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EFFECT
OF THE
CLIMATE OF AUSTRALIA
UPON THE
EUROPEAN CONSTITUTION,
IN
HEALTH AND DISEASE.

BY
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The influence of climate in modifying physiological and pathological phenomena is recognized not only by Medical Practitioners, but by every intelligent observer of nature. Most persons emigrating from Europe to Australia are conscious of some change in their constitution after a short residence here: that alteration consisting, in some instances, of an improved condition of the system, and in many others of a deterioration in their general health. Hence many discordant opinions upon this important point are found to prevail, and statistics are yet wanting to settle authoritatively the relative tendency to disease and death superinduced by the climate of England and Australia. Neither is the colony sufficiently old to afford reliable data for ascertaining the value of human life within its temperate regions; and in that absence of patent proof as to the fatality of disease, and duration of human existence, it becomes the duty of the physician to supply, so far as he is able, the want of vital statistics by careful observation of the tendency of diseased, as well as the natural course of healthy action, in the human body. In this way much valuable information may be acquired; useful, not only to the medical profession, but to the public at large. A certain modicum of medical information is now the possession of every man of general education, and thus subjects which were formerly caviare to the general reader possess an interest for all; and knowledge, which only existed as a monopoly among
physicians, is in these days shared by an enlightened community. The observations, therefore, which I propose to make upon the effect of this climate on the human constitution, more particularly in disease, are not altogether intended for my medical bretheren, but are offered as a slight contribution to the general fund of information which an active intelligence daily accumulates in matters Australian.

Of the changes referred to as occurring in the persons of those who emigrate to this country from Europe, the most important embrace variations in weight; in muscular power; and vital energy. With respect to the first of these conditions, it does not seem difficult to attain an approximate conclusion. The experience of any surgeon to a ship, carrying a few hundreds of emigrants, would seem sufficient to determine the point almost beyond a question. A comparison of the bulk and apparent weight of the adult passengers on board an Australian emigrant ship prior to their embarkation, and a few months subsequent to their landing, corrected by information obtained from the people themselves, would constitute sufficiently satisfactory data for solving the most interesting part of the problem. This method of dealing with the question has led me to the belief that the great majority of healthy adults who immigrate to this country lose weight shortly after their arrival here, notwithstanding the improved circumstances in the matter of diet which usually accompany the change of climate. As to the extent or proportion which this diminution may bear to the average weight of a healthy man we have no means of deciding, nor can any fixed rule be laid down which should settle the period for which the comparative attenuation of the European immigrant should last. Age and idiosyncrasy are the chief causes which operate in the determination of this part of the question. Persons who arrive in this country at an early, though it may be an adult, age are likely to gain weight as they advance in years, if their health should continue good; while those who emigrate at middle age seldom retain their English condition unless some peculiarity of constitution shall favour a development of the adipose principle. The case of people of advanced years who emigrate from Europe to Australia frequently offers an exception to the above remarks,
inasmuch as the warmth of the climate seems to revive their languid circulation, and, consequently, to improve their powers of digestion and assimilation; hence an increase in weight in the septagenarian may be the immediate result of the salutary change. As regards the loss of muscular power which is here assumed as one effect of this climate upon the European constitution, its existence is by no means so constant as the condition first mentioned, and variations in the law, which sometimes even include its converse, are far from infrequent.

This seeming anomaly may be partly explicable by a due consideration of the nature of muscular action, which owes its existence and origin to three independent sources, which the influence of climate may affect in different degrees. Thus the vital contractility of the muscular fibre may be favourably influenced for a time, at least, by a temperature which would diminish nervous energy, while the vital galvanism, which plays an important but mysterious part in the contraction of living muscles, may be vigorously induced by causes which, in the long run, would go to exhaust the general powers of the system. Certain it is also that a buoyancy of spirits and a desire as well as capacity for muscular exertion is observable in some persons for a considerable period after their arrival in this country, a phenomenon which so far as mobility of muscular fibre is concerned, seems quite compatible with a diminution of bulk and weight. This observation is not meant to apply to the labouring classes of Great Britain who emigrate to this colony, because in their case, it must be borne in mind, that the abundance of nutritious and stimulating food which constitutes the diet of all classes here, offers a marked contrast to the living of the working man at home, and must exercise a decidedly favourable influence upon the system, both nervous and muscular. And therefore any temporary increase in muscular vigour occurring in this class of emigrants is, probably, due as much to food as to climate. With a view to an approximate determination of the general question, forty-three male adults of reliable intelligence and chiefly belonging to the working classes, all of whom had been upwards of two years in the colony, were requested to answer the following interrogatories. 1—Are you heavier or lighter in this country than at home? 2—Are you stronger or
weaker here than at home? The replies to the first question were unanimous. Every man believed himself to have lost weight in this climate. The answer to the second interrogatory, although pretty conclusive so far as this evidence is of any value, varied considerably. Thirty-four affirming their belief in a diminution of their muscular power since their arrival in Australia; six supposing that no alteration in that respect had been brought about by change of climate; and three imagining that they had improved in muscular vigour since coming here. Although this statement cannot be considered, for obvious reasons, as conclusive of the question, still, when coupled with other considerations, it affords some foundation of a satisfactory kind for the assumption that the climate of Australia is less favourable than that of England to vigour and robustness in the muscles of the body. It does not appear that the feelings aroused, and instincts prompted by the continued influence of this climate, are favourable to great muscular development. The relaxation enjoyed by manhood and youth is not usually of that laborious description which constitutes the amusement of the village green in the old country; putting the stone, throwing the hammer, and such like sports appear less congenial to the disposition of the idler than the gentler exercise of quoits or bowls, which afford suitable excitement without fatigue, and are better adapted to the slighter muscular system of the Australian youth. These corn-stalks, as they are usually termed in N.S.W., are generally more slender in form than the natives of England,—a change which is obviously due to climate alone, as the sanitary influences which surround the former are generally more favourable to the development of strength and vigour in the system than those amid which a large majority of the children born in Great Britain are brought up. Even in those cases which may be considered to form an exception to this rule, where the muscular system is well developed, it does not appear that the real is always equivalent to the apparent strength. This was notably the case, in the instance of a well-known native of N. S. W., of pugilistic memory, who went by the name of Big Chalker, and who was beaten in a stand-up fight by a native of England, greatly his inferior in size and weight. The Aborigines of the country, as is well known, are not remarkable for muscular development, but their case
stands upon different ground from that now under consideration, inasmuch as the element of race here occurs to modify the argument. If any inference, however, is to be deduced from those observations, it must be one unfavourable to the supposition that an Australian climate is suitable to the development and vigour of the muscular system in man.

The same deduction would probably apply to horses and cattle, but in their case the comparison is still more difficult, in so far as the circumstances in which the animals are placed here differ widely from their condition at home, and gives them a great advantage in the contrast. It has often been remarked that horses can endure more fatigue in this country than they are able to do in England, an observation which is true, though of partial application, and which is to be explained by the consideration that the natural habits of the animal are but little interfered with in the bush generally, and that the roads over which they travel are softer and more elastic than those of England. Still, I have never heard it asserted that the muscular development of the horse in this country reached the extent which is common at home, nor that horses here are generally able for the great, though not continuous, exertions which they are called upon to make, for example, in the employment of Messrs Barclay & Perkins. With respect to cattle, if their weight be taken as evidence of the bulk of their muscular structure, a like conclusion must be arrived at. One thousand pounds, even in the best grazing days of Port Phillip, when the pastures were comparatively untouched, was considered a very great weight for bullocks, and, since grass has been less abundant, I believe that an ox weighing half-a-ton is rarely met with.

We now come to a consideration of the third position assumed, viz., that a diminution of vital energy in our race results as an effect of the continued action and influence of this climate upon us. The evidence in favour of this opinion is various and interesting. That, perhaps, which should claim priority of notice as being fundamental of all other proof upon this point, is the state of the circulating medium — the blood. Respecting this all-important fluid an empirical
opinion has long prevailed in this country that its current is more diluted and its properties poorer than they are in the colder climate of Great Britain. I am not aware that medical observation led to this opinion; on the contrary, I am inclined to believe that its adoption was the consequence of a kind of instinctive conviction arising out of many popular proofs which the constitution in this climate affords of the poverty of the blood. But of its correctness I think there can be little doubt, although perfect certainty upon the subject, at least as to extent, is not to be attained in the absence of a complete series of analyses. Some few imperfect observations, chiefly microscopical, made by myself, have led me to the belief, first, that the coloured corpuscles are deficient in number; secondly that the albuminous constituents are also less abundant than natural; thirdly, that its oily parts bear a larger proportion to the other components than occurs in Europe; and, lastly, that the salts seem also to be super-abundant. However, I by no means put forward this general analysis as an examination implicitly to be relied upon, but would rather trust the result to other tests, whose accuracy may admit of more universal proof.

