years be filled in by abler hands, with more complete materials at their command, and more uninterrupted leisure than can be enjoyed by one engaged in the practical duties of a professional life. Such as it is, however, the writer hopes it may be sufficient to place before the profession and the public at home a clear and impartial view of the general characters of the Australasian climates, and the effects that may be expected to result from their influences on debilitated European constitutions.

The first chapter, which to a medical reader will appear somewhat superfluous, was considered necessary to the proper understanding of what follows by those who have not so precise a knowledge of such subjects.

Himself a *poitrinaire*, the writer has personal as well as professional experience of the effects of antipodal climates on consumption. More than three years ago, two of the best stethoscopists in London pronounced his lungs tuberculous, to which opinion daily hæmoptysis, rapid loss of flesh, shortness of breath, and known hereditary predisposition gave but too sure confirmation. A six months' rest from business, occupied in amusing travel, with careful treatment in the meantime, failed to do more than check the more urgent symptoms; and, therefore, a total change by a voyage to Australia was recommended, and at once undertaken. In less than three months from his landing in this colony the patient gained sixteen pounds in weight, lost all his symptoms, and remains at the present time in excellent health.

The meteorological figures relating to Victoria are principally from the published reports of Professor Neumayer, of the Melbourne Observatory, many of whose remarks on weather, temperature, winds, &c., have been reproduced almost verbatim.

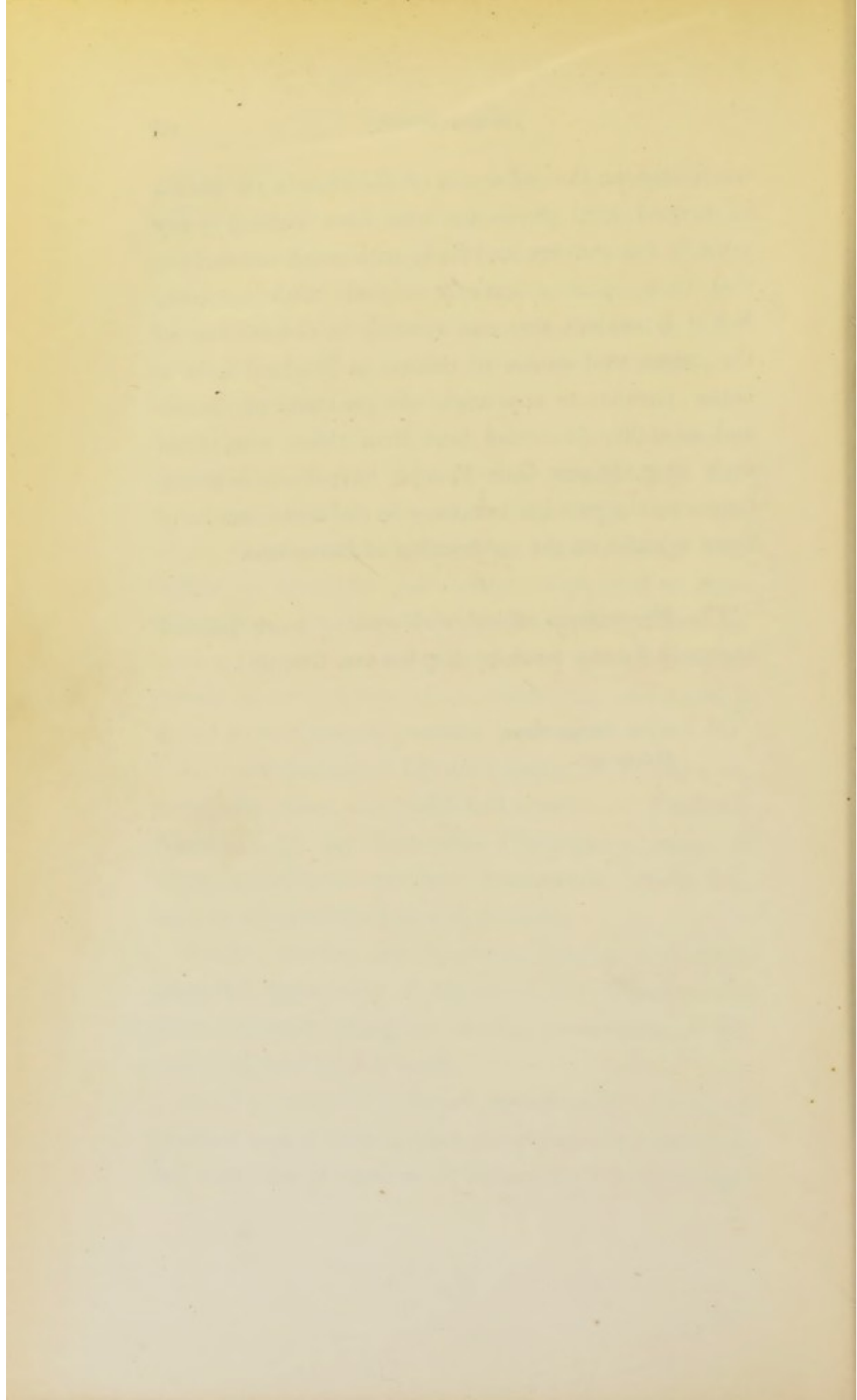
To Mr. Archer, the Registrar-General, the writer takes this opportunity of expressing his obligations for much valuable assistance in the preparation of the statistical parts of this book.

As the author's personal experiences of colonial practice do not extend over more than two years, he has taken the precaution of submitting the views here

enunciated on the influences of the climate on disease to several local physicians who have resided many years in this country, and finds, with much satisfaction, that their opinions entirely coincide with his own. But it is evident that one recently in observation of the causes and course of disease in England is in a better position to appreciate the contrasts of disease and mortality presented here than those who, from their long absence from Europe, have become accustomed to the peculiar influences, social and climatic, of these colonies on the constitution of Europeans.

The illustrations of colonial scenery were painted expressly for this work by Eugene von Guerard.

155 COLLINS STREET EAST,
MELBOURNE.



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STATE OF NEW YORK

IN SENATE

JANUARY 18, 1907

REPORT OF THE COMMISSIONERS OF THE LAND OFFICE

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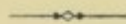
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THE HISTORY

OF THE

REIGN OF

CHARLES THE FIRST

BY

JOHN BURNET

OF THE UNIVERSITY OF OXFORD

IN TWO VOLUMES

THE SECOND VOLUME

Erratum.

Page 145, line 3, *sentence should read thus*: — Kangaroos are less common in Victoria now than when it was first settled; but the hounds, when they meet on Saturday mornings, are pretty sure to find, even within ten or twelve miles of Melbourne.

1875

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ON
AUSTRALASIAN CLIMATES.

CHAPTER I.

ON THE NATURE OF TUBERCULOUS AND SCROFULOUS DISEASE,
AND THE PRINCIPLES WHICH SHOULD GUIDE ITS TREATMENT
BY CHANGE OF CLIMATE.

THERE is, perhaps, no class of disease whose treatment has undergone a more complete change of late years than that phase of scrofula or tuberculosis which is called Pulmonary Consumption. The progressive spirit of the age has shown itself very evidently in the broad principles on which the modern physician founds his investigations and bases his remedial measures, and in the system by which he is educated to search first for the cause of symptoms, rather than to allow himself to be delayed by the symptoms themselves, whose value and meaning are now so much better understood from the scientific study of physical diagnosis. The result has been that the average duration of this fatal disease is now at least double what it was a century ago, and the number of threatened cases in which its development is prevented is probably very considerable, though, for obvious reasons, it would be difficult or impossible to

B

classify them. Judging from the results of the old plans of treatment as we see them recorded in books, we may reasonably conclude that in the days of our grandfathers most such cases would have rapidly gone on to the second and third stage, and ended fatally in six, nine, or twelve months at the most.

The general mortality in our population has greatly diminished during the last half-century, and the average duration of life has increased in a corresponding ratio, as much from the art of preventing as from that of curing disease, hygiene working hand in hand with medicine. Thus the deaths from fevers, agues, dysentery, scurvy, and such like complaints, in the British Islands, have been reduced at least one half by the improved drainage both of town and country, the better building and ventilation of houses, and the more wholesome and varied food consumed by all classes. But the numerical mortality from consumption is greater both positively and relatively than it ever was, in spite of the good results of rational treatment in individual cases; for the main causes of scrofulous and tuberculous disease, so far from being obviated by modern civilisation, seem rather to have increasingly bred and multiplied with its advance. The tendency to centralisation and crowding of the populations of Europe into large towns, the increase of in-door occupations amongst the working classes, and the over-cultivation of the arts and luxuries of living by the idle; the facilities with which the lovers of dissipation and the votaries of study can obtain the means of gratifying their equally enervating tastes; the enormous circulation of cheap works of fiction of loose morality and their demoralising results; the wide spread

of constitutional disease of a specific character amongst high and low; the ridiculous modern system of over-education of the intellectual, to the neglect of the physical developement, in the young of all classes; the universal 'fastness' and over-excitement of the age—such are the methods by which a premature exhaustion of the nervous powers has been brought about in a large section of our population. However diverse these causes (and I have mentioned but a few of them), their one and constant tendency is to result, either in individuals themselves or in their children, as scrofula or tubercle, which is perpetuated and intensified by inter-marriage, till, as a high authority has declared, there are probably few families in Great Britain, whether high or low, which are not more or less endowed with this mournful heritage.

Of every hundred deaths in the British Islands twenty are caused directly by Pulmonary Consumption; at least six or eight more victims to the same disease leave their homes to die at Nice, Pau, Madeira, or Algiers. Nor is this all. The other forms of scrofula and tubercle, such as water on the brain, abdominal consumption, bone and joint affections, and many others too numerous to recount, kill directly or indirectly, particularly amongst children, at least as many more. In short, it is no exaggeration to say that the 'Tubercular Order' of the class 'Constitutional Diseases' (adopting the present nomenclature) is the source of more than half the mortality in our home population. Stale as these facts are, and trite as is their application, they cannot be too often obtruded on the public mind, which is apt to shut its eyes to the patent truth that modern medical science—

though it may delay the fatal tendencies of these complaints in individual cases, and even neutralise them altogether—is powerless to cope with the sources of tuberculous disease in the population at large, which really belong to the province of the legislator and political economist.

But now, to follow out our argument, let us shortly examine the essentials of the modern or rational treatment of consumption, the means which are used to prevent or arrest its tendency when undeveloped, and to delay its destructive course when it has actually been established in the lungs.

Most physicians of the last century (there were but a few brilliant exceptions in advance of their age) either regarded this disease as a local affection of the lungs, or acted as if they did so, by applying their attention and remedies almost exclusively to those organs, ignorant, or at all events regardless, of the real source and nature of the malady. Thus, to avoid or lull irritation of the bronchial membrane, they kept their patient shut up in one room in a uniform warm temperature; to quiet his circulation, they bled, starved, and dosed him with antimony and digitalis, and tortured him with various forms of painful counter-irritant. So far from attaining the desired object, such a system only hastened the deposit of tubercle; and its subsequent softening usually took place with frightful rapidity, and a few months or even weeks were sufficient to see the sufferer in his grave, his friends consoling themselves with the assurance that ‘everything had been done’ for him. Such cases of acute phthisis, or galloping consumption, were once common enough, as is evident

from the literature, both popular and professional, of fifty years ago ; but now they are very rarely seen in Europe as a definite variety of the disease. It would be easy enough to hurry an ordinary case to its naturally fatal event with unnatural rapidity by such means as that which I have described ; which is the very best calculated to foster and encourage the morbid action, whilst, by denying the supply of new materials to the blood, it cuts off all hope of repair of existing mischief.

Nowadays we both know and act upon the principle that pulmonary consumption is only a variety of a great class of disease of the blood ; and that the lungs are in this case only the stage on which it plays its most important part, which may with perfect identity of nature be performed in the abdominal or any other glands—the brain, the bones, the joints—in fact, in any tissue or organ in the body ; so that it has but the same claim to be considered and treated in the light of a lung disease that scarlet fever has to be regarded as an affection of the throat or kidneys, small-pox one of the skin, or gout of the great toe.

The modern or rational treatment of all varieties of disease of a scrofulous or tuberculous character resolves itself into the following elements :—First, and most important (without which all treatment applied to the particular local manifestation of the disorder, wherever it may be, is but loss of time), *the reversal of those circumstances, conditions, or habits of life under which the disease made its appearance, and* (especially if no such indication as an obvious cause presents itself) *the immediate institution of such a hygiene and regimen as we know from physiology and experience to be the best suited*

to the preservation of health in a person already well. For example, the overworked and underpaid shoemakers, tailors, and milliners' apprentices in European large towns, who work many hours a day in a sitting or stooping posture in close ill-ventilated rooms, continually become the subjects of consumption from these obvious causes. The lungs, never half expanded—and, besides, breathing an impure air—cannot get rid of the hydrocarbonous materials whose excretion is their special function; so these accumulate in the liver, which usually gets large and fatty, and the digestive secretions (hepatic, gastric, and intestinal) are inefficiently elaborated, and an unhealthy half-perfected chyle is poured into the blood. The skin, never cleared out by the wholesome sweat of muscular exercise in the open air, fails also in its office as an assistant excretor of carbonaceous refuse, both gaseous and solid. The nervous centres, physically and mentally wearied by prolonged and monotonous exertion, become exhausted, and innervation, the essence and necessity for the performance of all the vital functions, becomes insufficient; a state which readily disposes to local congestion. Thus, the natural outlets for refuse matters from the circulation being to a great extent choked up, and the new materials supplied to it being inferior in quality, and these evils following each other in an unbroken but increasing circle, the results of this imperfect assimilation of food and defective purification of the blood begin to accumulate in it matters which cannot be turned to any good purpose in the economy, and which no part of the body claims as its own. The lungs bear the principal burden of excretion, and the

whole mass of blood passes directly through them. It is therefore most probable that in the adult morbid matters should be deposited here rather than elsewhere, particularly as the ill-performed functions of the liver and skin are always favouring pulmonary congestion. This is the simple history of one of the most common ways in which tubercle is induced by obvious and preventible causes. If an individual has any hereditary title to the disease, it almost inevitably results where such a state of life is continued for any length of time; and the exciting cause which determines the deposit to the lungs may be trivial or unnoticed. The over-anxious student, the premature debauchee, the careworn professional man or merchant, who tax their nervous centres beyond measure, and at the same time often ignore the common rules of hygiene, expose themselves to the same danger. It is useless to multiply instances. We know from every-day experience that any cause, physical, intellectual, moral, religious, or imaginary, which lowers the vital powers by exhausting the nervous energy in any way, has for a common effect in our population the formation of tubercle in the blood. In all these cases the obvious first necessity is *change*, and rest from the exertion of the physical or mental faculties which have been over-taxed; in short, as we put it before, a reversal of the circumstances under which the disease made its appearance. We enjoin to the patient, if possible, a country life, and a change to sea air (if his illness was contracted inland), simple, nutritious, and regular food, early hours, regular and efficient ablution of the skin, systematic exercise without fatigue, and an employment which will amuse without taxing the

nervous powers. Under such a regimen we may expect that the excretory glands (the lungs, liver, kidneys, and skin) will begin at once to take on their proper action and clear out accumulated refuse from the blood, which will then be able to supply the secreting glands with proper materials, and the digestion of food will be properly performed; healthy sleep and renewed energy of the nervous functions will follow. The liver, too, will now be able to carry out its respiratory function, and prepare carbonaceous materials for ready oxidation in the lungs; thus obviating at once one of the principal causes of pulmonary congestion.

These simple means enunciate the model on which our treatment of incipient consumption should be conducted; for in this way we put the system into that state which is most likely to promote the absorption of already effused tubercle, and to supply that defect in the sum of the nutritive processes which we have seen to result in its formation. Local pulmonary or other symptoms, unless in themselves weakening or dangerous, should be made a subject of secondary consideration.

Digestive medicines, such as bitters, mineral acids, aperients, or alkalies, according to the requirements of the case; medicinal nutrients, such as cod-liver oil, iron, and phosphorus, are simply branches of the same great plan, and may or may not be needed.

If this system could be efficiently carried out in cases where the disease has thus resulted from obvious causes without overwhelming hereditary taint, it is probable that the morbid action could in most cases be arrested without change of climate or any further means. But, as we well know, a perfect patient, who

can or will exactly follow a plan of life laid out for him, is but an ideal, a fiction of the doctor's imagining. There are many agents at work in the inner life of every individual, apart from the circumstances of the outer world, which are far beyond our control, and may neutralise and counteract all our best efforts for his physical well-being.

This, then, is a sketch, however rough and unfinished, but still a faithful one, of the general principles on which the management of all scrofulous and tuberculous diseases should be conducted, whatever may be their peculiar local manifestation. But in the pulmonary variety, unlike most of the others, the organs attacked are immediately and continually necessary to life, and their irritation is attended with a great degree of constitutional disturbance. Therefore the advisability of local means addressed to the lungs themselves—the attack of the effects of disease as well as of the disease itself—is particularly obtruded upon our notice. Accordingly, we now enter upon the second branch of treatment, which proved so great a stumblingblock to our forefathers, that, neglecting almost wholly the first thing needful, viz. rational hygienic means for preventing the further formation of tubercle in the blood, their treatment became a systematic medication of each symptom as it arose, regardless of, or ignoring, its real cause and effects. The cough was to be smothered with opiates, the blood-spitting to be checked by astringents or blood-letting, which rendered aperients necessary, till the patient's stomach became utterly unable to digest even the limited supply of food which he was allowed to take. Few persons seem in those

days to have considered, what we well know now, that some of the symptoms of incipient consumption may in themselves be salutary efforts of nature to relieve the congested lung; and that, when this is the case, interference on the part of the physician does harm rather than good. For instance, it may readily be seen, by watching large numbers of cases, that the early occurrence of blood-spitting in consumption is not only very often a perceptible relief to the general chest symptoms, but is usually coincident with a high degree of natural disposition and power in the constitution to relieve itself of the effects of disease, and that those in whom this occurs as a first or early symptom are the most susceptible of the benefits of rational treatment. Nearly all the cases in my own experience in which tubercle has been arrested in its progress, have spit blood early in their illness, whereas we know from statistics in England that this occurs at any period in little more than half of all consumptive patients. If tubercle be present, cough and expectoration are an obvious necessity for the unloading of the bronchial tubes and expulsion from them of the vitiated secretions of the pulmonary mucous membrane, without which the spread of the disease would be much more rapid. The absence of cough is no guarantee that tubercular deposit has not taken place. In children very often, and sometimes in adults, both lung tissue and bronchial glands may become infiltrated with tubercle and yet cause no cough, pain, or chest symptom of any kind. As a general rule, the direct medication of local symptoms in the early stages of consumption is to be avoided as much as possible. Even the night sweats,

which are usually so troublesome and weakening to the patient, are more efficiently controlled by cold bathing and friction of the skin, and means that tend to improve the tone of the capillary system generally, than by direct astringents. Counter-irritation on the skin is one of the most valuable means of combating local pulmonary congestion, but it has been used in the most vague and irrational manner, so that sometimes it becomes merely an extra source of constitutional drain without producing any corresponding benefit to the lung. But this is a question too wide to be entered into at present.

Change of climate has always been regarded as an important element or auxiliary in the treatment of consumption, but the general principles on which it should be used were never clearly put forward till the appearance of the well-known work of Sir James Clark, which for completeness and impartiality still holds its place as the first authority on the subject. We have many other works on climate, but they are nearly all written with the avowed object of lauding the applicability of some one locality to some particular form or complication of the disease. Some confine themselves to the British Islands, and spend pages upon the differences of temperature in the upper and lower part of Torquay, or tell how sheltered Hastings is from the east winds, and that the invalid can sometimes sit with his window open at Ventnor in the month of December.

Others cross the Channel and describe the calm steady relaxing air of Pau, and how suitable it is to those who have a fiery tongue and an irritable pulse, or

explain that Nice is just the reverse, and suits only those with languid circulation and atonic dyspepsia. Another tells us that it is never cold at Madeira, that it never rains in Upper Egypt, and so on. In short, most modern works on the influence of climate on consumption are elaborate, and many of them very interesting and faithful, disquisitions on temperature, dryness and moisture, soil, aspect, and prevailing winds in relation to their adaptability to the characteristic local symptoms of the different forms and varieties of the disease, in all the phases which it adopts according to the constitution or idiosyncrasy of this or that patient.

But should we not rather (at least when the disease is in its early stage) look upon the influence of change of climate on a broader principle than this, and assume that the first object is to find a climate whose characteristics, whatever they may be, will have a powerful constitutional alterative effect, in concert with the system of hygiene we have described, in preventing the formation of tubercle in the blood, apart from its local manifestations; and then, as a secondary consideration, endeavour to adapt the minor peculiarities of the situation, if necessary, to the particular form of local irritation under which the patient may be labouring?

With much deference to established authorities on these matters, I will suggest that English physicians are very apt to regard the subject entirely from the latter point of view, and have accustomed themselves, rather from habit than judgment, to make change of climate little more than a means of avoiding the cold winter in England, and thus lessening the risk of local bron-

chial irritation. They send their patients to Torquay, Hastings, or Madeira, where they can breathe a moist warm soothing atmosphere, which possibly effects the desired object of lessening the probability of increased local complication. So far well and good, though such treatment in theory seems like that of applying soft warm poultices to an inflamed ulcer, and neglecting to employ constitutional remedies to attack the taint in the system that caused it: aiming at no more than a palliation of the evil.

Spring returns, and with it the patient to his home; he has 'got over' the winter, and is congratulated accordingly by his friends. If he has been rationally managed, he has probably gained weight and feels improved in general health. He goes back to his business, remains tolerably well during the summer, and in the autumn the question arises whether he is to waste another winter, or to run the risk of remaining where he is. If he does the former, he is likely to prolong his life for another year or two; if the latter, the probability is that he loses in one week what he can never regain. Some chill to the surface when he is over-tired with business induces bronchitis, or congestion of some portion of the lung substance. He is put to bed, and undergoes the usual routine adopted in such cases. But fifty per cent. of his chances of life are gone beyond recall. The Rubicon is passed, the ice is broken, the weak point is established in the lung, and whatever depressing agency he may be subjected to from that time, either in summer or winter, will at once fly to that spot and light up the smouldering mischief. In short, for reasons to be afterwards

detailed, a temporary removal from one European climate to another, however suitable it may be to the patient's local complications, cannot in most cases be looked upon otherwise than as a palliative treatment, and not a curative means. And for this cause many of the most experienced physicians discountenance altogether the sending of patients abroad, except by way of amusement or distraction.

But are we justified in attempting more than this, in acting upon the supposition that pulmonary consumption is, under any circumstances, a curable disease? Undoubtedly we are, for the dried-up cretaceous particles which we sometimes see in the lungs of persons who have died from other causes are written evidence that tubercle has been formed in their blood and deposited in their lungs, but, from some great and notable change in their constitution, has remained there (its animal part being absorbed) as a simple foreign body, without proceeding to its natural course of irritation, congestion, and ultimate destruction of the lung and life. In fact, the blood threw out the tubercle into the lungs, whose office is that of an eliminator of refuse and morbid matters; and, no more being formed, from the circumstances which caused it being altered or done away with, the system had sufficient leisure and power to dispose of the limited local deposit.

We have, then, these data on which to reason. The consumptive tendency and even actual disease *may* be rendered nugatory in their fatal effects; but this seldom takes place, as the European climate, habits of life, and national constitution impregnated with disease, are constant obstacles to such an event; and, accordingly,

the result of any treatment, however rational, is, in nine cases out of ten, but a temporary staving off of the fatal termination.

I deduce from this, that to be curative to a case of incipient consumption contracted in Europe, the following elements are needed in a change of climate:—

That it should have an alterative action so complete and powerful that it will open not only a new leaf, but a new volume in the patient's constitutional history; and so change and modify the course of his vital functions, and more particularly the operation of his glandular and secreting system, that the probability of his blood again assuming the conditions under which tubercle was first formed will be very remote.

If with this we can combine the minor but still important elements of suitability to his particular local complications, so much the better. We cannot find climates that entirely answer these requisitions north of the equator, for reasons which we will enlarge upon in the next chapter; where I also hope to show my reader that in the temperate regions of the Australasian continent and islands, we find peculiarities of climate most remarkable in their contrast to those of any other countries, but especially to those of the same latitudes of the northern hemisphere: that, as might reasonably be expected, the change to these colonies is often to the European productive of a notable alterative effect on his constitution, and that this may be made the means of so modifying the tone of system of the scrofulous and consumptive invalid, that it will give him a probability of throwing off actual disease and of preventing its return that he could not obtain in any other way.

CHAPTER II.

THE CLIMATES AND VITAL STATISTICS OF THE NORTHERN AND SOUTHERN HEMISPHERES CONTRASTED, THE COLONY OF VICTORIA BEING PARTICULARLY INSTANCED AS A MEDIUM TYPE OF THE CHARACTERISTICS OF THE LATTER.

BEFORE proceeding to detail the peculiarities of the Australasian climates, it will be well first to consider why it is that we cannot obtain equal advantages nearer home; so we will shortly enter into the characteristics of the principal regions of the northern hemisphere, and their influence on life and disease.

The British Islands, from their insular position, their exposure to ocean winds, and the influences of the Gulf Stream, have a temperature changeable but moderate, an air usually moist and marine in its characters, and a large proportion of rainy or overcast days, especially during winter. As we have seen, the commonest and most fatal type of disease is some form of scrofula or tubercle, particularly the variety which attacks the lungs of young adults, and the reason of this in our particular case is as follows:—

First, the almost universal constitutional taint in the population from the constant working 'in and in' of the causes detailed in the last chapter. Second, the paucity and feebleness of our sunlight, especially during winter, which, by diminishing the facility of

excretion of carbonic acid from the lungs and skin, and fostering in-door and indolent habits, predisposes to dyspepsia, melancholy, and passive local congestion of internal organs. Lastly, the constant likelihood of such predisposition being lit up into actual disease by exposure to wet and cold. But, by race, the Anglo-Saxon is robust, energetic, prone to action and exercise of his muscular system in out-door employments and sports; and thus, counteracting the effects of climate, may enjoy a degree of health and vigour attainable by few other races, under any circumstances, in spite of dark dull weather, long winters, and short days. He, also, is in the habit of consuming a large proportion of animal food, which such a course of life enables him to digest and assimilate. But those who, from choice or necessity, lead a life of confinement and inaction during the long and dreary winter, particularly if their food is improper or insufficient, expose themselves to a great probability of the induction of tubercular disease, which, in a sunnier climate, would be avoided.

The influence of temperature in predisposing to such disease is a subject on which there is much popular misconception. We have ample evidence to prove that neither a low nor a high temperature are, in themselves, predisposing or exciting causes, either of the diathesis, or its local manifestations. The natives both of arctic and tropical climes are, *cæteris paribus*, less subject to tubercle than ourselves. In Iceland, Sweden, and Siberia, as few of the natives die of consumption as in the East Indies, Arabia, or tropical Africa. In the same way both such climates may be made even controlling agents in preventing its developement, though we can

hardly look upon them medically in this light. On the other hand, it is only when cold, being either excessive or prolonged in its operation on the system, becomes a depressing agent to the physical powers, that it can induce tuberculosis; and a prolonged high temperature, sometimes, so far from preventing its development, only hastens it. In fact, the whole question resolves itself into one of idiosyncrasy—that is, individual peculiarity—about which no rule can be laid down. Now, in the Northern States of America, a race identical with our own, and even more addicted to the predisposing causes of tubercle, is exposed to what is called an excessive climate: ‘for five winter months the Northern States are ice and snow-bound, and in summer are exposed to a burning tropical heat. The east and south-east winds, loaded with the steaming vapours of the Gulf-stream, saturate everything with a dripping moisture; whilst the north wind, having passed over the huge continent of land to the northward, is so absolutely dry that it parches in summer and blights in winter all animal and vegetable creation.’ The national habits of life are more intellectually and less physically energetic than our own. Here we have both the predisposing and exciting causes of consumption even more highly developed than they are in England; and, consequently, its ravages amongst young adults are perfectly frightful.

How can we hope for the alterative effect of which we are in search by sending our patient to such places as Hastings, Torquay, Penzance, Jersey, or any locality within the influences of the Gulf-stream? To an islander the remedy is utterly disproportionate to the necessity of the case. These places have, indeed, a very uniform

mild and moist climate ; but the prejudicial influence of the constant rainy and overcast weather is proved by their vital statistics. In Cornwall and Devonshire, where cold is almost unknown, and the almond and orange blossom in the open air, consumption is as common and as fatal amongst the natives of the soil as it is in any part of Europe. The only advantage to be obtained from a mild moist atmosphere is that of soothing local bronchial irritation ; *to tuberculosis, as a dyscrasy of the general system, this class of climate is decidedly prejudicial.* The gloomy skies, too—the constant driving masses of vapour from the south-west, which so often shut out the sight of heaven for many days together—foster despondency and depressing emotions, which not only predispose to internal congestions, but actually favour the deposit of tubercle in a person predisposed to it. A large proportion of sunny cheerful weather during the year, but especially in winter, is a *sine quâ non* in consumption. The patient must have every inducement to be the greater part of his day in the open air, so as to use all his excretors to the best advantage. This is equally necessary in the advanced stages, when he is too weak to take much exercise ; a succession of ‘dull, and dark, and dreary days,’ when ‘it rains and the wind is never weary,’ will soon tell their tale in the depression, not only of the spirits, but of the physical condition of the sufferer.

All the west coast of Europe has more or less of the characteristics I have described, and its inland districts need obviously no consideration. The Mediterranean coast of France, and Provence generally, has the sunniest climate and the brightest skies in Europe, but here we

go to the contrary extreme, which is almost equally prejudicial. The air is so dry and irritating, and has so little of the marine character to modify it, that few strangers, even with sound lungs, can avoid illness, if they reside long in it. 'Amongst the natives consumption is very common and very rapidly fatal; whole families are sometimes swept off by it.' Nice has a more equable temperature, and is less under the influence of the irritating 'Mistral,' but still has so much of the Provençale characteristics, that Sir James Clark, and all the best authorities, agree that there are few cases of consumption to which the climate is not positively injurious. The great frequency of pulmonary disease amongst the natives, with acute gastric complications, should of itself be sufficient to show how unsuitable the climate of this part of Europe is for the palliation or cure of such affections in strangers.

