Introductory lecture on "climate" / by Archibald William Pulteney Pinkerton ; delivered at the Medical School, Surgeons' Hall, Edinburgh, May 28, 1857.

INTRODUCTORY LECTURE

ON

'CLIMATE.'

BY

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DELIVERED AT THE MEDICAL SCHOOL, SURGEONS' HALL, EDINBURGH,

MAY 28, 1857.

EDINBURGH: SUTHERLAND AND KNOX.

MDCCCLVII.

MURRAY AND GIBB, PRINTERS, EDINBURGH.

TO

WILLIAM PULTENEY ALISON, M.D., EDIN.,

D.C.L., OXON.; F.R.C.P.E.; HON. F.R.C.P.D.;

FIRST PHYSICIAN TO HER MAJESTY FOR SCOTLAND; EMERITUS PROFESSOR OF PRACTICE OF MEDICINE, UNIVERSITY OF EDIN., ETC., ETC., ETC.,

AS A SLIGHT TOKEN

OF THE

RESPECT, ADMIRATION, AND AFFECTION

OF A

NEPHEW.

The following Lecture is the first of a series on the Effect of Climate on Health and Disease, and Hygiene, which I purpose giving this summer. The importance of the subject, and its bearing directly on Sanatory Measures at home, must be evident to every one who is acquainted with disease.

A. W. P. P.

44, Heriot Row, Edinburgh,
May 28, 1857.

LECTURE ON 'CLIMATE.'

GENTLEMEN,—In coming before you to-day, I would not have you suppose that I intend to lecture or to teach as one who is possessed of consummate wisdom. What I would do, is merely to call your attention to facts relative to Climate which otherwise might not have been presented to you, and to endeavour to show you the real influence of change in health and disease.

My experience is slight, but it has been reaped in various parts; it has been forced upon me often by having to act altogether on my own resources and responsibility. And this has been gained, too, at the sacrifice of several who, had they lived, might now have been teaching you far more ably than I ever can.[1] With them, who now lie in the grave far away from home, I have, only a few short years ago, sat on those very benches listening to him who taught so ably, who, for the honour of this school, and for our advancement, sacrificed himself. And though he now sleeps by the banks of the Belbec, still does he live enshrined in the hearts and memories of those who had the happiness of calling him their friend, or who had the honour of styling themselves his pupils.[2]

[1] Drs Alexander Struthers and Edmond S. Wason, who died within a few days of one another from Fever contracted in Scutari, during their devoted attendance on the sick.

Others, too, have passed away in other climes.—Drs David Keith, Alexander Brown, A. Thomson.

[2] R. Mackenzie, M.D., Lecturer on Surgery in this School, went out to the East in the disinterested pursuit of knowledge. He died of cholera after the Alma, at which battle he had exerted himself so much as to have been noticed by the Commander, and cheered by the men. He lies on the banks of the Belbec, where a neat cross has been raised by the officers and soldiers of the 79th Highlanders, with whom he did duty.

The subject I have chosen is too extensive for a short course of lectures. It is so diversified, that it will be impossible to do anything more than merely glance at the leading features.

Few data are yet given whereon to speculate; but what we do already know, we may use as an aid in gaining more information. And if I do so fix on your memories a few general statements relative to climate and to Sanatory Measures, that you will in future carry out the study and find facts for yourselves, my object will be accomplished. To study the laws whereby nature regulates disease, whereby man brings maladies on his own head by wilful neglect, whereby pestilence arises and cuts off more than the sword, is not only a branch of our profession, but one which is most intimately connected with our improvement as a civilized nation. With his thermometer and hygrometer, one may in a few months, in any one place, obtain facts by which to explain some yet unsolved mystery. We may never be able to say why epidemics rage for a time and die away, but we may ascertain what increases the malady when once it does appear, and so we may prevent much misery. 'When,' says Dr Alison, 'the course and effects of a disease are beyond our power, we may still, by a simple induction of facts, ascertain its external causes; and if this knowledge of the laws of nature is allowed the influence which it ought to have on the council of nations, we may be fully justified in asserting, that we do more for the prevention of sickness and suffering among mankind, by studying the mode of propagation of these diseases, even so far as yet known, and giving that advice by which they may be shunned, than we should do by the discovery of a new remedy, more powerful than any that is known in medicine.'[1]

The subject before us is a branch of Hygiene.—By limiting the term to climate, I would signify that the most important point to be taken up at present is the relation between climate and mankind. To understand clearly how climate acts on

[1] The exciting causes of Epidemics.—*British and Foreign Medical Review, Jan.* 7, 1854.

disease as well as on health—to see how climates differ, and from what causes, we must first have a clear perception of Physical Geography—we must study the features of every country, the state of the atmosphere, the winds, position of mountains, of swamps, and of forests. It will be our endeavour, in the ensuing lectures, to show the value of Humboldt's system of Isothermal, Isotheral, and Isochimenal lines. We will thus see that Scotland has a mean annual (50°) equal to that of the Crimea and New York. These two places have most intensely cold winters and burning summers, while we enjoy a much more equable temperature. I have known the thermometer during the day, in the Crimea, as low as—5°, when it was absolutely painful to stand outside; and I have known it so hot, that the men could hardly bear up against it. We will find that the reason why we enjoy such equability of temperature, compared with these two places, is, because we are insular, and they continental. The isotherm of 40° runs through St Petersburg, through Sweden and Norway, up to Iceland, and then descends to Newfoundland.

