action with these muscles more especially. This inference, however, is met by the considerations, that the arrangement of the motor nerves has reference more to the relative action of the muscles of opposite eyes; and that, as has been already remarked, the nerve to the inferior rectus acts as readily with the sixth nerve, as with that to the internal rectus, with which it is associated in origin. Also, that only one of each of the two pairs of muscles which act non-correspondingly receives a separate nerve, whilst the common nerve goes to all the other muscles in the orbit; and that, from the position of the muscle, it is as natural for the inferior oblique to be supplied by the division of the third nerve, which goes to the lower and inner recti, as it is for the levator palpebræ to be supplied from the division which supplies the superior rectus. Apart, however, from these reflections, on considering carefully which of the straight muscles will be more or less in action with each of the oblique muscles, it does not appear that there is any constant relation. It will depend very much on how far and in what way the two kinds of motion of the head are blended. The superior oblique will be in action as often with the internal rectus, and the inferior oblique as often with the external, as with any of the other recti muscles; and it therefore does not appear that there is in the same orbit any special association between either of the oblique muscles and one or more of the recti.

ARTICLE IV.—*Medical Topography of the Western Coast of Africa.* By D. RITCHIE, Esq., Surgeon R.N.—(*Continued from page* 328.)

No locality on the surface of the globe enjoys a more equable climate than Sierra Leone,—the mean temperature of each month in the year ranging between 80° and 82° Fahrenheit. The diurnal range is rarely more than two or three degrees; and the annual range is also very limited, being comprised within 87° and 77° of the same scale. This remarkable uniformity is to be ascribed to its geographical position, and to the clouds or vapours which, in a greater or less degree, continually diminish the solar influence. In consequence of the former, the atmosphere is renewed by the equatorial current, tempered by the influence of the adjacent ocean, by the lofty chain of mountains, of which Sierra Leone forms the terminating link, and by the evaporation from the expanse of luxuriant vegetation existing in this parallel.

In consequence of the atmospheric moisture accumulating in proportion to the proximity of the sun to the zenith of this place, and diminishing as it retires to the southward, its heating power is very nearly equalised. The amount of aqueous vapour, however, is always large, except during a few weeks, beginning about

the latter end of December, when the harmattan sets in from the Great Desert, bringing with it an impalpable dust, and an unusual desiccating power.

Unless during "the rains," the wet bulb of Mason's hygrometer at mid-day is very uniformly between four and five degrees lower than the other, thus indicating an amount of moisture between ·700 and ·800 with the dew point ten or eleven degrees lower than the actual temperature.

As the sun approaches the zenith of Sierra Leone, tornadoes and electrical phenomena become frequent, with occasional light showers, particularly at night, during April, May, and June; but it is not until the return of the sun from the northern tropic in July, August, and September, that heavy or continued rains occur. During these months the former perturbations yield to the torrents which inundate the face of nature; but in October they return in the same order, and continue in diminished intensity until the latter end of December, when a perpetual blue haze throws a serene veil over the face of nature. This is scarcely disturbed for the next three months by any meteoric change.

The peninsula of Sierra Leone contains a population of about 4000 negroes and 100 Europeans. The former consists of liberated slaves and emigrants from the adjacent country, presenting in their physical conformation very characteristic features of the tribes to which they belong. In Free Town, which contains about one-third of the entire population, the streets are wide and dry, with sufficient declivity to prevent the lodgement of water; and the houses are generally surrounded with a small garden, and consequently are detached from one another, thus guarding against, as far as practicable, the concentration of animal life and vegetable effluvia.

The physical peculiarities of a locality distinguished for its destructive influence on the health of Europeans, and for its being the only apparent source whence the epidemic fever along this coast derives its origin, must be a subject of the utmost importance and interest to all who are engaged in investigating the causes of disease, and in advancing civilisation. The climate of Sierra Leone may also be considered as forming a type of every littoral situation, from the River Gambia to Cape Lopez, a distance of about 2000 miles. Modifications indeed, arising from circumscribed causes, exist; and these will be mentioned as the description of the coast line is pursued; but the general characters remain the same, and will not require to be repeated.