It is hardly necessary to enter upon the now exploded bubble of the beauties of the Italian climate, either in winter or summer, as a residence for the consumptive invalid. 'The winter in Italy is wintry, and the traveller may shiver with cold there, and curse the poetical fiction which has led him to expect a climate almost tropical.'* All the north of the Peninsula is, in winter, rainy—exposed to great alternations of temperature, fogs, and keen irritating winds. The natives are but little less subject to consumption and scrofula than ourselves, and acute inflammatory affections of the lungs are common and fatal. Rome and Naples are not to be depended on, even as regards

* Dr. Pollock, *Medical Gazette*, vol. xlvii.

temperature. Sicily, especially Palermo, has, indeed, a delightful winter climate, so far as this consists in sunshiny weather, and an equable warm temperature; but, like all the Italian peninsula, both in summer and winter, it has the glaring and insurmountable fault of exerting a constantly relaxing, depressing, and enervating influence on the constitution, especially of northern races. Malta has many disadvantages; and its mortality, from all causes, consumption included, is very high. The Greek peninsula and islands have a climate resembling that of Italy. The 'eternal summer' of Byron existed only in his imagination. Boisterous gales, cold rain, and sleet, are sometimes the order of each day in winter for two or three weeks in succession. And as for Turkey, I have seen it snow, and felt it freeze, at Constantinople, in the month of May. The Ionian Islands have not these disadvantages, but they are as relaxing as any part of Italy.* Thus, the mere palliative advantages of most southern European climates are at best but limited and dubious; and, from the fact that consumption is induced plentifully amongst their natives, there is on the face of it an improbability that we shall obtain the beneficial alterative effect for which we are seeking, by sending our patient to any of them.

The only European climates that at all come up to our standard are those of the eastern seaboard of the Spanish peninsula—Malaga, Valencia, or Barcelona. These are mild, equable, marine; and, at the same time, sunny, bracing, and tonic, without being exciting; but

* For a good exposition of the popular misconceptions with regard to these climates, see chap. iv. of Dr. Cotton's *Prize Essay on Consumption*.

they are only suitable for winter residence : in summer the heats are oppressive.

The Mediterranean coast of Africa, and that of Syria, are the only extensive tracts of country, within easy reach of Europe, where the diseases under consideration are not endemic in the native population ; and in Egypt and Algeria, where Europeans have been resident for a series of years, it would appear that the climate must have a preventive effect on the constitution of foreigners, as the mortality from these diseases is far less than in Europe. But these are solely and essentially winter climates. In summer they have a tropical heat, and a vastly increased mortality from other causes incident to a prolonged high temperature. The mortality amongst the French colonists, both military and civil, is 70 per 1,000, which is four times as great as it is in their own country. The same argument applies to the East Indies and the Malayan peninsula. The climate has, no doubt, an influence to prevent the tendency to tubercle in those hereditarily disposed ; and, probably, also to abort it when existing, but undeveloped. But, on the other hand, the chances of death from other causes are increased at least fourfold,* and if tubercle has been actually deposited, and especially if it has begun to soften, the lung breaks down much more rapidly than it would in a cooler temperature.

Again let me impress upon my reader the importance of the proposition, that, to make change of climate simply a question of winter residence and avoidance of

* The annual mortality amongst British residents of all classes in India is certainly not less than 80 per 1,000. See Martin *On Tropical Climates*.

cold air, as is practically the common custom, is to limit ourselves to but one item of its capabilities as a remedy, and this not by any means the most important, in the treatment of the *early* stages of consumption.

Before entering on our description of the peculiarities of the Australasian climates, it will be necessary to make rather a lengthened discursion on certain subjects, which will assist us to appreciate their alterative effects on the constitution of Europeans.

There are four circumstances of living which have, to a certain extent, and each in its own way, an influence in controlling the developement, and even preventing the progress, of pulmonary consumption. The first two are atmospheric conditions—*sea air* and *mountain air*; the last two acquired habits of life, unnatural in themselves—the *practice of opium-eating* and *chronic alcoholism*. We must consider these severally a little in detail.

The good effects of a change to sea air from an inland residence are notorious in all diseases of the scrofulous type. That a continuous residence in sea air must have a preventive influence is also evident, from the low mortality from these diseases among seafaring men; but a simple residence on the coast has not in itself sufficient power to counteract the ordinary predisposing and exciting causes, and, accordingly, the mortality from consumption in seaboard districts is, as a rule, not much less than that inland. The good effects of sea air have been ascribed to the equability of its temperature, the absence of violent hygrometric changes, its purity from adventitious gases, and to the presence of iodine. It is

probable that all these have their influence in more or less degree; but that the main agent is the constant and equable presence of ozone, in a temperature and moisture little subject to variation in the same latitude. There is still a certain mystery attached to this variable constituent of the atmosphere. But we do know that it is produced at intervals in more or less amount in connection with electrical discharges, that it is the most powerful oxidising, and therefore disinfecting, agent known; and we consequently suppose it to be antagonistic to the paludal, or ague poison—to that of typhus, and other diseases of a low type, whose infection is connected with the evolution of mephitic gases from decomposing animal or vegetable matter—and also, probably, to the poison of cholera, whatever that may be; that, in neutralising these, it is itself decomposed, and therefore remains absent from that neighbourhood till it is renewed by further composition in the air. For this reason it exists more constantly and equably in sea air, and in the upper layers of the atmosphere, as in mountains, than on land, and particularly low land, or that removed from the sea; and it is notably deficient on the leeward side of large towns. Probably, also, more ozone is found at sea and on lofty mountains, for electrical reasons that need not now be entered upon, and its equable distribution in such localities is due to their exposure to the winds.

A continuous absence of ozone, especially if associated with a deficiency of sunlight (as in the narrow streets of large towns, or in deep valleys), favours the induction of disease connected with the mal-assimilation of food and deficient nutrition generally—scrofula,

tubercle, rickets, and such like. On the other hand, an excess of ozone, particularly if the air is dry, causes irritation of the mucous membranes, particularly those of the pulmonary and gastric tract—catarrh, hay fever, attacks of asthma, diarrhœa, or irritable dyspepsia. It has, in fact, upon the animal and vegetable organism an action similar to that of oxygen, in an exaggerated form: it stimulates the rapid performance of all the vital functions and their associated operations—respiration, circulation, excretion, secretion, assimilation—the circle of successive repair and destruction in which life consists, and whose coincidence and equality constitute health. It is nature's atmospheric stimulus, which, in an overdose, becomes, like alcohol, a poison.

The benefit of marine air is most obvious and lasting when the patient takes a voyage of some months' duration, in which case, circumstances being favourable, the good effect is sometimes marvellous, and far beyond comparison with any other change of climate.

Carried along without effort, he is exposed to the complete and continuous alterative of constantly breathing the pure, stimulant, ozoniferous, and yet soothing air of mid-ocean. Its first effect is usually to restore the digestive, and, with them, the assimilative functions, while the local affection gradually subsides into the background and often vanishes altogether. I have frequently seen persons who left England with wasting disease—softening tubercle in the lungs, serofulous glands or joints, large chronic abscess, chronic bronchitis—return from a voyage to Australia, India, or China, not only perfectly restored to health, but so stout as not to be recognisable by their friends. Of

course I am now referring to cases when no irreparable injury has been done to vital organs.

But is such good effect a permanent one? All we can say on this point is, that it has more chance of being so than any ordinary treatment. The quondam invalid returns to his avocations, and very likely, in the pride of his consciousness of restored health, takes liberties with himself that before his illness he would never have thought of. The old causes of disease again begin slowly and insidiously, but too surely, to work. He tries in vain to shut his eyes to the too palpable fact that he is losing flesh, that his morning cough and his evening flushes are again becoming habitual, and that his breath fails him when he runs to catch the train or the omnibus. But it is too true. The enemy has been silently working his sap and his mine: the unwelcome visitor has again taken up his quarters in the house, and now it will be difficult indeed to remove him.

The higher strata of the respirable atmosphere, as we breathe them on mountains, have a somewhat similar effect on the constitution to that of sea air. The characteristics of mountain air are its purity, its attenuation, its average low temperature, and the large amount of ozone which it contains. The effect of breathing such an air is (within certain limits) to quicken the pulse and breathing, and expand the chest, to produce exhilaration of spirits, a desire and capability for active muscular exertion, rapid oxidation of the tissues, with increased appetite and powers of digestion; in short, a sort of exaltation of a healthy state.

A mountain air is notoriously favourable to health and longevity. Dr. Lombard, of Geneva, asserts that pulmonary consumption is rarely contracted by those who live at an elevation of 3,000 feet above the sea level; and that above 5,000 feet it is never seen, but asthma is common. In the elevated table-lands of South America consumption is very rare, but all natives and long residents have emphysematous lungs, and asthma is very common.

The usual effect of a mountain climate in the prevention and control of pulmonary tubercle is constitutional and local, just as we described the two main branches of rational treatment, the first by its tonic invigorating qualities, and the facilities which it offers for easy oxidation, secretion, and excretion, from the large proportion of ozone which it contains; the second, by the effect of the attenuated air in developing the chest, increasing the respiratory surface, and inducing a condition of the air cells, which, if not incompatible, is at least rarely associated with the deposit of tubercle. Of course such powerful agencies may readily be made productive rather of evil than good by their ignorant or unskilful employment in unsuitable cases. The stimulant ozonic action of mountain air is not modified and guarded by the equability of temperature and moisture that we find at sea.

Habitual adult opium-eaters very rarely become the subjects of pulmonary tubercle, and are also less liable to inflammatory affections of the lungs than other persons living in the English climate. I am not alluding to those who, like the Orientals, take the drug in excessive doses, to induce sleep or intoxication, but to those

persons, of whom there are thousands in our home population, who take it habitually in small quantities, as a stimulant sedative, in place of wine, coffee, tea, or tobacco. Opium stands easily first of that class of agents which check undue waste of the tissues of the body without necessarily interfering with its nutrition. These habitual opium-takers, who are commonly met with in our large manufacturing towns, consume little food—perhaps not half what country people of the same stature would eat; but they usually neither gain nor lose weight, and do not age and break down under the influence of comfortless homes, monotonous work, vice, squalor, and misery, so rapidly as their neighbours. Opium has restorative and stimulant properties possessed by no other agent, not even by alcohol, for its effects are more certain and lasting. As an illustration, let me cite a case of every-day occurrence in the hospitals of our large towns. An aged decrepit pauper, the relict of three score years and ten of ‘labour and sorrow,’ has a sloughy, unhealthy ulcer on his leg. Those who are familiar with such cases know well that rest, and nourishing diet, and porter and wine, and bark and ammonia, and all sorts of stimulant applications may be employed; and yet, sometimes, in spite of the improvement of the patient’s general health, the ulcer will not heal. A more potent, and more directly nervine tonic influence is needed, which opium, and nothing else, will supply. A few drops of laudanum, given every three or four hours, will, in all probability, soon cause the ulcer to take on a healing action.

In an analogous manner the habitual use of opium in moderation has a power to interfere with the

tendency to exaggerated waste of tissue and defective nutrition which constitute tuberculosis, without, at the same time, rendering the system more liable to other disease. The brilliant, though fanciful, De Quincey notices this amongst the properties of opium,* but ascribes it to an increase of the cutaneous (and pulmonary?) exhalation. There is no doubt an action of this kind, and probably a beneficial one, but the chief *modus operandi* of the drug, in such instances, is by its power of giving tone through the nervous system to the capillaries, and preventing needless waste, without necessarily or materially hindering nutrition. But such effects are perceptible principally in adults, and more particularly in those past middle age, in whom the supply of new material requires only to be kept up to the daily demands for the support of the body; in the young, where an *extra* supply is demanded for growth, such a habit would probably conduce to the very evil we are trying to avoid. This is simply the physical view of the question; its moral aspects, though of vast importance, do not directly affect our subject.

Again, with regard to alcohol, the habitual tippler, especially of wine or beer, often induces in his system, so apt to accommodate itself to circumstances, a state of hypernutrition, which is a figure of the converse of the state of things under which tubercle is developed. Such persons rarely become consumptive, nor do those of gouty blood, whether inherited or acquired. Spirits have practically the same tendencies, but they shorten life in another way, by their immediate action on

* *Confessions*, pp. 247, 248.

individual organs—the brain, the stomach, the liver, or the kidneys.

What, then, is the object of this long discursion? We cannot keep our patient at sea for years at a time, nor fix him at the top of a mountain, nor recommend him to take to drinking or opium-eating. It is to impress upon my reader's mind that the only class of treatment from which we can expect real and permanent benefit, is the *alterative*; but that *this alterative must be so constant in its operation, and so long continued, as to become not only a habit, but a part of the system of nutrition.* We will now proceed to prove the existence of climates which combine the advantages of sea air and mountain air, and also peculiar restorative and stimulant properties, analogous to those which we have been considering in opium and alcohol.

One glance at the globe will be sufficient to show that the southern hemisphere must present remarkable and distinctive differences of climate from the northern. In the latter, the land and sea are distributed in about equal proportions; but the land is massed together in two large continents, with many thousand miles of interval between sea and sea. To the north, the land either reaches to the pole, or the marine influences of the arctic ocean are to all intents and purposes neutralised by its being frozen during the greater part of the year.

But in the southern hemisphere, water has greatly the preponderance over land, which is divided into three separate and isolated projections, the peninsula of South America, that of South Africa, and the prolongation of the Asiatic continent, which is called Australasia; and

not only are these separated from each other by expanses of unbroken ocean for the space of five or six thousand miles, a third of the globe's surface, but also they neither reach far enough south to join the antarctic continent, nor to impinge upon the regions of frozen sea; so that westerly winds, which are the most prevalent in the temperate regions of this hemisphere, sweep, with an uninterrupted course, around the globe.

Accordingly, the *excessive* climates of the globe are confined to the northern hemisphere, in whose temperate latitudes—falsely so called, so far as the inland or continental districts are concerned—the change of season produces excessive heat or intense cold. Thus Moscow, in a latitude of 55° N., has a tropical heat in summer, and an arctic cold in winter, and for this reason a large portion of the vast Asiatic continent, and also much of the north-eastern districts of Europe, can never support more than a scattered population. The projection of peninsulas and islands, however, which constitute Western Europe, is exposed to the equalising oceanic influences of the Atlantic, and particularly to those of the Gulf-stream; and thus Glasgow, for example, which is on the same parallel with Moscow, has a mild, equable climate, not liable to extremes either of heat or cold. But, as we have noticed before, the Gulf-stream, to which Western Europe principally owes the warmth and uniformity of its climate, bears also to its shores a mass of heated vapour, which is continually being condensed by any fall in the temperature, in the form of rain, fog, or mist. If, as some geographical alarmist has suggested, a great volcanic convulsion were to burst the barrier of the Isthmus of Panama, and thus divert the

Gulf-stream into the Pacific Ocean, the climate of the British Islands would at once descend in temperature to that of Labrador or Hudson's Bay, and they would become the grounding place of vast masses of iceberg, drifting southwards from the arctic seas. In fact, the characteristic features of the British climate, its equability, and the moisture of its air, are unnatural, and, physically speaking, fortuitous, being mainly dependent on an exceptional, and possibly (in a geological sense) recent, conformation of the globe's surface in the Gulf of Mexico.

The geographical position and geological conformation of the enormous sweep of coast east and west of the great Australian island, from Cape Leenwin to Bass' Straits, give it characteristics of climate absolutely distinctive, as no other part of the world* is placed under the same conditions; and it offers a special contrast to those parts of the northern hemisphere which are exposed to the influences of the Gulf-stream. The prevailing winds, during a great part of the year, are from the west and south, or south-east; from the two former quarters they sometimes blow continuously for weeks together, and having traversed such a vast expanse of unbroken ocean, unaffected by any terraneous influences, they have a purely marine and highly ozoniferous character, such as are only met with in the trade winds far from land. From the general absence of high mountain ranges on the continent, and the general tendency of the ranges near the coast to the north-east and south-west, the whole of the settled districts within a few degrees of the ocean enjoy more or less of the

* Except the Cape of Good Hope.

tempering, equalising, and ozoniferous influences of these west and south winds, without suffering the corresponding amount of damp and cloud which they bear with them in Europe. For an ocean wind, so far from being of necessity accompanied by rain and cloud—as we are accustomed to see it in the North Atlantic, from the reasons I have mentioned—brings with it bright sunny weather, as a rule. It hardly ever rains in the trade winds, far from land; it is only when some lofty island forms a nucleus point of attraction for the results of evaporation that these are condensed into vapour or rain.

The climate of the colony of Victoria may be taken as a medium type of the climate of Australasia. It is cooler than South Australia, New South Wales, or Queensland; warmer and drier than Tasmania, or New Zealand's southern districts.

By the following table the reader will see that the *mean yearly temperature* of Melbourne is about the same as that of Montpellier, Marseilles, Nice, Genoa, Pau, or Florence, which are on, or near, the corresponding isothermal line in the northern hemisphere; but that Melbourne has greatly the advantage of these in the fact that the *mean range of the seasons* is far less: that is to say, it has a warmer average temperature in winter, and a cooler one in summer. In this respect it is on a par with Lisbon, which is considered the model climate of Europe, as regards temperature, having a winter average equal to, or higher than, that of Naples, Valencia, or Barcelona, whose yearly and summer averages are considerably higher.*

* These figures are taken from Sir James Clark's and Dr. Francis's works on climate, and from the published observations of Professor

TABLE OF COMPARATIVE TEMPERATURES.

	Mean Annual Temperature	Mean Temperature of Seasons				Mean Range between Summer and Winter
		Spring	Summer	Autumn	Winter	
		°	°	°	°	
London	50	48	62	51	39	23
Torquay	52	50	61	53	44	17
Hastings	50	47	61	52	39	22
Penzance	51	49	60	53	44	16
Montpellier	57	53	71	61	44	27
Marseilles	59	57	72	60	45	27
Nice	59	56	72	61	47	25
Pau	56	54	70	57	41	29
Florence	59	56	74	60	44	30
Genoa	60	58	75	62	44	31
Lisbon	61	60	70	59	52	18
Naples	61	58	70	64	48	22
Valencia	63	60	78	65	49	29
Barcelona	63	...	77	...	50	27
Malaga	66	62	79	68	54	27
Corfu	65	59	77	70	54	23
Malta	67	62	78	71	57	21
Madeira	64	62	69	67	60	9
Melbourne	57	57	66	58	49	17
Geelong	56	56	64	58	49	15

Looking upon the question of temperature from these data of yearly and seasonal means, the great superiority of the Victorian climate to those of Southern Europe is evident at a glance; but such figures do not give a sufficiently close view of the medical aspects of the question. Although the average summer heat is moderate in the neighbourhood of Melbourne, being only 4° higher than that of London, occasional extremes of heat occur under the influence of the 'hot wind,' of which we will say more presently, when the thermometer rises even so high as 100°, 105°, or 111° in the shade. Such a temperature occurs usually

Neumayer, director of the Meteorological Observatory at Melbourne. Fractions are omitted in this table, for the sake of simplicity.

in December or January, but is very exceptional, and lasts but a few hours at a time.

The lowest temperature ever experienced is 32° , and this is very rare. The *five-day means* for six years, from 1855 to 1860 inclusive, show that from the 20th to the 24th of July is the coldest period of the year, the thermometer indicating 44° . These observations were taken in the most exposed situation in the neighbourhood of Melbourne, so that they may be regarded as excessive. In a sheltered situation, in the centre of the city, the greatest heat recorded in the years 1860-1-2, during the day, was 78° (the thermometer hanging in a shop-entrance, with a southern aspect), and the greatest cold 46° . This gives a mean annual range of only 32° , between 8 A.M. and 8 P.M., which is far lower than that of any recorded observations in Southern Europe.

Hoar-frost, and very thin films of ice, are sometimes, but rarely, seen in the suburbs during June, July, or August; but they disappear an hour or two after sunrise. The 'oldest inhabitant' is reported to have once seen snow reach the ground at the sea level; but, as such an occurrence has not been observed for the last twenty years, the authenticity of the report is rather doubtful. The *mean daily range* of temperature is—in spring, 19° ; in summer, 21° ; in autumn, 17° ; in winter, 14° . In summer very rapid changes of temperature are experienced near the coast, in situations exposed to the south. The thermometer sometimes falls 20° to 30° in the course of half an hour.

So much for temperature. As regards humidity, the mean dew-point for the year is 47° , that of London

being 44° ; and in this respect, too, the air sometimes undergoes rapid changes. On a change of wind to the north, in situations having that aspect, the amount of moisture in the air may be reduced as low as 13 to 15 per cent. The average annual rain-fall at Melbourne is 26 inches, being two inches more than that of London; but the manner in which this is distributed is very different. In London, and in the whole of the southern and western districts of Great Britain, rain falls on 170 or 180 days during the year.* We are all familiar with the phenomena of gathering cloud, and steady and equable rain for days, or even weeks, together, in the home climate. But, in Victoria, the average number of days on which rain falls is only 104, and the average number of hours of rain for the year is only 532; for it falls in this country with a violence almost tropical, and very seldom lasts more than a few hours at a time. Thus, in 1855, on the 29th December, the amount of rain collected during two and a half hours was 0.92 inches. On September 23rd, 1856, the same quantity fell in twenty minutes. In 1857, in February, the fall of rain, from 7 P.M. to the same hour on the following day, amounted to 3.420 inches, which would suffice for the greater part of a whole winter in England. On the 19th December, 1858, 1.623 inches fell during the afternoon; on June 8th, 1859, 0.616 inches fell in a few hours; on December 9th, 1860, in twenty hours, 2.586 inches; and in 1861, on January 31st, 2.370 inches during eleven hours.

* London, 178; Hastings, 153; Newport (Isle of Wight), 185; Clifton, 169; Penzance, 178; Grasmere, 196.

If the rain in duration and amount were equally distributed over the year, it would then rain nearly one hour and a half each day, at a rate of 0·075 inches, or about one-sixth of the time that the same quantity takes to fall in England. A continuance of overcast or cloudy weather is never observed in Victoria, the sky clearing as soon as the rain has fallen. Fog is of very rare occurrence. Mists hang about the Yarra occasionally in the early morning in autumn, but the sun is sure to eat them up by ten or eleven o'clock.* The mean annual height of the barometer at Melbourne, 120 feet above the sea, is 29·900 inches, indicating rather a greater pressure of air than in most parts of Europe; but the yearly range is considerably less.

The weather and the temperature are even more under the influence of the winds here than in Europe. There are two main currents of air—the *Equatorial*, from the north, a land wind, which usually prevails in winter; the *Polar*, from the south, an ocean wind, which prevails in summer—and both have a decided inclination to the westward. Easterly winds are very light, except occasional south-east gales, in spring and summer, of short duration.

There is commonly a regular cyclus of wind and weather in the neighbourhood of the coast, whose several divisions may be of longer or shorter duration, according to the season, but which usually follow the same general rule. After a continuance of calm fine weather, a light breeze rises from the south-east (in summer it may be a gale), and this soon shifts to east

* The mean number of hours of fog during the year is 141.

and north-east, which, in winter, is the rainy quarter, and is accompanied by damp overcast weather. The barometer, which was at first high, is now sinking rapidly, and electrical tension is decreasing; while the thermometer gradually rises as the wind gets round to the north. This, in summer, is the hot wind. A dense veil is spread over the sky; the wind is often very violent, and raises clouds of dust; the temperature attains its maximum, and the air becomes exceedingly dry. In a few hours the wind shifts to north-west; positive electricity becomes more prevalent; the wind becomes unsteady, and lulls almost to a calm—when it suddenly shifts (very often with a violent squall) to the west and south-west; torrents of rain, and thunder and lightning follow; and the thermometer rapidly falls. The wind now decreases in violence—inclining towards the south—the sky clears, the barometer rises, and cool cloudless weather follows.

Such is the natural cyclus of the weather for about nine months in the year—in spring, summer, and autumn. In winter it is less regular. Northerly winds are most prevalent.

It will be well here to say a few words about the hot wind, which is usually the 'bête noire' of new arrivals in the colony. Such winds occur, on an average, eight or nine times during the year, under the circumstances which I have just detailed. Their duration, until the wind changes to south-west and south, as it always does, varies. The longest period on record is forty-eight hours; but this is very exceptional. They do not generally last more than six or seven. The actual cause of their high temperature is doubtful,

now that the non-existence of the 'great central desert' is proved; but there can be no doubt that the extensive bush-fires, which are common in summer, have their influence. During the last few years, since so much of the up-country to the north and east has been cleared and settled, the hot winds have notably decreased in frequency and duration. In some parts of Victoria, particularly in the western district, they are rarely experienced; and when they do occur, it is in a very modified form. But the high temperature of the air during the prevalence of these winds, from the dryness with which it is always associated, causes a greatly increased evaporation from the lungs and skin; and, consequently, a far less degree of inconvenience to the animal body than when the same temperature is associated with moisture, as in the sirocco of Southern Europe. In Sicily, or Malta, when this wind is blowing, both natives and foreigners are rendered utterly incapable of exertion. In India, no one dreams of stirring beyond the influence of his punkah and tatties in the mid-day in summer; but in neither case is the thermometer so high as it is in a hot wind in Melbourne, which never interferes with business, and hardly with pleasure. In a stone house, with a southern aspect, it is not a difficult matter to keep the air 15° or 20° lower in temperature than that without, by closing the doors and windows carefully, for a few hours, till the wind changes. A thermometer in the shade, but exposed to the wind, will rise to 105° or 110° ; while, out of its immediate influence, the mercury will sink to 85° or 90° . To a new comer the little inconvenience he experiences from these high

temperatures is marvellous,* though the cool southerly sea breeze in the afternoon is delightful to everyone.

Spring and autumn are the most enjoyable seasons of the year in Victoria. Cool cloudless days, with gentle southerly breezes, sometimes follow each other for weeks together, without intermission, the very ultimatum of all that is delightful in weather. The north and north-east winds, in winter, are the most trying to pulmonary invalids; but their ill effects are trivial when compared with those of the same wind at Brighton or Nice, the keen irritating 'tramontana' at Rome, or the 'mistral' in Provence. The occasional sudden changes of temperature have not nearly the amount of prejudicial effect that might be expected, and which such changes would doubtless cause in Europe.† Of this we will speak more particularly when considering the special influences of the climate on disease.

* One illustration will prove this better than a chapter of assertions. On the afternoon of the day on which this was written (January 3, 1863), I had occasion to ride ten miles into the country, on horseback, with some friends. The weather was certainly warm, but none of the party (amongst whom was a lady) complained of inconvenience from heat. The following report of the weather appeared in the journals the next day:—'The wind blew from north-west, shifting to north-east, and about one o'clock thermometers placed in the shade, in various parts of the city, recorded from $98\frac{1}{4}^{\circ}$ to 105° . Later in the afternoon, a light breeze set in from the south-west, but its strength was insufficient to make any marked change.'

† I find that Dr. Walsh notices this as follows:—'*Theoretically speaking*, steadiness of temperature from day to day, with but slight nocturnal fall in the thermometer, ranks as a very important condition; but practically it turns out to be comparatively insignificant. For those climes, Egypt and Australia, which furnish, from time to time, the most striking examples of arrest of phthisis in individuals of the Saxon and Celtic races of North Europe, are glaringly deficient in this element of theoretical success.'

The amount of ozone in the air, as tested by Schönbein's papers, is very considerable in all the Australasian colonies, and follows with great exactitude certain rules with regard to the direction of the wind. Thus, in Melbourne, the ozonic reaction is least in east winds, increases with north and north-west winds, and reaches its maximum when the wind blows from south-west, whilst towards the east it gradually decreases. Thus the most prevalent and powerful winds during the whole year are those which are the most highly ozoniferous.

To summarise the main characteristics of the Victorian climate: it is a temperate warm climate, whose average summer heat is but two or three degrees above that of London; while in winter it is warmer than Nice or Naples, and as warm as Valencia or Barcelona; and actual cold is never felt at, or near, the sea level. The air is generally dry, always stimulating and ozoniferous; but so tempered by the prevalence of ocean winds, that it is prevented from becoming irritating, like that of Nice or Provence. With this there is a very large proportion of sunny cheerful weather during the whole year.

In no climate with which I am acquainted is there so much pleasant weather during the year as in Victoria—so many unclouded days, when it is neither too hot nor too cold—and an invalid has, consequently, every temptation to be in the open air.

The faults of the climate are connected with the hot wind, its high temperature and dust, and the sudden fall of temperature when it changes. But their advent is heralded by well-known signs, their disagreeable

effects may be much modified by a little care, and may be almost or altogether avoided by a judicious choice of situation ; and they are yearly diminishing in frequency and duration.

This is essentially a *new* country, and one that seems especially to invite colonisation. Its natives are a few scattered and nomad tribes ; its Faunæ grouped into few and isolated types, many of them, like the kangaroo and platypus, presenting striking and novel peculiarities, and nearly all being timid and harmless. Its Flora, too, is remarkably simple, and differs widely from that of most other parts of the globe ; but especially from that of the same latitudes in Europe. One may travel a thousand miles from south to north, and camp every night under blue gum trees, or she-oaks, identical in appearance. There is no indigenous fruit-bearing tree worthy of the name. But experience has shown, and every day proves to us, that the soil and climate of Australasia has an adaptability to the requirements of immigrant organic life, whether animal or vegetable, possessed by no other quarter of the globe. Not only do imported domestic animals—such as the horse, ox, and sheep—thrive in all parts of the colonies, but they breed with greater rapidity, and at an earlier age, than in Europe, and this with improvement, rather than deterioration, of type ; and, also, animals differing widely in their requirements and characters—the camel, the Alpaca, the Angora goat—seem to find common ground, and acclimatise themselves with the greatest facility.

In the vegetable world, this universal suitability to the natives of other climes is still more remarkable.

Any plant of any part of the temperate zone of the northern hemisphere will not only thrive, but improve, when transplanted to this colony. The cereal grains bear such produce as surpasses anything seen in other countries.*

The apple, the pear, the plum, the cherry, and the peach-tree, bear fruit of a size and flavour of which even Covent Garden might be proud; and so do the strawberry plant, the currant, the raspberry, and the gooseberry; and yet, by their side, flourish the cactus and palm, and the giant aloe, as luxuriantly as on the burning plains of Tunis. Peas, beans, and other leguminous plants bear several crops in succession. We have them on our tables at all seasons of the year, with no other forcing than the constant influences of a genial sun and a pure stimulating air. Apple and pear trees bear fruit not unfrequently twice in the year, and this the first year after they have been planted. The vine has acclimatised itself in Australia with a love of the soil that is very suggestive; and, though it is but a very few years since the first cutting was planted, wine is already one of the staple productions of the country, and is so much valued for its richness and delicacy of flavour, that the growers easily dispose of every gallon they make, which is retailed at a higher price than that of most imported European vintages. In quality the Australian wines are pronounced equal to those of Burgundy and the Rhine; † and, as regards quantity,

* The Victorian wheat at the Exhibition of 1862 was superior in weight and size of grain to all others exhibited.

