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THE

MEDICAL TOPOGRAPHY

OF THE

WEST COAST OF AFRICA:

WITH

SKETCHES OF ITS BOTANY.

BY

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## PREFACE.

IN offering the following pages to the Public, the Author has endeavoured to give a brief account of the principal places in West Africa, and a description of some of the plants employed as food, with the locality in which they are principally found.

He has also endeavoured to enter more fully into the description of the Seasons, and has proved that there are two sickly Seasons in West Africa, viz., the beginning of the rains and the harvest.

In conclusion, the Author thinks it needful to state, that the contents of these pages will re-appear in a larger Work, now in the press, "ON THE DISEASES OF TROPICAL CLIMATES."

And finally, that this Publication may be the means of exciting some interest in the breast of the Reader, on behalf of Africa, is the sincere wish of

AFRICANUS HORTON.

*Staff Asst.-Surgeon.*

Freetown, Sierra Leone,  
Sept., 1859.

TABLE

The following table shows the results of the experiments conducted on the effect of the temperature of the water on the rate of the reaction. The results are given in the following table.

The results of the experiments conducted on the effect of the concentration of the reactants on the rate of the reaction are given in the following table.

The results of the experiments conducted on the effect of the surface area of the reactants on the rate of the reaction are given in the following table.

The results of the experiments conducted on the effect of the presence of a catalyst on the rate of the reaction are given in the following table.

The results of the experiments conducted on the effect of the pressure on the rate of the reaction are given in the following table.

# MEDICAL TOPOGRAPHY

OF THE

WEST COAST OF AFRICA.\*

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IN presenting the Medical Topography of the WEST COAST OF AFRICA, I shall endeavour to confine myself chiefly to the description of the principal places visited for commercial and other purposes; their natural features and peculiarities; their effects upon health, and the duration of life; the stratification and composition of their soil; their metereological phenomena as influencing tropical disease (as far as our knowledge of the meteorology extends), together with the state of the weather, and the barometrical pressure and humidity of the atmosphere. I shall describe primarily the topographical condition of the different places along the coast, without entering into any political matters; and I shall endeavour to confine myself as far as is possible to those subjects connected with the causes or prevention of disease.

On a voyage to West Africa, after leaving the

\* A Thesis to the University of Edinburgh.

mountainous regions of the Canaries, drifted by the north-east trade wind, the voyager first beholds that point in the Senegal Empire, called by the Portuguese Cape de Verde. The greater part of this Empire is under the French Government; its principal town is St. Louis, which numbers a population of about 10,000 inhabitants, of whom 1,050 are Europeans, and the rest, including 200 soldiers, are natives. Among their exports, gum-arabic is the only one of medical importance—it forms the principal article of commerce in Portcinder, a small port on the north of St. Louis.

Gum-arabic, obtained from the exudation of the bark of *Acacia Arabica*, and belonging to the order of the *Mimoseæ*, or according to the Linnæan system, *Polygamia Menæcia*, is common in the forest of Senegal. It is brought in the market in large masses, irregular and mixed with particles of wood and other impurities, having a *conchoidal fracture*.

Goree is a small arid Island, situated about 80 miles from Senegal, and containing a population of from 6,000 to 8,000 inhabitants; on the south side of which, on a high ground, is built a fort, which is the great depôt for the French military force in West Africa.

The soil is sandy, and contains a species of rock, composed of augite and felspar, of a prismatic structure, with grains of magnetic or titanite iron, which is called *basalt*, and if this be the same as that in the account of Pliny, who informs us that the Egyptians found in Ethiopia a species of marble, called *basaltes*,

of an iron colour and hardness, we might easily see the derivation of the name.

Another species of gum is also exported here called *gum-copal*, which, in point of fact, is no gum at all, as it is not soluble in water; for it derives its name from the Mexican *copalli*, a generic name for resin; but differing, however, from resin in not being soluble in spirits of wine; in these respects it resembles amber. It is shining, transparent, citron coloured, inodorous and hard, and dissolves in linseed oil at a heat below the point of ebullition.

South of Goree is the River Gambia, the mouth of which lies on the north, in lat.  $13^{\circ} 40'$  N., and long.  $16^{\circ} 40'$  W.; on the south in lat.  $13^{\circ} 30'$  N., and long.  $16^{\circ} 42'$  W., extending by many bends about 500 miles into the interior. The river is very muddy and thickly overgrown with mangroves and other aquatic shrubs. During the wet season, its depth is greatly increased, and large trees may occasionally be seen hurled down by its rapid current. The country around is very woody, covered with an immense variety of trees thickly crowded together, united by a vast amount of shrubs, which render it impenetrable. The soil being composed also of clay, receives and retains the putrefied animal and vegetable matter which is left ashore by the tide, and which forms a mass of alluvia which, on being excited by the heat and moisture of the warm weather, give out those insensible poisonous exhalations which are detrimental to the constitution, not only of the Europeans, but also of the natives. Like a great



many places in Africa, vegetation here grows very luxuriantly, and this is favoured both by the fertility and humidity of the soil.

Further along the river, the banks which at its mouth were low, swampy and unhealthy, become more elevated—the woods more open—the stream more rapid, and consequently the parts become healthier. Bathurst, a port of no inconsiderable importance, is built on the mouth of the River Gambia. It was established as a British settlement in 1816, by Lieutenant-Colonel Brereton. The soil is sandy and clayish, intermixed with alluvial swamp, which is accumulated during the rainy season, and left at the banks in the dry season. The country all around is flat, and during the rains it is inundated by rivulets, many of which are even to be seen along the streets.

Among the market produce of botanical importance are: 1st, a nut from a species of plant in the natural order of *Sterculiaceæ*; this is the *Sterculia Acuminata*, or kola nut: 2nd, the seed of the *Arachis Hypogæa*, a leguminose plant, whose seed or edible portion lies buried in the ground, called by the natives, *ground-nut*. It will be interesting to the naturalist to hear, that the country around Bathurst, and all the coast from Gambia to Sierra Leone, abounds with mosquitoes and sand flies; and I may here state that wherever the coast is overgrown with mangroves, mosquitoes seem to delight themselves in profusely developing those morphological phenomena which are characteristic of their species; and thus we

see that these places abound with countless numbers of them, and the inhabitants suffer from the surgical operation of phlebotomy, which these creatures, although uninvited, practice on them.

Mosquitoes, of the genus *culex*, belong to that order of the *insecta* called *diptera*,\* in the group of the *culicidæ*; their mouth which is peculiarly adapted for sucking the blood of other animals, is in the larval state so prolonged as to constitute an organ of prehension not differing greatly from the mouth of the larval dragon-fly. "Conceive," say Kirby and Spence, "your under lip to be horny instead of fleshy, and to be elongated perpendicularly downwards, so as to wrap over your chin, and extend to its bottom; that this elongation is then expanded into a triangular convex plate attached to it by a joint, so as to bend upwards again, and fold over the face as high as the nose, concealing not only the chin and the first-mentioned elongation, but the mouth and part of the cheeks: conceive, moreover, that to the end of this last-mentioned plate are fixed two other convex ones, as broad as to cover the whole nose and temples; that these can open at pleasure, transversely like a pair of jaws, so as to expose the nose and mouth, and that their inner edges, where they meet, are cut into numerous sharp teeth or spars, or armed with one or more long and sharp claws;—you will then have as accurate an idea as my powers of description can give of the strange conformation of the lips in the larvæ in question, which conceals the

\* Δίπτερος (δῖς, πτερόν) with two wings.

mouth and face precisely as I have supposed a similar construction of your lip would do yours. You will probably admit that your own visage would present an appearance not very engaging while concealed by such a mask; but it would strike still more awe into the spectators were they to see you first open the two upper jaw-like plates, which would project from each temple like the blinders of a horse; and next, having by means of the joint at your chin, let down the whole apparatus and uncover your face, employ them in seizing any food that presented itself, and conveying it to your mouth. Yet this procedure is thus adopted by the larvæ provided with this strange organ. While it is at rest, it is applied close to and covers the face. When the insects would make use of it, they unfold it like an arm, catch the prey at which they aim by means of the mandibuliform plates, and then partly refold it so as to hold the prey to the mouth in a convenient position for the operation of the two pairs of jaws with which they are provided." \*

The metamorphosis of the *culex* is both strange and interesting; the female mosquito deposits its eggs in the water, and in order to ensure its safety, glues them together by her two hinder legs, so that they form a perfect life-boat; the form of each individual egg is conical, closed at one extremity, having a sort of lid which is well adapted to give egress to the embryo when in full maturity. The head of the larva is large, and contains two pre-

\* Introduction to Entomology, vol. iii. p. 126.

hensile organs, which by their constant vibration bring food towards their mouth; they are limbless, having no wing, but contain on the sides of their body, more especially the hinder part, a number of fins, by which they keep themselves buoyant. The respiratory tracheæ are connected with the air by two tubes placed in the abdomen, with which they are enabled to exchange carbonic acid for oxygen. After a time the larval animal passes into the *pupa* state; here we observe a more complex development; the head and thorax are fused into one; the abdominal respiratory tubes disappear, and are replaced by two dorsal thoracic tubes. It would seem almost impossible for the animal, which is still aquatic, to get rid of this incasement, and not be drowned by the surrounding water, but here Nature interferes. In the pupa state the creature becomes more buoyant, raises its back above the surface of the water, and the skin, on being exposed to the air becomes dry and splits longitudinally, from which the animal escapes, ready to perform its surgical operations. If a drop of the almost stagnant water, in which there are a great many mangrove trees, be examined microscopically, a vast number of these larval insects will be found. The audacity of this insect is thus fantastically described by our brave Niger-expedition explorer, Dr. Baikie:—"Mosquitoes crowded on board, possibly to welcome us on our return, but the pleasure of meeting was not reciprocal, nor could we persuade them to take a quiet hint and retire. I detected one settling in the most cool and impudent

manner on the back of my hand, preparing to enjoy an extemporary banquet. I fancied I recognised this savage intruder as being the same which had, during our ascent, committed on me an assault to the effusion of blood, but in the heat of my indignation I sacrificed this sanguinary gnat, without allowing time for mutual recognition, so that this question of identity must remain for ever a doubtful point in history."\*

Along the banks of the river Gambia, are to be found those curious animals called the *Lepidosiren*, which, amongst many others, seem to prove this general law in nature, *nihil per saltum*. This variety is called the *Lepidosiren Annectans*, and forms the transition stage between the *Pisces* and *Amphibia*, or *Batrachia*.

All the islands near, and belonging to Bathurst, present the same composition of soil and unhealthiness of climate, produced by dead vegetable accumulation, so that I need not give a special description of each, but suffice it to say, that they are Macarthy's Island, St. James's Island, and Bride's Island.

The coast, from Bathurst to Sierra Leone, is still low and uninviting, covered with thick forest, composed of various kinds of intertropical woods, much watered by the numerous rivers that open into the Atlantic. These are separated from each other by many Islands, formed according to Dr. Bryson, by the deposits of earthy matter, from the waters of the

\* Baikie's Exploring Voyage, p. 321.

several large rivers which empty themselves into the sea in their neighbourhood. The principal of these, the Rio Grande, "said to be navigable 150 leagues above its mouth," swells greatly during the rainy season, but in the dry season it is muddy; along its banks are numerous mangrove trees, or *Rhizophora Mangle*, whose aerial roots descend into the mud. The bark of this tree may be used medically with advantage as a febrifuge, and for tanning. It is very astringent, some species are used for dying; it belongs to the natural order *Rhizophoraceæ*.