Again, the surface of the earth must be considered. Looking at a physical map of Europe, one sees at once what an extent of green waste, and steppes, and rivers abound away to the east, while the mountains are all congregating towards the south. From this we see why the east wind of our shores is so raw and annoying. Every continental wind is more or less irritating, every sea breeze refreshing. Continents lessen the temperature, as is seen in the isothermals falling so decidedly in the northern hemisphere, and running almost parallel in the southern.

All these facts must be understood, to see thoroughly how disease originates, and why it spreads. Though every continent differs, and even varies in the form of disease common to it, still there runs a similarity through all, a grouping into two or three leading types.

And, as a branch of this search after disease, comes our attention to Sanatory Measures. It is useless to try to miti-

gate maladies abroad, if we do not look closely into our own streets and lanes at home. The facts already revealed as occurring in our large towns—our literally allowing thousands of fellow-creatures, who know no better, to wallow in the mire, and to inhale poison at every breath—are revolting. Much has been done to alleviate the poor, but very much remains still to be accomplished. And it is only by studying carefully and methodically the causes of disease, and the agents of its propagation, that we can understand how important it is to allow no such conditions, in towns or elsewhere, as we know now to be certain forerunners of disease.

If we can study some of the facts already given, we may improve not only ourselves and the places in which we reside, but we may do material good to the nation at large.

To-day, I will direct your attention to one of the most important points—the good to be derived by sending invalids abroad. And, to see how this is founded on rational grounds, the varieties of climate must first be mentioned.

Hot and cold climates are the general terms, with the temperate as intermediate. Other conditions are necessary for health, however; and a better division will be *moist* and *dry*. A *moist* climate, cold or hot, is to be found everywhere that civilization has extended. This form is most general. The moisture of these temperate regions need not be exemplified. The chilly fogs of an easterly wind are well known, caused by the passage of air over the Norwegian mountains and the low-lying swamps and forests of Central Europe. The more genial S.W. and W. breezes of our shores are carried hither from a pure marine place of origin, on the breast of a current of water 10° warmer than those of the ocean itself. They are warm and moist, differing in effect, as all know, from the chilly N.E and E.

A *dry* climate, hot or cold, is more rare. Within the tropics, a continent will cause a dry air, in contradistinction to a moist sea atmosphere. But in these cool regions, where evaporation is slow and vegetation constant, a thoroughly dry

climate cannot be obtained. Africa, Arabia, some parts of India and Australia, and Peru, are the driest we can name. The great African desert extends its drying influences to Algeria and Egypt, while these two continental sites are open on the north to an extent of water, which of itself is several degrees warmer than the Atlantic. In general, a dry climate must be sought for on a continent, and in warm latitudes. A wind blowing across a dry open warm country, unless very strong and irritating, will be much more beneficial to healthy, as well as to delicate constitutions, than one coming over the bleak damp soil of these central European districts. And this is proved by the decrease of consumption in India among men who are predisposed to it, and *whose brothers and sisters die here.* In both cases, continental winds occur; in the one, producing disease, in the other, apparently arresting the same.

Climates, then, are dry or moist, or more properly, '*Continental*' and '*Littoral.*' A continental differs from a littoral in the latter's position near the sea, and its influences. Madrid is a continental climate; Malaga, on the coast just above Gibraltar, a littoral one. Malaga does not suffer from the intense heats or chills of Madrid, because the sea equalizes the temperature. Continental places are called 'extremes,' and we may term the littoral 'equable.' To these two a third may be added, more properly as a subdivision of the last. The '*Insular*' climate possesses many of the advantages of the sea coast without the land influences, and wants many of the more exciting effects of the proximity of table land or mountain. Madeira, for instance, is 'equable;' but it is different from a littoral site, such as Lisbon or Cadiz. The only land influence felt there is during the prevalence of the 'Leste,' which blows from the coast of Africa. Malta, again, approaches more to the 'littoral' character; for it is more dry than most sea stations, being surrounded by *arid* hot continents, and a sea whose heat is higher than that of the ocean. The Mediterranean, in fact, requires to be considered, in a medical view, more a lake than a sea. It has

few oceanic properties. It is hemmed in by hot lands, and is exposed to a scorching sun, with very little and very gradual change of surface water.

These climates—continental, littoral, and insular—are affected by position, by exposure to the sea, east or west, by proximity of mountain ranges, and by the Gulf Stream. Hence we find the west of Europe warmer than the east of North America; the west coast of the latter continent is warmer than the east; the east shores of South America, again, are warmer than the west.

The Atlantic raises the temperature; the continent of Europe depresses it. And these have their influences on any one spot. The same degree of latitude does not cause the same heat. The position of an island will often give a raised mean winter temperature, although the summer be not very hot. The Faroe Islands have a higher mean winter temperature than Paris; Penzance, Gosport, Cherbourg, the most rainy spots in these regions, have a mean winter temperature only 2° below that of Florence or Montpellier. Dublin has a mean winter temperature of 40°; Pesth, a central continental town, only 28°.

Thus position, altogether regardless of latitude, influences the temperature of any one place; and though the summer heat be great, as in Paris, the winter cold may be extreme, and consequently the annual variation of temperature very large. Paris is a continental or extreme climate. It has intensely hot summers, and winters which present a lower temperature than Stromness in the north; the same with St Petersburg, and all places surrounded by land. Sea air is the equaliser; and, though it does not produce so much heat in summer, it prevents the winter cold from falling low.

These terms apply to climate geographically. As far as regards influence on man, they may be styled more appropriately 'relaxing' and 'exciting;' for wherever heat and moisture are combined, then a degree of relaxing effect is always perceptible on the healthy man. And more particularly is this observed on

the sea-shore, where shelter from the north and east is obtained. 'Exciting' climates are those dry and hot, or dry and cold. They possess a similar influence as is exerted by the clear frost of winter, although in a modified form; they elevate the spirits and invigorate the body. Wherever one goes, whether it be to warm or cold countries, various winds will always be met with which cause considerable uneasiness. Here, the east wind is very trying to many. In Spain, the winds from the Pyrenees and Provence, the 'Khamsin' in Egypt, the 'Harmattan,' and many more, all irritate and annoy. But these need not be much feared in winter; and in summer no one need remain in their neighbourhood.