The nervous system is that portion of the animal economy whose functions, depending, as they are known to do, upon the constitution of the blood, has generally been supposed to afford the clearest testimony as to its condition. To maintain this system in its full antiquity, as developed in the Anglo-Saxon race, a rich pabulum is wanted; when that nutriment declines in the qualities essential to its uses and intentions, the brain and nerves become naturally weaker. With this loss of power is associated an undue irritability or excitability, which explains how the beat of the pulse may be performed with greater rapidity and with less power; in what way the breathing may also become accelerated; for what reason the excitement of alcoholic stimulus is so apt to produce delirium tremens; why miscarriage is so frequent, and certain accidents of child-bearing of such alarming and common occurrence; and how other physiological phenomena yet to be mentioned, fall under our notice. To connect the dependence of the action of the pulse upon an altered state of the
nervous system, it may be necessary to premise that the movement of the heart and arteries are chiefly excited by the ganglionic system of nerves, and therefore any failure in this main principle of action must bring about a corresponding derangement in the circulatory system. From an extensive series of observations which I have made upon the state of the pulse in this climate I incline to the belief that from three to five beats per minute are added on the average to its diurnal revolutions. Thus, the ordinary pulse of middle age, which in the male may be taken at 70 beats per minute, must here be reckoned at 75, while the proportional increase in the female would raise the number to 80. In younger persons the same degree of acceleration is not perceptible, but other peculiarities in the pulse such as softness and compossibility, are equally striking, while, in infants, no very obvious difference of any kind can be made out.

As regards the function of breathing, its rapidity appears to maintain the usual relation to that of the pulse, its derangement being even of greater significance in this climate than in England, because it offers an earlier warning to the Australian than to the British physician. The premonition which a hurried breathing supplies in cases whose tendency is to run rapidly to their termination can hardly be over-estimated as a guide to treatment. The tendency to that singular complaint usually known under the name of delirium tremens, which so often occurs amongst spirit drinkers in this country, has been stated to indicate a weakened condition of the brain and nervous system, whose action becomes thus easily perverted and disturbed by undue excitement. That the early occurrence of delirium during a debauch affords proof of deficient vigour rather than its excess, cannot admit of an instant's doubt. No question now exists as to the nature of this alcoholic erethism, nor of the condition of the brain during its existence, which may properly be described as an asthenic irritability not to be cured by bleeding, nor by any active depletory means; at the same time, grave doubts may be entertained of the safety or efficacy of the ordinary routine treatment of this disease by narcotics and stimulants. The first seldom or never produces the wished for sleep, while, on the other hand, it frequently excites headache; and the second is apt to
maintain the excitement which it is the object of treatment to allay. Still, the occasional employment of opiates, as well as of stimulants, may be useful or necessary, but the circumstances which are to guide their administration should be carefully considered, and their effect watched, as there can be little doubt that more danger will result from the exhibition of too much rather than of too little laudanum and brandy.

Many eminent observers, both British and Foreign, have questioned the propriety of the plan of treatment against which I now venture to offer a caution, and it must be confessed that if there be any force in the reasoning which deprecates the anodyne and stimulant plan of treatment as dangerous in England, the argument must gain rather than lose in its application here. To shew the necessity which exists for a correct comprehension of the pathology of delirium tremens, and of its suitable management, I may state that the total number of inquests held upon the bodies of persons who died from intemperance throughout Port Phillip in 1853, as furnished by the tables of the Registrar General, amounted to 228, of which number 29 are said to have died of delirium tremens, and 25 to have committed suicide. Of this last class, it would be safe to assume that four-fifths were suffering from the delirium of drinking when they became felo-de-se, and a considerable proportion of the grand total 228, classified under the different heads of apoplexy, pneumonia, &c., were also afflicted in the same manner. To this aggregate must be added the number of deaths from the same cause, calculated from the Melbourne Bills of Mortality for one quarter of the same year, also arranged by the Registrar General, amounting in all to 9, which would give 36 for the whole year. But this statement, though sufficiently startling, does not convey any real idea of the number of cases of alcoholic insanity which come to be treated by medical men in this colony.

If we take the 29 deaths where inquests were held, plus the number assumed as having occurred in Melbourne, equal together to 65, as the datum upon which to form a conjectural estimate of the number of cases which occurred in 1853, we should not probably err on the side of excess in multiplying that num-
ber by 10; inasmuch as the disease is not of a strongly fatal tendency, except in those persons in whom it has been of frequent occurrence. This method of computation, which assumes the high mortality of one in ten, would give 650 cases, a result still probably below the true number; because the 65 deaths which form the basis of this calculation cannot be accepted as the entire amount of such casualties during the year. It is reasonable to presume that deaths may have been caused by delirium tremens upon which no inquests were held, and also that many such may have occurred beyond the precincts of Melbourne, to which district the table which furnishes the last mentioned data only refers. Without, then, attempting to aim at perfect accuracy in these numerical results, the approximate estimate which arises out of the preceding calculations is sufficiently striking to attest the necessity and importance of the establishment of sound principles for the medical treatment of delirium tremens.

