Report on the climate and principle diseases of the African station; compiled from the documents in the office of the Director-General of the Medical Department, and from other sources: in compliance with the directions of the Lords Commissioners of the Admiralty / Under the immediate direction of Sir William Burnett. By Alexander Bryson.

ON THE CLIMATE AND PRINCIPAL DISEASES OF THE AFRICAN STATION.

REPORT

ON

THE CLIMATE AND PRINCIPAL DISEASES OF THE AFRICAN STATION;

COMPILED FROM DOCUMENTS IN THE OFFICE OF THE DIRECTOR-GENERAL OF THE MEDICAL DEPARTMENT, AND FROM OTHER SOURCES,

IN COMPLIANCE WITH THE DIRECTIONS OF

THE RIGHT HONORABLE THE LORDS COMMISSIONERS OF THE ADMIRALTY.

UNDER THE IMMEDIATE DIRECTION OF

SIR WILLIAM BURNETT, M.D., K.C.H., F.R.S.

BY

ALEXANDER BRYSON, M.D.,
SURGEON, R.N.

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TO

THE RIGHT HONORABLE

THE EARL OF AUCKLAND, G.C.B.

FIRST LORD OF THE ADMIRALTY,

&c. &c. &c.

THIS REPORT,

PREPARED IN ACCORDANCE WITH HIS LORDSHIP'S EXPRESS DESIRE,
IN THE HOPE OF MITIGATING, IN SOME DEGREE,

THE SICKNESS AND MORTALITY OF THE SQUADRON ON THE AFRICAN STATION,

IS MOST RESPECTFULLY DEDICATED

BY

HIS VERY OBEDIENT AND VERY HUMBLE SERVANT,

A. BRYSON.

May, 1847.

CONTENTS.

PRELIMINARY OBSERVATIONS.

WITH the view of explaining the circumstances which led to the production of the following pages, it is necessary to state, that they were compiled in consequence of a Minute from the Right Honorable the Lords Commissioners of the Admiralty, addressed to Sir William Burnett the Director General of the Medical Department of the Navy, requesting him to cause to be embodied in a Report such portions of the Medical Returns from the African Station as might be deemed valuable. The writer, in his official capacity, was therefore directed by Sir William to go over the whole of the returns received into office since the year 1820, and to extract from them in a condensed form whatever matter either of information or interest they might contain, at all calculated to be made available for that purpose. This having been completed with as little delay as possible, he had then in the latter part of December last the honor to be further directed to proceed in arranging the matter so obtained, with whatever information he could furnish from his own personal experience on the station, in such form as might be considered

would present, according to their Lordships' direction, the greatest amount of information "regarding the diseases contracted there; the localities most injurious to health; the precautions which might be taken to avert or diminish fever; and the mode of treatment regarded most effectual;—embracing also the diseases most prevalent amongst the captured slaves." How far he has succeeded in executing the task thus assigned him, it is not for him to determine.

For the apparent delay in the production of the report he begs most respectfully to apologize, but from the great variety of subjects it embraced, and the numerous documents which it was requisite to examine, it was hardly possible to furnish it sooner; more especially as from his having numerous other duties of an important character to attend to, he could only devote a limited portion of his time to its preparation.

These several engagements and occupations, therefore, it is to be hoped will in some degree serve as an excuse for whatever errors it may contain, and the somewhat rude manner in which it has been arranged. His object has been to follow out as clearly as possible the spirit of their Lordships' Minute, keeping in view the necessity of presenting an extensive body of facts, from which the medical officers on the station, or elsewhere, might more conveniently study the nature of the fevers peculiar to the station, and at the same time be enabled to deduce for themselves such plans of treatment as they may consider would be the most likely to be successful.

Although the Report has been prepared under the immediate direction of Sir William Burnett, it is but right to

state that he is in no way answerable for any of its numerous imperfections;—had his time been less occupied in the discharge of the important duties of his office, they would perhaps have been less remarkable; as it is the writer has most thankfully to acknowledge the great advantages he has derived from his daily assistance and advice in every stage of its progress.

There has been of necessity in describing fever as it occurred in the respective vessels, a frequent repetition of somewhat similar facts: these, however, it was thought, notwithstanding their reiteration, would be more satisfactory and conclusive when viewed in detail, each separate fact supporting and elucidating the special views of the subjects which have been under examination, than if they had been embodied under any general form of description, however lucid and abridged. The localities most injurious to health have been alluded to, and with the exception of those south of the equator, on the main land, described from personal observation, or from notes taken on the spot.* The causes which are most generally productive of fever have been pointed out; and the precautions most likely to prove effectual in diminishing, and frequently altogether averting that malady, have been respectfully submitted for consideration. In speaking of the medical treatment of fever, it was considered to be of the greatest importance to show, in accordance with the opinions of the most intelligent medical officers who have served on the station, that the theories generally inculcated by writers and teachers in England, are not such as can be

* It is proper to acknowledge having received some valuable information on the southern division of the station, from Dr. Slogget, Assistant-Surgeon, R.N., and Mr. Jones, Paymaster and Purser, R.N.

followed out with safety or satisfaction on the coast;—and they have not unfrequently, after considerable experience and much disappointment, been abandoned for others which admit of less severe modes of practice. This remark more particularly applies to blood-letting, and the administration of mercury. Some important information, in a medical point of view at least, has been furnished relative to the period of incubation in fever: this, the nature of the service, from the exposure of men for short periods of time to the exciting causes within certain definite localities, occasionally affords peculiar advantages of marking with precision.

With regard to the tables, it is necessary to state that they have nothing whatever to do with the general statistical tables now in course of preparation; they have been furnished partly as a requisite appendage to the Report, in consequence of the increased desire and frequent application for this species of information, and partly with the view of showing the true rate of mortality on the station for a long series of years; those previously published, although replete with much valuable information, (in which these are deficient) having unavoidably been extracted from data which included the force on the Cape station; and being only for a limited period of years, give but an imperfect view of the subject. It is greatly to be regretted that from a want of time, it has not been possible to make any extended remarks respecting them; although in a statistical point of view this is of minor importance so long as the numbers are correct, and it is believed in the present instance they are as nearly so as possible, the deaths and the force of each vessel having been

taken exclusively from the pay-books in the office of the Accountant-General, with the exception of the two or three last years; for these, this source of information was not in all cases available, in consequence of several of the vessels not yet having returned to England. It has also been thought advisable to exclude those vessels which were not permanently employed within the limits of the station.

The pay-books, it is proper to observe, necessarily record the death of every individual of the established ship's company for which they are furnished, whether it occur on board or on detached service; whether from accident or disease; and are therefore more to be depended upon than the medical returns, which, although generally correct, are not always so, in consequence of a want of information respecting the fate of men absent on detached service, sometimes probably from inadvertence, and it would be wrong not to say occasionally from negligence, although the great improvement both in the monthly and quarterly returns, but more particularly in the journals for a number of years past, is such as to reflect great credit on the junior members of the profession, while it shows that their selection has been made with a just and judicious regard to the interests of the service.

It may be as well to notice here, the great importance attached to certain details required of medical officers in their public returns. In the first place, all dates and headings should be carefully inserted; the want of the former has frequently occasioned considerable trouble and loss of time. The position of the ship should invariably be

noted in a general way in the nosological returns, but more particularly when there is a greater exemption from, or prevalence of, disease than usually happens, or during the irruption and decline of epidemics; it is also requisite in connexion with remarks on the climate;—the state of the barometer and thermometer, and of the winds and weather, may be carefully noted, but unless the date and place, or if at sea the latitude and longitude, be also mentioned, such information is rendered useless; most elaborate tables of this description, from these inadvertent omissions, have been rendered totally unavailable for any useful purpose. Topographical remarks have sometimes been omitted, from a supposition that because a place has been frequently visited, it must have been as frequently described; but this is not always the case; the returns are in consequence occasionally very deficient in facts regarding localities of the greatest interest. Local medical information is also of importance to have upon record in the office of the Director-General, in the event of its being required hereafter for comparison or contrast. When there has been an interruption of the returns from the illness or death of an officer, his successor should, if possible, make up the deficiency; important data have sometimes been lost through an unpraiseworthy apathy in this respect. The necessity of entering all deaths, either in the table or body of the nosological returns, will appear evident as a means of arriving at correct results with regard to the mortality of the service. Those which occur on detached duties on shore, on leave, or at sick quarters, if not entered in the daily sick book, should be noticed in the body of the

return with the names of the individuals, and the causes of death, if they can be ascertained, attached; it is of equal importance to report in the same manner, deaths from drowning or suicide. Everything, in fact, however briefly, if correctly narrated, whether it relates to health or disease, wounds, invaliding, or death, is of consequence, not only for immediate official purposes, but as useful records of events which may require to be referred to hereafter, with regard to the granting pensions, and for statistical or general information.

TOPOGRAPHICAL REMARKS

ON

THE AFRICAN STATION,

EXTENDING FROM

CAPE VERDE ON THE NORTH, TO CAPE NEGRO ON THE SOUTH OF THE EQUATOR.

In order that the following details, abstracted from the medical reports of the African station, may be clearly understood, it will be advisable to premise them by briefly adverting to the different localities frequented by the cruisers when at sea, the various ports and harbours to which they resort for the purpose of obtaining supplies of provisions, wood, and water, or for refitting, as well as cursorily to notice the different slave establishments along the coast.

During the first ten years of the period included in this report, the traffic in slaves was vigorously prosecuted under the flags of several nations, on different parts of the coast, from the Gambia on the north, to Benguela on the south of the equator; while from certain anomalous clauses in the treaties then in existence, as the right of capture did not extend to vessels sailing to the south of the line under Brazilian colours, where, for the sake of security, they were generally assumed, the operations of the British cruisers were principally although not entirely confined to the northern latitudes, between the parallel of Cape Verde and the equator. The squadron at that time seldom exceeded ten, twelve, or fourteen pendants including tenders; the duties, therefore, of so

small a force upon such an extensive line of coast were not only at all times arduous and severe, but frequently of a most harassing and dangerous character, particularly to the subordinate officers and men. The chief slave exporting stations were constantly kept under the strict surveillance of one or more cruisers stationed opposite to them, and whilst so employed, it was not unusual for such vessels to have their boats detached for several weeks at a time, exploring creeks and rivers at perhaps a considerable distance along the coast, or lying concealed under mangrove thickets in readiness to pounce upon the slave craft the moment she shipped her human cargo, or attempted to leave the land. All vessels, whether encountered at sea or at anchor along the shore, were instantly boarded, if possible (for our cruisers on the African coast have not always been noted for speed), for the purpose of ascertaining their character, or for obtaining information. A strict look-out was invariably maintained from each mast-head during the day, and from the bulwarks by six men stationed, two on the bows, two in the waist, and two abaft on each quarter during the night, while the officer on duty was enjoined "to scan the horizon with a night glass" every few minutes of his watch. These duties are performed by the squadron at the present day with an equal degree of diligence, and, as nearly as possible, in the same manner.

There has seldom been, particularly of late years, any vessel stationed to the northward of the Gambia; it being generally understood that the slave trade along that coast has given place to others of a more humane and a more legitimate character. Upon several occasions, however, it has been so arranged that one of the squadron should make her appearance for a few weeks in the bay of Portendic during the season of the gum trade, as a protection to the British merchant vessels there trading with the Moors. In this locality, from its proximity to the great desert of Sahara, the harmattan is more severely felt than upon any other part of the station. It chiefly prevails during the months of

December, January, and February; from its extreme dryness it has the effect of imparting to the mucous membrane of the lips, nose, and eyes, the sensation of being parched; the former blisters and cracks, while the latter becomes inflamed. There is also generally experienced a considerable degree of physical prostration, with a corresponding amount of mental depression. Even upon inanimate substances this wind effects considerable changes; every substance which contains moisture, unless hermetically sealed, is speedily deprived of it; the seams of the decks and of boats open, if not frequently wetted; timber and cordage diminish in breadth, while they extend in length; the rigging consequently becomes slack, while sliding bulkheads become immoveably fixed in their grooves. But the most remarkable phenomenon attending it is the quantity of impalpable sand it brings from the desert, which, from its wonderful subtilty, penetrates even the smallest crevices; while the atmosphere becomes so thick that it is impossible to see many yards beyond the end of the jib-boom; every person exposed on deck for a few hours is so covered with the dust, that he presents more the appearance of a miller than of a seafaring man.

The blacks, in consequence of the excessive evaporation from their unctuous skins, suffer severely from catarrhal fevers during its prevalence; but to the whites, as previously noticed, it is seldom productive of more than temporary inconvenience.

Between the Gambia and Sierra Leone there has generally been one, and sometimes two vessels employed, cruising along the coast, but more particularly off the mouths of the Nunez and Pongos, where several hordes of petty slave dealers have from time to time taken up their residence. Formerly, when it was contrary to existing treaties to detain any vessel, although fitted as a slaver, unless she actually had slaves on board, it was customary for the cruisers here, as well as elsewhere, to remain "dodging" under easy sail, or with all their lofty sails furled, at the distance of from five to ten miles from

the land, or, at all events, at such a distance as to prevent their being seen, but in readiness to chase the instant any suspicious looking craft made her appearance from behind the dark line of forest that seems to bound the shore. During the last ten years, however, the practice, in consequence of new and more efficient treaties, has been somewhat different; for as soon as it has been ascertained that a slave vessel is at anchor in any creek or river, the cruiser either stands in directly for her, or, should there not be sufficient water, or the navigation be difficult, the boats are forthwith despatched to seize her and bring her out. This latter service, when it is protracted to perhaps several successive days or nights in the vicinity of extensive swamps, and when it is, as it always must be, combined with excessive labour, want of sleep, and irregularity of living, is, as will be hereafter shown, the cause of a fearful amount of disease and consequent mortality.

It has also been customary for the cruisers on the northern division of the station occasionally to run across to the Cape Verde Islands, either upon a cruise of speculation, or with the view of obtaining information or refreshment, or of recruiting the health of their crews. They also from time to time visit the settlement on the Gambia for similar purposes, as fresh meat of a fair quality for the climate is always to be obtained there; vegetables, however, are scarce, and the water generally is brackish, at least that procured in the usual manner, by sinking in the sand a tub, or small cask, with open staves, at a short distance beyond high water mark.

Notwithstanding the vast alluvial swamps that bound nearly three sides of this small settlement, it is, upon the whole, infinitely less detrimental to the European constitution than is Sierra Leone. The temperature throughout the year is somewhat lower, although this is chiefly observable during the mornings of the winter months, when the air, until the sun has risen a few degrees above the horizon, is frequently so sharp and bracing as to require additional clothing; but the

heat of the day during summer is at all times exceedingly oppressive, and is rendered doubly so by the reflection of the sun's rays from the loose white sand in the streets and upon the beach. Remittent fevers occur throughout the whole year, but from November to April they are by no means of a formidable character, unless contracted under peculiarly aggravating circumstances, such as an intemperate course of living, with exposure and fatigue in the marshes, or from sleeping in the open air during the night.

From July to October the nature of the place is totally changed, and no vessel, during that period, can remain more than a week or two at a time at anchor near the settlement, with safety to the health of her crew. During the latter month the rains commence, and continue to fall, with short intervals of fine weather, until September, when the river having become enormously swollen, and of a tawny colour from the admixture of soil, overflows its banks, and floods the marshy flats behind the settlement to a great distance, where, as the rains decline and the river withdraws into its proper limits, it leaves large shallow lagoons to be evaporated by the heat of the sun and the drier winds of the succeeding months.

During this season therefore, Europeans, whether on shore or in vessels at anchor in the river, are apt to be assailed by remitting fever of a more virulent character than during the dry season, while the more acclimated residents suffer from intermittents generally of an irregular type. Both these forms of disease, it has been assumed, are the result of the same cause, namely, the increase of marsh effluvia in the atmosphere, which, in some localities, is at times perceptible enough to the sense of smell at a considerable distance from the source of its elimination. The main land, or Barra shore, on the opposite side of the river, is not, as has been described, either of a swampy nature or thickly covered with bush. The land undoubtedly is but little above the level of the sea; the soil, however, is rich, free, and arable, and the forest open, with many extensive patches of land under cultivation. Ac-

cording to preconceived opinions it ought, therefore, to be more healthy than the island of St. Mary's; but the bed of the river affords no good holding-ground for vessels to anchor upon.

Southward of the Gambia the coast still continues low, thickly wooded, and marshy, with innumerable contiguous islands, formed by the constant deposition of earthy matter from the waters of several large rivers which empty themselves into the sea in this neighbourhood. From the Bissagos country, or rather, perhaps, from the settlement of Bissao, there have occasionally been a few cargoes of slaves exported, but the number has become less and less every year. The rivers upon this section of the station requiring the most constant attention of the cruisers, are, as previously observed, the Nunez and Pongos, both of which have occasionally been entered by vessels of light draught of water, although for the purpose of more thoroughly searching them boats are more convenient, and have been more frequently employed. Their banks, like those of all sluggish streams in this country, are described as being closely fringed with mangrove bushes, around the tangled roots of which there is a thick deposition of blue mud or slime, the detrital sediment of the river water, together with the rotting remains of branches, leaves, and other vegetable matters, swept down from the interior during the rains. These substances, it appears, accumulate in the estuaries of large rivers until, after being urged backwards and forwards by the tide, they at last become entangled among the mangrove bushes, or are thrown upon the shore in shallow stagnant creeks, where they rapidly pass into a state of decay, mingled with other substances of a marine nature. During the heat of the day, when the tide recedes and leaves this semi-putrid mass exposed to the heat of the sun, the elimination of fœtid malaria, as may be supposed, is most abundant. It is also supposed to remain suspended in a more concentrated and even in a more dangerous form in the dense fogs which frequently overhang these morasses from sunset to

sunrise. It cannot, therefore, be a matter of wonder that men arriving in these rivers from the clear atmosphere of the open sea, worn out and drenched in perspiration with long and heavy pulling, hungry, thirsty, and at last cold, should fall an easy prey to the demon of the place, the indigenous pestilence of the swamp. Although at times some may have escaped, it has too often been but the exception to the rule, particularly if to this catalogue of evils rain has been added, and this, during at least five months of the year, will too frequently be the case.

The country between the Nunez and Pongos, and southward, to the Melacoorie and Scarcies, is intersected by numerous brackish lagoons and winding intricate creeks, which extend from river to river, but are only navigable by small craft, or by native canoes. Along the sea-board, as well as probably for several hundred miles inland, upon the more solid and elevated parts of this vast delta, it is covered by a dense forest, and in the lower by mangrove jungles, the latter abounding everywhere in noisome swamps, which poison the atmosphere in their neighbourhood for at least two-thirds of the year.