As regards invalids, *soothing* and *bracing* climates may take the place of 'relaxing' and 'exciting;' for, as we shall shortly see, what is *relaxing* to the strong may be most beneficially *soothing* to the invalid.

Taking, then, in a medical view, the titles last used, we have the dry or 'bracing,' and the moist or 'soothing,' forms of climate. There are several places here which answer some patients, but they would do much better abroad. If they do good under the influence of a cool moisture, milder than where they first contracted disease, it seems highly probable that they would have benefited much more by still further change. Ventnor, Torquay, Hastings, the south coast, generally are all more or less soothing to those who suffer in the interior. The climate in the south of England is perceptibly milder than here or in the central districts, and invalids *do* derive some benefit by going to these places; but the position is nothing at all to be compared with those further south. The Isle of Wight is certainly a most enticing spot for the invald; Ventnor, and Bonchurch, and Shanklin, all present much to interest and amuse. Considerable good is there gained. But this 'Garden of England' will not compare with Madeira; and those who can go abroad had far better go at once, than lose much valuable time in 'trying' new watering-places at home.

Bournemouth should, from its soil and situation, be more exciting—more akin to Clifton, which is one of the mildest and driest places in England.

Abroad, Madeira ranks first among the more soothing places, where irritation is subdued. Rome, Naples, Lisbon, Cadiz, Pau, Montpellier—all are more or less of the same stamp.

Malaga, Gibraltar, Malta, the Ionian Islands, Algeria, Egypt, are all of the exciting kind. They are more dry than the first mentioned, because they are not exposed to a broad sheet of water like Madeira, or to the influence of mountain chains like Rome.

Algeria and Egypt enjoy the advantage of a dry warm continent, which tends to keep up both the heat and the dryness of their atmosphere.

It would be impossible to name all the resorts which exist. In South America, Valparaiso, Rio Janeiro, Peru, all present some aspect favourable for some diseases. Canada, Australia, New Zealand, and the Cape of Good Hope, offer many advantages to those who are delicate; and all these places are more dry than moist—more of the littoral than of the insular type of climate. New Zealand seems to exert a most healthful influence over the troops. There, the mortality per 1000 is only 8; in Newfoundland it is only 9,—far less than is found in warmer places, or even at home.

The atmosphere has an effect on our constitutions more or less marked in individual instances. This is produced probably in some one particular season, and very often always at its recurrence. Spring and Autumn are our two most noxious seasons; and this bad effect is rendered more distressing to invalids, as well as persons in health, by the prevalence of east winds. The mortality, in cases of phthisis, rises during the easterly and north-east winds, falling during the west and south-west. This phenomenon is one of the many for us to investigate. It proves to us, under our own eyes and in our own country, the destroying influences which winds or currents of air obtain by being trans-

ported across continents; while the health-giving, genial, westerly breezes, coming fresh and pure from the waters of the ocean, tend to invigorate the weak and refresh the strong.

Again, it is well known to all how bracing a clear frost is, compared to a humid, hot, sultry summer's day—how very different the keen sensations produced by the former, are from the languid, prostrating effects of the latter. Every one has also observed how much less nutrition is required during heat—how much less call there is for anything beyond merely supporting nature. And in the hot weather, the difference between a sultry damp day and a clear sunshine, is too well known to detain us.

The constitution of a healthy person, in these latitudes, is strong enough for all that nature demands: the great source of want in these cool regions is the supply of animal heat from within. Hence every organ is taxed to contribute towards the maintenance of this. The carbonaceous elements of food have to be properly and thoroughly prepared for the oxidation in the lungs, and these last have a large amount of impurities to throw off.

The direct effect of change to a *tropical* region, on such a constitution, is the *less necessity for animal heat being generated within the body*. Hence the chylopoietic and the pulmonary organs, and the system generally, are not taxed such as they were here. The whole tone of the system becomes 'asthenic:' it is lowered in vital energy. The flow of animal spirits, exuberant health, and capacious appetite of our agriculturist, will be changed to the pale, sallow complexion, and his whole system will be rendered languid. In such a condition, health is enjoyed; it by no means follows that this is lost. At first, the man may suffer; but, by prudence and acclimatization, he may have such a degree of health as is all that is requisite for his less active life.

The influence of the external air yielding a partial supply of heat, together with the enjoyable state of existence that one only knows in the sunny south, is to render one less alive to the pleasures of gastronomy. The stomach revolts at unnecessary

food: the system suffers. Hence condiments are used, and *they* cause more disease than the climate. Why men will not follow nature's example, and live accordingly, is strange. The Indian enjoys health, and possesses much strength, by living on rice! And why may not an European live as well on the same? Why does an Englishman carry about his dining luxuries and customs everywhere he goes? It is impossible to say; but it is possible to lay down as a fact, that such habits kill, and that most certainly. Heat being supplied externally, less elimination of carbon will be requisite; less appetite, less desire for food, loathing at satiety, feverishness or derangement afterwards, will be experienced. It is fallacious to fancy that the hepatic secretion need necessarily be increased in hot climes. Dr Morehead tells us that, in 'Europeans whose habits of living have become adapted to the climate,' biliary derangements are very rarely seen. It is only when nature is overtaxed by external stimulants that such occur. In the hot latitudes the body is quiescent, secretion and excretion are in less active play, every organ loses activity; the atmosphere supports the system, dispensing with the very conditions that a frigid air would absolutely require. The negro requires no oil, the food of the Greenlander.