Analogous in its nature to the proof which is offered of the irritability of the nervous system, by its deportment under the action of alcoholic stimuli, is that supplied by its tendency to produce or aggravate certain complaints, especially those of the organs of circulation. A disposition to disease of the heart has long been noticed in this colony by non-medical as well as by professional observers, and many reasons have been assigned for its frequent occurrence; amongst which, the constant use which was made of tea as an article of diet, in the earlier days of Port Phillip; the excitement and fatigue incidental to the discovery and settlement of a new country; the tendency to wild speculation producing a high state of mental exaltation, and of corresponding depression and the abuse of spirituous liquors have been severally and collectively made answerable, in a more or less positive manner, for the production of the malady. It is not improbable that those causes actually were more or less influential in inducing the class of maladies to which we have just referred, but that none of them were chiefly to blame for their origination seems to be proved by two considerations: the first having reference to the change in social habits consequent upon a more settled condition of the country, and the second to the fact that those complaints occur with equal frequency at periods of general prosperity, and amongst
a class whose habits generally remove them from the ill consequences of intemperance. This kind of evidence cannot become the subject of public authentication except through the gratuitous efforts of the medical profession; but the facts and inferences first mentioned receive full corroboration from the tables already referred to, by which we learn that of the deaths by disease which came to be tabulated in 1853 by the Registrar-General, no less than 54 may be assumed to have resulted directly from diseases of the organs of circulation, while it is beyond doubt that many others which appear in the tables, under the heads of dropsy, hydrothorax, asthma, apoplexy, &c., were truly cases of heart disease. Moreover, no returns from the colony at large had found their way into the Registrar’s office at the date of these reports, and therefore we are in some measure left to surmise in estimating what addition to the number of deaths arising from the diseases of the organs of circulation might be furnished by the unrepresented parts of the colony. Melbourne, at the period to which these tables refer, contained something less than one-fourth of the population of Port Phillip, and in forming an estimate of the probable number of deaths from this cause, throughout the colony during 1853, we shall not probably fall into serious error in assuming that the metropolis contributed in a higher proportion to the grand total than the rest of the country, and that instead of one-fourth, the proper numerical ratio, its proportion was actually one-third. On this supposition, the whole number of deaths, from diseases of the circulation, throughout Victoria, would amount to 132, to which must be added the cases on which inquests were held, in all 10, which would give us a grand total of 142. As already stated, this estimate would not include those cases of cardiac disease which terminated in dropsy, or in some other morbid manifestation, whose nomenclature is properly made to depend upon an official nosology. However, in dealing numerically with this question, use can only be made of the figures for whose correctness we have some guarantee; therefore, in comparing the mortality from this cause, in the colony of Port Phillip, with that of England, we shall not assume the deaths here to have exceeded 142 in the year 1853. At that time the population of the colony was supposed to amount to 200,000, at which estimate the number of deaths from the
cause under consideration would nearly amount to 1 for every 1408 persons. From the tables compiled by the Registrar General for England, it would appear that 1783 deaths from diseases of the circulatory organs had been registered in his office for the year 1846. At that time the population of England and Wales may be reckoned to have amounted to 17,000,000, upon which assumption one individual in every 9534 of the whole population died from diseases of the heart or arteries, a proportion nearly seven times less than the estimate arrived at for this colony. Now, although there are special reasons appertaining to Australia generally, which are likely to influence the statistics of heart disease, independently of climate; still I think it must be conceded that notwithstanding our large male population, in spite of the pursuits and habits of the people, these figures indicate with certainty a greater tendency to diseases of the organs of circulation than exists in Great Britain. Again, it should be borne in mind, before dismissing this question, that out of the whole amount of the population of Port Phillip in 1853, the period to which the statistics above quoted refer, a large portion must have consisted of new-comers upon whom the climate had not time to exercise its peculiar effect; and, upon the whole, it must be owned that the most carefully compiled statistics of a population such as that comprised within the limits of this colony, are liable to many obvious fallacies, and cannot, therefore, be entitled to the same reliance which may be placed upon a similar kind of information derived from older communities. Here, under the present land regulations, it is vain to hope for such a settled condition of the colony as will permit of dependence upon statistical observations. So long as land shall continue to be purchased as an article of speculation and barter, and with no view to its proper uses; so long as the system of sale by auction shall debar the working farmer from following his legitimate calling; and so long as the Government, in the hope, and with the intention, of mitigating the evil complained of shall increase it by forcing large quantities of land into the market for sale, under the present regulations, for such period shall Port Philip maintain a wandering population, and for so long shall the sovereign represent an uncertain quantity.
Another proof of the diminished nervous energy engendered by this climate is to be found in the tendency to miscarriage, which is unhappily so frequent here, and from which women born and brought up in the colony are not exempted. The over excitability of the procreative system, which is denoted by this inclination, will also explain the frequent occurrence of an imperfect or irregular contraction of the uterus after parturition which sometimes results in dangerous hæmorrhage, and which occasionally give rise to inflammatory action. Before concluding our remarks upon the condition of the nervous system in this country, it is worth while to notice what is generally believed to be a fact, viz.—that hydrophobia, a disease whose symptoms indicate extreme disorder of one portion of this system, has never been seen here, while tetanus, another disease closely allied to it, both in regard to the parts affected, and to the way in which they suffer, occurs with comparative frequency. The only other physiological phenomenon which I consider it necessary to mention in corroboration of these views, refers to some peculiarities of children born in this colony, of European blood. Families of animals and plants, says Muller, undergo within certain limitations, modifications in their distribution over the surface of the earth, an observation which is strikingly illustrated by the Jewish nation, scattered as its people are over the greater part of the habitable globe, and blending in a distinct manner their original traits with the peculiarities of the climate and nation among whom they sojourn. The Anglo Australian race furnishes another argument in favour of Mullar's views. Among them the chief physical peculiarities to be observed consist in children of the colour of their hair and eyes, which are very generally light in hue, and in adults, of a frame more slender than that which characterizes their European prototypes. No notable alteration in complexion as yet accompanies these changes; but judging from antecedent and parallel cases, that is those of the English and Spanish colonists of America, in its warmer regions, and of the Portuguese settlers at Goa and Macao, it may be presumed that the fervour of an Australian sun will deepen the hue of the present races, subjected to its influence.

As regards the mental qualities of the nations of Australia,
want of energy has been alleged against them as a faulty characteristic; but I am not sure how far their tone of voice, which is soft, and their manner, which is quiet and composed, may have been taken to indicate a lack of mental vigour. In forming any judgment of the Anglo Australians, it ought to be considered that they have not generally enjoyed the educational and other advantages of their contemporaries at home, and that until such time as their destiny shall be more fully developed, when accessions of trained intellect and talent from abroad shall be less necessary and frequent, it is impossible to say whether their qualities of mind shall be worthy their descent and lineage. Without, then, presuming to decide as to the effect of the climate of Australia upon the mental constitution of her sons and daughters, we may observe with respect to some of their physical attributes that white or light coloured hair is certainly sometimes connected with deficient nervous power; and it seems probable that in the case of Australian children this reason may partly account for the peculiarity. I argue that such may be the case from observing a high temperature to produce these distinctions in a greater degree than is effected by a more temperate climate. Thus children born, in Van Diemen’s Land, more nearly resemble their original type than they who first see the light on this side of Bass’s Straits. In a like manner the young Victorians can boast of a ruddier hue than the natives of Sydney; while they, in their turn, are less thoroughly blanched than their Indo European cousins, who are very conspicuous for white hair and a languid aspect and expression of countenance. Regarding the colour of the human eye, Lavater observes that blue or light coloured eyes are generally more significant of weakness, effeminacy, or yielding than brown or black. I am not sure what degree of importance may attach to this remark, but in looking to analogies for an explanation of the effect produced upon the temper and disposition by this climate, it is to be observed that cattle and horses bred here are generally more gentle and tractable than the same animals are found to be at home, and that the aboriginal inhabitants of the country, though having frequently exhibited traits of ferocity, may be correctly designated as a light-hearted laughter-loving race, more easily excited to mirth than anger.
In speculating upon the general characteristics of the future Anglo-Australian people, other circumstances than those of climate must be considered. Thus, if we should permit ourselves to be guided by the Isothermal theory alone, we should see in our posterity a gay and temperate race like the inhabitants of southern France, preferring the wines produced by their own luxuriant vines to the stronger liquors of northern Europe: impulsive in temperament and impetuous in courage, with little thought for the morrow, because of a conscious freedom from the pressure of want, and with the independent bearing of a free and prosperous people. Climatic influence might produce such a picture, but other causes must be held as likely to modify the general result. The effect of occupation, hereditary habits, education and international intercourse, must act as a strong counterpoise to that of climate and locality; and thus it is probable that the characteristics of the British people will long continue the chief distinguishing traits of their descendants in Australia.

Having proved the existence of certain physiological changes in the system of Europeans who emigrate to this country, and also of some peculiarities in persons born here, I now proceed to offer the pathological corroboration of the conclusions, in some observations upon the effect of this climate in producing and modifying disease. These may in some degree be taken as corollaries to, or inferences from, the results already obtained, and evidently bear directly upon the phenomena of inflammation, congestion, general fever, nervous disorders, and certain organic diseases arising out of them; also upon perverted nutrition, and the morbid products which result therefrom. Thus we find that the action or sthenic form of inflammation is less commonly met with here than the congestive or asthenic kind; that congestions of the skin, mucous membranes, and of certain glandular tissues are extremely common; that fevers seldom wear an inflammatory character; that insanity, delirium, neuralgic pains, cardiac disease, and irregular uterine action are well known; and also that tumours and other morbid growths, though, perhaps, less common here than in Europe, are still within the province of Australian surgery.
Connected with the subject of depraved nutrition, is the consideration of phthisis, or consumption occurring or originating in this climate. That true consumption does arise here in too many instances, is unquestionable; sometimes selecting for its victims the Aborigines of the country, and it is also certain that the disease recurs, and leads to a fatal termination in persons who had been affected with it at home; or in whom a strong hereditary predisposition exists, but that it prevails to the extent manifested by such statistics as the colony now affords, my own experience leads me to doubt. It is true that diseases of the chest are by no means unusual in this part of Australia, particularly pneumonia, or inflammation of the lungs, of a somewhat chronic character, and bronchitis. Both of these complaints often simulate tubercular disease of the lung, and I am aware of many instances in which the results of inflammation have been mistaken for phthisis. That such is the probability may be inferred from the circumstances generally of the population of Australia differing so entirely and favourably, as they are happily known to do, from the influences which are recognized in Europe as favouring the tendency to consumption: for example, deficient food, the posture requisite in many kinds of handicraft, the breathing an impure atmosphere, and deficiency of open-air exercise. These causes, admitted by the physicians to the Hospital for consumption, as the most extrinsically powerful for the development of tubercular disease have hardly any existence here, and we are therefore led to the inevitable conclusion that if phthisis be prevalent to any great extent, the climate must be extremely favourable to its origin and growth,—a result quite inconsistent with the general and well-founded belief that consumptive patients are often much benefited, nay, sometimes entirely cured, by a change from England to Australia. Still it must be admitted that a more dense population, and further experience, are required to determine the suitableness of the soil of Australia for propagating consumption; and, further, that the lowered energy of the nervous system, which seems to be the consequence of its climate may, in favourable circumstances, so modify nutrition as to give rise to this dreaded malady. In the mean time, the determination of the value of this climate as a means of cure for persons
From this document we learn that of 187 cases in the first stage of the complaint, which were treated in that institution, 8 died, or about 1 in 23.5; of 53 cases in the second stage, 1 died; and in 295 cases in the third stage, 98 deaths occurred—equal to 1 in 3: the average upon the whole three classes amounting exactly to 1 in 5. Thus, in a general hospital, where all sorts of complaints, except contagious febrile disorders, are treated, and filled in a great degree by the population of the surrounding country districts, we have a mortality of which one-sixth is furnished by consumptive patients; while in the hospital at Brompton, which must naturally receive more cases from town than from the country, and where no disease except consumption receives indoor treatment, the mortality only reaches 1 in 5. Again, the mortality in all England, as decided by the Registrar General, is only augmented by deaths from phthisis, in the proportion of 1 in 267. As regards these statistics, I can only repeat my former observations that, if they be worthy of confidence, they prove Australia-Felix to possess the finest climate in all the world for the production and growth of tubercular disease of the lung;—a conclusion contrary to my own experience, founded upon long practical observation.