Sierra Leone being by far the most important of our settlements on the western shores of Africa, has long been one of the principal resorts for the squadron, particularly for that part of it employed upon the northern limits of the command, for vessels arriving from England, or for vessels coming from the south to take their turn of servitude upon this less desirable part of the station. Spanish and Brazilian vessels captured by the squadron are also sent to Sierra Leone for adjudication in the Court of Mixed Commission, each with a prize crew on board consisting of from ten to twenty white men and a few blacks; it therefore necessarily exerts a considerable influence on the general health of the squadron, although this must in a great measure depend upon the nature and extent of the intercourse with the shore.

Whether this colony is more detrimental to the European

constitution than other localities on the coast, it would be difficult, from the unsettled nature of the population, together with the constant influx and reflux of strangers, to determine; but that a far greater proportional amount of disease is contracted here by the naval force, than upon any other part of the station, is clearly evident; at least since the settlement at Fernando Po has been abandoned. It is also evident that a great proportion of this disease is contracted in consequence of accidental or contingent circumstances peculiar to the locality, from causes common to the whole line of coast, rather than from an increase, or an aggravation in the condition of such causes in the locality itself, and of these none seem to operate more powerfully or more frequently than exposure on shore to the intense heat of the sun by day, or to the chilling dews by night, more particularly if accompanied in either case by a state of inebriation or exhaustion of the physical powers of the body from over-exertion. For the last sixteen years there has been in force a wise and salutary regulation to the effect, that no part of a ship's company, while at anchor at Sierra Leone, should have permission to land on liberty, with the exception of the officers and native Africans. The former, it may be assumed, were supposed to be capable of exerting a sufficient control over themselves to avoid those imprudences, to prevent which it was necessary to restrain the men; while the latter, who are specially embarked for the purpose of performing all the duties which are connected with the shore, are happily, although natives of a different part of the continent, exempt from the diseases which prove so fatal to Europeans.

Unfortunately the above regulation has not been always so strictly adhered to as it ought to have been; small parties of men, under peculiar circumstances, have occasionally been permitted as an indulgence to go on shore,—a practice that cannot be too strongly reprobated. In the town there are numerous public houses of the lowest description, where intoxicating liquors of various kinds and of the worst quality

are sold, or given in barter for the merest trifle. This is a temptation that few seamen can withstand, particularly after long confinement on board ship; nor do they seem to think it necessary to do so, for the moment they find themselves on shore, elated by the prospect of a few hours' exemption from the restraint of discipline, they abandon themselves to the utmost intemperance in the use of spirits, wander abroad exposed to the scorching rays of the sun, in a state of excitement bordering on frenzy, and, as night approaches, instead of returning on board as they ought to do, perhaps seek out the wretched haunts of profligacy, where at best they must spend the night upon the cold damp floor of a negro hut, or else throw themselves down to sleep on the naked ground in the bush, or in some obscure corner of the town, where they lie unheeded by the passers by, until they awake cold and stiff in the morning. Such is the usual course and termination of a day's liberty with seamen at Sierra Leone; and, with few exceptions, it paves the way for a severe attack of fever.

It appears, however, that the officers and men who navigate prize vessels to Sierra Leone suffer most severely. They generally arrive worn out by excessive labour, broken rest, and exposure both by night and day upon the deck of a small vessel, probably crowded with slaves in a loathsome state of misery and disease. After the human cargo has been delivered over to the authorities on shore, and the vessel condemned to be broken up or sold, they also land, and take up their quarters in a building in the town appropriated for the purpose, and denominated "the barn;" here it generally happens that the officer, quartered, perhaps, in a different part of the town, loses all control over his men, who being left to themselves, at once plunge into every kind of excess with all the characteristic carelessness of British seamen. Many, while they still inhabit the barn, are seized with fever, and are taken to the military hospital; others escape for a time, and apparently enjoy good health until they embark either

in their own vessel or in some other, which may in the mean time opportunely arrive; but in either case it generally happens that they are attacked with the disease within two weeks from the date of their joining. Few entirely escape the danger of this ordeal, even if they be of the most orderly and temperate habits.

Refitting ships is another source of climatorial disease at Sierra Leone. As this is generally performed, if not in a great hurry, at least with as much despatch as possible, it necessarily entails a considerable increase of labour upon the crew, with additional exposure to the sun's rays, wind, and perhaps to rain, the combined effects of which seldom fail to bring on catarrhal complaints, and fevers of different degrees of intensity. At these times it is also almost impossible to prevent spirits of a most pernicious quality from being smuggled on board, either during the night or during the hours allotted for meals, from the numerous canoes that flit about the harbour with fruit and other articles of refreshment for sale; which spirit, bad as it is, is too often eagerly coveted by the men, and generally drank in secret after the work of the day is over, while they are in that state of listless exhaustion, which invariably succeeds to violent exertion in the open air in this enervating climate. These casual acts of intemperance on board would perhaps be attended with less risk, were the men to retire to their hammocks at the usual hour, and to remain in them, which they seldom do, preferring, if permitted, to pass the night in the cool refreshing air of the upper deck.

But with all these disadvantages, Sierra Leone must still continue to be a place of importance and refuge to that part of the squadron stationed in its neighbourhood, in consequence of its ample and never-failing supply of most excellent fresh water, which is not to be obtained either so conveniently or so good in quality within a distance of many hundred miles, either upon the coast or the adjacent islands.

Formerly there was a naval victualling establishment on the south bank of the river, at King Tom's Point, about

half a mile below the town. This was abolished in the year 1833 or 1834, and the victualling stores were placed under the control of the Commissariat department. Up to that period the harbour was consequently much more frequently visited than it has been of late years, or since the establishment upon the Island of Ascension became the general depôt for all kinds of naval stores. Thither the vessels stationed in the Bights of Benin and Biafra, or to the south of the equator, more conveniently repair. This judicious arrangement has undoubtedly saved the health and lives of many persons; for although it is generally understood that upon all occasions Kroomen are to be employed in the boats whilst embarking stores, or going to and fro between the ship and the shore, still it would appear that it has too frequently happened that white men, although comparatively few in number, have also taken a share in these duties, either as superintendents, or else to expedite the work.

Besides fresh water and victualling stores, it also becomes necessary, every now and then, for the cruisers to resort to Sierra Leone for fresh beef and vegetables. These are always readily obtained; and although the former is hardly so good as that of the Gambia, the latter are better, and in greater variety; together with a profusion of delicious fruit at all times of the year. This of itself is an advantage of no small importance to men who have been long restricted to salt diet; and whose constitutions may be on the point of breaking down from a scorbutic taint. The latter are consequently consumed in enormous quantities by the crews of vessels returning from a protracted cruise off some desolate part of the coast, and generally without any injurious effect, beyond that of slight derangement of the digestive organs.

Vessels of war usually anchor off Freetown, in the open stream, about half a mile from the shore, and in front of the watering-place, a position which might be supposed to be perfectly beyond the reach of all ordinary paludal exhalations. The nearest part of the Bullom shore is at a distance of at

least five or six miles; and although it has all the appearance, when viewed from the harbour, of being "one continuous densely wooded swamp," and has been so described, such is not the case. Behind the thicket which crowns the bank of the river, the woods are open, and, towards the west, in the neighbourhood of the little village of Medina, there are many tracts of land under cultivation; the village itself, although contiguous to the river, is considerably above its level. It is, therefore, difficult to believe that any noxious aerial emanations from this shore have ever had the power of seriously affecting the health of Europeans resident in vessels, or on any part of the shore on the opposite bank of the river.

On the southern bank it is still more difficult, or rather impossible to discover any probable source whence fever could arise. The town itself is built upon the base and side of a rocky hill, completely denuded of bush, and incapable at any time of the year of retaining much moisture; the hills to the westward, as far as the sea, are of the same geological structure, and being now nearly cleared of natural bush, are studded over with negro hamlets, around which there are numerous patches of land under cultivation, consisting of cassada fields, with here and there bright green clumps of plantain and banana. Eastward from the town, as far as the junction of the Bunce with the main stream, there is a narrow strip of land of a more tabular form, with a few patches of natural scrub, at the distance of several miles; all within that consists of cultivated fields, a race-course, villa enclosures, and gardens;—yet this part of the colony has sometimes been described as a swamp, although it by no means deserves the name. Towards the eastern base of the hills, upon each side of the road to Kissy, the ground is dry, rocky, scant of soil, and, in many places, strewed over with small granitic boulders, and fragments of plutonic rock. There are also several small rivulets, but nothing deserving the name of marsh. A great part of the mountain ridge behind the hill, upon which the town is built, and the intervening

valley, have also been cleared of their natural thickets, whilst the latter, in many places, is under cultivation,—so that if marsh effluvia have any thing to do with the constant succession of sporadic fevers occurring at Sierra Leone, which it is apprehended they have not, they must be swept by the wind from the upper part of the river at its junction with the Bunce, or from the banks of the latter, a distance, considering the astonishing elasticity and miscibility of the atmosphere, it is difficult to conceive that they could be borne without becoming thoroughly innocuous.

There have been generally two vessels stationed between Sierra Leone and Cape Mount, a district which is considered part of the windward division of the station. The two points to which the cruisers require principally to direct their attention, are the rivers Sherbro and Gallinas. Upon the banks of the latter there is one of the most notorious slave marts on the coast. Both these rivers have invariably proved extremely prejudicial to the health of the crews of small craft, or boats entering them, at whatever season of the year. Their banks are similar to those of the Nunez and Pongos, while the physical condition of the surrounding country is much the same, and equally injurious to health. The slave barracoons on the Gallinas were attacked a few years ago by an armed force, composed of detachments from three of the cruisers, and were destroyed,—a measure it is most respectfully submitted of very questionable utility. The buildings, in point of value, were of no great importance to the slave merchant, nor was the loss of property such as to hamper him in his unhallowed trade; but the suffering likely to accrue to slaves subsequently arriving in a jaded and worn-out state from the interior, in consequence of the want of proper shelter, the want of food, and the necessity of their being retained in shackles, to prevent straggling, is beyond calculation, while at the same time the loss to the force employed, although not great, was considerable.

From Cape Mount down to the Gold Coast, there are not

any slave factories of importance; the surveillance has consequently been less strictly enforced between these points, nor has it been necessary to station cruisers off the Gold Coast for the last twenty years; unless for the purpose of protecting the British settlements from the natives, or as a demonstration in the event of disturbances occurring amongst the latter. Occasionally, while running along the land, they touch at Cape Coast Castle; but as it is impossible to communicate with the shore otherwise than by the native canoes, and as vessels at anchor in the roadstead roll heavily, it is seldom that they remain there long. Water can only be obtained in small quantities (and not upon all occasions) from the tanks under the buildings, where it is collected during the rains, by means of gutters leading from the roof and ramparts of the castle. At Accra the rollers in the roadstead, and the surf on the beach, are equally heavy with those of Cape Coast; the communication with the shore is therefore entirely restricted to canoes manned by the natives. From the limited extent of the fortifications, and the smallness of the tanks, water can only be obtained here, even in smaller quantities than at Cape Coast. There are not any springs or rivulets in the neighbourhood of either of these places; a want often severely felt by the natives, who are consequently solely dependent on stagnant pools formed during the rains, which frequently, however, become exhausted in the dry season; when they are compelled to dig deep pits in the soil, from which they obtain a limited supply; the water thus procured is frequently so brackish, as to be hardly fit for internal use.

Fresh beef, mutton, vegetables, fruit, eggs, and poultry are however, always to be obtained in great abundance at Accra, and at a moderate price. This anchorage has therefore been long resorted to by vessels passing up or down the coast, and more particularly by such as were in need of a change of diet for their crews.

In consequence of the difficulty of landing on any part of the Gold Coast, and the uncertainty of being able to get off

again when landed, from the surf suddenly becoming impassable, it has seldom happened that liberty has been granted to the men to go on shore at any of the British settlements; it becomes therefore more difficult to trace the effects of climate upon the naval force employed here. Sufficient intercourse, however, has taken place to warrant the conclusion that with few, if any exceptions, it is as inimical to the health of Europeans as any other part of the station within the tropics. The characters of all the prevailing febrile diseases are the same, although the physical condition of the soil is in many respects different.

There are not any of those extensive swampy deltas, or sluggish streams with stagnant shallow creeks and mangrove covered shores, so peculiar to the upper part of the coast; and the rocks, instead of being of plutonic origin, like those which form the mountain ranges at Sierra Leone, are mostly of primitive formation, especially in the neighbourhood of Cape Coast and Annamaboe, where the ground in almost every direction is spangled with scales of mica. Marshes are by no means so numerous, nor are they of great extent, being generally confined to the bottom of small valleys or hollows, through which there is not any watercourse. The country is hilly, and with the exception of a few cleared spots around the native villages, is covered with that sort of thicket denominated jungle. On the other hand, around Accra, an extensive open prairie stretches for many miles inland, until it terminates at the base of a range of lofty hills trending parallel to the shore; there are but few large trees and no jungle, although there are many patches of scrub brushwood, and the whole plain seems covered with tall strong grass, which presents a parched blighted appearance in the dry season, and a rank and vigorous vegetation in the wet. The few natives of England, Denmark, and Holland, who are resident here, or arrive from time to time, suffer generally from the endemic fever, before they have been long in the country; and subsequently, should they survive, from irregular paroxysms of

intermittent, which in a longer or shorter period, according to the life they lead, terminate in permanently impaired health.

Beyond the boundary of the Gold Coast, the country has again the appearance of a vast alluvial plain, through which the Volta, apparently a noble stream, slowly rolls its waters to the sea. This river has seldom, if ever, been entered by any of our cruisers, there being a dangerous shifting bar across its mouth, and but little depth of water at any time. Immediately after rounding Cape St. Paul, and entering the Bight, the first settlement of any note in that wild region, is Quitta, where there is a small ruinous fort, upon which the Danish flag is still hoisted, when a vessel of war comes to an anchor opposite the town. The vessels of the squadron occasionally touch here for poultry, yams, fruit, and vegetables, which the natives bring alongside, and one of them has also been at times stationed in the neighbourhood, for the purpose of intercepting slave vessels leaving the district of the Volta, or such as coming from the slave factories further down the coast, endeavour to escape by crawling up along the land during the night; a manœuvre which they have frequently practised successfully. Behind Quitta, a branch of the Volta expands into an extensive sheet of water, navigable for canoes only, which are generally poked along by poles that reach the bottom; its banks, as usual, are of a marshy character, and in some places, thickly covered with tall grass, or gigantic flags—the papyrus; whilst in others the more sombre mangrove usurps the domain. At a greater distance from the lagoon, however, the country is generally fertile, yielding yams, Indian corn, and the sugar-cane, and requiring but little care in their cultivation.

From Quitta to Popoe, and from the latter to Whydah, the shore has the appearance of a low sandy ridge; behind this, and at no great distance from the sea, there is another of those extensive sheets of water, half river and half lagoon, so peculiar to this part of Africa. Its waters are of a dark

muddy colour and brackish, and glide along amongst thick reeds and grass with an almost imperceptible motion, depositing upon its banks and bottom a black ooze, which emits, when disturbed, a most offensive odour. It extends upwards to the basin of the Volta behind Quitta, and laterally expands into smaller shallow lagoons, the shores and islands of which present the same character, and are densely covered with jungle, stunted palms, or flags from four to six feet in height, which occasionally encroach so far upon the river, that the natives are obliged to cut a passage through them for their canoes; still, notwithstanding the apparently unwholesome nature of the locality, it is seldom that the crews of vessels at anchor near the land, or running slowly along it, suffer any inconvenience from its mephitic exhalations.

Whydah is the first great slave mart in the Bight. The town is situated at the distance of five or six miles from the beach, but on the latter there are, or were a few years ago, several huts and a slave barracoon, capable of containing five or six hundred individuals. The river, at the distance of about two hundred yards, flows behind these erections, and during the dry season is fordable; it is, however, generally crossed by means of a canoe. The road to the town then passes through two marshes, the one about a mile, and the other a mile and a half in breadth; both are covered with water in some places to the depth of two, three, and four feet; across these Europeans require to be borne in hammocks; when the water is much disturbed by a large party passing up or down, the gases which are evolved become exceedingly disagreeable; more particularly as they are supposed to abound in the noxious principles of fever. Beyond the marshes the country is more elevated, and presents a succession of gently undulating hills covered with natural forest. In the immediate neighbourhood of the town, there are several large substantially built slave barracoons, the walls of indurated clay, thatched with grass, and surrounded with high wicker fences. The country is partly under cultivation, and seems productive. The only

Europeans who visit Whydah are the masters and supercargoes of slave vessels, and it is understood that they generally suffer severely from fever, both during their residence in the country, and after proceeding to sea.

Twelve miles farther down the coast is the town of Badagry, which although of minor importance as a slave mart, is seldom lost sight of by the vessel stationed off Whydah.

Lagos, on the other hand, which occupies a position more to the southward, and to the centre of the bight, has always been considered as an important station. It is supposed that during the last twenty years nearly as many slaves have been exported thence as from Whydah. It is built on a strange isolated point, and is nearly surrounded by water, having the sea in front, and Lake Crado, extending to a great distance inland, immediately behind the spit upon which it is situated. In point of salubrity it is considered to be on a par with other swampy districts on the coast; but from the difficulty of landing and the inhospitable character of the people, it has been seldom visited; it is, therefore, less known than any other town of the same size on the station.

The Benin is the only river on this part of the coast into which our cruisers have penetrated. Like all the other channels which intersect the delta of the Niger, it is bounded on both sides and to the distance of several hundred miles inland, by a succession of impenetrable mangrove swamps, and these, as might be expected, have seldom failed to produce fever in any part of the force long enough exposed to their deadly influence.

Between Cape St. Paul and Cape Formosa therefore, there have generally been three or four vessels stationed; one off Whydah, one off Lagos, one off the mouth of the Benin, and sometimes one off the upper part of the bight, between Popoe and the estuary of the Volta. It is worthy of remark, that notwithstanding the apparently unfavourable nature of the country, the crews of vessels have generally suffered less from fever while in this locality, than upon any other division of

the station. This, however, it is apprehended, does not arise from any superiority of climate, but from the circumstance of there being little or no intercourse with the shore. Boats have been less frequently detached, there being no rivers or creeks, with the exception of the Benin, wherein slavers could lie concealed; while, in the event of their being detached to a distance along the shore, as has sometimes happened, the heavy surf which continually rolls in upon the beach at all times, effectually precludes the possibility of landing.

The service in this bight, however, has always been one of the most irksome and monotonous character that can be well conceived. During the earlier years included in the present report, when empty slave vessels were permitted to roam along the coast with impunity, and to lie in clusters off the different slave marts, until they found a fitting opportunity to take their cargo on board, it was by no means unusual for the cruisers here to spend two, three, or four months in succession, standing "off and on the land," under easy sail; off during the night, and on again towards the land as soon as it was daylight, until the vessels at anchor in-shore could be counted from the mast-head with a good glass. The reason of this manœuvre is obvious. To avoid observation slaves were seldom embarked till the dusk of the evening, and this, which seldom occupied more than an hour or two, according to the nature of the bar or surf, having been effected, the vessel immediately made all sail, and endeavoured to gain an offing beyond the cruiser, if possible, before daybreak. Hence the reason of the latter standing out during the night, and in towards the land again in the morning.

