EGYPT AND THE NILE

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Dr PATTERSON.

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CONSIDERED AS

A WINTER RESORT FOR PULMONARY AND OTHER INVALIDS

BY

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PREFACE.

THE following pages have no pretension to be considered as a scientific treatise on climate, nor as an addition to the science of meteorology. They contain but the expression of a few simple meteorological data, carefully registered by the author and a few friends, to which necessary explanations have been added. They were written three years ago, in answer to the many inquiries of his profession in England and America for detailed information on the climate of Egypt, and the cases proper to recommend thither. With some additions, they are now offered, in the hope that they will supply a want known to exist.

The hygrometrical observations are, unfortunately, deficient. They were accidentally de-

stroyed, and an opportunity of replacing them has not again presented. The general remarks, it is hoped, will in some degree supply the deficiency. The late Lord Aberdeen kindly complied with a wish to keep a daily register extending over the whole Nile season. It is useful as illustrating the general remarks on temperature. Other travellers kindly assisted.

Cairo, Egypt, 1867.

EGYPT AND THE NILE.

CHAPTER I.

PRELIMINARY REMARKS.

"THE term climate," says Alexander von Humboldt, "taken in its most general sense, indicates all the changes in the atmosphere which sensibly affect our organs, as temperature, humidity, variations in the barometrical pressure, the calm state of the air, or the action of opposite winds, the amount of electric tension, the purity of the atmosphere, or its admixture with more or less noxious gaseous exhalations, and, finally, the degree of ordinary transparency and clearness of sky, which is not only important with respect to the increased radiation from the earth, the organic development of plants and the ripening of fruits, but also with reference to its influence on the feelings and mental conditions of men."

This description, though exceedingly comprehensive, fails in embracing many other conditions necessary to the study of medical climatology from

its most scientific point of view. It may, however, be accepted, as it includes many of the most obvious and useful individual elements of climate, which in practice are applied to the prevention and treatment of disease. Modern science has, as yet, failed in determining the modifying influence of these various conditions, so intimately connected with each other; and this precludes the possibility of forming any determinate system of medical climatology which shall embrace the many other conditions not included in the foregoing description. There are, however, both general and local conditions of climate which are known to favour the processes of organised life; and it is to these more obvious conditions we must be content, with our present knowledge, to trust and make use of, for the invalid. Whatever may hereafter be determined by the scientific study of the subject, it is very doubtful whether the knowledge so obtained will assist us much in its application to the various forms of disease for which change of climate is recommended.

The science of meteorology, if science it can be called, even in its present advanced stage, has produced little result in its application to medicine. The observations and experiments of Mr Glaisher

have done much towards determining the local character of climate, but we are most concerned in considering it, as a whole, in its most evident effects as regards the influence of heat and light, and freedom from noxious emanations, modified by the action of humidity, in its application to the invalid. If, then, we can, by direct observation of the senses, assisted by instrumental registrations of a simple character, applied over a large space of country, determine that certain effects are produced on animal and vegetable life of a nature favourably influencing vitality, and prove that conditions obtain of a general character, such as described by Humboldt, we do much towards the practical application of climate in the treatment of disease, and we may be content to await the more evident benefit that may result from the further discoveries of a gradually improving science. It is not intended, from these remarks, to infer the inutility of extended scientific meteorological observations on climate, but rather to limit the practical application of the certain knowledge we possess. We cannot take too extended a view of the subject of climate in its physiological relations towards the human race, but we are most concerned, in its practical medical relations, in

applying it as a whole, until we obtain more certain evidence of the action of its individual constituents, and how far any one element influences another. The character of a climate has been supposed to be better determined by its influence on the vegetation of a country than by mere instrumental observations; and where this is favourable to the organic development of plants, it has been inferred, perhaps naturally, that it would be equally so to the animal organism. Under certain limitations, this is undoubtedly true, and we may be much assisted in forming an estimate of the probable advantages to be derived by the removal of a patient to a climate characterised by a healthy vegetation. Physiologists have given much attention to the fact that in a warm climate, from the very rarefied condition of the atmosphere, and the great expansion of aqueous vapour, less oxygen, by weight, is given to the blood through the lungs. This is so in warm moist climates; but then we must consider that respiration is much more active, and the process oftener repeated, when the air is warm and dry, and that the quantity of oxygen, though less in each inspiration, may still be very considerable in the course of the day, and much less below a given standard than is generally supposed.

In considering the immunity of the natives of any climate from special forms of disease, and the deduction to be applied therefrom to strangers, and especially invalids migrating thither, we find many difficulties in the way of determining the precise effect of climate alone; and if we take the subject in its most extended form—that is, the great differences presented by different races of mankind in various regions of the globe—we shall find with what little certainty we are able to define what is exclusively due to climate in giving such a marked impress to their special physical and moral development, which influences the nature of their institutions, and determines various forms of disease, or gives them individual adaptability to various conditions of temperature. If in health we find it so difficult to determine this individual adaptability to change, how much more is it necessary to consider when we apply these deductions to the invalid? Further, in comparing this immunity, we must also consider the general habits of life of the population of a country, the influence of various kinds of food and drink, the effects produced by the introduction of new trades, the circumstances which often affect the general alimentation of a population, by depriving them, for a

time, of a diet wanting in the elements of nutrition, or by introducing new articles of diet little suited to the climate, and which tend to modify the type of various diseases, and bring about a condition of system which renders them more liable to diseases previously little known. Of the general effect of such conditions, Egypt offers many practical illustrations. The introduction of railways and the electric telegraph, the great impulse given to trade and commerce for the last few years, the establishment of large factories in connection with the cotton trade, and various other influences depending on a progressive civilisation, have all tended towards producing a more active nervous development, and, consequently, greater predisposition to certain forms of disease. This is exemplified by the marked increase of consumption in its pulmonary form, and the further development of scrofulous diseases. The latter disease, previously common enough in its external manifestations, has, under these influences, developed a marked tendency to the consumptive form. The great influx of Europeans, and the introduction of various articles of food and drink to supply their artificial wants, have altered the habits and mode of life of many of the native population, by

introducing them to a style of living foreign to their former simple and temperate ways. The cattle disease, which so fearfully visited the country, and carried off all the animals, and which immediately attacked all those newly imported, reduced the population, for a long time, to a diet deficient in nutrition. The lack of good vegetable food, arising partly from this, and still more from the land growing cotton, during the American war, to the exclusion of grain and vegetables, have had a bad effect upon the constitutions of the inhabitants of the country, and will, probably, for a few years to come, produce a marked difference in that immunity from consumptive diseases for which Egypt has been so long and justly celebrated. Yet, with all these determining influences at work, the freedom from phthisis, both in natives and Europeans, is something remarkable; and we are surely justified in assuming that this is owing to the salubrity of the climate, which possesses, in a very high degree, the characters, in a favourable sense, enumerated in the foregoing description of Humboldt, and which are known favourably to influence the "organic development of plants and the ripening of fruits," and equally favourably to influence the animal organism.

CHAPTER II.

THE CLIMATE—CAIRO—THE NILE AND ALEXANDRIA.

When we consider the influence of climate in its relations to special forms of disease, and the number of invalids annually leaving the shores of Great Britain, to seek that condition of climate they cannot obtain at home, it becomes a matter of great importance to the practising physician to have as accurate a knowledge as possible of the chief characteristics of the country to which he recommends a change. In recommending change to a warmer climate, the physician is often at a loss whither to send his patient, as sad experience has taught him how uncertain is the effect of change, and also how great a difference may exist in the climate of a place from year to year. So great have been these changes at many of the continental sanitaria during the last few years, that medical men, from fear of the odium likely to attach to them, naturally shrink from the

responsibility of recommending patients to leave the home where they are surrounded with domestic comforts and carefully regulated temperature, to risk the vicissitudes and fatigue of the journey, to a place "highly recommended," where, on arrival, they find a condition of climate very different from what they had been led to expect. Again, the physician recommending a patient to "try a warm climate" has often, and necessarily so, but a vague idea of the special conditions of the place to which he sends him. Hence it is that many of our travelling invalids often, and reasonably, distrusting the recommendation of their medical attendants, go roving about from place to place, seldom staying sufficiently long in any to derive benefit, and, finally, return home little improved, or, as frequently happens, much the worse for the change.

Even when the facilities for travelling in Egypt were very limited, the genial winter climate of Cairo and the Nile valley did not fail to attract the attention of travellers brought thither from motives of discovery and research, and the works of all, even from ancient times, abound in allusions to the serenity and health-giving properties of the Egyptian atmosphere. Since the establish-

ment of the "Overland Route" has obviated many of the difficulties of Eastern travel, and rendered Egypt easy of access, its climate has, as it were, revived its ancient reputation for salubrity, and during the last few years has been much resorted to by consumptive and other invalids of every nation.

The attention of the medical profession has been directed to it by many popular writers, and thermometrical and barometrical observations have been multiplied indefinitely to prove its character as a health resort in winter. But, whilst every season brings its tribute from the traveller's pen, and medical notes frequently appear, the profession at home feel they do not derive sufficiently detailed information to guide them in determining the cases proper for sojourning in Cairo, or on the Nile. This want the following remarks, it is hoped, will supply.

Laying aside the scientific definition of what constitutes climate, and the more subtle agencies embraced in the chemical constitution of an atmosphere, let us briefly glance at the main requirements which, in practice, are sought for the invalid requiring change, then, by remarking on the general conditions of the climate, and its in-

digenous population, ascertain how far Cairo and the Nile supply them. We shall then be able to estimate its claims to be considered a winter resort for pulmonary and other invalids. Finally, let us notice the special forms of disease benefited by the climate, of which we have concurrent testimony. The invalid leaving the shores of Great Britain and Northern Europe seeks a warmer temperature, a purer, and generally, a drier air, a greater amount of solar light, and freedom from rain. In short, he seeks to be placed under circumstances where he is able to take regular daily exercise in the open air, and to be less obnoxious to the causes likely to act injuriously in developing his original malady, or give rise to other causes, or diseases, to which his already existing tendency renders him predisposed. Now, heat and light, in their capacity of remedial agents, when in proper degree and quality, and in connection with the other requisite conditions that enable them to act favourably upon the animal organism, have always been recognised as the principal agents in promoting nutrition and development, and from these necessary conditions we look for favourable results to invalids, when properly applied through the medium of climate.

Extending over so many degrees of latitude, and possessing varied physical peculiarities, Egypt necessarily presents many grades of climate. All observation, however, proves that the whole of Middle and Upper Egypt has one nearly uniform characteristic, viz., great dryness and purity of atmosphere, and almost total freedom from rain. The seasonal changes are performed with such remarkable regularity, that, year after year, the same conditions of climate may be safely calculated upon. Rain is seldom seen above Cairo, and even there is rare. The invalid has not there to consider how many fine days he may be able to enjoy, as, from the paroxysmal character of the deviations from the general conditions above described, and from their being little frequent, they are not, in a practical sense, to be noted. The freedom from excess of humidity is a grand feature of the Nile climate, except at the time the river recedes; and, doubtless, to this its health-invigorating properties are chiefly due. This dryness renders it very easily acted on by the sun's rays, the application and withdrawal of which produce the very marked differences of temperature so characteristic of the various periods of the day, as shown in the thermometrical register.