The following instance of the effect of this climate in arresting the progress of consumption, selected out of a considerable number, I venture to narrate, as it occurred in the person of a gentleman very well known in this colony—the late John Fletcher, Esq. So far back as the autumn of 1845, being at that time resident in Edinburgh, Mr. F. requested my opinion of the condition of his lungs, which his medical adviser had informed him were affected. I discovered a cavity near the apex of the right lung around which the substance of the lung was consolidated and useless. Tubercular deposit had likewise occurred in the left lung, in the same situation, but no destruction of organism had taken place there. His health was much impaired, but he lived as usual, and took a little exercise daily. I advised him to return to Australia, where he had already resided for a short period; a recommendation which I believe he followed, soon after consulting me. Since that period, until the early part of 1853, I heard nothing of my patient; but, at that time, I was informed
that he had been in a declining state of health for about twelve months; and, in consequence of an aggravation or return of his former malady, had gone to the north to obtain the advantage of a higher temperature. A few months ago I saw a notification of his death in the newspapers. It thus appear that this gentleman survived the first onset of his fatal disease for nine years, although the injury to his constitution, produced by the first attack, was so serious that every probability was against his outliving the keen blasts of a single northern spring. It is also to be observed that Mr. F. spent the greater portion of the last nine years of his life in comparative good health, being able to follow his usual pursuits, and discharge the duties of his office, until about two years previous to his decease. In this case, I think it may be safely inferred that if the first attack of the disease had induced such alterations in structure, and such inroads upon health, as was the case in 1845, the constitution must have possessed little power of resistance in the climate of Scotland; and that its temporary subjugation of the complaint must have been due to the warmer and more stimulating climate of Australia.

The modus operandi, or means, by which the climate operates favourably in such cases is, probably, by quickening the circulation of the blood, and thereby producing a higher and more equal temperature throughout the system, which, in its turn, brings about an increased activity of the absorbents, and, consequently, an improved nutrition of the body. In this way it may also be seen how a tendency to excess, in any particular constituent of the blood, is diminished; and how a deposition of such in the lungs, or elsewhere, becomes less probable. In consumptive persons albumen is believed to predominate in the system; and it is also supposed that in them there is a deficiency of oil. A knowledge of this fact led to the trial of cod liver oil as a means to restore the just balance of these materials which chemistry had shown to be necessary to the nourishment of the animal economy; and further to supply, by means of the carbon, in which animal oils are known to abound, fuel for the excitation and maintenance of a higher temperature. In this case the anticipations of science have been fully borne out by the results of practice, and the end which seems to be attained here by the influence of climate
is brought about in England by this very beautiful application of physiological and chemical knowledge. The extraordinary efficacy of cod liver oil as a means of cure in consumption is so well attested, and so generally admitted at home, that medical practitioners in this country are sometimes surprised that its effects here are so little in consonance with its high character elsewhere. But a little reflection will show that cod liver oil is not a remedy so well adapted to a warm as it is to a cold climate. It must be borne in mind that the causes which induce phthisis in this country are not identical with those which operate at home; for example, a low temperature and its depressing effect upon the pulse cannot be reckoned among the influences which predispose to consumption in Australia. But it is in counteracting such impressions that the animal oils are so conspicuously useful. Again it must not be forgotten that here, when the capacity for generating animal heat becomes greatly impaired, the vital powers are much compromised also, and therefore no stimulus applied in the shape of pabulum would probably be effective without other assistance; added to this the vicarious powers of the liver are much more constantly called into requisition as an aid to the lungs in a climate possessing the temperature of Australia than that of Northern Europe, from whence it results that assimilation of oil in the system, or any matter containing a large proportion of carbon would probably be more difficult and less complete in this than in a colder climate. By these observations I must not be understood to condemn the administration of cod liver oil in Australia. In scrofulous constitutions it will generally be found highly serviceable in diseases of the lungs as well as of other organs; but as a general rule it should be exhibited in winter rather than in summer, and at the commencement instead of the termination of tubercular complaints.

Before quitting the subject of the influence of an antipodeal climate upon the European invalid, I believe that a word of encouragement may be addressed to all whose malady partakes of a scrofulous nature, particularly to those dyspeptic hypochondriacs of whom Dr. Johnson may be said to have impersonated the type. To such persons the climate of Australia seems to afford the necessary stimulus, and thus to overcome that congestive tor-
por which enthrals their digestive powers, and deadens their mental energies. It is to be hoped that, by-and-bye, the charms of good society may not be wanting to aid the effect of climate in dispelling the gloom and oppression so characteristic of this complaint; in the meantime, I fear that we are unequal competitors with Baden and Aix la Chapelle for the countenance and custom of the elegant victim of dyspepsia.

It has already been noted that the changes produced in the human economy in this country, have a direct tendency to influence the phenomena of disease, more especially in certain maladies, and this statement must be understood to refer to frequency of occurrence, as well as to alteration in symptoms. Thus, bilious colic, dysentery, influenza, ophthalmia and heart disease, complaints well known in England, are still more common here; and the same may be affirmed of delirium, insanity, and the accidents of child bearing; while continued fever, certain forms of bronchitis, and pneumonia, rheumatism, and neuralgia seem to bear the same proportion to the general total of disease as they do at home.

The class of maladies which, perhaps, presents the most marked difference, in their symptomatology from their prototypes in the mother country, are the febrile and inflammatory, together embracing a very large proportion of the morbid phenomena presented to the observation of the physician in Australia. The more striking characteristics of Australian fevers are their uncertain duration, the general absence of crises or changes occurring at fixed epochs of the disease; the deficient reaction and early implication of the nervous system; the little tendency to putridity and frequency of local congestions. These features all afford evidence of want of power to make that vigorous effort to expel the materies morbi from the system, of which the European constitution is capable in its native clime. This observation does not, of course, apply to the absence of putridity or extreme vitiation of the fluids of the body, a fact whose explanation is perhaps to be found in the nature of the ordinary cause or origin of fevers in this country, which seldom depends upon contagion; whereas the putrid fevers of Europe are usually
generated in localities, and amid circumstances where contagion exists in its most intense and concentrated form. There can be no question, however, but that contagious fevers may and certainly will be developed in this climate, when a more dense and needy population shall throng our cities and towns; a consummation to which the Government of this colony has lent its utmost aid, by a total disregard of every precaution and preventive against the propagation of disease in towns. Not only has town land been alienated without any conditions whatever, as to the area which shall be built over, but no provision has been made for drainage and sewerage; for suitable abattoirs in proper situations; for spaces necessary for public recreation; or even for the interment of the dead. These rudiments of municipal hygiene have been totally disregarded, and their neglect will certainly entail upon Australian communities, in future times, much distress and suffering, besides a heavy expenditure which ought to have been avoided.

