little intermission from May till September, when about the autumnal equinox they veer round to the east, where they remain for nearly six weeks with only slight deviations. The current then sets north-east, with occasional changes to north-west, followed at intervals during December and January by light southerly gales which, as has been said, are the coldest of the year. Thence on to the spring equinox, the eastern current once more prevails, till, as regularly as the rise and fall of the Nile, the baleful *khamsin* again blows from the south.

A comparison of the Egyptian death-rate with those of the chief European States affords a ready test of the significance of these climatic phenomena. The latest official returns report an average annual rate of 2.64 per cent. for the whole country, against 2.57 for England, 2.80 for France, 3.96 for Prussia, 3.34 for Belgium, and 4.08 for Spain. Cairo, however, with a population of 349,883, shows the high rate of 4.66 per cent., and Alexandria, with 212,034, a rate of 4.09, being a difference in favour of the whole country of 2.02 against Cairo, and 1.45 against Alexandria. This heavy adverse balance against the capital may, at first sight, seem strange, in view of the admitted healthiness of its climate, and the immense recent improvement in its sanitary condition. But it is quite sufficiently accounted for by the proportion of deaths occurring among natives who, for religious or other motives, flock from all parts of the country to Cairo to die, and by the deaths of resident Nubians and Soudanis, amongst whom the comparative cold of Middle Egypt develops pulmonary disease during the winter months. The exceptional moisture of Alexandria and its still very defective drainage equally explains the fatal excess of that city's death returns over the mean rate of the whole country. But Egypt, as a whole, compares

favourably with all the States above mentioned, except Great Britain, and as the sanitary science of the country is as yet in its infancy, the climate may claim the chief credit of the fact.

Hence both the ancient and modern celebrity of the Nile Valley as a favourite health resort. Decaying Thebes became fashionable in this way nearly two thousand years ago, when Celsus sent his rich Roman patients to recruit, in its balmy and yet bracing air, the energies shattered by Augustan luxury and dissipation; and modern medical opinion has wholly endorsed the estimate of the Nile climate then formed by the author of the *De Medicinâ*. Of the mass of lay testimony supplied by books of travel, one quotation from a recent scholarly and suggestive work will suffice:—"I unhesitatingly assert," says the Rev. A. C. Smith, summing up the result of his personal experience during a four months' tour in Upper Egypt and Nubia, "that the dry warmth, the lightness of air, the total absence of fog or damp, and the magnificence of the weather, far exceeded my most sanguine expectations. We arrived in Egypt early in December; we left it at the beginning of April, and during the whole of that long period we never saw a drop of rain, or felt any moisture in the atmosphere; we scarcely ever saw a cloud, but the brightest of skies, the most brilliant of suns, the balmiest of nights, attended us throughout. I do not mean to imply that it never rains in Upper Egypt, though Herodotus says almost as much, and proves the general rule by a single exception, which he calls a strange prodigy, when in the reign of Psammenitus, a few small drops of rain fell at Egyptian Thebes, 'a thing which had never happened before, and had never happened again to his time, as the Thebans themselves testify.' But this is evidently a

mistake, as the inhabitants of modern days acknowledge, and as the watercourses in the neighbouring hills prove, and the gutters or gurgoyles in some of the temple roofs clearly intimate; although a shower of rain is by no means a frequent occurrence, and, as I have said, we experienced nothing of the kind during our whole tour. Then in Upper Egypt and Nubia we felt such heat as to many may seem insupportable, and it is to some persons distasteful, but to me was most delightful, even though I took active exercise on shore with my gun in the hottest part of every day. . . . . To myself individually the climate of Egypt has been under Providence of the greatest value; indeed, of such advantage has it proved, that I am reaping the benefit of it now, and so thoroughly set up was I by that winter's roasting that I have been able to remain in England since during the winter months as I had not previously done for years; and I feel bound to record that blessing, as an inducement to others to make trial of the same remedy, which has operated so beneficially for me." *

English and Continental medical specialists bear abundant similar testimony. Reporting the result of a personal investigation made in 1860, Dr. Dalrymple says of the climate above Cairo:

"Day succeeds day in a nearly constant round of bright cheering sun, soft breezes, and blue skies; the heat rarely (though sometimes at noonday) too great to be quite comfortable; the early mornings just cool enough to make the use of a shawl or overcoat wise for those who are not in active exercise. . . . The day passes in quiet enjoyment in the serenest atmosphere; health is drunk in as you glide along, evening comes on rapidly, and again the shawl or overcoat becomes an absolute necessity, not because of absolute cold, but on account of the relative reduction of temperature that then takes place. . . . Here the same conditions may be reckoned year after year. There may be winters in which the cold or heat

* *The Nile and its Banks*, vol. ii., pp. 174, 5, 7.