To what *peculiarity*, then, of climate, of situation, or of febrific influence, is to be ascribed the *inherent power* which the *endemic fever* of this settlement, or of its neighbourhood alone, is said to possess in generating *epidemic disease?* Is it owing to some modification of the common malaria, or to the propagation of a new and distinct poison by European visitors, at a period in naval history,

when the defective measures for the maintenance of health exposed a crew, with constitutions shattered, to morbific agents, which their vital resistance was unequal to cope with, and thus converted the predisposed into a weltering mass of disease and death? Or does it arise from the atmosphere being saturated to the last degree with the diffusive products of the whole breadth of continent, over which, as the equatorial current, *it* has slowly passed, in a parallel remarkable for the numerous rivers by which the continent is traversed, and for the mass of luxuriant vegetation with which it is covered? To these questions no very decided answers can be given; but the mass of evidence, and the almost unanimous opinion of the medical officers who have been, or are resident, in the colony, coincide in *affirming* the latter supposition. If, however, the common endemial fever really passes merely by gradation into the virulent contagious epidemic (which fortunately only at distant intervals develops its malignity), it is certainly remarkable that the local affection does not exhibit any general difference in type, in degree, or in prevalence, to that which exists elsewhere. It assumes always the character of remittent fever, even in cases where complications or collateral conditions appear to modify it. Europeans almost universally, and even natives, are subject to be attacked by it; but neither of them in a greater degree than in many other localities along this coast. Here, as elsewhere, it appears as the result of a reduced or deranged state of the vital powers, produced by any of the numerous causes which affect these. That the Europeans are more disposed to disease will not appear unaccountable, when we take into consideration the effects of a relaxing climate, and a mode of life opposed to the enjoyment of perfect health, and contrary to their former habits. These act by reducing the nervous energy, and consequently diminishing and disturbing the assimilating and secreting functions. From these again proceed an accumulation of effete and imperfectly-organised matters, which are disposed to enter into new and poisonous compounds on the application of an efficient cause. This cause, uniform in its results and essentially identical in its properties, is so powerful and general on the coast of Africa, as comparatively to supersede all other morbific agents, or so to modify them as to form a common connecting link between nearly every manifestation of diseased action—as in every case of essential fever.

This is more particularly observable in affections of assimilating and secreting organs; but in many others it may be traced without difficulty, as in the predisposition to dysentery and to derangement of the nervous centres. The former was more prevalent formerly, when a mechanical irritant was introduced into the system by the internal use of water laden with debris from the adjacent mountain, at the commencement and during the continuance of "the rains." Since the employment of iron pipes, to prevent the contamination which arises from the action of a rapid torrent upon

a loose soil, the frequency of this affection has diminished; but there cannot be a doubt, that the constitutional liability to it remains the same.

Pulmonary diseases are comparatively rare, and arise most frequently from the irritation produced by the impalpable dust with which the atmosphere is loaded during the time the harmattan blows. A proportion of the effect must, however, be ascribed to the cooling of the surface produced by the unusual amount of evaporation ensuing from the rare dryness of the atmosphere. This influence must be more sensibly felt in proportion to the greater activity and importance of the cutaneous functions in this climate and among the negro race.

Cutaneous affections are frequent and grave from the same causes. The derangements which dispose to these are without doubt often induced and aggravated by circumstances connected with the slave trade. This remark applies more particularly to the most prevalent and peculiar of these affections—craw-craw, framboesia, and lepra. The others are merely examples of generally diffused diseases, and present nothing peculiar beyond the common characters which belong to the diseases of this coast.

Morbid action is almost universally characterised by congestion, and a disposition to advance to disorganisation of the vital structures. This is a deficiency of vital power, not of excessive action or organic energy. It may sometimes happen that cases arise, among those whose constitutions have not been deteriorated by a sojourn in the climate, which seem to contradict this statement; but they must be very rare, if they ever really occur. Observers are prone to mistake the irregular and convulsive struggles of debility for the tense and prolonged efforts of organic power.

This tendency of disease is fearfully aggravated by those conditions of the system characterised by a diminution of vital cohesion, as is observed in scorbutic affections. Where a disposition to scorbutus is present, in those suffering from the effects of a depressing and asthenic poison, the progressive decomposition of the vital structures becomes so rapid and unmanageable, as to assume the character of a malignant disease, in which the putrefactive process has begun before life is extinct. It is even probable that this rapid and general destruction of vital affinities may, by permitting a profuse evolution of new combinations, be the efficient cause of distinctive epidemics. Facts leave no room to doubt that the great mortality which has often, in a contagious form, visited our fleets and armies, arose very generally among those who were already suffering from an impure atmosphere and a restricted diet, both of which change and loosen vital structures. A wise foresight and a humane care have effected ameliorations in these, which permit us to behold it at a distance in the page of history without dreading its approach.