The most important of the places from the Rio Grande to Sierra Leone are, Rio Pongas, or Pongas, situated in lat.  $9^{\circ} 55'$  N., and long.  $13^{\circ} 46'$  W., Rio-nunez, Isles de Los, among which is Rooma, or Crawford Island, in lat.  $9^{\circ} 27'$  N., and long.  $13^{\circ} 48'$  W., island of Matacong, Mellacorie and Scarcies.

The river Sierra Leone, at its mouth is bounded on the north by Leopard's Island, and on the south by Cape Sierra Leone, running S. by W.  $\frac{1}{2}$  W., and N. by E.  $\frac{1}{2}$  E., interrupted at its embouchure by an extensive sand bank, called the *middle ground*; and is easily navigable by vessels from Cape Sierra Leone to the distance of about 25 miles. Its southern boundary is formed by the ever green peninsula of Sierra Leone, extending to a considerable distance inland. It receives several rivulets and affords facility for trade with several towns, amongst which are Robuonp, Tasso, Tombo, and Baunce Island, in timber, rice and ground-nut.

Sierra Leone is built on the mouth of this ex-

tensive river, by which it is bounded on the north. On the south and south-west, it is bounded by the Atlantic, on the east and north-east, by Baunce river, and on the south and south-east, by the Shalbro territory. This peninsula, whilst approaching it by sea, on a summer's day, presents the most picturesque and lovely scenery that ever eye beheld in a tropical world. Its lofty concatenate mountains, extending from its most southern boundary, westward to the north, clothed with every variegated tint of nature's exuberant and richest colours—its extensive and commodious river, receiving at anchor, vessels of every description, cannot but enhance in the mind of the beholder, the idea of those fairy lands which he perhaps had been accustomed to read of in some romantic stories. Viewing towards the left, the eye is greeted with a vast extent of low land, "covered with luxuriant and richly coloured bush," whose engaging colours vie with the clear blue sky above. But turning to the right, the traveller is enchanted with scenes of grandeur and nature's imposing magnificence—the lofty peaks and declivities, displaying alternately hills covered with verdant green, and sky of a light blue tint—the coast with its several indentations presenting a towery lighthouse, the beacon for approaching vessels. These make the voyager forget his home, and wish ever to dwell in this "seeming Paradise." In front, lies Freetown, whose streets are not inadequately described as "laid out with mathematical precision," ostensibly protected by a fort and a magnificent line of barracks, whose gun-mouths

point in every direction, bidding defiance to any menacing foe. In its further end, the Fourah Bay College stands out prominently, as a masterpiece of architecture, where a sound education is given to the young men of the Colony, in Greek, Latin, Hebrew, Arabic, mathematics, and every branch of English studies, under the superintendence of its *eminent* and *learned* Principal, the Rev. E. Jones.

Freetown, the Capital, is situated in lat.  $8^{\circ} 29'$  N. and long.  $13^{\circ} 14'$  W. Containing from about 24,000 to 30,000 inhabitants, composed of Igboes, Yorubas,\* Mandingoes, Soosoos, Joloofs, or Yoloofs, Timnehs, Krew, and Dahomians, which by their intermarriages are destined to produce the finest race in Africa.

Dr. Winterbottom, in his accounts of West Africa, said: "The natives of Guinea are in general described by travellers, as well formed in their limbs, and remarkably free from natural deformity, their skins are always cool, at least more so than those of Europeans in the same climate, and they are also remarkable for their sleekness and velvet-like softness. The inhabitants of the river Sierra Leone, particularly the females, are said to be the handsomest people upon the coast. Both men and women are in general above the middle size, well proportioned, sprightly, and of an open countenance . . . The manners of the females, particularly the younger part, are not devoid

\* I use the term Yoruba, in a generic sense, meaning all those tribes, which by their mode of salutation in Sierra Leone, are called "Aku."



of grace, and are free from every appearance of constraint. The estimate of female beauty among the natives in this country is the same as in most others. The young women are in general remarkable for the beautiful contour of their limbs, and for an ingenuous open countenance. The eyes are often large and well formed, their ears small and neat; their necks and bosoms are well turned, scarcely indeed to be surpassed by 'the bending statue which enchants the world.' The frankness of their manners is tempered with an agreeable timidity towards strangers, which renders them still more interesting."

Freetown is divided into five sub-towns, as follows: Kru-town, Maroon-town, Settler-town, Soldier-town, and Mohamedan-town; inhabited principally and severally by Krewmen, Maroons, Settlers, relieved soldiers and Mohamedans. The emancipated Africans and their offspring, *par excellence*, possess stores and houses in all these sub-towns. The two principal tribes are the Yorubas and Igboes, the proportion being about one Igboman to one hundred Yorubas.\* The houses are built principally of stones and boards; they are of four sets; the first comprises those built entirely of stone, two or three stories high, with shingled or slated roofs. The second class is called "*frame-houses*," built of boards mounted on a circumference

\* The great difference in the proportion of the tribes in Sierra Leone, is that the proportion of Yorubas, emancipated from slavery since the establishment of the squadron, far exceeds all the other tribes put together.

from three to six feet high; the roofs are either covered with bamboos or shingles. The third class is called "*quarter-frame*," differing from the preceding in being raised from the ground by four or more stone-pillars, and the roof always covered with bamboo. The fourth or last class is known under the general name of "*ground-floor houses*;" their walls are either made of mud or board; when of the former, they are very substantial; roofs covered either with grass or bamboo.

The houses are placed on either side of the streets, detached, many of which have beautiful promenade and flower gardens around them; this reminds me of that portion in Tacitus, where he says, describing the habitation of the Germans of his days, *Ne patiuntur quidem, inter se junctas sedes. Colunt discreti ac diversi, ut fons, ut campus, ut nemus placuit. Viscos locant, non in nostrum morem connexis et coherentibus ædificiis: suam quisque domum spatio circumdat.*"\*

The writer above quoted thus describes the residence of the Governor in 1803:—"The present residence of the Governor of Sierra Leone is a handsome wooden building of one story, surrounded by a spacious piazza. It is situated upon a small

\* Tacitus.—*De situ, moribus, et populis Germaniæ.*—"They do not even suffer houses to be built in contact. They occupy detached and remote habitations; as the fountain, the plain, or the grove, may attract them. They planned their villages, not after our own fashion in rows of adjoining houses, on the contrary, every one has a piece of land surrounding his habitation."

round hill, elevated about a hundred and fifty feet above the level of the water, and placed between the town and the foot of the mountains. From this eminence, called Thornton Hill, the eye takes in a most extensive prospect, and dwells with pleasure upon the surrounding picturesque scenery, in which the milder beauties of nature are agreeably blended with those of a more solemn and sublime appearance. The cheerful tints imparted by vast profusion of shrubs are finely contrasted by the sombre shade of venerable trees, whose aspects bespeak them of primæval growth. The attention is first attracted indeed by the active scenes of life immediately beneath. From this hill the eye distinguishes with ease not only the various streets, but almost every house in the town, which appears as if placed in the midst of a shrubbery. Over the town is seen St. George's Bay, enlivened by the appearance of ships, or the frequent passing of boats and canoes, and the scene on that side terminates in an extensive view of the ocean. On the right-hand is seen the river flowing majestically for several miles above the colony, together with several of its islands, and the whole extent of the Bullon shore from Leopold's Island to Tagrin Point, a distance of twelve or fourteen miles; the land richly clothed with wood, and edged with fine white sandy beech. On the left-hand are the mountains, forest crowned, wending in nearly a semi-circular form, and recurring with a gentle declivity towards the Cape. The back ground is closed by immense forests, which rise like

an amphitheatre, and occasionally have their summits veiled in fleecy clouds. An intelligent traveller, who visited this river, observes that those who admire the tranquil and solemn scenery of nature, which disposes the mind to soothing reveries, and who wishes to experience the charms of the picture which the entrance of the river Sierra Leone presents, should visit it in the month of April. It was about five o'clock in the afternoon; behind us we had the sun, which in little more than an hour disappeared in the ocean. The evening was calm, and the heat moderated by a gentle breeze which had just risen. The rays of the sun, of a lilac red, were diffused over the internal parts of the bay, and marked its various inequalities, which appear like compartments of the same picture, but differently illuminated. Before us appeared the village of Sierra Leone, and two other towns of the natives, and near the former place we could distinguish the masts of vessels at anchor. The bustle of men, and the manœuvres of boats and canoes returning from fishing, gave animation to this beautiful landscape, whose composition is sweet and simple and peculiarly pleasing by the harmony of its tints. Europe, indeed, offers more brilliant and richer views, and Switzerland and the Alps present more stupendous appearances, but no where can we find a more agreeable or more charming situation than the Bay of Sierra Leone."

Sierra Leone is divided into three districts, viz., mountain, river, and sea districts.

The mountain district, and by far the healthiest, comprises Gloucester, Leicester, Bathurst, Regent, and Charlotte. The temperature is very moderate, being sometimes 69 deg. Fah., always refreshed with a mild breeze, and exceedingly cold at nights in the harmattan season. The towns are built in slopes of red clay-stone hills, moderately populated, and having the land around the towns well cultivated.

The following vegetables are principally found in this district:—

*Citrus Aurantium*, or sweet orange.

*Citrus Bigaradia*, or sour (bitter) orange.

*Lemoni Vulgaris* (*Citrus Medica*), or common lime.

*Bromelia Ananas* (*Ananassa Sativa*), or pine-apple.

*Coffea Arabica*, or coffee.

*Dioscorea Bulbifera*, or yam.

*Croton Tiglium*, or purging-nut (natively, but wrongly, called fig-nut).

*Jatropha Janipha*, or Cassava.

*Urginea Scilla*, or squill.

*Anacyclus Pyrethrum*, or Pyrethrum.

*Maranta Arundinacea*, or arrow-root.

*Citrus Aurantium* is a very important dietetic article in Sierra Leone. In the height of the season about 15 oranges are sold for one penny. It is much cultivated at Leicester, and some varieties blossom all the year round, so that the fruit can be had at any time of the year. I have observed, that when the old oranges begin to ripen and become ready for use, new blossoms are thrown out, and before the old ones

are consumed, the last are almost ready to be eaten. They are perennial trees, attaining to the height of about 20 or 30 feet. The odour of the flower is very fragrant, depending on some volatile oil which it contains, and which is very abundant in those in Sierra Leone, so that many bees are to be seen hanging on the flowers. The fruit, an *hesperidium*, is very juicy, containing several ounces of liquid, which nature so providentially prepares as an antidote against the urgent thirst produced by a tropical sun. A single tree can produce in one season from 300 to 800 oranges.

*Citrus Bigaradia* is not cultivated at all. A peculiar phenomenon has been observed with respect to the nature and growth of this orange, viz., that when sweet orange is made to grow in very unfavourable circumstances—*e. g.*, barrenness of land, dryness of soil, much exposure to the burning rays of the sun, and constant mutilation—the orange fruit that is produced is more or less sour. The sweetness of orange fruit deteriorates in some cases with the age of the tree, and in rare cases is developed with the growth.

*Citrus Medica* is smaller than the ordinary English lemon. It grows uncultivated, developing thorns at certain distances, so that it cannot be climbed with impunity. The fruit is oblong, with ridges on its surface, and very acid. It is very useful in preventing sea-sickness, and is the best hygienic means for effecting this object that I am acquainted with.