will be more or less, but the anxious hope of the invalid is never frustrated. The atmospheric phenomena are very constant, and in Egypt you hear little or nothing of that extenuation of the climate which in Italy, Spain, or the South of France so often meets the remonstrant disappointed health-seeker, 'Oh! such a season as this was never known.' . . . . The notes taken by me show that the favourable climate of the Saïd is continued, and in some respects improved, in Nubia. The air is much dryer even than in Upper Egypt, and the rapidity with which the reservoir of the wet bulb thermometer exhausted was very remarkable. It is more bracing from its closer contiguity to the desert, and there is far less dew at night. . . . It is scarcely possible to imagine anything more invigorating and life-giving than the air of the desert; there is a dryness and elasticity about it like nothing else; and the sense of renovation when breathing it round the Mokattem hills [near Cairo], or further on in the actual wilderness, is to the languid invalid like a new lease of life." *

A relatively still better authority, Dr. Patterson—for several years in the Egyptian medical service, and now surgeon-superintendent of the British Seamen's Hospital, Constantinople—writes seven years later:

"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 only one 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

* *Meteorological and Medical Observations on the Climate of Egypt*, pp. 12, 13, 15, 17. This is undoubtedly one of the best recent essays on Egyptian climatology, but it no longer accurately describes either the sanitary or general administration of the country. The sixteen years since 1860 have vastly advanced and improved both; and, with them, the hotel accommodation of which Dr. Dalrymple then so justly complained. In this respect Abbatt's and the Hotel d'Europe, at Alexandria, and Shepheard's, the New Hotel, and the Hotel de Nil, at Cairo, now leave little—except lower prices—to be desired.

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 an 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. 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° Fah., more between morning and midday, and 8° higher still between ten and three o'clock p.m.—the hottest period of the day. The changes produced at night by the rapid radiation of the 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 73° Fah. My own observations indicate about 2° lower. The thermometer in Cairo seldom falls lower than 40° Fah., 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 toward the latter half of January there is a gentle and steady increase of the thermometer during the warmer parts of the day. The average of the month of April approaches nearest to the mean temperature of the year. The humidity is, of course, regulated by the rise and fall of the Nile; and thus explains the discrepancies of authors—some stating November, others December, to be the most humid month. It is at the time of inundation, and when the receding Nile leaves large tracts of country uncovered, heat 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 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 NE. These winds blow with great regularity after the period of the

khamsin, or hot winds, till November. . . . It is many years since a well-marked *khamsin* wind has passed over Egypt, and old residents agree in saying that it is much less frequent than formerly, and certainly much less severe. . . . After the period of the *khamsin* there is a gradual increase of the ordinary temperature, till the thermometer reaches its average summer height of 95° Fah., 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° Fah., 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 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 also of its atmosphere is vastly greater. 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 diseases certainly derive benefit from its climate, but they are of a special character. The general character of the climate of Alexandria may be described as being harsher than that of other parts of Egypt, and as unfitted for debilitated constitutions coming from Europe. Invalids returning from the Nile may, however, enjoy with great advantage a few weeks' stay at Alexandria, *i. e.*, from about the beginning of April to late in May. The temperature is

not then high, nor the humidity excessive. The days are bright and sunny, and the variations 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." *

A yet later observer, Dr. Dunbar Walker, writing in 1873, bears similar but still more emphatic testimony:

"I have (he says) after visiting most of Europe, parts of Asia and Africa, come to the conclusion, with many others, that Egypt holds out the greatest advantages. Nice has got its advocates; Mentone is considered by others to be unrivalled in producing a salutary effect on phthisical and other patients. San Remo has been upheld, and seems to be drawing away numbers from her sister towns in the Riviera. Other authorities point to Italy as possessing a climate unequalled by any other part of the world. Spain has been shown, especially the southern coast, to outstrip other winter sanitaria. Sicily, Algiers, Malta, and Tangiers have all their advocates, but weighing all things, Egypt has advantages that far outshine any other winter resort, and will give results never afforded by any other place frequented by invalids, nay, even by any other spot on the habitable globe during the winter months. If Egypt is selected, I can say, that to sufferers from phthisis no climate offers so many attractions as those experienced in Cairo. That the disease is not met with in the town cannot be recorded, but that it is comparatively rare amongst native Cairenes can be asserted. Those amongst whom it is found are generally natives of Nubia or the interior of Africa, whose susceptibility to contract the disease is considerable from the reduced temperature from what they have been accustomed to, and the position they hold as slaves. . . . As regards the advantages and drawbacks of a Nile trip for the invalid, we notice, with reference to the increase of temperature, that in the portion of the Nile between Cairo and Sioût, the mean is 2° higher than in Cairo. On the river still higher up, from Sioût to Assouan, it rises another degree, and in Nubia still another degree, so that at the Second Cataract we have a mean of 4° higher than in the Delta [Middle Egypt?]. The air