Although the present sketch does not imply a full or complete catalogue of all the symptoms which accompany any particular disease; nor an enunciation of more than general doctrines; yet to anticipate an objection which may be taken to the opinion here propounded, that putridity or great vitiation of the fluids of the body seldom takes place in Australian fevers, I may observe that an eruption quite analogous to what occurs in typhoid fevers is frequently seen here, and has been pointed out to me as evidence that the disease was generating into typhus. These spots, I need not explain to the well-informed medical reader, afford no proof of the existence of typhus or putrid fever; although from their close resemblance to the taches roses lenticulaires of Louis, they may be held to be indicative of typhoid fever, a disease which, long believed by many to be essentially different from typhus, has been satisfactorily shown to be distinct from that formidable malady, by Dr. Wm. Jenner. Nor, perhaps, is it surprising that this resemblance between the typhoid fever of Europe, and some kinds of fever here, should exist, if it be borne in mind that the mucous membranes generally, and conspicuously that portion of it which affords a covering or lining to the alimentary canal, are here extremely liable to abnormal change, while
the chief distinguishing feature of typhoid fever is to be found in the peculiar affection of the bowels which accompanies it. As regards the nervous symptoms which appear along with the other manifestations of fever in this country, it may suffice to say that they usually occur earlier in the course of the complaint than they do at home, and are not generally, even in fatal cases, so persistent. It is by no means uncommon here to see fevers ushered in by delirium, but certainly not usual, so far as my observation may serve for a guide, to notice that condition remain for any great length of time. This fact, if it be one, seems to be explicable on the supposition that increased action of the nervous system is more easily excited here than at home in consequence of greater irritability and less power; accordingly that in favourable cases the reaction must quickly supervene, or complete exhaustion of the vis nervosa would result; while in those instances which terminate fatally, irritability or the power of being excited to action is soon worn out, and the disorder of the nervous system is evidenced by other symptoms than those of delirium in some cases, while many more die from prostration and without showing any other sign of nervous derangement.

Inflammation has also been stated to possess features of its own in Australia. Of this peculiar condition it may be observed that it makes its attack chiefly on those tissues and structures, in and by which certain vital processes are being carried on, e.g. the skin, mucous membranes and the glands. No doubt certain forms of inflammation involve the serous, fibrous and cartilaginous structures; but these are much more rarely the seat of inflammatory action than those first mentioned. Accordingly we have pneumonia and bronchitis more common than pleurisy or pericarditis; inflammation of the bowels and dysentery more frequent than peritonitis; conjunctival ophthalmia more usual than sclerotic or iritic inflammation.

These remarks would hold good in Europe as well as in Australia, because it is obvious that inflammation must be excited with greater difficulty in structures of low organization and vitality than in highly developed organs; but the difference is much more marked in this country, and is
adduced now as a proof of what has already been asserted, that the vital powers have not that vigour in setting up reactionary processes in the system which they possess in the colder climate of our Fatherland. For the same reason, when the joints, tendons, &c., do become involved, as occurs in rheumatism, the case of the patient should be even worse here than at home; and such my experience leads me to believe is the fact, having found chronic rheumatism more utterly intractable in this climate than in that of England or Scotland.

Upon this view it is not difficult to understand that inflammation should frequently be found to exist in the congestive form; a fact of which abundant proof is exhibited in the affections to which the lungs, liver, alimentary mucous membrane, and the skin, are liable. As this form of inflammatory action frequently offers no striking proof of its presence either to the patient or to the doctor, its existence is often unsuspected and its progress unstayed until serious embarrassment occurs to the affected organs, the symptoms of which obstruction may still present no patent evidence of inflammation; and thus both cause and effect being unsuspected, it is not surprising that unsatisfactory results should follow the treatment. Of this kind are the affections to which the liver is so liable at certain seasons of the year, in which uneasiness hardly amounting to pain is the only symptom which might accidentally call the part implicated under the notice of the sufferer; but of whose existence secondary evidence of a satisfactory nature usually appears in the form of dysentery. When this severe complaint occurs, the attention of the patient and physicians is generally entirely occupied with its treatment; and again, the fons et origo mali is unnoticed, and left to the care of nature. Secondary, or consequential evidence, also frequently first demonstrates congestive inflammation of the lungs and kidney; giving rise to pseudo phthisis in the first case, and to irritability of the bladder, &c., when the kidney is the organ affected. It is worthy of observation that the congestive form of pneumonia or inflammation of the lungs is exceedingly common in infants, and in persons of dissipated habits; and that deaths frequently result from this cause, when no suspicion of the true nature of the case may exist. Evidence to support this
statement is unfortunately too plentiful. One instance some time ago came under my notice, in which a government official died suddenly, as was asserted, from the effects of excessive drinking. The deceased was unfortunately addicted to intemperance; but this vice was not directly answerable for the fatal event, which I am aware, was actually produced by pneumonia. Here, an ignorant medical opinion might have produced, and, I believe, actually did give rise to, much distress and sense of humiliation in the bereaved family, and also to some material loss.

Looking for further proof of the congestive nature of inflammatory action in this climate, it is fortunate that we can avail ourselves of the opportunity afforded for ocular demonstration of the fact, by some inflammatory affections of the skin. Thus, in measles and scarlatina, the feeling of roughness which is conveyed to the finger by passing it over the eruption, and which is produced by the presence of an infinite number of minute points, so small as not to be apparent except by the aid of a glass, is here much exaggerated; while the reason for its existence is obvious to the naked eye. In other words, the congestion of the skin in these complaints is much greater than at home; and its papillae naturally becomes more prominent. This kind of evidence is also plainly afforded by other affections in which the skin and mucous membranes are involved; as for example, boils, inflamed tonsils, gumboils, &c., &c.

Referring to the doctrines of the present day upon the subject of inflammation, and to the chemical constitution of the blood, for an elucidation of the facts just stated, it is to be observed that the causes which produce astasis in the capillary current must act here with force, because the coloured corpuscles are probably deficient in number, while there is no reason to suppose that those which are colourless are over-abundant; and as the stagnation and crowding of these bodies is known to constitute the first step in the progress of inflammation, it may be presumed that this morbid phenomenon is produced by vital rather than by mechanical agency,—that is to say, that the tide of blood in the capillary or small blood vessels is checked more by a want of power to move on, than by a choking of the
passage from excess of the corpuscular element, a conclusion which harmonizes with, and explains the general views adopted in these remarks.

After all that has been said in proof of a diminished nervous energy, as a consequence of continued exposure to this climate, it would be indeed singular if we should find the brain and nervous system exempt from disease. Inflammation with all its consequences—delirium, paralysis, apoplexy, neuralgia, and insanity,—all testify to the variety as well as to the frequency and severity with which this department of the human frame is visited by aberrations from the healthy state. Nor is this to be wondered at when the very general exposure of people here to an exceedingly hot sun is kept in remembrance.

The effect of sun heat upon the nervous system is well epitomized in coup de soleil or sun stroke. In this disaster, the high temperature produces a corresponding excitement, which being maintained in great intensity for a considerable space of time, atonic reaction suddenly takes place, and the individual frequently loses consciousness as a first effect of the accident. What in this case is produced by an exalted temperature and at once, may be brought about in a lesser degree by a more gradual application of the same agent. Thus, a severe debauch may induce an apoplexy, while a minor degree of intemperance often indulged in will only weaken the brain and nerves. In both examples undue excitement, either sudden and severe, or gradual and continued, will effect analogous results; and some loss of power in the nervous system is the sure consequence of exposure to the influence of a warm climate. The irritability thus induced is often perceptible in the temper prior to any physical manifestation of disorder, and in some cases seems to become chronic. Persons who passed at home for good tempered, here becoming remarkable for irascibility. By information obtained from the records of the Yarra Bend Asylum, for the insane, published by the Registrar General, it would appear that the most frequent forms of madness amongst its inmates, are subacute and chronic mania and dementia. Acute mania does not occur at all. The exciting causes of lunacy appear to be rather numerous, as might be expected, but
that which stands pre-eminent among all others is intemperance; nearly one-third of the total for 1853 being due to drinking.
Sun stroke appears to be the immediate cause in about one case in fourteen; and disappointment in one out of fifteen examples. These statements refer to males only; of whom the entire number treated in the asylum in 1853 was 109. The total of females treated during the same year was 35; of whom about one-third suffered from puerpual mania, and one-fifth from melancholy; a result which well illustrates the difference which exists between the mental and physical constitution of the sexes, and the influence by which they are affected. It thus appears that 144 cases of insanity were treated in the Yarra Bend Asylum in the year 1853; of which number about one-fourth only were females. Assuming this total of 144 to represent the number of instances of lunacy occurring during the year throughout Port Phillip, the result would shew that one person in every 1389 of the inhabitants was affected with madness. But it is well known that many persons so afflicted cannot find refuge within the walls of the Yarra Bend, and are perforce incarcerated in jails and watch-houses; and it is also certain that other individuals with the same affection, but in affluent circumstances, do not seek a retreat in such an institution, but are placed under private medical surveillance. In this way it is impossible to approach accuracy in forming an estimate of the proportion which insane persons bear to the whole population; but that the ratio is extremely high no doubt can be entertained. It would be interesting to ascertain whether the natives of the colony furnished any quota to the above list. Their temperament and habits, which are not usually dissipated, do not point them out as likely subjects of mental derangement; but experience alone can solve this important question.