*Ananassa Sativa* grows to a large size in the

mountain district. It belongs to the natural order of *Bromeliaceæ*. The leaves are rigid and spiny; the fruit is poly-gynæcial, and formed by the union of numerous succulent ovaries and bracts. They are sold in great numbers to the officers belonging to the coast squadron, who buy them unripe. When ripe they form a very wholesome article of diet, sweet and finely aromatic.

*Caffea Arabica* was formerly cultivated to a great extent in the mountain district, but it is now abandoned. At Gloucester it was planted in Philip's Farm on the way to Bathurst; at Regent's Town, in Regent's Farm; and at Bathurst, in the Missionary Farm. It grows from 8 to 20 feet high, bearing a great number of berries, which, when ripe, are reddish-brown, containing two seeds in their interior, inclosed by an endo-carp. Between the endo-carp and the seeds is contained a small quantity of brownish-red fluid, which has a neutral-sweetish taste. They grow very slowly. Some that I planted took about five years to attain the height of four feet, although every care was taken to supply them with manure. An attempt was lately made to transplant the younger trees from the Missionary Farm at Bathurst to the open ground before the Fourah Bay Institution (which looks to and is very near the sea), by Mr. Reichardt, the lecturer on Oriental language in that college; but he failed in his attempt, as most of them died in the next season, through the action of the sea.

*Dioscorea Bulbifera* forms one of the most im-

portant articles of diet in Sierra Leone. Planted in the beginning or latter end of May, at the outset of the rainy season, it sends off its stem, which <sup>\*</sup>rises above the surface of the ground, and winds round an erect pole which is placed near its bed. From the *axile of all the leaves*, branches are produced, which entangle with one-another, until, in the months of July and August, they become so thick, full, and impenetrable, that they form nests for birds. The leaves are cordate, acuminate, furnished with thorns near their axiles. The yam itself is a rhizome, and is sometimes very large, being occasionally 3 feet long and  $1\frac{1}{2}$  foot broad, containing a large quantity of starch, and an acrid principle, which in some varieties, as the *organy*, stings like a nettle when applied to the cutaneous surface; it is, however, destroyed by boiling. The best variety is the *Dioscorea Alba*, or white yam. Curious to state, the period of maturation is indicated by the development of some larval insects which appear as caterpillars on the surface of the earth near the beds. I shall allude to these creatures again in the natural history account.

*Croton Tiglium* is to be found in great abundance, and is used in making fences. Vegetation in this plant is very active, for by cutting a branch, and carelessly throwing or thrusting it into the earth during the rainy season, roots are developed, which pierce the ground. It belongs to the order *Euphorbiaceæ*, and produces an albuminous seed, which is inclosed by three elastic monospermal carpels. They



are not used by the natives medicinally. Lately a small quantity was imported by Mr. Clegg, of Manchester.

*Jatropha Janipha*, is among the most important articles used as pabulum. It differs from the *Janipha Manihot* of writers, in that it does not contain the narcotic principle which is said to exist in the latter, for I have many times seen a large quantity eaten unwashed without any narcotising or injurious effect produced.

The *Cassada*, or *Cassava*, is a perennial shrub, from 4 to 6 feet in height, having an oblong acuminate leaf growing on the stem, which seldom has branches. The edible portion is a rhizome, which in some instances is very large. The largest I saw was about 5 feet long by  $2\frac{1}{2}$  feet thick, called *Timneh Cassada*. When so large it contains a less quantity of starch, bulk for bulk, but a greater quantity of water. From it are prepared—1. Tapioca, by drying and heating the fecula of the root. 2. Foofoo, by depriving the root of some quantity of starch, and drying what remains over a fire, then well pulverise and fan the mass. This is put into a pot (over the fire) containing hot water, and kept turning for some time until it forms a paste; in this state it is ready for the epigastrium. 3. Farina, by parching the *Cassada* after it has been well pulverised and fanned. 4. *Cassada bread*: instead of parching the mass, it is baked in a rounded form. The marroon *Cassada bread* is considered the best.

*Scilla*, the bulb of *Urginea Scilla*, of the natural

order *Liliaceæ*, is found in great numbers in the mountain district. It grows about in the field, unnoticed and uncared for by the inhabitants, although it is one of the most potent medicines in our Pharmacopœia. It is called by the natives *Hog-yavus*, probably from it being generally the prey of pigs, who root them up and leave them about. The bulb varies in size, pear-shaped, made up of a series of scales, which overlap each other; the outer one thick, and more or less reddish-brown, the inner thin and membranous. It is considered by the natives as poisonous, from its power of producing severe nausea and vomiting if taken internally.

*Anacyclus Pyrethrum*, of the natural order *Compositæ*, is found in great abundance in the woods; of very little value, brown externally, mottled with black shiney spots internally, radiated and yellow. When first chewed it is insipid, but afterwards produces a burning sensation over the parts, leading to a great flow of saliva.

Many other medicines officinal in our Pharmacopœia are to be found in the forests of Sierra Leone, which for want of able investigators are still unknown.

*Maranta Arundinacea* is very largely cultivated at Gloucester and Regent. It is a perennial plant, which has its stem under ground, and if left produces successive flowering stems, rising above the ground during the rainy season, and dying down again in the height of summer. It forms a tuberous rhizome, about a foot long, covered with scales, and contains a

large amount of starch, which, when prepared, forms commercial arrowroot. Commercial arrowroot is prepared by removing the scales of the root, and pulverising the tube in a wooden mortar; the mass is then well washed, and the residue subjected to a second pulverisation, until all the starch is removed; this is washed again, and the water is strained, so as to free it from all chaff. After the starch is settled in the bottom of the vessel, it is collected, and subjected to a second straining, and, if required very pure, it is subjected to a third straining. The starch thus obtained is very white. It is then spread, either on white linen or on a mat, and exposed to the direct rays of the sun until it is perfectly dry. The number of strainings produces that difference in the quality of the arrowroot which is so constantly observed in commerce.

In the river districts are comprised—Freetown, the capital; Kiskey, Wellington, Hastings, and Waterloo. Wellington is considered the most unhealthy, for reasons which will be found in the Etiology of the most common disease of West Africa—*febris intermittens*. The soil of this district, and of the colony generally, is ferruginous; gravelly in some localities, and sandy in others. Specimens of dust taken up at the rising of the hill below Melville Farm, were examined by the late Professor John Bowman, of King's College, London, and his report was, that “they are nearly all remarkable for the large quantity of ferruginous matter which they contain.”

No, 1	contains	8·84	per cent	oxide of iron.
2	„	26·00	„	„
3	„	11·48	„	„
4	„	23·20	„	„
5	„	29·00	„	„
6	„	46·12	„	„
7	„	6·92	„	„
8	„	11·56	„	„
9	„	12·48	„	„

In and round about Freetown are cultivated the

*Vitis Vinifera*, or Cape vine.

*Convolvulus Batatas*, or sweet potatoes.

*Guava Psidium*—viz., *Psidium Pyriferum*, and *Psidium Pomiferum*, or white and red guava.

*Cocos Butyracea* (*Guineensis*), or palm-tree.

*Cocos Nucifera*, or cocoa-nut.

*Anguria Trilobata* (*Cucurbita citrullus*), or water-melons.

*Vitis vinifera* belongs to the order of *Vitaceæ*, or *Ampelideæ*. It is not much cultivated by the inhabitants, and therefore the fruit obtained is not in sufficient quantity for making wine. Its leaves, which in some cases are simple, in others compound, are very astringent. Its flowers are racemes. The plant climbs by tendrils, which, when examined closely, are found to be abortive branches. The juice of the grape contains a large quantity of tartaric acid, in the form of bitartrate of potash.

*Convolvulus Batatas* belongs to the natural order of *convulvulaceæ*; it is a rhizome, very smooth externally, and contains a large quantity of mucilaginous albumen and saccharine principle; its leaves

are alternate and exstipulate, inflorescence unifloral, calyx imbricated, persistent; it is extensively cultivated by the inhabitants.

*Psidium Guava* is to be found in almost every garden in Freetown. Of the two varieties, *Psidium Pyriferum* and *Psidium Pomiferum*, the former is very common; some variety of which contains an excess of acid which renders it very sour. It belongs to the natural order *Myrtacæ*. Some of its leaves are entire, exstipulate; the calyx generally adherent and sometimes operculate. The fruit is succulent and very wholesome; it is generally used in making jellies, which are called "guava-jellies."

*Cocos Butyracea* grows luxuriantly in Fourah Bay, Cline-Farm and the Banana Island; it belongs to the natural order *Palmæ* the leaves are pinnate, each pinna having a tendril; the flowers hermaphrodite; the stem endogenous, composed entirely of cellular tissue, having vascular bundles in different parts. From this tree the palm-wine, the ordinary beverage of the natives, is made. Preparation: a small hole is bored into the softer or younger part of the stem and a receiving vessel attached to it, into which the saccharine matter is allowed to flow. It generally remains for twelve hours before removed; the wine, thus obtained, when first taken down is very sweet, thick, and not intoxicating; it is mixed with a small quantity of water and sold; but sometimes it is left until vinous fermentation has taken place, alcohol and carbonic acid developed, and then sold; so that the individual who drinks it is

victimized by intoxication and by severe headache. It is employed by bakers as a ferment in making bread, instead of yeast, and it answers admirably well.

*Cocos Nucifera* is cultivated to a limited extent in Sierra Leone. It grows to about sixty or seventy feet in height. Its fruit serves for food and luxury, and supplies a kind of sugar, called *jaggery*. Its fibres are used in making door-mats and scrubbing-brushes. From the nut is expressed a peculiar oil, called cocoa-nut oil, which has been proposed as a substitute for cod-liver oil in the treatment of Phthisis, but which fails practically.

*Anguria Trilobata* vel *Cucurbita Citrullus* was much more cultivated in former days than now. It grows principally in marshy places; its leaves are alternate and palmately veined; its fruit, a pepo, is covered externally by a firm rind, consisting of three carpels united.

In the river district, the following articles are found in abundance :—

*Capsicum Frutescens* (*Guineensis*), or cayenne pepper.

*Capsicum Medium*, or larger.

*Capsicum Minimum*, or smallest (longer).

*Arachis Hypogæa*, or ground-nut.

*Musa Sapientum*, or banana.

*Musa Paradisiaca*, or plantain.

*Tamarindus Indica*, or tamarind.

*Zingiber Officinale*, or ginger.

*Capsicum Frutescens*, *medium* and *minimum*, are

species of the same plant, belonging to the order *Piperaceæ*. They grow (cultivated) in large quantities in Sierra Leone, and are used principally as condiments and stimulants by the natives; a small quantity, as cayenne pepper, some years ago, formed one of the exports of the Colony. The plant is a shrub furnished with nodes and internodes at regular distances; the leaves are verticillate, having stipules; the ovary one-celled, and the ovule orthotropical. They owe their pungent and aromatic properties to an acrid resin, *capsicin*, and a volatile oil.

*Arachis Hypogæa* belongs to the order *Leguminosæ*, or *Tabacææ*. Its fruit is a legume, produced underground, composed of a pericarp, which is rough and rugose when dry, but smooth when raw, opened by ventral and dorsal sutures. It runs along the ground, sending rootlets through it; at the end of each of these a small knot is observed, which becomes thickened, presenting an external thick covering, which in the early state is entirely filled with an albuminous, tenacious substance. When it arrives at maturity the seed recedes from the pericarp, leaving a space between them which contains air. The *testa* is smooth, shining, and sometimes reticulate. The quality of the seed depends entirely on the quantity of the leaves, and the amount of surface thus presented for vegetable respiration. From this seed is expressed a very useful oil, called in India, *Katchung* oil, but which we in the West Coast of Africa call *Ground-nut* oil. In Sierra Leone this oil is prepared

extensively in the establishment of Mr. Oldfield, a merchant, who was one of the early explorers of that important and extensive river the Niger. It supplies the inhabitants with a clear oil, and the steamers with a substantial lubricating oil.