The thermometer there indicates a variation as great as 12° F. between the morning and midday observations, and at evening again a change equally great. The phenomena of the day proceed thus :—From after sunrise the temperature, a little increased from that of the night, remains very steady for an hour or two, until the sun describes a small arc; then the little moisture being dispersed, the warmth is rapidly communicated to the dry air, which retains a tolerably steady and warm temperature during the remainder of the day, slightly, but perceptibly, affected by any variation in force or direction of the wind until sunset, when it rapidly becomes colder, and the dew, when present, is quickly deposited. The thermometer then falls suddenly —as many as 8° or 10° F. in a quarter of an hour. It then gradually rises again, and undergoes the usual changes of night. The nights and mornings of winter are very cold. In the early hours of the morning the thermometer in Cairo sometimes falls as low as 36° F., or lower. A register in my possession, taken on the Nile above Thebes, in the month of January, between one and two o'clock A.M., indicates 28° F. In the desert the cold at night is severely felt. During the hottest

period of summer the morning air is deliciously cool, the same varying range of temperature existing. Thus, it is not uncommon during the summer months to have a difference of 20° F., or more, between morning and midday, and 8° higher still between then and three o'clock P.M.—the hottest period of the day. The changes produced at night by the rapid radiation of heat from the earth's surface, under a cloudless sky, are well marked in Egypt. The mean yearly temperature of Cairo is generally stated at about 73° F. My own observations indicate about 2° lower. The thermometer in Cairo seldom falls lower than 40° F., but it is often lower on the Nile. January is the coldest month of the year, or, perhaps, what is more correct, the latter half of December and the first half of January, as towards the latter half of January there is a gentle and steady increase of the thermometer during the warmer parts of the days. The average of the month of April approaches nearest to the mean temperature of the year, according to Dr Pruner. (See "Topographie Medicale de Caire.") The humidity is, of course, regulated by the rise and fall of the Nile; and this explains the discrepancies of authors—some stating November, others Decem-

ber, to be the most humid month. In the year 1860 there was an unusually high Nile, and the humidity was certainly greatest in November. It is at the time of inundation, and when the receding Nile leaves large tracts of country uncovered, that fogs are common; the mornings then are harsh and cold, and the evening damps prevail to a considerable degree. This condition is also observed in the Desert, in the neighbourhood of the cultivated lands, but not to such an extent as near the river. The sun, even there, at about ten o'clock A.M., acquires sufficient power to disperse the fog, and then follows the beautiful and serene day so much enjoyed by the invalid. The summer heats are greatly tempered by the pleasant northerly breezes, the Etesian winds, which range from N. to N.E. These winds blow with great regularity after the period of "khamseen," or hot winds, till November. A register, taken from July 3d to September 7th 1856, gives forty-four days, and another, from October 3d to November 14th, gives twenty-six days of northerly breezes. Thunder-storms are rare in Cairo, but more frequent up the Nile. These, then, are the general conditions of the climate and seasons, excepting the period of the "khamseen" winds.

These winds require some notice, as they produce a marked effect on the animal system, and to some invalids might prove exceedingly injurious. "Khamseen" is the Arabic for fifty, and is applied to these winds because they are more common during a period of fifty days, dating from the second day of the Coptic Easter to Whitsuntide. They blow from the southward, between south and south-east. They vary much in intensity; the more easterly the wind, the hotter it is. The thermometer at these periods in Middle and Upper Egypt ranges between 95° and 105° F., but is often as high as 110°. It usually continues three days, but may be longer. In May 1860 a khamseen continued seven days, during which time a thermometer stood at 104° F. in a large room at Cairo. The air becomes thick and hazy from the presence of a fine sand suspended in it, which, by obscuring the sun's rays, and rendering the atmosphere of a dull yellow tinge, adds to the other discomforts it brings. Although, when fully developed, they may generally be considered as pernicious in their influence, the ill effects have been much exaggerated. In healthy subjects, no worse effects are produced than a little general excitement of system, indicated by the flushed

cheek and brilliant eye, a more rapid succession of ideas, more frequent respiration, and a generally increased action of the functions, followed by listlessness and languor. Exceptions to this, however, are by no means uncommon, and many Europeans seem rather to luxuriate in the mild khamseens. Some of the chronic cases of bronchitis are even benefited by breathing the dry warm air, and many invalids derive pleasure from it. This must be understood to apply only to the mild form, such as is common in Cairo and its neighbourhood. It will be sufficiently evident, from the effects described, that patients having a marked hæmorrhagic tendency from the lungs must leave Egypt before this period. The peculiar conditions of atmosphere preceding, attending, and following these winds, and their effects on both animal and vegetable life, seem to have relation to changing electrical phenomena; and it is stated by Dr Pruner, on the authority of Ruppel and Rüsseger, that a large quantity of free electricity is found in the atmosphere during a "khamseen." (See "Topographie Médicale.") Though these winds always produce a considerable rise in the thermometer, yet there is a great want of relation between the degree of heat and its

effects upon organised bodies. Sometimes, though rarely, when the hot wind blows directly from the east, its pernicious characters are more developed, and then it assumes something of the nature of "blight," destroying, when severe, budding vegetation and grain in the ear. This is usually ascribed to the rapid evaporation of moisture, but scientific observers incline to attribute it to certain electrical actions. Probably both causes act together. The former opinion, as being the most evident, and appreciable to the senses, requires consideration, since it is well known how much sooner vegetable life is affected than animal by an excessively dry temperature. It is many years since a well-marked wind of this kind has passed over Egypt, and the old residents agree in saying that the khamseen itself is much less frequent than formerly, and certainly much less severe. It would be superfluous to enter here into some late discussions as to what constitutes the true characters of khamseen, but it is evident that a wide field lies open for inquiry regarding their relation to electrical changes. A well-conducted series of observations on the development of ozone, and its supposed influence on organised bodies, might give important and useful

results. If it be true that this substance has its origin in frictional electricity, the presence of molecules of fine sand suspended in the atmosphere, and any electricity of tension developed during the evaporation of atmospheric moisture under the high temperature of these winds, render it possible that their pernicious influence may, in some way, be owing to the production of ozone, or some modification of it. After the period of "khamseen" there is a gradual increase of the ordinary temperature, till the thermometer reaches its average summer height of 95° F., with a considerable variation at night and morning. This heat, as already observed, is greatly tempered by the northerly winds, which bring, in the latter part of the season, light and refreshing dews from the Mediterranean. The atmosphere is, however, very dry until about the end of November, when the damps from the lands uncovered by the receding Nile begin to appear. Cairo and its neighbourhood has then a temperature about 70°, and the morning and night variations are not so great, being regulated by the humidity. A register kept on the Nile during a trip to Thebes in November, gives the average daily temperature of the observations, taken at the hottest periods of

the day, as high as 78° F., while in Cairo a similar series shows 3° higher. Such is the general condition of the climate of Middle and Upper Egypt for the greater portion of the year. The time of sojourn for travellers and invalids is from October to April, which demands a more detailed consideration. The following tables have not been constructed after the usual plan of giving the simple thermometrical registration at fixed hours. The first three columns are the mean of the months, taken by not less than three observers daily at different times between the hours stated. The fourth column gives the total mean. By this plan much of the inaccuracy of the observers and the instruments is corrected. Where this is not the case, they are the mean of four or six observations daily. The remarks on each month indicate its peculiarities. Table No. I. is an analysis of six daily observations, taken during a voyage from Cairo to Thebes and back, occupying thirty-one days.

Table No. I.

	A.M.	A.M.	A.M.	P.M.	P.M.	P.M.	Total mean of Month 76° F.
Oct. 3 to Nov. 3.	7	9	12	3	6	9	
	68°	72°	78°	82½°	78½°	77°	No rain.

Table No. II. refers to the Nile journey between Cairo and the first Cataract and back.

TABLE No. II.—NILE.

Date.	7 to 9 A.M.	12 A.M. to 2 P.M.	7 to 9 P.M.	Mean Temp.	Remarks.
	°	°	°	°	
Nov.	53	63	58	58	Wind N. to N.E. A little dew often at night.
Dec.	47	68½	57¼	57¼	
Jan.	50	64½	55	56	Sunshine. Two rain showers in January and February.
Feb.	56	70	63	63	
March,	61	71½	66	66⅓	Thunder-storm two days in succession in one year.
April,	—	—	—	—	

In Table No. II. two years' observations are included, but each year the results for each day were so uniform as to render one table only necessary. The daily variations on the Nile are sufficiently expressed in the first table. The number of observations, and the periods of the day, mark the range well; the night temperature being always a few degrees lower than the 9 P.M. observation indicates. The evenings began to be cold late in October, and in November it was necessary to clothe a little heavier before going on deck after six o'clock. December shows a much greater difference in the daily range of temperature, and also at different periods of the month. The greatest variation re-

gistered this month was on December 29th. The morning observation, 52° F.; at mid-day, 72° F.; difference, 20° F. The greatest difference in any two periods of the month was between 49° F., the lowest, and 72° F., the highest; difference of 23° F. In January the greatest difference in the mid-day observation was between 78° F., the highest, and 62° F., the lowest—16° F. The average daily range, however, varied between 4° and 7° F., whilst the greatest difference between morning and noon on the same day was 76° F., noon; 53° F., morning—equal to 23° F. February. An examination of the daily register for this month gives an average variation of from 9° to 12° F. between morning and midday; but on one of the days there is a difference between the morning and two P.M. observation of 32° F. The thermometer at 7 A.M. marked 44° F., and at 2 P.M. 76° F. In the sun's eye the same day the mercury stood at 135° F.; the wind was blowing lightly from N.W. At sunset the thermometer fell 6° in ten minutes. Another day it fell 8° in half an hour. This sudden fall of temperature at sunset is common to all the dry parts of Egypt. The lowest temperature registered this month at 9 A.M. was 58° F., the highest 65° F.—a difference of 7°. The lowest

temperature between midday and 2 P.M. was 62° F., the highest 79° F.—a difference of 17° F. With these exceptions the average range of the month was from 4° to 5° F. All the tables in my possession, extending over several years, show a very remarkable degree of regularity, from day to day, in the observations taken at the same hours. In March the greatest difference was during two days of warm south winds, when the variation between morning and midday was 21° and 29° F.; three more days give a variation of 18° F. The average range of this month was a little higher than the last, but towards the latter part of the month the fluctuations are greater, owing to occasional warm southerly winds, and also to the winds being stronger and more variable. The temperature of the Nile water, taken at various places and times, was 64° F. In April, May, June, and the following months, there is little opportunity of taking correct observations on the Nile, but the conditions, as regards the daily variation, and the great difference between the mornings and evenings, are similar to those described, only that the temperature is very much higher. Mr Consul Petherick assures me that these varying conditions of climate and temperature obtain in a greater

degree higher up the Nile, until within the tropical rain degrees of latitude, when they become less manifest, and an oppressive and steamy atmosphere is found.

Cairo.

The observations from which Table No. III. is deduced were taken over a period of four years.

Table No. III.—Cairo.

Month.	8 to 9 A.M.	Noon.	9 P.M.	Mean.	Average of Rainy Days per Year.
Jan. .	53½	63½	59	58⅓	Three days.
Feb. .	55½	64½	52	57	Two days.
March,	61¼	73	63	65¾	One day rain; thunder and lightning in two of the years.
April,	70	79½	60½	70	One light shower.
May, .	73	84	73½	77	None.
June,	78½	83½	82½	81½	—
July,	80	95	83	86	—
Aug. .	78½	84½	84	82⅓	—
Sept. .	78½	98¾	82¾	82½	One shower.
Oct. .	76	84	74	78	Do.
Nov. .	67	78	64	69	Do.
Dec. .	50	71	56	59	Four days' rain in each year.

The remarks on the Nile tables apply generally to the above of Cairo. The month of January shows a higher temperature in Cairo than on the Nile, whereas the other months are a few degrees lower. The observations on the Nile were taken between Cairo and Thebes, after that above Thebes,

as far as the first Cataract, hence the difference, which is less than might be expected from the difference of latitude. In comparing the tables it is necessary to remember that in February, and part of March, the observations were taken nearer the equator. The presence of a large sheet of flowing water must also be borne in mind.

The following analysis of the observations of Niebühr, from November 1761 to August 1762—the observations of the French Scientific Commission, in Centigrade degrees, as given by Clot Bey—and the results of the observations of M. Destouches, member of the General Council of Health for Egypt,—mark well the regularity of the temperature of the climate, and show how far nearly the same conditions exist from time to time.

Analysis of Niebühr's Observations.—Cairo.

Date.	8 A.M.	Noon.	9 to 10 P.M.	Mean of Month.	
	°	°	°	°	
1761, Nov. .	64·17	73·15	66·2	67·78	Fahrenheit.
Dec. .	55	62·39	57·9	58·16	
1762, Jan. .	52·40	63·7	53·19	56·21	
Feb. .	52·7	66·5	55	58	
Mar. .	60·11	75·22	64·51	66·61	
April,	64·22	79·19	65·43	69·61	
May,	71·1	82·3	79·3	77·6	
June,	75·8	85·20	79·3	79·77	
July,	78·7	95·15	84·20	85·82	
Aug. .	80·16	95·10	88·14	88·46	

Observations of French Commission, given by Clot Bey (Aperçu Générale de l'Egypte).