In England, insanity and all other nervous disorders are said to be upon the increase. This fact may perhaps be explained by a reference to the habits and circumstances, not only of the present generation, but of those which preceded it. It cannot be doubted that the sins of the fathers are visited upon the children unto the third and fourth generation, and that the common practice of intoxication which prevailed in the days of our fathers and grandfathers, may have impaired the strength of the nervous system.
in their descendants, and laid them open to influences, both from without and from within, which their own sounder system was able easily to resist.

It may be presumed, then, that if Port Phillip had been colonized sixty or seventy years ago, the physician of that epoch, would have been led to other conclusions, regarding the effect of this climate upon the European constitution, than those which are arrived at in these remarks; and it may be hoped that as intemperance is no longer a vice among the better classes, the descendants of the present generation, and still more their children, will recover what may be termed their birthright; that the example of their superiors in education and refinement will gradually wean the lower orders from their present taste for strong waters; and that future observers will have the gratification of recording a decrease in that class of maladies which may be justly regarded as a truthful reflexion of national vice.

In the mean time it is ours to endure, and to endeavour to cure; a process which cannot be pursued successfully without a due knowledge of the causation of disease.

Among the various consequences to the human frame, which have here been ascribed to the influence of this climate, none is more interesting to the community at large than miscarriage, and the other accidents incidental to the parturient state. The process of childbearing which all civilized nations justly regard as one involving some risk, against which every precaution suggested by the largest experience should be adopted, is here peculiarly uncertain; often resulting in disappointment when the best-grounded hopes of a favourable issue might have been entertained. Women, in every rank and condition of life, at every age and in all stages of their procreative career, are surprised by the occurrence of premature labour, for which they are usually unable to assign any adequate reason.

The following list, which I had tabulated for other purposes than those to which it is at present applicable, will attest the apparent caprice with which nature acts on these occasions. It
consists of thirty-one cases, comprising various conditions in life, ages, and complexions, women who were pregnant for the first time and those who had borne many children—persons apparently of robust constitution and females of delicate frame—natives of the United Kingdom, and of Australia. The accident occurred at every period of pregnancy, from one month to eight; but in the majority it happened at an early stage.

<table>
<thead>
<tr>
<th>No.</th>
<th>Age</th>
<th>Complexion</th>
<th>Had Children</th>
<th>Miscarried before.</th>
<th>Exciting Cause.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>32</td>
<td>dark</td>
<td>one</td>
<td>no ——3 months</td>
<td>measles, severe</td>
</tr>
<tr>
<td>2</td>
<td>34</td>
<td>fair</td>
<td>two</td>
<td>no ——6 months</td>
<td>jaundice, slight</td>
</tr>
<tr>
<td>3</td>
<td>26</td>
<td>dark</td>
<td>none</td>
<td>no ——8 months</td>
<td>jaundice, severe</td>
</tr>
<tr>
<td>4</td>
<td>23</td>
<td>dark</td>
<td>none</td>
<td>no ——3 months</td>
<td>fever, moderate</td>
</tr>
<tr>
<td>5</td>
<td>25</td>
<td>fair</td>
<td>one</td>
<td>no ——8 months</td>
<td>fever, moderate</td>
</tr>
<tr>
<td>6</td>
<td>27</td>
<td>dark</td>
<td>none</td>
<td>once ——7 months</td>
<td>phthis, first stage</td>
</tr>
<tr>
<td>7</td>
<td>34</td>
<td>dark</td>
<td>three</td>
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<tr>
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<td>dark</td>
<td>two</td>
<td>thrice ——3 months</td>
<td>retroversion complete</td>
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<tr>
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<td>fair</td>
<td>one</td>
<td>once ——3 months</td>
<td>procidentia, slight</td>
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<td>10</td>
<td>37</td>
<td>dark</td>
<td>two</td>
<td>no ——6 months</td>
<td>fatigue</td>
</tr>
<tr>
<td>11</td>
<td>28</td>
<td>fair</td>
<td>three</td>
<td>no ——3 months</td>
<td>fatigue</td>
</tr>
<tr>
<td>12</td>
<td>22</td>
<td>fair</td>
<td>none</td>
<td>no ——7 months</td>
<td>mental annoyance</td>
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<tr>
<td>13</td>
<td>38</td>
<td>dark</td>
<td>one</td>
<td>once ——7 months</td>
<td>mental annoyance</td>
</tr>
<tr>
<td>14</td>
<td>22</td>
<td>dark</td>
<td>none</td>
<td>no ——6 months</td>
<td>mental annoyance</td>
</tr>
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<td>dark</td>
<td>one</td>
<td>no ——6 months</td>
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<td>three</td>
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<td>none</td>
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<td>36</td>
<td>dark</td>
<td>three</td>
<td>once ——2 months</td>
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<tr>
<td>18</td>
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<td>dark</td>
<td>three</td>
<td>once ——3 months</td>
<td>none</td>
</tr>
<tr>
<td>19</td>
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<td>fair</td>
<td>two</td>
<td>no ——3 months</td>
<td>none</td>
</tr>
<tr>
<td>20</td>
<td>35</td>
<td>fair</td>
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<td>21</td>
<td>fair</td>
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</tr>
<tr>
<td>22</td>
<td>33</td>
<td>fair</td>
<td>none</td>
<td>twice ——2 months</td>
<td>none</td>
</tr>
<tr>
<td>23</td>
<td>22</td>
<td>dark</td>
<td>none</td>
<td>no ——2 months</td>
<td>none</td>
</tr>
<tr>
<td>24</td>
<td>21</td>
<td>fair</td>
<td>none</td>
<td>no ——2 months</td>
<td>none</td>
</tr>
<tr>
<td>25</td>
<td>33</td>
<td>dark</td>
<td>four</td>
<td>no ——2 months</td>
<td>none</td>
</tr>
<tr>
<td>26</td>
<td>23</td>
<td>fair</td>
<td>none</td>
<td>no ——3 months</td>
<td>none</td>
</tr>
<tr>
<td>27</td>
<td>26</td>
<td>dark</td>
<td>none</td>
<td>no ——5 months</td>
<td>mental disquiet</td>
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<td>24</td>
<td>dark</td>
<td>none</td>
<td>no ——2 months</td>
<td>none</td>
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<tr>
<td>29</td>
<td>28</td>
<td>fair</td>
<td>none</td>
<td>no ——2 months</td>
<td>none</td>
</tr>
<tr>
<td>30</td>
<td>31</td>
<td>dark</td>
<td>none</td>
<td>no ——2 months</td>
<td>none</td>
</tr>
<tr>
<td>31</td>
<td>22</td>
<td>dark</td>
<td>none</td>
<td>no ——2 months</td>
<td>none</td>
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The figures in the fifth column refer to the period of Pregnancy at which the miscarriage occurred.
It is not within the scope of these remarks to enter into a
minute analysis of this table, which must be permitted to speak
for itself. The observations which it is necessary to make upon
the whole subject must therefore be rather of a general than of a
special kind. Thus looking at the list in a kind of wholesale
manner, we observe that out of the entire number of cases, fifteen,
or nearly one half, were not attributable to any exciting cause, and
that in a considerable portion of those where a reason for their
occurrence was assigned, the same was manifestly insufficient for
such a result without the co-operation of other influences. What
these forces may have been, and in what manner they were prob­
ably operative, I propose briefly to enquire. Obviously they
are not to be looked for in the mode of life adopted by females
in this country, which does not differ materially from that which
is common at home; and if any comparison be made between the
condition of the masses in Great Britain and in Australia, the
advantage is without doubt on the side of the colony. Women
here are not generally subjected to such hardships and exertion
as would prove injurious to their system; neither is it among
that class in which physical exertion are necessary that we find
the larger proportion of miscarriages. It is therefore clear that
it is not to any speciality of this kind that the tendency now
under consideration can be attributed. Moreover, as the danger,
has been shewn to be general and not restricted to age, complexion,
condition, nor any particular degree of strength or weakness; it
seems undeniable that the cause or influence which predisposes
to the accident is also of a general, not of a special nature. To
climatic agency alone then can be traced the frequency of uterine
irregularity in this country. This deviation from healthy function
does not consist only in the occurrence to which our attention has
yet been limited; but is apparent in frequent abnormalities in
menstruation, and also in dangerous hemorrhages. These phe­
nomena assist in throwing some light upon the main question.
They evidence distinctly two important facts; first, that a defici­
cy of power frequently exists in the nerves of the womb; and
secondly, that excess of ovarian excitement sometimes alternating
with, or exchanged for, diminution of that state is often present.
That the ovaries should be liable to a condition of exalted function
in this climate is not surprising, as no fact in physiology is better
established than the influence of temperature upon the sexual system; and it is equally well known that the effect of all stimuli applied to nerves (heat included) is eventually to produce weakness or loss of power. We are thus furnished with a key to the explanation of the predisposing causes of premature labour, which it will be interesting to follow as far as a knowledge of pathological processes, and of facts, will enable us to go. Taking for granted that loss of power with increased excitability in the uterine and ovarian systems is the consequence of this climate, we may presume that the circulation in these parts, and also their muscular power must be more or less altered and deranged; and therefore that the capacity of the womb, as a nutrient organ, must be impaired, as it is obviously impossible that nutrition can be duly maintained when the supply of blood is irregular; and as it is known that the supply of blood to the uterus is regulated by the ovarian system, it may be safely inferred that undue ovarian action is answerable for a large proportion of the disappointments to which expectant mothers in this country are liable. If further proof of the activity of the ovarian system in Australia be required, it is to be found in the fecundity which is often the consequence of emigrating hither among women of a worn out constitution, and among prostitutes. The precise manner in which premature expulsion of the contents of the impregnated womb is effected cannot be explained authoritatively in the present state of our information upon the subject. Professor Simpson speaking of the means by which labour is brought about at the full period says:—"I would venture to suggest that in the human female the exciting cause of parturition is to be traced to changes going on, or rather accomplished, between the uterus and its deciduous lining, which changes lead to parturition when they have proceeded so far as to effect the necessary amount of disintegration and separation between the relatively attached surfaces of the uterus and decidua. . . . Let me, in the mean time, merely observe that these changes in the connection between the decidua and uterus seem of a nature analogous to the so called fatty degeneration, which occurs in effete and worn out structures in other parts of the body; and that we artificially imitate these changes, and their effects in inducing premature labour when we separate the membranes from the
"interior of the uterus." Admitting the explanation of the learned Professor to be satisfactory, so far as it goes, it does not gratify our curiosity as to how this fatty degeneration and separation take place. It is a fact that while these changes do occur either at full term, or prematurely, the womb is full of blood, and therefore able, so far as that fluid is concerned, to preserve the vitality and vigour of any organized substance connected with it. Nay more, in cases of miscarriage the uterus is often gorged with blood; but whether this engorgement and the expulsion of the ovum stand in the light of cause and effect, or whether they occur conjointly as the result of a cause common to both, it is impossible now to determine. It may be that the unusual supply of blood to the organ determines its contraction as a means of relief, and that the muscular movements thus induced for another and conservative purpose may occasion the separation of the membranes and expulsion of the foetus.