Proceeding downwards along the coast, the Bight of Biafra next comes under observation. This for a long series of years has been considered the principal cruising ground of the preventive squadron, and the position which has been most coveted both by officers and men, in consequence of the greater number of slave vessels frequenting the many intricate mouths of the Niger, where they can conveniently lie

concealed pending their negotiations, and escape with facility when they obtained a cargo. There have been therefore, seldom fewer than four or five vessels stationed between Cape Formosa and the equator, sometimes at anchor, but more frequently under weigh, with only sufficient sail set to enable them to keep their position off the mouth of one of the large rivers known by the names of Nun, Brass, Bonny, Calebar, and Cameroons; all which, with the exception of the last, are merely the disemboguing branches of the Niger. These vessels repair from time to time, or by turns, or rather as directed by the commodore or senior officer, as their water and provisions become exhausted, to Princes' Island for the one, and to Ascension for the other.

This section of the coast, from its excessive heat, light winds, humid atmosphere, and almost interminable morasses, is one of the most unwholesome localities on the station. Happily the shore has no attractions either for officers or men, and is seldom visited either from motives of curiosity or for pleasure. The rivers and creeks, however, have frequently been explored by boats in quest of slavers, and the former occasionally of late years have been entered by some of the smaller class of cruisers.

An open bay on the west side of Princes' Island has in general been made the rendezvous for the squadron on the southern division of the station. An abundant supply of wood for fuel can always be obtained there, and every valley presents a running stream of the purest water. Nearly the whole island is in a perfectly natural state, and everywhere presents scenes of the most exquisite beauty. Both officers and men therefore, when the opportunity offers, are frequently tempted to wander both too far and too long by the shaded brooks, or along the many secluded paths which intersect the bush, forgetting probably for the time that they may encounter the latent principles of fever in every step they take. It is, however, but justice to this oasis in the desert, if the word may be figuratively applied to the shipless seas of

Africa, to state that fever has seldom been contracted either in the bay or on the island, unless preceded by undue exposure, over exertion, intemperance, or what has been too frequently the case, a combination of all these causes.

St. Antonio is situated on the north-east side of the island on a low alluvial plain at the upper extremity of the harbour. It is land-locked, surrounded by moderately high hills, and densely wooded. Streams meander, as on the other side of the island, in almost every valley; it is, however, both in point of salubrity and as a place of anchorage, far inferior to West Bay.

Clarence Cove, on the north end of Fernando Po, has also been frequently resorted to for wood and water, but less frequently than Princes'; it is infinitely more unhealthy; and, notwithstanding the fostering hand of Government extended over it for several years, furnishes but few of those articles so necessary for the refreshment of a sickly ship's company. Fruit is not abundant, and although yams are indigenous, plentiful, and the finest in the world, the natives, either from a want of encouragement in the first instance, or from indifference to traffic, do not bring them into the settlement in the quantities that might be expected. The island, taken as a whole, is perhaps one of the most beautiful on the face of the earth; it presents from the beach to the highest ridges an expanse of magnificent, ever-varying verdure, unbroken, unless upon the very crest of the mountains, by the abrupt protrusion of either rock or hill. The trees are of a truly gigantic size, and strike the observer, who penetrates into the recesses of the forest, with a sensation of awe. There are places where there is nothing to be seen all around but huge grey branchless trunks, terminating high over head, in a dense canopy of widely intermingling branches; generally, however, the tangled mass of underwood is altogether impenetrable. On the plateau which was selected for the settlement, there were never more than a few miles of ground which had been fairly cleared of the natural forest, and upon this

new brushwood and rank grass sprang up with such astonishing rapidity, that it was found impossible to keep it clear. The mean temperature throughout the year is supposed to be lower than on the mainland; it ranges from 72° to 86°; upon an average 80° during the night, and 84° during the day.

From the general and continuous proclivity of the land however, there are not any marshes within many miles of the settlement, if, indeed, there be any on the island. The soil is open, red, and surpassingly fruitful; still there is not perhaps, any spot in the whole known world more detrimental to health; even the native-born Africans, from various parts of the continent, are always in a sickly state; although the natives of the island itself appear to be a healthy, and an athletic race of people.

The island, from its great altitude, besides being subject to heavy rains, is also frequently visited by sudden atmospheric changes, and terrific thunder-storms; while the heat, although in reality not great, from the excessive moisture of the atmosphere, and occasional calms, is at all times almost insufferable.

The island of St. Thomas is less frequently visited than either of the former. It presents the same geological features, but of a somewhat tamer character. The hills are less elevated, and although wooded, they neither present the sublimity nor grandeur of those of the last-named island. Along nearly the whole extent of its southern shore, a heavy surf rolls in upon the rocks with great fury, under which, from the numerous "blowholes," it seems to have hollowed out extensive caverns, in which, when the rollers are high, it makes a prodigious noise. The beach is exclusively occupied by a belt of cocoa-nut trees, which bend their graceful tufted heads over the rocks, as if doing homage to what is in truth there, "the roaring sea." Within this line of defence, the woods in many places present a parched and blighted appearance, from being frequently washed by the salt spray. It is also extremely unhealthy. Live stock, fruit, and vege-

tables may be obtained in small quantities at the small town St. Anna de Chaves.

Anna Bona is a pretty little island, about two degrees and a half south of the equinoctial line; it is between twenty and thirty miles in circumference, and from the sea presents to the eye of the approaching voyager a pleasing aspect. The natural woods are principally confined to rugged valleys, or scattered in clumps along the sea-coast, leaving large open spaces, where houses only are wanting to give it the semblance of a civilized and a richly cultivated country. The natives are few, and very miserable; they generally bring off pigs and poultry, which they readily part with for any article of clothing; fruit and vegetables are also, at times, plentiful, particularly guavas, which are excellent, and seem to grow wild. Amongst the hills in the interior there is a small lake of fresh water, the bed of which is supposed to have been originally the crater of a volcano. Notwithstanding the total absence of swamp land, the comparatively little wooding, the prevalence of a continuous sea breeze, and the dryness of the soil, there is every reason to believe that it also abounds in all the principles essential for the production of remittent fever.

In May, 1845, a prize crew (in a small hired schooner), consisting of two officers, a lieutenant, and an assistant-surgeon, seven white men, one Halifax black, and ten Kroomen, anchored at this island; as the vessel required some repairs they disembarked, and put themselves under canvas while these were going on. At the end of two weeks, the hold having been in the meantime thoroughly cleared and whitewashed, and the men apparently much improved in health by a change from a salt to a fresh meat diet, they again embarked and went to sea on the 11th of June. Between that date and the 20th, the whole of the white men, the Halifax black, and the two officers were attacked with fever; five died, and three were subsequently invalided. The whole of the Kroomen escaped.

A greater number of cruisers have been employed to the south of the equator during the last five or six years than was formerly the case; by their activity several old-established hordes of slave dealers have been broken up, and if not permanently suppressed, have been at least for the time scattered, and disturbed in their systematic plans of operation. At present there are generally four, five, or six vessels constantly employed between Cape Lopez and the southernmost littoral point of Benguela; but the localities requiring more particularly to be watched, are the Gaboon, Loango, Kabenda, the Congo, and Ambriz. St. Paul de Loando, by far the most important of all the settlements on that part of the coast, is happily no longer disgraced by this infamous traffic. Cruisers, besides anchoring occasionally at all these places, sometimes touch at Black Point, Quicombo, Lobita, Benguela, Loash, Salinas, Elephant Bay, and Massamedes, or Little Fish Bay.

Various schemes have been from time to time adopted by slave dealers for the purpose of evading the vigilance of the squadron. At present, on this part of the station, as in some degree connected with the disposition of the force, it may not be uninteresting to remark that the following are those most successfully practised.

In the first place, it may be taken as a general rule, that wherever wood and water are to be conveniently obtained, there are also slaves for sale. They are generally shipped, if not on the spot, at least within twenty miles on either side of it, and by the boats of the country, which are continually passing up and down the coast under the pretence of carrying archilla. A constant communication is thus kept up, and the positions of the cruisers having been ascertained, the slaves are immediately marched across the country, and embarked at those places where there is the greatest likelihood of escaping. The vessels engaged in this traffic arrive under the American or Brazilian flag, those of the former being sold for the purpose, the American master and crew remaining ostensibly in possession until the coast is clear and the

slaves are about to be shipped. The latter vessels clear out at St. Paul de Loando or at Benguela, for one of the intermediate ports, where they remain for an opportunity to ship their cargo in safety and escape, being principally guided by the intelligence obtained from the boats, as previously mentioned, as to the positions of the nearest cruisers.

The Gaboon, although nearly under the equator, is considered the most healthy of the large rivers on this division of the station, but why it should be so there are no means of explaining; the surrounding country is hilly, with however extensive intermediate swamps, while the banks of the river abound in brackish lagoons, skirted everywhere with mangrove thickets.

The coast between the Camma river and Loango has a picturesque appearance when viewed from the sea. It consists of gently undulating hills and slopes, clothed with rich verdure, with here and there scattered clumps of trees and low brushwood.

The native town of Loango is described as being large, clean, and well built; it is situated at the distance of six or seven miles from the sea-shore. The anchorage, like that of Black Point, is protected by a reef of rocks: it is frequented by the cruisers chiefly for water, which is obtained near the beach from a very small stream that trickles over a bed of argillaceous rocks. The country in the immediate vicinity of the bay is rich, alluvial, and fertile; it is covered with low brushwood and gigantic trees. Maize and cassada are cultivated by the natives, and appear to yield them abundant crops. Further inland the country is not so thickly wooded, and the soil is more sandy, although still fertile, and covered with coarse Guinea grass. In Loango there are three English and as many Portuguese factories, the latter confessedly for the purpose of carrying on the slave trade. The climate is said to be fatal to Europeans; and those who survive its influence for a year or two bear testimony to the truth of the remark. Their houses are situated at about half a mile from the sea-

shore, in a fine open country, sufficiently elevated to command an extensive sea view. The soil is sandy, with a fine mould, and there not being any marshes in the neighbourhood, it is difficult, according to generally received opinions, to account for its insalubrity. The merchants suffer from remittent and intermittent fever, with consequent enlargement of the liver and spleen.

The coast between Black Point and the Congo presents the same general appearance, but becomes more thickly wooded near Kabenda, and still more so towards the Congo. There is generally at least one cruiser either at anchor, or under weigh off the town of Kabenda. This place has been celebrated for many years, as one of the principal slave depôts south of the equator. It is prettily situated on the sides of the hills bounding the lower part of the bay. The soil is similar to that of Loango, but is more fertile and more thickly covered with wood. Fresh water is obtained here with difficulty, and in small quantities only, as the river is at the distance of a mile and a half from the anchorage. The Congo being so near is resorted to in preference. When it is not considered safe to ship slaves at Kabenda, they are marched during the night either to Melemba Bay, or to the Monomazia bank, at both of which places vessels can lie concealed under the high land; the former is about twenty-three miles to the northward, and the latter thirty southward, near the mouth of the Congo.

The country on each side of the Congo, as far as the eye can reach, is hilly, and clothed with trees and jungle in the full vigour and luxuriance of tropical vegetation. The banks of the river are low and swampy, and covered with mangrove thickets for forty miles from its entrance; they are intersected on both sides by creeks, or tributary streams of considerable size and depth.

The soil is alluvial, and whether under cultivation or in a state of nature, is extremely fertile. Her Majesty's cruisers frequently visit this river for the purpose of obtaining wood

and water, live stock, fruit, vegetables, and other refreshments. The water, when first obtained, is of a reddish colour from impurities, which however are soon deposited in the tanks, and it then becomes clear and wholesome; if used when impure or brackish, it is apt to produce intestinal complaints, which may degenerate into dysentery. It should, therefore, invariably be taken up in the strength of the stream, when the tide is ebbing, and at least twenty miles up the river, near Scotchman's Cap. It is also of importance that the men should be prevented from washing their clothes in the night-time while in the river, and from drinking the water obtained alongside, as both fever and dysentery have been thus occasioned.

At Ambriz, where there are extensive barracoons, the slave trade is still carried on with vigour. The river is obstructed by a bar, upon which the surf breaks so heavily that no open boat can cross it. It is said to be infested with alligators. The country around the factories being low, marshy, and covered with mangrove jungle, is consequently unhealthy, and, after the rains, the musquitoes are so numerous that the residents have to sleep during the night in the open air, under the protection of the smoke of a wood fire, in order to escape the torment they occasion. When Ambriz is closely watched, the slaves are sometimes marched to Ambrizetta, and shipped there.

Around St. Paul de Loanda the soil consists principally of a fine sand, which yields but a scanty vegetation. The town is intensely hot from the reflection of the sun's rays from the sandy soil; it is badly supplied with fresh water, the greater part of that used by the inhabitants being brought from Bengo Bay, a distance of between six and eight miles, where there is a small river that fertilises a valley through which it runs, rendering it a perfect garden. Fevers prevail here, and are most severe during what are called the little and the great "carnerades," but are worst during the latter; they are said to differ somewhat from the remittent of Sierra Leone, although

the difference appears to consist only in their complication with a certain amount of intestinal irritation; they terminate frequently in true intermittent. The most approved treatment amongst the resident physicians consists in the use of emetics in the first instance, followed by the continued exhibition of mild aperients; when the active symptoms have subsided, blisters are applied to the thighs and legs, and disulphate of quinine given internally. General bleeding is never had recourse to, but should the pain and irritation of the stomach not be relieved by the emetics, from one hundred and fifty to two hundred leeches are applied to the epigastrium. Calomel is never given in large doses, neither is it given for the purpose of producing ptyalism; it is sometimes however used as an adjuvant to other purgatives. The disease is considered to be totally unconnected with any local cause, and non-contagious; it is sometimes epidemic. Small-pox is rare, but all attempts at vaccination made with lymph brought in hermetically sealed tubes, have hitherto failed. The native blacks are not subject to fever, but they are liable to diarrhœa, dysentery, and dilatation of the rectum; the latter complaint is especially common among the recently captured slaves: it is treated by powerfully stimulant enemata.

The general aspect of the coast, as viewed from the sea, between St. Paul de Loanda and Little Fish Bay, is sterile and uninviting; being apparently little better than a continuous sandy waste, with here and there patches of stunted brushwood scattered over its surface, interspersed with large trees upon which the archilla vegetates. The only exceptions to this general sterility are a few valleys through which small streams meander towards the sea. South of Benguela there are not any rivers of importance, the largest in the dry season seldom exceeding a few yards in width.

Quicombo is a roadstead, or rather a small bay situated in 10° 19′ south latitude; it is frequently visited by the cruisers of the Benguela division of the station, on account of the facilities it affords of obtaining water, which is readily

procured from a large lake not more than fifty yards distant from the beach; it is formed by the confluence of several small streams from the neighbouring hills, which are numerous, but of no great height. Care should be taken that the level of the sea be below that of the fresh water before the casks are filled.

The valley is about a square mile in extent, and the soil is apparently composed of alluvial deposits from the various small rivers which unite to form the lake. The principal stream flows with great rapidity, and is supposed to have its source at a considerable distance inland. The country towards the interior is of a rocky character, with a sandy soil; there are numerous trees, and on all of them the archil lichen grows in great abundance. There are several Portuguese factories established here, ostensibly for the purpose of collecting the lichen, as well as for carrying on a trade in wax, gum, copal, and ivory; it is however notorious that their owners are at the same time extensive slave dealers. Behind the hills in the rear of the town, and to the right, there are barracoons capable of containing many thousand slaves, most of them of recent erection.

The residents suffer greatly from remittent and intermittent fever; wearing out a wretched existence in the course of a few years vainly struggling against these diseases. It is in fact supposed that more than one-half of the Portuguese perish annually.

Lobito is occasionally visited for wood by the cruisers stationed off Benguela. The soil has the same general character as that of Quicombo. It is destitute of water, and the only inhabitants are a few Portuguese blacks in the pay of the colonial government; they are principally employed in burning lime from oyster shells.

Benguela is considered to be the most sickly of the Portuguese African colonies south of the equator; and the appearance of the resident whites seems to justify the opinion. It is five miles from St. Philip's Bonnet, and is situated on

an alluvial flat at the upper part of the bay, with a range of lofty hills at some distance in the rear of the settlement. It is extremely hot, and is destitute of water, with the exception of that which is brought from a small stream a few miles north of the town, which flows through a marshy flat into Lobito bay. There is a considerable trade in archil, gum, wax, and ivory. Formerly it was one of the principal ports for the exportation of slaves; but, through the vigilance of the local government, that has been put a stop to. The scorpions of Benguela are said to be more venomous than those of any other part of the globe; and that unless remedies be speedily used, death sometimes ensues in twenty-four hours: this, however, it is apprehended is purely apocryphal. Good beef and vegetables may be obtained at a reasonable price, but not in sufficient quantity to supply the crew of a large vessel; the bay abounds in excellent fish.

Old Benguela is the most fertile and park-like land on that part of the station; it yields an abundance of cassada, pompions, and bananas. Slaves are obtained here, and, if not shipped in the bay, are marched to Rio Grande, a river ten miles to the northward, where there is every facility for their embarkation. At the latter place, good water may be had; but the bar is so dangerous, that none but small decked vessels can venture over it. There is also plenty of fire-wood at both places, but it requires time to select the good from the bad. Loash was a well known slave depôt, but is now abandoned; the natives having plundered the dealers so frequently, that they found it unprofitable to remain.

Elephant Bay was at one time much frequented by the cruisers on account of its sheltered anchorage, and for its advantageous position in enabling them to watch all vessels making Loash. The Portuguese have lately formed a small settlement there, for the purpose of collecting archil, which abounds in the neighbourhood. The shore from the anchorage has the appearance of an immense basin, the sides of which are formed chiefly by lofty hills of red sandstone and

granite, and the valley by the soil, sand, and rocks washed down by occasional floods from the surrounding hills. During the rainy season, numerous streams flow through the valley, but these are at times however completely dried up. The only water which is then to be obtained is from a brackish well at the foot of a hill, on the south side of the bay; it is unfit for internal use; animals resort to it in great numbers during the night, as is evidenced by numerous tracks.

The valley of Equemma, a few miles distant, presents the same general features; though from its being partially watered by a small stream, it is both more fertile and more thickly wooded. Both here and at Elephant Bay the guaiacum tree grows, but not to any great size.