Jan. 13°·3	April 22°·2	July 30°·2	Oct. 22°·7	Centi-grade.
Feb. 14·0	May 24·3	Aug. 29·0	Nov. 18·8	
Mar. 17·5	June 28·6	Sept. 23·3	Dec. 16·2	

Observations of M. Destouches.

1835, 22°·4	1838, 22°·4
1836, 22	1839, 22·1
1837, 23	

The mean of five years being about 22°·4 C., equal to nearly 72° F., which corresponds closely with all the other observations given. The number of days in which rain fell during these five years was 59, being about an average of 12 days for each year. Niebühr records that in November 1761 it rained so heavily for two days that the water penetrated through the terrace of the house he occupied.

Rain in Cairo is now not so rare, owing to the greater extent of cultivation.

Of the curative influence of the desert air much has been written. Independently of its dryness and bracing tone, it possesses a softness and balminess difficult to describe. This has attracted the attention of every observer. In summer, even, it is the resort of the wealthy Cairene, and to breathe the desert air is the native panacea for innumerable

complaints. The health officers of the Suez Canal Company speak highly of its health-giving properties. But subject as is the desert air to sudden night changes, a tent becomes a very insufficient protection for the European invalid, already susceptible to the slightest change of temperature. During the day it is very warm from want of shade, but the mornings and nights of summer are deliciously cool. Dews at night are very common in the earlier and later parts of the year, but exposure to them is not attended with danger. The learned Dr Shaw, so far back as 1721, writing of the desert, says, that in the months of September and October "the atmosphere from Cairo to Corondel was perfectly clear and serene;" and again, "In our journeys betwixt Kairo and Mount Sinai, the heavens were every night our covering, the sand, with a carpet spread over it, our bed, and a change of raiment, made up into a bundle, our pillow. And in this situation we were every night wet to the skin by the copious dews that dropt upon us, though without the least danger (such is the excellency of this climate) of catching cold. The continued heat of the day afterwards made us often wish that these refrigerations could have been hourly repeated." This

statement, however, must be received with considerable reservation, and applied only to the strong and healthy. The following table gives the mean temperature of four months in the desert. The instrument (Fahrenheit's) was suspended outside of the window of a brick hut, in the shade.

February, 60°·8	April, 80°·0
March, 66·37	May, 73·14

The mean daily temperature of February and March was about 57°½ F.; the lowest temperature in February was 46° F.; the greatest difference between any two periods of the month being 36° F.; the greatest difference in any one day being between 46° F. at 6 A.M. and 72° F. at noon. In March the lowest temperature was 48° F., the highest 94° F.; the greatest difference in one day was between 58° F. and 92° F., and again, between 52° F. and 86° F., in each case ranging over 34° F. These two days were khamseen, and it began to blow hot after the morning observation. The mean of April, 80° F., which is very high, but allowance must be made for the number of hot winds, as this month is generally stated to have an average equal to that of the year. The highest temperature was 103° F., a "khamseen" day. The

greatest difference in any one day was between 77° F. and 101° F.; the daily variation was from 14° to 15° F. In May the highest temperature was 107° F., a strong "khamseen" blowing. This day gives a full idea of the variations at such periods. Thus, at 6 A.M. the mercury stood at 54° F.; at 9 A.M., 78° F.; noon, 107° F.; at 6 P.M., 94° F.; the greatest difference being 53° F. Compared with observations taken in Cairo at the same time, the desert air has always a temperature a few degrees higher during the day. From late in November till March the cold at nights in the desert is severe; the mornings, before and a little after sunrise, are also cold. Ice has been found in the desert in February, probably owing to the rapid radiation of heat under such a clear sky. Niebühr informs us that in January a servant found a piece of ice upon a cabbage in Cairo, and showed it as a great rarity. I have once seen ice formed in a low room in Shepheard's Hotel, in February 1859. The barometrical changes are very slightly marked at all times of the year in Egypt. Appended is a table of observations which was carefully registered for nearly three months on the Nile. The instrument was on deck. The observations were not taken regularly at the same

hour, but at various periods of each day. The height of the barometer, however, corresponds to the degree of temperature at the hour of observation.

The interesting account given by Dr Barclay, in 1854,* of the meteorological conditions of Middle and Upper Egypt, and their relation to diseases of the respiratory organs, contains thermometrical observations taken in Cairo, and in the desert, near the Pyramids. But they were not taken in the open air. They give, for the early months of the year, too high a temperature and too small a diurnal range. Thus, for March, the lowest temperature is given at 63° F., and the average daily variation of the month at only 6° F. or so. A reference to the observations, from which the foregoing tables are constructed, gives it as low as 48° F. This observation was taken at 6 A.M. Now, this is not the coldest period of the twenty-four hours. His observations are, therefore, of the atmosphere of a tent or tomb—I believe the latter, and not of the open air of the desert. This should be known, as many invalids coming to Egypt refer to these statistics of Dr Barclay. They are valuable, however, as indicating what a comparatively high temperature, and little changing

* See Medical and Surgical Journal, Oct. 1854.

condition of atmosphere, may be artificially procured in this climate. Very little heat is required to warm the dry air, and though a fire is a great addition to comfort in the cold nights of winter, yet it requires judicious management, as a very few minutes in a room, not too closely confined, gives rise to considerable discomfort. The good effects of this climate would be much enhanced if the hotels and boarding-houses were constructed with due regard to thermal comfort. In all parts of Middle and Upper Egypt the cold is more severely felt than the generally high state of the thermometer would lead us to expect. Thus, with a temperature of 58° or 60° F., which, in Europe, would be genial, the cold may be severely felt by invalids unable to take a small amount of muscular exercise, or who have not good apartments, and are insufficiently clothed. This cold of evaporation, produced by the transpiration passing rapidly off from the surface of the body to the dry and thirsty atmosphere, may cause considerable depression in very weak subjects if not guarded against. The Rev. Dr Barnett of Cairo instituted a regular registration of the thermometer for nearly two years, to ascertain what temperature could be secured in-doors under ordinary circumstances.

The results are given in the following table, which is exceedingly useful, as showing what temperature can be secured in a good ordinary house. The instruments were suspended in an inner room, on the second floor, with rooms above and all around, except on the east side, where there were two windows, on which the sun shone very little during the forenoon. The doors and windows were open in the night, but all closed at 9 A.M. The thermometers were placed between the windows.

Month.	Highest Temp. of Month.	Lowest Temp. of Month.	Mean Daily Range.	Remarks.
	°	°	°	
Jan.	...	55	...	
Feb.	...	54	...	
March,	...	59	...	Six ob-
April,	81½	70	4	servations
May,	86	73	3	daily, be-
June,	86	79½	4	tween the
July,	87	82	2	hours of 6
Aug.	87½	82½	2½	A.M. and 9
Sept.	85½	73	2	P.M.
Oct.	83	69	1½	
Nov.	75	65	2	
Dec.	70	63	2½	

In January, February, and March, the highest temperature is not given. The mean daily range may be taken as 5° F. for these months. In the large houses of the rich the summer temperature is considerably lower than this table indicates, and, with a free northern exposure, lower still.

The climate of Alexandria demands a brief consideration. Surrounded by water, it differs in every respect from the other parts of Egypt already described. From November to March the rain falls in torrents for several days at a time. Many fine days, however, intervene. The mean temperature of the year is below that of Cairo and the Nile, and is much less variable. The moisture of its atmosphere is stated by Dr Pruner to be a hundred and fifty-two times that of Cairo. (See "Topographie Medicale.") It is exposed in winter to violent storms from the Mediterranean, which extend over the Delta, and even reach as far as Cairo. The following meteorological tables, given by Hugh Thurburn, Esq. ("Journal of the Royal Geographical Society, February 1852), show its characteristics :—

MEAN TEMPERATURE FOR THE YEARS 1847, 1848, AND 1849 —DEGREES FAHRENHEIT.

January,	57·36	July,	78·50	
February,	57·83	August,	80·28	Mean of the
March,	62·16	September,	78·13	year for the
April,	66·98	October,	74·84	three years,
May,	70·26	November,	68·47	69·29.
June,	76·25	December,	60·44	

MEAN FALL OF RAIN IN 1847–49.

	Inches.		Mean Temperature.	
Winter, . . .	6·247	...	58°·54	Fahrenheit.
Spring, . . .	0·278	...	66·46	
Summer, . . .	0·008	...	78·34	
Autumn, . . .	0·974	...	73·81	

7·507 inches annual mean fall.

Alexandria formerly possessed a great reputation for salubrity, and was much recommended by the ancient physicians for diseases of the chest. It is probable that the ancient city was not exposed to such deleterious influences as at the present day, and that its climate was modified by a different condition of cultivation and drainage, as it by no means corresponds to its ancient reputation in this respect. Many cases of chest disease certainly derive benefit from its climate, but they are of a special character, as will be treated of hereafter. The general character of the climate of Alexandria may be described as being harsher than that of the other parts of Egypt, and as unfitted for debilitated constitutions coming from Europe. A reference to the hygrometrical register of Dr Barclay shows a very high degree of humidity. Invalids returning from the Nile and Cairo may, however, enjoy with great advantage

a few weeks' stay in Alexandria, *i.e.*, from about the beginning of April to late in May. The temperature is not then too high, nor the humidity excessive. The days are bright and sunny, and the variation of the thermometer not great. The other parts of the Delta correspond in their meteorological phenomena to Alexandria, the temperature being a degree or two higher. Snow is so rare in the Delta that, in 1833, when it fell at Alexandria, Rosetta, and Atfeh, it is related the oldest inhabitants were astonished, having never before witnessed such a phenomenon.

CHAPTER III.

GENERAL CONDITIONS OF THE EGYPTIAN CLIMATE.

The general conditions of the Egyptian climate already described, seem, in a great measure, to supply what in practice is required by a large class of invalids, *i.e.*, a warmer and drier atmosphere, a large amount of solar light, great freedom from rain, and, for many months, comparatively little humidity. To these may be added generally, and in the desert especially, freedom from the impurities of animal and vegetable effluvia, and noxious emanations from the soil, the desiccating properties of a dry, sunny atmosphere, and the absorbing powers of a sandy, porous soil, reducing these noxious agents to their lowest degree. The preceding meteorological data, extending over so long a period of observation, show the remarkable regularity from year to year of the seasons, and with what certainty these conditions may be depended upon. They also show the steady and

gradual increase of the temperature from month to month. The diurnal range is certainly frequent and great, and this circumstance might, at first sight, be urged against the climate as a resort for pulmonary invalids. It must, however, be remembered that this is a necessary condition of its health-invigorating properties—its great dryness —which renders it so easily acted on by the local causes affecting it; and further, that these changes occur only at periods of the day when the invalid is, or should be, in his habitation, out of their influence, and that they are confined within certain ranges of temperature which in Europe would be considered healthy and mild. The unvarying character of the climate from year to year, of which we have such extended proof, is of itself of sufficient importance in determining the winter residence of the invalid, and, along with this, its assumed efficacy in preventing and retarding certain forms of disease, give it a claim to be considered a first-class resort for patients. Thermometrical and barometrical observations alone give a very false indication of how far a climate is suitable for invalids, as many little circumstances of locality exert an injurious influence on an atmosphere, which, in these respects, may be con-

sidered perfect. Without experiencing it, for example, no one would believe the difference between the climates of Alexandria and Cairo, when each has the same temperature. In Alexandria, with the thermometer at 80° F., the exhaustion and depression of its moist atmosphere may be severely felt; whilst the same temperature in Cairo and on the Nile will be comparatively fresh and bracing. To a want of such considerations must we often refer the injudicious selection of locality so frequently made for patients. A climate so favourable for leading an open-air life may naturally be supposed to exert a marked influence on the indigenous population, as regards health and liability to certain forms of disease. A consideration of this subject may enable us to determine more accurately the class of cases likely to derive benefit from it. It is stated, and truly so, that the natives of Middle and Upper Egypt suffer little from consumption and pectoral diseases. Even admitting this truth, it is difficult to determine what are the practical deductions to be inferred from it, when applied as an argument in favour of its application to invalids from other latitudes. That much of the immunity from consumption depends upon the climate, which allows