*Musa Sapientum* is a well known equatorial plant. It has an underground endogenous stem, from which proceed numerous rootlets. The leaves have a midrib, from which parallel veins diverge; the stem is succulent and herbaceous, and the plant belongs to the natural order *Musaceæ*. It serves as a cooling, nutritive food; the fruit should be taken off the plant when "quite full," and be kept in a warm room; or, better, covered in a cask with its own leaves when perfectly dry, and allowed to remain until it becomes perfectly ripe.

*Musa Paradisiaca* belongs to the same order, but the fruit is larger and longer, and takes a much longer time to come to maturity. When ripe it is not so soft as the *Musa Sapientum*.

*Tamarindus Indica* belongs to the sub-order *Cesalpinieæ*, of the natural order *Leguminosæ*, and attains to a very great height in Sierra Leone. It has imbricated petals, and hypogynous calyx. The fruit is a legume, having a dorsal and a ventral suture. The pods are from five to six inches long, flattened and concavo-convex, divided into three or four cells containing convex seeds, surrounded, when young, with a pulp, which is whitish, but when fully formed of a brownish-red colour, and an acidulous taste. It acts as a refrigerant and laxative, allaying thirst.



It contains bitartrate of potash, tartaric, citric, and malic acids, sugar, and pectin.

*Zingiber Officinale* is much cultivated in and about Wellington. The produce is now inferior to what it was about nine years ago. From the fact of merchants offering the same market price for the well-grown and the indifferently-grown quality, farmers are induced to cease paying much attention to its cultivation, and so the quality of the produce degenerates every year.

*Zingiber* belongs to the order *Scitamineæ*, or *Zingiberaceæ*. It is an herbaceous plant, having leaves with parallel veins diverging from a midrib; its calyx 3-lobed, corolla and staminodes 3-parted. The rhizome or root is sometimes about a foot long, yellowish internally, covered by a thin epidermis externally, which has a brownish-yellow colour. It is not so white as it is exhibited in the shops, for after the rhizomes are dug up, their external covering is scraped off, then they are bleached either by exposure to the fumes of burning sulphur, or by washing them in a solution of chloride of lime, after which they are dried by exposure to the sun. Ginger is acrid, aromatic, stimulant, sialogue, and carminative. It contains volatile oil, and soft resinous matter.

York, Kent, and Banana Islands, form the principal places in the sea district, and are very healthy. The last of these requires a brief account.

The Banana Islands are situated in lat.  $80^{\circ} 30' N.$ , south of Cape Sierra Leone, and consist of two portions, the largest of which was originally called by

the Sherbroes, *Yel-ab-Bana*, or Banana proper, and the other, the Plantain Island. These islands are probably of volcanic origin, and this view is strengthened by the fact, that within the last five years, Sierra Leone has been visited by two successive subterranean vibrations. Banana proper, is about four miles long and nearly one-and-a-half broad; in the part which faces the main-land is Dublin, consisting of an extremely gradual ascent of unbroken table-land, varying but little in its breadth to an extent of about two miles; a hill or mount is then seen, the highest part of which is about seven hundred and fifty feet above the level of the sea, and an inferior elevation upon it, of the height of about five hundred feet above the level of the sea, is called Mount Leven. The quality of the soil on the table land is good, it being a deep, rich, dark loam, with occasional patches of red clay.

The maximum temperature, according to Fahrenheit's scale in the hottest day, under shade, is about 85°, "and the temperature is seldom known to vary more than one or two degrees at a given hour, and never more than four round the year." I would strongly advise that foreigners who reside in Sierra Leone, especially Freetown, instead of toiling in the pursuit of wealth all the year round, year after year, to the great detriment of their health, should take a summer's holiday once a year in this place, as is done in a more civilized portion of the globe.

The most useful vegetable productions in the sea district, are—

*Carica Papaya*, or pawpaw.

*Oryza Sativa*, or rice.

*Panicum Scabrum* (*Panicum Pyramidale*, *Panicum Tenellum*), or Guinea corn (different varieties).

*Ricinus Africanus*, or castor-oil tree.

*Saccharum Officinarum*, or sugar-cane.

*Zea Mays*, or Indian corn.

*Carica Papaya* is extensively employed as a dietetic article in Sierra Leone. Authors have ascribed to the juice of the unripe fruit the medicinal property of a vermifuge—a property which I think is due principally to the seed. It belongs to the natural order, *Papayacæ*, and grows to a large tree, bearing succulent fruit, many of which contain a peculiar volatile oil, which renders the flavour rich and agreeable when chewed.

*Oryza Sativa* belongs to the most important order in the vegetable kingdom—the *Graminacæ*. To this order belong also *Zea Mays*—*Avena Sativa*, or oats; *Triticum Vulgare*, or common wheat; and all those grains which supply food to man and beast. It is an herbaceous plant, with thin, tall, brownish, hollow stem, with nodes and internodes. “The flowers are considered as composed of a series of bracts; the outer, called glumes, alternate, often unequal, usually two, sometimes one, rarely absent; the next, called pales, or glumelles, usually two, alternate, and the

lower or outer one being simple, the upper or inner having two dorsal or lateral ribs, and supposed to be formed by two pales united; sometimes one or both are wanting."

*Panicum Scabrum*, *Panicum Pyramidale*, *Panicum Tenellum*, are varieties of the genus *Panicum*. It grows in different localities. One variety is mostly employed by the Yaloofs, who call it *Chooschoos*, from the sound which it makes in its dried state when agitated by the wind. The *Zea Mays* belongs also, with the *Paniceæ*, to the order *Graminaceæ*.

*Ricinus Africanus*, or *Palma Christi*, grows to a great size in West Africa, having palmate alternate leaves, which are deeply divided into lobes. They resemble, and are of the same size as the French kidney-beans, differing however in having their hilum at one end, whilst the French beans have theirs in the middle of one side. The seed is covered externally with a husk or testa, containing within its interior a white nucleus. Sometimes the natives extract the oil, which they use as *Oleum Purgans*. This is done by first removing the husk, and heating the residue in a vessel of boiling water, till all the oil is extracted, and then removed.

In the Cape de Verde Islands, under the name of *Bofarura*, the leaves of the white green leaf stalk, variety of castor-oil plant are used to promote the secretion of milk—in women who have not been mothers—in those who have not suckled for years, and in those in whom the milk is slow in appearing

after delivery. A decoction is made of a handful of these leaves, which the patient uses to foment the defective breast;—some of the boiled leaves are then laid over the parts, and retained until all the moisture has evaporated. Experiments were made by Dr. Tyler Smith with leaves of the castor-oil plant obtained from the Chelsea, Regent's Park, and Kew Gardens, which corroborate the efficacious nature of the remedy.

*Saccharum Officinarum* belongs to the important order *Graminaceæ*; it is one of the sugar-forming plants, and grows luxuriantly in alluvial lands of tropical climates. It is not much cultivated in Sierra Leone; and rarely attains to the height of ten or twelve feet.

*Natural History.*—With respect to the zoology of Sierra Leone, I need not enter into details, as time and space will not allow me; but suffice it to say, that Sierra Leone possesses a great many animals of interest, which will amply pay the naturalist should he make his researches there.

Whilst describing the *Dioscorea Bulbifera*, I mentioned that its period of maturity was indicated by a larval creature, which appeared as a caterpillar. This species of insect, from the circumstances of its appearance, I have called the *Dioscoridex*. Each consists of annular segments, exactly like the *Annelidæ*, so that they are called by the natives the “*yam-worm*.” The mouth is strong and cornuous, well adapted for cutting the leaves of vegetables, which form its food. Its whole body is filled with a

fatty or adipose substance, entomologically called *rete*, or *epiploon*, which serves for food during the dormant or pupa state, exactly like the fat of the hibernating marmot. They appear in great clusters, twisting one upon the other, consisting of from one hundred to three hundred in a mass. The *Dioscoridex* lays from two hundred to five hundred eggs at a time, and this most probably at the end of the dry season. These it embeds in the soft and newly-raised earth prepared by the horticulturist for yams, called *yam-beds*. Here the ova lie buried during the whole rainy season, until by the heat of approaching summer (harvest) in the month of September, they are hatched, giving rise to a wingless multipod larva. The larva obtains its food from the green leaves of the luxuriant vegetation with which it is surrounded, and after becoming metamorphosed, it appears either as a winged or a wingless insect; the real product of the metamorphosis (for want of fit opportunity at present) will be a subject of future investigation.

*Leeward Portion of West Africa.*—Leaving Sierra Leone, running W.S.W., the Plantain Islands present themselves, near which from the Sherbro Bay the mouth of the Sherbro River is to be seen. It is easily navigated by vessels of heavy burden, to from twenty to twenty-five miles inland. On or near its bank is built the Sherbro Island, which is a fertile tract of land, covered with wood and vegetation, and forms the seat of a British Consul—Consul Hanson.

About eighty or ninety miles from the Sherbro Island is Cape Mount, which lies in lat.  $6^{\circ} 15' N.$  and long.  $10^{\circ} 34' W.$  It projects far into the sea, and may be seen on a fine day about thirty or forty miles distant. The coast is low and marshy, but covered with verdant trees. The country about this Cape is the Gallinas, and here we find a great number of *Feminæ Chirurgicæ*, who perform the operation of circumcision on the young females, exactly in the same way as that described by Strabo, *lib.* 17, p. 284, as practised by the Egyptians—

Και τουτο δε των ζηλουμενων τα γεννωμενα παιδια, και το περιτεμνειν και τα θηλεα εκτεμνειν. Ὅπερ και τοις Ιουδαιοις νομιμον και οὔτοι δε εισιν Αιγυπτιοι.

The young patient, from four to seventeen years old, having been placed in a proper operative position, an aged female with a bistoury, takes hold of her clitoris, and with one sweep cuts it off;—sometimes this is followed by a copious hæmorrhage from the pudic artery, which in the female is very small. The parts are then washed with cold water, and the patient put in a recumbent position. Sometimes dangerous inflammation takes place in the parts around, so that the *labia majora*, *nymphæ*, and *mons veneris*, and in fact the whole *vulva*, become so tumefied that the contents of the bladder can only with very great difficulty and pain be emptied through the almost occluded *meatus urinarius*.

This excisive operation is practised also in some parts of the Timneh country, in the Quarra

Eboes, Galla tribes of Abyssinia, Old Kallabar, Arabia, Darfour, Foulah and Mandingo countries.

Extending from Cape Mount to Cape Palmas is the Liberian territory, established in 1822. South of Cape St. Anne, is Cape Mesurado, near which a river, of the same name, runs far into the interior. On its bank, Monrovia, the capital of the Liberian republic, is built.

The population of Monrovia is from 2,000 to 3,000 inhabitants.

It is built on an elevated land; its salubrity is doubtful, since it "is deprived of the northern sea breeze in its purity, by the long sandy beach and brush-wood which stretches from Cape Mount to St. Paul's river, across which it must pass before reaching the place, and of the westerly wind by a high peak of land, intervening between the town and the sea."