The necessity of confining these remarks within certain limits, obliges me to leave this subject and Sierra Leone. Once more at

sea, we find a light breeze almost constantly blowing from the south-west, on the shore along which we run in a south-easterly direction. A few small islands are passed, which stand like the advanced guard of the distant mountains. They are verdant with waving palm trees, and appear so lovely as to be always a delightful object to the passing voyager. They are named the Bannana and Plantain Islands, and have been described as little paradises, but in reality they are not free from the common endemial fever, although there neither the stagnant and putrid marsh, nor the effluvia of putrefaction, may be detected by the most fastidious organs of sense.

The distant mountains having gradually shelved away, nothing now meets the eye but the white sandy beach, and a long wavy dark line of primeval forest impending over it. Sherbro—a long sandy island formed by the deposits borne hither by several rivers, which the surf has thrown back across their mouths, scarcely breaks the continuity of the line, until we reach Cape Mount—a low hill covered with shaggy wood, whose granite base is washed by the never-ceasing waves. This again is succeeded by the low ivory forest, until we arrive at Cape Mesurado—a rounded headland of primitive formation resembling the preceding, about 200 miles from Sierra Leone. It shelters a small sandy bay, on the eastern side of which is situate that interesting settlement called Monrovia, formed by the free negroes from the United States. The surrounding country is flat, covered by a dense forest, and traversed by a sluggish river, which rolls its muddy waters through mangrove swamps. Although, from these circumstances, the soil is very fertile, yet the situation of the colony appears to have been injudiciously chosen, where so many more advantageous sites might have been selected, and with as great facility appropriated.

A similar configuration and formation of coast to that contained in the foregoing description, extends in an easterly direction for the next 800 miles, until we reach Cape St Paul. It bounds a vast undulating plain, which rises gradually to the foot of the lofty range of mountains, which, under the names of Loma and Kong, at a distance of between 200 and 300 miles, maintain nearly a parallel course to it. While the northern sides of these are drained by the tributaries of the Niger, the southern declivities give rise to numerous rivers, which intersect and irrigate the whole expanse, and render it unboundedly fertile. They pursue a comparatively direct course to the sea, into which they discharge their waters by numerous mouths. These are all more or less unfitted for navigation, by the bars which the surf has thrown across them.

In consequence of the flatness of the surface, which is broken rarely by low swelling hills, the drainage is imperfect; and in the rainy season stagnant pools of water are very frequently scattered over its entire surface. To these are attributable the dysenteric affections which are prevalent, and that remarkable parasite the

Dracunculus. In other respects, the endemic diseases are the same with those belonging to Sierra Leone, as a comparison of the two climates would have led us to expect they would be. We must, however, regard, as an exception to this, the contagious form of fever which has always appeared an important disease, and never one engendered by local influences, however conducive these may be deemed to the propagation or preservation of the germs of the disease in their entire activity. That part of the coast which runs nearest with the latitude is considered more salubrious than that which, pursuing the form of the continent, takes a north-westerly direction. This is attributable to the attraction of the land acting directly against the equatorial current, and thus restraining, as in circumscribed vortices, a confined and contaminated atmosphere.

No difference is observable in the climate from that of Sierra Leone, further than the earlier progression of the seasons by a fortnight. Neither superior salubrity, convenient harbours, nor abundance of commercial produce, render any part of this a desirable settlement for Europeans. On these accounts, those which have been formed at a great sacrifice of treasure and life are all in a sickly and declining condition. No doubt, however, can exist, that the amazing fertility of a country so extensive, so full of mineral riches, so temperate, and so well watered, must in time be brought under the harrow, and its dormant resources made available to the support and happiness of an immense population, instead of being, as at present, hid amid its own wild luxuriance, which the apathetic labours of the scattered savages scarcely restrain from burying their narrow fields and miserable huts.