The harbour of Little Fish Bay, in Portuguese Massamedes, possesses many advantages as a place for cruisers to refit, although from its distance from the slaving districts, it is but seldom visited. The climate is generally cool and agreeable; the harbour is almost landlocked, and abounds with excellent fish. The banks of a small stream which flows into one side of the bay are extremely fertile, and under cultivation. There is also good pasturage at hand, upon which numerous bullocks of a large size, and of good quality, browse; these may be obtained at a moderate price. There are several Portuguese families residing near the fort, which is built on a lime-stone cliff at the extremity of the bay; and is garrisoned by about sixty men, partly blacks and partly whites. The climate is thought by the Portuguese to be healthy; although the traders, who travel inland in search of ivory, gum, and wax, suffer severely from fever, and consequent enlargement of the spleen. The appearance of the country altogether, with the exception of the watering-place, is that of a sandy desert.

A RETROSPECTIVE ACCOUNT

OF THE

DISEASES

PECULIAR TO

THE AFRICAN SQUADRON.

CONDENSED REVIEW

OF THE

PRINCIPAL DISEASES

WHICH PREVAILED IN THE RESPECTIVE VESSELS OF THE SQUADRON,

During the Years 1823, 1824, *and* 1825.

By the following condensed review of the Medical Reports from the African station it will appear, that of all the diseases which affect the naval force which is there employed, that which proves most destructive to health and life is remittent fever. This disease prevails throughout the whole line of coast, at all times and seasons of the year, as an endemic, and at distant and uncertain periods it occasionally assumes an epidemic form.

It will also appear, that although the disease has sometimes broken out in vessels cruising off, but in close approximation to the land, it has seldom presented malignant characters. It has, however, frequently broken out in vessels which have remained at anchor for a considerable length of time in any of the ports or rivers on the station, particularly if the crews of such vessels should have had personal communication with the shore, or been detached upon distant boat service. Under these circumstances it has frequently become virulent, and, in a few instances, appears to have acquired contagious properties.

During the February of 1823 fever of an epidemic charac-

ter began to manifest itself in the colony of Sierra Leone, and rapidly extended to the crews of vessels in the harbour, in the river, or in the adjacent rivers and creeks, and to the different settlements along the coast.

In the latter part of March it first assailed the crew of H. M. S. "Bann," then at anchor off Freetown; but, as Sir William Burnett has already, in his official report published in 1824, so fully investigated every circumstance of interest connected with the appearance, progress, and decline of the disease in that vessel, it would be a work of supererogation, in every sense of the term, to do more than quote, with his permission, a few of the principal passages of the report, for the purpose of connecting the history of the "Bann" with that of the other vessels on the station to be hereafter mentioned.

Sir William states that the first case appeared on the 25th of March, after she had been at anchor off Free Town from the 11th January until that date, the crew during that time having been employed refitting the ship, and also in refitting a small prize vessel which had been converted into a tender. By the surgeon's report it also appears "that they were much exposed to the heat of the sun's rays, and had, perhaps, indulged in irregularities," circumstances that have never yet been known to fail in producing fever at Sierra Leone, particularly when persisted in for several weeks in succession.

On the 26th of March the master and two seamen were next attacked, but recovered.

On the 27th the vessel sailed from Sierra Leone, and between that date and the 31st three more cases were added to the list, and other four on the 3rd of April.

"According to Captain Phillips' account, the sick list then rapidly increased, the disease beginning forward in the ship, came gradually to the after part, till nearly all the officers and men were attacked. Indeed, when it ceased at Ascension, about the 11th of May, only sixteen of the officers and ship's company had escaped. The total number was ninety-

nine, of whom thirty-four died, fifteen of them before the Bann reached Ascension. The disease had also attacked that part of the crew which was detached in the tender, San Raphael, to reconnoitre the Gallinas; and after her return to Sierra Leone it raged with such fury that at one time it was determined to destroy her."

"The Bann, on her leaving Sierra Leone, was ordered to St. Thomas', but, from the unhealthy state of the crew and the bad weather, it was deemed advisable to proceed directly to the island of Ascension. On her arrival at that place, tents were erected on shore at the distance of nearly five hundred yards from the garrison, all intercourse with which was interdicted, and the whole of the sick, amounting in number to forty-five, were landed and placed in the tents provided for them."

"Eighteen days after her arrival, viz., on the 11th of May, a boy (son of one of the serjeants of the garrison) was violently attacked and died, but it is neither known nor believed that he had any nearer communication with the sick of the Bann than passing daily at no great distance from the tents to feed his father's poultry."

About this time the fever in the Bann had nearly ceased, but it went on daily attacking some of the garrison; and it appears by the official report that twenty-eight were taken ill, of which number fifteen died and thirteen recovered. The disease finally became extinct upon the island about the 16th June.

Sir William states his inability to account with certainty for the origin of the fever, either in the colony or in the Bann, but distinctly proves that it was not, as had been supposed, imported by a vessel named the Caroline; "that it was in the first instance merely the common endemic of the country, brought on by hard labour and exposure to the sun, not possessing, under these circumstances, any contagious properties, and continued to be so until after the middle of February; that it subsequently, by the state of the

weather preventing ventilation, and from a great number of the sick being confined in a small place, became contagious; and that, though it was impossible to trace the fever in question directly from the Bann to any individual of the garrison of Ascension, yet there is just reason to believe that the disease was introduced into the island by that ship."

The next vessel that comes under notice, taking them as they stand in alphabetical order in the returns, is the "Cyrene," which was at Sierra Leone in March, where, it is stated, several of the crew contracted fever from intemperance and exposure on shore. There was also a party of men employed painting and repairing the boats in a small bay about two miles below the town, where they slept under canvas in their hammocks. All these men, eleven in number, had fever, and one of them died. The disease, however, did not appear to have assumed the malignant character it did in the Bann.

During the months of April and May the ship was employed off the Gold Coast. Only one case of fever occurred there in the person of the armourer's mate, who slept five nights on shore in the town of Cape Coast. The Cyrene then proceeded to the Gambia, where she remained at anchor until the end of June, and then returned to Sierra Leone, between which and the Cape de Verde Islands she appears to have been employed in October. Having refitted at the former anchorage, she sailed for Cape Coast, and in December for England. During the year upwards of eighty cases of fever occurred on board, principally between March and September, seven of which proved fatal.

The "Owen Glendower" arrived on the station in the early part of the year 1823. On the 26th of March, when at Sierra Leone, there was not a man on the sick list. The crew were then employed in watering and refitting the ship; they were considerably exposed, and much in the water, and had opportunities of procuring spirits; still, however, con-

trary to what usually happens, only a few cases of fever resulted. After leaving this anchorage the duties, while in the Bight of Biafra, became very severe and harassing. The men were much employed in boats, searching the rivers Bonny, Old Calebar, and Cameroons, were exposed to heavy rains both by night and day, suffered great privations with regard to food and drink, and underwent severe bodily fatigue in pulling the boats from place to place. There occurred upwards of seventy cases of fever of a remittent character. The disease was not contagious, and was in every instance contracted by exposure and irregularity, chiefly amongst those on detached service.

Towards the close of the year she proceeded to Sierra Leone, where the men were employed in refitting the rigging; several cases of fever occurred in consequence of the exposure and fatigue attending these duties, but only one of them proved fatal. A week after she left the above colony, small-pox, which was then rife on shore, broke out amongst the Kroo-men and liberated Africans; thirty were attacked, and four died. In the majority of instances it assumed the confluent form. On the 25th of January, in consequence of a party of the officers having been assailed by the natives of Succondee, then in league with the Ashantees, detachments were landed, and an attempt made to burn the town, in which two marines and one Krooman were killed. Early in February she arrived at Cape Coast. The marines and a party of seamen were landed to assist in garrisoning the castle, and in putting it in a state of defence against the Ashantees, then encamped at no great distance in the bush; but on account of the great abundance and cheapness of spirits, it was found to be impossible, in spite of the best endeavours of the officers, to keep the men sober; they were therefore, more particularly as their health began to suffer, re-embarked. Subsequently a large proportion of them were attacked by hepatitis, and a disease resembling the colonitis of India; nineteen cases of the former and seven of the latter occurred. It is not a little

singular that these diseases are now of comparatively rare occurrence on this part of the coast. In the colonitis the patients were generally unwell for several days before they presented themselves; when they did so, they complained of dull pain extending from the right superior spinous process of the ilium, along the course of the colon, to the epigastrium; the appetite continuing good, but with urgent thirst, and a torpid state of the bowels. Those who presented themselves in the early stage of the disease had a bluish-white tongue, a moist skin, and a natural pulse. The pain complained of gradually concentrated in the hypogastric region; the bowels became loose, with much pain and straining while at stool; the evacuations being merely a reddish serum or mucus, the urine scanty, of a deep red colour, and discharged with painful strangury. As the disease advanced, the dysenteric symptoms became more severe, the evacuations presenting shreddy portions of a membranous-like substance in a reddish fœtid fluid. On dissection, the omentum was found adhering to the surface of the intestines; the points of adhesion frequently containing a little matter; in the cavity of the abdomen there was commonly an effusion of reddish serum. The cæcum in almost every instance inspected was gangrenous; there were inflammation and gangrene of the arch of the colon under the liver; the sigmoid flexure was also found inflamed, and the inner surface of the gut ulcerated, excoriated, and inflamed towards its lower end. The mesenteric glands were also found hardened and enlarged. The treatment was the same as that usually adopted in dysentery.

There occurred also a number of cases of fever amongst the men who had been exposed at the castle, and four soldiers who had been left in the bush, when the troops retreated before the Ashantees, died of the same disease after coming on board.

The "Swinger" brig arrived on the station in the last quarter of 1823, and as far as can be made out from the

reports, was employed on the usual duties of the station. She continued healthy until the same period of 1824, when she entered the Rio Pongas on the 12th of October, and anchored at a distance of fifteen miles from the sea, in close contact with the mangrove bushes, and amongst swamps overspread with every species of filth in a state of decomposition. The boats were employed several days in examining the creeks, and left the ship each day without either a sufficiency of water or of provisions; their sufferings were consequently great. Shortly after this, the vessel returned to Sierra Leone, where the men had leave, and as usually happens, came off late at night, and frequently in a state of intoxication. She next proceeded to Bunce Island, twelve miles further up the river, where she was secured alongside the wharf, and her holds cleared out, the crew in the meantime having opportunities of indulging immoderately in trade rum. In consequence of their imprudence, fever of a malignant character broke out and carried off eight men.

It does not appear that the fever again attacked the crew of the Swinger while she remained on the station.

The "Maidstone" arrived on the coast from England in May, 1824, and continued healthy until June, when she anchored at Cape Coast; ten cases of fever occurred while she remained there, and twenty-three of dysentery; these diseases were in every instance contracted on shore. During the last quarter of the year, fever again made its appearance on board, in consequence of exposure on boat service; three cases proved fatal. The weather during that period was damp, and the rain at times heavy. The Maidstone then continued healthy until June, 1825, the duties having been more confined to ship-board, and the weather dry and equable.

From the latter month until December, she was employed in the Bights of Benin and Biafra, touching occasionally at Princes' Island, Fernando Po, St. Thomas', and Accra, for

wood, water, and fresh provisions. During this period there were twenty-four cases of fever and three deaths, the disease generally attacking those men who were employed on shore with the watering parties at Princes' and St. Thomas', or who were away in the boats on other duties.

The following circumstance is singular, and clearly enough points out the greater danger attending exposure by night than by day, to the exciting causes of fever in this climate.

The crew of the "Thetis" assisted in the defence of Cape Coast Castle, when it was attacked by the Ashantees in July, 1824, and several cases of fever occurred in persons who were employed on shore. Of a party consisting of one midshipman and seven men, who for two days and one night held a tower (Phipps') half a mile to the left of the town, near which there is a small brackish lagoon, six were attacked with fever from the 10th to the 17th day after exposure, and three died. In one case there was deep yellow suffusion of the skin and eyes. The immediate cause of the disease in these cases is supposed to have been exposure during the night to marsh, jungle, and dead animal effluvia; in proof of which it is stated, that the carpenter and ten of his crew who had been employed at the same tower for four successive days, did not contract the disease; they had their breakfast before they landed in the morning, and always returned on board by sunset.

There are not any reports from the "Victor" previously to June 1824, but between that date and the 1st of March 1825, there were between twenty and thirty cases of fever, of which five terminated fatally. The latter occurred in men who had been exposed to the exciting causes on shore. On dissection a liquid like coffee-grounds was found in the stomach of one individual. In March, April, and May, whilst the vessel was cruising in the Bights of Benin and Biafra, the crew not having had any communication whatever with the shore, continued in the enjoyment of perfect health.

Early in the year 1824, the "Atholl" joined the preventive squadron from England, and immediately commenced the usual duties of the station. Her crew continued healthy until she arrived at Princes' Island, where they were employed watering the ship, after which they obtained leave to go on shore to wash their clothes in a shaded stream; thirty of them straggled into the bush, and having found their way across the island to a small town (Port Antonio), got drunk, and lay about all night in the woods, and in the miserable hovels of the natives. Forty-one cases of fever seem to have been the result of this indulgence, and three of them terminated in death.

The same ship again suffered from fever after the rainy season, and a few days subsequently to her leaving Sierra Leone, where the men unfortunately had liberty to go on shore. They committed great irregularities, to which the sickness was chiefly to be attributed. There were altogether forty cases of fever and three deaths.

It is not mentioned in the returns when the "Redwing" arrived upon the station, but between May 1825, and the beginning of the following year, upwards of thirty cases of fever occurred on board from severity of duty, and exposure to the vicissitudes of the weather in the rivers of the Bight of Benin.

It is stated that "the vessel sails badly, consequently the duty has been principally done by the boats, the men in which have frequently been exposed for several days and nights together to the profuse rains at one moment, and to the glare of an almost vertical sun the next."

From January 1826 until May, she was employed on the windward part of the station, and visited Sierra Leone. Two deaths occurred from fever; one of the individuals contracted the disease at Bunce Island, the other at Sierra Leone, where he was permitted to go on shore. The months of May, June, and part of July were spent in cruising off Capes Mount and

Mesurado, the crew being in the enjoyment of good health until they returned to Sierra Leone, where they remained nine days.

During this period there was considerable communication with the shore by boats, and those who were employed in such duties were necessarily much exposed; the weather was however fine, the thermometer ranging between 80° and 82½°. There occurred one or two tornadoes, with heavy rain, and there had been continuous rain previously to the ship's arrival.

After leaving this anchorage eighteen cases of fever occurred, all of which were in persons who had been on shore; the disease was most violent in those who had slept there and were of careless habits. In three instances the fever terminated in death.

The crew of the Redwing afterwards continued in the enjoyment of the most perfect health until the end of the year, when she returned to England.

It appears from the reports from 1823 to 1825, both years included, that there existed a greater amount of sickness, both throughout the squadron, and throughout the different European settlements along the coast, than usually happens; but whether this resulted from accidental circumstances, or from some epidemic condition of the atmosphere, there is no means of determining. The probability however is, that both in some degree assisted in causing the more general prevalence of disease, and the increase in the mortality.

In the first place there was a greater number of soldiers, the refuse of other regiments, sent out to Sierra Leone to fill up the ranks of the African corps, many of whom were men of incorrigibly bad habits, who in a manner drank themselves to death in a short time after they had landed in the colony.

There was also a greater influx of Europeans upon the Gold Coast, in consequence of the Ashantee war, in which several of the vessels of the squadron also took a part, particularly in the defence of Cape Coast Castle; and it would appear that

the squadron congregated more in harbour than it has ever done since. All these causes, therefore, if they did not add to the virulence of the epidemics in 1823 and in 1825, at least tended to multiply their victims.

The prominent features of the disease, whether in the endemic or epidemic form, appear to have been identically the same with those presented to the medical officers upon the coast in the present day, notwithstanding the great diminution of bush in some parts, and particularly around Sierra Leone. Lassitude, dull erratic pains and rigors marked the stage of invasion; heat and headache, with general pains, thirst, intolerance of noise and light, irregular pyrexial exacerbations and remissions, the stage of maturation; yellowness of skin, stupor, and somnolency, dark dry tongue, irritability of stomach, black vomit, and black dejections, the stage of decline in cases terminating in death.

In almost every instance where the disease assumed a formidable character, its origin could be traced to one or more of the common well-known predisposing and exciting causes, namely, to undue exposure to the vicissitudes of the weather, either on shore or in boats near the shore, combined with fatigue, cold, wet, insolation, or with intemperance, and other imprudences included under the head of irregularities.

The Bann contracted the fearful scourge, which swept off nearly one-third of her crew in little more than two months, at Sierra Leone, from a protracted exposure to the influence of that pestilential locality. The Cyrene contracted a similar disease, although less virulent, from similar causes, and in the same locality. The Owen Glendower, in the Bight of Biafra, and at Sierra Leone; the Swinger, in the rivers Pongos and Bunce; the Redwing, in the rivers of Benin; and the Atholl, at Bunce Island and at Sierra Leone. It however does not appear to have assumed a contagious form in any vessel but the Bann.

DISEASE IN THE SQUADRON,

AND AT

FERNANDO PO,

Between the Years 1826 *and* 1831.

The "Esk" is first mentioned in the medical returns in the latter end of the year 1825. Whilst at Sierra Leone about the end of July, 1826, she received on board two midshipmen and several seamen of the Clinker, who had been on shore a few days only. In the course of a week one of the midshipmen and two of the men were seized with fever; one of the latter died, and the other, who had contracted dysentery, and partly recovered, after exposure to heavy rains at Fernando Po, had a relapse, and finally fell a victim to that disease.

The effects of nocturnal exposure are well exemplified in the following instance, as well as the period of incubation: —Two officers remained on shore one night at Princes' Island, having accidentally missed the boat. Twelve days afterwards they were both seized with fever in a violent form. The treatment adopted was bleeding, purging, and cold sponging, with calomel to affect the mouth, and sulphate of quinine during convalescence. The Esk returned to England in April, 1828.

The "Leven," a surveying vessel, appears to have arrived on the west coast of Africa by way of Bombay; she continued healthy until the return of the boats, and the tender Alba-

tross, which had been employed on a survey of the Sherbro channel and Bolm river during the months of February and March, 1826. They were employed in the Bolm river about ten days; the weather being fine but hot during the day, and the dews at night remarkably heavy. The boat's crews, and the crew of the tender, were a good deal exposed, being employed all day in towing the latter; and it is remarkable, that of four boats' crews who slept in their boats, only three men were attacked; whereas of those who slept on board the tender, seven seamen were attacked. It is to be regretted that the numbers employed are not mentioned. The disease presented the usual symptoms; all the cases which terminated fatally were accompanied by great mental despondency from the beginning, and with low delirium in some on the third and fourth day. Many passed large round worms.

"Cold affusion was used in the hot stage with good effect. Calomel and antimony were given with the view of affecting the mouth; but in the worst cases ptyalism could not be produced, although ulceration of the gums took place in several. In a few instances during the remissions bark was tried, but seemed to do harm."

During May, June, and July, the Leven was employed surveying the shoals of the Rio Grande, and the passages between the adjacent islands. The weather was dry and fine, and the boat's crews not having been much exposed, nor more than four days absent from the ship at any one time, only two cases of fever occurred, both of which were mild.