The next important place is Cape Palmas, which lies south of Cape Mesurado. The soil about this coast is well watered by many magnificent rivulets, and is well adapted for growing rice and other farinaceous productions, which in fact are to be obtained here in great abundance; hence the name Grain Coast. The staple commodities of Caster are ivory, gold-dust, hides, Malaguetta pepper, and rice.

The towns about this Cape, one of the principal of which is Grand Destros, are inhabited by Krumen, the most important seafaring men on the West Coast of Africa.

From Cape Palmas to Cape Lihu or Lahou, is



the Ivory Coast, comprising a track of land running E.N.E. to about 180 miles. The coast is monotonous, presenting no elevations or undulations of any importance, except "two shallow bays of unequal dimensions;" the land is low, but covered with a great number of evergreen woods and palms. The soil is clayey, containing some masses of granite rock, well watered, and grows cotton, indigo, rice, and many farinaceous dietetic articles.

The River Lihu or Lahou, near Cape Lihu, is in lat.  $5^{\circ} 17' N.$  and long.  $4^{\circ} 30' W.$  About this river are a few towns of native importance, which trade with European merchants in palm oil.

The coast between this Cape and Cape St. Paulo, or St. Paul, forms the Gold Coast. About eighty miles from Cape Lihu is the river Assinæ, which extends inland to a considerable distance. Remnants of a French fortification could be seen on its banks, the holders of which were compelled by the inhabitants to abandon it in 1706.

The Gold Coast is so called from containing a considerable quantity of that noble metal, which is obtained by merely collecting the sandy or alluvial earth and washing it; it "is brought to England annually to the amount of from 70,000 to 80,000 pounds weight." "There is very little difference in the soil along the coast, from Cape Palmas to the river Volta; within four or five miles from the shore it is of a siliceous nature, the clumps of hills, which are to be met with in every direction, are composed of gneiss and granite. Mica is found to enter into the

composition of some. The rocks, from containing large portions of felspar and mica, are rapidly passing into decomposition; such, more especially, as are exposed to the influence of the air, rain and water. The result of this decomposition is the foundation of argillaceous clay. On receding from the sandy shore the soil is silicious, mixed only with some decayed vegetable and animal matter, where no granite or micaceous rocks intervene; it is in the valleys that the rich alluvial soils are to be found, formed of decomposed material of the surrounding hills, washed down by the heavy torrent of rain, which are deposited with the matter of vegetable decomposition, and afford great richness to the original mould.

There are no mountains within several miles of Cape Coast, the highest land not being above two hundred feet above the level of the sea; nor are these plains of great extent. The country, however, is not without beautiful scenery; clumps of hills are to be seen everywhere, with their corresponding valleys covered with a most luxuriant foliage throughout the year. The whole of the country, as far as the eye can see, is one continued forest, until you reach the boundaries of the Wrinebah and Acra countries. Here extensive plains, with clumps of trees and bush are beautifully interspersed. These plains, however, are not without their evil consequences to Europeans; for during the rains, when any rivulet is filled with water to such an extent as to overflow its original boundaries, "it bursts forth and covers the plains, presenting an extensive

watery surface for the action of the powerful rays of a vertical sun." \*

About eighty-five miles from the river Assina is Axim, a small town containing an old Dutch fort, which stands on a rock. The country around is low, moist and thickly wooded; the soil consists of a mixture of carbonate of lime, clay and oxide of iron, which is readily diffused in water. The town and country around are very unhealthy, the atmosphere being impregnated with those miasmatic exhalations that are pernicious to European constitutions. The river Axim contains a large amount of gold-dust.

Fifteen miles from Axim, running E. by S.  $\frac{1}{2}$  S., is Cape Three Point, which contains the Dutch forts Antonio and Brandenburgh; the land is hilly, and the soil composed of red and sandy clay. Further on from the Cape is the town of Dix Cove, a British settlement, containing an excellent landing-place. On an elevated portion of land, at the extremity of a creek, is built a fort.

Cape Coast Castle is situated in lat.  $5^{\circ} 6'$  N. and long.  $1^{\circ} 5'$ , founded by the Portuguese; it became a British possession in 1672. Cape Coast town "is a low, angular point of barren sandy land, washed on the south and east by the sea, and the adjacent tract is dry and sterile; the country inland, consists of sandy hills, with occasional narrow, swampy, but productive vallies:" there is a great want of water in the town, no river being in its neighbourhood,

\* Report of Mr. Tedlie to Dr. Nicoll.

but water is obtained for domestic purposes from tanks which collect rain during its season, and from wells which furnish a limited and brackish supply; and also from some stagnant, nauseous, and muddy pools, which collect water during the rainy season. Commerce is carried on in gold and other produce, but one great and inevitable disadvantage to its progress, is the difficulty of landing. The soil is very variable, being in some places black and rich, in others, composed of a brownish or brownish-yellow clay. The country around is thickly wooded, and in many parts almost impassable. The natives are clean, their habitations for the most part are properly ventilated.

Anamabo, about twelve miles from Cape Coast, next claims our attention. When that inhuman traffic, the slave trade, was at its acme, this town was in the zenith of prosperity, but since the abolition mandate was promulgated, and majestic Britain menaced by her squadron every unfaithful ally, it has gradually lost its influence. It contains a Dutch and an English fort, which are separated by the river Cormantur. The town itself is low, and contains a few native huts, but it has a better anchorage than Cape Coast town.

Akra is situated in the south and south-east of Cape Coast, and is divided into British and Dutch Akra. British Akra lies westward of Dutch Akra, in lat.  $5^{\circ} 30'$  N., its fortification is called James' Fort, and is serviceable in keeping down the warlike spirit of the surrounding nations; the streets are

properly laid out, and the Government now takes some interest in the education of the people. In April 1852, a proclamation was issued by the Governor and Council of Cape Coast, that a poll-tax of a shilling a-piece, should be levied on every man, woman, and child, and "that the revenue derived from the tax, after the payment of stipends of the chiefs, and other expenses attending its collection, be devoted to the public good, in the education of the people, in the general improvement and extension of the judicial system, in affording greater facilities of internal communication, in increased medical aid, and in such other measures of improvement and utility, as the state of the social progress may render necessary, and that the chiefs be informed of the mode of its application, as well as entitled to offer such suggestions on this point as they may consider necessary."

The soil is sandy in some parts, but if dug a little distance below the surface, a black fertile mould is reached. Akra extends for several miles along the coast; the inhabitants live on rice, cassada, ground-nut, yams, foofoo (made of pulverised plantain), and kooskoos; sheep, goats, pigs, fowls, turkeys, ducks, antelopes, hares, deer, and pigeons. They trade principally in gold, which they obtain from Ashantee, in ivory, and cotton (small quantity); in return, they receive rum, tobacco, blue, baft, and other articles of Manchester and Glasgow manufacture.

Dutch Akra is situated on the back of British

Akra, and is protected by a fortification, which is called *Greve Cœur*. It is less healthy than British Akra, on account of the narrowness of its streets, and the improper ventilation of its buildings.

We now arrive at the Bight of Benin, extending from Cape St. Paul to Cape Formosa, and comprising about 300 miles of coast, running E. by S.  $\frac{1}{2}$  S. The coast, which has a concavity N.N.E., is low, swampy, and well watered by creeks and rivers opening into the Atlantic. Cape St. Paul is in lat.  $5^{\circ} 45'$  N., and lon.  $1^{\circ} 52' 18''$  E. The country about the Cape is low and unattractive, covered in many places with rich but uncultivated vegetation. About fifteen miles from the Cape is Quitta, containing a demolished Danish fort. It is occasionally visited by vessels off the coast for provisions. About nine miles from Quitta is Paurey, which is eight miles north of Acquijah. These places are unimportant, and need only be mentioned.

About forty-five miles south-west we arrive at Popo (nationally pronounced *paw-paw*) country, which is divided into two States, viz., Little and Great Popo. Little Popo is about forty-five miles from Quitta, and formerly contained a Dutch colony. During the rainy season it is very swampy, all the rivers are greatly swollen, and the atmosphere is very damp, and consequently prejudicial to health. Here, formerly, the Dutch were mostly engaged in the slave trade, and shipped vast numbers of captured Africans, who were doomed to life-long servitude on the brutal transatlantic shore.

Great Popo is about twenty to thirty miles eastward of Little Popo, and about sixty-five miles from Quitta. When the Slave-trade was carried on with a high hand in this part of the world by all the European powers, the English, Dutch, and Portuguese, had factories in this place. The natives are honest, industrious, and well-formed. They trade in palm-oil, ivory, which they obtain from the interior, and grains. The soil is made up of red clay and sand, and in many places is very fertile. Near it a small river empties itself into the ocean. It is muddy, and overgrown with a number of aquarious plants, which render it impassable in some parts even for the native canoes. It was formerly called by the Portuguese, Rio do Poupou, but now geographically known as Popo River.

The coast from Great Popo to Whydah presents one monotonous sameness, being very marshy, and covered with trees, reeds, and grass. It occupies a space of about sixteen miles.

Whydah, or the Franco-Dutch Juidah, is situated in lat.  $6^{\circ} 19'$  N., and lon.  $2^{\circ} 5'$  E., and forms one of the most important palm-oil sea-port towns in the western coast of Africa. It is a town in the kingdom of Dahomy, which for many years had been one of the principal slave-marts on this coast; and, under the *quasi*-Emigration Act of the French Government; it is now a seat of slavery in the garb of emigration.

The Government of Dahomy is monarchical, and the army is composed of both men and women; the

latter, from their natural quickness, are the principal instigators of war. Some years ago, after the war with Abbeokuta, in which the king of Dahomy was defeated, anticipating that the British Government were about to send an expedition against him, he coolly but pertinaciously said, "Should Briton send ten thousand men against me, five thousand will die by the way for want of water, and with my amazons I will cut to pieces the remaining five thousand."

The name of this despotic monarch is Gezo, and his amazons, of which he is very proud, cry before him daily, "Gezo, Ahezo! Ahezo!" *Gezo, the king of kings.*

Whydah became the possession of the sovereign of Dahomy in 1772. It is low and flat, with sporadic undulatory elevations and hills. The town contains several large baracoons, built of clay, and capable of holding several hundred slaves. The soil is black in some parts, and brown in others, and well adapted for growing farinaceous substances. Many of the plants which are found in Sierra Leone are also indigenous here, such as—

*Citrus Aurantea*, or sweet orange.

*Ananassa Sativa*, or pine-apple.

*Guava Psidium*, or guava.

*Musa Sapientem*, or banana.

*Saccharum Officinale*, or sugar-cane.

*Capsicum Frutescens*, or Guinea pepper.

*Dioscorea Bulbifera*, or yam.



Besides these we find the—

*Nasturtium Officinale*, or water-cress.

*Hibiscus Esculentus*, or ochron.

*Citrus Limitta*, or lime-tree.

*Panicum Miliaceum*, or millet.

*Ocimum Basilicum*, or common basil.

*Indigofera Enneaphylla* (*Indigofera Tinctoria*,  
*Indigofera Hirsuta*), a species of indigo.

Thirty miles from Whydah is Port Novo, a sea-port town of the territory of Ardrah. It is well adapted for the pursuit of commerce, and was at one time occupied by the Portuguese. The town of Ardrah, which is situated on the bank of Lake Crado, the entrance to which is formed by the river Lagos, or Ossa, constitutes the capital of the whole territory.