† In the Exhibition of 1855, at Paris, a new South Wales wine, in spite of all the shaking and alternation of temperature on its

considerably more is made to the acre of vineyard than in those countries.* Our 'vegetable mould' will not need any replenishing for many years to come. While, in Europe, vine-growers expect a good year in five, we have each and every crop equally good or improving.†

The mulberry seems to thrive as well as the vine, and the silkworm breeds and multiplies with far greater rapidity than in Europe. The culture of tobacco is declared by connoisseurs to promise great things; and the cotton already grown in Queensland, and even in the northern districts of Victoria, is finer in fibre and has a higher market value than that of India or the Southern States of America. In short (lest I should tire my reader), every production of every foreign country that has been introduced into Australia has not only thriven, but has surpassed the most sanguine hopes of its acclimatiser.

Now let us proceed to examine the effect of such a climate on the European immigrant of the genus homo, and his progeny born here.

It is obvious that there are great difficulties in coming to reliable conclusions with regard to the vital statistics of this colony, for it has been peopled less than thirty

voyage, took the second prize in a competition with all the best European vintages. Recent tastings by the best German authorities declare that the best Australian samples, that have had time to mature, are superior to any of the Rhine wines. Good colonial wine, of ten or twelve years' keeping, cannot be bought for money. It is all in private hands.

* A vine, four years old, has been known to bear as many as 400 bunches of grapes!

† So great is the demand for colonial wine, that unprincipled retailers are known to buy up the cheaper French wines, and sell them as colonial.

years ; * and, until the year 1851, the population was scattered and inconsiderable. Then the discovery of gold caused a sudden influx of immigrants, at once changed the occupations of at least half the previous colonists, raised the value of property in a manner unexampled in the history of the world, and gave rise to a social revolution the worst calculated to preserve the public health. However, I give the reader the results I have obtained from the statistical records of the colony, the experience of many of the oldest and most skilful medical practitioners, and my own observations. And here it will be well to observe that all statistical figures which appear in this work, connected with the colony of Victoria, may be taken as perfectly reliable, for in no country out of Europe has this subject been so carefully systematised during the last five or six years.

For this reason, and also that the Victorian climate may be taken as a medium type of antipodal characteristics, we will confine ourselves first to its influences on life, health, and disease ; and afterwards see what results we obtain from the statistics of New South Wales, a hotter, and from those of Tasmania, a cooler, climate.

The population of Victoria was, in 1861, 540,322 souls, of whom 328,651 were males, and 211,671 females. Of these, about 68 per cent. were British born ; 18 per cent. colonial born, mostly of British parents ; and, of the remainder, two-thirds were Europeans, Germans, Italians, or French. The Asiatic

* In 1836, when the first census was taken, the settlers numbered 177 in all.

population was composed principally of Chinese, who numbered 24,732. The native population was about 2,000, and is yearly diminishing. In fact, there are about the same proportion of British-born and foreign inhabitants of the country as in the population of Liverpool, or any other large sea-port town at home.

With the exception of an excess (20·07 per cent.) of the classes engaged in mining operations, and a deficiency (11·33 per cent.) in the manufacturing and labouring classes, the occupations of the people, as regards out-door and in-door employments, may be said to be not dissimilar from those in England. By the following table (copied from the Registrar-General's Reports), it will be seen that we have a higher per centage of both men and women of the young adult or marriageable age than there are at home, and a smaller per centage of the old and decrepit, who die from slight causes.

VICTORIA.—COMPARISON OF AGES OF MALES AND FEMALES
WITH THOSE OF GREAT BRITAIN.*

Vicennial Periods	Males and Females in 1,000 at different Periods			
	Males		Females	
	Victoria	Great Britain	Victoria	Great Britain
Under 20 years . . .	296	461	472	441
20 years to 40 . . .	554	307	429	312
40 " 60 . . .	136	165	89	168
60 " 80 . . .	11	62	8	71
80 " 100 . . .	3	5	2	7
	1,000	1,000	1,000	999

* I shall call the reader's special attention to this table when we are examining the influences of the climate on particular diseases.

For these reasons it is only natural to expect that 'the annual birth, death, and marriage rates of Victoria are uniformly in favour of the colony, when compared with those of Great Britain. Thus, on examining the results recorded in the two countries over a period of seven years, from 1854 to 1860 inclusive, we find relatively to the mean population existing throughout each year, that in Victoria the marriages have been slightly over, and in England somewhat under, 1 per cent. The births in Victoria have been 3·8 per cent., and those in England 3·4 per cent.; while the deaths in Victoria have been 1·94 per cent., while in England they have been 2·2 per cent.' And this mortality, low though it is, must be regarded as unnatural and excessive, for the social position of the colony during a great part of this period was peculiar and unparalleled in the history of the world. In 1854, no less than 78,000 immigrants by sea were poured into the streets of Melbourne. Of these, many thousands were compelled to live in tents, or in the open air, and to put up with discomforts of every kind. Many, too, had their constitutions enfeebled by the long voyage (for in those days ships were often shamefully over-crowded and miserably victualled), and numbers gave themselves up to the wildest excesses on landing. Milk for children was not to be had, vegetables cost almost their weight in silver, and spirit-drinking to excess was the rule rather than the exception. In wet weather the streets were knee-deep in mud; in dry weather they were continually in a cloud of dust. Under such circumstances a double or treble amount of mortality to that recorded would have been readily accounted for, and

would, doubtless, have occurred in any less salubrious climate. Even in 1857 more than a third of the population of the colony were living in tents. The average of the seven years under consideration was also greatly raised by the exceptional mortality in 1860, which resulted mainly from the prevalence of scarlatina and measles, as epidemics, which diseases were previously almost unknown in the colony. The last two years (1861 and 1862) may be taken as very fair averages of the mortality in this colony in its present social condition, the gold fever having to a great extent calmed, and no new importation of disease having taken place. In 1861, the mean population was 541,025, and the deaths 10,522, or 19·45 per thousand; the births being 23,461. In 1862, the mean population was 547,958, and the deaths 9972, or 18·20 per thousand; the births being, 23,618.

In Melbourne and its suburbs, with a mean population of 139,916, the deaths in 1861 were 25·78 per thousand, about the same as London; in 1862, the deaths were 23·34 per thousand, about the same as the whole of Great Britain.* In the provinces, which include several large towns, such as Geelong, Ballarat, and Sandhurst, with populations of 20,000 to 40,000, and many smaller townships and villages, the mortality in 1861 was 17·24 per thousand; and, in 1862, 16·43, or as nearly as possible the same, on an average of the two years, as the 69 chosen healthiest districts in Great Britain.

Penal establishments afford about as good an

* At Paris and other capitals of continental Europe, the annual death-rate is 30 to 40 per thousand.

opportunity of arriving at the influence of the climate on the duration of life as we could have. In Pentridge and Collingwood stockades, the former five miles, the latter two miles from Melbourne, there were in 1861 and 1862 an average of 1,000 prisoners,* the greater part of them undergoing long sentences. At Pentridge, in 1861, there were two deaths, at Collingwood none. At Pentridge, in 1862, eight deaths, at Collingwood two. Most of these were aged men with broken constitutions. In 1860, with a higher average number of prisoners, there were but three deaths at Pentridge and none at Collingwood.

This mortality may be taken as a good index to the Australian mortality in adult life (from 16 years old and upwards), under conditions the most favourable to health. The average mortality on these three years is thus only five per thousand ; far lower than that of any other establishments of the kind in the world.

The infant mortality of a country has always been known to be a very delicate test of its general salubrity, other things being considered. There has been a vast amount of misconception and error with regard to the mortality amongst children in this colony : so much so, that an impression prevails in the minds of many persons that the climate has a peculiarly fatal influence on infant life. But this idea is perfectly groundless, and the reverse has been proved to be the actual fact by the Registrar-General, Mr. Archer, in an elaborate paper on

* In 1861, at Pentridge, 869 ; at Collingwood, 211=1,080. In 1862, at Pentridge, 806 ; at Collingwood, 141 = 947 : all adult males.

the subject,* in which it is demonstrated that the deaths under one year have a per-centage considerably less than those of most parts of Europe. To reproduce the whole paper would occupy too much of our space; but I give the reader the results of Mr. Archer's calculations and researches.

In three years, 1854-5, 1855-6, 1856-7, the deaths in Melbourne and suburbs, under 12 months, for every 100 children born, had an average of 21 for males and $19\frac{1}{4}$ for females, 20 for both sexes in each year; while in the rest of the colony, exclusive of Melbourne and suburbs, the corresponding figures were $14\frac{1}{2}$ per cent. for males and $12\frac{1}{3}$ for females, $13\frac{1}{2}$ for both sexes combined.†

Comparing these statistics with those of Europe, it is found that in Saxony 34 per cent. of children born die before the completion of their first year; in Iceland, 30 per cent.; in Prussia, 18 per cent.; in Belgium, 23 per cent.

With regard to England, Mr. Archer enumerates 90 places—counties and towns—in which the registered yearly mortality of male children under 12 months is above 20 per cent.: that is to say, in excess of the mean for Melbourne. I insert a few of these in illustration, premising that the years in which the Victorian estimates were taken cannot be regarded as fair specimens of the average present mortality amongst infants, for those

* Facts and Figures, vol. ii. p. 8.

† In a paper just published in the *Medical Times*, by Dr. Whitehead, it appears that the first twelve months' death-rate in England, in 1859, was 15·29 for every 100 births; in France, in 1856, 16·02.

years saw the gold fever at its height, milk was hardly obtainable at Melbourne, and mothers of the lower class had every temptation to neglect their infants, to earn the enormous wages they could then obtain by washing and charing.

COMPARATIVE MALE INFANT MORTALITY.

Deaths per cent. per annum under twelve months.

Country Districts.	Town Districts.
Victoria (excluding Melbourne) 13·5	Melbourne and suburbs* 20·84
Cheshire 22·3	City of London 24·2
Lancashire 26·8	Marylebone 26·0
Yorkshire 22·2	Kensington 22·1
Durham 21·0	St. Martin's 28·1
Bedfordshire 22·5	Holborn 29·0
Staffordshire 22·2	St. Giles's 32·3
Norfolk 22·2	Canterbury 22·7
Hertfordshire 20·6	Reading 21·4
Buckinghamshire 20·7	Brighton 29·4
Northamptonshire 20·4	Ely 30·0
Cambridgeshire 23·7	Norwich 28·8
Warwickshire 23·1	Cheltenham 23·3
Leicestershire 23·2	Leicester 30·6
Lincolnshire 21·1	Nottingham 33·0
Nottinghamshire 23·1	Liverpool 30·4
	Manchester 32·9
	Leeds 24·8
	Derby 26·5
	Bristol 25·2
	Worcester 24·7
	Stoke-on-Trent 28·5
	South Shields 28·4
	Yarmouth 24·0
	Clifton 21·5

With regard to the prolongation of life in old age, this climate seems, from its dryness, average warm tem-

* In 1854-5, 24·10 per cent; in 1855-6, 20·85; in 1856-7, 17·92.

perature, and stimulant characteristics, to be admirably calculated to prevent the most common cause of death in the aged, viz. chronic bronchitis and such like affections of the air passages. Instances of extreme old age are not uncommon: a man and a woman, both over 105, recently died in the Benevolent Asylum at Melbourne, and there are at the present time several inmates over 90 years of age. A death at 103 also recently occurred in the town. In Victoria, every thousand married women between 15 and 55 years of age (the extreme period of child-bearing) increase the population annually by the birth of 263 children. In Great Britain the same number of women of the same age bear only 224 children annually.* These figures are very suggestive, both of the prosperity of the colony and of the effects of the climate in promoting the health of adults of both sexes. Of all stations of the British army, the Australasian colonies have the lowest mortality: that of New Zealand is even lower than that of the continent.

Mortality in troops, from all diseases, per 1,000, at

Malta	18	Cape	15
Ionian Islands	28	Mauritius	30
Bermuda	30	United Kingdom	17½
Canada	20	New Zealand	8¼
Gibraltar	22	Australian Continent	11

Having sufficiently considered the evidences of the salubrity of the climate and its general suitability to European races, we may now proceed to look into the

* Statistical sketch of the colony of Victoria, in the catalogue of the Exhibition of 1862, by W. H. Archer, Registrar-General.

causes of death in this colony and the manner in which disease appears to be modified by the climate.

To enter at any length into the vital statistics of Victoria, would take too much of our space and would not facilitate the understanding of our argument any better than a general view of the subject. We find, on the first glance at the causes of death, that the antipodal rule of contrariety to everything in the northern hemisphere holds good, and that, in the first place, the *fatal seasons* of the year are reversed. Thus, in England, by far the greater number of deaths occur in the *winter* half of the year : consumption, pneumonia, and pleurisy carry off the young and middle-aged by thousands, and bronchitis the old and debilitated ; while, as spring advances and the temperature rises, the mortality rapidly falls, and at Midsummer is at its minimum, in the absence of any exceptional epidemic. But in Australia the winter half of the year is the most healthy ; and, as spring and summer come round, the mortality rises in direct ratio with the temperature. The reason of this is obvious when we examine the bills of mortality : for, in England, the most common cause of death is disease affecting either primarily or secondarily the respiratory system, one of whose most common exciting causes is its cold damp climate ; while in Australia the most common cause of death is disease of the general system, or abdominal viscera, such as fever, dysentery, or diarrhœa, whose activity is called forth by a *high* temperature. Thus, in the British Islands, 40 per cent. of the annual mortality at all ages is caused by disease affecting the respiratory organs ; that is to say, pulmonary consumption, bronchitis, pneumonia, pleurisy, hydrothorax,

asthma, quinsy, and laryngitis; while the same diseases, on an average of six years, from 1854 to 1860, caused in Victoria only 15 per cent. of the total mortality at all ages. These facts at once give us ample grounds for drawing a broad distinction between the climatic fatality of the two countries, and a very good *primâ facie* case for assumption that the tendency to, or probability of, death from any disease affecting those organs is very far below that in the mother country. But we will go farther: for I find that, in the southern countries of Europe, where the temperature on an average of the year is as high or higher than that, in Victoria, affections of the lungs are far more prevalent. Thus, at Nice, 'catarrhal affections and inflammation of the lungs rank amongst the most fatal diseases of the inhabitants.' At Florence, 'acute inflammation of the lungs is one of the most prevalent and fatal diseases.' At Rome, 'inflammatory affections of the chest are frequent during winter and spring, and are violent and rapid in their course.' At Naples, 'catarrhal affections are the most common diseases.'* At Malta, 33 per cent. of our troops die of diseases of the lungs; and, even at Barcelona, on the eastern seaboard of Spain (which is the only district in Europe at all resembling in climate the Australian continent), about 20 per cent. of fatal maladies are those of the chest.† From these facts it is but reasonable to infer that the Australian climate has some specific influence in preventing and controlling the developement of pulmonary disease, over and above that of its average warm temperature, which we

* All these are copied verbatim from Sir James Clark.

† Dr. Francis, on change of climate, p. 249.

do not find in countries on the same isothermal line in the northern hemisphere.

So much for the general salubrity of the climate, and its statistical influence on 'disease of the respiratory system,' according to the old system of classification. We will now, following up the principle on which we have hitherto based our considerations of the treatment of consumption, enquire, first, what the effect of the Australian climate is upon the developement and fatality of the 'tubercular order of constitutional diseases' (according to the new nomenclature), viz. scrofula; tabes mesenterica, or abdominal consumption; phthisis, or consumption of the lungs; and hydrocephalus, or tubercular inflammation of the membranes of the brain. On this view of the subject our statistics are even more favourable. I have chosen the year 1861, being an unusually wet year, for our illustration; and have preferred town statistics to those of the whole colony, for the sake of greater accuracy in the returns, so that the reader may regard the numbers now adduced as excessive of the average. *In that year only 434 deaths were registered as being caused by the several varieties of the tubercular order of disease, being 11·896, say 12 per cent., of the total mortality from all causes.** In Europe, as we saw in the first chapter, these diseases are both statistically

* The only way in which these numbers can be in any way raised is on the supposition that a certain proportion of those deaths entered as 'brain disease,' or as 'debility,' were of tubercular nature. If this be allowed, we may add one, or possibly two per cent. to the above; but the same addition must be made to the English returns, in considering the relative mortality of the two countries, for the registration system is certainly as efficiently carried out now in Melbourne as it is in London, and perhaps more so.

and pathologically the most fatal of any, and may be regarded as the scourge of civilised life—the single item of pulmonary consumption causing, at least, 20 per cent. of the total mortality. And yet Melbourne is a populous city, having a large proportion of inhabitants of the lower class, many of whose habitations are crowded and ill-ventilated. Animal food is certainly cheaper, and wages higher, than in the large towns of Europe—so that the food of the population at large is more plentiful and nourishing; but as regards general hygiene, society of all classes is as neglectful of its rules for preserving health, either in the old or young, as it is in any part of the world. The external manifestations of scrofula (which are not commonly fatal, and therefore do not appear in the registrar's returns), disease of the lymphatic glands, and of the bones and joints, eruptions on the skin, occur in very notably smaller proportion than in Europe.* Such affections belong peculiarly to childhood and youth—say to those

* In the Immigrants' Aid Society's Home, at Melbourne, with which the writer is officially connected as consulting physician, there are maintained an annual average of 400 children, from birth up to 13 years of age. The greater part of these are the offspring of the very dregs of the colonial population. Five-sixths of them are Australian born. During the last twelve months, there has been no case of infantile phthisis, only one of *tabes mesenterica*, and one of disease of the brain of tubercular origin. No case of scrofulous disease of bones or joints has occurred, and hardly any of enlargement or supuration of the lymphatic glands. The principal cause of death is diarrhœa or dysentery, or marasmus, general wasting from neglect, and want of breast-milk, and improper food, before admission. In England, in the same number of children of the same class, at least half would have exhibited the unmistakable features of scrofula. These things show themselves in a much more forcible light to one who, like myself, is recently familiar with disease in England, than to those who have practised for many years in this country.

under 20 years of age. On referring to the table of comparative ages at p. 47, we see that, of every 1,000 females in Victoria, there are 472 under 20 years of age, while in England there are 441; of every 1,000 males in Victoria there are 296, and in England there are 461 under this age; so that childhood and youth in Victoria and in Great Britain are as 768 to 902. Thus the age of our population cannot have very much influence in effecting our comparative immunity from this class of disease.

From these data, I do not see how we can arrive at any other conclusion than that there must be a climatic influence in this country which tends to control the developement of scrofula and tubercle in the European constitution.

In the first chapter, when considering the elements necessary in a climate likely to be useful in the treatment of pulmonary consumption, whether as to prevention or cure, we assumed that the first and most important requisition was, that it should have a stimulant alterative action which might work with a system of rational hygienic means in preventing the formation of tubercle in the blood; and that, next, it should have a general suitability to the patient's pulmonary complication. Our statistics have shown that the Victorian climate possesses both these requisites; that with a low general mortality from all disease, we have a remarkably low mortality, both from tubercular disease as a class, and also from diseases of the lungs as a class. A low mortality from consumption is a natural consequence, as we will now proceed to demonstrate. I am very anxious to give my reader a perfectly fair and impartial view of the vital statistics of the colony as

regards consumption, and for this reason I have again chosen the year 1861. In 1860 the general mortality was high from epidemics of measles and scarlatina, and therefore the relative mortality from other diseases was low. It might be objected to years before 1860, that the unsettled condition of the colony rendered efficient registration difficult; but in 1861 Melbourne had settled down into the quiet business routine of an European city; every arrival to, and departure from, the colony is recorded; all deaths are registered and certified by qualified medical men, or inquests are held if no medical man has been in attendance, or there be any doubt as to the cause of death. Altogether, I should think that the returns of the causes of death in Melbourne during the last few years are as reliable as those of any city in the world. The year 1861 is a good representative of the average general mortality of the city, but it was unfavourable to pulmonary cases from having an unusually large proportion of wet and chilly weather.

The population of Melbourne and suburbs being, in round numbers, 140,000, in 1861, the total mortality was 3,648, and the deaths from pulmonary consumption were 328 of these, i.e. rather over 7 per cent. of the total mortality. These were distributed during the year as follows:—

MELBOURNE AND SUBURBS.		
1861.	Mortality from Consumption.	Mean Temperature.
Quarter ending March	. . . 75 . . .	. . . 66°
Do. June	. . . 97 . . .	. . . 54·2°
Do. September	. . . 81 . . .	. . . 51°
Do. December	. . . 75 . . .	. . . 60·3°
	— 328	

The small mean range of the thermometer (the hottest and coolest quarter having a difference of only 15°) bears an evident relation to the small variation in mortality from consumption between one season and another. It must be borne in mind that these figures represent *town mortality*, which is naturally higher, from intrinsic causes, than that in the country, and is also swelled by the fact of the sick from other parts of the colony coming to the metropolis for medical advice or hospital accommodation. The deaths from consumption in the colony at large are probably not more than $4\frac{1}{2}$, or, at the utmost, 5 per cent.

We have seen that, as regards *race*, the population of this colony is similar or identical with that of London or Liverpool—and therefore has an equal proportion of hereditary disposition to consumption; and that the *occupations of the people* present no decided contrast as regards the proportion of out-door and in-door employments. I will now show my reader that, as regards *age and sex*, the Victorian population are *far more predisposed to consumption than that of Great Britain*.

Every stage of life has its liability to some particular form of disease: infancy and childhood, to whooping cough, measles, scarlatina, and such-like; adult age, to acute inflammation and the continued fevers; a stage beyond it, to cancer and atheroma; old age, to bronchitis, and so on. In the same way, pulmonary consumption is far more common in *young adults* than at any other period of life. Thus, in Dr. Cotton's well-known work, I find a table showing the ages of 1,000 persons in various stages of consumption, with these

observations: 'A glance at this table shows that the disease is most frequent between the ages of 20 and 30, more than 39 per cent. having occurred within this period; that the next age most favourable to its development is from 30 to 40 years; the next, from 10 to 20; and that after the age of 40 its frequency gradually lessens, until, as we approach the three-score years and ten, few cases present themselves.' But, on referring to the table at p. 47, showing the age of the Victorian population as compared with that of Great Britain, *we see that the main difference between the two is the high proportion of persons of this very consumptive age, 20 to 40, in Victoria; and the low proportion of other ages above or below this period, which are less liable to consumption.* So that, *cæteris paribus*, it might be expected that the *actual* mortality from all causes in the colony would be less than that at home; but the *relative* mortality from consumption considerably greater.

As regards *sex*, too, our population is more liable to consumption than that of Great Britain, for, on again referring to Dr. Cotton, we find that 58·2 cases in London are in males, and 41·8 in females, showing that the male sex is statistically more consumptive than the female, at least in and around the metropolis. But we have seen that there is a striking disproportion between the sexes in Victoria, the males numbering 328,651, the females only 211,671, an excess of 116,980 males.*

* In Pentridge and Collingwood stockades, with an average of 1,000 male adult prisoners, there was no death from consumption, either in 1860 or 1861. In the latter year there were only two deaths

In short, seven persons die of consumption here, while twenty die in England, out of every hundred, though we are far more liable to the disease, as regards *age* and *sex*, and equally so as regards *race* and *occupation*.

I have heard it offered, as an explanation of the low mortality of this country, that the population is composed of picked individuals, and does not fairly represent the proportion of inherited constitutional disease that exists in England. In the last generation such was doubtless the case, but for the last thirty years the emigration from the mother country to these colonies has represented a very fair average of the vital power of the home population, and the advantages of a sea voyage are so well known, that the existence of pulmonary disease is considered an inducement to, rather than a reason against, such an undertaking.

But, even if such were the case, we have ample proof, from the statistics of the British army, that the fact of a body of individuals being composed only of young, strong, and healthy adults—the *ne plus ultra* of the vital power of their generation—does not render their mortality much lower than that of the general population of all ages. The British army is recruited from the flower of the agricultural population, and yet, ‘of effective men, of all ages, in the army at home, the annual mortality in the thousand is 17·5; while, in the

from chest disease of any kind in all the institutions under the charge of the principal medical officer, with an average numerical daily strength of 1,708. One of these was from consumption, and one from bronchitis. Both occurred in the western gaol, in dissolute women, of broken constitutions.

general population, it is for men of the army ages in town and country 9·2, and in the country alone 7·7.* The great cause of this high mortality in our troops is pulmonary consumption, showing clearly that, where the exciting causes of that disease are rife, and the climate is favourable to its developement, a large proportion of adults in a population conduces to the raising, rather than the lowering, of the mortality.

To what, then, can we attribute the great general salubrity of these colonies, and particularly the remarkable immunity, both from tuberculous diseases as a class, and also from complaints of the respiratory system of whatever kind? *It is distinctly to be accounted for, first, by the characteristics of the climate; and, second, by the altered circumstances and habits of the population at large, which also are greatly dependent on the climate.* Now, if my reader will take the trouble to look back to Chapter I., where we entered into the combination of climatic, social, and individual conditions, the operation of which has resulted in the frightful prevalence of tubercle and scrofula in England, he will observe the conditions to be the very opposite of those which obtain in Australia. Thus the southern and western coast of England, which affords the best representative type of its climate, is moist, cloudy, and relaxing; while that of Victoria is dry, sunny, and stimulating. Both, indeed, are ozoniferous; but in the former the characteristic action of this vital agent is almost nullified by reason of the air being usually saturated with the steaming vapours of the Gulf-stream, which we have shown to be an

* Pickford on Hygiene, p. 216: Churchill, 1858.

unnatural condition of the atmosphere in that latitude ; while, in the latter, the ozone is simply guarded and prevented from acting as an irritant by the prevalence with it of the *normal* oceanic influences of the latitude. Again, as regards the social condition of the mass of the people. The gains of handicraftsmen of all classes are twice or three times greater in Victoria, on an average, than in England, while working hours are less, and animal food is half the price. For this reason, and that the dry stimulating air hastens all the vital processes, but especially secretion and excretion, a larger proportion of food is consumed here by each individual than in any part of Europe, and is more readily converted into healthy blood, which is the great end of all means for the prevention or cure of the tubercular cachexy. The prevalence of fine weather, and the national and individual prosperity so evident in this colony, give rise to a large number of public holidays—a taste for, and the means of obtaining, out-door amusements of all kinds—which conduce, both by physical and mental means, to prevent that tendency to congestion of internal organs which is favoured by a dull dark damp climate. The most casual observer from England notices the gaiety and liveliness of the population of Melbourne, as compared with that of large towns at home.

A good example of the manner in which the climate and habits of life in Australian towns reverse the conditions which are common predisposing causes of tubercle at home, is seen in the case of female household servants. Of all classes in London, Dr. Cotton found that consumption occurred most commonly in

persons following this occupation, the main physical agent being that the poor women pass the greater part of their time in kitchens or rooms below the level of the street, lighted from an area, so that, in the dim atmosphere of a London winter, gas is necessary nearly all day. The inevitable consequence is an etiolation similar to that of a plant growing in a cellar, light and air being equally necessary to the existence of both. But in an Australian town excavated rooms are unknown, and each occupant of the house has an equal share of pure air and sunlight, whilst, for at least ten months out of the year, doors and windows are wide open.

In short, there is no mystery about the matter. We need call in no special or peculiar specific agency in the Australian air to account for our low mortality from consumption. The simple reason is, that here the plain ordinary elements of health — air, oxygen, light, exercise, nourishing food—have more opportunity of exhibiting their normal operation on masses of the population than they have in England.

We saw that the fatal seasons of the year were the reverse of those in Europe, and how this resulted from climatic causes—the zymotic or miasmatic class being the most fatal with us, and influencing principally the infant mortality. In the warm half of the year, when the temperature is, on a monthly average, about 65° Fahr., the ratio of deaths amongst infants is six times as great as it is in the cool half of the year, when the monthly temperature is about 53°. And this prevalence of miasmatic disease in Melbourne is a simple result of the absence of any system of drainage in so

large a city; it is only the dryness and ozoniferous character of the air that prevents such disease becoming a perfect plague. The hot winds, from their powerful desiccating influence, do us good service in this respect; zymotic disease is always most prevalent when they are below the average in frequency and duration. In any European climate (except some parts of Spain), with a moderately warm temperature, endemic disease of the most virulent type would be the inevitable result of a saturation of the soil with sewage matter like that which occurs in Melbourne. An efficient system of drainage would lower our mortality, both amongst young and old, by at least one-third. It is easy to see how unnatural miasmatic disease is to this climate, for endemic disease arising from natural causes—such as marsh poison—ague or intermittent fever of any kind produced by the decomposition of vegetable matter, is absolutely unknown in all the southern and western districts of Victoria. This is due to the absence of large rivers and the persistence of the foliage; but most particularly to the dryness and highly ozoniferous properties of the air. The inflammable nature of the leaves and wood of the eucalypti or gum trees, too, which form the mass of the Australian forests, give rise to frequent bush-fires, which soon devour fallen trees and decaying vegetable matter on the ground.

A great proportion of the mortality in children under five years is due to over-stuffing with animal food. If a teething child of two years old eats meat three times a day (as is a common practice amongst the lower classes), it is hardly fair to blame the hot wind if he dies of

dysentery or gastric fever. This very cheapness of food, which ought to be, and is, in some respects, such a blessing to our population, may readily be made the exciting cause of disease.

Acute inflammatory dysentery in adults, which used a few years ago to be a common and fatal disease, is not often seen now, especially in Melbourne, as the water supply is now plentiful and comparatively pure. Languid or atonic dyspepsia, so common in England, is very rare here. On the other hand, irritable dyspepsia is not unfrequent, both as a distinct affection and as a complication to other diseases; and inflammatory affections of the abdominal viscera in general are more often met with. Hepatic inflammation and congestion are far less common than might be expected from a casual glance at the high temperature in summer. There is a remarkable deficiency in the *chronic* induration of the liver and kidneys, caused by excessive spirit-drinking, though this practice is as prevalent as it is in Scotland. The pale flabby faces, and dropsical abdomen and legs, which meet the eye on every side in the wards of a London Hospital, are here, to say the least, not common. The prejudicial effects of alcohol seem to expend themselves, first, either on the stomach itself, causing gastritis, or less commonly acute hepatitis, or at once to attack the nervous system, and cause inflammatory disease of the brain, 'red softening,' delirium tremens, or mania. This is doubtless due to the mechanical influence of the dry ozoniferous air in increasing pulmonary and cutaneous exhalation, and thus rapidly getting rid of a volatile foreign element, such as alcohol, from the blood, before it has time to injure the less

delicate portions of the organism. In the same way I have noticed that, during great part of the year, more chloroform is required to produce anæsthesia than in England, even in children. If a chronic tippler in Australia escapes those more violent affections of the nervous system, which either kill him at once or cause him to be put under restraint, the constant absorption of hydrocarbon, coupled with the rapid assimilation of animal food resulting from the stimulant nature of the climate, induces in his blood an unnatural condition of hypernutrition, somewhat analogous to that of gout. This, like 'vaulting ambition that o'erleaps itself,' often takes the form of a degeneration of tissue, not heterologous, like tubercle, but analogous, like fatty degeneration—a misguided and perverted form of assimilation, but one resulting from a *plus* rather than a *minus* condition of the normal elements of nutrition in the blood. Fatty accumulation about the heart, and fatty degeneration of its fibre, is a very common disease, so is aneurism, and 'aortic insufficiency;' aortitis, and even cases of general idiopathic arteritis are also sometimes met with.* Simple valvular disease, either of the mitral or aortic orifices, of gradual production, unconnected with acute rheumatism, are often met with. Sanguineous apoplexy, white softening, and embolism, are more common than in England. So, also, fatty degeneration of the tissue of the liver, unconnected with the scrofulous diathesis, is the result of causes that would produce cirrhosis in England. It must be understood that our summer heat, though great for the time, is not often

* See case reported in the *Australian Medical Journal*, April 1863, in the Melbourne Hospital, under the care of Dr. Motherwell.

sufficiently prolonged to produce the acute hepatic inflammations, or engorgements, that are so common in India.