The influence of *cold* air on a person accustomed to hot climes is that of enforcing more activity in all the textures, of exciting the heat-giving organs to more energetic secretion. The system, feeling the demand, of course enables one to live more freely than he had done before; but if his system be too asthenic, if the tax on his lungs be too great, then phthisis, or some malady more acute, finds a ready victim. The hepatic and pulmonary organs are both engaged in this heat-giving work. And they suffer by change, which involves difference of external warmth, giving rise to what have been styled the 'carbonaceous' and 'oxygenous' diseases.

These two forms of climate—the hot requiring a depression, a more languid state of the system, the cold enforcing a more active organic life—are the extremes. Between these are many

forms that have less marked effects, but still most decided, on the invalid. In these, dryness and moisture are very important. One place, with the same heat as Great Britain, may be more dry or moist. And the action of the one differs much from that of the latter. While the one renders languid and prostrate the healthy man, the other may brace up and invigorate him. Moisture and heat are more inimical to health than cold and dryness. And in tropical countries, when these two former are combined with decaying vegetable matter, disease of every form appears. *Cold and dry air is inimical to disease.* In the northern states, the mortality of the troops is much less than among those stationed at Florida. Chest complaints are more numerous among our men at Bermuda than in Canada; while in Newfoundland the mortality among the English soldiers is only 9 per 1000, just above that of Australia and New Zealand. Newfoundland is cold and foggy; but the mists come from the sea, not from the Continent.

The hot and moist atmospheres tend to languid circulation, slow respiration, and, consequently, less nutrition. The hot and dry climates, though they do require less nutrition, may still be more exciting by mere mental sympathy, or by bracing the system; and hence different constitutions will suffer more or less, according as they are situated; for, as there are different climates, so are there varying constitutions; and what will render one perfectly useless, may develop another's physical frame and mental acquirements. The constitution is so varied, that some can withstand, and even enjoy health under, what will be instant death, or at least certain disease, to his neighbour. In China, near one of our stations, five Englishmen built separate houses in a ravine. Within a few months, four were laid in the grave, while the fifth escaped. Change of air induces disease of the type common to the country. Why cholera seems so much of a continental disease, while fever of some form attacks both islands and continents, is not for us to explain. But it seems evident that civilization has changed the type of disease, independently of the change of constitution which goes on in

the same within any given number of years. We know that on a dry soil, hot and tropical, continued fever may abound, and cause very few deaths, while remittent and intermittent fevers are much more deadly, and are found in new places, uncultivated and uninhabited. In Canada, it is observed that typhus abounds in the old stations, while intermittents are met with in the new. In the expedition to Burmah, out of 600 men, 328 were seized with fever—219 intermittent, and only 4 continued. In the same body of men, at Calcutta, during the hot dry months, 209 cases of fever occurred—34 intermittent, and 173 continued.[1] It would appear that at first we must lose largely, and that as our constitutions become acclimatized, and as improvements are carried forward, we may expect a decrease of mortality. In some places, very little hope can as yet be entertained. In Sierra Leone, we lost two-thirds of our white force within one year; and still the same deadly influence is exerted.

It is well known how a body of men suffer when sent to the East or West Indies—how an army going to a new field of action is affected. Every nation, during warfare, loses more men by disease than by the sword. It matters little where the men are sent to, the result is always the same. And though, in tropical or extreme countries, man does suffer from the change, still there are many intermediate climates in which a healthy European enjoys health, and where a delicate constitution may become strong. Australia, New Zealand, and Canada, are places where any one not absolutely diseased may do so. They are much the same as Great Britain in many respects; and though, ere long, all our diseases, endemic and epidemic, will find their way thither, still one does not lose health as he does in India or West Africa. And in these places it will be found, on more minute examination, that the drier the soil and atmosphere, the more beneficial will the situation be.

Soothing and *bracing* climates are what invalids require, according to their several constitutions. We have seen that hot

[1] Dr Murchison, Climate of Burmah.

and moist atmospheres are not favourable to health, on account of their rendering the system languid and unfit for active life. In the invalid, this change will be beneficial, if properly applied, just as a dry and hot or cold atmosphere will, by its more exciting qualities, influence another set of patients.

Diseases such as atonic dyspepsia, asthma, and such as involve no structural change, will do good in any climate, provided the constitution be taken into account, and a suitable selection made. In those where organic lesions have occurred, much greater responsibility lies on the physician, and less chance of benefit to be conferred on the patient.

But to the question, as to whether or not change of climate is useful in disease, I think we can safely answer in the affirmative, that many patients do enjoy prolonged life and more comfortable circumstances abroad, in warmer places, than at home. From what I have personally witnessed there among invalids of both sexes, and of all ranks and conditions and ages, I am perfectly satisfied of the efficacy of change of climate, if properly recommended; for all depends on this. Great wrong has been done to what nature and reason both point out as a curative measure, by patients being *all*, of whatever disease, *sent to one place*, and also by their being exiled from home when disease *has left no shadow of hope*. These are two errors, only to be corrected by a more careful study of what conditions are necessary for success. Though Madeira does good to many, and enables them to spend comfortably their years of affliction, and even restores some to almost complete health, still many have died there, and several receive no benefit. This is not the fault of the climate; it is owing to the two errors just pointed out. Many do well in drier places, such as Malta, while the reverse holds good also. I have known patients enjoying health in Madeira, who could not exist in Malta. I have seen others, who, the moment they left Madeira and came to the Mediterranean, were freed from many troublesome symptoms. I have known men who, by living in a hot climate, alternately with going a sea voyage for six weeks,

enjoy such health as rendered them quite comfortable, and able to join in worldly pursuits. If all were sent to Madeira, no wonder many would die, several receive no benefit, and a few recover; hence it is that the opprobrium of the "Englishman's Grave" has been bestowed on Madeira, an island that perhaps is excelled by no other, in whatever latitude, for beauty and diversity of scenery.