Further speculation on this interesting subject is here unnecessary. I would only advert for a moment to the plan of treatment; which a belief in the views here adopted might recommend in cases of uterine irregularity.

The obvious aim of treatment in such instances would be to diminish or repress ovarian excitement; to relieve the engorgement of the uterus at the monthly periods; and to strengthen the system generally. These indications might be fulfilled in different ways by various practitioners; but without insisting upon any particular method I would observe that in many cases it is absolutely essential that the patient live absque marito, and use an unstimulating diet; that abstraction of blood from the womb with warm pedeluvia, and sometimes hip baths, be adopted at the monthly periods, along with rest in the recumbent posture; and that gentle exercise, cold bathing, and tonics, if required, should be used assidiously between the periods. These recommendations contain nothing new in themselves; it is only as regards the times of their application, which should be very strictly observed, that any necessity for recalling them into notice existed.
Another point of great interest connected with the effect of this climate upon the European constitution is the value of infant life. From the statement of the Registrar General respecting the mortality in Melbourne, from July 1st to September 30th, 1853, it appears that out of 368 deaths of males registered in that quarter, 116, or nearly one-third, occurred in children under five years; and that of 257 registered female deaths, 117 or 45.5 per cent. were those of infants under five years; and that of the 116 male children deceased, 99 died under three years; and of the 117 female infants, 94 lost their lives before attaining that age. Further, that among the male children no less than 66 died under one year; and among the females 50 deaths were registered within the same period.

Finally, we gather from the same source which has furnished the foregoing figures that the proportion which infants of two years of age and under bear to the whole population is 9.60 per cent., while the ratio which their deaths bear to the grand total of mortality is 26.24 per cent. These statistics are sufficiently striking, and their truthfulness is painfully evidenced by the constant announcement of infant deaths in the public prints; by the sad processions which so often cross our path; by the affliction of our neighbours; and often by our own sorrowful experience.

What then, are the causes productive of such mortality? Are children born here with constitutions less able to resist the trials to which infant life is obnoxious than they are at home? Are Australian mothers unable to afford a due supply of nourishment to their offspring; or, are the accidents and diseases incident to childhood more numerous and severe in this climate than in England? It is certainly a fact that infants in this country are little able to overcome the effects of disease; but how much of this inability may proceed from constitutional weakness, and how much may be due to the influence of climate after birth, it is not easy to determine. Of the dangers which beset early life, those which proceed from a comparatively feeble vitality, and those arising from dentition are the most constant and numerous. The effect of a low temperature in extinguishing infant life is well known, and we can hardly imagine that a nervous power so
easily exhausted by cold, could remain uninfluenced by the effect of heat. Indeed it is quite certain that exposure to a high temperature does exhaust the nervous system, especially when it is little capable of resistance, as in the case of young children; and therefore we here see a climatic agent which may, nay must, operate prejudicially in all cases where the vital powers may be enfeebled;—a condition which has been observed to be common at an early age. Again, the effects of dentition are very likely to be aggravated by any stimulating or depressing agency. During the first year of human existence there is a great excess of spinal over cerebral development; but during the next two years the brain nearly doubles its weight, and begins to exercise some portion of that controlling and regulating power which constitutes one of its chief functions throughout life. This statement of the condition of the brain in childhood however will prepare us for many of the accidents which occur to infants, and will likewise serve to explain the extreme danger which must arise to an organ in such a rapid state of transition and increase, from exposure to a high temperature. Apoplexy in infants is known to occur not infrequently, although the fact has but lately met with a general recognition. Coma occurring as a sequel to convulsions and other affections of the nervous system is well known; and true epilepsy is often seen in infants. All these disorders of the cerebro spinal system cannot fail to be aggravated by any causes tending to disturb the balance of the circulation; hence it may be reasonably inferred that the dangers of dentition are greater in this climate, which not only possesses a much higher temperature than that of the warmest parts of England; but in which occurs the phenomenon of hot winds, prejudicial alike to animal and vegetable existence, and which is also liable to the most sudden and extreme alternations of heat and cold. Another effect of heat upon the infant economy, which must influence its vigor in no small degree, is the change which this agent produces in the functions of the liver. This organ, which at all periods of life exercises a most important influence in the functions of nutrition, seems at this time to be specially responsible for the proper constitution of the blood; the vital properties of this fluid being mainly dependant upon the due action of the liver for their integrity. But it is well known that
a high temperature is very apt to embarrass the hepatic functions in their higher as well as in their inferior relations, and that an imperfect vitalization of the blood will as certainly result from their interruption as an incomplete elimination of bile. The first effect must produce debility; the second a predisposition to gastric and enteritic disorder. Another important system in the animal economy is very liable to derangement under exposure to heat. I mean the respiratory. The lungs are apt to be affected both primarily and secondarily by this agent; but its indirect action is of the most consequence. Thus the circulation which is quickened by a high temperature, compels a corresponding rapidity in the respiration by which the decarbonization of the blood is imperfectly effected, and the animal heat insufficiently maintained, while the partially vitalized blood, which results from inaction of the liver, does not offer the proper stimulus to the contracting power of the pulmonic capillaries; and congestion is the natural consequence.