Rheumatism, and the lithic acid diathesis, are more common; oxaluria, and the class of chronic diseases of the kidney, characterised by albumen in the urine, less common than in Europe.

The *course* of disease also undergoes modification in this climate. Febrile affections have a more rapid course;* suppuration, or resolution of inflamed tissue, takes place sooner; wounds, ulcers, and broken bones heal, as a rule, more rapidly; constitutional gangrene, or sloughing, are uncommon; and disease in general has, at first, a more dynamic type than at home. In all complaints of an acute nature, the patient changes rapidly for better or worse; convalescence or fatal exhaustion are frequently (especially in children) a matter of a few hours. In the same way children grow very fast, and are early developed into men and women; while to the old and debilitated Europeans the climate acts as a powerful restorative, and they often appear to take a new lease of life. Sterility is often cured by a residence in Australia; persons who have been long married in England without having any family, frequently find themselves surrounded by young olive-branches in a few years after they have arrived in the colony. The same has been remarked in Algeria, and the Cape, where the climate is somewhat analogous.

Such are the main characteristics of the influences of

* The disease known as 'Colonial Fever' appears to be the ordinary non-contagious continued fever of European climates, more or less modified by local conditions.

antipodal climates of the temperate zone on the life, health, and disease of the European resident. The reader must bear in mind that we have now been more particularly instancing the climate of Victoria, which, in all respects, may be regarded as a medium type of the Australasian colonies, and therefore more fitted for the purpose of our illustration. The other colonies, though all partaking of the distinctive antipodal type, have each their peculiarities, which must be considered separately in the next chapter on the influence of these climates on the course of pulmonary consumption.

To the pathologist, the statist, and the political economist, the contrast of the conditions under which the colonial population and those of Europe live and die, is very strongly marked. In the latter, the two prominent forms of disease and causes of death—scrofula and tubercle as a constitutional, and inflammatory affection of the lungs as a local agency—are, considered in the mass, difficult or impossible to control, since the first take their rise in matters which nothing short of a complete social revolution could influence; and, as happens also with the second, are greatly dependent on the climate, both for predisposing and exciting causes. In Australia, on the other hand, zymotic disease takes the place of these, and such complaints may be controlled, or even prevented, both in the mass of the population and in individual families, by sanitary and hygienic measures. It is a question simply of money and trouble. The efficient drainage of Melbourne would at once do away with five-sixths of the disease from which so many children die, just as the Yan Yean water supply has removed the main source of dysentery and epidemic

diarrhoea in adults—the drinking of river water loaded with vegetable matter and contaminated with the sewage of the city. A high temperature is a predisposing, not an exciting cause of disease of this class. In short, the characteristic feature of disease in England is, that its causes are too deeply rooted to be much influenced by sanitary measures, while in Australia the chief causes of death may be obviated or controlled.

CHAPTER III.

ON THE METHOD OF UTILISING THE PECULIARITIES OF ANTI-
 PODAL CLIMATES FOR THE PREVENTION OR ARREST OF THE
 EARLY STAGES OF CONSUMPTION CONTRACTED IN EUROPE, AND
 ON THE ADAPTATION OF VARIOUS LOCALITIES TO THE DIFFERENT
 PHASES OF PULMONARY COMPLICATION IN ITS MORE ADVANCED
 STAGES.

THE statistics which we introduced in the last chapter sufficiently prove the action of the Australian climate as a *preventive* to the developement of consumption. We must now consider the manner in which it influences the course of the disease when actually established. And first, it will be well to describe the characteristic modification of the disease as it is induced here. We have seen that about seven per cent. of the mortality in Victoria is from consumption; of the persons who died from this cause (so far as I have been able to ascertain), not more than three-fifths contracted their illness in the colony, and the remainder arrived here in various stages of the disease, more or less advanced.

Consumption induced in Australia is perhaps more modified—as regards its causes, symptoms, and course—by the climate, and the social condition of the people, than any of the other diseases we have described. And first, as regards causes. It is, in nine cases out of ten, the obvious result or crisis of some prolonged exhaustion

of the physical or nervous powers, particularly in those whose livers have been reduced to the friable state of fatty degeneration, which is a constant effect of continual spirit-drinking in this colony. Excessive labour and excitement at the diggings—prolonged exposure and privation in the bush, succeeded by a period of dissipation and excess in town—sudden loss of fortune in mercantile life—such are the most frequent causes of consumption in this climate. Of 40 cases contracted in the colony, which have come under my own care during the last 10 months (27 males and 13 females), the disease was in 19 (two of them only females) distinctly caused by either prolonged exposure to wet and privation in the bush, or excessive spirit-drinking, or both. There are here a very small proportion of those cases so common in Europe, where tubercle is slowly and insidiously developed, and deposited in the lung without any obvious exciting cause. Thirteen of the forty had more or less hereditary title to consumption, about the same proportion that the English statistics show.

The *course* and *symptoms* of consumption are greatly modified in this colony, as we might anticipate from what we have seen of the modification of other disease by the stimulant characters of the climate. Occasionally in England cases are met with, where, under peculiar circumstances which suddenly depress the vital powers, tubercle departs from its usual rule of selecting the upper lobes of the lungs especially for its first place of deposit, and is effused indiscriminately over their substance, or perhaps rather the middle and lower lobes seem to be more particularly obnoxious. Such may be

the course of tubercle as a sequela of fever, or other exhausting disease, in a person of consumptive family, or in a young debauchee, or a romantic imaginative girl on the death or desertion of her lover. In this country, the combination of peculiar social conditions, and the stimulant influences of the climate, produce, in a large proportion of cases where exhausting excesses have been both the predisposing and exciting cause, an analogous state of things; and consumption takes the form of an acute inflammatory degeneration of the lung substance generally, which rapidly breaks down into cavities—the patient emaciates visibly, almost from hour to hour. It is evident from the first that no remedial measures can check the progress of the disease, which terminates in death in five, four, or even three weeks. This is a crucial example. The rule is, that tubercle is less constant to its normal place of first selection, the upper lobes, in this climate; and we know, that when this is the case its course is always more rapid. Three-fifths of the cases of phthisis here are in constitutions broken by previous excess of some kind, which would almost of itself be sufficient to account for the greater rapidity of its course, without taking into consideration the stimulating effects of the climate. Ordinary cases, induced by sedentary employment, in persons hereditarily predisposed, follow much the same course that they do in England; but such are comparatively rare, for the reasons mentioned in the last chapter. In men, almost all have the complication of chronic disorder of the liver of some kind or other. Hæmoptysis is more common in connection with tubercle than in England, and more commonly takes the form of

active hæmorrhage from the lungs. Valvular heart disease is a more common accompaniment of phthisis here than at home. Dr. Cotton found organic disease of the heart in but three out of 1,000 cases, while the same number occurred in the forty cases I have cited. And these are seldom the common cases resulting from endocarditis in rheumatic fever, but a result of a degeneration of tissue analogous to atheroma, of gradual and insidious progress, which usually attacks the large vessels, particularly the aorta, lessening its normal elasticity, and interfering with the action of the valves. This condition may possibly be associated with tubercle, when the exciting causes of the latter suddenly attack a person whose liver and arteries have for some time been assuming the former condition, a combination of disease that I never heard of in Europe.* In fact, this peculiar degeneration of tissue, to which the liver, the

* Not long since I examined a man who had an unmistakeable aneurism of the aorta, and also the characteristic sounds of tubercle in several parts of the lung. In the note book of the resident medical officer of the Benevolent Asylum (Mr. Cooper) I find the following case:—E. N. æt 46, male, of intemperate habits, has lived in the colony since 1841. Admitted October 24, 1861. Is paralysed on the right side, with much muscular atrophy. Has cavernous breathing and pectoriloquy under left clavicle. Heart's impulse much increased, but no audible bruit. The paralysis has existed two years, but his general health was good till a year ago, when he was seized with dyspnœa, hæmoptysis, and cough, which have since been increasing. Died on June 18, 1862, after profuse hæmoptysis.

P.M.—Dura mater adherent and much thickened. Brain substance much congested, especially on left side. No fluid in the ventricles.

Left lung much infiltrated with tubercle, and a large cavity at the apex. Right lung almost destroyed. A large aneurism of the arch of the aorta. (See Appendix.)

heart, and the middle coat of the arteries seem to be particularly obnoxious, is, so far as I know, more common as a distinct disease in these colonies than in any other part of the world. It has characters partaking both of the nature of atheroma and of what is called fatty degeneration, but has peculiarities distinct from either of these, one of the most remarkable of which is that it is not confined to persons of middle age, or that subsequent to the grand climacteric, as in Europe; nor is it commonly associated with the gouty diathesis. This is a subject well worthy of careful pathological investigation, but one into which we cannot now enter further than as an illustration of my proposition in the first chapter, with regard to the requirements of a climate which can be expected to have a curative influence in early consumption. We there proposed that the first thing needful in such a climate is, that it should have a powerfully alterative effect upon the constitution, so as to antagonise or counteract the state of things under which the disease appeared, and thus to become a most valuable branch of the rational treatment of tuberculosis as a disease of the blood; and that with this, but as a secondary requirement, such a climate should have the minor advantages of suitability to the various phases of local pulmonary irritation. Let us now see how far our description of the Australian climates, as typified in that of Victoria, fulfils these requisitions.

We have found that it has an influence either identical with, or analogous to, all the four circumstances which are known to have a controlling influence over the developement of tubercle—that its air has the purity and ozoniferous character of the air of mid-ocean, out

of reach of the disturbing and damp-laden influences of the Gulf-stream—and also the ozonic, stimulating, exhilarating properties of mountain air, without its coldness and attenuation; that it has restorative effects on constitutions broken by age or chronic disease, analogous to those of opium or alcohol, and that altogether the climate presents a contrast to that of the northern hemisphere, but most remarkably to that of countries under the influence of the Gulf-stream. We saw that the climate is well suited to all varieties of immigrant organic life, and particularly those of corresponding latitudes in the northern hemisphere, which all thrive better here than there—that as regards the human species, his mortality is lower, his increase more rapid, than in Europe. That the most fatal diseases are the result of sanitary neglect or individual excess, and that the unavoidable sources of mortality are reduced to a minimum by the exceeding salubrity of the climate.

We saw that the *type* of disease in general is altered here in a way readily to be accounted for by the stimulating characters of the air. That the statistics of the colony show a remarkable deficiency in the mortality from all forms of scrofula and tubercle, in spite of the fact that by age and sex the population is highly predisposed to pulmonary consumption; but that another form of constitutional disease, atheroma or fatty degeneration, is very common; and we know that such disease may be, and often is, a result of excess rather than deficiency of assimilable material in the blood, which is a reversal of the conditions under which tubercle is developed. That though the altered social

condition of the population may conduce to this, the main agent in effecting our immunity from tubercle is the ozonic and dry character of the air, which hastens and perfects the assimilation of food and the secreting processes generally, while the depuration of the blood by excretion is also facilitated. So much for the first requisition. As regards the second, we found that the climate of Victoria has advantages possessed by no European country—that while it is warmer than Nice or Naples in winter (or, indeed, than any part of Europe except the extreme south), it is far cooler than these places in summer, having *a smaller mean annual range at a warm level* than any locality to which invalids are usually sent. We saw, too, that the occasional extremes of heat and sudden fall in the temperature are not, from the dryness of the air, so prejudicial as might be expected, for that the mortality from lung diseases as a class is very low. When we come to notice various localities in this and the other colonies, we shall see that these alternations of temperature are confined to the coast, and may readily be avoided by an invalid; and that the different varieties of climate suitable to the different phases of pulmonary irritation—the dry, the moist, the tonic, the soothing, the exciting, the relaxing—are readily accessible.

Having convinced ourselves that the change to an antipodal climate has for these reasons a *primâ facie* probability of doing more towards the arrest of the progress of consumption than we could obtain by any other means, we must now consider more in detail its operation on the different phases of that disease.

We saw in the earlier part of this work that there

are two great classes into which consumptive patients may be divided, relating to the origin of their illness. *First*, those in whom the consumptive tendency or diathesis is inherited from their parents, in whom exciting causes only serve to vivify the germs of disease pre-existent in their blood. *Second*, those who have no such inherited tendency, and in whom the disease has been created by obvious causes, which may be identical with those which act as excitants to the former class. We also saw that, from the constant working and propagation of these sources of disease, the tuberculous diathesis has become (so to speak) endemic in the British Islands, so that the second class of individuals who have not a more or less direct inherited title to consumption is comparatively small. But we must now draw the line in a different direction, and divide the consumptive family, whether inherited or induced, into groups, characterised by the manner in which the tuberculous state of blood affects the system at large. In all cases (excepting accidents from without), these individual phases will follow a certain rule connected with the patient's constitutional type, for tubercle, whether inherited or acquired, appears in all types of constitution. For instance, the sanguine or nervous temperaments are frequently the subjects of tubercle, and their progeny have usually, when intermarriage has intensified the type, such distinguishing characters that they have established a *diathesis*, or habit of body so liable to consumption, that the popular opinion in England associates consumption almost exclusively with it. This type, in its crucial developement from the intermarriage of two or more generations of this temperament, par-

ticularly if they are allied in blood, has usually remarkable beauty of person and brilliancy of intellect—a 'thorough-bred' look, which in our national pride we associate with the British aristocracy, but which now is only too often seen in all ranks of society. Such persons have slender, graceful figures, with long neck and limbs; but narrow chest, harmonious and delicate features, full and expressive eyes, thin skin, rapid circulation, large arteries, fine and luxuriant hair (brown or auburn), brilliant teeth, delicate filbert nails, and small hands and feet. They have usually brilliant and versatile minds, all their senses are highly developed, and they almost always have a high appreciation of the fine arts. They are in fact amiable and admirable, and, as the event always shows, are 'too good to live.' Such typical examples of inherited tuberculosis in a nervous or nervo-sanguineous temperament always follow the same course, and exhibit the same symptoms and the same kind of complication. When the temperament is less decided, or the inherited tendency less perfect or non-existent, the disease being induced the symptoms are less regular; but the tendency in all such patients is for consumption to have a rapid course, to be attended with febrile symptoms, and for its main complication to consist in active irritability of the gastro-pulmonary mucous membrane. It is not difficult to prophesy the course and phases of such cases; the delay or hastening of the different stages being dependent on the manner in which they are treated, or the absence or presence of any physical or mental depressing agency. First, while tubercle is floating undeposited in the blood, loss of appetite, irregularity of the bowels, acid dyspepsia,

irregular distribution of blood over the whole body, causing palpitation, headaches, flushing, fainting, coldness of the hands and feet, menorrhagia, or amenorrhœa, more commonly the former. Some slight accidental occurrence, such as a chill to the surface, determines this tendency to local congestion to one or other lung, and tubercle is deposited. This at once acts as a source both of local and constitutional irritation—the delicate membrane of the air-cells resents the presence of the foreign matter, more blood is drawn to the part, the pulse rises, and the patient gets hectic and irritative fever. He has active congestion of that part of the lung in the neighbourhood of the recently effused tubercle. If now, as is probable, either a minute blood-vessel gives way, or a copious oozing takes place from the mucous membrane, the gorged portion of the lung is relieved, and the tubercle *may* not cause further irritation for the time (if meddling medicine has not interfered with astringents), as the mass of the blood is comparatively healthy. But on some other occasion the same cause, or an analogous one, produces a similar effect; this time, probably, the tubercle is more gradually deposited, the remedial hæmorrhage does not take place, a permanent source of pulmonary irritation is established, a permanent rise in the pulse, habitual cough, periodic hectic, and perspiration. As the tubercle softens emaciation is rapid; the cough is a harsh, teasing, irritable spasm, easily excited by change of temperature, and especially by a dry, cold atmosphere; the stomach is irritable, and apt to secrete undue acid; the tongue red and clean; and the patient is teased by diarrhœa. In short, mucous irritability is the distin-

guishing feature in consumptive persons of the nervous or sanguineous temperament, whether inherited or acquired.

On the other hand, in the bilious or in the phlegmatic temperament, the course of consumption is very different. The former have usually powerful frames, coarse dark hair, harsh features, and large blood-vessels. Their minds are mostly active and persevering; they are deep thinkers, deliberate actors, strong friends, good haters. Tubercle is not so often inherited as acquired in this temperament. But the phlegmatic or lymphatic temperament is often the subject of consumption, and contrasts the most decidedly with the sanguine or nervous. Here we find fair hair, light eyes, clumsy figure, heavy meaningless features, small blood-vessels, languid circulation, and a torpid obtuse mind—a constitution but little subject to external impressions. In such persons the effusion of tubercle into the lung need be attended with little or no disturbance, either local or constitutional. In a large girls' school in England there are always two or three examples of this leuco-phlegmatic temperament—stoutish flabby young ladies, with pale waxy faces—blue eyes, with whitish eyelashes—and indefinite brown, or towey coloured hair. They usually arrive at the age of seventeen or eighteen before they have any claim to womanhood, and are decidedly heavy and thick-skinned, both in body and mind. In such constitutions the deposit of tubercle may go on so insidiously, and cause so few symptoms, that until the chest is auscultated it may never be suspected, for they often neither cough nor emaciate. The first symptoms are commonly languid dyspepsia, with

constipated bowels, and pain and oppression after food, the tongue being large, pale, and flabby, with headache, listlessness, and dislike to exertion. If hæmoptysis occurs it is passive venous oozing from pressure of tubercle on one of the bronchial veins, and the pulse seldom rises till late in the disease. As tubercle softens, which it need not do till a large portion of lung is infiltrated, the cough becomes loose and hollow, with copious expectoration, but the bronchial mucous membrane is seldom very impressionable to changes in the air. The complications of such cases are atonic dyspepsia, passive congestion of internal organs, enlargement of the liver, constipation, and dropsy.

The bilious temperament has these characters in the course of consumption in a less marked form.*

But it is obvious that a large section of the Anglo-Saxon race cannot be classed under any of these heads, for there are many individuals whose temperament is complex or totally undefined. In such there is no rule by which we can prognose the effects and course of tubercle: it will follow the idiosyncrasy or individual peculiarity of the patient.

For several reasons it is advisable that an invalid, who decides on undertaking a journey to the antipodes in search of health, should prefer the voyage round the Cape of Good Hope to the "overland route" by way of Suez and Galle. He will thus avoid the fatigue,

* The scrofulous diathesis follows similar types with the tuberculous. It is useless to attempt to draw distinctions between them, for they are to all intents and purposes identical. Their only distinguishing point is that in the former the glands, bones, and skin are more liable to become diseased than in the latter, which circumstance frequently saves the lungs from attack, at least for a time.

bustle, and excitement of a crowded steamer, and the heat in the Red Sea, which is very great at all times of the year. But the principal advantage of the former route is, that by the regular life on shipboard in a long uninterrupted voyage on the open ocean, through regions where he is exposed to no extremes of temperature, the patient is best prepared to take advantage of the influences of the antipodal climate, into the peculiarities of which he is thus gradually initiated.

All writers have agreed in the striking benefit that may be derived from a long sea voyage in the early stages of consumption, but they usually qualify their praise by referring to the 'discomforts of ship life,' narrow cabins, confined air, and so on. But at the present day, in Messrs. Green's, or Wigram's Australian packets, sailing from London, an invalid may be as comfortable as in his own home. The first class cabins are spacious and lofty, and each has a window three feet square. The table is kept in the style of a first class hotel, and to such perfection has the art of preserving fresh vegetables attained at the present day, that one fares as well in mid-ocean as in port.

The best time to sail from England is in October or November. All these ships call at Plymouth, and by embarking there a moderately fair wind carries one into warm weather in three or four days, and winter is left behind. There is less rough weather and less danger of shipwreck on the Australian voyage than on any other, as is proved by the low rate of insurance. Once clear of the Channel, half of whose miseries are avoided by embarking at Plymouth, the chances are that the outside ports will not need to be closed till the

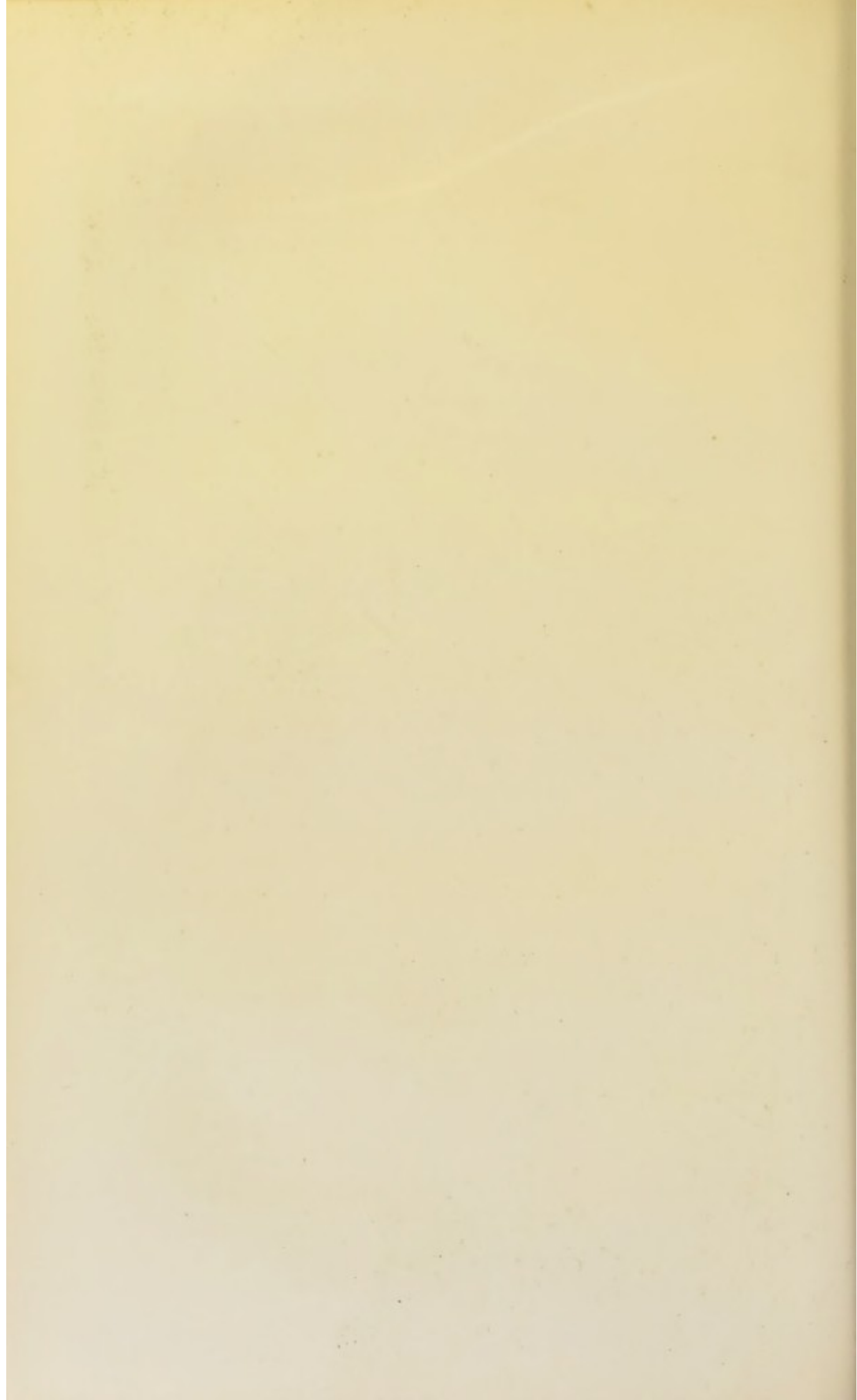
ship is off the Cape of Good Hope, and possibly not during the whole voyage. Madeira is passed on the fifth or sixth day, then the Peak of Teneriffe, like a white cloud on the horizon, and soon afterwards the ship is running before the north-east 'trades,' with brilliant skies, cool delicious breezes, and a uniform temperature of 70° to 75° day and night. Everyone spends his time on deck, and the ship and all she carries subside into a state of dreamy, delicious, indolent monotony, which is most pleasureable to one tired and worn out with the worry and turmoil of the great world. The invalid lies on the sofa in his cabin before the open window, the soft balmy breeze blowing gently in upon him, neither too hot nor too cold, but the happy medium of temperature. He is content to do nothing but enjoy the sensation of living, and to listen to the little wavelets lapping against the ship's side, or to watch the bonita as he startles from the sea coveys of flying-fish, glittering in the sun like streams of rubies and emeralds. Modern navigators know well where it is best to cross the line in order to avoid calms, so that ships are seldom delayed more than a day or two on the equator, and frequently not at all. The thermometer rarely rises above 80° , and the south-east 'trades' are soon entered. The Australian liners do not now go further south than 43° or 44° , so that on the outward voyage but little cold weather is experienced. There is usually a gale or two in rounding the Cape of Good Hope, and the traveller sees such ocean waves as are met with in no other part of the globe; but, from their great length, the ship's motion in running before them is gradual and easy. It is by this time December or January, the Midsummer



S.D.B. Decr 1861.

SOUTHWARD BOUND, OFF TENERIFFE.

Hambart, lith



of the southern hemisphere, so that the average temperature is about 60° or 65° all the time that the ship is making her easting. Then by degrees she turns northward, the weather gets warmer again, and land is sighted about the seventieth or seventy-fifth day from leaving Plymouth. In two voyages to Australia the thermometer in my cabin never rose above 80° , and never sank below 56° , nor was there any calm of more than twenty-four hours' duration. Those who have never been in 'blue water' can hardly understand that a ship often sails for days and even weeks together without sufficient motion to spill the wine in one's glass at dinner.

There are but few cases of consumption in any stage to which a long voyage in a comfortable ship will not be strikingly beneficial, and more especially to those which approach more or less to the first type of the consumptive diathesis—patients who are rapidly wasting, with quick circulation, irritable mucous membranes, and a tendency to active congestion and hæmoptysis.

The first effect of a sea life on such patients is that the circulation is tranquillised, the pulse steadily decreases in frequency, and with it the irritability of the bronchial membrane, while any tendency to diarrhœa is sure to be checked; and this beneficial sedative influence on the system is not purchased at the expense of that languor and relaxation of fibre which accompanies it at Pau or in South Devon, for after the patient gets accustomed to the movement of the ship, he finds his appetite and digestion returning to their natural standard, and in a fortnight or three weeks he visibly gains flesh. Habitual hæmoptysis is almost inevitably

checked by a sea life, and a little sea-sickness does no harm. By the time the ship reaches the equator the probability is that the cough has almost disappeared, and with it other intercurrent symptoms, such as night sweats, hectic palpitation, and so on.

Such is the usual effect of a sea voyage on the early stage of consumption in the sanguineous or allied temperaments, or in most of those undefined cases which have resulted from over-work, anxiety, grief, or such-like depressing emotions. Eight or ten cases of this class have come under my own observation on ship-board. All of them improved more or less during the voyage, gained weight, and lost the severity of their prominent symptoms. Several of those in whom the disease had not advanced beyond the first stage gained as much as 20 and 25 lbs. in weight before arriving in Australia.

In the bilious or lymphatic temperament the good effect of a sea voyage, though not usually so palpable and obvious, is perhaps more lasting. To such persons sea sickness in moderation is decidedly beneficial. It relieves the venous congestion both of the thoracic and abdominal viscera, which is with them a constant feature, and rouses the circulation generally.

In fact, we may conclude that there is no case, at least of incipient consumption, to which an Australian voyage will not do positive good of itself, apart from its usefulness as a stepping-stone, or preparative to the more decidedly curative influence awaiting the patient at its termination. Inflammatory complications are hardly ever heard of in chest cases at sea: the great temptation is to eat too much, and to take too little exercise.

So we may take it for granted that this, our first step in the adoption of an antipodal climate as a curative agent in the first stages of consumption—the voyage out—will of itself be productive of benefit to the patient, whom we will now follow on shore in Victoria.

The ship approaches Port Phillip Heads, and after being tossed about for a time in the 'Rip,' glides into the still waters of this great land-locked gulf. It is the end of January, and the prevailing cool southerly or westerly breeze soon brings her towards Hobson's Bay, the glittering white-walled suburbs of Brighton and St. Kilda are passed, and, as the sun sets behind Station Peak, she anchors amongst a crowd of other vessels off Sandridge. The voyage is over, and our traveller is at last in Australia. But it is very difficult at first to realise that the whole mass of the globe separates him from England. By the last rays of sunset he sees the distant spires of Melbourne against the dark background of Mount Macedon, and in the still cool evening air he can hear the familiar sound of the church bells and the rumble of the trains as they converge from all sides into the metropolis of the southern hemisphere. Lines of gas lamps appear on all sides on shore. The passengers, in high spirits, are collecting their luggage ready for landing the first thing in the morning, and listening in eager groups to the advice of some old colonist as to their plans and prospects on shore. And now the great Australian moon rises behind the tree-topped Dandenong Ranges, with a brilliancy unknown even in the tropics—the groups on deck begin to break up and go below—and soon the ship is quiet for the night. But by sunrise the sailors are at work,

the anchor is lifted, and before the passengers are well awake they find themselves alongside the Sandridge railway pier.