About fifteen miles from Port Nova, and a mile-and-a-half from the sea, is Badagry. About ten years ago it was invaded by the army of the king of Dahomy, and its population, which then was about 10,000 men, is now reduced to 5,000; it is situated on the banks of the river Ossa. Eastward of Badagry, about eighty or ninety miles, the white granite rocks of Abbeokuta come in sight. Abbeokuta contains a population of from eighty to ninety thousand inhabitants; it was originally built under a rock, whence its name *Abe* under, and *okuta* a stone; but now it extends to a great distance, enclosed by a wall made of thick clay, about fifteen miles in circumference; the inhabitants are very

industrious, and the land in its neighbourhood is well cultivated.

Situated on the mouth of the river Ossa, is Lagos, in lat.  $6^{\circ} 24'$  N., and long.  $3^{\circ} 22'$  E.; it is a small Island about six miles in circumference, comparatively healthy; the soil consists of a dark loam intermixed with sand and silicious matter; it is a very flourishing place, but its landing is very dangerous, containing a great number of the shark tribe, which play havoc on any unfortunate boat. The surf here is very high, rolling, and disagreeable.

The Bight of Biaffra extends from Cape Formosa in lat.  $4^{\circ} 5'$  N., long.  $6^{\circ}$  E., to Cape Lopez in lat.  $36^{\circ} 10'$  S., and long.  $8^{\circ} 40'$  E. The famous and long known river, the Niger, opens by its numerous mouths into the Atlantic in this Bight. The distance between Cape Formosa and Cape Lopez in a straight line is about three hundred miles, but the distance by coast line is about five hundred and fifty miles. Cape Formosa, which forms the northern boundary of the Bight of Biaffra, is intersected by numerous rivulets, which are branches of the river Niger, or "mother of waters". The soil about it is alluvial and very unhealthy. Within this Bight are included the Islands of Fernando Po, St. Thomas and Princes; the river Niger, with its branches, Nun, Bonny and Brass; Old Kalabar and Kameroun.

The tribes or natives which inhabit the Bight of Biaffra, are the Eboes, Kalabars, and Kamerouns; and the countries along the coast belonging to

the Eboes, are Oru, Brass, and Ebane. Running through the territory of Ebane are the rivers New Kalabar and Bonny, which are separated at their mouth by an extensive bank of sand called, Break Island, between which two rivers lies Okrika. The residence of the king, Amakee, is about ten miles from Fouche town. This sovereign is described to be the "most independent king to be met anywhere on the coast," from "the fact of his not taking goods on trust from any super-cargo, nor allowing his people to do it. . . . All the people in the town have an air of sturdiness in their walk.

The river Bonny leads to the town of Ebane or Bonny of traders; this town was one of the most flourishing and famous places of traffic at the time when the slave-trade was in its zenith; it then exported twenty thousand slaves *per annum*; but since the abolition of that nefarious traffic, European merchants have been engaged here in trading with the natives in palm-oil. The market towns around Bonny are Iguanga, Sebrotone, Ouragua, Kufe, Egbanage, Orala, and Oreante.

The coast between Bonny and Old Kalabar is low and muddy, and extends about sixty-three miles. The river Old Kalabar was formerly notorious for being one of the chief inroads of slavers in Africa. It is about twelve miles wide at its mouth. The country on either side is, for the most part low and unattractive. The river Rio del Key is about twelve miles from Old Kalabar. Monotony of scenery and

irregularity of coast line are the principal characteristic features of the countries around. From this river to the extensive Kamaroon River we observe several elevated lands, one of which rises about 13,760 feet above the level of the sea, called Kameroun Peak, but known in the native, or Duwalla language, as the Mongo-ma-lobah. Another, the lesser Kamaroon Peak, is about 5,820 feet high. The towns around are inhabited by the Isebu tribe. The mountain sides are very dry and attractive, especially when compared with the low, alluvial soil of Old Kalabar. The River Kamaroon is very extensive, having several breakers at its embouchure, called Hog's Head. Along the river are Josses Town, King Bell's Town, King Aquas Town, and Dido's Town.

Next is the river Balimbia, which forms an exception in the characteristic features of West African rivers, in not containing any mangrove swamps. "The left bank, along which run rows of hamlets, is from four to six feet above the water's surface, redundant in cocoa-nut, plantain, and cocoa-trees. On the opposite banks are plantations, where the slaves reside, and which they cultivate. Interior to their country is the Woorree race, who speak the same language as the Balimbas, and are supposed to be of the same descent, being entirely different from the Duwallas of Kameroun, and Isebus of Bimbia. The Balimbia has several mouths, one of which is called Boreah."\*

\* "Hutchinson's Impression of Western Africa."

From this river to Cape St. John the river is low and thickly wooded. Further South we meet with the Elabez and Corisco Islands, and the river Rio-da-Angua. This river forms the northern boundary of the Corisco, which is bounded on the South by Cape Esterias.

In lat.  $37^{\circ} 48'$  N. and lon.  $90^{\circ} 30' 30''$  E. lies the river Gaboon; and in lat.  $36' 0''$  S. and lon.  $8^{\circ} 40'$  E. is situated the town of king Passol, and travelling  $10^{\circ}$  southward we arrive at Cape Lopez, the southern limits of the Western Coast of Africa.

The soil of the Bight of Biaffia is composed principally of deep clay and mud, with a rich, dark loam, very marshy, and densely wooded. The effect of clayey soil in engendering disease will be treated of in the "Etiology of Tropical Malaria." We find growing in great luxuriance plants of the natural order *Lolanaceæ*, *Cucurbitaceæ*, *Convulvulacæ*, *Legumenseæ*, *Melastomaceæ*, *Graminaceæ*, *Compositæ*, and *Cyperaceæ*. Out of these I may here enumerate—

*Democarpus Africanus*, or hog-plum.

*Anacardium Occidentate*, or cashew-nut.

*Clerodendron Africanum*, or cocoas.

*Convulvulus Batatas*, or sweet potatoes.

*Abrus Precatorius*, or wild liquorice.

*Cucurbita Pessa*, or pumpkin.

*Cucurbita Lagenaria*, or gourd-plant.

*Carica Papaya*, or pawpan.

*Bliglia Sapida*, or soap-berry.

*Mangifera Indica*, or mango.

*Abelmoschus (Hibescus) Esculentus*, or ochro,  
(okra).

*Arachis Hypogea*, or ground-nut.

*Ananassa Sativa*, or pine-apple.

*Sagus Vinifera*, or wine-palm.

*Parkia Africana*, or locust-tree.

*Pterocarpus Erinacea*, or red wood-tree.

*Sterculia Acuminata*, or kola-nut.

*Achras Zapotilla*, or nase-berry.

Besides these we find, *Dioscorea Bulbifera*, *Jatropha Sierraleonica*, *Guava Psidium*, *Musa Sapientum*, *Musa Paradisiaca*, *Oriza Sativa*, and *Saccharum Officinale*.

I need only describe in detail four of the principal of these plants which are in constant use.

*Anacardium Occidentale*, of the natural order *Anacardiaceæ*, is a perennial plant, with alternate exstipulate leaves; it grows in rich luxuriance in the Western Coast of Africa. The flowers are unisexual, presenting united sepals and imbricated petals. Its stamens are perigenous; ovary one-celled, and ovule solitary. It blossoms once a year, from each flower an indehiscent fruit is produced, the edible portion of which is a ripe species of drupe, which, instead of containing the seed in its interior, supports it on its excavated base. The drupey portion is a perfect cone, having its small end attached to the tree, and supports by its excavated broad base the nut, or seed. It is covered externally by a soft,

smooth, pulpy pericarp, which incloses a reticular, spongoid mass, which almost resembles the trabecular tissue of the spleen, consisting of a soft, whitish mass, a number of interlacing fibres, and a milky-white somewhat transparent juice. The nut is covered externally by a hard, woody pericarp, in the interior of which is the edible kernel, which is somewhat brownish-white. For a pabulum it is first well dried, then roasted with the pericarp, which is afterwards removed. The pericarp is very acrid, especially when raw, and contains a large quantity of resinous matter, which is expelled during roasting. Some writers aver that the fruit of the *Anacardium Occidentale* produces cerebral affections. This I firmly deny, both from personal experience and from observations in more than one hundred persons. The bark contains astringent and resinous matter, and has been employed by tanners in Sierra Leone to produce tanno-gelatine—proving it to contain tannin.

*Clerodendrum Africanum* is an herbaceous plant, belonging to the natural order *Araceæ*. Its leaves are sheathing, or spathulate at the base, the others have a long, spongy petiole. The flowers are monœcious; parianth entirely absent. The fruit is an underground rhizome, or corm, consisting of a thickened portion of the stem. From the difference observed in the corm, I have divided it into two species, viz., *Clerodendrum Hortonium* and *Clerodendrum Hirsutum*.

*Clerodendrum Hortonium* is the larger and more

wholesome of the two. When planted in a soil rich in nitrogenous matter—*e. g.*, the effete of the cow—it grows to the height of from five to six feet. From the corm, or underground bulbiferous stem, lateral branches shoot out, which in some instances are continuous with the parent trunk, but in others are united to it by a moderately thick pedicle. Each of these branched tubers is oblong ovate, prolonged on both ends, with one of which it is continuous with the mother tuber, but the other is made up of a number of buds. The external covering is generally pilose, but sometimes glabrous.

*Clerodendrum Hirsutum* is comparatively small, rising only to the height of from  $2\frac{1}{2}$  to 3 feet, in a favourable spot. It contains an acrid, irritating principle, which is destroyed by boiling. The leaves are cordate, and deeply veined. The corm is small, and shoots out small lateral branches, more from the top than from the bottom of the body. These offshoots are small and globular. It is covered by a layer of scaly epidermis, beneath which is the true pericarp.

In Sierra Leone these two species are distinguished by the ill-founded names of Jamaica and Country cocoas.

*Cucurbita Pepo* belongs to the natural order *Cucurbitaceæ*. It is a climbing plant, with palmate-veined cordate leaves, which are covered with tendinous asperities. Corolla, five-parted, marked with reticular veins; calyx, five-toothed; ovary, one-celled, with three parietal placentæ. The fruit is



succulent, exalbuminous, and crowned by a leaflet of calyx, with three parietal placentæ, globular or somewhat oval. The pericarp is green, smooth, but marked by indentations from above downwards.

*Abelmoschus Esculentus*, of the natural order *Malvaceæ*, is a shrubby plant, with alternate stipulate leaves, and showy flowers. The carpels are separable; sepals five, valvate, having external involucrate bracts; petals twisted; stamens united into one bundle by the union of their filaments; anthers extrorse, retiformed, one-celled, and open transversely. Fruit contains polyspermal carpels, a thready, transparent mucilage, and an acrid, irritant principle, which is destroyed by boiling. The polyspermal carpels are continued, but united to a central stalk by dissepiments, which thus divide it into several separate cells, each containing from five to eight ova. When dry, the polyspermal carpels separate spontaneously, and the seeds are discharged. Used generally in making palaver sauce. It is first cut into small pieces, and then put in the sauce whilst boiling. It helps in supplying respiratory food to the system.

The Island of Fernando Po, lying N.N.E. and S.S.W., is situated between 3° and 4° N., lon. 8° and 9° E., and is about thirty-five miles in length and fifteen in breadth. It was originally discovered by the Portuguese in the year 1471, but it became the possession of Spain in 1778.