the inhabitants to spend the greater part of their lives in the open air, cannot be doubted. This, and their exceedingly simple habits of living, and freedom from the use of stimulating and intoxicating drinks, seems to be the antidote of the predisposition to many diseases their other habits of life, early addiction to venereal pleasures, and close intermarriages, are likely to produce. Consumption, however, is not so little common as is usually stated. The experience of Clot Bey is in favour of its existence to a small extent. Pruner Bey estimates it somewhat higher. Both of these observers, however, agree in thinking it more common among the Nubians and Abyssinians when transported lower down the Nile ; and there many circumstances of change and living, foreign to their natures and constitutions, concur in producing it. My own observations and experience of twelve years lead me to suppose phthisis more common than has been generally admitted, both in Cairo and Alexandria, and in the latter place especially, where the Nubians and Negroïd races certainly suffer much from chest diseases. This, however, cannot be wondered at when we compare the moist climate of Alexandria with the countries higher up the Nile, and consider how

much in these races the functions of the skin are interfered with. In Cairo phthisis is much less common than in Alexandria; but cases frequently come under notice among the indigenous population. I believe the increase of syphilis is becoming a very powerful predisposing cause. Whatever be the true relation between scrofula and phthisis, it is pretty generally admitted that it does act as a predisposing cause in Europe. Now, in Egypt, especially in Cairo, scrofula, in its external manifestations, is very common. The Copts and Jews seem to be affected with every form of this disease. What, then, renders them, comparatively speaking, less obnoxious to phthisis than the people of northern climes? Doubtless to the large amount of open-air exercise during the day, and free exposure to the tonic action of the sun's rays, and, among the wealthier classes, a healthy state of the skin from the regular use of the bath. To the want of free cutaneous secretion, which balances the impeded action of the lungs in a high temperature, the liability of the negro to chest diseases has been attributed when removed to colder latitudes. Whatever discrepancies exist regarding the prevalence of phthisis among the natives of Egypt and Nubia, the opi-

nion that it has increased of late years is gaining ground. Allusion has been made to one cause—the increase of syphilis. Other causes, in connection with the progress of civilisation, must ere long begin also to act. If, as has been alleged, vaccination at all favours the spread of struma, may it not now be operating in this country, where it has been systematically carried out of late years? In reference to this immunity from phthisis at an earlier period of Egyptian history, the great infant mortality, in cutting off the weak and puny, has not been sufficiently taken into account, nor that, since the introduction of an improved hygiene, and good medical treatment, many have been carried over the periods of childhood and adolescence only to fall victims to this disease at a later period of life. This may be one cause why it appears more evident in the present day. Also the greater freedom of access now enjoyed by the physician to the native families has probably brought cases under notice, which formerly were allowed to die unseen, except by the native midwife or religious sheik, and of which there was no registration. It will still more assist us if we ascertain from the European population how far the Egyptian climate acts as a preventa-

tive to phthisis. On this point there exists but one opinion, as all medical observers agree that the European settlers are as little liable to consumption as the natives. Every physician practising in Egypt can point out numerous cases where the tendency to phthisis has been entirely overcome, or kept greatly in check by a prolonged residence.

Among the English and other European residents engaged in commerce, and in the various departments of the Egyptian Government service, who are freely exposed to all the varying conditions of temperature by night and by day, pulmonary diseases are exceedingly rare, and many who have come to the country with strong predisposition, both hereditary and acquired, have been much improved during their stay, and in many instances have quite recovered. The European engine-drivers and plate-layers on the Egyptian line of railway between Alexandria and Suez suffer comparatively little from chest diseases, and in that portion of the line through the desert the immunity is something remarkable, considering the daily and nightly changes to which they are subjected. Many of them, to my certain knowledge, have thrown off chronic bronchial affections acquired in the pursuit of their trade in

England, France, and other countries of Europe. In Cairo croup is rare, contrasting very favourably with Alexandria, where, from the excess of moisture, it is common enough. Speaking generally of Egypt and its varied population, it may be safely affirmed that there is a remarkable freedom from all diseases of the respiratory organs, and this in spite of the many and well-understood causes which are acknowledged to act injuriously in other countries in producing a predisposition to, if not actual, disease, and that such diseases already existing in constitutions foreign to the climate experience, in the majority of cases, great benefit from sojourning in it. And even if the amount of phthisis be admitted as greater than has been generally stated, it must be confessed that its victims, native and European, are those in whom the predisposition is very great, and under the most unfavourable circumstances.

Having produced sufficient evidence that the climate of Egypt possesses, in a high degree, the conditions suitable for a large class of invalids, it becomes necessary to indicate the special forms of disease most benefited, and the proper time for their sojourning. Phthisical and bronchial affections, chronic diseases of the mucous membranes,

congestive diseases of the abdominal viscera, nervous exhaustion, debilitated circulation from progressive disease of the heart, and especially that form attending advancing years, secondary and other syphilitic diseases, and struma in its various manifestations, are the diseases in which most marked improvement has been observed. In the early stage of phthisis, hereditary or acquired, indicated by general delicacy of constitution, a prolonged residence in Egypt is generally attended with the best results; but the patient should spend two or three winters at least. In that form of early phthisis where much bronchial irritation exists, the stimulating effect of the dry air on the irritable mucous membrane of the trachea and bronchi is sometimes great for the first few days after arrival, but it soon wears off. It may be necessary to introduce moisture into the air of the apartment. Cases of this kind should not come straight on to Cairo, but spend a few days in Alexandria; they may then safely proceed on their Nile journey. Under such favourable conditions of atmosphere the effect of a comparatively high temperature, and a peculiar, not to be described—stimulating, yet balmy—influence on the general functions of the body, this climate may be, often is, of great service in the

more advanced stages of pulmonary phthisis. It may succeed for a time, and I believe does, in arresting the progress of suppurative tubercle; yet the effects of a long journey, the frequent changes of diet, and the want of many of the personal comforts and attentions to which such patients have been accustomed, cause me strongly to impress a careful consideration before advising them to come to Egypt, and especially to go up the Nile. If it be desirable that such cases should come, let them be advised to remain in Cairo for a time, where they can lead a quiet, regular, and vegetative sort of life; then, should they improve, they can try the Nile. As a rule, the Nile-boat life is not adapted to such cases unless they proceed under very favourable conditions of attendance and companionship; otherwise the fatigue and excitement attending the preparations and details of the Nile voyage irritates and weakens them. They are far away from medical advice, and, from debility, are seldom in a condition to take the amount of exercise requisite to keep their functions in order. Nothing can possibly be worse than the common practice of three or four such invalids uniting to take a boat for the Nile voyage. As already observed, the cases most benefited are the incipient

forms, hereditary and acquired. The former may be, and often is, warded off by means that prevent its aggravation, if they are steadily applied over a long enough period of time. To the young and puny offspring of consumptive and scrofulous families the Nile climate holds out the hope of saving, if taken in time, and the effect, when good, continued. To such as can devote the necessary time, the climate of Thebes, from all accounts, seems worthy of trial. An invalid so placed can, by regulating his movements, command an almost uniform condition of daily climate for several months—first, by a short stay in Cairo, then, by following the seasons, he may proceed up the Nile until he reaches a climate where the heat is just sufficient to allow him to spend much of his day in the open air, and have regular exercise without being much fatigued. He can then drop gradually down the Nile towards Cairo, keeping nearly the same temperature all the way. If he reaches Cairo late in March, or even a little earlier, he will then find a condition of climate such as is, probably, found in no other place, in which he can remain a few weeks. About the middle of April the midday temperature begins to be felt a little too warm for a debilitated system, and the chance of being surprised by the hot winds ren-

ders it advisable to depart. A short stay in Alexandria will then be found beneficial, as the air is several degrees cooler than that of Cairo, and the humidity not too great, and the early hot winds are little felt. It has been observed already that some patients rather enjoy breathing the warm air of the premonitory hot winds, and can hardly be persuaded to leave Cairo at this time, before the true "khamseen" sets in. The individuals thus beneficially affected are generally of phlegmatic temperament; but this not universally so, as the same is sometimes observed in persons of a sanguino-nervous temperament. The only guide in permitting their stay under such circumstances is the amount of constitutional vigour they possess, and their special adaptability to a high temperature; and in this latter respect no rule can be given, either from temperament or general habits of life; therefore it is necessary to notice the effects of these winds upon them, and judge accordingly. Chronic bronchitis, with or without much secretion of bronchial mucus, chronic affections of the larynx and trachea, nearly all derive benefit. The form of bronchitis most readily affected is that where there is great secretion, and where the disease has a tendency to be frequently recurring in the subacute

form. The bronchitis of the aged is greatly improved during the early part of the season in Cairo, *i.e.*, from the middle of October till late in November. The remainder of the season in Cairo does not seem to continue the good effect. The change to the Nile should then be made. No doubt the high temperature and genial heat of the former period has a good effect on the aged and debilitated system, by increasing the capillary circulation and gently stimulating the functions of the organs. To this, also, we must attribute the marked benefit in cases of pulmonary congestion arising from obstruction of the heart's action, and from the irritation of tubercular deposit. There is, however, one form of bronchitis which is not so favourably affected by the Nile climate, viz., that mixture of nervous and bronchial affection so often met with in practice, to which we are unable to minister much in the way of medicine, and to which we give the vague term "pneumo-gastric affection," as indicating some disease or irritation in which the nerve of that name is supposed to play a part. This form is seldom, if ever, benefited by the Nile voyage, which may be partly owing to the frequent, though slight variations continually going on in a very dry atmosphere. Now,

this affection most commonly exists in nervous, irritable individuals—often in students and literary men; and if the benefit these cases derive from a quiet regular life in an equally warm, but moister atmosphere, be compared with the effect of the Nile voyage, there may be some reason in referring it to this cause. It is painful to hear these valetudinarians describe the wandering lives they lead, and the little benefit they derive from change. That they at first receive a little relief from coming to Egypt they all admit, but it is short. The desert air seems to act powerfully for a while; but its effect soon wears off, and so, probably, would any other change. Alexandria might be of some service to such cases. Dry, irritative bronchitis, when attended with much debility, is relieved, and there is increase of physical strength. We might expect relief from the increase of strength alone, the irritability, to a certain extent, depending on the bodily weakness; but, independently of the tonic effect of the light and bracing air on the general system, the balmy atmosphere seems to relieve the irritable mucous membrane by its mere topical application. Pure asthmatic affections follow their usual vagaries here, as elsewhere. Some are benefited, others not at all.