I cannot give my reader a better idea of the ordinary effect of the climate on a new-comer than by quoting from the journal of a friend, who arrived in Australia several years ago, having left England with softening tubercles in the lungs* :—‘It was a regular Australian day when I first landed. Having breakfasted on board ship, the train set me down in ten minutes in Melbourne, when I got into a hansom, and drove about the streets to take my first impressions of colonial life. The pale blue sky was cloudless, a gentle north wind was blowing. I knew that it must be very hot, though I did not feel it so, for the air had an indescribably exhilarating effect upon me, which, together with the excitement and novelty of the scene after the uniformity of ship life, was very enjoyable. And besides his bodily sensations, no Englishman can see Melbourne for the first time without a glow of pride at the energy and enterprise of his race. It is almost as difficult to realise as a dream or a fairy tale that this great city, with its crowded streets, its banks, and shops, and theatres, and churches—the richest and most populous of our great colonial empire—is the growth of a mere day as regards our European notions of the age of cities. Twelve years ago Melbourne was an insignificant provincial town of New South Wales, and thirty years ago the site of its busiest streets was virgin forest, whose solitudes

* This gentleman is now in Australia, engaged actively in business, and enjoying excellent health.

were rarely disturbed even by the corroboree of the aboriginal savage.

‘ Having driven or walked about the streets for several hours, I began towards mid-day to feel very hungry, a sort of carnivorous hunger, a sensation of the faculty of almost unlimited digestive powers, unknown since my school-boy days, which outdid even my appetite at sea. I went into the Café de Paris and eat a hearty luncheon of (I am afraid to say how much) solid meat; so much so, that I was almost ashamed to look the waiter in the face, for I felt, after paying my score, that I could eat another slice with great gusto, if no one was by. In short, I got up from table with what till then I should have considered a very good appetite. A thermometer hung near the door, which, to my exceeding surprise, stood at 90°; but so far from feeling the indolence or oppression which a large meal in the middle of the day in England would have caused (especially in hot weather), I rode on horseback about the suburbs all the afternoon, and eat a hearty dinner in the evening.’

This is not an exaggerated picture of the first effect of the pure warm dry invigorating air of continental Australia upon the new-comer, especially if he be a convalescent. I reproduce the quotation as it was written, under the excitement, not only of seeing for the first time a new world, but of feeling the possession of a new lease of life—of the consciousness that one’s *vis medicatrix naturæ* has now at last fair play, and can nullify the terrible sentence of the stethoscope.

Such, then, is usually the first effect of the climate of continental Australia in its temperate regions on the

new-comer—an increased appetite for food, with a rapid and efficient digestion, assimilation, and excretion—a sensation of high spirits and a desire for muscular exertion. It will be at once evident to my reader that to any form of tuberculosis in a temperament allied to the bilious or lymphatic, or in one of no decided peculiarity, such as are a very large section of the Anglo-Saxon race, such climatic influences cannot but be in the highest degree favourable to the attainment of the end we have in view, namely, the absorption of all the absorbable elements of already effused tubercle, and the substitution of a highly vitalised circulating ‘pabulum of the tissues’ for that elaborated under conditions which resulted in the formation of the morbid element and its consequent deposit in the lung. In fact, all cases of incipient consumption, not particularly characterised by irritability of the mucous membranes, have the greatest possible likelihood of throwing off the morbid tendency by the combined effects of the sea voyage and the Australian climate. Of course, such persons must not at once jump to the conclusion that they are cured, and indulge in excesses of all kinds on landing, as many are apt to do, or they will bring on hepatic congestion, and possibly light up again the old mischief in their lungs; and then find that what was at first a curative influence now turns the scale against them, for such powerful tonics are not to be trifled with. But the experience of medical men in this country shows, that if such persons are content to use this new power of enjoyment of their animal functions without abusing it, there is no reason why the good effects of their antipodal journey should not be made permanent.

Apart from their temperament, all individuals have a certain amount of peculiarity or idiosyncrasy with regard to temperature, concerning which no one can judge so well as themselves. There are some to whom a continuous breathing of warm dry air acts as a stimulus, and who feel depressed by any fall in the temperature, even by the cool southerly breezes at Port Phillip in summer, which to another are invigorating and refreshing. Such should choose a residence a few miles inland, by which it is easy to avoid the sudden changes of temperature to which the coast is subject.

But, in the great majority of cases, experience shows that these occasional falls in the thermometer at Melbourne and its neighbourhood are not productive of pulmonary irritation, and in early cases, at all events, need not be deprecated. Indeed, in England, we have accustomed ourselves to give far too much importance to sudden change of temperature as a source of chest disease. In incipient consumption, at least, an absolute uniformity of temperature is no more to be desired for the well-being of the physical, than an uninterrupted course of prosperity would be for the moral, constitution. A moderate exercise of the reacting and complementary functions of the cutaneous, pulmonary, hepatic, and renal capillaries are necessary to the perfect operation of those organs, and the tone of the secreting and excreting system in general. The unvarying mild air of Madeira is as injurious to a case of early consumption in the class of temperament we are now considering (and under which head at least three-fifths of the Anglo-Saxon race may be placed) as the

comparatively excessive climates of inland continental Europe.*

We will now consider the influence of the Australian climate on those cases of early consumption which occur in individuals of the sanguineous or nervous temperament, in whom, as we have seen, the circulation is irritable, the mucous membranes morbidly sensitive and readily disposed to resent stimuli, whether direct or secondary, the disease being probably hereditary. Fortunately for our race the tubercular diathesis in its typical developement in this temperament is not common, for whether left to itself, or treated on whatsoever plan in Europe, it invariably destroys life in less than two years from the first appearance of the symptoms. Sometimes we see a whole family cut off one after the other as fast as they grow up, or occasionally one individual out of several children is made the scapegoat of the family, and seems to concentrate on himself the tuberculosis of the generation; or the diathesis may reappear in the family after skipping two or three generations, as gout sometimes does. This is often seen in the older European aristocracy, espe-

* 'A fair amount of exposure to the weather appears to me rather calculated to avert than to induce consumption. * * * * Rapid transitions and short continuance of cold and heat are comparatively inoperative.' Clinical lectures, delivered at the Brompton Hospital, by Theophilus Thompson, M.D., F.R.S., London: Churchill. See also Sir J. Clark On Climate, p. 68:—'Long residence in a very equable climate is not congenial to health, even with all the advantages of exercise in the open air. * * * * Dr. Combe, during his residence in Madeira, remarked that invalids were better when the temperature was less steady, and the weather more variable, than when the season was unusually mild and equable. * * * A long residence in very mild sheltered positions I regard as unsuitable to young persons disposed to tubercular disease.'

cially that of Spain and Austria, and in those whose intermarriages are confined to their own class. And, what makes these cases the more distressing, such persons are, almost without exception, characterised by features both physical and intellectual, which make their loss most difficult to bear. 'We may often observe in families that those members in whom the hereditary tendency is most apt to betray itself are characterised by refinement of feeling and delicacy of sentiment. Selfishness and hardness of character, with an aptitude for jostling with the world, are qualities which seem to indicate firmness of structure, and less frequently present themselves in persons susceptible of this form of disease.' *

The good die first;
 And those whose hearts are dry as summer dust
 Burn to the socket. †

Now let me ask my reader, lay or professional, in whose experience, no doubt, many such cases have occurred, has any treatment in Europe ever, in any one of them, given justifiable hope even of the arrest of the disease? Did not each case end in the same way, with only the variety of a few months' longer or shorter duration, or the greater or less prominence of some distressing complication? Was not the sum of the good effect of the most judicious treatment, carefully carried out, simply the staving off for a time of the inevitable conclusion? Did any change of climate in the northern hemisphere—Pau, Torquay, Madeira, Malaga, Algiers—ever do more than this? On the other hand, it is

* Dr. T. Thompson, *op. cit.*

† Wordsworth.

in the experience of all physicians in this country, that cases of hereditary consumption in persons of irritable sanguineous temperament, in whom the lung has actually begun to break up, not unfrequently lose all their symptoms from the effects of the voyage and a judiciously selected residence in these colonies.

It is obvious that in this class of cases, in which so much mischief may result from even a slight return of pulmonary irritation, the second branch of treatment requires more particular attention than we have yet given it. As a rule, persons in whom mucous irritation is or has been a primary feature should avoid the southern continental littoral, and prefer a residence to the north of the great dividing range, out of reach of the immediate influence of the cool sea breeze; or there may be cases in this temperament for whom the air of continental Australia is altogether too dry, and acts as an irritant on the bronchial membrane, besides giving rise to gastric irritation. To such persons the climate of the northern island of New Zealand will be more suitable. Auckland and Taranaki have as warm, but a moister and more equable, air than that of southern Victoria; and the northern coast of the middle island, especially Nelson, has one of the most delicious climates in the world, being almost as warm as Auckland, but less moist and relaxing.

But in practice it is found that there are very few cases of the early stage of consumption, in any temperament, who will find it necessary to leave the colony of Victoria. Supposing the patient to have had only the earliest symptoms of tubercular deposit, and that, as is most probable, all mucous irritability has subsided





Hanhart, 1856

MT. ABRUPT, NEAR DUNKELD, WESTERN DISTRICT.

Augst Guerd, del.

during the voyage, the general rules of hygiene are all that he need consider; and any part of these colonies which has not a permanently too high temperature will, in most cases, be suitable. Such an one, if he be wise, and can afford to make his health the first subject of consideration, will not allow himself to be delayed by the seductions of a town life, but will at once proceed to some friend's station up the country, and lead the life of an Australian squatter, whose main feature is constant employment in the open air, principally on horseback, and such a life Sydenham (who was one of the most acute observers of disease in any age) believed to be a specific for consumption, even in an English climate. The neighbourhood of the Murray or Darling will be most suitable in winter; and the picturesque valleys of Gipps' Land, or the lakes, plains, and ranges of the western district, in summer. Nor will our quondam invalid find that such a life is irksome to him. As he gallops after wild cattle, or wilder emus and kangaroos, through the grassy park-like glades of the Australian bush, breathing a pure, warm, invigorating air, which permeates like a gaseous elixir vitæ through every fibre of his frame, he feels that life, health, and vigour are in themselves sources of the highest physical enjoyment. As an enthusiastic Frenchman described his sensations in the pure ozoniferous atmosphere of a Piedmontese mountain, in the month of June: '*Le sentiment de l'existence même est une sorte d'ivresse!*'

But a theorist, or one accustomed to the local or pulmonary system of treating consumption, will accuse me of forgetting the actual disease in the lungs. So, in all probability, has the patient—if he has been at all

careful to avoid excesses in eating and drinking and over-fatigue. For all sources of pulmonary irritation from within have now been obviated. The blood is now perfectly depurated by the excretors, whose mechanical action is favoured by the pure, dry, ozoniferous air, so that the secretions and the assimilation of food are stimulated and perfected, the general capillary circulation is free and unchecked—both the *vis à tergo* of the heart, and the *vis à fronte* of the venous current, aided by muscular exertion, being facilitated and empowered. The portal circulation being stimulated by constant exercise on horseback, the liver not only secretes healthy bile for the purposes of digestion, but reduces carbonaceous matter brought to it by the vena portæ into a state of ready combustibility; and thus the respiratory function of excretion of carbonic acid and water takes place as smoothly and easily as the working of a well-regulated watch, for imperfect action of the liver is one of the commonest intrinsic causes of pulmonary congestion. At the same time, the chances of pulmonary congestion from extrinsic causes are reduced to a minimum by the warmth and dryness of the air, by which mechanical exhalation is favoured. This, and the constant and powerful actinism of the solar ray in a pure and ozoniferous atmosphere, is the cause of the remarkable restorative influence of the Australian climate on the old and debilitated. In chronic affections of the kidney this is very strongly evidenced.

In England we are accustomed to associate dryness of air with the cold, parching influence of the east wind, which, of all weathers, is known to tend most powerfully towards the production of inflammatory affections of

the respiratory organs and the kidneys; and the prevalence and fatality of such diseases in the south of France is due to this combination of dryness and cold. Cold and damp, and heat and damp, are equally hurtful in different ways, and both interfere greatly with the cutaneous and pulmonary exhalation. Warmth and dryness are, on the contrary, tonic and stimulating to the great majority of persons; and even extreme heat and dryness are not, as has been supposed, of necessity prejudicial. The only countries in the northern hemisphere whose climate has these characteristics of warmth, dryness, and stimulation, are some parts of the Spanish Peninsula, and Upper Egypt in winter. Dr. Francis makes some remarks so apposite to our present subject, and so applicable to what we have been remarking of the climate of continental Australia, that I take the liberty of reproducing them:—‘As a general rule people are fully alive to the effects which different kinds of atmosphere produce on the health. And these effects, so far as they do not depend on mere temperature, have led to the arrangement of climates under two classes—those which habitually brace and stimulate the body and raise the spirits, and those the effects of which are to relax, subdue, depress. The former seem to derive their properties chiefly from the dryness of the air, although it is somewhat doubtful if that condition alone is sufficient in all cases for their production. These are the climates which, when they are not extreme, are found to agree best with the greater number of invalids who leave England on account of their health—morbid states, in which there is more or less of general debility, when unattended with active symptoms, usually

experiencing relief under their influence. This class of climates may be termed tonic; and, like the medicines of the same name, are contra-indicated in all cases where there is anything like inflammation or irritation, or a natural susceptibility of those morbid states. It is a mistake sometimes made to infer that, because a climate is mild or hot, it is on that account relaxing. Such climates, on the contrary, so long as the air is dry, are often highly strengthening and exhilarating, even in the summer. A striking proof of this was experienced by our own party whilst riding on horseback across the sandy plains and pine forests of the maritime portions of Estremadura, the lower Beira, and the Entre Minho y Douro, in Portugal. Here the temperature very far exceeded the ordinary summer warmth of England, for the month was August; but the sky was cloudless, and all the day the dry north wind blew gently in our faces, and although we seldom passed less than ten hours daily in the saddle, and found the sleeping arrangements sufficiently uninviting, unpleasant fatigue was never the subject of complaint. One, indeed, of our number, who commenced the excursion whilst suffering from atonic dyspepsia, speedily lost all his symptoms.* Dr. Francis goes on to describe the prodigious marches made by the contending armies during the Peninsular War, which were unsurpassed by any other troops in any other country, and attributes them to the 'favourable and sustaining nature of the dry atmosphere of Spain, which allows the pulmonary and cutaneous exhalations to

* On Change of Climate, by J. T. Francis, M.D. London: Churchill, 1853, pp. 25, 26.

escape insensibly, even during periods of great activity and exertion.*

A great part of the colony of Victoria, north of the great dividing range of mountains that separate the Yarra and the Murray, have this dry warm exhilarating climate, without the sudden changes experienced south of these ranges from the effects of the sea breezes. These parts of the colony are readily accessible in a few hours from Melbourne by railway. And with these tonic and restorative properties, experience shows that in the vast majority of pulmonary cases in the early stages the air has not the irritating effect on the bronchial membrane that we have been taught in England to expect from very dry air, but rather the reverse, bronchial diseases of any kind being rare.

So much for the influences of the Australian climates in general on incipient consumption. Our next subject of consideration is this:—Are we justified in advising a patient, in whom tubercle has actually proceeded to the stage of softening or cavity in the lungs, to undertake the Australian voyage? And this, at the outset, opens a question which has been frequently discussed, namely, whether, in a disease whose tendencies we know to be so fatal, the absence from home and home comforts, and the depression of spirits suffered by an expa-

* Such instances of prolonged and excessive physical exertion without a corresponding amount of fatigue are continually seen in Australia. Last summer, a young lady, a relation of the writer, of not by any means robust frame, rode the same horse 170 miles in three consecutive days, seventy miles the first day and fifty miles each of the two following days, without any greater degree of fatigue than a day or two's rest sufficed to relieve.

triated invalid, does not do him more harm than the advantages (in themselves questionable) of foreign climates may do him good. The latest and best authorities seem to take this view,* and with considerable justice. Mental and physical influences work with each other in these matters. Thus, a patient sent to Madeira has, besides the relaxing enervating effects of the climate on his bodily frame, many circumstances which tend directly to depress his spirits and make him a hopeless melancholy being. He is shut up in a corner of a mountainous little island, near enough to England to make him continually anxious about his home and his business, and yet with communications so irregular that he seldom hears of them. His amusements, like the climate, are mild and monotonous—the same ride, the same walk, day after day, with no change; his society a few unfortunate exiles suffering from his own disease, most of whom he watches day by day growing weaker and thinner till they sink into their graves before his eyes. He can find but little to amuse him amongst the natives of the island, whose principal characteristics are bigotry, indolence, and dirt, and who themselves contract and fall victims to his complaint, as if in mockery of his hopes. Consumptive persons are very often intensely impressionable to external, moral, and intellectual influences; and cheering, hopeful conditions of the country and people amongst whom they live are matters of no small importance. Now, in Southern Italy (which is the only part of the Peninsula

* Dr. Cotton, *op. cit.*, p. 241. Also Dr. Walshe, 'Diseases of the Lungs.'

we need consider in the light of a medical climate) all that meets the eye of a person of thoughtful educated mind conduces to sadness and melancholy. The present shows nothing hopeful, the past is but a memory, and by the people themselves forgotten or unknown. A nation which has had its day, dead beyond all hope of resurrection; a government supported by foreign bayonets, which only protect to insult it. There is little trade or business, no art, no literature but in the past. There is no modern Italian author, and hardly a single painter, or sculptor, or architect, worthy of the name. Music lives, but only in the delicious Capuan seductive melodies of Donizetti, suggestive of moonlight serenades and love in idleness, or else of the depths of Borgian depravity and crime. On every hand the invalid sees ruins, telling their mournful tale of the past; and the present is brought before him by crowds of beggars, both lay and ecclesiastic, all dirty, picturesque, idle from choice, and satisfied with their idleness, having no thought of yesterday, no hope for to-morrow, but what is connected with mere sensual gratification.

The distant hills are clothed in a soft blue mist, the mild low breeze rustles through the trees, and one feels fit for nothing but to lie on the soft sward and read 'Childe Harold,' every canto of which referring to Italy tells of the depressing influences of the country and climate on the already brooding melancholy mind of the poet. The air of the whole Italian peninsula is, both in summer and winter, very relaxing and enervating, as everyone must have felt who has resided there. The following is a very graphic sketch (from Mendelssohn's 'Letters from Switzerland and Italy') of

the effects of the Italian climate on a person of northern race:— 'I felt languid, disinclined for all that was serious, in fact lazy. I lounged about all day, with a morose face, and would have preferred lying on the ground without the trouble of thinking or writing or doing anything. Then it suddenly occurred to me that the principal classes in Naples live in precisely the same manner, and that consequently the source of my depression did not spring from myself, but from the whole combination of air, climate, &c. The atmosphere is suitable for grandees, who rise late, never require to go out on foot, never think (for this is heating), sleep away a couple of hours in the afternoon on a sofa, then eat ices, and drive to the theatre at night, where again they do not find anything to think about, but simply make and receive visits.'

One not unfrequently hears the climate of Victoria compared to that of Italy, which is a decided libel on the former, through ignorance of the real characteristics of the latter. No two climates, both of which are in warm latitudes, could present a greater contrast, both in nature, and in effects on the human constitution. Melbourne is as warm as Naples, and yet the place is as busy as a bee-hive all the hottest part of the day; and this is not due only to the superior energy and business habits of the races who have colonised this country, for English or Germans resident in Italy soon acquire the indolent *dolce farniente* style of living of the natives, while, on the other hand, Italians emigrating to Australia (as they now do in considerable numbers for the cultivation of the vine) quickly lose the lazy dawdling ways that are universal to them in their own country.

How can it be expected that a climate with the general characteristics of Italy should produce that stimulant alterative effect, both on mind and body, which is necessary to arrest the formation of tubercle? Treatment by such a climate is as irrational as it would be to apply soft warm poultices to a strumous gland or joint, and to neglect the constitutional treatment necessary to counteract the taint in the system that gave rise to it. From what we know of the nature of tuberculous degeneration of tissue, such a combination of sedative influences are the least calculated to be of benefit to any case but one in which intense irritability of the mucous membranes is the leading feature, and then only for a time.

Most places on the continent of Europe resorted to by pulmonary invalids are open to many objections on the score of mental or moral prejudicial influences. Foreign manners, houses, servants, cookery, are amusing to the traveller for pleasure, but to the invalid they soon become irksome, and form serious subjects of annoyance. He is so near home that it is not worth while to take his family with him; he probably cannot speak the language of the country, and is therefore reduced to the society of any countrymen of his own who may happen to be in the place, and who may or may not assimilate with his tastes. To make a business of getting well is a most irksome occupation, nor does companionship in misfortune make it less so. To a man engaged in active business, the very fact of being but a few days distant from important matters in which he cannot participate, is in itself a constant source of worry and tantalisation.

But the rational way to look upon the matter is this:—The patient has a disease whose tendencies we know to be invariably fatal, and which is so in ninety-nine cases out of every hundred treated in Europe. Why, then, should we become parties to his self-deception in hoping for any real or permanent benefit from a treatment so utterly inadequate to the exigencies of the case as a temporary removal to another European climate? But if we wisely counsel him, when once the existence of tubercle in his lungs is detected, to lose no time with such half measures, but to undertake at once the Australian voyage, his mind is set at rest for the time. He knows that he must be absent at the least a year, and makes his arrangements accordingly; and as the good ship rushes through the sounding waves, leaning over gracefully to the influence of the fair north wind which fast bears her towards the sunny south, he leaves dear foggy old England, with all her cares and anxieties, at rest for a time in that dark bank of clouds that is rapidly sinking astern, his own reason telling him that he has adopted a means which will give him solid tangible hopes of throwing off his disease.

When he arrives at his voyage's end, he finds, besides the stimulating invigorating air, that all he sees is home-like and cheerful and enlivening. He finds a new young country, with life, vigour, and activity evident on every side, and prospects brilliant, hopeful, and *golden*. There is no past—good, bad, or indifferent—to look back upon with a melancholy interest; the present and the future are everything, and the motto is 'Advance, Australia!' No one is idle, all are busy

either at work or pleasure, and everywhere appears that spirit of energy and industry which have made Old England what she is, renewed, refreshed, and made young again by transplantation to a virgin but congenial soil.

For to live, and (if it must be) to die, amongst one's own people is no small consolation to an invalid. In health we may boast ourselves cosmopolitan, and affect to assimilate with the people of any nation with whom we may be thrown; but, in slow wasting illness, the longing for home becomes sometimes ungovernable, and after all home is not so much the *natale solum* itself as the people, the habits, the manners, which custom has associated in our minds with the old island. And in the large towns, at least, of Australia there is little besides the brilliant sky to remind the invalid that he is not actually in England. The streets, houses, shops, public buildings, have the same general characters as those of a lately built suburb of London. We walk through the same deserted streets on Sunday to the same church, and sit in the same narrow uncomfortable pew, to hear the same clergyman preach the old style of sermon, in the way we should hear it preached at Bayswater or Little Pedlington. To one who knows that he carries written on his face the mark of a disease whose very name is synonymous with death and decay, it is at least consoling to know that he will be buried decently in consecrated ground, amongst his own people, with the rites of his own church, to whatever section of the great Christian family he may belong, instead of having to be smuggled into the ground on sufferance, by strangers in a strange

land. For amusement and occupation the invalid need not want. We cannot indeed provide him with ruins or local history, and he will see very few beggars, and those not very picturesque; but the lover of natural scenery may find in these colonies lake, mountain, and glacier views, not to be surpassed in Switzerland or the Tyrol. The botanist, the geologist, and the lover of natural science in general, will find an ample and most interesting field for his congenial studies. The sportsman may hunt, shoot, and fish to his heart's content, within a home-to-dinner distance from Melbourne; and for town amusements, music, the drama, and so on, we are far better off than any city short of a capital in Europe.

We now come to the question of the *physical* adaptability of these climates for the palliation, or possibly arrest, of consumption which has already advanced to the second stage, that of softening tubercle. What we saw regarding the effects of the sea voyage on early cases applies equally (with certain limitations) to those more advanced; and to a considerable proportion of the latter cases the voyage will have a higher relative benefit than to many of the former, to whom the indolence of a sea life is rather a drawback. As we remarked before, the greater part of the voyage to Australia in a ship leaving England late in the autumn is performed in weather which tempts everyone to spend their whole time on deck. An invalid has, in a good ship, far more comforts than he could obtain in most foreign towns, and the range of temperature between day and day, and day and night, is very small, from the time the ship gets clear of the land. Passive

motion without fatigue, such as one gets on board a sailing ship, constant vection through the air, is a most desirable condition for such cases. On the other hand, there are some individuals in whom irritability of the stomach is the leading feature, who suffer much from sea-sickness, and whose strength would be woefully reduced by two or three days' knocking about immediately after embarkation. This is a risk such as one must take the chances of in any undertaking.* To some, such a clearing out of the bronchial tubes, and unloading of the liver, as is the result of sea-sickness, is positively beneficial; and, as we have seen, the *chronic* influences of a prolonged voyage are always to calm the circulation, and quiet mucous irritability, both in the pulmonary and gastric tracts.

The writer has made two outward voyages to Melbourne, which will serve as good average illustrations of the weather, and the question now at issue. In the first, the ship sailed from Liverpool on October 22, 1860, and was delayed four days, by south-westerly winds, with cold and rain, in the St. George's Channel. From that time till the region of the equator, which was crossed on the thirty-second day, the weather was all that could be desired for an invalid; warm, sunshiny, and usually smooth. Then close muggy weather for four days, with heavy showers, followed by twelve days of the cool delicious south-east 'trades.' Then variable weather, but, on the whole, agreeable, till the Cape of Good Hope was passed, which justified its ancient name of Cape of Storms, by a heavy, but

* As a rule, consumptive persons do not suffer much from sea-sickness.

favourable gale from the west, with a clear sky, and a temperature of about 60° by day, and not lower than 54° at night. Windy (but usually bright) and cool weather succeeded. The lowest latitude reached was 43° S. Off the Australian coast the ship was delayed by calms; light easterly winds, with cloudless and most enjoyable weather, and she reached Melbourne on the ninety-third day from Liverpool. In 570 passengers there was but little sickness, and only one death—that of a puny infant, two months old. Out of several consumptive invalids on board, there were two who embarked after reaching the second stage, that of softening tubercle. The first, a man, 26 years of age, or thereabouts, of typically sanguineous temperament, very liable to active hæmorrhage from the lungs, of decided hereditary predisposition. This individual rapidly lost his cough, and gained flesh so fast, that, at the end of the voyage, he was hardly recognisable, having become actually obese. He was obliged to have his clothes 'let out' several times, and his appetite was the joke of the ship. The other case was a young man, 20 years of age, of strongly marked nervous tuberculous diathesis, having a cavity in the left lung, and scattered, but softening tubercle in the right. This patient gained flesh and strength during the voyage, and his pulse lowered from 110 to 90 in the minute, while the cavity in the lung dried, and the expectoration was reduced to a minimum. But the benefit received in this case was not so marked as in the other, probably from depressing mental influences.

The writer's second voyage was from Plymouth, on November 27, 1861, and there were not six days of rough

or disagreeable weather out of the eighty-two occupied in reaching Port Philip. Nine-tenths of the passage was like summer yachting in the Mediterranean. There was one patient on board who had very extensive disease of both lungs (in one of which were cavity sounds); he was of nervous temperament, 37 years of age, without hereditary predisposition, but having a broken constitution. He markedly improved until the night the ship arrived in Hobson's Bay, when he got chilled, and had an inflammatory attack from which he was some weeks recovering. I sent him to Queensland for the winter of 1862.

All these three were most unpromising cases. I have related their bare facts, because they occurred under my own eye. There are many individuals now living in this country in comparative health who left England in the second stage of consumption, but my professional reader will understand how difficult or impossible it would be to follow out any history of a number of such cases. All the cases of tubercle under the writer's observation, in the first stage, or of threatened consumption in persons of tubercular diathesis, that have undertaken the voyage and a subsequent residence here, have received the most marked benefit, and all whose subsequent history I have been able to trace have remained well up to the present time.

Accordingly, from all that we have seen on these questions, it appears not only a justifiable but a hopeful treatment to make a voyage to these colonies, even in the more advanced stages of consumption. It now

remains for us to consider more particularly the local peculiarities of different places, and their applicability to what is now more prominently brought before us, the patient's local pulmonary complications.

For our present purpose, pretending only to take a general view of the subject, it will be sufficient to class patients in the second or third stage of consumption under two heads, according to the peculiar bronchitic complication to which they are severally subject; or, in plain English, by the kind of cough and spitting. Thus, we have two persons, each with a cavity in one or other lung. The first has a harsh, dry, resonant cough, spasmodic and violent in its character, each paroxysm lasting for two or three minutes, and resulting only in the expulsion of a little thick, viscid, semi-purulent mucus. The cough of the other is loose, hollow, less violent, and quickly ends by the expulsion of a mouthful of a frothy semi-fluid, just coherent enough to be spat out at once, and evidently consisting principally of simple congestive exudation from the membrane of the bronchial tubes, and that which in such cases lines the walls of the cavity. These characters of cough do not certainly follow any particular temperament, though naturally the former may be expected in the nervous or sanguineous, and the latter in the bilious or lymphatic.

Now, the medical treatment of these distinctive types of cough has always been recognised as obviously contrasted. To the former we give sedatives, lowering expectorants, moist soothing inhalations, counter-irritants on the skin; to the latter stimulating expectorants and inhalations, and astringents. But, strangely enough,

it is only within the last few years that these principles, so obvious and rational, have been applied to the selection of climate, although they were clearly enunciated long since by Sir James Clark. And, even at this day, it is not uncommon to see patients with the most opposite complications sent indiscriminately to Nice, Pau, Egypt, or Madeira, solely on the idea that they are all warm winter climates; whereas the result proved that the one class of cases received as much or more harm from the change than the other derived benefit. It is evident that the first, or those characterised by *irritable bronchial membrane*, require an air first moist, next more or less warm, and lastly (which is indeed almost a consequence), sedative or even relaxing in its effects on the constitution. To send such cases to Nice, Marseilles, or Egypt, is inevitably to aggravate their symptoms, and hasten the breaking down of the lung. But the moist serene relaxing air of Pau will tend to lower the pulse, to quiet the irritability of the cough, to facilitate expectoration, and to retard the progress of the local disease. On the other hand, those who have chronic bronchitis, with copious secretion, whether dependent on tubercle or not, require a dry, tonic, and even stimulating air, such as the eastern coast of Spain, Nice, or Upper Egypt. All this may be seen fully detailed in Sir James Clark's or Dr. Francis's works on climate. Pau and Upper Egypt may be regarded as typical examples of the extremes of these two characters of air, of which gradations are found in other places.

In these colonies we have good examples of all the varieties of climate, air, and soil required for the treat-

ment of the local phases of pulmonary consumption ; whether in winter or summer. Thus, Launceston, in Tasmania (24 hours by steamer from Melbourne), fulfils every condition which we could require for the class of cases to which Pau is beneficial. It is in a moist clayey soil, in a valley at the junction of the north and south Esk, about 40 miles from the sea, protected from all winds but the north by high ranges of mountains, whilst the heat and dryness of those winds are obviated by their passage across the Bass's Straits. The atmosphere is usually still, moist, and equable, and to healthy persons relaxing, as the ozoniferous west and south-west winds cannot reach the valleys. Count Strzelecki compares the winter climate of Launceston to that of Lisbon, while in summer it is not warmer than Cheltenham. There are excellent hotels and lodging-houses in the town, and living is not dearer than in an English watering-place, whilst the scenery is highly picturesque, and there is no lack of society and the amusements which can be expected in a provincial town.