The skin and its continuation, the mucous membrane, in and by which every vital process of the system is carried on, are also liable in a variety of ways to be unfavourably influenced by a high temperature. In the reduplications and involutions of this membrane, the mysteries of nature may be said to reside. In it and in its glandular folds, absorption, imbibition, endosmose, and all the operations of a most subtle chemistry, under the control of nervous influence have their seat; and it is not difficult to see how a slight change in the constitution of the fluid to be operated upon, how an excess or diminution in the strength of the nervous current, or any alteration in the mechanical part of the apparatus, that is to say in the membranes themselves, may affect the result. The marvel is, that in an organism so delicate, failure in its performances is not more frequent. Here temperature both modifies nervous power and the supply of blood, and more particularly from this cause gives rise to alimentary disorders. It cannot now be matter of surprise that when any complaint shall compromise the vital powers, this important part of the system should give evidence of the injury, or that in any vitiation of the fluids of the body, the mucous tissues should be the chief sufferers. Hence, the prevalence of diarrhea and dysentery, and also of fever,
because although in this last named malady the first step in the series of morbid actions may be taken by the nervous system, yet the mucous tissues become so speedily engaged, and exercise so important an influence upon the progress of the disease, that their delicacy and liability to disordered function may fairly be made chargeable with encouraging, if not originating idiopathic fevers.

We have thus by a priori reasoning, shown the probability of the occurrence of exhaustion or debility; of stupor and convulsions; of pulmonic congestion; also of fever, diarrhea, and dysentery; all of them diseases of great severity and of fatal tendency. Let us now ascertain whether these conclusions receive any corroboration from statistical facts. The Registrar General says the chief cause of death among male infants was atrophy or debility, being 18 per cent. of the total deaths under five years, and all occurred within a few weeks after birth. The next in order of fatality was convulsions, being 15.5 per cent.; the next pneumonia, or inflammation of the lungs, being 14.6 per cent.; and then followed dysentery 8.6 per cent.; hooping cough and croop 6.9 per cent.; brain disease 6 per cent.; bronchitis 6 per cent.; typhus fever 5 per cent.; teething and tabes 5 per cent.; scarlatina 4.3 per cent.; and gastritis and enteritis 1.7 per cent. Among females nearly the same proportions were observed except under the head of scarlatina, which produced among them a mortality equal to 14.5 per cent. In this list the small mortality from fever, or typhus as it is termed, is remarkable. I may here repeat what I have before observed, that I never saw a case of true typhus in this country; but it is well known that continued or colonial fever as it is termed, is a complaint of very common occurrence at certain seasons of the year both among adults and children; and although not commonly fatal in grown up people, yet among young children it is a dangerous and often fatal malady. It is true that the quarter of the year to which these statistics refer is not remarkable for the occurrence of fever, and in this way its apparently innocuous character may have been obtained.

It may now be considered whether the question proposed respecting the causes of mortality among infants in Australia have been answered, or whether these interrogations point to a pro-
liable causation. It certainly appears to be likely, judging from the facts and arguments here laid down, that infants born in this country do not possess the vigour and vitality—at least, in this climate—which belong to those born at home; yet, it is difficult to say how far congenital weakness may be answerable for the large mortality among children, which is characteristic of Australian statistics, and how much of these consequences is due to the action of the climate after birth. Certainly the forms of disease in this country, are not generally so severe as they shew themselves in England. The intense inflammation, the high febrile action, the violent nervous excitement and strong muscular movements which characterize the diseases of Great Britain, are not common here; and therefore, I do not consider that the large proportion of infantile deaths which occur in this climate is due to the diseases from which they result being of an unusually severe type.

Having made many microscopic analyses of human milk in this country, as well as at home, I am able to say that it is not to defect in the nutrient qualities of that fluid in Australia, that infantile debility is attributable. This observation applies only to the milk of women in good health. In cases where the mother is sickly, and such certainly occur with greater frequency here than at home, the quality of the milk becomes deteriorated, and the infant suffers. To a certain extent therefore, debility is induced among young children here, by defective nourishment. The general result of these observations, and of the facts which they embrace, becomes, as has been already observed, too powerfully strengthened by evidence of a public and palpable nature; but, it must be borne in mind that the testimony upon which these conclusions rest, and the statistics upon which they are founded, are gathered from town populations only; and that a much more favourable account of the health of children in Australia could be obtained from the country districts. Climatic influences, when these are of an unfavourable kind, are naturally aided by other conditions opposed to health which often exist in towns; and thus become more obvious and of greater importance than when circumstances greatly promoting a sanitary state among the people are present to counteract their
effects. These are generally found to exist apart from towns, and are made up not only of the blessings of pure air and plenty of it; but consist also of a suitable diet and wholesome exercise,—neither of which are at this time obtainable in any town in Port Phillip except at such a cost as to render them practically unattainable.

It has been already observed, that opportunities never to be recalled, of rendering our cities and towns the abodes of health and comfort, have been neglected by the Government of this colony; but still, something may be done to improve our sanitary condition, and adorn our rectangular state. Trees may be planted to afford us a shade; water may be recognized as an article of necessity, not of luxury, and its uses may be found not less ornamental than advantageous; spaces for public recreation may not only be set aside, but made available for that purpose; in fact, the admitted necessities of a large population in a warm climate ought to be supplied with all reasonable expedition, whereby the health, comfort, and taste of the people will be improved and gratified. Other requirements for health in a warm climate appertaining to food, are no less deficient than those just mentioned. Fruit and vegetables are indispensable to its maintenance, especially during summer; and no greater popular error prevails than the idea that the use of fruit is likely to induce diarrhea, or dysentery. The truth here lies in the opposite direction; and, it is a fact worthy of notice in this place, that the cider counties of England, and the rural departments in France where an acid but pure wine forms the constant beverage of the people, have been singularly exempt from cholera during every visit which that disease has paid to Europe.

Moreover, in laying down hygienic rules for this climate, it should be impressed on the minds of the colonists, that it differs greatly from that under which they were born, and that habits which were suitable in England may here be out of place. The hours for rising and for going to bed; for business, or for exercise; for meals and for amusements; are all maintained as imported. The ardent heat of a noon-day sun is braved by every one who obeys the impulse of business or of pleasure; it has not
yet occurred to us that the cool of the morning and afternoon would find us better prepared, mentally and physically, for the exertion of either, or that the repose of all animated nature during the hottest period of the day might wisely be imitated by man. Neither should the noisy alarm of all the feathered tribe at early day fail to arouse the sleeper. One hour in the morning has been said to be worth two at night; here it may be considered equal to two at any other time of the day. Hot sun, noisy auctions, brandy and water together, form a combination favourable to the interest of the medical profession; but were sales held at an earlier hour, the exhaustion which demands the stimulus would not be produced, and bad bargains, in more ways than one, would be avoided.

It is now time to bring these observations to a close. They are necessarily very imperfect, having been put together irregularly and hastily, during the hours of quiet permitted by a most uncertain profession. I trust, however, that this notice of an important subject will have the effect of exciting the attention and interest of persons with more leisure and greater ability and information than I am possessed of.

I cannot conclude without acknowledging the advantage I have derived in these remarks from my references to the Statistical Register, a work which, though imperfect, from causes peculiar to these colonies, is still of great utility; and for various and reliable information respecting the Province of Victoria, stands alone. It is to be hoped that the gentleman to whose industry the public are indebted for this very meritorious compilation, will receive every assistance in his future efforts for the good of the colony.

Note.—The mean temperature of London, is 49·87; Melbourne, 59·02; Buenos Ayres, 58·2; Marseilles, 59·10. The barometrical pressure of London, is 29·892; Melbourne, 29·960; Buenos Ayres, 29·910; Marseilles, 30.