The well-marked spasmodic cases are generally more relieved in the early part of the season, when the air is slightly humid. Patients of this class, however, when residing in Egypt, are favourably placed as regards the facility for change. They are within access of three modifications of climate —Alexandria, Cairo, and Suez—so that when one does not give relief another may be tried. There are also the Nile and the desert. The latter, however, is seldom available, except under circumstances unfavourable to debilitated states of system. Humoral asthma is more under the influence of change; and the dry bracing air of Middle and Upper Egypt, by giving tone to the weakened state of system, which so often attends this form of disease, frequently produces good and permanent results. The freedom, also, from aerial causes of irritation, in the shape of deleterious gases and noxious emanations from the soil, which characterise Upper Egypt, renders it superior to many other places for these forms of disease. The comparatively high temperature which can always be procured, and which assists in promoting the equilibrium that should exist between the respiratory and cutaneous functions, tends to lessen the liability to congestion of the pulmonary mucous

membrane, and of the lung substance itself, which such patients often acquire. With all these advantages, asthma, in its various forms and complications, recognises no specific in climate; and, beyond these general conditions, no such good result has been observed as to enable us to lay down a rule for special cases. Of the special influence of climate on scrofulous diseases medical science possesses no very exact data, yet we anticipate benefit in such cases by placing the patient under circumstances favourable to healthy nutrition. That the Egyptian climate, by allowing such great freedom for open-air exercise, and exposure to the tonic action of sun-light, has a marked influence in modifying the ill effects arising from this state of system, has been already shown when referring to the prevalence of this malady amongst certain classes of the population. Few of the sufferers from this disease, from colder latitudes, go away unbenefited. No doubt the mere change itself exerts, in the majority of cases, a considerable influence; but there is something instructive and suggestive in the delight and eagerness with which the scrofulous invalids seek the early morning warmth and sunny bracing air, from which their systems derive tone, and their general func-

tions are healthfully stimulated. There can be no doubt whatever of the good effects produced on these cases by residence in every part of Egypt, provided the patient leads a properly-regulated life. Young subjects are particularly under the influence of these favourable conditions of life and exercise in a dry and pure atmosphere, and under a bright and almost cloudless sky. Where a strong hæmorrhagic tendency exists in any of these diseases, a greater amount of judgment and care is required, both as to selection of locality and the season proper for sojourn. It will be evident, from the preceding remarks, that the dry and stimulating air of Upper Egypt and the desert is not at all times, even in winter, suited to such cases coming direct from Europe or America. Many serious cases come under notice from being too suddenly transported hither. Patients with this predisposition should be recommended to stay a short time in Alexandria; after a while they can come on to Cairo, and, perhaps, may proceed up the Nile; but they must leave the country early in the year—not later than March—as a hot wind might undo the benefit of a whole season. Such cases do come here from Europe, by the advice of eminent physicians, at the time when

they should be leaving, and often suffer serious injury. The reason why they are sent is correct enough, viz., to relieve the tendency to pulmonary congestion by the increased cutaneous circulation induced by a higher temperature. But the excitement of the nervous and vascular systems, often produced by the hot winds, which is supposed to be dependent upon special electrical conditions, independent of mere temperature, had not been considered—probably were not known. It is not to be inferred that it is always improper to send out cases of this kind, as many in whom this tendency exists derive great and permanent benefit from the Nile voyage, even as far as Nubia, but that it is necessary to use greater caution in the selection of cases where the Nile climate may be deemed advisable, and to send them at the proper time, which is from November to the latter part of February. On their return they may safely pass a short time in Alexandria before going to Syria or other places. To the overworked teacher and student, the care-burdened merchant and man of business, and those subjected to a hard daily routine, which has broken down their stamina, and induced a highly excited state of nervous system, the confirmed dyspeptic and hypochondriacal in-

valid, the depressed and anxious-minded, the nervous and hysterical female in whom the menstrual functions are disordered,—to all of these the Egyptian climate may be beneficial. In a country where the manners and habits of life are so different from what obtains in European countries, pleasant and varied objects of attention, which strike the imagination and keep the mind employed, tend much to improve the depressed morale and morbidly anxious mind of the invalid. The bright and sunny sky is itself an incentive to cheerfulness and pleasure, which, combined with the amount of healthy open-air exercise necessary to attain the enjoyment of sight-seeing, cannot fail to produce favourable results wherever that is possible. Indeed, in all cases where a dry and bracing air, bright sunshine, freedom from rain, and atmospheric impurities, are the desiderata, the Egyptian winter climate claims an important, if not the most important place.

Secondary and tertiary syphilis, in all its forms, is benefited by a prolonged residence in Egypt. In cases where the patient is not too much reduced in strength, and can bear a rather elevated temperature, he may come out early in the season, and, before the colder weather commences, may

start for the upper country and go on to Nubia, regulating the temperature by the speed of his journey. As the heat increases he can then gradually drop down the Nile and reach Cairo in April, where he may stay some time. Few of such cases have cause to regret a long stay in this country, where they can combine the treatment of their disease with all the advantages of a climate not favourable to its rapid progress. The warm winds often produce a favourable effect, and, under their influence, the pains of tertiary syphilis frequently disappear; and where the strength will permit, they need not fear staying a short time during the period of "khamseen." It is a recognised fact that syphilitic diseases are milder in their character in Egypt, and more amenable to treatment. Diseases of rheumatic and gouty origin are often benefited, when the patient will lead the life he ought to do, but this class of invalids seldom does so. Such patients often stay in Cairo, or go up the Nile, trusting to climate to counteract the evils arising from high living and luxurious ease, which they will continue in spite of the injunctions of their medical advisers, and, of course, derive little benefit. They blame the climate, but a reference to the daily

bill of fare, wine bill and dinner-pill account, will often elucidate a more potent cause of failure. A climate so far favourable towards promoting an active state of the functions, by increasing the capillary circulation of the skin and other organs, and assisting the processes of elimination, may be expected to operate favourably in many other diseases. More extended observation is, however, necessary to determine precisely what class of cases are benefited. Many cases of kidney disease, probably of incipient Bright's disease, seem to be much improved by a winter's residence in the Saeed and Nubia, but so many other conditions of treatment have to be considered in these affections, that, beyond the good effects likely to arise from a free cutaneous secretion, and freedom from the cares and turmoil of business, there are not sufficient data for advancing a decided opinion. That *bête noir* of medical treatment, clergyman's sore throat, is often relieved, whether permanently or not I cannot say. Of fourteen cases coming under my own notice, in which there was almost total loss of voice, eight got nearly well, four were much improved, and two returned much worse.

As a winter resort, or midway station for the

invalid from our Indian possessions, Egypt would appear to offer many advantages; and before the overland route was established, it was much resorted to by officers on "Egyptian leave." Clarke states that during the occupation of Egypt by British troops, the Sepoy army, encamped on the island of Rhoda, enjoyed as good health as in their own country. The experience of Indian medical men proves that the sudden change from a hot Eastern climate is far from being favourable to the returning invalid from the tropics. And if we consider the different conditions of functional activity existing in a hot climate, and the very opposite produced by a sudden transition to one the very contrary, we cannot be astonished at the ill effects which so frequently follow the sudden change. Many years' residence in a climate such as India (where, in an atmosphere so highly rarefied, the process of oxygenation of the blood is imperfectly performed, and where the nervous functions have been unduly exalted, and often exhausted) generally bring on a state of system little likely to be benefited by a sudden change to Europe. Of the many invalids yearly passing through Egypt on medical leave, a great majority would certainly be more benefited by a short stay

in this country in winter. Nearly all suffer from a tendency to visceral congestion, the liver being the organ chiefly affected. The safety valve of an increased action of the skin, promoted by a high temperature, is shut off too quickly, and the physiological changes thereby produced bring on active organic disease, which often leads to speedy dissolution. Some of these patients come to Egypt after trying their native climate, and express themselves very decidedly concerning the ills produced by the too sudden transition from one extreme to the other. In reference to our troops passing regularly through Egypt, and the establishment of hospital accommodation at Suez, it might reasonably be suggested to the home authorities, the advantage likely to arise from the addition of some arrangement which would allow many of the weakened and anæmic soldiers to remain a short time there, where they would recover a little tone of system before proceeding home, and be better enabled to face the English climate, and be less liable to the dangers attending the sudden change.

CHAPTER IV.

GENERAL REMARKS FOR INVALID TRAVELLERS.

Invalids coming to Egypt for the winter should be well provided with warm clothing. Flannel should always be worn next the skin. As little departure as possible from a good plain style of English cooking is advisable, and an early dinner hour is recommended. The use of very strong wines and spirits is hurtful in so stimulating a climate. Good dry claret and bitter beer may be safely drank in moderation. The Nile water, when well filtered, is soft and pure, and may be safely used. With some it may at first disagree, and have a tendency to induce diarrhœa, and until this is overcome it should be tempered with a little good brandy. The midday sun is, at all times, powerfully felt by the newly-arrived European; and too free exposure to its rays, especially after eating, is apt to be followed by mild sun fever and biliary irritation. To prevent this the head should be

well protected, either by a turban of white muslin wound round the ordinary head-dress, or by a pith helmet. The best head-dress is a common felt wide-awake. The picturesque red fez, with which new comers delight to ornament themselves, is very unsafe; it affords no protection, and, when worn, should be supplemented by an umbrella or the turban of white muslin. The hotel accommodation in Alexandria and Cairo is tolerably good. Incidental allusion has been made to the want of thermal comfort in the houses; this applies equally to the hotels, where little provision is made for invalids. As soon as possible after arrival in Cairo, the invalid should prepare for his Nile voyage, for once on board his "Dahabiah," he can better arrange for his personal comfort, and fix his hours for meals; and if he wishes to "do" the lions of Cairo before going up the Nile, he can do so with little extra fatigue, and when his day's work is over, he can spend the remainder of the day in his boat on the river, and be freer from the noxious exhalations of a large and densely populated city. The streets and bazaars of all Oriental cities are very narrow and confined, through which continually flow currents of damp and cold air, exceedingly hurtful to the delicate

chested, and intercurrent pneumonia is no unfrequent occurrence from such exposure. On returning from the Nile later in the season, the pleasures of sight-seeing can be enjoyed with much less chance of danger, and the invalid does better by making the most of the season, and spending the greater part of it in the drier and purer air of the Saeed and Nubia. Climate would indeed be a wonderful specific, were it to counteract the ill effects produce by the irregularities of many who seek its aid. Removed from the controlling influence of friends, many invalids, seeking health abroad, seem totally to disregard the rules of their medical advisers, and hope to attain, by a life of unhealthy excitement, that improvement which can alone result from a quiet, vegetative, and *dolce far niente* sort of life.

While staying in Cairo the invalid should rather seek the open country and dry desert air, which is easily accessible, taking care to be under cover before sunset, as the temperature then often falls very suddenly and exposes him to the risk of cold. Slight colds are very easily taken and very common, but do not appear to be hurtful in the same degree as in other and more northerly climates. Pulmonary invalids often express astonishment at

being so little affected by them. Facilities for the Nile voyage are yearly increasing. A large and comfortable steamer now starts twice a-month for the upper country. The accommodation is good, as far as space of cabin is concerned. The Egyptian Government will probably continue this service, which offers many more advantages at present for the tourist than for the invalid. But if a good hotel, or a few comfortable houses for accommodating invalids were established at Thebes, there would be little more for them to desire, as they would then have comfortable and easy access to a climate of unsurpassing excellence as a winter residence. A few years more, and doubtless this will be the case. We shall then see realised what seemed, formerly, the romantic visions of the earlier travellers, who imagined the Nile becoming a second Rhine. The spirit of enterprise is alive in Egypt, and rapidly extending beyond the Delta. The mighty river, formerly so still and lifeless, is now ever disturbed by the paddle and the screw, and a life-like activity everywhere prevails. The impulse given to the extension of railways by His Highness, the present enlightened ruler of Egypt, will materially improve the condition of the country, and render every part of it

easy of access. The new Nile Valley Railway is making rapid progress; telegraphic communication already exists, and, as a necessary consequence, house building, hotel accommodation included, is only a matter of time. That Egypt, especially the Saeed, will then become a favourite winter resort for invalids from every part of the world cannot be doubted, as for five months in the year no such healthful conditions of climate can elsewhere be obtained. They will be there sure, at least, of being freely in the open air for several hours daily. They will not have to consider how many fine days they can enjoy, and be prepared to profit by them, as every day is nearly the same in its amount of sunshine and clearness, dryness, and freedom from rain, the almost universal characteristics; and how far these conditions are appreciated by the chronic invalid, and help to determine his choice of locality for the winter, is well known. In the sunny places of the various health resorts of Europe, we see how instinctively the poor invalids gather together, and, for want of other occupation and change, compare notes of their cases and treatment. This is little conducive to their well-doing. The continued association of so many invalids for a long time may be, often

is, injurious, and here the advantage is most decidedly in favour of the Nile voyage in the "Dahabiah," where, with no more trouble than giving the necessary orders, the invalid can go about from place to place, having healthy companions to cheer him, changing scenery of a novel character ever presenting to his view objects associated with the past history of a country for ages veiled in mystery, but still possessing attractions sufficiently varied to strike the imagination, and instruct, while they amuse the beholder.

A common practice prevails, to which allusion has been made, that of several invalids uniting to form a party for the Nile voyage. Little good ever results from this, often harm. So obvious must this be, that no more need be said than strongly condemning it. Another piece of advice may not be out of place, which applies to the physician as well as the patient. Curtail the usual list of medicines, more especially the stronger purgatives; half the quantity of quinine and cod-liver oil will suffice for a warm climate. Many invalids partly nullify the good effect of change of climate by continually dosing themselves with physic, and keeping their organs in a continual state of irritation.