There are other parts of the northern coast of the island whose winter climate is identical with that of Algiers or Sicily, considerably warmer, and less damp and relaxing than Pau, without the dry and stimulating air of the mainland. All the northern coast is protected from the cold southerly winds by high ranges of mountains. Hobart Town and the southern coast must be looked upon rather as a summer climate for invalids than as a winter residence, although in Europe it would take a high rank amongst the latter, its coldest month having a mean of 45.82° Fahrenheit, that is to

say, considerably warmer than the winter of Pau, and on a level with most winter climates in the south of Europe.

The whole of Tasmania is very salubrious, and well suited to European constitutions, particularly those exhausted by residence in India or other hot climates. The mortality of Hobart Town is 23 per thousand on a mean of five years ; this rate corresponds with town and country mortality combined in England, and is considerably lower than any town mortality alone in Europe. The deaths from consumption are 7·8073 per cent., and those from other diseases of the tubercular order very few. I have purposely again confined myself to town mortality. The rural population in Tasmania enjoy an immunity from disease most remarkable and suggestive ; but as, in so thinly peopled a country, there might be doubts as to the accuracy of the returns, I have preferred giving the reader figures of whose authenticity there can be no doubt. Dr. Swarbreck Hall, a gentleman who has been many years resident in the island, and has devoted much attention to its climatology and vital statistics, tells me that he has found that ‘ youths born in Tasmania are not nearly so subject to consumption as those born in Europe ; except when the hereditary tendency is very strong, few of the native born exhibit the tubercular diathesis.’ It must be remembered that this colony has been peopled nearly sixty years, that its population is more settled and localised than that of any of the other colonies, and that at least three-fifths of those under twenty years of age have been born in the island of British parents. The population was, in 1861, 89,977 souls, of whom 49,593 were males, and

40,384 females—41,649 being under twenty years of age, 44,162 between twenty and sixty, and 4,166 above sixty. So that in all matters of race, age, sex, occupation, and general temperature of the climate in which they live, the Tasmanian population may be said to be similarly situated with that of Devonshire or the South of Ireland.

There is a striking contrast between the appearance of the colonial-born population of the Anglo-Saxon race in all the temperate regions of Australia and its islands and that of the same race born in the North American colonies in similar latitudes. Every one is familiar with the lanky frame, prominent features, and straight hair which have already become as national a characteristic of the native-born American as the woolly head of the negro, or the well-known physiognomy of the Jew. In these colonies, however, and more especially in Tasmania, our race preserves its national type, and apparently will continue to do so, for the second and even third generation have the robustness and toughness of frame, and the bold, open features by which an Englishman is known all over the world. It is, however, hardly to be expected that this will last in the subtropical regions of Queensland, or even of New South Wales, where already the Yankee build and face have begun to make their appearance.

But to return to our subject. Auckland, in the northern island of New Zealand, is another good example of a moist, warm, and rather relaxing climate, suitable to the irritable, dry, bronchial complications of consumption; but it has the disadvantage of being windy and boisterous.

But the winter climate *par excellence* of these colonies is that of Moreton Bay, and its neighbourhood, in Queensland, not far from the southern limit of the tropics. Here the average winter temperature on the coast is 62° or 63° —warmer even than Madeira—an air soft and soothing, without being relaxing, and sunny brilliant weather. This of all climates that I ever heard of is the one most likely to prolong the life of an advanced case of consumption in an irritable constitution, whose bronchial membrane resents any fall in the temperature. And here, too, the invalid may gradually adopt a more stimulating air as he finds his local irritation quieted down. Inland, a few miles from the coast, the land rises, and the climate, equally sunny and enjoyable, is more dry and tonic in its characters. A considerable number of instances are familiar to the inhabitants of the more southern colonies of persons apparently in a hopeless stage of disease recovering sufficiently in Queensland to follow their ordinary avocations.

Consumptive patients with relaxed bronchial membrane, copious expectoration, atonic dyspepsia, and no remarkable irritability of pulse; or cases of tubercular consolidation, such as are seen principally in the leucophlegmatic temperament; or the chronic, loose bronchitis of old people; or almost all cases of induced consumption in persons of broken constitution, require a very different class of climate from these, viz. dry, warm, tonic, and stimulating. We have every gradation of these characteristics in continental Australia, of which South Australia is perhaps the best example.

The soil for many miles around the city of Adelaide is a light sandy loam, in which the vine, the orange, and the geranium flourish in great vigour and beauty. Rain seldom falls on more than a hundred days in the year, or to a greater depth than about twenty-two inches. In spite of the droughts and great heat of the summer, the climate is statistically a very healthy one. The winter temperature is about 53° on an average of the three months, that is, higher than any part of Europe, except the extreme south of Spain and the Ionian Islands, while the air even in mid-winter is usually bright and genial. The population of the colony is 65,048 males, and 61,782 females. Of these 68,910 are under twenty-one years of age. The deaths from consumption are 6.98 per cent. of the total mortality in Adelaide. Two-fifths of the population are colonial born.

In the matter of temperature, South Australia may be compared with Malta, or even Tunis, but in general salubrity they will bear no comparison. As a winter climate for the class of cases we are now considering, South Australia is admirably suited.

Many of the northern districts of Victoria, on the frontiers of New South Wales, and still further north, within the limits of the latter colony, have winter climates which present admirable modifications of this type—dry, warm, and tonic, but not so stimulating as that of South Australia—for example, Echuca on the Murray, distant 135 miles from Melbourne, with which it will soon be connected by rail. This district has a winter temperature of more than 50° ; the orange and other subtropical plants flourish luxuriantly.

But besides these decided antitheses of climate, we

have others which, without such positive characteristics of soothing or stimulating air, are suitable to that numerous class of consumptive patients who require simply a warm, bright, and salubrious climate in winter, and have not any very special requirements beyond this. Sydney, and the coast of New South Wales in general, differs very considerably in climate from that of Victoria. It is several degrees nearer the equator, and out of reach of the west and south-west winds, of which we spoke in considering the latter colony. The result of this is, that the average temperature is higher both for the year and in winter, the air is less ozoniferous and stimulating, the changes are fewer and not so rapid, and have more regularity; the climate in fact approaches more nearly to the subtropical character. A large amount of rain falls during the year on the coast districts. The winter temperature at Sydney is about 53° , i.e. 4° higher than Melbourne; the summer heat, though not higher at any one time, is more prolonged and sometimes attended with damp. The winters at Sydney are warm, bright, and pleasant during the day, but chilly at night. The statistics of the colony show that its general salubrity is equal to that of Victoria, and the deaths from consumption, in a population of 350,860, are equally low. The inland districts are drier and more equable, and some of them on elevated table-lands are sufficiently cold to allow of snow lying in the winter. Sydney must be looked upon as a winter and spring climate. In summer and autumn its heat is frequently oppressive.

Taking it all in all, there is perhaps no climate in the world so generally suitable to consumptive cases at all

seasons of the year as Melbourne and its neighbourhood. With the winter temperature of Rome or Barcelona, the southern littoral of Victoria is not hotter in summer than Paris; less moist and boisterous than New Zealand, it equally falls short of the excessive dryness of South Australia, and the close damp heat occasionally experienced at Sydney. Although as winter or summer climates we may find the other colonies more suitable to individual cases of advanced consumption, none of them are so suitable all the year round to early cases arriving from Europe.

The north-east wind in winter is perhaps more injuriously felt by pulmonary invalids in Melbourne than any other. It is usually damp, bringing with it cloud or rain, is deficient in ozone, and of low temperature,* having passed over the Australian Alps, which at this season are covered with snow. These are never strong winds in winter and quickly shift to west and south-west. If the invalid is very sensitive to such occasional prejudicial influences, he should spend the winter on some district to the north of the dividing range, by

* By low temperature is meant 40° to 45° which in England would be considered warm for winter weather, at least in the midland or northern counties. The following are the lowest recorded temperatures between 8 A.M. and 8 P.M. in a sheltered situation in the city of Melbourne, during the three coldest months of three

Months.	Years.		
	1860.	1861.	1862.
June . . .	52·19°	50·40°	51·46°
July . . .	49·23°	46·66°	51·72°
August . . .	52·9°	49·87°	50·5°

The reader must bear in mind that these are not *winter averages*, but isolated extremes of cold. These figures are from the observations of Mr. Moss, optician, Collins St. West.

which he will avoid them altogether. The lower Murray, for example, and the Northern Wimmera partake greatly of the climatic characters of Algiers. But even in the immediate neighbourhood of the capital situations may be found completely sheltered both from these winds in winter and the hot winds in summer. Heidelberg, in a picturesque valley, eight miles from Melbourne, has a very warm, sheltered, and soothing winter climate, well suited to those who have any tracheal or laryngeal complication. In parts of the suburbs of Richmond and Kew, also, the invalid may find residences where these prejudicial influences may be avoided. At all seasons of the year a south-westerly aspect is to be preferred. Geelong, Alberton, and Queenscliff are as warm as Melbourne in winter, and feel less of these north-east winds, while they are cooler in summer and have fewer and shorter hot winds.

Those for whom the cool bracing air of a mountain climate in summer is thought advisable may readily attain an elevation of between 2,000 and 3,000 feet by railway from Melbourne in a couple of hours, in the neighbourhood of Woodend or Kyneton, on the picturesque wooded slopes of Mount Macedon, whose thickly timbered ridge entirely protects them from the hot wind. Ballarat, the second town in the colony and four hours distant from the capital by rail, is nearly 1,500 feet above the sea-level, but is so sheltered that its winter average temperature is but 4° or 5° lower than that of Melbourne, the summer being also proportionately cooler, and the difference of the mean of summer and winter only 19° . Beechworth, the capital of the Murray district, has a dry, pure, stimulating climate, and,

though 1,750 feet above the sea-level, it has a winter average of 44° , and the vine is successfully cultivated. The mortality in these up-country mountain climates is very low, far below that of the most healthy rural districts of Europe.

We have hitherto looked upon the preventive or controlling agency of the Australian climates in consumption, more particularly as regards individuals. But to the European political economist, the question is one of the greatest importance. Not only the British population, but also the whole of Europe is becoming saturated with the elements of scrofulous and tuberculous disease, and these have from long habit become so familiar that they are looked upon with indifference as regards the masses of the population, though they are more destructive to the youth and flower of those races than ever were the cholera, the plague, or the most bloody wars of Napoleon. Eighty thousand individuals, most of them in the prime of life, die every year in England and Wales, victims to the single item of pulmonary consumption. We nourish in the streets and alleys of our large towns, especially those of the manufacturing districts, hotbeds for the production and fostering of scrofula and tubercle, whose spread there is little chance of checking in the place and with the associations under which it is constantly reproduced. Our teeming population is exhausting the soil of the British Islands; our over-civilisation, our normal schools, our mechanics' institutes, our penny newspapers and periodicals, our cheap theatres and places of amusement—the extraordinary spread of the thinking element

in our population in contradistinction to the working, or often the cultivation of both at the same time, have caused a premature exhaustion of the nervous system in young Europe which must tell a fearful tale in another generation or two, in the shape of scrofula and tubercle. If human creatures were simply thinking machines, the ridiculous modern system of our education of the lower classes, so prevalent nowadays, would have some grounds in theory; but it is not so. The nervous power expended in working out a mathematical problem is identical with that required for muscular exertion, or for the digestion and assimilation of food, and if it is expended on the one function the other must suffer from the want of it in the same proportion. Kind-hearted philanthropists, who persuade factory boys and girls, after working all day with their muscles, to spend the long winter evenings poring over books and slates, are lowering their pupils in the physical scale, just as they raise them in the intellectual; and the national habit in the British climate under such conditions is to induce tubercle either in the individual or his generation. It is a law of nature, both as regards individuals and nations, that over-expenditure of the nervous power in any way lays the system open to the attacks of disease. If there is any epidemic or endemic disorder prevalent, this is probably the assailant; if there is not, the result in a European climate is almost inevitably the production of tubercle in the blood. And this does not die with the victim; his offspring inherit the seeds of disease, which are, under these circumstances, far more ineradicable than when picked up by the wayside of life. And this habit of the induction of tubercle is

so ingrained in the European races of this century, that any cause, even another specific disease, such as syphilis, which lowers the vital powers of the parent, will probably appear as tubercle or scrofula in the child.

The fact is, that all European races, but especially those whose civilisation is most marked, require a renewal of type, and an infusion of new and healthy blood, and this is only to be accomplished by the transplantation of masses of the population to a highly salubrious climate, with characters presenting a contrast to their own, where the people at large shall be placed under conditions the converse of those to which they and their forefathers have been for generations subjected in Europe. Emigration to the Australian colonies exactly fulfils these requisitions, not only in respect to the individuals themselves emigrating, but also in their offspring, who exhibit the unmistakeable features of a newer, purer, healthier type of constitution—a rising generation of physically young England, the growth of the brilliant skies, the pure air, the plentiful food, the high wages, the low taxes, the liberal institutions, the hopeful and cheerful moral influences of the Britain of the South.

CHAPTER IV.

COLONIAL LIFE AND AUSTRALASIAN SCENERY.

THE British mind (as has been often enough remarked) exhibits so many paradoxes and contradictions, that it is quite a curiosity to the student of human nature. At home we take a morbid pleasure in abusing and satirising our army, our navy, our public works, our church, our dress, our cookery, our education. Nothing gives the public more pleasure than a good stinging leader in the *Times* about short bolts, and apoplectic stocks, and wasted public money, and idle pluralists, and tall hats, and 'great bleeding underdone joints,' and the poor work the Eton and Harrow boys sometimes make of their spelling at the competitive examinations. But let the *Siècle* or the *Wiener Zeitung* say half as much, and we are up in arms at once. We may beat our own fag, but no other boy shall lay a finger on him. Though we are never tired of grumbling at home, no people are so proud of their country when abroad. Most Englishmen of the present day know more of Paris and Brussels than they do of Dublin or Edinburgh, and will travel to the other end of Europe to see mountains and waterfalls less wild and picturesque than those within a day's journey of their own doors.

But the strangest paradox of all is this. If there is one national quality in which our race is unrivalled, and of which we have just and legitimate reason to be vain, it is our power of establishing ourselves in distant and new countries, and making, not a sojourn, but a home in them—of stretching that little island in the north Atlantic into a chain of Englands that girds the globe. This it is that galls the Gallic pride more than anything. France has as fine a navy, and a far more numerous army—a larger, more fertile, and more prosperous country—manufactures, art, science, and taste are equally flourishing; but merchant *ships, colonies, commerce*, which the Great Napoleon sighed for, while the smoke of Trafalgar was still brooding over his captured and scattered fleet, she has never been able to obtain.* But, with our usual perversity, the great colonial empire of England is the very subject of which the mass of educated Englishmen know the least, and while they have Grote, Hallam, and Macaulay at their fingers' ends, and are probably more familiar with ancient Greece, the politics of the Middle Ages, and the reign of Queen Anne, than men who lived in those days, they are not ashamed to display the grossest ignorance of events in which their own countrymen of their own generation are the actors, and which have an equally important bearing on the future history of mankind.

If Melbourne, with its broad and busy streets, its railroads branching north, south, east, and west, its bustling wharves and crowded shipping, the wealthiest and most prosperous commercial city of the Southern

* Algeria is a military occupation, a school for soldiers, and nothing more. Cayenne a political prison.

world, had been the growth of twelve years of French or Russian energy and enterprise, the *Times* would have had Dr. Russell's ready pen at work long ago, and the British public would have been made as familiar with Collins Street as it is with the Regent Circus. Instead of this, the popular mind at home had till lately a sort of vague idea that Australia was a country where people lived in a state of semi-barbarism, and were principally employed in digging for gold, or in washing wool and boiling down cattle. Because convicts were formerly sent to Botany Bay, it was supposed that the penal element formed a considerable part of our society; and in the minds of many old-fashioned people the fact of having been to the antipodes is decidedly a suspicious antecedent even at the present day. It was only when the Exhibition of 1862 forced the subject on the notice of the newspapers that the public was generally made aware of the separate existence of these colonies, or even cared to know the broad facts of their geography. A learned bishop consoles his friend in Queensland for his absence from England, by expatiating on the blessings and comforts of the Christian communion which he will necessarily enjoy with a common friend in South Australia, which his Lordship apparently supposed to be a neighbouring parish, or at most a 'Sabbath-day's journey' by rail, as they are both in Australia! A Professor of Modern History at one of our universities, having about as definite knowledge of colonial politics as the good Bishop of antipodal geography, assures the British public that the colonies are impatient of the imperial yoke, that they are ripe for

separation from the mother country, and that if they do not receive their emancipation very soon as a gift, they will rebel and set up for themselves. The fact is, that the colonial population (including its foreign element) exhibit a loyalty as universal and sincere, and perhaps more vehement and demonstrative, than that of the English people themselves, and that even the most rabid democrat would not dare to promulgate such ideas out here if he valued a whole skin. The learned Professor should have been in Melbourne during the late rejoicings on the news of the marriage of the Prince of Wales, when every house contributed its light to do honour to the Royal pair, from the costly gas illumination of the rich banker or merchant down to the half-a-dozen farthing candles in the window of the poor Irish labourer. A more universal exhibition of loyal feeling by all religions, sects, and nationalities in the population cannot be imagined. Mr. Goldwin Smith's projects for colonial emancipation may sound very clever in theory to those who know nothing of the real question at issue, and may be applauded as prophetic aspirations in his own classroom; but in Australia they would certainly procure him a cold bath in the nearest water-hole. A leading British periodical* reviews a book by a Mr. Polehampton, descriptive of his experiences as a digger ten or twelve years ago, when gold was first discovered in this colony—the 'mad times,' as they are now called. The reviewer jumps to the conclusion that the state of society in Melbourne is the same, 'in

* *The Dublin University Magazine*, September 1862.

the main,' now as it was then ; talks of our '*obviously defective civilisation, which altogether denies to the higher gradations of intellect and attainment a proportionate position,*' and concludes by pompously enunciating the opinion that '*æsthetics are of course peremptorily ignored by a population governed by the coarsest standards, and educated to the vulgarist pursuits and the grossest habits.*' The reviewer, therefore, in his innocence and ignorance of colonial life, concludes that Melbourne streets are, in the year of grace 1862, a succession of bogs and quagmires ; that its citizens are habitually disguised in liquor, long boots, and beards ; that oaths and black pipes are continually in their mouths ; that most of them never open a book, because they cannot read ; and that their highest intellectual enjoyments are blind hookey and comic songs.

Now, if such a picture had been drawn by a jealous Frenchman, sensible of the truth and value of the '*idées Napoléoniennes*' about ships, colonies, and commerce, and his country's failure to realise them, one would not have wondered at his wilful ignorance and perversion. Or, if it had been the production of some American, sore and galled to see a still loyal British colony adopt the liberal institutions of a democracy, and yet manage to avoid its most glaring inconsistencies, its sneering spirit would easily be explained. But that a British periodical, of respectability and reliability on all other subjects, should thus go out of its way to publish such absurdities about the most flourishing and promising colony of its own country, can only be explained by falling back on the inherent

perverseness and obstinacy of the British mind in certain matters, which prompts it to undervalue, and even affect to despise, many things in which any other nation would take the greatest pride.

But still there are excuses to be made for the Dublin reviewer, for the rapid growth and sudden civilisation of the gold-colonies, of which Victoria is the type, are as difficult of comprehension to an European political economist, who has never visited them, as the steam-engine or the electric telegraph would have been to an engineer of the last century. Like Dr. Johnson and the red hot cannon balls, the *Dublin Review* scouts the idea of a stride from barbarism to civilisation in ten short years, because it has no precedent in history: 'Sir, the thing 's impossible.'*

But ten years in the history of a gold colony is equivalent to at least a century in that of an European town. No parallel can be drawn between the growth and developement of Melbourne and that of even any other colonial city. Mr. Polehampton's picture of the state of things here shortly after the discovery of gold seems not to be overdrawn; but anyone who will take the trouble to give the subject one moment's consideration must perceive that the influx of immigrants from that time to this has included not only 'adventurers, handicraftsmen, and day labourers,' but also numerous members of the educated and refined classes, with their families and connections around them: in fact, that each ship arriving at our shores of late years has brought with her about the same proportion of hand-

* See Appendix A.

workers and head-workers, of muscle and brain, as they exist in the home population; and he must have a very poor opinion, both of the Anglo-Saxon race and the civilisation of the nineteenth century, who concludes that men of taste and education arriving in this colony should, from the fact of their being so far from home, sink at once to the brutal dissipation of the public-house and the skittle-ground. The unparalleled state of things which existed in Mr. Polehampton's time, the sudden rise of half the population from poverty to wealth, of necessity upset at once all the laws of grade in society. But now mind and matter have gravitated to their natural level once more, and even gold-digging, instead of being an affair of pick, dish, and cradle, when a strong back and arms were all that was required to make their possessor a rich man, has become (except in the remoter districts) rather a question of capital and shares, and costly steam-engines and 'plant' in mines 400 to 500 feet deep, in which many thousand pounds may be sunk before an ounce of gold is obtained. Poor Mr. Polehampton trudged to the diggings, through mud up to his knees, laden with a heavy 'swag' of picks, shovels, and blankets; bought eggs at a guinea a dozen, and a loaf for six shillings; boiled his own 'billy' under a gum tree, and went to bed with an uninterrupted view of the Southern Cross. Nowadays, he would travel over the same ground to Ballarat or Bendigo in a comfortable first class carriage, as smoothly and steadily as if he were on the Great Western Railway, and for the gold question would consult that day's *Argus*, or the penny *Morning*

Herald, to tell him the current price of dividend mines, or the last new quartz reef. Arrived at his journey's end, he would probably drive in a hansom to a good hotel, and dine and sleep as comfortably as if he were in England, at no higher charges. By undertaking a series of 'Rambles beyond Railroads,' or by visiting the New Zealand diggings, Mr. Polehampton would see plenty of scenes which would remind him of the 'good old times,' but the localities which he describes in *Kangaroo Land* would no longer be recognisable to him.

So it is in the social aspects of Australian life. Things have settled down in Melbourne and Sydney into pretty much the same state as the society of any large commercial town in England, or in the rest of Europe. People are very fond of pouncing upon some social evil common to human nature all over the world, and fathering it upon an especial community as their peculiar prerogative. We declare the particular county town in England where we happen to live to be the worst place for gossiping and scandal that ever was known, because the tittle-tattle which goes on there equally with every other small community, is about us and our friends and acquaintances.

A chance visitor to Australia sees men made respectable by wealth who would not be so without it, and finds others in high places whose more fitting situation would be on the roads, and he straightway goes home and writes a book asserting that these things are peculiar to colonial life, and particularly to a continent nearly as large as Europe, because one corner of it was formerly a penal settlement — quite forgetting how

Englishmen at home fall down and worship the golden calf, and how many Pauls and Roupells, and Redpaths and Robsons are continually being exposed in every grade of London society. Universal suffrage in Australia has brought a class into power which in the older European communities has but little voice in the government, and though this system has many evils it has also its advantages. It may be that the better and more educated classes are not efficiently represented in Parliament, because here, as in every other community, they are in the minority; but, on the other hand, the general prosperity of the colony of Victoria, and the admirably efficient manner in which public works have been carried out, both in generalities and details, are no bad test of the merit of its legislators in matters affecting the population at large. A few hard-handed as well as hard-headed men in the Imperial Parliament would open the eyes of chancellors of the exchequer and lords of the Admiralty to many curious facts.

But as regards social life and general society in Australia (with which politics and politicians have little or nothing to do as such), people do not change their manners, tastes, and dispositions, because they have changed the Great Bear for the Southern Cross. Demand and supply follow each other here just as they do north of the equator. The man who finds his chief pleasure in bar parlours and 'shades' may indulge in such pleasures to his heart's content in Melbourne, and will not fail to do so; and the student of science and letters, the enthusiast for music or the drama, or whatever hobby the man of education or taste may have taken up, will find congenial spirits with whom

to enjoy it, and ample means for its gratification. It is easy to test the demand for any particular class of amusement in a population by the supply which the public caterers find it worth their while to provide, and by this test it may be seen that the inhabitants of this city spend far more money in amusements of an æsthetic or scientific character than any community of the same numbers in the world. With a population the same as that of Bristol, Melbourne supports three theatres of considerable size, at all of which the same class of entertainment is provided as at the best theatres in London, no one of them having an audience to support the style of play which is in vogue at the East-end and transpontine establishments. Our 'obviously defective civilisation' has formed a Royal Society, an Acclimatisation Society, an Apiarian Society, museums of natural history, geology, agriculture, and mining, two dramatic clubs, educational and literary institutes too numerous to mention separately, a Medical Society, a Pharmaceutical Society, Photographic, Phonetic, and Architects' Societies, and a Society of Fine Arts. Mechanics' institutes and reading rooms flourish in every suburb, and more lectures on literary and scientific subjects are delivered in Melbourne than in a place of twice the size in England. On the principle, I suppose, that 'music hath charms to soothe the savage breast,' we have a Philharmonic and a Choral Society, and a Musical Union, whilst oratorios and concerts are of frequent occurrence. Melbourne supported two Italian Opera seasons last year (1862). Amongst many other works most creditably performed, the enterprising manager brought out at great expense the 'Huguenots' of Meyerbeer, then

for the first time performed south of the equator, and it ran for three weeks or more with full houses. Such an appreciation of the most classical operatic music of modern days is the best contradiction that could be offered to the accusation of 'coarse standards, vulgar pursuits, and gross habits.' During the short existence of this town, thirty-three religious and charitable institutions have been founded and still are in active operation, most of them supported by voluntary contributions. Fifty-six newspapers and periodicals are published in Melbourne.* The botany, zoology, geology, mineralogy, and meteorology of the colony have each a highly talented official, paid by Government, for the study and investigation of these branches of science. The professors at the University are all men of the first reputation in the universities at home, and receive large salaries. These men, of course, take the place in public estimation to which their talents and attainments entitle them. The most economising democrat in Parliament never thinks of curtailing the estimates for the remuneration of scientific men. This is the way in which the 'obviously defective civilisation' of the Australian population neglects the higher gradations of intellect!

The class of men who are unsuccessful in Australia, and who, consequently, abuse colonies and everything colonial, are the now very numerous body of white-handed men of education and average talents, who have been brought up to no business or profession in parti-

* Three daily, thirty-one weekly, ten fortnightly, ten monthly, one quarterly, and one annually. In the whole of Victoria about 100 periodicals are published.—*Registrar-General's report in Exhibition Catalogue, 1862.*

cular, but who consider, from their general literary acquirements, that they can turn their brains to anything. But 'they cannot dig, and to beg they are ashamed;' their knowledge of the Greek particle and mathematics will not feed them here any more than it will in England. So, after hanging about the large towns till their friends are tired of them, they subside into shepherding in the bush, or some other easily learnt occupation, or work their passage home to England. But what can these individuals do anywhere? No merchant or business man of any kind will give them employment in England with salary enough to live upon, and the only means of subsistence for which their university education has fitted them is that of curate, with emoluments of about 60*l.* a year, or usher in a school, the veriest drudgery that can be imagined. Such men often expect that their good education will be of itself sufficient to give them standing and lucrative employment here, and when they find out their mistake, and see plain, hard-working lawyers and doctors, who could not hold a candle to them in the matter of Greek Iambics, making their fortunes, while they are living from hand to mouth, they very naturally persuade themselves that Australian grapes are sour, and tell every one in England that letters and æsthetics are neglected at the antipodes. On the other hand, any profession, business, craft, or trade will ensure a man his livelihood in this country, if he will attend to it. People here are very fond of grumbling at the 'bad times;' but, while handicraftsmen, who know their work, can easily earn from 8*s.* to 15*s.* a day, if they are sober and industrious—while the ordinary wages of working miners are 8*s.* per day of eight

hours, and the cost of the necessaries of life is not greater than in England, such grumbling must be very causeless. The workmen at the ready-made clothing establishments in Melbourne earn, on an average, 3*l.* to 3*l.* 10*s.* a week, and some are able to make 4*l.* or 5*l.* A workman of the same class would have the greatest difficulty in earning 20*s.* or 23*s.* for six days' hard labour in England. Needlewomen, who, at home, make about 9*s.* or 10*s.* a week, may here easily earn 25*s.* or 30*s.*, and good sewing-machine hands still more. 'The appearance of the workpeople at these colonial clothing factories presents a no less striking contrast to the appearance of the same classes in England, than does the relative rate of wages in the two countries. Instead of the men being cross-legged skeletons, which is the usual symbolical representation of the journeymen tailors employed by slop-sellers in England, and instead of the females having pale haggard cheeks, and consumptive coughs, which are too often the inevitable fate of English needlewomen, all seem to be the very picture of health and cheerfulness. It is no wonder that they present this appearance, for, besides their wages being sufficient to enable them to procure an abundant supply of all the necessaries of life, and to provide against a rainy day, the terms of toil are not such as to over-tax their strength or destroy their constitution. Eight hours a day is a rule at these establishments, commencing at 9 A.M. and terminating at 5 P.M. As the supply of labour, however, is by no means equal to the demand, extra work is given out to those who choose to undertake it at their own homes after the usual hours, and by this opportunity many make a considerable

addition to their ordinary earnings.* Female servants are still at a premium all over the colony. In town, plain cooks and housemaids get 35*l.* to 40*l.* a year, and mistresses who live in the country think themselves very fortunate to find decent women for this. Good grooms demand 100*l.* a year and their keep. Situations for man and wife at 60*l.* to 70*l.* a year, with food and lodging of the best, often go begging for weeks together, as is evident from the advertisements in the newspapers. With this state of things before our eyes, it seems strange to hear people grumble at bad times, when we know how many thousands in England would be glad to work night and day for what a carpenter or gasfitter in Melbourne throws away at theatres and music halls on his amusements.

The fact is, that the people of this colony have been surfeited with prosperity, and now they 'wax fat and kick' at things which in any other part of the world would be considered excellent. With a climate that combines the summer of Cheltenham and the winter of Palermo, I have heard them abuse the colony, because there are a few exceptional days of hot wind and dust, or a few weeks of wet and chilly weather. With mutton and beef at 5*d.* a pound, they complain that milk is a little dearer than in London. Because masons and carpenters earned 2*l.* or more a day in the year 1854, they think themselves hardly used that they cannot do so now; and one sees idle

* From the *Argus* newspaper, June 2, 1863. Letters appeared subsequently, stating that these figures were exaggerated, but the writers did not deny that working tailors could readily earn more than double the London wages.