From Cape St Paul to Cape Lopez, embracing a coast line of more than 1000 miles, the character of the climate and of the shore is very uniform. At Cape St Paul begins that remarkable breakwater, which, in the form of a crescent, extends for nearly 400 miles round the Bight of Benin to Cape Formosa. It is formed on the one side by the sand thrown up by the surf, and on the other by the debris from the rivers which flow into the natural canal formed by it. Here their natural outlet is obstructed until a weight of water accumulates sufficient to overcome the barrier, which is continually renewed by the ocean. At Cape St Paul the canal or lagoon joins the rapid stream of the Bolta; at Little Popoe it communicates directly with the sea; again, at Lagos and Benin, and between that and Cape Formosa, with the mouths of the Niger. It is never stagnant; but as it extends into broad sheets of water resembling lakes, its current is sluggish, and only remotely affected by the tides.

The breakwater itself is a narrow, barren, sandy ridge, elevated only a few feet above the level of the sea, and in general incapable of culture, or of forming a situation for the habitations of men. The scanty soil nourishes only shrubs or stunted trees; but the opposite shore, until we approach the river Benin, is a rich alluvial

plain, intersected by rivers, and in every respect resembling the country previously described between Cape Mount and Cape St Paul. This configuration of land sinks near the River Benin into the low swampy Delta of the Niger, which extends from this to the foot of the Cameroon Mountains, presenting a coast line of above 250 miles, through which, by numerous mouths, the sluggish and turbid waters of that noble stream meet the ocean, after anastomosing with each other by a hundred tortuous channels.

The whole constitutes a vast alluvial plain, so slightly elevated as to be partially washed by every returning tide. A dense mangrove forest throws a funereal gloom over the black and slimy waters which creep among its tangled roots, and scarcely leaves space for the amphibious population, which thinly inhabits the drier portions of the soil. This part of Africa is interesting, from the profitable trade which has been established in the estuaries of its noble rivers—the Benin, Brass, Bonny, New Calabar, and Old Calabar. A steady increase is also promised, through the extent of inland navigation that is available along the parent stream—the Niger.

It is pleasant, after the eye has been wearied by contemplating, day after day, an unvarying line of white surf and blue forest, to behold the gigantic outline of the Cameroon Mountains, rising dimly through their misty shrouds. Rugged, and covered with lofty trees to their summit, they rise to the height of 13,000 feet abruptly from their sea-worn base. The sun rarely penetrates the veil of vapour which hangs round the numerous cones which rise one above another irregularly until the highest disappear from the view. On their southern base, along the side of a beautiful little harbour, is situate a native town, and a missionary establishment, named Bimbia. The latter stands on an elevated headland, from which, by the beauty of the situation, and the appearance of civilisation and refined taste, it seems to possess a moral influence, enhancing the benign precepts which its amiable and devoted tenants have endeavoured to diffuse around.

The Cameroon Mountains are of volcanic formation, and form part of a ridge which runs in a northerly direction, under the names of Rumby and Qua. It also maintains to the south-westward a submarine course, only emerging in the islands of Fernando Po, Prince, St Thomas, and Anna Bona. These all possess a similar volcanic character, and a similar influence on animal life.

Fernando Po, the most important of these, lies about twenty miles from the mainland. On approaching it, the eye is delighted with the view of a bold shore, festooned with creeping plants, over which is a lofty forest, variegated with every tint of the most luxuriant vegetation, and sloping gently upwards until it reaches the abrupt sides of the central mountains, up which it runs in picturesque masses, until it reaches the very summit,—a height of about 10,000 feet. The whole earth does not possess a soil more

fertile, or a climate more congenial to vegetable life. From the moisture condensed around the lofty peaks, or the frequent rains, numerous rivulets of crystal water leap down the umbrageous valleys, and neither expand into languid pools nor feed morasses. No stagnant water, nor accumulation of decaying organic matter, anywhere exists. The other islands of this group present the same features in a diminishing degree, as they recede from the central elevation. Unless in Prince's Island, and there only in a contracted space, no swamp, nor stagnant water, nor any other recognised source of malaria exists. It is therefore unnecessary here to enter further into details, which will come more appropriately under consideration when their common climate is described.

From the Cameroon Mountains to the north, the land forms an undulating dry plain, which rises abruptly from the eastern boundary of the Delta—the Old Calabar River. On its shelving bank, about forty miles from the sea, in a position happily chosen amidst a numerous population, Duke Town is situate; where another of those centres of civilisation—a missionary establishment—diffuses its humanising influence. Here the activity of commercial enterprise, and the spiritual power of a divine revelation, are making an impression, which it is hoped will deepen and expand over this moral waste.