CHAPTER V.

APPENDIX OF METEOROLOGICAL TABLES.

I.—Table of Thermometrical and Barometrical Observations taken on the Nile between Cairo and First Cataract.

Months.	Thermometer.	Barometer.	Direction of Wind.
Jan. 5	67° F.	$29\frac{8}{10}$	North.
6	59	$29\frac{8}{10}$	N.E. by N.
7	61, hazy,	$29\frac{7}{10}$	N.E. by N.
8	58, foggy,	$29\frac{7}{10}$	N.W. by N.
9	57, hazy,	$29\frac{7}{10}$	S.W. by W.
11	58, clear,	$29\frac{15}{20}$	S.
13	53	$29\frac{15}{20}$	S.E. by E.
	67, 1·20 P.M.	$29\frac{8}{10}$	
14	51	$29\frac{15}{20}$	S.
15	56	$29\frac{15}{20}$	S.
	72, 4 P.M.	$29\frac{15}{20}$	
16	54	...	N.
17	60	$29\frac{15}{20}$	N.
18	56	$29\frac{15}{20}$	S., very high.
19	68	$29\frac{15}{20}$	S., light.
20	64	$29\frac{8}{10}$	N.W.
21	56	$29\frac{9}{10}$	W. by N.
,,	...	...	W. by N., strong.
22	...	...	N.W.
,,	61, 1 P.M.	$29\frac{8}{10}$	N.W., light.
23	60	...	N.W. by N.
,,	...	...	N.W. by N., strong, 2 P.M.
24	58	$29\frac{9}{10}$	N.N.W.
,,	...	...	N.N.W., very strong, 11 A.M.
25	56	$29\frac{19}{20}$	N.
,,	,, 1·30 P.M.	...	N., very strong and cold.
26	52	$29\frac{9}{10}$	N.N.W.
,,	61, 1.30 P.M.	$29\frac{7}{10}$	N., fresh.
27	58	$29\frac{15}{20}$	N.
28	64	$29\frac{6}{10}$	N.
29	...	...	S.W., cold and rainy.
30	...	...	S.W., fresh and fair.
31	...	...	S.W.
Feb. 1	50	$29\frac{8}{10}$	N.W.
2	50	$29\frac{8}{10}$	N.W., 9 A.M.

THERMOMETRICAL AND BAROMETRICAL OBSERVATIONS ON THE NILE—*Continued.*

Months.	Thermometer.	Barometer.	Direction of Wind.
Feb. 3	48° F.	29 8/10	S.W., 9 A.M.
4	62, 4 P.M.	29 8/10	N.E.
5	58, 9 A.M.	29 9/10	N.W. by W.
,,	71, 2·30 P.M.	29 9/10	
6	70	30	N.E.
7	58	29 9/10	E. by N.
8	58	29 9/10	N.
9	63 (sun 98°)	29 8/10	N.E.
10	68	29 8/10	
12	71	29 1/2 7/10	N.E., 1st Cataract.
13	84	29 8/10	E.
14	84	29 6/10	E. by N.
15	64	29 6/10	N.
16	73	29 1/2 3/10	N.E.
17	56	29 6/10	E.N.E.
18	65	29 6/10	N. by E.
19	68	29 8/10	E. by S.
20	68	29 8/10	N.
21	...	...	N.E.
22	75	...	
23	...	...	
24	66	29 6/10	N.E.
25	60	29 8/10	E.
26	72	29 6/10	N.
27	63	29 7/10	N.
Mar. 1	71	29 6/10	N.
2	80	...	N.
3	65	29 1/2 1/10	N.W.
4	60	29 5/10	N.
6	78	29 5/10	N.
7	68	29 1/2 3/10	W.
8	65	29 1/2 1/10	S., a little rain.
9	...	...	
10	70	29 4/10	N. by W.
12	57	29 8/10	N.N.W.
13	60	29 1/2 7/10	N.W.
14	58 1/2	29 8/10	N.W.

II.—Observations taken by the late Lord Aberdeen on the Nile, during the season 1860–61.

1860.	Place.	Sunrise	2 P.M.	8½ P.M.	Wind, &c.
		°	°	°	
Nov. 10	Benisouef	50	73	...	N., moderate.
11	Do.	57	74	...	Do.
12	Do.	53	72	...	Do.
13	Feshu	50	...	...	Do.
14	Melatiah	49	80	...	Do.
15	Merana	50	78	...	S.E.
16	Do.	56	80	...	Do.
17	Do.	53	78	...	Do.
18	Colosaneh	56	75	...	N.
19	Do.	50	...	...	N.W.
20	Do.	56	...	...	Do.
21	Minieh	52	75	...	N., high.
22	Do.	47	72	...	Do.
23	Do.	53	70	...	Do.
24	Do.	53	72	...	Do.
25	Burgas and Selia Moussa	56	72	...	Do.
26	Mellawee	55	74	...	Do.
27	Do.	52	70	...	N., light wind.
28	Manfaloot	54	72	...	N., strong wind.
29	Osiout	57	74	...	Do.
30	Abouteg	51	72	...	Do.
Dec. 1	Neghele	51	72	...	Do.
2	Tahta	43	72	...	
3	Do.	41	72	55	
4	Meragheh	47	74	54	Calm.
5	Sheudowil	41	70	56	N., light.
6	Soohág	43	70	55	Do.
7	Menshieh	45	68	55	Do.
8	Girgeh	47	67	54	N., rather strong.
9	Belianeh	45	73	60	Calm.
10	Do.	46	72	60	Do.
11	Hamra	46	71	60	Do.
12	Do.	36	71	58	W., nearly calm. Therm. in water at sunrise 64°, in calm 58°.
13	How	34	72	51	Fine meteor after sunset
14	Under Gebel	47	72	53	Nearly calm, W.

LORD ABERDEEN'S OBSERVATIONS—*Continued.*

1860.	Place.	Sunrise	2 P.M.	8½ P.M.	Wind, &c.
		°	°	°	
Dec. 15	Monah, near Kheneh	46	71	58	N.W., light.
16	Kheneh	47	72	53	W., nearly calm.
17	Do.	47	72	54	S.W., light.
18	Do.	43	71	62	W.
19	Do.	47	68	57	N.W.
20	Negàdeh	43	70	55	Do.
21	Luxor	44	65	59	N.W., nearly calm, slight earthquake.
22	Do.	45	68	57	N., moderate.
23	Do.	43	67	55	N., light, wide halo round the moon.
24	Do.	37	70	53	N., very light.
25	Do.	34	73	55	Do.
26	Do.	40	69	52	Do.
27	Do.	41	70	54	Do.
28	Do.	45	71	55	Do.
29	Do.	43	72	55	Variable, S.E and N.
30	Do.	42	70	56	N., nearly calm.
31	Do.	47	64	47	S.W., strong gusts, sky obscured with sand.
1861.					
Jan. 1	Thebes	45	65	51	S.W., cloudy.
2	Do.	49	69	53	S.W., moderate.
3	Do.	41	70	55	W., very light.
4	Do.	40	68	55	N.W., nearly calm.
5	Do.	43	70	57	N., calm.
6	Do.	53	69	56	Variable, N., S.W., N.W.
7	Do.	52	74	58	S.W. 10 A.M., N.W., calm.
8	Do.	56	72	58	Do. do.
9	Do.	53	70	60	N.W., very light.
10	Do.	50	73	57	Do.
11	Do.	48	71	58	Do.
12	Do.	51	68	56	N.W., strong gusts.
13	Do.	45	70	57	S. till 12, N.W. fresh breezes.
14	Do.	43	67	55	N.W., nearly calm.
15	Do.	41	67	53	S., calm till 12, N.W.
16	Do.	43	66	53	N.W., nearly calm.
17	Do.	47	68	55	Do.
18	Do.	45	68	58	Quite calm.

LORD ABERDEEN'S OBSERVATIONS—*Continued.*

1861.	Place.	Sunrise	2 P.M.	8½ P.M.	Wind, &c.
		°	°	°	
Jan. 19	Thebes	49	78	56	S., strong wind, cloudy sky, and sandy.
20	Do.	47	70	56	N., light, distance hazy.
21	Do.	44	68	55	N., fresh breeze.
22	Do.	42	68	56	Calm in morning, from noon N., fresh.
23	Negâdeh	47	66	54	N., moderate.
24	Do.	44	68	55	Do.
25	Do.	41	63	54	N., rather strong.
26	Thebes	43	68	53	N., light.
27	Do.	44	70	55	S., nearly calm.
28	Do.	42	70	54	Do.
29	Do.	45	62	53	S., nearly calm, thunder and lightning, heavy rain at intervals.
30	Do.	49	51	49	W., strong wind, much sand, sun scarcely seen.
31	Do.	44	48	46	S.W., very strong, no sun all day.
Feb. 1	Bagadiels, near Erment	45	54	52	N.W., strong, hazy.
2	Thebes	42	58	53	N., not so much wind, hazy.
3	Do.	39	63	53	N.W., calm, bright sun, distance clear.
4	Do.	41	64	50	N., fresh breeze, fine and clear.
5	Erment	42	63	50	N.W., very strong.
6	Esné	47	65	52	N.W., light wind, fine.
7	Do.	47	65	53	Do.
8	Do.	49	67	53	Do.
9	Do.	43	69	53	Do.
10	Do.	47	68	52	N., light.
11	Do.	45	75	57	N.E., sudden gusts, evening calm.
12	Do.	48	82	64	N.E. and E., strong gusts of hot wind.
13	Do.	52	80	60	N.E., not much wind.
14	Thebes	59	70	60	N.W., nearly calm.
15	Sailing	55	68	57	N., strong, sailed from Esné.

LORD ABERDEEN'S OBSERVATIONS—*Continued.*

1861.	Place.	Sunrise	2 P.M.	8½ P.M.	Wind, &c.
		°	°	°	
Feb. 16	Erment	53	67	55	N., very strong, sailed from Erment.
17	Assouan	47	71	57	N., very moderate.
18	Do.	50	76	60	N.W., light.
19	Do.	52	78	65	Do.
20	Do.	60	77	64	Do.
21	Do.	55	76	63	Do.
22	Do.	53	78	65	Do.
23	Do.	55	76	63	Do.
24	Do.	49	76	65	Do.
25	Do.	50	76	65	Do.
26	Do.	53	79	69	Do.
27	Do.	51	80	65	Do.
28	Left Assouan	53	79	67	Do.
Mar. 1	Edfou	49	81	65	N., nearly calm.
2	Esné	52	80	65	Do.
3	Thebes	55	80	67	N., light.
4	Do.	49	79	68	N., fresh, very high wind in night.
5	Left Thebes	50	75	60	N., moderate.
6	Negàdeh	48	78	68	N., nearly calm, rain in night.
7	Near	62	80	67	N., nearly calm, sky overcast.
8	Ballas	65	82	67	Several light showers, N., cloudy.
9	Khenah	63	88	72	S., very light, sky overcast, sheet lightning and heavy shower in night.
10	Do.	73	80	69	N.W., strong, much sand.
11	Do.	58	68	57	N.W., strong, no sun all day.
12	Do.	49	71	60	N.W., moderate, sky clear.
13	Left Khenah	50	75	62	N.W., fine.
14	Do.	50	78	64	N.W., nearly calm.
15	Do.	49	81	65	N., light.
16	Do.	55	82	63	S., very calm till noon, then N., strong and much sand.
17	Do.	49	70	57	N., fresh.
18	Belianeh	48	68	59	N., high and cold.
19	Girgeh	50	70	58	N., light.