The exemption from fever during these months, it is submitted, cannot altogether be attributed to the fineness of the weather, nor to the limited exposure in the boats; it is one of those instances in which it is as difficult to account for the absence of fever, as it is on other occasions to explain its presence. Had it occurred, it is more than probable the exposure in the boats in a notoriously unhealthy locality, abounding in marshes and mangrove-covered creeks, would have been assigned as the cause.

The "Maidstone" has been previously noticed; she arrived on the northern division of the station early in the year (1826) from the Bights; and in January refitted at Sierra Leone, where the men had one day's leave; shortly after which there were eleven cases of remittent fever, and two deaths. There were also four cases of hepatitis, and four of dysentery; probably different results of the same cause. From Sierra Leone she proceeded to Ascension, where the ship's company were disembarked, and placed under canvas for a fortnight on the beach. They were well supplied with turtle, and had a few vegetables. No disease whatever resulted from this, and it may be assumed that the men roamed freely over the island; while, in their encampment, they were constantly exposed to the rays of the sun throughout the day upon a beach of white comminuted shell and coral.

In March she resumed her position in the Bights, her crew greatly renovated in health; and continued cruising off the estuaries of the large rivers there until the 6th of May, when she anchored at St. Thomas', for the purpose of obtaining wood and water; the parties employed in these duties returning on board every evening at sunset. The jolly-boat was detained one night, however, by a tornado; and the crew, including a marine, obliged to remain in the bush, drenched with rain, until the morning. Four or five days afterwards six of the men were attacked with fever of a remittent form, while the vessel was at sea. It is not stated how many were left on shore.

Until May in the following year the Maidstone ranged pretty generally along the coast, from the equator to the most northern extremity of the station, but no disease of much importance occurred on board, except to a few individuals who had been either away in a prize, or on shore at Sierra Leone. She finally returned to England in July.

The "North Star" arrived on the station from England in July 1826; and whilst at Sierra Leone in August, the effects of

the climate became manifest by the occurrence of a few cases of fever. On the 7th of the latter month, twenty of the crew were employed in boats and on shore embarking provisions; they had wine and bark, as directed by the public instructions, with the exception of Lieutenant Boultbee, who conducted this service; he declined taking the prophylactic dose prescribed to the men; and it is not a little singular that he was the only one of the whole party who suffered from fever. Several other cases of fever occurred both in this and the following month; but it is not stated whether the parties had been on shore or not; one proved fatal.

The men were strictly enjoined to wear blanket dresses during rain. These are generally made from the common slop blanket, and consist of a frock and trousers, rudely fashioned, but well adapted as a means of defence against rain and the sudden nocturnal chills, so injurious to health in nearly all intertropical regions.

On the 3rd September the vessel arrived with a clean bill of health at West Bay, Princes' Island, and remained there until the 13th; the thermometer at the time ranging between 78° and 82°, with very heavy rain; notwithstanding which the crew were employed refitting the ship, wooding, and watering. The wood was cut and carried down to the beach, and the water-casks filled in the brook, and rolled down to the boats by the Kroomen; still the boats' crews were much exposed to the rain, and in spite of the greatest precaution on the part of the officers, several succeeded in getting intoxicated on palm wine or aquardienté. There were also several of the officers' servants who were permitted to go on shore to wash in the brook, there being at that time absolutely no means of obtaining the luxury of clean linen otherwise upon the station, from Accra down to the equator. In consequence of all these imprudences committed between the 3rd and 13th of the month, fever broke out on the 20th, and continued until the 18th of October, when it began to decline. All who had been exposed on shore, with two or three exceptions only,

had an attack. The disease was not of a severe character, and none died.

The North Star then proceeded to Ascension, and appears to have been remarkably free from disease for some time. In the report, commencing on the 12th of March, 1827, it is however stated, "the cases of fever that terminated fatally, were men who had been twenty-two days in the boats, exposed to the intense heat of the sun, to the heavy night dews, and to rain occasionally. The whole of the five cases had been four days ill in the boats, or in the captured slave brig, Silverienha, previously to their being brought on board, and were without medical assistance during that time, there being then but one medical officer in the vessel." There resulted altogether, it would appear, twelve cases of fever from this expedition; five died, five were subsequently invalided, and two returned to duty,—proof, it may be assumed, of the disease having been of a most malignant character.

In May and June the North Star visited Sierra Leone, the Pongas, the Gambia, and St. Jago, one of the Cape de Verde group. There occurred only six cases of fever, but they furnish the strongest evidence of the danger attending all exposure to the telluric agencies of this inhospitable shore. Four of the six were the common endemic, which terminated in death in three instances. One was a boy who had been left behind at Sierra Leone, and exposed to the heat of the sun by day, and to the damp of a negro hut where he slept by night; another was a man who had remained behind in the Rio Pongas in a small merchant vessel for the space of five months; the third was employed in one of the ship's boats in the Pongas, and exposed to rain for twenty-four hours in succession. From September to December the ship was on the northern part of the station, and the crew remarkably healthy: the nature of the duty is not stated.

FEVER IN THE "SYBILLE."

This vessel arrived at Sierra Leone from England on the 24th of May, 1827. In the beginning of June four cases of remittent fever occurred on board; one of the patients was the butcher, who had been on shore killing bullocks: two others were smugglers serving for punishment, and they of course had not once left the ship. Upon the fifth or sixth day of the disease, yellow suffusion of the eyes and skin took place. The fourth case occurred to an officer after returning from a shooting excursion at Accra.

It is remarked that "great attention has been paid to the health of the crew;—drunkenness is promptly punished, and the men warned of its bad effects; cleanliness and ventilation are not only rigidly attended to, but the slightest humidity on the lower deck is immediately dissipated by the frequent use of Brodie's stoves. Every man is obliged to muster in a blanket dress for the night watch; and they are never unnecessarily exposed to wet, being permitted to remain below when the service will admit of it. Wooding and watering are performed chiefly by the Kroomen; and when any seamen are employed on these duties, they are invariably allowed breakfast, and afterwards bark and wine, however early they may require to leave the ship."

A better code of regulations than the above could hardly be produced for the service on the coast of Africa. How far they were carried into effect, the writer of these notes has no means of ascertaining from the documents in the office of the Medical Director General; but during the remainder of the time this vessel continued on the station, her crew suffered most severely, on more than one occasion, from the ravages of fever, and at last it is believed she was finally forced to quit the station before her time of servitude had expired.

It is to be regretted, that in consequence of the harassing duties of the surgeon, and his subsequent illness, he was unable to send in so full an account of the disease as could have been desired. From a published account,* however, and from information obtained from other sources, it appears that the Sybille was employed in the Bights of Benin and Biafra from December, 1828, till the 21st of June, 1829, when she anchored at Fernando Po. Here they found the Eden, which ship had lost her captain, surgeon, assistant-surgeon, and a great many men, by fever contracted at Sierra Leone. All communication between the Sybille and the shore, or the Eden, was prohibited during her stay, with the exception of the purser, and one or two superior officers. On the 22nd of June however, they received on board a sergeant of the royal marine artillery, and seven marines, from the Eden, and on the following day another marine from the settlement; all these had lately arrived from England in the Champion. On the 23rd of June, John Meeking, one of the marines who had been received from the Eden, was attacked with fever, and immediately sent on shore; the sergeant, who complained of rheumatism, was at the same time placed on the sick list. On the evening of that day, the Sybille sailed from Fernando Po. To the sergeant and the seven marines who had joined with him, a drachm of cinchona with a gill of wine was administered twice daily for four days; and afterwards once a day for a few days longer. On the 26th of June, William Love, a boy, was seized with fever, though he had had no communication with the shore or with Meeking. The case was mild. On the 2nd of July, at Princes' Island, Charles Hall, who came on board at Fernando Po, was seized, and from that period the disease continued to show itself in different parts of the ship while at sea. It soon assumed a most malignant character, and attacked individuals of every class, age, and temperament, although the negroes were affected with it in comparatively small numbers, and in a

* Medico-Chirurgical Review.

mild degree. On the most minute investigation, the surgeon was unable to trace the disease, either from man to man, or from mess to mess; and those who attended the sick were not more affected than those who kept aloof. The sick-berth attendant, and the surgeon himself, though both unprotected by previous attacks, escaped the fever. The sailmaker, who sewed up the dead bodies in their hammocks, had a slight attack, though he had formerly had the yellow fever at Jamaica; while the boy who assisted him escaped. Every attention was paid to cleanliness and ventilation; and the dead bodies were speedily committed to the deep, together with their bedding and clothes.

"The disease was evidently yellow fever in the greatest degree of intensity. With two exceptions, it was of the continued kind; the stage of excitement short. In the worst cases, it terminated fatally between the third and sixth day, most frequently on the fifth. Death was preceded in a great number of cases by black vomit, often accompanied by a dingy or livid hue of the countenance. Yellowness of the eyes and skin was very common before death; it varied from a pale lemon colour, to a dark orange hue. An officer, who died on the eleventh day of a relapse, had previously suffered from yellow fever in the West Indies."

It is worthy of remark, that of the eight marines received from Fernando Po and the Eden, who took bark during eight days, two only became affected with fever.

"The sudden cessation of the disease," says Dr. M'Kinnal, "on the 28th of August, when forty men were on the list, and when the power of contagion (if it existed) must have been at its height, seems to prove that atmospheric changes had great influence in the production of the disease, as well as in its extinction."

"On the 12th of September, the ship arrived at St. Helena without a man on the sick list; being the seventeenth day from the date of the last seizure, and the third day from the date of the last death by fever. After two days' quarantine,

the officers and men of the Sybille went on shore, and mixed with the inhabitants from that time till the 25th of October, without any accident resulting from the intercourse."

"The Sybille again anchored at Fernando Po on the 19th of November, when the settlement was considered healthy; she afterwards touched at Whydah, where bullocks were procured, and then proceeded to cruise at a great distance from the land. On the 3rd of June, 1830, she anchored at Princes' Island, and was there joined by her tender the Black Joke, which arrived from Sierra Leone, where she had been very sickly, and lost twenty-three of her men. Her crew, however, were now entirely recovered, or convalescent. When the Sybille was weighing anchor on the 7th, a boy, who laboured under common tertian, came on board from the Tyne, which latter vessel was stated to be healthy. Six days afterwards, namely, on the 13th of January, yellow fever again broke out in the Sybille, while cruising off Cape Formosa. Dr. M'Kechnie, an assistant-surgeon, who had lately come from England, and who had been on board the Black Joke for a few minutes, was the first seized. The disease soon increased in the ship, and early in February it became very alarming, producing the most dreadful havoc amongst all classes on board. The number of cases during this visitation amounted to eighty-seven; of which twenty-six died, with the usual symptoms of the most malignant yellow fever."

"Afterwards, in St. Helena roads, on the 22nd of March, the fever again broke out, twenty-two cases occurred, and six died."

"The surgeon gives it as his opinion, that the disease on both occasions arose principally from noxious emanations from the interior of the ship, probably caused by the decomposition of the wood from the long-continued action of heat and moisture, aided perhaps by an accumulation of different substances under the lining or limber boards of the holds." On the other hand, it is positively asserted by officers who served in

her, that no ship could have been kept more clean, or have been better ventilated. The greatest care was taken of the people; the boats were seldom if ever sent away on detached service; and in order that this should also be observed in her two tenders, they were only allowed a little dingy each.

The disease throughout was considered by the surgeon as non-contagious, but by the officers and men as highly so. The commodore, from humane motives, prohibited all Europeans, with the exception of himself and the medical officers, from visiting the sick. Dr. M'Kechnie mentions, "that the frequent deaths produced such depressing effects, that at meal-hours, when smoking was allowed, but more particularly in the evening, the men used to congregate together with despair depicted in their faces, to learn from one another who had gone to the doctor, or who was likely to die during the night." The same gentleman has also kindly furnished the following incident, which deserves to be placed upon record:—"To dispel as much as possible the state of general mental depression, and to convince the officers and the ship's company that the disease was not contagious, Dr. M'Kinnal directed me to collect some black vomit from the first patient who was attacked with that fatal symptom; accordingly I collected about a pint of it from a man named Riley, I think, about two hours before he died. Shortly after this the doctor came up to the starboard side of the half deck, when I told him what I had done. He then went down to the gun-room, and about half-past twelve o'clock (the men being then at dinner), returned with a wine-glass. Mr. Green, the officer of the forenoon watch, was then going below, when he called him over, and filling out a glassful of the black vomit, asked him if he would like to have some of it; being answered in the negative, he then said, 'Very well, here is your health, Green,' and drank it off. There were no other persons actually present, but there were others on the deck at the time, and it became the theme of conversation all over the ship during the afternoon. Dr. M'Kinnal immediately after-

wards went on the quarter-deck, and walked until two o'clock, to prevent its being supposed that he had resorted to any means of counteracting its effects. This took place in February, 1830, when the ship was cruising off Lagos, about one hundred and eighty miles from the land."

A more deliberate act of cool moral courage can hardly be conceived; but it is evident he had observed the fatal tendency of fear upon all around him. The sick being deprived of the kind offices and friendly consolation of their messmates, lost all hope of recovery from the moment they were seized; while the healthy, from brooding over the little probability they had of escaping, and from daily witnessing the mortal remains of some of their shipmates committed to the deep, were rendered peculiarly susceptible of the morbid poison, whether it were of a personal or of a local nature; it was therefore, above all things, desirable to restore confidence by some means or other, and there was certainly none so likely to produce that effect as the revolting measure Dr. M'Kinnal imposed upon himself. It is almost unnecessary to add, that it did not impair his appetite for dinner, nor did he suffer any inconvenience from it afterwards.

FEVER IN THE "EDEN."

The Eden arrived at Sierra Leone on the 2nd of September 1827, and sailed for Fernando Po on the 4th of October, with the necessary stores for the projected establishment at Clarence Cove on that island. On the passage down she touched at Cape Coast and at Accra, but none of the crew were permitted to land. Ulcer, in the mean time, made its appearance on board in a somewhat malignant form; its occurrence was attributed, no doubt very properly, to the crowded state of the ship, there being more than double the number of people on board than there was fitting accommodation for, the lower deck being completely filled with stores and provisions for the establishment. On the 27th of October she reached her destination, and was moored at the entrance to the Cove, so as to have the full benefit of the sea-breeze, which is frequently so light as to give rise to the idea of a "stagnant state of the atmosphere."

Six cases of fever occurred during the last quarter of the year, four designated synocha, and two of the ordinary remittent character. The first of the latter was contracted at Sierra Leone by a man who had slept on shore at King Tom's Point for fourteen days, while in charge of the stock horses; the other case, which terminated fatally, is thus detailed:—

"The patient was a young lad, nineteen years of age, who was sent amongst the chiefs at Fernando Po to learn their language and customs. He was away upon two occasions, about fourteen days altogether, and in the course of a week after his last return to the colony was seized with fever. On the seventh day his eyes and skin became of a bright yellow colour, gradually assuming a darker tinge. On the fourteenth day he was convalescent, but three days afterwards he had a relapse, and died on the twenty-sixth day of the disease."

This case, so singularly, and, it may be said unnecessarily contracted, was soon followed by others of a similar nature in the unfortunate establishment on shore. In December, four of the European mechanics employed there were seized with fever, and two died. It thus appears that the deadly nature of the locality was soon made apparent.

During the first quarter of 1828 ulcer still continued prevalent, in consequence of which the ship was several times whitewashed, and otherwise purified, while the worst cases continued to be treated under canvas on shore. There were four cases of fever, two of which terminated in death: both individuals had been intemperate characters. It appears that a lotion of the chloride of lime was, in the first instance, supposed to be effective in the cure of ulcer, but it was ultimately laid aside as useless. The hospital on shore was fumigated with the vapour of nitrous acid, and the main and lower decks of the ship again whitewashed, but still without benefit. It was remarked, that those persons whose ulcers became foul, were generally attacked in groups of three or four in one night, and mostly after much thunder and lightning, preceded by several days of hot, sultry, and oppressive weather. The sloughing process only attacked the lower extremities, particularly the feet and ankles, and never ascended higher than mid-leg.

Fever became more general in April, and six deaths resulted. Three of these at the time were under treatment for ulcer, or convalescent at the hospital when they were attacked. In consequence of the disease showing a disposition to spread, the whole of the sick on shore were removed to the ship. Two cases of fever were also removed from the Horatio tender, employed in cruising off the Calebar river on the opposite coast, and one came from a prize. In every other instance the disease was contracted either at the hospital by the patients while under treatment, or on shore by the carpenters and armourers employed there.

With regard to the treatment, it is observed, "that it varied

from the practice followed on first arriving at Fernando Po, and the results have been much more satisfactory; for latterly *two* out of three have recovered. I have abandoned the practice of giving calomel with the view to excite ptyalism, and now use it only as a purgative. The other means adopted are, free bleeding, according to the effects produced, followed by purgatives, repeated according to circumstances, with the application of cold wet cloths to the shaven head, and a blister to the head or nape of the neck when delirium occurred. After catharsis, two grains of calomel and two of antimonial powder are given twice or three times a day, together with effervescing draughts; and, upon a marked remission being observed, ten grains of the sulphate of quinine is immediately given. This, in some cases, has entirely prevented a return of fever, and in others (the majority) rendered the disease milder and more manageable. Smaller doses of quinine only increase the febrile symptoms."

Ulcer during the spring quarter was entirely subdued, but four cases of dysentery were put under treatment. Tornadoes had been frequent with heavy rain during May, although the rainy season had not fairly set in.

The ship being free from disease, and the laborious part of the work on the settlement having been completed, she sailed early in June for Sierra Leone, touching by the way at Princes' Island and Ascension. The weather was cool, dry, and pleasant, until she reached her destination, on the 6th of July, when it rained with very little interruption till the 21st. The crew continued tolerably healthy up to the latter date, when they again left Sierra Leone. In the course of a few days after this the usual fever made its appearance, but was chiefly confined to men who had recently volunteered from timber ships, the greater part of whom had been living on shore, and committing every kind of excess. There were five deaths from fever and one from dysentery.

Remissions occurred on alternate days in most instances, but in some this was hardly perceptible. The disease was

marked by great mental depression, with but little determination to the head. In the majority of the cases there was more or less of yellow tinge in the eyes and skin, which was first observable about the seventh day. The contagious character of the disease (if it were contagious) does not appear to have come under consideration.

Between the 17th of September and the 12th of October the Eden continued cruising off the Bonny, occasionally anchoring near the shore. The weather was unsettled, and heavy rains occurred at least every alternate day, with a bright hot sun breaking through the clouds at intervals. While at sea there were not any severe cases of fever, but on returning to Fernando Po on the 12th of October, five were received from the shore, all in a very dangerous state.