To the south of the Cameroon Mountains, lies the broad estuary of a river of the same name. Its banks present features resembling those of the Gambia, and, in a minor degree, of the Niger: flat, alluvial islands, presenting a sea front of about fifty miles, and extending into the interior from ten to twenty miles, clothed with mangrove forests, when they meet a beautiful champaign country, spreading away broad and pleasing, on whose cultivated patches a scattered population enjoys abundantly all the necessaries of life.

As we advance along the shore to the southward, beyond the narrow sandy beach and its interior chain of lagoons, low hills, running parallel with them, produce an agreeable variety, which is at last broken by the river Gaboon and its tributaries. Here low alluvial islands, resembling those at the mouth of the Cameroon River, and a marshy tame shore nearly under the line, present no favourable prospect for the settlement which the French have formed. Again, as we advance, the former configuration of the land returns, until we reach the rocky promontory Cape Lopez (nearly one degree to the south of the equator), which is a well-defined point of demarcation between the climate of the Bights of Benin and Biafra, and that of the southern part of the coast.

The anxiety to compress within the narrowest limits the preceding description of the land, will not, it is hoped, tend to keep out of view any material fact. I have endeavoured to give a connected sketch of this coast line of a thousand miles, from its possessing

throughout a similar climate, and similar influences in generating disease. Over all, a leaden-coloured sky, laden with eternal vapour or dense dark clouds, throws a perpetual gloom. The dark brown sea that washes its shores eddies round from west to east, and again returns seaward to perform its unvarying circuit. Contaminated with the tributes poured into it by wide muddy rivers, and teeming with animal life, it becomes in a measure a tepid stagnant pool. On moonless nights, when the winds are sufficiently strong to ruffle the surface, myriads of scintillating animalcules shed a pale blue light, sufficiently powerful to enable the eye to read with facility moderate-sized print.

The languid winds blow almost continually from the south-westward on the land, where they are rarified by the greater heat of the surface, and, ascending into the higher regions of the atmosphere, return in an opposite direction, bearing with them the diffusible products of the soil and of organic matter. This compensatory circulation is nearly always distinctly marked by the movements of the clouds, of which the upper strata are almost invariably proceeding in a direction opposite to the breeze. Such is obviously the active movement of the atmosphere; but a slow displacement must always be constantly progressing from east to west, depending on the general law which regulates the currents of the fluid coverings of the globe. In the Bights of Benin and Biafra, the course of the year is scarcely divided into seasons by the changes of heat and cold, or by the periods of activity and decay in the vegetable kingdom. There is an irregular double winter and summer, produced by the passage of the sun twice across the equator in the year. On this account there are properly two *rainy seasons*, divided by short periods of comparatively settled weather. The longest of these is when the sun has receded to its greatest distance in December and January,—the other in August; but atmospheric vicissitudes are common during the whole year. During February and March, these are more violent; but heavy and continued rain is more frequent in April, May, June, July, September, October, and November. In the first and last of these months, it descends generally in the form of light passing showers; but in the middle ones in heavy and continued torrents. Electrical phenomena are frequent during the whole year, but more particularly during February, March, and April,—September, October, and November. They are often attended by that violent atmospheric commotion called "the tornado."

The mean annual temperature at 8 A.M. is 79° 33′ Fahr., at 2 P.M. 80° 40′ Fahr.; being only an average diurnal range of 1° 07′ Fahr. The coldest month in the year is August, which has a mean temperature at 8 A.M. of 76° 90′, at 2 P.M. 77° 90′; and the hottest month is December, which has at 8 A.M. a mean of 81° 40′, at 2 P.M. 83° 50′; showing the greatest monthly range to be only 5° 05′. While the mean temperatures are so nearly the same, the

extreme range is also confined within narrow limits,—the highest observed being 86° 50′, the lowest 74°. As these observations were made at sea, they must be understood to be lower and more equable than if they had been made on land. The steady temperature of the surface of the sea, ranging between 76° and 83°, must have a permanent influence upon these results; but the following hygrometric observations may reasonably be considered more widely applicable. They were registered by Mason's hygrometer, and the deductions are made from tables supplied by that instrument. The mean difference between the dry and wet bulbs at 8 A.M. was 2° 44′, at 2 P.M. 2° 79′, indicating a dew point between three and four degrees below the actual temperature, and an amount of moisture at 8 A.M. equal to ·855, at 2 P.M. ·820.