LORD ABERDEEN'S OBSERVATIONS—*Continued.*

1861.	Place.	Sunrise	2 P.M.	8½ P.M.	Wind, &c.
		°	°	°	
Mar. 20	Menshieh	49	72	60	N., light.
21	Ekhineum	50	76	61	Do.
22	Soohág	51	77	60	Do.
23	Menshieh	50	72	59	Do.
24	Meragheh	51	77	62	Do.
25	Tahta	52	78	60	Do.
26	Do.	49	74	59	N., fresh breezes.
27	Neghele	50	78	61	N., light.
28	Osiout	50	85	72	S., strong, sky obscured with sand.
29	Howalke	59	77	63	N.W., light.
30	Manfaloot	52	77	61	Do.
31	Do.	51	81	70	N., very light.
April 1	Minieh	52	80	70	Do.
2	Colosaneh	60	83	63	S.W., calm, evening W., strong.
3	Abougirgeh	53	76	60	N.W., moderate.
4	Feshu	52	77	62	Do. do.
5	Gezeeret	51	79	63	Do. fresh.
6	Benisouef	50	76	63	Do. do.
7	Do.	53	75	60	Do. light.
8	Do.	52	77	61	Do. do.
9	Do.	50	76	62	Do. do.
10	Do.	53	82	65	N.,nearlycalm,cloudy
11	El Onasta	58	88	72	W., very light.
12	El Halfeh	60	90	74	N., calm, noon strong breeze, N.W. at sunset.
13	Bedrishayn	54	95	71	S.E., strong, sunset very strong.
14	Sakkara	60	85	70	E., nearly calm, sky cloudy till 5 P.M., N., high, gale in night.
15	Do.	55	77	65	
16	Old Cairo	60	76	64	N., fresh.
17	Do.	55	75	62	N., light.
18	Do.	58	77	64	Do.
19	Do.	59	76	58	Do.
20	Do.	50	72	61	Do.
21	Do.	55	80	69	N.E., nearly calm.
22	Do.	65	93	75	S.E., moderate.
23	Do.	70	96½	...	Do., strong.

The thermometer (Fahrenheit's) was suspended in the open air in the shade, free from the reflection from the water and from currents of wind.

III.—Thermometrical Register kept on the Desert, No. 8 Station (Robeki), 32 Miles from Cairo.

1861.	6 A.M.	9 A.M.	Noon.	6 P.M.	Remarks.
	°	°	°	°	
Feb. 20	58	61	65	62	Fine.
21	59	64	69	60	Warm and windy.
22	57	59	60	54	Very windy.
23	59	62	67	60	Rather windy.
24	60	66	72	63	Rather warm.
25	51	63	64	58	Very windy.
26	48	52	68	62	Warm.
27	51	57	76	64	Very fine.
28	45	52	72	68	Do.
Mar. 1	48	62	70	64	Do.
2	48	61	68	62	Do.
3	51	59	75	66	Morning misty, fine.
4	54	62	78	72	Hot wind, lightning, & rain.
5	56	60	70	66	Very fine.
6	55	64	71	63	Do.
7	51	62	74	66	Fine, but windy.
8	54	66	78	69	Very fine.
9	53	66	78	64	Windy.
10	56	69	80	66	Very fine.
11	56	70	74	59	Heavy sand-storm.
12	51	64	70	62	Heavy wind.
13	58	70	84	66	Very fine.
14	62	76	88	74	Do.
15	60	68	74	62	Windy.
16	58	66	78	58	Fine.
17	54	60	76	60	Do., windy.
18	52	64	86	70	Warm.
19	58	72	92	75	Very hot, }
20	59	70	90	58	Rather hot, } Khamseen.
21	60	74	94	66	Very hot, }
22	56	68	78	59	Fine, windy.
23	64	76	88	66	Very fine.
24	65	78	86	72	Do.
25	68	78	88	69	Do.
26	56	59	74	62	Windy and rather cold.
April 5	...	66	74	69	Very fine.
6	59	67	71	65	Do.
7	...	...	...	...	Do.
8	...	...	...	...	Do.
9	63	71	87	78	Rather hot.

Fahrenheit's thermometer.

THERMOMETRICAL REGISTER ON THE DESERT—*Continued.*

1861.	6 A.M.	9 A.M.	Noon.	6 P.M.	Remarks.
April 10	69	80	88	81	Hot.
11	70	80	88	80	
12	77	96	101	89	Khamseen wind.
13	79	87	102	81	
14	74	79	87	80	Cloudy, with strong wind.
15	68	75	85	79	Very fine, pleasant breeze.
16	71	77	86	80	Do.
17	68	72	81	77	Do.
18	70	70	80	75	Do.
19	67	70	72	69	Cloudy, strong breeze, evening cold.
20	66	68	70	67	Very fine.
21	68	72	82	75	Rather warm.
22	73	82	96	89	
23	88	92	103	93	Khamseen wind.
24	86	92	102	91	
25	82	89	96	90	Mild Khamseen.
26	78	85	90	84	Rather warm.
27	80	94	102	90	Very strong hot wind.
28	80	87	92	87	Nice breeze.
29	70	77	83	79	Very fine.
30	67	74	82	79	Do.
May 1	68	75	82	78	Do.
2	67	73	81	78	Do.
3	66	73	81	77	Do.
4	60	72	77	73	Fine and cool.
5	66	73	79	74	Very fine.
6	60	74	79	74	Do.
16	54	68	105	92	Fine, midday khamseen.
17	67	92	109	91	Hot, no wind.
18	68	74	92	80	Very fine.
19	54	82	98	72	Fine, windy.
20	52	79	92	80	Very fine.
21	60	84	89	72	Windy.
22	71	80	105	88	Very fine. At midday no wind.
23	64	88	107	86	Do.
24	78	88	102	88	Very fine.
25	72	84	94	84	Do.
26	64	74	92	84	Do.
27	78	98	106	98	Cloudy, and strong khamseen wind.
28	58	69	96	74	Very fine.
29	61	72	98	70	Do.

THERMOMETRICAL REGISTER ON THE DESERT—*Continued.*

1861.	6 A.M.	9 A.M.	Noon.	6 P.M.	Remarks.
	°	°	°	°	
May 30	52	78	80	64	Windy.
31	62	80	92	80	Do.
June 1	74	88	98	79	Very fine.
2	76	79	102	90	Do.
3	78	84	106	89	Do.
4	78	88	107	94	Khamseen wind.
5	80	88	101	94	Very fine.
6	82	92	102	89	Strong wind.
7	80	88	104	94	Very fine.
8	71	84	101	88	Do.
9	81	90	104	96	Do.
10	79	84	106	92	Close and fine.
11	74	81	92	78	Very fine.
12	76	88	98	87	Do.
13	78	92	108	98	Strong khamseen.
14	72	87	101	87	Windy.
15	75	88	98	89	Do.
16	71	84	94	80	Do.
17	70	80	91	78	Do.
18	68	80	88	74	Windy and fine.
19	72	80	92	75	Very fine.
20	78	84	94	74	Do.
21	79	92	98	80	Windy and fine.
22	76	94	101	84	Very fine.
23	82	91	103	87	Very close.
24	81	92	107	88	Hot wind, very close.
25	82	91	108	90	Hot wind, 2 P.M. 136° in the sun when the glass was placed out ten minutes.
26	80	92	104	88	Very fine.
27	82	94	102	95	Do.
28	84	92	101	98	Do.
29	76	94	104	90	Do.
30	82	96	101	86	Do.
July 1	84	94	102	82	Do.
2	81	89	98	86	Do.
3	84	94	105	96	Strong warm wind, fine.
4	81	88	98	84	Very fine.
5	78	84	92	82	Do.
6	79	86	93	84	Do.
7	78	89	100	89	Do.
8	84	92	106	90	Do.
9	86	94	107	88	Do.

THERMOMETRICAL REGISTER ON THE DESERT—*Continued.*

1861.	6 A.M.	9 A.M.	Noon.	6 P.M.	Remarks.
July 10	84°	92°	100°	96°	Very fine.
11	85	94	109	94	Do.
12	81	88	96	86	Do.
13	85	91	101	89	Do.
14	88	94	105	97	Warm wind.
15	74	82	101	89	Very fine.
16	76	86	104	91	Do.
17	78	89	107	98	Very close.
18	72	80	99	88	Very fine.
19	74	86	98	86	Do.
20	78	89	101	90	Do.
21	81	90	105	99	No wind } in day time.
22	80	92	107	89	No wind }
23	79	86	97	84	Cloudy, wind all day.
24	80	89	100	87	Very fine.
25	81	91	99	84	Do.
26	84	96	108	95	No wind all day.
27	83	94	106	89	Do.
28	78	89	101	88	Very fine.
29	76	84	99	81	Do.
30	82	94	104	92	No wind all day.
31	84	97	109	97	Do.
Aug. 1	86	98	105	96	Fine, little wind.
2	88	97	106	92	Fine.
3	89	98	108	94	No wind all day.
4	90	98	106	96	Strong wind.
5	89	98	108	94	No wind all day.
6	88	100	110	101	Very hot and strong wind.
7	84	96	106	94	Hot wind all day.
8	82	95	104	90	Do.
9	84	94	105	91	Strong wind.
10	81	89	101	90	No wind.
11	84	92	102	89	No wind all day.
12	85	92	106	89	Very fine.
13	88	93	107	91	No wind.
14	89	93	107	89	Very light wind.
15	89	96	109	94	No wind all day.
16	88	97	110	96	Do.
17	89	96	109	94	Do.
18	87	98	108	97	Strong wind.
19	88	98	111	98	No wind all day.
20	84	92	108	96	No wind.
21	82	91	103	88	Light wind.
22	84	92	105	90	No wind.

THERMOMETRICAL REGISTER ON THE DESERT—*Continued.*

1861.	6 A.M.	9 A.M.	Noon.	6 P.M.	Remarks.
	°	°	°	°	
Aug. 23	82	88	104	89	Light winds.
24	82	86	105	88	Do.
25	82	88	106	90	Do.
26	81	84	99	87	Cool wind.
27	80	85	98	84	Do.
28	81	86	94	86	Do., cloudy.
29	82	87	92	84	Cool winds.
30	80	84	91	86	Cloudy all day.
31	76	84	94	87	Do.
Sept. 1	80	86	94	84	Do.
2	82	86	98	86	Clear.
3	81	87	97	82	Fine.
4	82	87	96	83	Do.
5	84	88	98	84	Strong winds.
6	82	88	99	86	Do.
7	84	89	97	82	Cool winds.
8	82	86	94	80	Light winds.
9	84	87	93	81	Do.
10	82	86	97	84	Strong winds.
11	83	87	96	84	Do.
12	82	88	99	86	No wind.
13	84	88	100	84	Do.
14	82	87	98	86	No wind all day.
15	84	88	99	82	Light wind.
16	82	86	97	80	Do.
17	79	84	98	80	Do., foggy.
18	80	86	98	82	No wind all day.
19	78	89	94	84	Strong wind all day.
20	72	89	96	80	Do.
21	71	78	98	82	Do.
22	72	76	86	80	Cool wind all day.
23	71	75	88	79	Do.
24	72	76	87	81	Do.
25	71	94	86	79	Do.
26	90	72	84	78	Strong cold wind.
27	71	76	88	84	No wind.
28	74	78	86	82	Do.
29	72	74	84	79	Light wind.
30	71	74	86	80	Do.
Oct. 1	72	75	87	81	Do.
2	71	74	86	82	Do.
3	72	76	88	82	No wind all day.
4	71	75	87	81	Light wind.
5	70	80	92	79	Do., warm.

THERMOMETRICAL REGISTER ON THE DESERT—*Continued.*

1861.	6 A.M.	9 A.M.	Noon.	6 P.M.	Remarks.
Oct. 6	67°	73°	86°	98°	Strong wind.
7	69	74	88	80	Do.
8	68	71	86	78	Light wind.
9	69	71	88	79	Do.
10	68	74	89	81	Do.
11	66	71	88	79	Strong wind.
12	68	72	89	76	Do.
13	68	74	90	81	No wind all day.
14	68	75	88	78	Windy all day.
15	69	78	88	77	Light wind.
16	68	74	86	76	Do.
17	67	75	88	74	Do.
18	68	78	90	74	No wind all day.
19	68	79	88	72	Light winds.
20	66	74	87	70	Strong winds.
21	67	74	88	72	Do.
22	68	75	90	74	Do.
23	68	76	88	72	Strong wind.
24	66	70	84	70	Cool wind all day.
25	67	69	83	71	Do.
26	66	71	88	74	Light wind.
27	66	70	87	72	Do.
28	65	69	84	70	Strong wind.
29	66	71	86	72	Do.
30	64	74	81	70	Do.
31	66	74	84	72	Do.
Nov. 1	68	74	88	70	Cloudy all day.
2	69	76	88	72	Strong wind.
3	69	74	87	71	Do.
4	66	72	88	74	Do.
5	67	71	84	72	Light wind.
6	66	70	86	72	Do.
7	66	72	87	74	Do.
8	64	72	86	72	Do.
9	64	73	85	70	Cloudy.
10	62	70	83	69	Very cloudy all day.
11	65	72	85	70	Do.
12	64	74	86	71	Fine.
13	63	74	86	70	Do.
14	64	75	87	71	Light rain after sunset.
15	60	71	84	69	Cloudy all day.
16	61	72	85	72	Do.
17	60	73	84	71	Do.
18	61	71	86	69	Fine.