Patients are often sent out *too late*, when all hope is gone. I have known patients sent out die within the first week. I have seen invalids come out with extensive disease of the chest and larynx, unable for any fatigue, sensible to the slightest change of heat, and incapable of any mental effort. These die, and consequently the climate or the place gets into bad repute. If there be anything more heart-rending than another, it is to witness a poor invalid come to one of those resorts, buoyed up by vain expectations; mix, it may be, with many of the amusements during the first few weeks, while the constitution is temporarily supported by the warm and genial air; and then, perhaps suddenly, perhaps for weeks, laid aside to languish and to droop, with perchance no one to comfort him. Far away from home, surrounded by strangers, he feels the hand of death coming slowly on him; and he sighs for, he mourns in agony over, the happy land he now shall see no more. Do not on any account, or for any consideration, ever advise any one whose constitution is thoroughly shattered, whose system is deluged with scrofula, and whose chest may be one mass of disease, to go from home. The chances are all against him. And even though he were to gain a month by doing so, is it not far less cruel to allow him to die happily among his friends, than miserably abroad? Besides all which considerations, the true and good effect of change would tell among those who have *some* chance, and would help to remove the opprobrium under which a useful remedy at present lies.

From the effect produced on the body by change to a warmer place, it follows that all the organs will have less to secrete, that the carbon-eliminating and elaborating textures will have much

less to perform, the heat of the body being partially sustained by the external air. Hence the respiration will be less laboured, the necessity for quick breathing done away with, and a warm air will impregnate the lungs, instead of a damp foggy atmosphere.

All diseases in which change can be recommended will be chronic. Functional disorders require change of scene and amusement more than change of air. Heart affections from functional derangement, atonic dyspepsia, anæmia, and others of the same class, are so benefited. In these, some failure of vital energy exists; there must be a low tone in the system, whether preceded by nervous despondency, or inefficient nutrition. In others, irritability of some one function will be present—palpitation, dyspnœa, anorexia, or want of control over the mental emotions. In all, change is to be recommended. The effect on the respiration and circulation will differ in hot moist situations where a soothing influence will be exerted, from the bracing up of the hot and dry atmosphere. In bronchial and bronchitic irritation, soothing air will benefit greatly; while, in some relaxed forms of mucous membrane, where stimulants are more called for, the bracing dry atmosphere will have a more healing influence. These diseases must be judged of by their causes—local or constitutional—and treated accordingly. Climate, when it acts on the diseased frame, acts generally as well as locally; and it must be used just as we employ any other constitutional remedies.

In the atonic form of dyspepsia, where the stomach has lost tone and vigour, and when constitutional stimulants are called for, a dry warm climate does good. Dr Francis remarked that on the coast of Brittany, and in the Channel Islands, which, from their position, are damp, atonic dyspepsia is very common. The inhabitants are vegetarians, with the addition of oil as a luxury. In Murcia, which is dry and warm, the Spaniard feeds on lettuce and large quantities of oil, and suffers from no form of indigestion whatsoever. In Valencia, which is also hot and drier than the west coast of France, he (Dr Francis) has often

seen 'the wiry active muleteers make a mid-day meal of a lump of bread, into a hole in the centre of which a quarter pint measure of oil has been poured!' The Moors in Algeria do the same; and everywhere in the south of Spain oil is drank like water, and no indigestion caused. And from my own experience, I never enjoyed better health or had such an appetite as I used to have in Spain; while, on the contrary, in other moister climates, a continual languor, headache, and listlessness, constantly existed.

A soothing climate will benefit those who require soothing and nursing, whose constitutions are so tender that any rude exposure, even to heat and excitement, would do harm. It will also benefit those who require to be kept 'asthenic,' or who need their excitable frames kept in abeyance.

Leuco-phlegmatic constitutions do not thrive in hot humid situations; flabby textures and general laxity of frame require the stimulus of a bracing air. But still there are constitutions, not sanguine and not phlegmatic, that will do more good in such a soothing atmosphere.

Bracing climates, hot and dry, or cold and dry, will be too strong, too exciting, for sanguine constitutions. They will do good to those who require stimulating air; and it by no means follows that any exposure is incurred. By 'stimulating,' is merely meant the peculiar feeling which patients feel in a dry air, similar to what we feel on a bright, clear, dry, frosty morning. And as the local soothing effect of a moister air is exerted on the lungs, so is the drying up influence of a dry air to be observed, not only on the pulmonary, but on all the organs of the body. In speaking of a dry and cold climate as one for invalids, of course due allowance must be made for condition and profession of the patient. A man of energy and perseverance, whose constitution is not far gone by disease, or when delicacy is just showing itself, may do a great deal, and enjoy life for years, in Canada, or Newfoundland, or New Zealand, or the Cape of Good Hope—places where invalids among the higher classes and the female sex could never be sent to.

The organic diseases—those in which structural lesions have taken place—are benefited by change of climate. This is a general assertion, to be guarded by the supposition that consistent changes are recommended.

Rheumatism improves in Nice, Rome. At Gibraltar and Malta, this complaint is about 35 per 1000; while in Great Britain it occurs about 50 per 1000, and in Jamaica it is only 30 for the same number.