With respect to its volcanic origin, the following able description has been given by Dr. Daniel:—

“Basaltic scoriæ, in different stages of decomposition, with aluminous and other stratified conglomerates, ultimately blended with and based on the results of igneous action, fully determined the geological features of Fernando Po, and attest its volcanic origin; while the recent explorations of Clarence Peak, in confirmation of the correctness of these views of its physical formation, have satisfactorily proved it to be an extinct crater of considerable magnitude. Throughout the Isle the land in general rises somewhat abruptly from the sea, exposing to the eye faces of basaltic and other rocks embedded in the soft, friable masses of scoriæ, the crevices of which are frequently filled up by tufts of plants, and by brushwood. In other places, where the declination of the land is of a less precipitous character, it becomes more easy in its descent. Beaches of fine black sand, with huge rounded fragments dislocated from the circumjacent cliffs, are found at their base; the acclivities surmounting which are uniformly concealed by a dense underwood of shrubs and young trees. On the inferior slopes these volcanic vestiges are covered with a superficial crust of dark red clay, mixed with the loam of decayed vegetation, which, being clothed with extensive woods of bombax, palm, red-wood, and other trees of gigantic dimensions, presents a very imposing and beautiful effect. Like all mountainous regions in equatorial Africa, the upper plateaus and heights are diversified by the mingled links of a varied vegetation, which, partly corresponding with

the woody productions of a more temperate clime, and partly with those found on the lower or maritime districts of the island, are of a less exuberant growth, and do not assume the gorgeous richness so peculiar to African landscapes within the tropics. Adjoining the limits of these woods the ground is conjointly strewed by a thick jungle of dwarf bushes and trees, intersprinkled with occasional specimens of the aborescent fern (*Filix Arborea*). Beyond this, a verdant sward of grass ascends within a short distance from the more lofty peaks, and is selected by game, herds of deer, and wild buffaloes, as their pasturage. In the dry months the natives set fire to the long withered stems, in order to drive these animals into their power; and it is possible that from this circumstance the report has originated of the volcanic eruptions of flame, said to have been noticed on the summit of the mountain. The distant range of highlands, as they rise from the flat and undulating terraces that constitute the extreme periphery of the island, proportionately increase in altitude, and finally converge into two terminal peaks, joined by a continuous ridge some miles in extent. The highest of them, called Clarence Peak, is almost constantly enveloped in fleecy clouds."

Fernando Po contains two lofty mountains, one of which, Clarence Peak, was ascended by the late Governor Becroft in 1843. It is about 10,160 feet above the level of the sea.

Of the principal places in Fernando Po we have

the following account from the same Author:—  
“Maidstone Bay comprehends that intermediate line of coast between Cape Bullen, to the westward, and Port William, on the north-west. It is shallow, with a regular gradation of soundings, commencing at twenty-four fathoms; and, from its smooth water and sheltered position, affords a secure anchorage to ships of any tonnage. Although it is not beyond four or five miles in width, Port William is a remarkably long and narrow promontory, running out for some distance seaward, half a mile to the south-west of which is another and slighter extension of the shore, called Adelaide Point. Inclosed by these two projections is a semi-lunar indentation of the land, known as Clarence Cove. In close proximity to the latter point are two detached rocks, thinly sprinkled with vegetation, and connected by a reef: they are also denominated Adelaide Islets. A strong and useful wharf formerly stood in the centre of the cove, and constituted the landing-place of the town. It has now partially disappeared, and on the black sandy beach, the sheds and storehouses, formerly the property of the defunct African Company, lie around; and to the left of them, on the strand, is a clear space, on which the trading canoes of the natives are drawn up.

The road leading to the town obliquely winds to the summit of the almost perpendicular declivities, nearly one hundred feet in height,—the ascent of which, from their steepness, is extremely difficult. Commanding a prospect of the Bay is a range of

seven or eight substantial and well-built houses, whose snow-like exterior may be discerned many leagues distant; these edifices are built within a dozen yards of the cliff, a commodious and neatly-constructed road, fringed by the *Cactus Opuntia*, or prickly pear, passing in front of them. They are now inhabited by the Missionaries and more opulent colonists. Paradise, Government, and Longfield houses, the latter recently pulled down, were erected at the expense of the British Crown, and originally formed the residences of the executive and commissariat officers. Attached to Government House is an extensive but negligently-cultivated garden, in which orange, lime, sour-sor, coffee-tree, and various esculent vegetables grow in profusion. Midway on Point William is the building that once was reserved for the hospital of the Settlement, and the sickly crews of vessels, but now ignobly desecrated by mercenary uses, wholly in opposition to the humane intentions of its founders. . . . Its position is tolerably well chosen for the requisite ventilation by its exposure to the full sweep of an invigorating sea-breeze, whose delightful and salutary coolness, combined with the lulling sound of the surf beneath, and the beautiful mountain scenery around, contribute to produce a good effect on the languid patient, and assist in the removal of that despondency and depressing languor which exert so baneful an influence on the frames of fever-worn seamen and others. In the vicinage of the hospital may be traced the ruins of the magazine built of stone, blacksmith's shop, and other build-

ings ; further to the northward may be seen a small monumental obelisk, having on it an appropriate inscription recording the melancholy fate of those persons who perished in the ill-fated Niger expedition.

The town of Clarence is erected on a clean and level area, gently declining as it approaches the base of the chain of woodland hills that skirt it on the west. It is located in lat.  $8^{\circ} 47'$  east. Its geological conditions are in all respects conformable to those of the strata of the sea cliffs, and are of the same elevation. The plan of the town is that of a square, whose longest diameter exceeds three-quarters of a mile from the lateral prolongation of the houses at regular intervals. Two or three principal avenues pass from one common thoroughfare on the verge of the beach, and are intersected at right angles by a number of lesser streets, all of which are uniformly wide and spacious, but disgustingly dirty. The native dwellings, composed of pieces of wood roughly fashioned and put together, and roofed either with shingles or palm-leaf mats, seldom rise above one story in elevation, except in a few instances, such as those of the more respectable inhabitants and the government edifices previously alluded to. They occupy, in picturesque arrangement, both sides of the street, the majority of them being white-washed externally, which gives the whole an air of neatness and comfort. Attached to each is a small garden of fruit-trees and plants, enclosed by fences of the *Jatropha Curcas* and

other shrubs, the bright, glossy verdure of which confers a pleasing and homely charm on the *tout ensemble* of the place. The greater portion of these habitations, however, are falling into a state of decay, and present a very dilapidated aspect; while, from indifference and natural indolency, their occupants have suffered a rank vegetation to spring up and pervade their gardens, and even the public thoroughfares.

The population of Clarence varies from 800 to 1000; and the houses, including those in the course of erection, amount to 180. The negro inhabitants are an admixture of most of the races of Western Africa, including those of Haussa, Dahomy, Popo, the Gold Coast, Old Calabar, Ebo, Benin, Cameroons, Sierra Leone, Congo, Bornau, Yarruba, Bam-larsa, Adj-jah, Gaboon, &c.; with them are amalgamated a few whites and semi-coloured offspring of a blended parentage.

*The Seasons and Meteorology of Western Africa.*

—There are four seasons in West Africa, viz.,—the Rainy, Harvest, Harmattan, and Summer. The Rainy season commences in the beginning of May, and terminates in September; the harvest commences in October, and terminates on or about the 14th or 15th of December, about which time the Harmattan season begins, and ends about the 15th of February; the summer commences about the 16th of February, and terminates at the end of April. So that the rainy season comprises three full months, and is the longest season, whilst the Harmattan, the

shortest, extends only to two months; the harvest and summer each comprises two months and a half. It will be desirable to describe each season in detail, and we commence with the—

Rainy Season, which, as we have seen, commences in May and terminates in September. The meteorology shows itself by a cloudy, heavy, and misty atmosphere, with occasional lightning and one or two peals of thunder; the evenings are very dark, or if the moon be present, it is seen through a misty atmosphere; shooting stars are occasionally to be observed running in every direction, at a distance apparently of about 1000 feet, proving that the atmosphere is highly impregnated with electric fluid; there are occasional showers of refreshing and cooling rains; the thermometer and barometer, instead of being almost stationary, present a great degree of variation; now every one begins to prognosticate “what kind of a season it will be;” the Europeans are particularly glad to have a more refreshing weather, but they dread the idea of the sequel of the rains; the middle ranks of society are filled with unpleasantness at the anticipation of a drawback in trade, especially with the neighbouring nations; the horticulturist sharpens his hoes and garden implements with delight, and the agriculturist, with an agility that is delightful to behold, digs, rakes, and prepares his field—looking out for an abundant harvest. The average maximum of the thermometer, according to the observation of Mr. Boyle, is  $82^{\circ}$ , medium  $80^{\circ}$ , and minimum  $77\frac{1}{2}^{\circ}$ ; and of the baro-



meter, the average maximum is about  $30^{\circ} 44'$ , medium  $29^{\circ} 82'$ , and minimum  $29^{\circ} 80'$ .

The rain gradually increases from May until July and August, when it comes down with terrific rapidity, swelling large streams to navigable rivers; brooks are converted into rivulets, sweeping away everything that is planted near them, and small streams overflowing their banks; the gardens are inundated, so that in many places water is to be seen oozing from the ground; the grass-roofed houses are worn out by its tremendous, rapid, and unremitting torrent, so that in some houses the occupants are washed whilst enjoying the invisible caloric emanating from a blazing fire; bridges built *pseudo*-substantially disclose the unskilfulness of their architecture; the sea sometimes swells and washes far into the land, sweeping houses and furniture along with it — reminding one of the Egyptian deluge—and man is obliged to shelter himself under the canopy of some cloth of Manchester or Glasgow manufacture, supported by curiously worked whale-bones and pine-wood.

Vegetation grows rapidly; the leaves are of deep green colour. Everything in the vegetable world seems pleasing; and the agriculturist views with delight his growing plant whilst promenading through his fields.

At the beginning of the season, fever is very pernicious, which is enhanced by the heat and moisture of the soil; but the pouring rain of the latter part of June, July, and August, inundates the

vast extent of land covered by the dead vegetable and animal matter, putting in abeyance the existing malaria which is destructive to the constitution, and fever scarcely affects the system; but catarrh and bronchitis are of frequent occurrence.

In the latter part of August, and during September, the rains become less frequent, but descend with great rapidity and violence as if precipitously forced down by a steam machine; the winds are high, and two or three visits of the tornado are occasionally experienced. Vegetation now begins to come to maturity, but is rather watery, and the birds begin to raise their tuneful voices in the morning.