'loafers' about the streets of Melbourne who will tell you they cannot get employment, and yet, if you offer them three or four shillings a day to work in your garden, they will laugh at you.

People are not satisfied with moderate gains in this part of the world. They want to spring into opulence, or at all events competence, in three or four years, and complain terribly of double the business profits that they would get in Europe. There are almost unlimited openings for the investment of capital here, at rates of profit amply remunerative to those who have not such high-flown notions—as is evident from the fact that the current rate of interest of money borrowed on freehold or other unimpeachable security is never less than 8 per cent.

The cost of living in Melbourne at the present day is, for the style of the better classes, perhaps 10 or 15 per cent. higher than in London—the principal items of increased cost in housekeeping being rent and servants' wages. All articles of consumption are (with two or three exceptions) cheaper, or as cheap, as they are in London.* The working classes may live for less than they do at home, but, having more money at command, they seldom do so. Many articles of luxury have now fallen in price below the home level. Wenham Lake ice is 2*d.* a pound; artificial ice still cheaper. Grapes and pine-apples of the most delicious flavour are to be had for about a third of their Covent-Garden price. French silks and satins are imported direct, and may be had for lower prices than in Regent Street.

* See Appendix B, Melbourne prices current.

But it is not only in matters of this kind that the colony has undergone so remarkable a change lately. The climate itself has been considerably modified by the settling, irrigation, and general opening up of the interior; and, as regards the city of Melbourne, the hot winds have lost at least half their dust and disagreeableness since the Yan Yean water supply was instituted. This gigantic work supplies the inhabitants of this town and part of the surrounding districts with soft water, at high pressure, to the amount of 130 to 140 gallons per head per day—more than six times the quantity supplied in London. The Yan Yean reservoir is an artificial lake, formed by the embankment of a valley in the Plenty ranges, 19 miles from the city. Its area is more than two square miles, and its average depth 18 feet. As it is 595 feet above the town level, the pressure in the pipes is very great; so that for watering the streets, putting out fires, and so on, it is only necessary to open the plugs, and the water is forced to a height of 30 or 35 feet from the ground. So great is the power of the Yan Yean, that it has partially supplanted steam in driving machinery. The cost of this vast undertaking was about 820,000*l.*, and the present income from the water supply is not less than 60,000*l.* a year. It is estimated that the extension of the supply to all the suburban districts will yield an interest of 70 per cent. on the cost of such extension.* The water usually requires filtering for drinking purposes, though most people do not care to do this: it is clear most of the year, but has often a

* Registrar-General's report in Exhibition Catalogue, 1862.

musty flavour. It has been suggested that this is the result of the mains opening too near the bottom of the reservoir. The temperature is about 40° summer and winter—a blessing which all who have lived in a warm climate will know how to appreciate. The supply being unlimited, almost all the better class of houses have bath-rooms attached to them; and the baths and wash-houses about the town are cheap and easy of access to the lower classes. In the great marine bathing and swimming establishments, both for men and women, at St. Kilda and Sandridge, one can have a luxury unknown in England—a fresh-water shower-bath on coming out of the sea, which removes the unpleasant sticky sensation of the skin left by the salt water. The reservoir itself forms a pretty little lake, surrounded by wooded hills, and is a frequent resort for pic-nics and pleasure parties. Those whose experiences of hot winds and dust storms were formed in wooden huts or under canvas, in the year 1853, can have little idea of how small the inconvenience caused by them is nowadays. Indeed, the reader may take it for granted that a book about these colonies written more than three years ago is no longer a reliable authority, either as regards cost of living, or society and social life, and hardly even in the matter of climate.

Those who travel into the remoter districts cannot expect to find the luxuries and comforts that they enjoy in Melbourne or other large towns. But many of the wealthy squatters have built themselves large and comfortable houses, with every convenience that one sees in a country house at home, and now that railways

are spreading into the bush in all directions, their communications with the capital are constant and easy.

Melbourne possesses a free public library, opened in 1850, before any such institution existed in Great Britain—at all events on so extensive a scale. It contains 30,000 volumes, a valuable collection of works of art and curiosities, and is very handsomely furnished and decorated. All comers enter and take any book they please without question. The annual number of visitors is over 160,000. The museum of art was opened by his Excellency Sir Henry Barkly, in May 1861. The public are admitted from 12 noon to 4 P.M. In the first three months the number of visitors was 13,357.* This does not look much like the ‘ignoring of æsthetics’ of which the Victorians are accused by the Dublin reviewer. On looking at the educational statistics I find that in 1861 there were 886 schools in Victoria, with 51,668 scholars, and that the attendance of children on singing and drawing classes in the districts of Melbourne, Geelong, Ballarat, Castlemaine, and Sandhurst, was 16,750. There can be no doubt that so far from being below the average in mental culture and attainment, the colonial population has more education and intelligence, number for number, than any of the nations of Europe. But this is not a guide book or annual register. I merely mention these statistics that the reader may judge for himself of the deplorable ignorance of many writers in England as to the actual condition of its colonies.

* Parliament has just voted a considerable sum for the foundation of a National Gallery of Arts.

Australian scenery is not very attractive at first sight to a new arrival. He misses the brilliant green of European grass, and the rich dark masses of foliage which form so great a part of the beauties of an English landscape, the gum trees and the oaks here reminding him rather of the dusky olive groves of Southern Spain, and the general absence of water in the interior making the views look very tame. But the neighbourhood of Melbourne gives one but little idea of the variety of scenery that may be expected in so vast a continent as this, and in some of the remoter districts there are prospects of great attractiveness.

But even near home there is not much to grumble at. Collingwood Flat may not be picturesque, nor has Emerald Hill much right to its name, but the neighbourhood of the Botanical Gardens, and parts of South Yarra, Kew, and Hawthorn, are prettier and more 'rural' than the suburbs of most European towns. Indeed, the distant view of Melbourne, from the upper part of the gardens, looking down the windings of the Yarra, is very beautiful in its way, and in its associations almost unique, from the hand-to-hand connection of primitive nature, and the highest resources of modern art and culture. The visitor finds broad gravel walks, flower-beds, and shrubberies tended with as much care as those of Kew or Chiswick, with plants from all parts of the globe—great aloes and cacti, and lofty fan palms, and here and there a sturdy young colonist of an English oak or ash, growing next door to an orange-tree, a sweet potato, or a cotton plant. He turns a corner, and finds himself on the banks of a lonely pool, half choked with tall canes and rushes, and overhung

by great white-trunked gum trees, where the swan trims his shining black plumage, and the blue crane and 'native companion' stalk undisturbed—a scene of savage naturalness. He mounts the hill again, and sees the spires and public buildings of the city peeping through the trees, which, with the distant shriek and rattle of the trains as they pass and repass, and the song of the blackbirds and thrushes who have made their home in the gardens, form a strange mixture of associations of art and nature, Europe and Australia. On Saturday afternoons, however, and public holidays, of which we have almost as many as they have in Italy, the gardens are filled with gaily-dressed people, and a military band plays, or there is an *al fresco* concert, and the aspect of the place is very different. Amongst the crowd we see men not much past middle age, who have lighted their camp fires in the primitive forest, on the very spots which are now the busiest streets of Melbourne.

These gardens, whose maintenance costs the colony a large yearly sum, are under the charge of Dr. Mueller, the Government botanist; a gentleman whose learning and research have illustrated the vegetable world of this continent more fully and completely than has been done in the case of any other new country.* From hence seeds and cuttings of newly-acclimatised plants are distributed all over the colony.

In the hilly districts of Gipps' Land, and in all the coast ranges of the southern and south-eastern districts of Victoria, a type of vegetation prevails characterised

* Dr. Mueller lately received the Cross of the Legion of Honour from the Emperor of the French, in appreciation of his scientific labours, and success in acclimatisation.

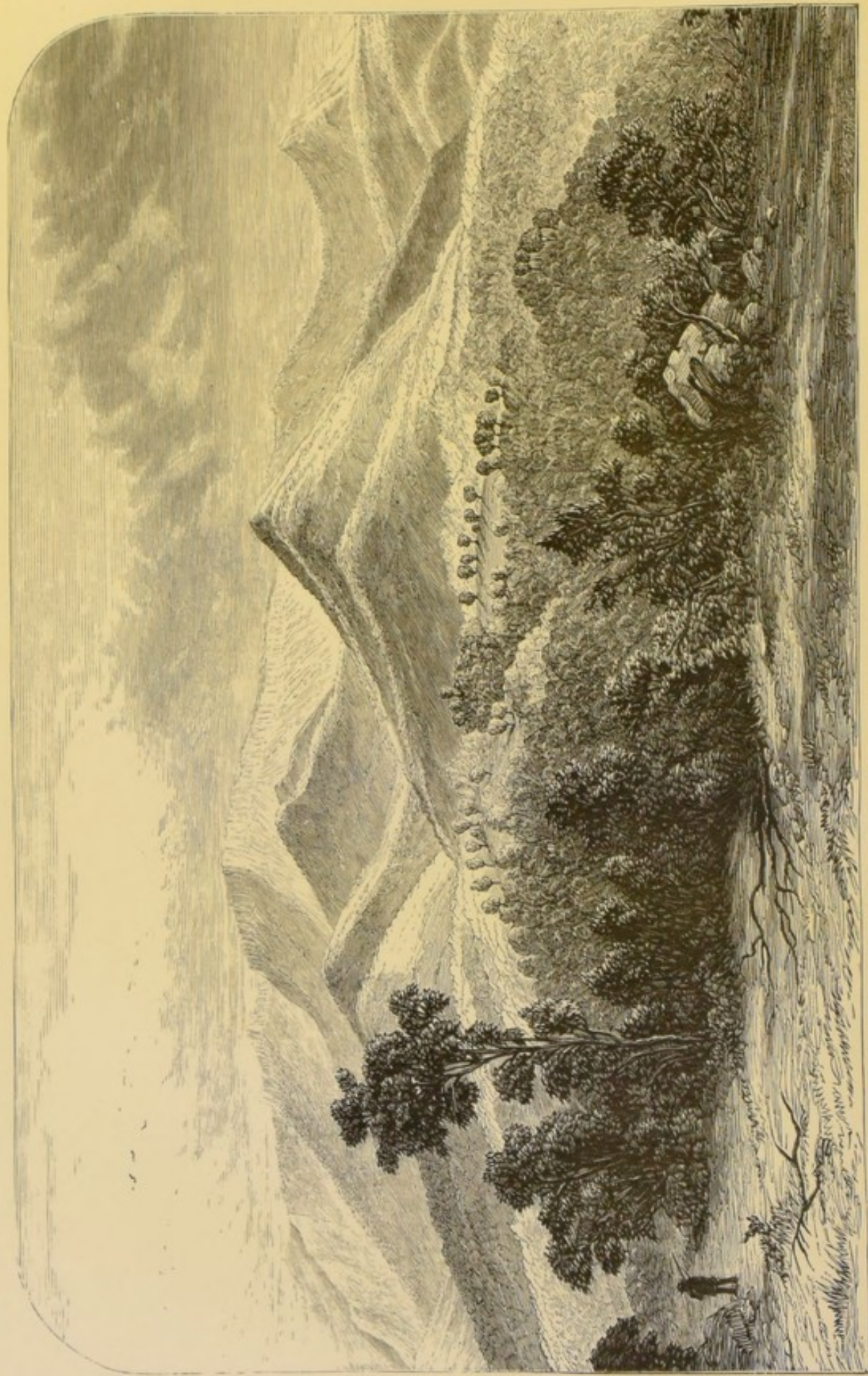
by the richness and luxuriance which belong to a more moist and cool climate than that of the continent generally. The stately fan palm, the graceful fern-tree, and the evergreen beech flourish in the valleys and hill-sides having a southern aspect, with all the exuberance of the subtropical type. These districts have a climate and vegetation identical with that of Tasmania, of which Count Strzelecki says : ' The course of the seasons, which in extra-tropical countries causes the leaves to fall and diversify the foliage with the fresh bright verdure of spring, or the gorgeous and variegated tints of autumn, has no influence upon the unvaried mantle of olive green which clothes the forests of Tasmania. On a nearer examination, however, this vegetation is discovered to possess much gracefulness in the form both of species and of individual trees, and many delicate or minute shades in its verdure, which, combined with the ever-changing ash-grey colour of the shedding bark of the *Eucalyptæ*, the undulating, and often broken surface on which it thrives, and the resplendent sky above, present a world of interest and attraction. Frequently it is so grouped as to present contrasts of surpassing beauty, the more striking because they are abrupt and little expected. Amidst the apparent sameness of the forest may be often found spots teeming with a gigantic and luxuriant vegetation, sometimes laid out in stately groves, free from thicket or underwood—sometimes opening on glades or slopes, intersected with rivulets, carpeted with the softest turf, and which lack only the thatched and gabled cottage, with its blue smoke curling amidst the trees, to realise a purely European picture. Sometimes again the forest

skirts an open country of hill and plain, gracefully sprinkled with isolated clumps of trees, or it is lost in immense thickets, where innumerable flowering shrubs and elegant interwoven creepers form bowers as impenetrable and as picturesque as those seen in the forests of Brazil.'

In the Dandenong Ranges, about twenty miles from Melbourne, this class of scenery may be seen in perfection. The 'Fern Tree Gully' is a favourite holiday excursion. Here the blue and red gum trees attain a height that rivals the far-famed trees of California, the silvery white stems of the former running up sometimes 100 or 120 feet without a branch, and the whole tree attaining a height of 180 or even 230 feet. The graceful ferns arch their long fronds across the rivulet which gurgles at the bottom of the gully, and the densely woven creepers, spanning from tree to tree, almost shut out the light even of the blazing Australian mid-day sun.

The open forest, which forms so large a part of the pastoral districts of Australia, is, to my mind, very picturesque. Change gum trees for oaks and elms of the same size, and you may fancy yourself riding through the quieter parts of Windsor Park; but instead of the deer you will see the kangaroo, who stares at you for a few seconds with curious, innocent, hare-like face, and then goes off bounding away over logs and fallen trees like a gigantic flea. For pheasants you see flocks of gorgeously painted green parrots, hundreds together, or of white yellow-crested cockatoos, making the quiet forest glades echo with their harsh cawing cries. But the note of the Australian magpie is singularly sweet





HIGHLAND SCENERY OF VICTORIA; THE SNOWY BLUFF ON THE WONANGATTA, GIFFSLAND.

and melodious, and sounds very appropriate to these lonely scenes.

Kangaroos are ^{very} more common in Victoria now than when it was first settled, ^{and} the hounds, when they meet on Saturday mornings, are pretty sure to find, even within eight or ten miles of Melbourne. In some of the remoter districts kangaroos are great pests to the farmer by eating up his green crops, and also to the squatter by consuming the fresh grass that springs up after the bush fires, and for the appearance of which his cattle have been anxiously waiting. In the western district especially they are in great numbers. Not long since a number of the inhabitants instituted a 'drive' and a battue, and killed no fewer than eight hundred in one day. Their skin makes very soft pliable leather; their flesh is like very coarse stringy beef. Kangaroo tail soup, however, is a great institution.

In the Australian Alps the scenery takes the characters of a thoroughly Highland district, and forms pictures worthy of the pencil of a Guerard, in whom this colony has found a painter capable of rendering its grand and massive features, its vast plains, snowy mountains, and primæval forests. 'Nothing can surpass the delightful effect produced by a glance over the verdant highland valley in the midst of summer, after an ascent from the perhaps parched plains of the low land, through the jungle of the lower ranges, to the lofty open heights, and the pure light atmosphere of the Australian alps.' There is also lake and river scenery of great beauty in some of the remoter districts of this colony. The islands in Bass' Straits and the southern coasts of Tasmania present scenery most attractive to the sketcher. Although

guiltless of any further history than that of the adventures of a few whalers or a stray gold-seeker or two, no one who has seen both will deny that Flinder's Island has as grand an outline, with its double cloud-capped peaks, as Samothrace or Stromboli; nor does Capri bask under a sunnier sky in a bluer sea than do the capes, mountains, and basaltic cliffs of Tasmania's peninsula; though for the orgies of a Nero they have no more romantic substitute than the expiatory sufferings of a penal settlement.

The blank past of colonial scenery is, to those who have been brought up here or made this country their home, a want which no natural beauties will supply; they long for the *old* country, the *old* house, the *old* cathedrals and monuments of Europe, and lands where every river, and mountain, and valley has its history, with an affection that home residents can hardly realise. Hazlitt says, in his 'Essay on the Past and Future,' that the latter is 'like a dead wall, or a thick mist, hiding all objects from our view. The past is alive and stirring with objects bright or solemn, and of unfading interest. . . . What a blank, for instance, does the history of the world for the next six thousand years present to the mind compared with that of the last. All that strikes the imagination or excites any interest in the mighty scene is *what has been.*'

But colonial life and scenery, to one sated with the retrospective pleasures of travel in countries whose history, great though it is, has only the interest caused by the general sympathies of human nature in the abstract, have a newness and brightness suggestive of a hopeful future, that also strike a chord which finds an

echo in everyone's breast more or less according to his physical temperament. And this more especially to a consumptive person. He is probably young and sanguine of recovery; life is before him; he has little sympathy with dead hopes, past pleasures, buried aspirations, and men and events over whose political life and meaning an ocean of more recent (and to him more important) circumstances has swept and obliterated all but the outline of their 'footprints on the sands of time.' On the other hand, he sees with delight scenes both lovely in their natural features, and which are also an unwritten page suggestive of a brilliant future. 'The good he expects is like a store yet untouched, and in the enjoyment of which he promises himself infinite gratification.'* Such feelings may be, and are usually, transient, but for the time they are vivid and enjoyable, and, as we saw some time ago, may be utilised very importantly for the physical well-being of an invalid.

The individual characters and bold features of antipodal scenery seem in themselves to be suggestive of an eventful future. Who can approach the New Zealand coast, for instance, at sunrise on a bright morning, without feeling that each of those glittering snowy peaks and glaciers that stand out against the rosy sky must one day have a name and a story, and that each 'folded hill' beneath throws its purple shadows over plains and valleys where events will one day be enacted that will make them famous? Those who have read Ruskin's two chapters on the 'Mountain Gloom' and the 'Mountain Glory' will appreciate the unalloyed

* Thus also the first few stanzas of Campbell's 'Pleasures of Hope.'

pleasures of such scenes, where as yet there is little or no contrast between the impressions of the beauty of the hills, and their kindly offices for mankind, and the dark, miserable realities, both of past and present, with which the historic Alps of Europe are associated. He will see snowy peaks, as bold and lofty as Mont Blanc or Monte Viso, 'shining like heavenly castles far above,' with as yet no 'gloomy lesson frowning in the shadow,' no 'dark plague-like stain' of inherited bigotry, ignorance, poverty, and disease to spoil the green banks of sward as bright and lovely as those which clothe any Piedmontese hill-side, or to sully the purity of its mountain streams, which flow through valleys as fair as that of Tempe. The northern island has, indeed, its existing heathendom, its tales of murdered missionaries, and such-like atrocities; but the middle island, which must eventually be the most important, was to all intents and purposes virgin soil when it was first settled about twenty years ago. There were, indeed, a few scattered natives on the northern coast, but the mass of the island, which is as large as England, had apparently been left from all time to the moa and the wild duck. Within the last few months adventurous gold-seekers have penetrated across its great snowy backbone, the southern Alps, many of whose peaks attain an elevation of 13,000 or even 14,000 feet, and feed glaciers as extensive as those of Zermatt or Chamouni. They describe mountain lakes and waterfalls, surrounded by the grandest scenery, and fertile valleys where in all probability human foot never trod before. When the Alpine Club has exhausted the 'Peaks, Passes, and Glaciers' of Switzerland and Savoy,

they will find ample scope for their climbing propensities in New Zealand, with the additional excitement of being able to call their new-found mountain progeny after their own names.

Colonists have usually much more regard for the utilitarian than the picturesque, but those who look upon natural objects with the eyes rather of an artist than of a merchant, a squatter, or a gold-finder, must see that the Harbour of Dunedin, in Otago, and Port Chalmers, at its entrance, present as close resemblances to the scenery about Loch Katrine, and the head of Loch Lomond, as though they were in the same country. The cool cloudy stormy climate, and the prevalence of the Scotch accent amongst the residents serve to heighten the illusion.

I visited Otago in April 1861, in a Scotch mist. Most of the passengers on the steamer looked, in their plaids, like shaggy Newfoundland dogs just out of the water, and answered to the name of Donald or Angus. We paddled along, through winding channels, between rocky wooded islets swarming with rabbits, and grassy points of land, with trees whose branches dipped in the dark water. Above rose woods, with grey cliffs 'cropping out' here and there, waterfalls tumbling noisily into dark ravines, and, higher still, dense wreaths of vapour creeping lazily along the steep mountain sides. Occasionally a gust of wind would tear a rift in the clouds, and show a window of blue sky, and a grassy or stormy peak, with a ray of green light on it, and a patch or two of glittering snow in its shaded hollows, and then the curtain would drop again. With the exception of some differences in the appearance of the foliage, it was

‘Caledonia, stern and wild,’ reproduced at the antipodes; and one might read ‘Rob Roy,’ or the ‘Lady of the Lake,’ and realise their scenes almost as readily as in the Western Highlands.

In some of the more inland districts of this province, the climate is described as cool in summer, cold and bracing in winter, and with a far less proportion of wet than in those nearer the coast; exceedingly healthy for the young and strong, but hardly suited for our consideration as climates for pulmonary invalids. In the northern island there are medicinal springs, of various temperature and powerful therapeutic virtues; but as long as the country is in its present unsettled state, there is little prospect of their being studied and effectually utilised.

Then there is Sydney Harbour, with its numberless winding creeks and bays, dotted with sails of all nations and sizes, and their banks with the sunny villas of the citizens peeping out from amongst groves of orange, lemon, and myrtle, and backed by the graceful spires of the Norfolk Island pine—one of the prettiest scenes imaginable; or, more inland, the Blue Mountains, and the Weatherboard Falls—one of the grandest scenes in nature, and accessible without any difficulty. In short, there is plenty to be seen in these colonies, and plenty to amuse a traveller for health, who will find the novelty of colonial life and scenery very pleasing, at least for a time. The hotel and lodging accommodation in the large towns of Australia is, at least, as good as that of any English watering-place, and cheaper than that of many of the more fashionable resorts. Melbourne cab fares are a shilling a mile;

boats on the Yarra, or in the bay, about a fifth dearer than at Brighton or Scarborough; and other things of the same kind in about the same proportion. In inland districts, of course, prices are higher, but the rapid spread of railway communication is equalising them towards the standard of sea-port towns.

And now, before taking leave of the reader, let us recur shortly to the medical part of our subject. The more one studies and observes the symptoms and course of consumption of the lungs, the more evident does the necessity appear of drawing a broad line of distinction between the management of cases in the earliest stage, and those in which the disease has made an actual organic change in the breathing apparatus. In the *first*, we should treat it simply as a general blood disease, a constitutional dyscrasy, with those remedies both of hygiene, drug, and climate, which are proper to counteract scrofula and tubercle, whatever their local manifestation may be, and we shall find it safer, in general, to shut our eyes to, and ignore local pulmonary or other complications (unless, in themselves, weakening), rather than to involve ourselves in the dangerous and confusing mazes of the treatment of symptoms.

But when a case is obviously in the *second* stage, when a persistent source of irritation has been established which works its own mischief, then, relaxing nothing of our general measures to improve the health, we are obliged to enter on the second branch of treatment.

It is from the neglect of such plain distinctions, that many persons have come to consider consumption

as an inevitably fatal disease, like cancer, whereas there is no doubt that, in its early stage, it is more under the influence of treatment than most complaints of a naturally fatal tendency when left alone. But, then, this treatment must not be only the every-day routine of counter-irritants, and expectorants, and tonics, and such-like, but an alterative commensurate with the necessities of the case. We must not let our patient 'lay the flattering unction to his soul,' that the cod oil which he drinks, and the tartar emetic ointment which he rubs in can arrest or counteract the tuberculous cachexy—while he works at his office, his classroom, or his shop, eight or ten hours out of the twenty-four—for all reason and experience show that such would be a delusion and a snare. And if, as English practitioners see every day, medical treatment has twice the chance of being efficacious if used in conjunction with change of air, scene, and employment, even to another part of the same country, how much more likely is it that greater and more permanent good will result when medical treatment is associated with so complete and absolute a change as the antipodal climates are described to be? And if the existence of disease be ascertained, and the necessity of such rational means of cure be appreciated, they should be undertaken without delay; for to a case of consumption, in an irritable temperament, every week's time lost is of irrecoverable value, for the patient is drawing just so much nearer the turning point where tubercle begins to soften, when he loses three-fourths of his chances, not only of cure but of palliation.

And now let me take this opportunity of making

a few observations on the subject of counter-irritation as a branch of the local treatment of chronic phthisis. Blisters and irritating ointments, or liniments, are very sound and efficacious remedies in the temporary congestive attacks during the course of a case of phthisis, and can be omitted when the symptoms that call for their use have passed off. But there are cases even in the very earliest stage of tubercular deposition, when, with every rational treatment in full operation, the patient gains flesh and strength; but it is evident, from the physical signs in his lungs, that the local disease is progressing, in spite of the improvement of the general health, and such may be the state of things even in the third stage when cavity exists. Now, it is obvious that ordinary counter-irritants, such as the above, are not the kind of derivative wanted, and (unless we push them to an extent that would make the patient's life a burden to him, and weaken him very much) will not influence the steady progress of the disease. But there are certain circumstances with which nature sometimes steps in and delays or arrests the spread of the disease in the lung; for instance, pregnancy, fistula in ano, scrofulous ulcers of the skin, chronic disease of the bones or joints. When the first arrives at its term, the patient too often sinks rapidly into her former state; and if the surgeon is injudicious enough to interfere with the last, and remove or lessen their local irritation, it flies back to the lungs at once. These are evident indications for imitation in treatment, and have always been recognised as such. But blisters and liniments applied over the seat of disease do not resemble these; they cause a rush of blood to the

surface, which ceases when the effect of the irritant has passed off. What we want, rather, is a derivative that will cause a constant demand for blood, to supply a new secretion in some distant part of the body which may *gradually* supplant the pulmonary irritation. The most cleanly, the least painful, and the most efficient means of doing this is by introducing a seton in the skin, and allowing it to remain for some months at a time. This was a common remedy in former times, but of late years it has gone out of fashion, like many other valuable modes of treatment—perhaps from its indiscriminate use in inappropriate cases. In the treatment of early consumption, I regard it as a most valuable remedy in a particular class of cases. For example, a person of irritable temperament has the physical signs of the earliest stage of tubercle in one lung—coarse breathing at the apex, perhaps a little prolongation of the respiratory murmur, and inequality of percussion sounds, or other of the many deviations from the natural state by which we infer the presence of tubercle. At the same time he is wasting, has night sweats, and has spat blood. He is sent into the country, or to sea; takes cod oil, iron, and so on; and under this treatment loses his general symptoms, and gains weight. But when his chest is again examined, it is found that the local disease has been advancing gradually and insidiously, and that the unmistakable dry crackle of tubercle, or even the humid click of a more advanced stage, is now to be heard in the lung. This is not the *usual* course of such cases. The improvement of chest signs commonly follows that of the general system very certainly; but

such cases as I have described do frequently occur. If now a small seton is introduced at the insertion of the deltoid muscle, where vaccination is usually performed, or at the outside of the knee, it will usually be found that the pulmonary symptoms will be held in abeyance, while the general health continues to improve. Patients assure me that there is not half the inconvenience from this treatment that might be expected, far less than that from Croton oil liniment, or blisters, or the unmanageable pustules of tartar emetic ointment. The theoretically depressing influences of the discharge are not found to exist in practice ; and it is not necessary to introduce more than a few threads, or a narrow band of gutta percha. As the morbid sounds gradually subside—which, in all probability, they will do, if the patient takes a long sea voyage—the threads may be removed one by one, and the seton allowed to heal. In the more advanced stages of consumption, I have also seen the greatest benefit result from the introduction of a seton over the locality of a cavity. This treatment is, I believe, still in vogue on the continent of Europe ; but English practitioners seem to have disregarded it, though for what reason, except that many people have a sort of horror of the name of a seton, I cannot understand.

And now, in conclusion, let me beg my reader to overlook the many faults and deficiencies he has found in this work ; for I have no pretensions to be an adept in the art of book-making, and owing health, and probably life, to the Australian climate, I have found it difficult to avoid a partisanship of style, and to divest my judgment altogether of the bias of personal gratitude.

However, on revising what I wrote twelve months ago, so far from seeing any reason to modify or alter, I find that the fullest confirmation of my first impressions has been the result of all that I have seen and heard on the subject since then. And, as the climates of the southern hemisphere have hitherto been almost unbroken ground in the field of pathological research, perhaps this book may have, at least, the good effect of suggesting further and more minute enquiry into the vital statistics of the Australian colonies—a subject of great interest and remarkable novelty to the physician and political economist of the Old World.

APPENDIX.

VICTORIAN RAILWAYS.

RETURNS for the first five months of 1863, excepting those of the least important line, viz. the Melbourne and Essendon.

GOVERNMENT LINES.

BALLARAT LINE.

Month	Passengers			Goods			Total		
	£	s.	d.	£	s.	d.	£	s.	d.
January	10,999	17	0	6,822	0	10	17,821	17	10
February	10,817	13	11	7,117	15	7	17,935	9	6
March	8,877	13	2	7,175	16	6	16,053	9	8
April	10,351	7	1	8,324	15	9	18,676	2	10
May	8,054	8	1	6,581	16	9	14,635	4	10

MURRAY RIVER LINE.

Month	Passengers			Goods			Total		
	£	s.	d.	£	s.	d.	£	s.	d.
January	12,671	9	2	5,598	17	0	18,270	6	2
February	10,261	13	9	7,516	1	1	17,777	12	10
March	9,709	2	6	10,750	13	0	20,459	16	5
April	10,585	16	6	10,363	11	2	20,949	7	8
May	8,648	6	1	9,206	15	6	17,855	1	7

WILLIAMSTOWN LINE.

Month	Passengers			Goods			Total		
	£	s.	d.	£	s.	d.	£	s.	d.
January	905	1	10	1,057	11	3	1,962	13	1
February	712	17	7	2,006	13	6	2,719	11	1
March	698	18	8	1,243	4	0	1,942	2	8
April	737	6	3	2,133	13	7	70	19	10
May	701	7	4	1,551	9	9	2,252	17	1

PRIVATE LINES.

MELBOURNE AND HOBSON'S BAY RAILWAY.