THERMOMETRICAL REGISTER ON THE DESERT—*Continued.*

1861.	6 A.M.	9 A.M.	Noon.	6 P.M.	Remarks.
Nov. 19	62°	70°	84°	70°	Fine.
20	60	69	83	68	Cool wind all day.
21	61	70	83	70	Cloudy.
22	62	71	84	72	Rain and strong wind.
23	60	70	85	69	Light rain.
24	60	72	84	70	Cloudy.
25	61	71	83	68	Do., and windy.
26	60	69	84	68	Cloudy.
27	61	70	84	69	Do.
28	60	72	86	70	Fine.
29	61	71	85	71	Light rain at noon.
30	60	69	82	69	Cloudy.
Dec. 1	59	70	80	67	Rain.
2	57	69	82	66	Rain in morning.
3	57	68	80	67	Cloudy.
4	56	68	78	65	Windy all day.
5	56	66	77	66	Do.
6	57	66	78	65	Do.
7	55	64	72	62	Sand-storm all day.
8	57	66	78	65	Rain in morning.
9	56	67	76	65	Cloudy.
10	58	70	80	66	Very fine.
11	54	67	72	64	Strong wind.
12	54	62	70	58	Sand-storm and rain.
13	57	64	71	60	Cloudy.
14	54	61	69	59	Do., and rain.
15	54	63	71	58	Cloudy.
16	56	60	66	57	Strong wind all day.
17	54	62	72	59	Windy, but fine.
18	56	64	78	60	Very fine.
19	57	63	77	60	Do.
20	56	64	72	61	Light rain.
21	52	58	70	59	Very windy all day.
22	55	58	71	61	Sand-storm all day.
23	56	61	78	62	Much rain.
24	54	59	72	59	Cold wind.
25	52	59	69	56	Do.
26	56	60	76	60	Light rain.
27	56	59	74	59	Fine.
28	54	58	75	58	Do.
29	52	57	76	59	Do.
30	53	58	74	58	Light rain at night.
31	52	56	70	54	Much wind.

THERMOMETRICAL REGISTER ON THE DESERT—*Continued.*

1862.	6 A.M.	9 A.M.	Noon.	6 P.M.	Remarks.
Jan. 1	50°	54°	72°	55°	Very cloudy.
2	51	56	71	54	Do.
3	50	54	74	52	Fine.
4	48	52	76	50	Do., strong winds.
5	48	50	76	52	Windy.
6	46	52	74	50	Do.
7	47	52	76	51	Do.
8	45	50	74	51	Light rain.
9	46	51	76	52	Windy and rain.
10	47	52	72	50	Windy and rain.
11	46	50	70	50	Windy.
12	45	49	71	49	Very windy.
13	45	50	73	48	Very cold.
14	46	49	70	49	Windy and cloudy.
15	45	50	72	50	Rain.
16	45	52	71	51	Do., and windy.
17	46	54	76	52	Fine.
18	45	54	77	51	Do.
19	44	52	75	49	Windy.
20	45	51	71	50	Do.
21	44	50	72	49	Do.
22	46	52	70	50	Sand-storm and rain.
23	47	54	72	52	Fine.
24	49	55	75	56	Do.
25	48	54	76	52	Do.
26	46	55	74	50	Rain.
27	47	54	76	51	Cloudy.
28	46	56	77	51	Do.
29	46	54	79	52	Rain.
30	45	52	74	49	Sand-storm.
31	42	50	72	49	Do.
Feb. 1	44	52	74	48	Do., and rain.
2	45	51	74	49	Windy.
3	46	54	77	50	Fine.
4	47	53	74	48	Rain.
5	48	54	76	50	Fine.
6	49	52	72	47	Heavy wind.
7	44	49	70	49	Do., and sand-storm.
8	47	52	79	50	Fine.
9	48	55	82	50	Very fine.
10	48	57	85	51	Do.
11	47	54	79	50	Rain and wind.
12	49	54	84	52	Fine.
13	48	55	85	54	Do.

THERMOMETRICAL REGISTER ON THE DESERT—*Continued.*

1862.	6 A.M.	9 A.M.	Noon.	6 P.M.	Remarks.
Feb. 14	49°	52°	81°	50°	Rain.
15	45	50	84	51	Rain and windy.
16	44	55	80	52	Heavy wind.
17	47	54	88	54	Fine.
18	48	54	87	52	Windy.
19	47	56	88	52	Heavy winds.
20	48	55	89	54	Fine, rain.
21	47	56	82	53	Very fine.
22	49	57	90	54	Do.
23	48	58	92	56	Do.
24	49	57	90	54	Do.
25	50	58	90	52	Little rain in morning.
26	51	59	92	54	Fine.
27	49	54	...	...	Heavy storm. Thermometer broken at 10 A.M.

The part of the desert, where these observations were taken, is on the line of railway between Cairo and Suez. Rain is of frequent occurrence in January and February. The rain clouds, coming from the Mediterranean, are arrested by the Mokattam range of hills. The rapid evaporation following these rains produces a considerable degree of cold. The high range of the thermometer early in August is not produced by "khamseen" winds. These days are generally transparently clear, and have a peculiar brightness, and the heat is not oppressively felt, nor are there any manifestations of those electrical changes which mark the "khamseen" periods. Observations taken in the Libyan desert give a steadier range of temperature.

IV.—Thermometrical Register, kept in Saloon of Nile Boat, by Dr Sanderson, showing Maxima of Day and Minima of Night, 1860.

1860.		Fahrenheit.		
		Maximum (day).	Minimum (night).	
Feb.	24	74°	55°	Ascending and descending the Nile.
	25	76	56	
	26	74	55	
	27	74	58	
	28	74	...	
	29	71	58	
March	1	75	58	
	2	75	59	
	3	75	58	
	4	71	57	
	5	75	61	
	6	82	60	
	7	79	62½	
	8	80	61	
	9	82¼	...	
	11	86	68½	
	12	89	72	
	13	94	69	
	14	96	68	
	15	87	68½	
	16	...	65	
	17	87	66	
	18	87	65½	
	19	83	70	
	20	84	60	
	21	80	60½	
	22	75	60	
	23	80	60	
	24	80	60	
	25	79	62	
	26	80	63½	
	27	83	65	
	28	84	66	
	29	83	67½	
	30	87	69	
	31	90	70½	
April	1	90	74	
	2	90	67	
	3	87	...	

At Thebes.

V.—Thermometrical Register, kept in Saloon of Nile Boat by Dr Pritchard, ascending and descending the Nile, from December 15, 1859, to March 3, 1860.

Place.	7 A.M.	2 P.M.	7 P.M.	Wind, &c.
Ascending.	°	°	°	
Boulac, . . .	50	75	68	N. 1.*
Geezeh, . . .	48	74	69	N. 1.
Kafr-il-Lyat, . .	45	72	68	N. 1.
E'Suf, . . .	44	71	66	N. 2.
Bibbeh, . . .	43	70	69	N. 4. Cloudy.
Colosaneh, . .	42	68	65	N. 3. Rain 2 hours.
Minieh, . . .	44	70	68	N. 4.
	45	72	69	S.W.
Rhoda, . . .	45	73	69	N.W. 3.
Mellawee, . . .	45	74	70	N.
	46	74	70	N. 1.
El Kossayr, . .	47	74	71	N. 1.
Kosseeh, . . .	49	74	71	N. 4.
Manfaloot, . .	50	75	71	N. 3.
Benóob-il-Haam,	51	75	72	N.E. 2.
Siout, ...	52	76	72	N. 1.
Neghele, . . .	54	76	70	N. 7.
Soohág, . . .	55	76	71	N. 6.
Belianeh, . . .	56	77	72	N.
El Hamra, . .	57	77	72	N. 1.
Bajoura, . . .	57	77	71	N.E. 1.
Kasr-E'Syad, .	57	77	72	N. 1.
Tabenna, . . .	56	76	70	N.E. 2.
Kheneh, . . .	56	77	71	N. 3.
Ballas, ...	57	77	71	N.
	58	77	71	N.W. 1.
Luxor, ...	59	78	73	N.W. 2.
Erment, . . .	59	78	73	N.W. 3.
Esné, ...	58	70	68	N. 6. New year's day.
El Kab, . . .	40	68	66	N. 6.
Edfou, ...	40	68	66	N. 7.
Gebel Hiwa,† .	50	70	60	N. 10. Cloudy.
Assouan, . . .	55	70	60	N. 2. Cloudy.
Bab, ...	50	70	60	N.E. 2.
1st Cataract, . .	50	68	58	N. 3.
Tafa, ...	54	72	60	N. 3.
Kostamneh, . .	60	74	61	N. 3. Tropics.
Malkeh, . . .	60	74	61	N. 1.

* Thermometer, Fahrenheit. Strength of wind by numbers,—1 more than calm, up to 10, hurricane.

† Heat greater under Mokattam range, or vicinity of high land.

DR PRITCHARD'S THERMOMETRICAL REGISTER—*Continued.*

Place.	7 A.M.	2 P.M.	7 P.M.	Wind, &c.
	°	°	°	
Sheih-biggeh, .	60	73	61	N. 4.
Derr, ...	61	76	62	N. 3.
Ibreem, . . .	61	76	62	N.W. 2 .
Amada, . . .	62	77	62	N.W. 8.
Eshkur, . . .	50	77	62	N.W. 2.
Wady Halfa, .	50	77	62	N.W. 3.
Abouseer, . .	...	82	...	N.W. Cloudy.
Descending. From January 18th, to March 3, 1860.				
Wady Halfa, .	50	77	62	N.W. 4.
Aboo Simbul, .	50	76	61	N.W. 6.
Ibreem, . . .	50	72	60	N. 2.
Amada, . . .	50	70	59	N. Cloudy.
Sabooac, . . .	50	70	59	N. Do.
Dakkeh, . . .	50	70	59	N. Do.
Kalabshee, . .	50	68	58	N. 2.
Philæ, ...	49	74	72	N. 3.
Maharraka, . .	49	76	72	N. 2.
1st Cataract, . .	49	74	69	N. 2.
Silsileh, . . .	49	70	68	N. Cloudy. In quarry, 84° in shade.
Edfou, ...	45	68	64	N. Cloudy.
El Kab, . . .	49	70	65	N. 2.
Esné, ...	52	74	72	N. Cloudy.
Luxor, . . .	60	72	66	S.E. Gale.
Kheneh, . . .	60	74	67	S. Cloudy.
Kishnah, . . .	62	76	70	S. Do., sultry.
Girgeh, . . .	64	84	76	S. Do.
Soohág,* . . .	66	89	80	S. 4. Do.
	60	70	61	N. 6. Gusty.
Siout, ...	56	68	60	S. 2.
	58	69	58	S. 1.
Manfaloot, . .	50	70	59	N. 4.
Kosseeh, . . .	48	66	58	N. 4.
Rhoda, . . .	48	66	58	N. 3.
Minieh, . . .	45	66	50	N. 3.
	44	70	50	W. 2.
Benisouef, . .	46	66	54	W. Gale and rain.
Memphis, . .	54	70	55	N. 3.
Geezeh, . . .	55	68	54	N. 3.
Boulac, . . .	54	66	56	N. 4.

* The highest heat in saloon, 89° F.; in sun, 122° F.; coldest, 42° F. in saloon, exposed, 38° F.