With regard to that establishment, it is remarked, "out of the twenty-five marines sent from England in the Medina to form the garrison, eight have been already attacked with fever of a different type from that which proved so fatal last season; it is characterized by a greater determination of blood to the head. Opening the temporal artery and leeching have been had recourse to with great relief, as has also the warm bath when there was internal congestion." On a fair view of all the circumstances attending all these cases, it is probable that the difference was more imaginary than real, more a difference in the contingent symptoms than a difference in the type or character of the disease. The cause being on both occasions the same, and the subjects not dissimilar, with a corresponding condition of the soil and season to that of the previous year, it would be difficult to conceive in what way a difference could arise, unless it be supposed that, from the more recent arrival of the men from their native climate, they retained a certain condition of body capable of modifying the effects of the morbific agencies of the locality. It may be further remarked that the difference in the mode of treatment only confirms the fact that no rule can be laid down for the treatment of fever within the tropics; it must vary with

the symptoms, irrespective of time or place, season or soil, classification or nomenclature.

On the 20th of October the Eden sailed from Fernando Po, having embarked seven cases of fever, all of which were contracted on shore. Most of these were then convalescent, and all recovered on the passage to the island of Ascension; but on returning to Fernando Po on the 26th of December, three relapsed, and visceral disease having supervened, they were at last invalided and sent to England.

The health-condition of the settlement is again adverted to. The medical officer having in the meantime been taken ill, the sick were attended to by the surgeon of a French slave vessel. The whole of the detachment of marines that arrived in the Medina, with one exception (the sergeant), had been attacked with the common remittent fever of the country; eight of these had died, and two were invalided. Most of the others were convalescent; but they had, however, an extremely sallow complexion, were unhealthy, and liable to bowel complaints.

It would therefore appear that the plan of opening the temporal artery, so highly thought of a few weeks before, had not met with the success that was anticipated; and it may not be improper to remark, that in yellow fever this practice is not infrequently attended with considerable danger in the typhoid stage of the disease, in consequence of the absorption or decay of the coagulable lymph in the half-cicatrized wound. When this occurs it will frequently happen, particularly when black men or black women are employed as nurses, either from their inattention, or from apathy and stupidity in attempting to control the hæmorrhage as directed, that a considerable quantity of blood will be lost before the vessel can be secured; while the necessary firm bandaging of the head proves a source of annoyance and irritation to the patient afterwards. The loss of a few ounces of arterial blood at this stage of the disease generally gives a fatal turn to the symptoms.

The Eden, it is presumed, remained in Clarence Cove until the 7th of April. During the preceding months a great number of fever cases came under treatment, but they were principally relapses. She returned to Sierra Leone on the 1st of May, all on board being then healthy. A few cases of malignant fever occurred on shore about this time, and on board the trading vessels in the river, on which account medical men augured an unhealthy season. Two midshipmen on board a prize of the Eden's were seized early in May, and one died in the prize. The other was removed to the Eden on the 5th of May, and died on the 6th. The next that sickened was John Russell, a seaman, who had volunteered from the shore: he was attacked on the 3rd of May, and died on the 17th. After this there was not any addition to the list of fever cases until the 12th, when the attacks were as follows:—

On the	12th	May	1	On the 24th May	2
	13th	,,	2	25th ,,	3
	14th	,,	3	26th ,,	1
	15th	,,	7	27th ,,	2
	16th	,,	3	28th ,,	3
	17th	,,	2	29th ,,	1
	21st	,,	2	30th ,,	3
	22nd	,,	1	31st ,,	3
	23rd	,,	2		

On the 20th she sailed, and arrived at Fernando Po on the 11th of June, having lost altogether, in officers and men, twenty-five individuals. The whole of the officers, with the exception of one lieutenant and the gunner, were either dead or confined to bed. The details of this dreadful visitation are emphatically concluded in the following words, which present a picture so truly appalling that it were well they could be read in those places where a closer approximation to the coast by our cruisers is advocated:—"The men were dying daily, amidst almost incessant rain and frequent tornadoes, accom-

panied with much thunder and lightning; the main-deck was crowded with sick, and constantly wet. The moral effects of these scenes became palpable in every countenance; while, from the want of medical attendance, the surgeon and two assistant surgeons having died, it was impossible to pay that attention to the ventilation of the ship, or even to the personal comforts of the sick, which their situation required."

On her arrival at Fernando Po, she was placed in quarantine; and, on the following day, all the sick were sent on shore, to an isolated spot on Point Adelaide. On the 14th of June, H.M.S. Champion arrived from England, and Sierra Leone, with supernumeraries for the island: having been reported *not* sickly, she was immediately admitted to pratique; in consequence, however, of several bad cases of fever having been landed from her, the Eden was released on the following day, the 15th of June. All the stores and tanks were then sent on shore; the ballast shifted, and the ship herself thoroughly cleansed, whitewashed, and fumigated; after which the convalescents were re-embarked, and she sailed for Princes' Island on the 9th of July; she arrived there on the 17th, sailed again on the 20th, and anchored at St. Helena on the 23rd of August. Between Fernando Po and Princes' Island, the weather was cloudy with heavy rain, and fresh breezes from the south-west; between the latter island and St. Helena, it was fine, with light south-west breezes, until the south-east trade was entered. The Europeans on board when she left Fernando Po, amounted to fifty-eight, of whom twenty-three were convalescents. The number put on the sick list during the voyage is not known; but the main deck for a long time was crowded with the hammocks of fever patients; most of which were fresh attacks, though there were also many relapses amongst the convalescents. Three deaths occurred between Fernando Po and Princes' Island; and seven between the latter and St. Helena.

A medical officer who had joined previous to her leaving Fernando Po, was, in the course of a few days subsequent to

her departure, seized with fever, from which he finally recovered, though with an impaired constitution, and an almost total loss of memory, which rendered him unfit for his duties at a very critical period. The office of surgeon (there being no assistant) was then assumed by the captain, whose extensive knowledge and long experience of the African climate and diseases, rendered him peculiarly fitted to perform its duties. His treatment of this formidable disease, it is stated, was simple, but more successful than any that had hitherto been adopted. Having witnessed the frequent and fatal result of "energetic treatment," he had imbibed a kind of horror of bleeding, and, at the same time, a predilection in favour of mild measures, probably from observing the greater success that attended the simple means employed by the natives and resident Europeans. The abstraction of blood did not therefore form any part of his treatment. He commenced with some brisk purgative, and after its operation, patiently waited for a remission of the symptoms, when he exhibited quinine, and continued its use, until the patient got well; omitting to give it, however, if a paroxysm of fever intervened. When diarrhœa supervened during convalescence, which was not unusual, he gave calomel until ptyalism was fully established; after which the patient generally recovered rapidly.

The deaths in May amounted to twenty-seven; in June, to thirty-one; in July, to thirty-two; and in August, to seven; while out of thirty men left in hospital at Fernando Po, only nineteen were alive on the 1st of December: making the total number of deaths from fever and its sequelæ, between the 1st of May, 1829, and the 1st of December of the same year, one hundred and ten! * of whom fifty died on board the Eden, and fifty on shore at Clarence Cove. Thirteen were natives of Africa, all the others were Europeans.

As this disease commenced at Sierra Leone, it is presumed

* This number probably includes several men who were not entered on the ship's books.

that its causes must be sought for amongst the febrific exhalations eliminated in that pestilential spot. In the first place, it will be necessary to notice the meteorological phenomena that characterized the season. The rains commenced in April, and, upon the whole, were lighter than usual. Between the 1st and 7th of May, the mornings were calm and sultry, followed by a light breeze from the north-west, which toward evening veered round to the south-east. From the 7th to the 20th, there was cloudy weather, with occasional rain, and light winds from the south-east to the south-west. There was a violent tornado on the morning of the 3rd, and another on the morning of the 17th of May; and rain fell slowly but irregularly during the whole month; so that the quantity of moisture, and the intense heat of a vertical sun, tended greatly to increase vegetable decomposition, and exhalations from the soil.

The emanations from the flats between the town and the Bunce River, and from the Bullom shore, although seven miles distant, together with the state of the weather, are therefore supposed, in the first instance, to have originated the disease, which spread with fearful rapidity and virulence over the greater part of the colony, and assumed a more than ordinary degree of malignancy amongst the shipping at anchor in front of the town; some merchant vessels in fact lost nearly all hands. From a variety of circumstances, it was considered not to have been transmissible from person to person, although it appeared to be developed in certain infected spots, and that exposure for a very short time to the exciting cause in a concentrated form, was sufficient to produce the specific effect: thus a soldier contracted fever in the Earl St. Vincent merchantman, although he remained only two hours on board.

The entire complement of the Eden was one hundred and sixty officers and men; making an allowance for a few that were not seized, and for those who recovered, the deaths must have exceeded two-thirds of the persons attacked.

Its symptoms are described as being divisible into two classes; the first indicating increased excitability and inordinate vascular action: the second diminished excitability, with congestion of the brain, and of the organs of the abdominal cavity. In some cases, the symptoms in the stage of invasion were rapidly developed; in others, more slowly, and in an insidious manner. In the course of twelve or fourteen hours, there was generally a remission of the symptoms, followed sooner or later by the next and last stage, characterized by prostration of strength, remission of pain, the skin being covered with a clammy moisture, or dry, and below the natural temperature; pulse natural or flagging, or quick, small, and weak; irritability of stomach, hiccough, yellowness of the eyes, frequent but ineffectual calls to stool, and mental anxiety. As the disease advanced, the debility increased; the eyes became more yellow, bloodshot, and glassy; the skin also became of a yellow tinge, and covered with a cold perspiration, with sordes on the teeth, chapped lips, and hurried respiration, vomiting of black matter (black vomit), sometimes delirium and convulsions; at others, coma and insensibility to surrounding objects closed the scene. All the deaths occurred between the third and ninth day of the disease, but the majority on the fourth or fifth.

Venesection in some cases procured a remission, which was seldom followed by exacerbation; but generally by a train of unfavourable symptoms in the second stage. When bleeding was not had recourse to, there was usually an exacerbation on the third day. Black vomit, though a common, was not an universal symptom; sometimes it appeared early, at others late; and was occasionally attended with a burning pain in the region of the stomach, and a desire for food. The brain seemed to be the organ primarily affected; then in succession the alimentary canal, the liver, and stomach.

The treatment consisted in bleeding in the early stage, purging, and the free exhibition of mercury, both externally and internally, in order to produce salivation as quickly as

possible. Blisters were also used when indicated. In some cases which proved fatal, the mouth was sore from the influence of mercury, showing the danger of depending upon the supposed specific effect of that mineral. Although bleeding produced a temporary remission and relief for a time, it was soon followed by collapse, from which the patient seldom recovered; while those patients who were not bled, appear to have survived fully as long as those who were.

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MEDICAL HISTORY OF FERNANDO PO.

Although fever seems to have prevailed in a sporadic form, or rather as an endemic, at Fernando Po, from the time it was first occupied, it does not appear that it became epidemic until the 29th of June, 1829, when a sergeant of marines was attacked; on the following day four other cases occurred, and it then became general; between the above date and the 31st of August, there were no less than seventy-seven persons prostrated by the disease; to thirty-nine of whom it proved fatal, a mortality that sufficiently stamps the malignancy of the disease. It however appears that the season had been unusually wet during the months of July and August, when the disease had acquired its greatest virulence; the rain sometimes fell in distinct showers, but more frequently in torrents, continuing through the greater part of the day and night; and although the sun shone brightly at times, and with great force, still the horizon was generally clouded, with an extremely damp state of the atmosphere, and the men were much exposed to these vicissitudes. The thermometer ranged from 63° in the morning at six o'clock, to 81° at mid-day.

It will be proper here to bear in mind that the Eden and Champion arrived from Sierra Leone, the one on the 11th, the other on the 14th of June, both with the epidemic raging on board. The former had been placed in quarantine, but was released in consequence of several bad cases of fever having been landed from the latter, and of the disease, upon further investigation, having been considered to be of local origin in the Eden. A number of Europeans,

as well as Africans, were at the same time landed for the service of the colony, and the sick of both ships' companies were sent on shore, that they might have better accommodation and quietude. An attempt was made to keep those of the Eden separate from those of the colony for some time; but the latter, in the course of two weeks increased so rapidly, and the disease being apparently not of a contagious nature, but dependent upon common causes peculiar to the locality, seggregation was considered to be no longer necessary; the whole of the sick were therefore moved into the hospital on the 29th of the month.

The arguments adduced in favour of the disease having been introduced into the settlement by the Eden and Champion rest upon these grounds.

In the first place, the condition of both vessels while on the passage from Sierra Leone was such as might very probably engender contagious properties in a disease not originally contagious.

2nd. That previously to the arrival of the Eden and Champion, and consequently prior to the landing of the marines and supernumeraries, the colony, which contained but few Europeans, enjoyed (comparatively speaking)good health; but immediately afterwards a fever appeared, which committed great havoc amongst the marines, and also carried off several of the colonists.

3rd. That when one member of a family was seized, it usually attacked others of the same family.

4th. That medical men were among the first seized; and,

5th. That a fever of so much malignancy had not been observed since the establishment of the colony in 1827.

The following reasons are adduced in favour of a local origin, and against its being contagious:—

1st. Strangers, on their first arrival, have always been, and are still subject to fevers of more or less severity, according to the season of the year, and the constitution of the individual. Of thirty mechanics who arrived in November, 1827, all had

suffered; the number that died cannot be ascertained; a few were invalided, and five only remained when the Eden arrived in June, 1828. While the disease was raging in the colony, two individuals were sent, the one on board H.M.S. Plumper, and the other on board the Fame, merchantman; both were shortly afterwards attacked and died, without an extension of the disease in either of these vessels.

2nd. In December, 1829, when the colony was healthy, and the dry season had commenced, four men were discharged from the Eden to the settlement; in a very short time they were all attacked with a malignant fever, of which three died; all these were natives of, or belonged to the island of St. Helena, and were therefore acclimated; the other, who recovered, was a stout healthy seaman, and had also been in some degree acclimatised. These men, it might be supposed, were less susceptible to fever than young robust subjects, arriving direct from England.

3rd. The invalids sent to the Lord Suffield transport, did not communicate the disease to any one on board that ship.

4th. The character of the fever was similar to that of Sierra Leone, and of other parts of the coast. It was, in fact, an aggravated form of the common remittent; and,

5th. Its great mortality and epidemic character were occasioned by the importation of a number of young robust Europeans at the commencement of the unhealthy season.

The fever was distinctly remittent in its character, and accompanied by yellow suffusion of the skin and eyes, and black vomit. Blood-letting was practised in the cases where the head was much affected, but not unless there were appearances of congestion. It was considered to have been used with advantage; but the mortality which occurred, it is presumed, fairly precludes the applicability of such a phrase in relation to the treatment of a disease, apparently so little under the control of all the ordinary remedial means; unfortunately there is not any means of testing, with even an approxi-

mation to truth, the utility of any particular plan of treatment in transient, but virulent invasions of epidemic maladies, which appear to differ in themselves at the same period, and in the same locality; or at the same period, but in a different locality; or in the same locality, but at distinct and different periods.

In the early stage of the disease the bowels were always well cleared out; calomel, in large doses, was then had recourse to; but in the bad cases, it was generally impossible to produce ptyalism, although the gums, by the continued use of the mineral, might become vascular and swollen. Even in cases where ptyalism was effected, it had not the power, as is generally supposed, of preventing the recurrence of febrile paroxysms; and it is further expressly noted, that although there was no flow of saliva during the paroxyms, still there was both before and after them.

This is important, as another well-authenticated proof,* from accurate observation noted on the spot, of the utter inutility of calomel, even when "pushed" to salivation, as a therapeutic agent in the treatment of yellow fever. "Quinine was found necessary to complete the cure."

Gastric irritability was at first combated by a blister, and, if necessary, by effervescing draughts, the patient being directed to lie as much as possible on his back and right side; and, at the same time, to abstain from drink. This, it is stated, was an advice much more easily given than complied with, a remark the truth of which will readily be admitted by any person who has witnessed the deep distress, and constant jactitation of a patient in the most agonising stage of intense fever, or who may have experienced an attack in his own person. In the gastric irritability, attended with great general collapse, much benefit was often derived from a pill of capsicum, opium, and camphor; or from a small quantity of nitrous ether with laudanum, camphor, and aromatic con-

* Dr. Stewart.

fection. Porter diluted with water, to which was added a little lime-juice and sugar, was often found to quiet the stomach, when nothing else would. Arrow-root, with a little wine, succeeded at other times. In short, medicines the most opposite in their nature, were found to succeed in cases of disease presenting exactly similar characters. In those cases where the head remained loaded with blood, whilst the circulation was receding from the surface, the practice was most embarrassing. Calomel, although persisted in, failed; while the bleeding from the nose prevented the abstraction of blood from the arm. Bottles of hot water to the feet frequently restored the retarded circulation. And again, although the application of cold to the head seemed to lower its external heat, the eye would still look red, and the pain continue undiminished.

In the cases which did not prove fatal on the fourth or fifth day, and when apyrexia occurred daily at some period or other, quinine was the only remedy that could be depended upon; it was often rejected, although generally on the fourth or fifth day of the bad cases, it was kept down by an effort on the part of the patient. The liquor arsenicalis was useful in a few instances; but sulphuric acid, tincture of muriate of iron, and bitters were powerless in preventing the recurrence of febrile paroxysms. "These were not had recourse to from an idle wish to experiment on the life of a fellow-being, but on account of the small stock of quinine, which it was of importance to reserve for the worst cases."

The appearances on dissection were engorgement of the vessels of the brain, with slight serous effusion into the ventricles, and between the membranes. Lymphy deposit was only observed in one case. The peritoneal surface of the stomach was healthy; the villous membrane of a dark brown and red appearance; both these conditions existing sometimes in different parts of the same stomach; dark spots the size of a pin's head; the membrane not abraded in any instance; black vomit was generally found in the organ. The liver was in-

flamed in two instances towards its acute margin; in all the others it was much enlarged, and of a dark colour. In no instance was an abscess detected in this organ by incision. The bile was viscid, and invariably dark. The spleen generally enlarged. The intestines also frequently contained the matter of black vomit, and were sometimes inflamed on their mucous surface,—the small intestines more frequently than the large.

Of the whole party of marines and mechanics, including officers and women, landed upon the island in the middle of June, amounting to fifty-eight, only four had escaped an attack of fever on the 31st of October, 1829, and most of the others had experienced two. The party arrived about the beginning of the rainy season, and the greater number of the men were mere recruits. Two of the three medical officers sent out died on landing, from fever contracted on the passage; and the third was long prevented from attending to his duties by three separate attacks of fever, and his ultimate usefulness much impaired by repeatedly suffering from quotidian ague.

The cases of intermittent generally assumed the quotidian form at first, but the paroxysms subsequently became so irregular, as to defy all nosological arrangement. They generally, however, came on about 5 P.M., and lasted until 2 or 3 A.M. The cold stage was slight and short; swelling at the præcordia from flatulence, with an uneasy sensation in both hypochondria in general accompanied it. The disease produced extreme langour, with both mental and physical prostration. The Africans suffered much from remittent and intermittent fevers, ulcers, yaws, and diarrhœa.