	Receipts		
	£	s.	d.
January	6,377	0	4
February	6,192	16	8
March	6,145	14	6
April	6,766	0	8
May	4,857	10	11

THE MELBOURNE RAILWAY.

	Receipts		
	£	s.	d.
January	3,291	7	2
February	2,973	7	9
March	2,860	16	6
April	3,925	14	11
May	3,159	16	2

THE BRIGHTON RAILWAY.

	Receipts		
	£	s.	d.
January	1,100	16	2
February	891	18	6
March	833	9	9
April	1,078	11	6
May	774	7	10

APPENDIX A.

The trade of the colony of Victoria alone was in 1860 as follows:—

1860.

Entered inwards	Tons	Value of imports	£
. 581,642		. 15,093,730	
Cleared outwards		Value of exports	£
. 599,137		. 12,962,704	

In 1850 the imports were valued at only 744,925*l.*, and the exports at 1,041,796*l.* In 1860 this colony consumed no less than 9,564,093*l.* worth of British manufactures. Of the exports, gold was, of course, the most valuable, viz. 8,624,860*l.*; and next wool, 2,025,066*l.*

The revenue of the colony in 1860, after only ten years of separate government, was 3,066,220*l.*

During these ten years there has been expended upon public works no less than 3,391,753*l.*

Another instance of the rapid growth and prosperity of these colonies, where not only the stimulus of gold attracts immigration, but also the climate, which permits agricultural and pastoral pursuits to be carried on all the year round, is seen in the case of Queensland. It seems only yesterday that Moreton Bay district was settled at all, but already its northern and central districts, a community *only five years old*, are clamorous for a separate government. There are four sea-ports, whose trade in 1862 was as follows:—

NORTHERN AND CENTRAL QUEENSLAND.

	Imports £	Exports £	Total £
Rockhampton . . .	244,919	148,636	
Maryborough . . .	89,556	110,761	
Gladstone . . .	21,348	14,390	
Port Denison . . .	10,465	4,069	
	<u>366,288</u>	<u>277,856</u>	<u>644,144</u>

APPENDIX B.

The following report of the current market prices in Melbourne is from the *Argus* of June 13, 1863. It will give the reader a good idea of the actual cost of the necessaries of life in the depth of winter.

RETAIL MARKETS.

Butchers' Meat.—Beef, 5*d.* to 7*d.* per lb.; mutton, 4*d.* to 6*d.* do.; veal, 7*d.* to 8*d.* do.; pork, 9*d.* to 10*d.* do.

Poultry.—Turkeys, 7*s.* to 7*s.* 6*d.* each; geese, 11*s.* to 12*s.* per pair; ducks, 6*s.* 6*d.* to 7*s.* do.; fowls, 5*s.* 6*d.* to 6*s.* 6*d.* do.;

rabbits, 4s. to 4s. 6d. per brace; butter, fresh, 2s. per lb.; eggs, 3s. per dozen; bread, 6d. to 7d. the 4 lb. loaf; milk, 8d. to 10d. per quart.

EASTERN MARKET.

The market continues to be over-abundantly supplied with vegetables, and the prices low; the demand, however, was better to-day than it has been for some time past. The following were the prices ruling:—

Vegetables.—Jerusalem artichokes, 1½d. per lb.; beet, 1s. per dozen; bouquets, 9s. to 12s. per dozen; cabbages, 3d. to 1s. 6d. per dozen; carrots, 8d. to 1s. per dozen bunches; cauliflowers, 1s. 6d. to 6s. per dozen; celery, 2s. 6d. to 6s. per dozen bunches; watercress, 8d. to 1s. per dozen bunches; horse-radish, 4s. to 6s. per dozen bunches; leek, 1s. per dozen bunches; lettuce, 3d. to 6d. per dozen; marjoram, 9d. per dozen bunches; mint, 9d. do.; onions (dried), 28s. per cwt.; do. (green), 6d. per dozen bunches; parsley, 6d. per dozen bunches; parsnips, 1s. do.; peas, 3d. per lb.; potatoes, 5s. to 6s. 6d. per cwt.; do. (young), 8s. to 9s. do.; pumpkins, 4s. per dozen; radish, 9d. per dozen bunches; sage, 1s. do.; savoys, 2s. per dozen; shallots, 4d. per lb.; spinach, ½d. per lb.; thyme, 9d. per dozen bunches; turnips, 4d. to 6d. do.; tomatoes, ¾d. per lb.; vegetable marrows, 6d. to 1s. per dozen.

Fruits.—Apples, 3d. to 4d. per lb.; pears, 3½d. to 5d. per lb.

Dairy Produce.—Butter, 1s. 6d. to 1s. 8d. per lb.; ducks, 5s. 6d. to 6s. 6d. per pair; eggs, 2s. 2d. to 2s. 6d. per dozen; geese, 8s. to 10s. per pair; hens, 4s. 6d. to 5s. 6d. do.; honey, 7d. to 9d. per lb.; pork, 9d. per lb.; sucking pigs, 12s. 6d. to 15s. each; turkeys, 9s. to 12s. per pair; bacon, 1s. 9d. per lb.

The following published tables of mortality in Victoria, from the office of the Registrar-General, will be interesting to those who study the minutiae of vital statistics:—

VICTORIA, 1861.

CAUSES OF DEATH IN MELBOURNE AND SUBURBS DURING
THE QUARTER ENDING MARCH 31.

Causes of Death	Under five years	Over five years	Totals	Proportions per cent.
1. Zymotic diseases	414	111	525	44·98
<i>Sporadic diseases:—</i>				
2. Of uncertain seat	126	38	164	14·03
3. Of nervous system	112	39	151	12·91
4. Of respiratory system	44	98	142	12·14
5. Of circulatory system	2	8	10	·85
6. Of digestive organs	77	33	110	9·40
7. Of urinary organs	1	3	4	·34
8. Of generative organs . . . . .	...	12	12	1·02
9. Of locomotive organs	2	5	7	·59
10. Of integumentary system . . . . .	...	...	...	...
11. Old age . . . . .	...	10	10	·85
12. External causes	6	21	27	2·30
Unspecified	4	3	7	·59
Totals	788	381	1,169	100·00

I. *Zymotic diseases.*—Measles, 24; scarlatina, 196; whooping-cough, 21; diphtheria, 28; croup, 12; thrush, 7; diarrhœa, 128; dysentery, 71; cholera, 6; influenza, 1; typhus fever, 26; erysipelas, 4; syphilis, 1.

II. *Diseases of uncertain seat.*—Hæmorrhage, 5; dropsy, 5; abscess, 10; cancer, 17; atrophy, 53; debility, 67; malformation, 6; scrofula, 1.

III. *Diseases of the nervous system.*—Cephalitis, 19; hydrocephalus, 23; apoplexy, 8; paralysis, 5; convulsions, 60; tetanus, 2; insanity, 2; delirium tremens, 3; disease of the brain, 27; sun-stroke, 2.

IV. *Diseases of the respiratory system.*—Laryngitis, 9; quinsy, 5; bronchitis, 15; pleurisy, 3; pneumonia, 35; phthisis, 75.

V. *Diseases of the circulatory system.*—Pericarditis, 2; disease of the heart, 7; aneurism, 1.

VI. *Diseases of the digestive organs.*—Teething, 44; gastritis, 9; enteritis, 9; peritonitis, 2; cirrhosis, 1; tabes mesenterica, 18; ascites, 5; intestinal rupture, 1; disease of the stomach, 3; hepatitis, 9; jaundice, 4; worms, 2; colic, 1; disease of the liver, 2.

VII. *Diseases of the urinary organs.*—Cystitis, 2; stricture of the urethra, 1; granular disease of the kidneys, 1.

VIII. *Diseases of the generative organs.*—Childbirth, 6; disease of the womb, 2; ovarian abscess, 2; ovarian dropsy, 2.

IX. *Diseases of the locomotive organs.*—Disease of the joints, 6; rheumatism, 1.

X. *Old age.*—Four males, aged 60, 64, 75, and 83; six females, aged 52, 57, 60, 60, 70, and 87 years.

XI. *External causes.*—Drowning, 7; burns, 3; wound in the bowels, 1; killed by a blow on the head with a stone, 1; accidents (not specified), 8; fall from a horse, 1; crushed by a gig, 1; suicide (throat cut), 1; skull fractured, 2; suffocation, 2 infants.

	Mean temperature of month of	Mean Daily Range of Temperature
	January, 67°	19°
	February, 65°	18°
	March, 65°	19°
	Mean temperature of the quarter,	66°

QUARTER ENDING JUNE 30, 1861.

Causes of Death	Under five years	Over five years	Totals	Proportions per cent.
1. Zymotic diseases	241	109	350	36·05
<i>Sporadic diseases :—</i>				
2. Of uncertain seat	97	31	128	13·18
3. Of nervous system	88	53	141	14·52
4. Of respiratory system	49	128	177	18·23
5. Of circulatory system	1	29	30	3·09
6. Of digestive organs	35	32	67	6·90
7. Of urinary organs	1	4	5	·51
8. Of generative organs . . . . .	...	19	19	1·96
9. Of locomotive organs . . . . .	...	5	5	·51
10. Of integumentary system	2	2	4	·41
11. Old age . . . . .	...	3	3	·31
12. External causes	11	28	39	4·02
Unspecified . . . . .	...	3	3	·31
Totals	525	446	971	100·00

I. *Zymotic diseases.*—Measles, 10; scarlatina, 170; whooping-cough, 25; diphtheria, 20; croup, 18; diarrhœa, 41; dysentery, 29; cholera, 1; influenza, 1; remittent fever, 1; typhus fever, 28; erysipelas, 4; syphilis, 1; glanders, 1.

II. *Diseases of uncertain seat.*—Hæmorrhage, 5; inflammation, 2; dropsy, 9; abscess, 3; mortification, 4; scrofula, 1; cancer, 5; tumor, 1; atrophy, 26; debility, 69; malformation, 3.

III. *Diseases of the nervous system.*—Cephalitis, 29; hydrocephalus, 14; apoplexy, 15; paralysis, 10; convulsions, 49; tetanus, 2; cholera, 1; insanity, 1; epilepsy, 3; delirium tremens, 3; disease of the brain, 13; disease of the spine, 1.

IV. *Diseases of the respiratory system.*—Laryngitis, 3; bronchitis, 22; quinsy, 3; pleurisy, 4; pneumonia, 39; hydrothorax, 3; asthma, 2; phthisis, 97; disease of the lungs, 4.

V. *Diseases of the circulatory system.*—Aneurism, 7; pericarditis, 3; disease of the heart, 20.

VI. *Diseases of the digestive organs.*—Teething, 12; gastritis, 5; enteritis, 9; tabes mesenterica, 8; peritonitis, 5; ascites, 3; worms, 1; ileus, 3; hepatitis, 10; intussusception, 1; jaundice, 1; disease of the liver, 9.

VII. *Diseases of the urinary organs.*—Nephritis, 2; diabetes, 1; stricture of the urethra, 1; disease of the kidneys, 1.

VIII. *Diseases of the generative organs.*—Paramenia, 1; childbirth, 10; disease of the womb, 8.

IX. *Diseases of the locomotive organs.*—Necrosis, 1; rheumatism, 2; disease of the joints, 2.

X. *Diseases of the integumentary system.*—Phlegmon, 1; ulcer, 3.

XI. *Old age.*—Males, 2, at 62 and 63 years; female, 1, at 82 years.

XII. *External causes.*—Drowning, 5; burns and scalds, 5; fractures and contusions, 9; passed over by wheels of vehicles, 2; murdered (manner not stated), 2; hanging (judicial), 1; hanging (suicidal), 2; poison (suicidal), 1; poison (not stated), 1; poison (lead), 2; suffocation, 3; starvation, 1; accidents (unspecified), 4; suicide (unspecified), 1.

Mean temperature of	Month	Mean Daily Range of Temperature
April,	59°	18°
"	May, 52°	14°
"	June, 50°	12°
"	Quarter, 54°	

QUARTER ENDING SEPTEMBER 30, 1861.

Causes of Death	Under five years	Over five years	Totals	Proportions per cent.
1. Zymotic diseases	145	86	231	30·00
<i>Sporadic diseases:—</i>				
2. Of uncertain seat	65	38	103	13·38
3. Of nervous system	54	55	109	14·16
4. Of respiratory system	51	119	170	22·08
5. Of circulatory system	2	27	29	3·76
6. Of digestive organs	21	24	45	5·84
7. Of urinary organs . . . . .	...	9	9	1·17
8. Of generative organs . . . . .	...	9	9	1·17
9. Of locomotive organs . . . . .	...	2	2	·26
10. Of integumentary system . . . . .	...	2	2	·26
11. Old age . . . . .	...	6	6	·78
12. External causes	17	33	50	6·49
Unspecified	2	3	5	·65
Totals	357	413	770	100·00

I. *Zymotic diseases.*—Measles, 6; scarlatina, 97; whooping-cough, 19; diphtheria, 29; croup, 13; thrush, 3; diarrhœa, 10; dysentery, 21; cholera, 1; influenza, 4; remittent fever, 1; typhus fever, 19; erysipelas, 6; syphilis, 2.

II. *Diseases of uncertain seat.*—Inflammation, 1; hæmorrhage, 5; dropsy, 15; abscess, 3; mortification, 3; purpura, 2; scrofula, 2; cancer, 7; gout, 1; atrophy, 10; debility, 49; malformation, 5.

III. *Diseases of the nervous system.*—Cephalitis, 27; hydrocephalus, 7; apoplexy, 14; paralysis, 10; convulsions, 28; tetanus, 1; chorea, 2; epilepsy, 3; insanity, 1; delirium tremens, 2; disease of the brain, 14.

IV. *Diseases of the respiratory system.*—Laryngitis, 4; quinsy, 3; bronchitis, 35; pleurisy, 1; pneumonia, 39; phthisis, 81; asthma, 2; disease of the lungs, 5.

V. *Diseases of the circulatory system.*—Pericarditis, 5; aneurism, 3; disease of the heart, 21.

VI. *Diseases of the digestive organs.*—Teething, 12; enteritis, 1; peritonitis, 2; tabes mesenterica, 3; hydatids in the liver, 3; hernia, 1; ascites, 3; intussusception, 1; ulceration, 2; dyspepsia, 1; hepatitis, 7; jaundice, 2; disease of the liver, 6; cirrhosis, 1.

VII. *Diseases of the urinary organs.*—Nephria, 2; nephritis, 1; cystitis, 1; stricture of the urethra, 1; disease of the kidneys, 4.

VIII. *Diseases of the generative organs.*—Hysteritis, 1; childbirth, 6; disease of the womb, 2.

IX. *Diseases of the locomotive organs.*—Rheumatism, 2.

X. *Diseases of the integumentary system.*—Carbuncle, 1; disease of the skin, 1.

XI. *Old age.*—Three males, two at 83 and one at 87 years; three females, at 76, 85, and 86 years.

XII. *External causes.*—Judicial hanging, 3; drowning, 12; burns and scalds, 9; fractures and contusions, 7; insane abstinence from food, 1; throat cut (suicide), 2; gunshot wound, 1; suffocation (overlain by mother), 7 infants; choked whilst swallowing a potato, 1 lunatic; asphyxia (not stated), 1; passed over by a wheel, 1; poisoning, 2; accidental death (unspecified), 3.

	Mean temperature	Daily Range of Temperature
Mean temperature of July,	46°	12°
" " August,	49°	16°
" " September,	57°	19°
" " Quarter,	51°	

QUARTER ENDING DECEMBER 31, 1861.

Causes of Death	Under five years	Over five years	Totals	Proportions per cent.
1. Zymotic diseases	109	44	153	20.73
<i>Sporadic diseases:—</i>				
2. Of uncertain seat	99	23	122	16.53
3. Of nervous system	77	45	122	16.53
4. Of respiratory system	47	111	158	21.41
5. Of circulatory system	1	30	31	4.20
6. Of digestive organs	46	29	75	10.16
7. Of urinary organs	2	8	10	1.35
8. Of generative organs . . . . .	...	4	4	.54
9. Of locomotive organs	1	3	4	.54
10. Of integumentary system	1	2	3	.41
11. Old age . . . . .	...	12	12	1.63
12. External causes	10	31	41	5.56
Unspecified	2	1	3	.41
Totals	395	343	738	100.00

I. *Zymotic diseases.*—Scarlatina, 15; whooping-cough, 17; croup, 4; thrush, 3; diarrhœa, 49; dysentery, 32; influenza, 3; typhus fever, 9; erysipelas, 5; diphtheria, 9; cholera (infantile), 1; remittent fever, 2; scurvy, 1; syphilis, 2; measles, 1.

II. *Diseases of uncertain seat.*—Dropsy, 7; abscess, 4; cancer, 8; tumor, 3; atrophy, 23; debility, 71; hæmorrhage, 3; scrofula, 2; malformation, 1.

III. *Diseases of the nervous system.*—Cephalitis, 13; hydrocephalus, 15; apoplexy, 17; paralysis, 4; convulsions, 47; insanity, 3; disease of the brain, 16; disease of the spine, 2; delirium tremens, 2; sun-stroke, 1; epilepsy, 2.

IV. *Diseases of the respiratory system.*—Bronchitis, 32; pleurisy, 4; pneumonia, 35; phthisis, 75; disease of the lungs, 6; hydrothorax, 2; quinsy, 2; asthma, 2.

V. *Diseases of the organs of circulation.*—Disease of the heart, 24; aneurism, 6; varicose veins, 1.

VI. *Diseases of the digestive organs.*—Teething, 13; gastritis, 8; enteritis, 5; tabes mesenterica, 12; ascites, 2; ulceration, 3; colic, 5; hydatids in the liver, 1; hepatitis, 13; jaundice, 7; intestinal stricture, 2; peritonitis, 3; disease of the liver, 1.

VII. *Diseases of the urinary organs.*—Disease of kidneys, 6; stricture of the urethra, 1; nephritis, 1; diabetes, 1; cystitis, 1.

VIII. *Diseases of the organs of generation.*—Disease of womb, 3; childbirth, 1.

IX. *Diseases of the organs of locomotion.*—Rheumatism, 3; arthritis, 1.

X. *Diseases of the integumentary system.*—Ulcer, 2; psoriasis, 1.

XI. *Old age.*—Males, 8; females, 4; aged respectively, commencing with the males, 51, 56, 59, 61, 63, two at 70, and one at 77; and thus for the females, 50, 62, 70, and 73.

XII. *External causes.*—Hanging and suffocation, 5; drowning, 19; burns and scalds, 3; fractures and contusions, 7; poisoning, 1; snakebite, 1; accidents (unspecified), 5.

Mean temperature of	Mean Daily Range of Temperature
October, 58°	19°
November, 60°	20°
December, 62°	20°
Quarter, 60°	

Since this work was finished I have seen a paper in the *Edinburgh Medical Journal* for August 1859, on the 'Comparative Mortality in Australia and England,' by Dr. Beddoe, who appears to have been the first to call the attention of the profession in England to antipodal vital statistics. Those who have seen this paper will remark that although there are certain discrepancies between the figures quoted by Dr. Beddoe and the above, particularly as regards zymotic diseases, which appear to have notably increased during the last few years, yet the mortality from phthisis, from tubercular and scrofulous diseases, and from disease of the respiratory organs in general, is as low or lower than it was in the years from which that gentleman took his statistics. The deaths from scarlatina, dysentery, and diarrhœa appear very numerous; but the absence of small-pox, epidemic cholera, and endemics of the intermittent type bring the mortality from the zymotic class down to not more than 30 per cent. of deaths from all causes.

It will be noticed that kidney disease, renal dropsy, whether from chronic nephritis or the specific poison of scarlet fever, are far below the European average, and so is old age; while violent deaths and affections of the circulatory and nervous systems cause more deaths here than at home. The deaths entered as 'atrophy' and 'debility' are mostly in infants, from neglect, improper food, and want of breast milk, and have not usually a scrofulous or tuberculous character.

The deaths entered as 'typhus' are probably all continued non-contagious fever, with typhoid symptoms, such as is common in the valley of the Thames in England (e. g. at Richmond).

Genuine petechial typhus, or enteric contagious typhoid fever, occur rarely if ever in this colony.

CLIMATES OF MELBOURNE AND LONDON.

COMPARATIVE METEOROLOGICAL TABLE.

Month	Mean Barometer		Mean Thermometer		Mean Dew Point			Mean Rainfall	
	Four Daily Observations at Melbourne	At London	Four Daily Observations in shade at Melbourne	At London	Thermometer in shade at 2.30 P.M. at Melbourne	Wet Thermometer at 2.30 P.M. at Melbourne	At London	At Melbourne	At London
January	inches 30.065	inches ...	67.94	...	73.12	65.60	...	inches 1.36	inches ..
July . . . . .	...	29.452	...	63.17	...	...	55.37	...	2.44
February	29.909	...	67.31	...	72.84	65.90	...	0.95	...
August . . . . .	...	29.971	...	62.78	...	...	55.16	...	2.37
March	30.099	...	63.92	...	68.92	63.06	...	1.60	...
September . . . . .	...	29.882	...	57.00	...	...	50.49	...	2.97
April	29.991	...	60.56	...	65.01	60.40	...	3.13	...
October . . . . .	...	29.949	...	50.37	...	...	45.64	...	2.46
May	29.962	...	54.91	...	58.90	55.26	...	3.67	...
November . . . . .	...	29.834	...	43.12	...	...	39.87	...	2.58
June	29.960	...	51.00	...	54.54	51.93	...	2.41	...
December . . . . .	...	29.957	...	40.09	...	...	37.47	...	1.65
July	29.983	...	49.34	...	53.17	50.57	...	2.18	...
January . . . . .	...	29.952	...	36.02	...	...	33.49	...	1.56
August	29.942	...	50.66	...	54.50	51.29	...	3.61	...
February . . . . .	...	29.926	...	39.75	...	...	35.98	...	1.45
September	29.964	...	55.08	...	58.90	53.37	...	3.27	...
March . . . . .	...	29.935	...	42.65	...	...	37.82	...	1.36
October	29.963	...	58.97	...	63.72	58.65	...	2.54	...
April . . . . .	...	29.919	...	47.57	...	...	40.57	...	1.55
November	29.835	...	62.25	...	66.76	61.18	...	4.27*	...
May . . . . .	...	29.959	...	55.26	...	...	46.79	...	1.67
December	29.846	...	66.29	...	70.98	64.21	...	1.86	...
June . . . . .	...	29.970	...	60.68	...	...	53.16	...	1.98
Means	29.960	29.892	59.02	49.87	63.45	58.62	44.32	2.571	2.003
Excess of Mel- bourne over London	0.068	...	9.15	...	...	14.30	...	0.558	...

* This is the average of November for the five years, 1846, 1847, 1848, 1850, and 1851; in 1849, 12.13 inches fell, which amount is not included in the total from which the mean of 4.27 inches was found. If we include 1849, the mean for November in the six years ending 1851 would be 5.58 inches.

The numbers in the columns headed London have been taken from a table showing the climate of London for twenty years ending 1846.

The thermometer in shade at Melbourne was fixed at the Signal Station, Flagstaff Hill, 130 feet above the level of the sea. It was at the SW. side of the building, was read off daily at 8.30 A.M., 2.30 P.M., sunset, and 9 P.M.

The following are examples of the complications of phthisis in Australia, taken from the note-book of the resident medical officer of the Benevolent Asylum. All these cases had extensive tubercular disease of the lungs:—

Notes of the condition of the heart and other organs in sixteen cases of phthisis in which post-mortem examination was made during the years 1862-3:

CASE

- I. Male, æt. 66. Heart much enlarged. Aorta and its valves converted into a bony mass. Ossific deposit for considerable distance along the aorta. Liver much enlarged.
- II. Female, æt. 32. Heart and liver larger than natural.
- III. Male, æt. 59. Chronic disease of liver and spleen.
- IV. Male, æt. 26. Heart and liver enlarged.
- V. Male, æt. 24. Aortic valves much thickened. Liver very large.
- VI. Male, æt. 43. Heart enlarged.
- VII. Male, æt. 60. Heart very large. Chronic disease of liver and kidneys.
- VIII. Male, æt. 20. Fatty liver and kidneys.
- IX. Male, æt. 56. Heart enlarged. Aortic valves thickened. Spleen and kidneys enlarged. Liver fatty.
- X. Male, æt. 60. Aortic valves much thickened by bony deposit. Liver enlarged. Tumor of pylorus (carcinomatous?).
- XI. Male, æt. 53. Bony deposits in aorta. Liver enlarged.
- XII. Male, æt. 58. Bony deposits in aorta. Liver enlarged.
- XIII. Male, æt. 25. Liver very large; contained two large hydatid cysts. Abscess in right kidney.
- XIV. Male, æt. 39. Fatty liver.
- XV. Male, æt. 56. Enlarged liver.
- XVI. Male, æt. 53. Aortic valves thickened. Bony deposits. Liver fatty.

The mean of these four diurnal observations is that given in the third column of the above table. The mean dew point, or the height of the wet thermometer, was only taken at 2.30 P.M., and is that inserted in the sixth column. The means for January at Melbourne have been deduced from observations made during five consecutive years from 1847 to 1851 inclusive. The means for all the other months have been found by taking the means of observations continued during six consecutive years from 1846 to 1851 inclusive. For the sake of comparison with the Melbourne wet thermometer or mean dew point, read off daily at 2.30 P.M., the mean height of the thermometer in shade at the same hour has been inserted in the fifth column.—From the *Statistical Register of Victoria for 1854*, edited by W. H. Archer, Registrar-General.

It will be noticed that all these cases, with one exception, were males; that nine of them were over 50 years of age; that all, except one, had disease of the liver; that eleven had heart complication of some kind, and of these seven are specially noticed as having aortic disease.

The following cases were found to have tubercles in the lungs, dying of other disease:—

CASE

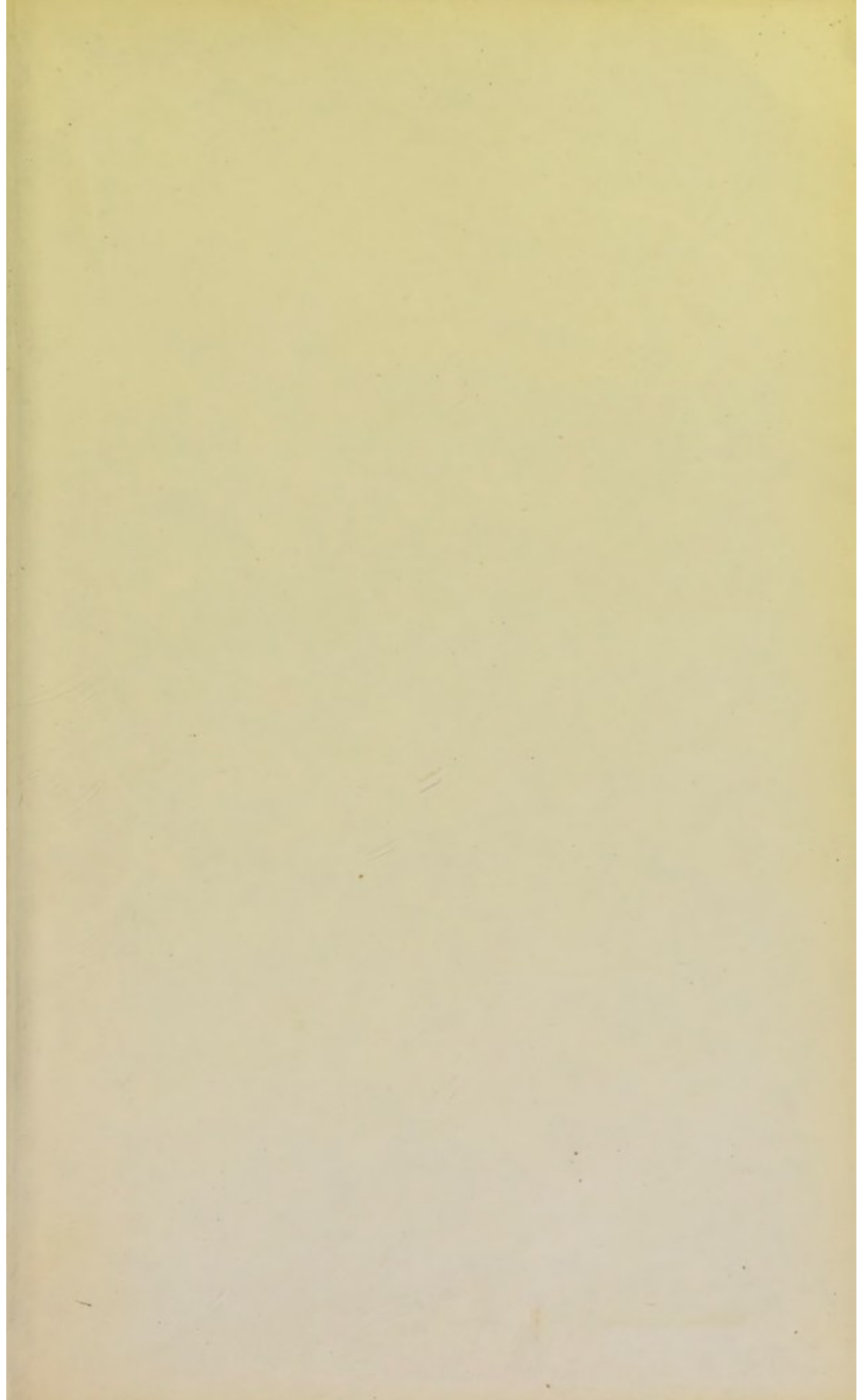
- XVII. Male, *æt.* 81. Cause of death, granular disease of kidney and old age. Aortic and mitral valves thickened, with ossific deposits.
- XVIII. Male, *æt.* 55. Softening of brain, paralysis, insanity. Liver and kidneys much congested.
- XIX. Male, *æt.* 69. Cause of death, pneumonia; enlarged liver.
- XX. Male, *æt.* 77. Enlarged liver. Hydatid cysts in kidneys.
- XXI. Male, *æt.* 34. Paralysis. Dementia. Thickened aortic valves; no bony deposit. Hydatid cysts in kidney.
- XXII. Female, *æt.* 40. Thickening of mitral and aortic valves. Much fluid in pericardium.
- XXIII. Male, *æt.* 59. Died of pleuro-pneumonia. Liver large. Heart healthy.
- XXIV. Male, *æt.* —. Died of pneumonia. Aortic disease and hydatids in both kidneys.

The Benevolent Asylum is an institution for the relief of the aged, infirm, disabled, or destitute. A great part of the inmates have been resident many years in these colonies. The post-mortem examinations show that of whatever disease a patient may die, if he is over 40 years of age he has, in all probability, chronic liver disease and arterial degeneration in some form.

In January 1862, there were 252 males and 60 females in the asylum.

LONDON

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