Diseased cardiac and arterial vessels are benefited. I have seen several improve rapidly after coming into the Mediterranean. The dyspnœa, or palpitation, would be subdued, and the patient enjoy placid, tranquil health. And in both these forms of disease the disposition and habit of body must be studied. A sanguine excitable temperament will suffer by over stimulus, while a lethargic invalid would be lost completely if sent to a depressing soothing air.

The most common disease which leads to this mode of treatment, and which demands our most serious attention, is phthisis. It is not meant that phthisis can be cured by change of climate, any more than that it can be cured by cod-liver oil. Consumption may be retarded, rendered quiescent; but that is not cure. And this state can be procured by climate. Change itself can protect one from this disease. Louis relates the case of a boy whose sixteen brothers and sisters all died, and who escaped himself by being sent away at a tender age. Though consumption be prevalent among the natives of Madeira, Spain, Malta, or Egypt, it does not follow that our northern constitutions will receive no benefit there. What may be a cause of disease to them, habituated to the heat, will be no such thing to us strangers; and what will be to them moisture, may to us be the very reverse.

Consumption is a constitutional disease, whose principal symptoms are confined to the lungs. The liver must have been influenced in some one way to cause the disease; for the lungs are apparently passive organs. The blood sent, if abnormal, will cause diseased action, will give rise to unnatural products left in the lung, and so engender the local symptoms. These are ag-

gravated by a cold, moist air; while the strength is completely lost by mal-assimilation of food. If such, then, be the case,—if the hepatic or carbon-eliminating, and the pulmonary or oxygenating organs, be rendered not only useless, but the cause of death,—if the body cannot keep up its wonted supply of animal heat, and the food taken does not sustain,—if every breath of chilly damp air provokes cough and encourages disease,—it stands to reason, that a remedy which will require less food, less organic activity, and that will sustain by external heat and soothe by warm air, must have a beneficial influence. Such a remedy is more powerful, because it is more general. It removes the patient from all external causes of irritation; it supplies heat, and sustains the body, doing away with the internal use of carbonaceous food.[1] In Sir James Clark's work on Climate, are given Dr Renton's tables of patients treated in Madeira for phthisis. Out of 35 cases of incipient disease, 26 left the island much improved. In Dr Lund's tables, 66 out of 100 lived, and in the following proportion:—

Of those in the first stage,	. . .	43
„ second „	. . .	13
„ third „	. . .	10

and this compared with the deaths—

Of those in the first stage only		5
„ second	„	11
„ third	„	18

—a striking proof of what is caused by needlessly sending poor dying persons away. And to this may be added the additional facts—out of 47 confirmed cases, 32 died six months after landing; and out of 56 patients with tubercular lungs, or disease well marked, 30 died on the island. These are the proofs of the folly of medical men, not of the insalubrity of the climate, or the non-efficiency of the change.

[1] This is proved by the fact, that cod-liver oil is not used in Madeira; that, in fact, it is hurtful. In the opinion of some, it provokes hæmoptysis. It is too heating and exciting.

Consumption of ancient times was put down as a disease of dry air! This can hardly be granted now; for certainly there is very little, if any, dry air in this continent. The centre of phthisis, as an endemic, is the middle and western parts of Europe, all closely connected with water or with extensive forests. The island of Thasos, on which Hippocrates wrote and made his observations, has a northerly exposure; and the winds he blamed most for causing this disease, were the land winds, the N. and NW. and W. These will have the same effect as our E. and NE. A dry land wind irritates, but it need not cause structural disease: moisture must be present. Besides, phthisis is a disease which will increase anywhere, if not looked to at its outset. It is essentially a disease of civilization, and extends in its wake. The natives of other lands suffer by being translated—and they are uncivilized; but in all cases some moisture is to be discovered, or some land influence connected with vegetation. Again, when we hear of phthisis being common in Madeira or any other warmer resort, probably these statistics are taken from town populations, or from persons who frequent them and do some work connected therewith. Consumption is a disease of the town more than of the country. It is, in fact, one of those diseases which man brings in a great measure on himself, and on his children, even to their children's children. In Turkey, I am told by one who was there for some time,[1] among the country population little or no phthisis exists. In the Crimea, among the Tatars, it is infrequent. Among the Russian soldiery it is met with, certainly; but it is there induced by habits of life very widely differing from the primitive customs of these country people. Among ourselves, we find how much a town life tends to this disease. In our foot regiments, the ratio of deaths per 1000 from pulmonary disease is 10·2, while that of the foot guards is 13·8; showing how decided a difference is made by a town life among men who have been healthy when admitted into the service.

[1] Dr D. Christison.

But of whatever kind, or from whatever cause, consumption, if taken early, may be checked by change of air. European residents in India—civil as well as military—are 'almost exempt from scrofula, and so are their children;'[1] and this is true when the families of any one at home are notoriously unhealthy. In 44,611 British troops at home, 483 admissions are from phthisis, with 5·7 per 1000 deaths. In India, out of 105,919 white troops, only 598 were admitted, with 1·6 per 1000 deaths. In the Madras Presidency particularly, the mortality is very small from this disease. In Ceylon, 4·7 per 1000 of white troops were attacked; deaths, 2·7. In the Tennasserim provinces, again, which are continental, lying on the eastern side of the Bay of Bengal, only 4 cases occurred during an occupation by us of ten years' duration! Troops in the West Indies present a much larger mortality from phthisis: nearly twice what occurs at home. Jamaica, particularly, is fatal to phthisical persons. Phthisis is less fatal among sailors than soldiers. It is not at all common in the Hebrides, Faroe Isles, Iceland, and these northern nations. And though the mortality from lung affections among the troops in Canada be large, their habits and intemperance will probably be found the real causes.