* *Egypt and the Nile: considered as a Winter Resort for Pulmonary and other Invalids*, pp. 12-13, 19-20, 34-35.

is dryer, purer, and more bracing the farther we proceed up the river, and it has been considered that if there is any air or climate in the world that offers advantages for the cure and non-development of phthisis, Nubia possesses it." *

These three writers concur in recommending the climate of Egypt as of the highest remedial value, not only in all varieties of pulmonary disease, but also in rheumatic, renal, and brain disorders, and their opinion is strongly supported by Dr. Prince Zagiel, an eminent Russian physician, in his monograph *Du Climat de l'Egypte*, as also by Dr. Pruner, in his *Topographie Médicale du Caire*, and by other Continental specialists.

On the other hand, if the Egyptian climate is thus powerfully preventive and curative of many of our most serious European maladies, Clot Bey enumerates no inconsiderable list of endemic disorders from which our colder latitudes are mostly or wholly free. Amongst these, *plague* formerly enjoyed the bad pre-eminence; but of this terrible scourge, which used to break out epidemically at nearly regular intervals of six, eight, or ten years, there has happily been no visitation for more than fifty years—partly, perhaps, because of the stricter quarantine enforced against Barbary and the Hedjaz, where it is also endemic, and in both of which it has appeared more than once during that period. From the Pharaohs to the Viceroys, however, the plague has been one of the strictly native maladies of Egypt; its inducing cause and its treatment have alike baffled medical skill, and it may be doubted if mere hygienic reforms will ever permanently eradicate it. Of the commonly prevalent disorders, *ophthalmia* is the most general and constant, with the result that the population of Egypt offers probably a larger proportion of wholly or half blind than that of any

* *Egypt as a Health Resort*, pp. 69, 70, 90.

other country in the world. The great strength of the solar rays during the summer months—when the disease is worse—the clouds of fine dust brought down by the hot winds, and the neglect of cleanliness have all been variously assigned as the cause of this distemper; but the first two at least of these surmises are negatived by the facts that in Upper Egypt and Nubia, where the heat is much greater, the affection is very rare; and that in the desert where the *khamsin* dust equally abounds, it is altogether unknown. Fortunately, this native scourge seldom attacks Europeans, and when it does a few applications of sulphate of zinc will suffice to check and cure it. The vegetable diet of the fellaheen renders *dysentery*—following diarrhœa—another common, and at certain seasons destructive malady, but from this again ordinary dietetic care effectually preserves foreigners. Several varieties of *skin disease*, including leprosy—which appears, however, to be dying out in Egypt, though still very prevalent in its worst type in Crete—are also common amongst the natives; but these, too, rarely or never affect Europeans, and need not be feared by either foreign residents or tourists. The great extension of hospital accommodation in Cairo and Alexandria within recent years has sensibly mitigated the effect of these endemic disorders, and as the sanitary administration further improves, a corresponding reduction of the national death-rate may be reasonably expected. Even as it is, Egypt, we have seen, compares favourably with the healthiest countries of Europe, and as a resort for foreign invalids offers climatic attractions which a consensus of medical opinion declares to be unique.

CHAPTER XVIII.

THE SOUDAN.

Its Geographical Area—Dongola—Berbera—Taka—Shendy and Halfé—Sennaar—Khartoum—Kordofan—Darfour—The Shillook Country—Darfertit and Donga—Sir S. Baker's Expedition—Colonel Gordon—Successful Results of his First Expedition—His new Commission as Governor-General—Expressed Determination to Extinguish the Slave Trade—The Opposing Difficulties—Antiquity and Wide-spread Sources of the Traffic—Trade of the Soudan—Its Export Routes—Development that may be Expected with Improved Communications—Results already Achieved—The Khedive's Claim on European Confidence.

In Western geography Nigritia, or the Country of the Blacks, comprises the great expanse of eastern Africa between Nubia and the Equator, and westwards anywhere beyond Lake Tchad to the Niger. But the Egyptian Soudan, though covering nearly the whole of this area southward, is bounded westwards by Darfour, extending on the east to the Red Sea, and thence down past Souakim and Massowah, overlapping Abyssinia, to Berbera and Harrar.

Of the great group of provinces thus collectively named, Dongola, the first, is one of the finest; for while its southern districts are within the zone of the annual rains, it is abundantly watered northwards by the overflow of the Nile over an area of nearly fifteen miles, known as the Wady-Jaijar, or great Dongolese plain. Some miles above Old Dongola, the former capital of the province, the river sweeps round to the north-east, and makes what is called the Great Bend, enclosing northward the fine peninsula savannah mis-named in our maps