The barometer ranged between 30·10 and 30·30; but as a guide to the weather its oscillatory movements appear scarcely applicable.

In the neighbourhood of Cape Lopez, the climate undergoes a great change. The sluggish uniformity of the Bight is replaced by fresh south-westerly breezes,—its sullen sky and fumid heat, by rolling clouds or a clear atmosphere, which impart to the sensations a buoyancy and vigour never felt within the recurrent breezes of that fatal gulph. Rain is, however, frequent and often extensive. Thunder-storms are also very common. All these changes appear the result of the drier and purer atmosphere of the south coast mingling with that of the north, which is saturated with moisture, and possesses a very different electric tension.

No part of the world obtains the character of being so prejudicial to the health of Europeans as the shores of the Bights of Benin and Biafra, and their contiguous islands. Remittent fever, of an asthenic and fatal form, threatens all who visit them. No variety of soil or local influence averts the common scourge, or appears either to mitigate or augment its force. Yet life, and even health, may as certainly be preserved amid the flat mangrove swamps on the banks of the rivers Benin and Bonny, as on the declivities of the Cameroons, or the high shores of the adjacent islands. In the month of December 1849, when the writer visited the river Benin, he saw two individuals—one a native of the north of Europe, who had been a resident for fifteen years; the other a native of Ireland, who had dwelt for nearly three years in that pestilential locality—neither of whom had suffered from endemic disease. A similar fact was at the same time observed in the very differently constituted island of Fernando Po; and other instances might be mentioned, showing that the common influences pervading this part of the world are independent of the configuration of the land. The enjoyment of good health must, however, be regarded as the exception to the rule which regulates life in this insalubrious climate. It is, therefore, necessary to consider it in relation to its influence in generating disease. In this respect Fernando Po bears, per-

haps, the pre-eminence, in consequence of the destructive epidemic which raged there from the settlement by the British in 1827, almost until it was abandoned. This, however, was an imported disease, rendered continuous by the arrival of successive emigrants and the uniformity of the climate, and therefore affords no fair criterion by which to judge of it. There cannot be a doubt that the germs of disease, depending on a certain amount of temperature and moisture for their constitution and development, will continue and increase so long as these conditions and a germinating area exist. Taking this for granted, it becomes obvious that the disease referred to will endure permanently in this island, as long as susceptible individuals arrive to multiply the germs,—in consequence of the vapour, which, like a mantle, almost perpetually covers the lofty mountains in the interior to their base, well nigh completely arresting the process of evaporation, stimulating the vegetating affinities, and nearly altogether obliterating the changes of the seasons. At the same time a most malignant form of ulcer prevailed—the result, probably, of the same cause, modified by some collateral influence concentrating that poison in a circumscribed area, which would otherwise have overwhelmed the whole system. The correctness of these views is supported by the fact, that neither of these diseases has been observed to be endemic since that time; for although numbers of Europeans have continued to be exposed in every variety of circumstance to the influence of the climate, they have experienced only the usual results which attend a similar exposure elsewhere.

From this experience opinions have so changed that Europeans now gladly retire from the low dark shores of the Delta to breathe here what they believe to be a purer atmosphere, but perhaps in reality only to evade the wearisome monotony, alike exhausting to the patience and depressing to the spirits, which after a lengthened residence in this quarter is so apt to be felt. A hasty view might lead to the supposition, that a locality where the emanations were to a certain extent confined, and consequently became concentrated by surrounding circumstances, would be found the most active in generating disease, but such an opinion would be at variance with the fact; for fever of as malignant a type has arisen as certainly, if not more so, from exposure in the dry and comparatively naked shores of Anna Bona, as at Duke Town on the Old Calabar, which can only be reached by a tortuous navigation of above 400 miles, among low alluvial islands, covered with swamps and impenetrable forests, and over which the sea breeze blows with a sickly languor.