The Harvest commences at the beginning of October. Everything in nature seems to put on a more pleasing and beautiful appearance; the birds vociferating their musical tunes, and the sun shining through the crevices of the doors and window-curtains, inform the recumbent individual that it is the dawn of day; "the thermometer, at its maximum, averages about  $83\frac{1}{2}^{\circ}$ , at its medium  $80\frac{1}{2}^{\circ}$ , and at its minimum  $78\frac{1}{2}^{\circ}$ ; and the barometer at its maximum  $30^{\circ} 15'$ , medium  $29^{\circ} 84'$ , and minimum  $29^{\circ} 30'!$ " At this season the weather is very changeable, and invariably visited by four or more tornadoes. The word "tornado" is derived from the Portuguese *travado*, which means a thunder-storm. It gives to the inhabitants premonitions of its coming. At first a cold breeze is felt, which is followed by a clear, white, heavenly canopy, which gives the whole atmosphere a kind of bright, rusty appearance; at once

a dusky white spot is observed, which in Sierra Leone generally points E.S.E. of Freetown, at a great altitude, and gradually descends, spreading at the same time until it reaches the horizon, forming sometimes a cone—the base on the horizon, and the apex above; this spreads laterally until a half or a quarter of the visible horizon is covered with impenetrable darkness. Nature now seems to lie in dormant vitality, and its functions to be seized with a paralytic stroke; the most profound quietness pervades the whole earth; the leaves are perfectly at a stand-still; not a creature is to be seen about in the street; the whole system becomes oppressed with a mingled sensation of awe and apprehension of some stupendous phenomena;—at once, a blast of lightning vividly flashes from sky to sky, and then darts on the negatively electrified ground, followed immediately by a distant tremendous reverberating explosion, which startles every terrene, animated being; a slight whirlwind is afterwards observed whirling round, with some velocity, the light ponderable material found in the streets. At length a vehement, irresistible gust of wind rushes from the gloomy horizon with immense impetuosity, sweeping every unsubstantially-fixed substance before it,—uprooting trees, carrying away slates and bamboos from the top of houses, and sometimes even the roofs and chimney tops themselves, and filling the atmosphere with an immense quantity of *Imfusorial Protozoa*; then follow *thick pellets* of rain, which, as it were, retreats for a time, and then returns, and terminates

with a "furious deluge, which falls in one vast sheet rather than in drops."

There are repeated occurrences of forked or penetrating lightning, which occasions a peculiar sensation in the exposed sentient surface: Mr. Hutchinson describes it as "a dash of increased heat simultaneous with a vivid flash of lightning," and Dr. Baikie as "a feeling of warmth in the face." This feeling, I believe, is due to the increased development of ozone in the atmosphere, which, being a powerful and energetic oxidising substance, oxidises the oxidisable transpiration emanating from the surface of the body.

After the tornado, the most pleasing sensation is felt; the air is refreshingly cold, clear, and exhilarating, containing a large quantity of oxygen; usually no mist is to be observed for some days; the constitution is much invigorated and innerved.

During the rest of the season the fruits are gathered, and the leaves wither and fall to the ground; there are occasional showers; the dead vegetable matter undergoes putrefaction, enhanced both by the moisture of the soil and heat of the sun, which becomes a fruitful source for the exhalation of malaria, so that at this season fever rages to a fearful extent.

The Harmattan season commences about the middle of December, and terminates in the middle of February, occupying a period of two months. The name harmattan is derived from the Fantee *aharamanta*, a designation of the season when this wind

blows, from *aharaman*, to blow, and *ta*, tallow, or grease. It blows along the whole Western Coast of Africa, extending from Cape de Verde, in lat.  $15^{\circ}$  N., and Cape Lopez, in lat.  $36^{\circ} 10'$  S., and lon.  $8^{\circ} 40'$  E., having its origin from the Desert of Sahara. It blows in Sierra Leone generally E.S.S., in the Gold Coast N.E., and at Lopez N.N.E.

The approach of the Harmattan season is generally indicated by the dropping of the leaves from the trees, which do not putrify as in the preceding season, but are dried up, so that they are prevented from being the source of malaria. Vegetables of every kind suffer; all the tender plants and most of the productions of the garden are destroyed; the grass withers and becomes dry, like hay; vigorous evergreens feel the pernicious influence; "branches of the lemon, orange, and lime-trees droop, the leaves become flaccid, and so parched as to be easily rubbed to dust between the fingers, should the harmattan blow for several successive days."\* It generally commences with a deep fog, or haze, not inaptly compared with the characteristic London November fog, differing, however, from it in its physical effects on the system. An idea of the nature of the fog may be obtained, when I state that in the height of the Harmattan season in tropical Africa I have frequently seen the sun, at eleven o'clock in the morning, through the fog, as white as the moon, so that an inexperienced observer would, at the first sight, think that it was the

\* Gallery of Nature, p. 448.

moon not hidden as yet by the powerful rays of the sun.

Another peculiarity of this wind is that of extreme dryness. All nature seems to feel the effect. The ground is dry, parched, and cracked, the grass withers, trees lose their green foliage, chinks are opened in the roofs of houses, the doors and windows become dried up, forcibly split, and cannot properly fit, the furniture loosened, books bent concavely. In the human body it produces great dryness of the throat, a sensation of thirst, which is to relieve the parched or dried-up pharynx; the lips are chapped, and bleed occasionally; the surface of the body crisps, and the whole system suffers *pro tem.* from great uneasiness. The temperature of the atmosphere is considerably low, especially in the morning and evening; and this, in Sierra Leone, is observed to a great degree at Gloucester and Leicester, and the badly-clad children of the population suffer greatly from its effects.

The salubrious effect of this season is not to be overlooked; during the previous seasons we have seen that the exhalations of dead vegetable animal matter are enhanced by the heat and moisture of the weather, and that consequently fever spreads rapidly, and is very destructive to the constitution; but its progress is now arrested by nature's stupendous interference; the harmattanic, cold, dry wind from the desert, places a *veto* on animal and vegetable decomposition, and consequently on malarious exhalation, and the result surpasses all the malarifuge

that is in the power of the medical practitioner. The air is perfectly purified; fever is no longer to be heard of; those suffering from convalescence are restored to their proper health; all malignant diseases, as if by magic, disappear; ulcers quickly cicatrise, and cutaneous eruptions are arrested. "In the year 1770, there were on board the *Unity*, at Whydah, about 300 slaves. The small-pox broke out among them, and it was determined to inoculate. Those who were inoculated before the Harmattan came on got very well through the disease. About seventy were inoculated a day or two after the Harmattan set in, but not one of them had either sickness or eruption. It was imagined that the infection was effectually dispersed, and the ship cleared of the disorder; but in a very few weeks it began to appear among those seventy. About fifty of them were inoculated the second time; the others had the disease in the natural way. An Harmattan came on, and they all recovered except one girl, who had an ugly ulcer in the inoculated part, and died some time afterwards of a lock-jaw."\*

Birds undergo several metamorphoses in their feathers. Some become perfectly black, having very long tails. This condition lasts for a month, and then ceases. Their appearance generally precedes Christmas, so that they are called by the natives of some parts of Africa, Christmas birds. Others have red feathers developed around their necks, but which

\* Philosophical Transactions, Vol. lxxi.

all disappear with the season. Reptiles, especially the *Ophidian* group, to use a familiar language, generally "change their skins," and appear in new ones;—so that all creation physically suffers from the effects of the Harmattan.

The Summer commences, as we have seen, from the middle of February, and "the average maximum of thermometer from February to April is about  $85^{\circ}$ , the medium  $80^{\circ}$ , and the minimum  $79^{\circ}$ ; of the barometer the average maximum is  $30^{\circ} 41'$ , medium  $29^{\circ} 95'$ , minimum  $29^{\circ} 87'$ .

The weather, as may be imagined, is continuously hot, close, and unpleasant, but not unhealthy, since putrefaction is prevented.

Hence it is to be observed that there are two special sickly seasons in West Africa, viz., the beginning of the rains, and the harvest season.

Sierra Leone being about the centre and principal port of the West Coast of Africa, I have made the observations of the season more particularly as it occurs in it; for each season occurs earlier as we recede from Cape Lopez to Sierra Leone, and later as we leave Sierra Leone for Cape de Verde.

The following description of the weather in August, 1858, is thus briefly stated in the *African*, a weekly newspaper of Sierra Leone: "The weather has been very trying lately, and a great deal of sickness is prevalent, especially among new residents. The rain has set in in right good earnest. According to the gauge kept at Fourah Bay, we find the



quantity of rain which fell during the preceding three months to be as follows:—

Months.	Quantity.	Remarks.
May ...	8 in 95	For fifteen days of rain, with strong tornado. Thunder and lightning on the 3rd, 19th, and 28th.
June ...	12 in 27	For fifteen days of rain, with strong tornado. Thunder and lightning on the 4th, 7th, and 11th.
July ...	23 in 50	Nineteen days of rain.



REGISTER OF PLUVIAMETER, FROM THE 8TH OF JUNE TO THE 31ST AUGUST, 1829,  
KEPT AT SIERRA LEONE. (BOYLE).

Date.	Morn.		Evening.		Total.		Remarks.	Date.		Morn.		Even.		Total.		Remarks.
	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.		Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	
June 8	—	1'10	1'10	—	1'10	—		July 7	1	2'5	3	4	Aug. 5	3	4	
— 9	1	1'10	2'10	—	2'10	—		— 8	2'5	2	4'5	—	— 6	—	—	
— 10	1	1	2	—	2	—		— 9	3	3	6	—	— 7	2'15	2'15	
— 11	2'20	2'20	4'40	—	4'40	—		— 10	7'10	7'2	14'15	—	— 8	—	—	
— 12	1'10	1	1'10	—	1'10	—		— 11	7'5	3	10'5	—	— 9	2'10	2'10	
— 13	3	—	3	—	3	—		— 12	3	1	4	—	— 10	3	3	
— 14	1'10	1	2'10	—	2'10	—		— 13	2'25	2	4'25	—	— 11	3'25	3'25	
— 15	—	1'10	1'10	—	1'10	—		— 14	3'10	2	5'10	—	— 12	3'10	4'10	
— 16	1	2	3	—	3	—		— 15	7'5	2	9'5	—	— 13	5	6	
— 17	2'10	1	3'10	—	3'10	—		— 16	—	1	1	—	— 14	3	3	
— 18	3	—	3	—	3	—		— 17	—	1'25	1'25	—	— 15	1'10	3'10	
— 19	1'10	2	3'10	—	3'10	—	Tornado	— 18	2'10	4	6'10	—	— 16	2'25	6'25	
— 20	2'75	1	3'75	—	3'75	—		— 19	1	1	2	—	— 17	7	7	
— 21	1'10	1	2'10	—	2'10	—		— 20	2'25	—	2'25	—	— 18	—	—	
— 22	1'25	1	2'25	—	2'25	—		— 21	—	—	—	—	— 19	—	—	
— 23	1'10	2	3'10	—	3'10	—		— 22	3'25	1	4'25	—	— 20	2'25	3'25	
— 24	2	2'25	4'25	—	4'25	—		— 23	1	1	2	—	— 21	4'10	5'10	
— 25	1'25	1	2'25	—	2'25	—		— 24	2'25	1	3'25	—	— 22	3	10'	
— 26	1	2'25	3'25	—	3'25	—		— 25	2	4'25	6'25	—	— 23	7	16'	
— 27	2	2	4	—	4	—		— 26	1'10	—	1'10	—	— 24	6'10	8'10	
— 28	3'25	1	4'25	—	4'25	—		— 27	2	—	2	—	— 25	2'15	2'15	
— 29	2'25	1	3'25	—	3'25	—		— 28	1	1	2	—	— 26	—	—	
— 30	1	2	3	—	3	—	Tornado	— 29	2'25	2	4'25	—	— 27	1'10	1'10	
July 1	3'25	1'10	4'35	—	4'35	—		— 30	2	—	3	—	— 28	1'10	1'10	
— 2	2	1	3	—	3	—		— 31	2	1	3	—	— 29	1	1	
— 3	1'25	2	3'25	—	3'25	—		Aug. 1	1'25	3	4'25	—	— 30	2'10	2'10	
— 4	—	4	4	—	4	—		— 2	1'25	3	4'25	—	— 31	1	6	
— 5	2	3	5	—	5	—		— 3	3'25	1	4'25	—				
— 6	—	1'25	1'25	—	1'25	—	Tornado	— 4	2	2'10	4'10	—				