This was seen in these tables just mentioned, where the disease in its first stage seems retarded, and that for years. In our military returns, we find that the ratio of deaths from lung disease, per 1000 men, falls down to 3·5 at Ithaca, and 4·5 at Zante; while at Santa Maura, another of the Ionian Islands, it is so low as ·8. In Newfoundland, the ratio is 4·2; in Canada, about 7. The whole mortality of Australia is small; hence we may draw the same conclusion relative to phthisis.

That in those who are predisposed to this disease—and it may be in those who have deposition already commencing—climate of a dry and warm nature does good, is proved by the almost total want of phthisis in the Crimea during the latter half of the war. The last winter and spring were remarkably healthy—the

[1] Dr Ancell on Tuberculosis, p. 530–31.

mortality very small. Phthisis was not found commencing there. Very few cases were returned at all; and yet draughts had come out during the autumn and winter—young men—who were there exposed to almost every kind of work tending to excite disease. The great secret of the health being so highly kept, was the *constant out-door occupation* of the men in a *clear*, *dry*, *pure* atmosphere. The French, who lose many men by phthisis at home, are very healthy in Algeria. According to M. Martin, physician to the Dey in Algiers, 'nothing is more rare among acclimatized Europeans than consumption generated in Algiers.'[1] In Oran, a town of Algeria, of 138 deaths, 1 only was from consumption. M. C. Broussais says, that there the deaths from phthisis are 1 in 20, while in Paris they are 1 in 5.

In Spain and in Malta I have myself seen invalids from phthisis enjoying good health, such as to render life pleasurable to themselves. I have known many, still alive, who would die in England, living very comfortably there, as well as in Madeira; and, from what I have there seen, I feel more and more convinced that this remedy, if properly applied, will be as successful as any other, and as saving of life as we can possibly be on this earth. There is another reason why these places do not get justice done them: the patients themselves, when they feel so much better, so free from all urgent symptoms, immediately join in amusements but little calculated to improve them. Hence many are laid up after violent exercise; hæmoptysis may be induced by over-straining the body, and death ensue. This is what we have very little power over, beyond the advising them against such certain methods of suicide.

If, then, men predisposed to phthisis by birth, as well as by mode of life, enjoy health, become stronger in constitution, in hot places; if, as has been proved, dry continental situations are unfavourable for the development of this disease, and that it is mostly in old cases, which should *never* have been sent from home, that the mortality exists; surely we are warranted in say-

[1] Dr Francis on Climate, p. 271.

ing, that to very many in the primary stages, and to delicate constitutions, great good and long life may be obtained by change of climate. Out of an army somewhere about 50,000, what an enormous proportion of phthisis we would have had here; and in the Crimea, none! In Tennasserim, as we have just seen, 4 cases in 10 years;—in Madeira, out of 100 patients, of 48 in the first stage, 27 had the disease arrested; of 24 in the second, 5; and of 28 in the third stage, only 5 were benefited by apparent arrest of the malady.

In Malaga, I have seen phthisis do well; I have known many troublesome symptoms kept in abeyance. In Malta, I have witnessed the same. And that there is drying up agency carried on in these places by means of the dry air, I am perfectly convinced from what I have there seen. This is spoken of by Dr Hall as one of the benefits of Clifton—a dry resort in our country.

And now the question comes, who are to go to Madeira, and who are to go to Egypt, Spain, or Algeria? Who are to be sent to the soothing clime, and who to the more dry and bracing? Now, it is sufficient for us at present to specify two constitutions as the basis to go upon—the sanguine and the phlegmatic. These two are at the bottom of all other kinds, influenced by the nervous system, as in the melancholic or hypochondriacal. Persons at all inclined to nervous diseases, should not go from home. In hot and dry places, or in more moist, irritating winds are of occasional occurrence, which not only ruffle the temper, but may induce serious nervous affections.

Generally, it may be said, that sanguine temperaments benefit in dry air, whether cold or hot. But when disease exists, if there be any tendency to irritability or excitement, the soothing climate is most suitable. Again, the phlegmatic constitution, which requires stimulating, will fail in obtaining this in a similar atmosphere to Madeira. But there are some, even among these phlegmatic constitutions, that may be over-stimulated, and who require more of the quiescent mode of life. In general, the more continental the position, the more bracing; but some places, such

as Rome, are soft, without being depressing. Madeira does not agree with the healthy man so well as with the invalid. Children in India, born of English parents, are remarkably exempt from scrofula; and this may be owing to the continental position.

The sanguine temperament, which requires to be soothed and kept in abeyance, should be sent to Madeira or Rome, for instance, —to a climate where there may be little chance of extra excitement. In Madeira, fevers are characterized by more or less of the typhoid type, so that caution must be used in not sending those who have shown tendency to a low type of fever.

To all, however, who travel for mere delicacy, without real disease, any warm climate may suit, provided they be prudent; but still, I must say, from my own personal feelings, I would prefer recommending the Mediterranean; for there the land gives more scope for amusement, and more food for the mental powers. One can roam from one part to another, and always keep in an equal temperature. And that benefit is to be obtained, is proved by our daily increasing experience. Egypt is unfolding a wide field for invalids; Algeria and Palestine all promise to be of most signal service. To those, however, that are drooping, who require nursing more than exciting air, Madeira will be suitable, provided always they be not too low. That leuco-phlegmatic constitutions do not benefit in moist places, is well shown by Dr Hall. He tells us that at Torquay, which is a soothing climate, anything approaching to irritation is more relieved than an atonic system. 'If the complexion be florid, and the skin harsh and dry, Torquay will agree. But when the patient is pallid and flabby; frequently faintish, and always feeble; the skin soft, cool, and often moist with cold perspiration; when, in short, the heart is too weak, without any active irritation existing in the lungs, and with a low state of the general vital power,—as a rule, Torquay will not agree.'[1] It has been very plainly laid down that sea voyages do all the good—that these are far before hot positions on land. This I cannot

[1] Hall's Torquay, p. 13.

agree with. It is quite true that the mortality of our sailors is less than that of our soldiers; that 11 of the former die to 18 of the latter; and that phthisis is not a common disease among seamen. But the different habits of these two classes must be considered; and there will be found that, as in the Crimea, men exposed all day to the open air, and kept from many evil practices, as they are on board ship, will enjoy much better health, even an immunity from phthisis, in hot countries.