Believing, then, that a specific poison is equally common to the whole extent of surface under consideration, there is still a curious fact which deserves to be mentioned. It has frequently happened that several individuals have been simultaneously seized with the same disease, indicating a special and concentrated evolution of the

noxious excitant. What the peculiar cause of this may be, is still indeed a mystery, but the laws which regulate it are more in accordance with those which belong to organic than to gaseous products. It appears from its effects to arise only at distant and irregular periods, to be confined within narrow limits of space and time, and to affect only peculiar habits, producing no deleterious effect on those not predisposed, as a chemical or mechanical irritant may be supposed necessarily to act.

A correct view of the influence of this climate in generating disease, will, it is presumed, be obtained from the following statement of the diseases prevalent during a period of six months, among a crew numbering altogether 140 individuals, of whom twenty were negroes. Fifty cases were placed on the sick list, exclusive of injuries, the effects of violence. Of these the most important, although not the most numerous, were fevers, numbering in all seventeen cases. A great diversity was observed in their relative severity and duration, some terminating after one paroxysm, others assuming almost a continued form, and a very complex identity, by the similarity of their symptoms and termination on the ninth day. These were all the result of exposure to the influences of the soil, while employed in proximity to, or in actual contact with, it in the rivers of the Delta. Of the whole, one individual died, whose age (forty-six) and general character would have rendered him a probable victim to any severe form of fever. All the others completely regained their health and strength without relinquishing the vessel or the service.

The class of cases most numerous, but the least important in regard to their severity or duration, were cutaneous and subcutaneous affections,—they numbered in all twenty-two cases. Some of these were connected with a cachectic, others with a scorbutic, disposition; but they all recovered under appropriate treatment.

Affections of the lungs and air-passages included four cases of no importance. This immunity must not be understood to apply always to these affections; for I observed a case of the most malignant kind of pneumonia prove fatal in less than thirty-four hours, a result hastened, no doubt, by a complete change in the character of the blood, and its want of a vital cohesion proportional to the impulse of a hypertrophied heart. Such cases are generally the result of the same impressions on the cutaneous surface which excite in the system similar affections in this climate.

Affections of the membranous structures included two cases,—one of rheumatism, the other of ophthalmia,—neither of which have been found generally prevalent or intractable forms of disease.

The remaining class of affections—those of the abdominal viscera, included four cases,—hepatitis, dysentery, dyspepsia, and dysuria; all important from the disorganisation they are disposed to induce, or from the deteriorating influence they exercise upon

health. They were all, however, under a careful method of treatment adapted to the circumstances of each, conducted to a successful termination.

Whilst the preceding summary gives a fair view of the state of health on board of vessels cruising off this part of the coast, it may not do the same on land, or in vessels remaining long in contiguity with it. In these cases it is probable that fever is more prevalent, and its results less favourable,—that new forms of disease arise as old ones disappear,—and that, altogether, diseased action is more intractable, and its results more unsatisfactory.

That remarkable disease which is characterised by an invincible inclination to sleep and to slow decay, is not infrequent at Fernando Po and the adjacent islands. It runs its course in about six months, and its inevitable end is death. It appears to be connected with *ramollissement* of the brain, but it is impossible for one who has not personally examined the disease to form a correct opinion.

The protective power of malaria is not sufficient, as some have supposed, to ward off pulmonary consumption. Permit me here to pay a small tribute of respect to the memory of that pure-hearted and zealous missionary, the Rev. Mr Merrick, whose christian character and high intellectual endowments were accomplishing so much for the cause of humanity and religion when this disease approached, and the writer had the regret to see him at a time when he was far beyond the reach of human aid. Although this case and two more are very distinctly impresssed on my memory, it must be acknowledged that the disease is comparatively rare, and, in relation to the mortality of the coast, occupies a very minor position.

The character of diseased action over the area to which the preceding remarks apply, is identical with that already described when treating of Sierra Leone. The congestive and disorganising tendencies are perhaps even greater; but it would be rash to hazard an opinion on this matter, when the sources of error from collateral circumstances are so numerous.

It is proper to state, that in the preceding review of endemic influences they have been considered chiefly with regard to their effects on the constitution of the European. The African is, however, by no means exempt, and it even appears probable that a similar liability to morbid action extends over the whole animal kingdom. Horses perish, cattle are puny and multiply sparingly, the forests are comparatively destitute of birds, and the air of insects—leaving vegetative organisation to pursue its uninterrupted course of silent energy.

(*To be continued.*)