November was a healthy month, comparatively speaking, at Fernando Po. Several men, however, were received from a merchant brig, which had contracted fever while trading in the river Nun; seven of these died. The fever was apparently identical with that of Fernando Po. In December there were several cases of fever, but not in that severe form which characterized those of autumn. The stage of excitement was shorter,—the oppressed state of the cerebral, gastric, and

hepatic organs more transient; and in the fatal cases there was not any black vomit. In January and February, 1830, a few cases of sporadic fever occurred; principally the result of intemperance, exposure, or previous fever.

During the period included between March and July, 1830, fever again resumed its work of destruction in this ill-fated settlement. The rains commenced in May, and continued throughout June and July; the sun, occasionally breaking through the clouds for a few hours, shone with a brilliant and almost a scorching intensity; at these periods the heated evaporation from the earth was so great that it is best described by the word "steamy;" it was at the same time offensive, and loaded with an earthy aromatic odour, rendering respiration difficult, and producing headache, with a degree of lassitude hardly to be conceived but by those who have suffered from its baneful effects. The men at this time were exposed to the heavy rains, and to the glare of the sun throughout the day, while engaged in their various avocations; to these causes and the effluvia arising from the rapid decay of vegetable matter, the sickness was principally to be attributed; the greatest mortality occurred in a party which arrived from St. Helena in April;—it consisted of men, women, and children, amounting in all to fourteen, of whom there were only two remaining alive by the end of July. A lieutenant of marines, with his wife and six children, also arrived at the same time, and shortly after they were all attacked with fever; four of the children, before they had been a month on the island, fell victims to the disease. The wreck of this family a short time afterwards was obliged to leave the settlement for the recovery of health. Six attendants, it is stated, also died at their residence, which was contiguous to a dense wood, considerably below the plateau of the settlement, and in the neighbourhood of a small stagnant pool surrounded by a great quantity of decaying wood.

Throughout July and August fever continued to prevail, as fresh subjects presented; but the greater number of indi-

viduals admitted into hospital were seamen from palm-oil ships, who had been ill some time previously to their arrival, and had probably contracted the disease in the rivers on the opposite continent. Another surgeon having taken medical charge of the establishment, it is necessary to notice that the treatment consisted of bleeding, purging, and the application of counter-irritants, together with calomel in combination with antimony; three grains of each being repeated every third hour, until the gums gave evidence of the system being under the influence of the former mineral. Quinine was also given when indicated.

The reports continue to exhibit the same melancholy amount of disease and mortality, up to the beginning of 1832; about a twelvemonth after which, it is believed, the place was abandoned altogether as a government establishment. During the year 1831, there were amongst the Europeans alone, two hundred and seventy-four cases of fever of all denominations treated in the hospital; many of these, however, occurred in men who were in no way connected with the naval service, —seamen from merchant vessels, who contracted the disease while their ships were at anchor off the island, or while they were lying in the rivers on the opposite coast, where they sometimes remained for several months collecting palm oil and other freight, whence the men were sent in boats to Fernando Po for medical treatment. There were also a number of wounded and sick men, Spaniards principally, landed from captured slave vessels. Forty of the deaths, however, from fever occurred in men either belonging to the establishment, or in seamen sent from the vessels of the squadron. But the mortality from all classes of disease is most remarkable; three hundred and eighty-four men were admitted into the hospital, of whom seventy-nine died. The number of cases treated, exclusive of fever, is one hundred and ten; twenty-six of which terminated fatally, being at the rate of one in four; a mortality, it is assumed, that has seldom been exceeded in any civilized community, from a similar number of diseases of the same nature. Some

were of a dangerous character, but the majority were not so originally. There were nine cases of confirmed consumption admitted, all of which died; and ten of dysentery, five of which died: there were also three deaths from ulcer. This disease had occasionally, from the first formation of the settlement, assumed a sloughing form; and prevailed generally both amongst the whites and the black population.

The treatment of fever during the year under consideration was of that nature which is usually designated energetic;* namely, the detraction of blood from the arm or temporal artery in large quantities, repeated, if judged necessary, for the second, third, fourth, or fifth time; the bowels meanwhile being briskly purged by means of calomel in combination with jalap, colocynth, or scammony; or calomel alone followed by frequent doses of the solution of sulphate of magnesia; if the stomach rejected these medicines, enemata were had recourse to every third hour, until free catharsis followed; and if, after this severe discipline, there still existed pain in the head, or uneasiness in the epigastrium, blood was again drawn by means of cupping instruments applied to these parts. Blisters were also resorted to, and repeated upon parts still raw from previous vesication, for the purpose of relieving vomiting or continued internal pain; but the practice was found to be dangerous, in consequence of its producing inflammation and suppuration in the substance of the kidney; with a serous effusion between its peritoneal coat and the parenchymatous structure, where there was observed an appearance like numerous small vesicles; together with severe inflammation of the mucous coats of the ureters, extending to that of the bladder, where it terminated in suppuration. Calomel, when intended to produce ptyalism, was given in five-grain doses in combination with antimony every third hour; it had previously been exhibited in larger doses, but severe salivation was not approved of, as those who were so treated, if they recovered, suffered from repeated attacks of the disease subsequently.

* Another surgeon took charge in 1830.

It was, however, found difficult to regulate the dose, so as to produce the degree of ptyalism required; very small doses frequently causing severe ulceration of the tongue and fauces, without any salivation whatever; and in some instances it is stated, that it even acted as a poison, producing inflammation of the parotid gland and gums, terminating in a gangrenous state of both. Quinine was given as usual, when the fever abated, in three-grain doses every third hour; but was supposed to be of but little utility until the alvine secretions became natural.

Had the disease been of the nature of a demon, possessing power over the body, but compelled to share in all its evils, it might be supposed that it could not long have withstood such formidable measures; it might also have been conceded that the means were, or would have been, warrantable and applicable to the ends desired; as it was, it can only be regretted that the practice was not more successful. That it was adopted from a thorough conviction of its being the most likely to succeed, and followed out with a zeal and a devotedness to the relief of the unfortunate sufferers, all who had opportunities of witnessing the horrors of this pestilential spot at the time, may well remember; and none but those who have had similar duties to perform, can rightly judge how far a generous mind, foiled in all its resources, and reasoning upon false data, will be led astray in devising means to mitigate the sufferings of humanity. Mild measures had failed, and, therefore, in accordance with the rules of practice and the doctrines of the day, as the disease increased in violence, so was it to be violently attacked. How far this succeeded at Fernando Po is not left as a matter of doubt or of speculation.

It has been strongly urged upon the younger branches of the profession, for the last twenty years at least, that bleeding in tropical fever is a *sine quâ non,* and that calomel is "our sheet-anchor;" the former under peculiar circumstances, such as supposed inflammation and congestion, was enjoined

to be practised with a bold hand, until the violence of the disease was broken; while the latter was to be "pushed" *coute qui coute*, no matter what the symptoms were, until the system gave unequivocal evidence of being under its influence; a spongy, swollen state of the gums, with looseness of the teeth, was and is still held by many not to be satisfactory evidence, and therefore formed no limit to the still farther "pouring in" of the mineral, which was not to be discontinued until a complete state of ptyalism was induced, a condition that clearly and distinctly appears to be incompatible with that of fever, and never occurs until an absolute remission of all the symptoms permits the various organs of the body to resume their wonted functions; it is in fact the effect, and not the cause, of returning health. Happily these doctrines, groundless in theory and empirical in practice, are rapidly giving place to others more consistent with common sense, and the rules of sober reasoning. The majority of medical officers of the present day find that the abstraction of blood in large quantities is productive of a dangerous degree of debility in the typhoid stage of the disease; while it has been observed that the blood drawn is frequently dark-coloured, and deficient in coagulable properties, indicating directly the reverse of an inflammatory diathesis. It has also been observed, that a state of ptyalism cannot be enforced by increasing the quantity of calomel exhibited; neither is it when obtained, although it marks the cessation of pyrexial action, a state of safety.

"HECLA," "PRIMROSE," "PLUMPER," "ATHOLL," AND "DRYAD."

The "Hecla" arrived at Sierra Leone in May, 1828; thence she proceeded to St. Jago; returned to Sierra Leone in September; and again, having sixteen cases of fever on board, she visited Teneriffe in October; and, returning to the coast in November, commenced her surveying duties.

In December thirteen cases of remittent fever occurred, principally among the officers, the men in the tender employed surveying the creeks of the Gambia, and three deserters who remained some time in the bush. Five of the above cases died, namely, one officer, one of the crew of the the tender, and the three men who deserted. The officers, three in number, and a man who attended them, contracted the disease on a shooting excursion.

Until July, 1829, her boats were busily employed surveying the rivers between the Gambia and Sierra Leone, and only a few unimportant cases of disease appear to have occurred; but in consequence of the death of the surgeon all further account of the medical history of the ship is lost: she appears to have passed down the coast, and was at Fernando Po in October, where a large proportion of the crew were cut off by fever.

During the latter months of the preceding year, the "North Star" was employed on the Sierra Leone division of the station; and subsequently, until the October of 1828, generally along the coast, from the Bight of Benin to the Gambia; she then took up a station in the Bights, when there occurred six cases of fever, three of which terminated in death. Two of the latter occurred in men who had been some time on

shore at Clarence Cove, Fernando Po, and were taken ill nine days after joining the ship; the other, who died, was one of three men who had been left on shore at Port Antonio, in Princes' Island, for four days; he was seized about the ninth day after his return on board, with another of his comrades, who was attacked precisely at the same time. The disease is stated to have been of a continued type, although exacerbations towards night are noticed.

The treatment adopted was bleeding from the temporal artery; purging, and the inducement of ptyalism by calomel as soon as possible; blisters were applied to the nape of the neck, and over the whole head, with fomentations, and mustard cataplasms to the feet. The appearances on dissection were the "veins of the brain very much distended, with effusion of watery fluid in proportion to the amount of inflammation." In each case the abdominal viscera were found perfectly healthy.

The "Primrose" is first mentioned in January, 1829, when she was employed cruising in the Bight of Benin, touching occasionally at Princes' island, Fernando Po, and Accra. Fourteen cases of fever of a severe character occurred, but no deaths. In December and January she was employed to the northward of Sierra Leone in searching the rivers. During this period few diseases of importance occurred, and not a man was lost in this service, which was performed by the boats. Bark, night and morning, mixed with the allowance of rum, was used, there not being any wine in the ship. In February she returned to Sierra Leone, the crew continuing healthy, but there was one death from fever. The victim, a subordinate officer, had been left there in charge of a prize, and having contracted fever from exposure to the sun's rays, together with irregularity of living, died on the tenth day.

From February until June, 1830, there was not any disease of importance on board, which is undoubtedly attributable to

the ship having been nearly constantly at sea, and occasionally leaving the coast altogether for the purpose of visiting Ascension, the Cape Verde Islands, and St. Helena. In June, 1830, there were a few cases of fever, and one death; they occurred in men employed on shore at Princes' Island. The person who died was of dissipated habits. The Primrose subsequently visited Anna Bona, and returned to England in December of the same year.

The "Plumper" appears to have arrived on the station either in the latter part of 1827 or in the beginning of 1828, and first touched at the Gambia, where a watering party had frequent communication with the shore. One man slept two nights in the town, and another one night; both contracted fever. Towards the close of the year she made a trip to England, and afterwards rejoined the squadron at Sierra Leone in the latter part of June. The rainy season was then commencing, and the colony was unhealthy; several of the oldest residents had fallen victims to the epidemic, respecting the origin of which there were various opinions. Seven cases occurred in the Plumper, three of which terminated fatally. The fever was remittent, and presented the usual symptoms. The treatment adopted in the early stage was blood-letting, and clearing the bowels out with calomel and jalap, or the sulphate of magnesia with tartarised antimony. The next object was to get the patient under the influence of mercury as soon as possible by the exhibition of eight-grain doses of calomel, in combination with antimony and opium, two or three times a day. It is stated that the success was not such as could have been wished.

During the three last months of the year there occurred sixteen cases of fever, six of which proved fatal. They were contracted on shore at Sierra Leone by men belonging to prize crews of H.M. ships Sybille and Medina, and by part of the crew who were permitted to go on shore at Princes' Island in November, where they exposed themselves with the

usual inconsiderateness peculiar to seamen. The fever was supposed to have been of an epidemic character, and common along the whole coast at that time.

The Plumper's crew did not again suffer from climatorial disease until the latter part of November and December, when a sudden irruption of fever of a most malignant character in a manner unmanned the vessel, whilst in the neighbourhood of or at Sierra Leone. It is however to be regretted, that, in consequence of the death of the medical officer, there are not any returns from the 14th July until the 3rd of December. The deaths however were numerous; out of thirty-six men sent to the military hospital at Sierra Leone, only twelve survived, and of these it was found necessary to invalid eleven, and send them to England for their recovery; one individual only, an officer, remained out of the whole number capable of continuing in the execution of his duty on the station. They were all subjected to the mercurial plan of treatment "pushed" to its utmost extent; consequently those who escaped death had a long and painful convalescence.

On the cessation of the fever ptyalism ensued, with frightful swelling of the cheeks and palate, accompanied with ulceration of the gums, looseness of the teeth, and intolerable mercurial fetor, perceptible not only in the wards of the hospital to which they were confined, but over the whole building. Comment upon this sad tragedy, as it may be called, would be useless; it speaks for itself. It is presumed there are few, particularly of those who may have witnessed somewhat similar scenes, who will not, on calm reflection and an impartial view of the case, experience a sensation of regret that the whole of these men had not been left entirely to the curative efforts of nature. Had their wants simply been attended to, their bowels kept open, suitable food and drink administered as circumstances required, the mortality could hardly have been greater, while the amount of physical suffering most unquestionably would have been less, with in all probability, less injury to the health of the survivors.

The Plumper was afterwards principally employed on the northern part of the station until June, 1832, and was frequently at anchor in the river Gambia, where a few cases of remittent fever occurred from exposure in boats and otherwise.

The "Vigilant," ketch, was ordered to the coast of Africa with despatches. In the beginning of August, 1828, three men were placed on the sick list with fever, two of whom died. They had been previously on shore at Sierra Leone, and exposed themselves in a state of inebriety all night to the "dampness of the atmosphere."

The "Atholl" arrived on the station in November, 1829; for the first three months after which she was employed in the Bights, and afterwards on the northern part of the station until July, her crew, generally speaking, being healthy. It is remarked that "the cases of fever have recovered much more slowly of late than formerly (a twelvemonth ago), so that instead of its being an advantage to be acclimatised, it is apprehended that it will be found to be quite the reverse, for the system becomes relaxed and debilitated by the enervating influence of the climate, and consequently it is more difficult to restore it to a state of health and vigour. There is another peculiarity attending fever, namely, that whilst in a state of convalescence, irregular paroxysms of intermittent fever are apt to occur, sometimes of the quotidian, but generally of the tertian type. A few grains of the sulphate of quinine readily check them, but in order to prevent a recurrence, it is necessary to continue the use of that invaluable medicine occasionally until health is finally re-established."

In August, a party of men were employed refitting the tender, Black Joke, at Princes' Island, where, in consequence of being unavoidably exposed to the sun by day, and, although sleeping in tents, to the damp air by night, they were attacked with fever. Early depletion, and the other means adopted, soon checked it, but such was the consequent debility and

tendency to intermittent fever, that it was with much difficulty that any of them were restored to health; while one, notwithstanding the administration of bark, wine, and preserved meats, died on the passage to Ascension.

The "Dryad" arrived on the coast on the night of the 7th November, 1830. On the passage out two men slept on shore one night at Porto Praya, on the island of St. Jago. One was seized with symptoms of fever on the tenth day, the other not until the fifteenth. The period of incubation in these cases was therefore clearly defined. One assumed a tertian intermittent form, the other ran through its course with all the violence of the yellow remittent of hot countries. During the first three months of 1831 the harmattan wind was prevalent, but its curative effect upon ulcers was not perceptible. "The crew continued healthy, although the boats of vessels loading timber in the river Melacooree, about sixty miles to the northward, were arriving weekly at Sierra Leone with the dead and dying, victims of fever."

GENERAL OBSERVATIONS.

From the year 1825 to 1829 it does not appear that fever prevailed as an epidemic in any of our settlements upon the coast between the Gambia and the equator; nevertheless several of the cruisers lost a considerable number of men during the intermediate years. In 1826 there were four deaths from fever, one from hepatitis, and one from dysentery, in the Maidstone; but on detached service, principally, it is presumed, in prize vessels at Sierra Leone, she lost no fewer than twenty-three men, making a total of twenty-nine for the year. In the North Star, during 1827, there were nine deaths on board from fever, two from accident, and one from water in the chest; but on detached service there were eight, making the total loss for the year twenty. The Eden, in 1828, lost sixteen men on board from disease, and twenty-five of her crew died on shore, either at Fernando Po or at Sierra Leone, the greater number, however, dying at the first-named locality.

In the latter end of April and the beginning of May, 1829, it appears the disease first began to prevail as an epidemic in the town of Sierra Leone, in the shipping in the river, and also in that at anchor in the river Scarcies, a few leagues to the northward. Its origin, as usual, was wrapped in impenetrable obscurity, although, by interested parties and men of speculative minds, it was attributed to various improbable causes, a few of which may be enumerated as examples of the loose style of reasoning generally adopted upon this subject.

By many it was ascribed to the landing of slaves in the centre of the town, together with the practice of throwing dead horses and cattle into the river, upon the banks of which it seems they were sometimes left exposed, and also to the

mal-position of the slaughter-house. All these causes, however, had existed to an equal degree during the previous years, when no epidemic prevailed. Slaves had frequently been landed in a sickly state, but it is seldom that dead animals are seen in the river or on its banks; if below high-water mark, they are speedily devoured by sharks, and if on shore, by the numerous vultures that are constantly soaring on the wing in search of carrion. Subsequently it was affirmed that it had been imported into the colony by H. M. S. Eden, although her crew when she arrived were in perfect health, and did not exhibit a case of the disease until the 12th of May, several having previously occurred on shore, and proved fatal. Three slave vessels were next suspected, but in neither of these had a single case occurred before their arrival, nor, indeed, until after its appearance in the colony. Another opinion was, that it originated at Sangarrah, in December, 1828, a country thirty days' journey in the interior, or between two and three hundred miles in a north-east direction from Sierra Leone. It was stated to have been carried thence by the north-east winds, through Loosoo and Bullom, across to Freetown. The next probable and least extravagant theory, however, was, that it arose from physical causes of a malarial nature peculiar to the soil at the time, in consequence of the heat and humidity of the season. It was considered by the medical practitioners of Sierra Leone to be non-contagious.