Again, phthisis occurring among natives almost always shows itself when they are brought to a moister climate. Africans, from dry parched Africa, die as much of consumption in the West Indies as here.

And, as in many other diseases, *height above the sea* causes recovery, and imparts health. In Peru, consumptive invalids, when sent 7000 feet up the Andes, are relieved. Dr Smith, in speaking of the diseases of Peru, says, 'Thus, on the "*hot moist*" coast, it is a common disease; but on the intermediate mountains, and in the temperate valleys of the interior, pulmonary consumption is a rare malady.'[1]

Equality of temperature, little daily variation in the thermometric markings, are guides to where an invalid should be sent. Extremes are hurtful; draughts of air are most injurious abroad as well as at home. But it is strange to find 'a climate with a great range of temperature, a strong contrast between winter and summer, and constant and rapid changes of season, afforded a smaller amount of tuberculosis in the American army than a milder climate, even in the winter season.'[2]

Many attempts have been made to erect artificial resorts at home, to construct miniature Madeiras. But that is not possible. Every one knows how oppressive a confined atmosphere is. The great advantage of these places abroad is, that exercise and perfect freedom are enjoyed. Many patients fret under confinement; and certainly very little good can be expected from any such attempts. In judging of how far a person is benefited by moisture

[1] Dr Smith, quoted by Dr Hall. [2] Ancell on Tuberculosis, p. 535.

or dryness, a good idea may be formed from the patient finding relief or not from steam inhalations. The local effects of such, combined with the constitutional peculiarities of any one patient, will lead us to say, whether Madeira or Egypt be preferred.[1]

The more we study the causes of disease, the more are we convinced that man brings much on himself. Phthisis is generated and fostered by intemperance. Cholera, which takes its origin in hot moist places, abounding with vegetable and animal decay, is greatly encouraged among ourselves by filth, bad sewerage, and over-crowding. Fever, of a continued and typhoid form, is never away from our haunts of poverty, breaking out now and again in ravaging epidemics. And who is accountable? Who will look behind the scenes, and lend a helping hand to the poverty-stricken mechanic? Who will have courage to visit the haunts of disease, and discover the local causes? Unless we, as medical men, look to all these things—unless we make our voices heard denouncing the apathy and indifference of the people, and try to awaken them to what is not only hurtful to themselves and others, but a sin against nature and nature's God, disease will abound yet more and more. It is for our national, as well as our individual interests, that sanatory measures should be most exactingly carried out. For, with all the diseases and all the foul-tainted abodes which our poorer people are subjected to, how can we expect our population to be strong and robust? How can we send to our colonies such men as we should? Instead of healthy, able-bodied people, poor, squalid,

[1] 'Change of climate, when it can be accomplished, is unquestionably, in the *early* period of the disease, of fundamental service.'

'In the selection of a climate for any particular case, the dry or moist character of the attending bronchitis, and the general tendency to the *stricture* or *laxum* in the organism, furnish the best guides. In the former case, the climates of Maderia, Teneriffe, the Azores, Rome, Pisa, Torquay, Penzance, Ventnor, and the under cliffs generally; in the latter, those of Egypt, Cadiz, Algiers, Genoa, Nice, Clifton, and Bournemouth, are the most advisable for winter quarters.—*Walshe, Diseases of Chest.*

It was not till *after* this lecture had been written that I found the foregoing passage of Dr Walshe so completely conciding with what I have already advanced.—*A. W. P. P.*

delicate constitutions will go; and if they do reach the destined haven, and do succeed in establishing their footing, they may, and are, laying the foundations of unhealthy generations.

Disease in our towns sends disease to our colonies; and if we would strengthen our young men ere they emigrate, let us cleanse our streets and bye-ways. It is for us, gentlemen, to investigate and rigidly search out the cause of epidemics and endemics. It is for us, as medical men, and as bound by all right and noble feeling toward our fellow-men, to set before the face of the nation what really does exist! Ignorance on the part of those who *can* alleviate, and indifference on the part of those who suffer, will draw down further curses in the shape of dread disease. We have good reason to believe that cleansing out all impurities can be of most signal service; that though cholera may alight on any one spot, and is not to be avoided, still its progress can be held in abeyance by strict sanatory measures.

If such, then, be the case, let us join heart and soul in doing away with that disgrace, that blot in our fair fame as a Christian and civilized nation. Let our paupers be cared for, and *kept* clean; let those who would willingly shut their eyes to the subject, hear and see what fashion and luxury bring on the lower orders. Make those who wear the gems understand at what a sacrifice of human life and of human happiness every luxury is obtained.

In so doing, we will confer a lasting benefit, not only on our fellow-creatures, but on the nation. We will be fulfilling a most important branch of our profession, and we will perhaps be able to lighten that curse that now hangs so heavy on us, and enable generations yet unborn to revere and honour them who roused the nation—too long asleep—to cherish and do justice to those who make our riches, and who fight our battles.

FINIS.