It will be observed that both the Eden and Champion contracted the disease at this colony, and in their crowded state carried it with them to Fernando Po, where the supernumeraries for the colony and all the sick were landed in the course of a few days after their arrival. Amongst the former it continued to rage for the two succeeding months with unparalleled fury, and also assailed other individuals who had no direct communication with either vessel. It also appears that it broke out in the Hecla at Sierra Leone, or shortly after she left it, and carried off thirty-nine of her ship's com-

pany. The Sybille, as previously detailed, contracted the disease at Fernando Po in June, and in the course of a few weeks lost twenty-two men out of the sixty-nine attacked. In the Black Joke, however, in prizes, and otherwise, she lost in addition thirty-seven, making the total number of deaths fifty-nine for the year. There was not any vessel that suffered in the same proportion with the Eden; during the year, out of a crew it is supposed of not more than one hundred and sixty men, she lost altogether ninety-nine, sixty of whom died on board, and thirty-nine on shore. The loss in all the other vessels on the station during the year was, comparatively speaking, trifling, with the exception of the Sybille's tender, the Black Joke, from which there were not any returns sent into office in consequence of her being attached to that vessel, and manned exclusively out of her ship's company; it is, however, ascertained that she also contracted the disease at Sierra Leone.

After the disease had been extinct for a period of upwards of four months, it reappeared in the Sybille in January, 1830, and again, in the same ship, at St. Helena in March. In these two visitations her losses amounted to thirty-two men, and then it may be said the epidemic of 1829 and 1830 finally ceased, although fever of an equally virulent character nearly unmanned the Plumper in the November and December of the latter year at Sierra Leone.

The total numbers in the following Tables have been extracted from the Pay-Books in the department of the Accountant-General, and are therefore presumed to be more correct than if they had been taken from the medical returns, which in general only give an account of the deaths that occur on board, and, in many instances, of those only in which the subjects had come under medical treatment.

Table I.

The following Table exhibits the Total Loss sustained by the respective vessels of the Squadron during the year 1825, distinguishing the Deaths from Disease from those occasioned by external Violence or Drowning :—

	Deaths		Total Deaths.
	From Disease.	From Accident.	
Atholl . . .	6	..	6
Conflict . . .	..	1	1
Barracouta . .	..	..	..
Maidstone . .	15	..	15
Redwing . .	9	6	15
Swinger . . .	10	..	10
Esk	1	..	1
Total . .	41	7	48

The mean strength of these vessels for the year is assumed to have been about 663 men; the ratio of deaths per 1000 was therefore, from disease, 61·8; ditto, from all causes, 72·4.

The Redwing lost six men by drowning in the Theresa prize schooner, which was upset in a tornado and went down, carrying with her at the same time two hundred slaves. In the Maidstone there were only six deaths occurred on board, but in July she captured a slave vessel in the Bonny, when four officers and seventeen men were transferred to her to conduct her to Sierra Leone, where they arrived in August, about the middle of the rainy season, and soon afterwards the whole party were attacked with fever, of which six men and one midshipman died in the military hospital. There are no means of ascertaining how or where the two other deaths occurred. In the "Swinger" there were only two deaths on board; it is therefore to be inferred that eight took place on detached service, either in the boats or in prizes.

Table II.

Table showing the Total Number of Deaths from Disease and Accident in the Squadron during the year 1826.

	Deaths		Total Deaths.
	From Disease.	From Accident.	
Maidstone . .	29	..	29
Clinker . . .	1	..	1
Brazen . . .	6	2	8
Conflict . . .	5	..	5
Redwing . .	6	..	6
Swinger . . .	1	..	1
Despatch . .	2	1	3
Atholl . . .	2	3	5
Esk	2	..	2
North Star . .	3	..	3
Total . .	57	6	63

The mean strength of the squadron for the year being 1043 men, the ratio of deaths per 1000, from disease, was 54·7 ; ditto, from all causes, 60·4.

By the medical returns it appears that there were only six deaths in the Maidstone during the year, leaving the large proportion of twenty-three to be accounted for on detached service. In the Brazen one man died on board, and two were accidentally drowned; five therefore died on detached service. In the Conflict there were three deaths on board, and two on detached service. Two of the Atholl's men were drowned, and one killed by accident; the Despatch also lost one man by drowning.

Table III.

Table showing the Total Number of Deaths from Disease and Acccident in the Squadron during the year 1827.

	Deaths		Total Deaths.
	From Disease.	From Accident.	
Maidstone . .	5	1	6
Clinker . . .	2	..	2
Sybille . . .	2	1	3
Eden . . .	3	..	3
Conflict . . .	2	..	2
Atholl . . .	3	..	3
Esk	5	..	5
North Star . .	18	2	20
Total . .	40	4	44

Mean strength of the squadron 955 men; ratio of deaths per 1000, from disease, 41·9; ditto, from all causes, 46·1.

Nine men died on board the North Star, and nine on detached service, but there are no means of ascertaining where; she also lost two men by drowning.

Table IV.

Table showing the Total Number of Deaths from Disease and Accident in the Squadron during the year 1828.

	Deaths		Total Deaths.
	From Disease.	From Accident.	
Clinker . . .	9	..	9
Sybille . . .	5	..	5
Eden	41	2	43
Hecla	5	..	5
Primrose . . .	2	..	2
Medina . . .	3	..	3
Esk	1	..	1
Conflict . . .	1	..	1
North Star . .	14	1	15
Total . .	81	3	84

Mean strength of the squadron 958 men; ratio of deaths per 1000, from disease, 84·6; ditto, from all causes, 87·7.

The Clinker appears to have lost four men on detached service. Of the Eden's crew twenty-three died on shore at Fernando Po, of fever and ulcer principally.

Table V.

Table showing the Total Number of Deaths from Disease and Accident in the Squadron during the year 1829.

	Deaths		Total Deaths.
	From Disease.	From Accident.	
Clinker . . .	3	..	3
Sybille . . .	57	2	59
Eden	99	..	99
Hecla . . .	39	..	39
Primrose . . .	1	..	1
Medina . . .	..	..	..
Plumper . . .	3	..	3
Total . .	202	2	204

Mean strength 792 men; ratio of deaths per 1000, from disease, 255·1; ditto, from all causes, 257·6.

The Sybille lost fifty-seven men from disease, and two by drowning; but there not being any medical returns for the period, it is not possible to ascertain whether the whole of the deaths occurred on board or not. The returns from the Eden and Hecla are also deficient, in consequence of the deaths of several medical officers in those vessels.

Table VI.

Table showing the Total Number of Deaths from Disease and Accident in the Squadron for the year 1830.

	Deaths		Total Deaths.
	From Disease.	From Accident.	
Sybille . . .	39	..	39
Eden	1	..	1
Conflict . . .	1	..	1
Atholl . . .	1	..	1
Primrose . . .	3	3	6
Medina . . .	4	1	5
Plumper . . .	23	..	23
Clinker . . .	..	..	..
Total . .	72	4	76

Mean strength of the squadron 667 men; ratio of deaths per 1000, from disease, 107·9; from all causes, 113·9.

The returns for the Sybille are still deficient for the present year, as are those from the Plumper, in consequence of the death of her Assistant Surgeon. The Primrose had three men killed in action with the slave ship Velos Passagera.

PRINCIPAL DISEASES AND MODES OF TREATMENT

ADOPTED IN THE FOLLOWING VESSELS,

Between the Years 1831 *and* 1836

The returns from the station during the next five years are almost entirely devoid of medical interest. With the exception of the "Conflict," fever in a severe form did not appear in any of the vessels of the squadron, which still continued to be employed principally in the vicinity of the slave factories on the north side of the equator, but more particularly off those in the Bights of Benin and Biafra, from which a greater number of slaves were exported during that time than have ever been since, or probably ever were before.

The first vessel that comes under observation for the year 1831 is the "Ætna;" she arrived on the coast for surveying purposes in the latter part of 1830, and commenced operations between the Gambia and Sierra Leone. The effects of the climate appear to have been developed during the first three months in occasional attacks of remittent fever, induced by exposure in the boats, together with hard labour in the immediate neighbourhood of marshes. During the succeeding three months there were an equal number of fever cases, namely nineteen, but still no death. Scurvy, however, in a more severe form than is usually met with in H.M. vessels in the present day, also made its appearance. "Nearly all

the cases first came on the sick list with swelling and inflammation, and might have been readily mistaken for erysipelas. In most instances there was in the centre of the inflamed part a small white pustule. On the second or third day the redness changed into a dark chocolate colour, extending over a great part of the leg, with considerable increase of the swelling. The ship proceeded to the Gambia, where fresh beef and vegetables were issued, with almost immediate benefit to all hands."

The "Atholl," when last noticed, had gone to the island of Ascension; she again appears early in the present year, 1831, running slowly down the coast from Sierra Leone to Fernando Po. She was subsequently employed in the Bight of Biafra until June, and having had but little communication with the shore, she continued healthy. During the remainder of the year, in consequence of a misunderstanding between the Ashantees and the intermediate tribes, which threatened to bring them into hostile collision, she was principally employed on the Gold Coast, where eighteen cases of fever and two deaths took place, principally in persons who had been exposed on shore; four of these were volunteers, who had spent nine days at Cape Coast, the vessel they belonged to having been found not to be seaworthy. Two cases of that singular disease, dracunculus, came under observation. One of the men who, eight months previously had resided in the town of Accra, had one in each foot in front of the ankle. From one to two inches of the worm were drawn out daily, coiled round a small fragment of wood, and afterwards secured to the spot whence it issued with adhesive plaister, until it was finally extracted. When shrivelled and dry they measured several feet in length. The Atholl returned to England in February, 1832, having been a healthy ship during the whole time she was on the coast.

The "Conflict" arrived upon the station in July, 1830.

The crew suffered but little from the common diseases of the country until the following July, the whole of that month and part of the preceding one having been spent in the river of Sierra Leone. The greater part of the crew were on shore during the heavy rains, where they committed the usual excesses, and frequently slept in the open air. Thirty cases of fever, of which eight terminated fatally on board, and five were sent to the hospital, were the result of these imprudences. The disease appears to have been of a most malignant character. It was remittent, but varied in its symptoms in different cases; in the worst it was attended with great excitement, and, as it advanced, the skin assumed a yellow colour, interspersed with livid spots. Towards dissolution, in the fatal cases, a quantity of dark matter was vomited, while a disagreeable cadaverous smell exhaled from the body some hours before life became extinct. The dejections were also frequently dark and fetid. In one instance, in the course of half an hour after death, the whole surface of the body presented a dark blue colour, and the cuticle separated. There can be but little doubt that all these cases were what is usually termed yellow fever in its worst form. Still, although every circumstance is very minutely detailed, contagion is not alluded to.

This vessel sailed from Sierra Leone on the 5th of August, and arrived at Ascension on the 29th, where, in consequence of a representation which was made to the Commodore relative to the state of the vessel below, it was directed that she should be thoroughly cleared out. On the removal of the tanks and the limber-boards the hold presented a very filthy appearance, blackish mud with vegetable matter being brought into view, the effluvium from which was at first insufferable. The passages to the pump-well were found to be completely blocked up. This filth having been removed, the holds were whitewashed, well ventilated, and dried; the tanks were then re-stowed and her stores embarked, after which she again sailed for the coast, where she arrived on the 11th of October,

and resumed her duties in the Bights. Nothing worthy of observation took place until she returned to Sierra Leone in the spring, when twelve cases of fever came under notice, most of them occurring in individuals who were either frequently on shore, or who led a dissipated life. There were also seven cases in a prize crew of the Pelorus, which were received on board; two of these proved fatal.

The Conflict having been found defective, and the crew, from disease and want of discipline, being in a disorganized state, the latter were sent to England, and the former, after having been roofed over, was retained as a hulk for the reception of prize crews, and moored off King Tom's Point.

The Dryad, Favourite, Medina, and Plumper continued tolerably healthy during the year.

The "Charybdis" was employed in 1832 cruising generally, and continued healthy until the rains set in, when a few cases of fever occurred, which became more numerous when the vessel was employed off the Rio Pongos. The boats were frequently sent away for a week at a time amidst an almost incessant rain, to lie in ambush in a creek in the river, watching the motions of two slave vessels. Seventy-three cases of fever resulted, four of which were sent to hospital, and one died. As the rains ceased the ship's company became more healthy. She afterwards, in 1833, made a trip to the Cape, and returned to England in November to be paid off.

The "Pluto" steam vessel, the first employed as a cruiser on the African station, arrived at the Gambia from England in January, 1832; she touched on her way along the coast at Sierra Leone, and reached Fernando Po on the last day of February. A few days after leaving this island there occurred seven cases of fever, two of which died. It is supposed that the disease was contracted by sleeping on deck during the night in wet clothes. The weather during March was

variable, with occasional heavy rain, thunder, and lightning.

Between June and September there were seven other cases of fever, three of which terminated fatally. They all occurred shortly after leaving Fernando Po, and were occasioned by intemperance from spirits smuggled on board there. Only one case of fever occurred during the next three months, and that was contracted on shore. The Pluto was subsequently actively employed on various parts of the station, and continued tolerably healthy until she returned to England in the latter end of 1834.

The "Brisk" remained nearly the whole of the first six months of the year 1833 in the river Gambia, in consequence of the natives upon the Barra shore having assumed a hostile position against the colony. During that time, although the vessel was refitted, and the men a good deal employed in boats and on shore, assisting to repel the attacks of the natives, they continued perfectly healthy. She was subsequently during the last six months of the year actively engaged cruising in the Bights of Benin and Biafra; where, with the exception of a few slight febrile attacks, the crew still continued healthy, and it is remarked that their having enjoyed such uninterrupted good health was greatly to be attributed to the general economy adopted, nothing being left undone that could in any way advance the comforts of the crew; visiting the rivers in boats being avoided as much as possible; so that the men were seldom exposed directly to the baneful influence of malaria, apparently so abundantly developed on the banks of all rivers in this country. Cleanliness was particularly enjoined, as also the wearing of blanket clothing after sunset. In wet weather the awnings were constantly spread, and a stove kept burning between decks. The same judicious regulations appear to have been observed in this vessel throughout the whole period of her commission, and with the same result. She returned to England, and was paid off in October, 1835.

The "Ætna" again arrived on the coast from England in December, 1833, for the purpose of resuming the survey in the parallels 11° and 12° N. On the 8th of January, her tender, the Raven, with the boats of the ship, proceeded to survey the river Cachea; and having been employed in this duty for a few days ascending the latter, they arrived at Farine, where they remained thirty-six hours; they then descended the river, and joined the Ætna on the 22nd of the same month. The weather during the time was close and sultry by day, but cold during the night, the thermometer at noon averaging 83° in the shade. The rise and fall of the tide is considerable, and the banks, which are muddy and shelving, extensively exposed at low water.

The boats which were thus employed contained ten officers and forty-two seamen, seventeen of whom contracted fever, namely, four officers and thirteen seamen, and six died. The whole were attacked between the 27th of January and the 6th of February. The ship, on the suggestion of the surgeon, left the coast on the 4th of the latter month, ran for the Cape Verde Islands, and anchored in Porto Praya on the 8th, where the sick rapidly recovered. The disease, in some instances, was attended with yellowness of skin; but it is not stated whether black vomit took place in any of the fatal cases. Bleeding, purgatives, and diaphoretics were the principal remedial means used.

During the next quarter she returned to the coast. To the boats' crews that were most employed in the river Gambia, bark and port wine were administered, according to the instructions, and their immunity from fever is to be attributed to their administration. The rains were about to set in when the survey was completed on the 21st April.

Between May and August this vessel was employed, in the first instance, in refitting at the Gambia, and subsequently in surveying on the Arguin bank, lat. 20° N., off Cape Blanco, during which time both officers and men continued in the enjoyment of the most perfect health. Severe gales were

experienced off the Cape, with a heavy sea, and considerable annoyance was occasioned by the great quantities of sand blown from the plains by the north north-east wind. The night dews were almost equivalent to showers of rain. The thermometer ranged between 68° and 81°. It is presumed the Ætna again left the coast of Africa until the end of the year.

The "Fair Rosamond" arrived upon the station in the summer of 1833, and returned to England in February, 1837. During the whole of that time, there only occurred four cases of fever, while the crew seem to have enjoyed an almost equal exemption from all other diseases. She is a small vessel, indifferently ventilated, with an extremely confined lower deck, having been originally a slaver (the Dos Amigos,) which was condemned at Sierra Leone, and purchased for a tender to the Dryad. It does not appear that her boats were often detached, but the men were frequently subjected to excessively hard labour in sweeping the vessel in chase, without experiencing any injurious result.

The "Pelorus" returned to the Bight of Biafra from the Cape of Good Hope in January, 1834, and was principally employed in the former, with the exception of having twice visited Sierra Leone, until February, 1835. Between May and the latter date, the boats were frequently detached, and a considerable amount of disease was contracted in consequence, but apparently without any fatal result. These expeditions are thus described. "The first, composed of thirty-two persons, proceeded in boats to Bembi Island, from Fernando Po, on the 3rd of May, landing the same evening, and remaining until the evening of the 6th. One of the party complained of diarrhœa; on rejoining on the 7th, six others were afterwards attacked with remittent fever between the 15th and 21st, and one contracted a troublesome ulcer. When at Bembi the men slept in two large comfortable huts, at an elevation of full

fifty feet above the level of the sea. There are not any distinct marshes on the island, but it is very imperfectly cleared of wood, although the forests are generally much less dense than at Fernando Po. The weather was fine during the day-time, but it frequently rained at night; and on the night of their leaving, they were exposed to incessant rain until day-break. Bark and wine were supplied when on the passage in the boats."

"On the 13th of June, a second party of thirty proceeded in the boats from Fernando Po as before, and arrived in the Cameroon River the same evening. They went on board a merchant schooner of thirty tons, where they remained until the 21st of June, at the distance of ten miles from the mouth of the river in Bembi Creek, and less than half a mile from the shore, which is skirted with mangroves. The schooner had recently discharged a cargo of salt; the hold where the party slept was consequently exceedingly damp, both from that cause and from numerous leaks; they were also greatly hampered for room, while, to add to the general discomfort, the vessel was overrun with rats. The weather was fine generally during the day, but wet and chilly at night. Bark was supplied for seven days, and only one man had fever; his attack was decidedly synocha."

"The third party, consisting of fifty-four persons in all, left the Pelorus in the Cameroon River on the 28th of June, and proceeded by the Quorra steam vessel to Cameroon town, about twenty-four miles from the mouth of the river, where they remained until the 4th of July, anchored within two hundred yards of the left bank, exposed to the sea-breeze during the day, but to the land wind during the night. From the limited accommodation, a great proportion of the men were obliged to sleep on deck. Heavy rain fell at night, but the days were remarkably fine. No bark or extra wine was supplied on this occasion, still only one man had fever, and that again of a synochal character; his attack was attributed to imprudences and to 'getting drunk.' "

In each of these expeditions, the exposure to the exciting causes of fever was nearly the same, with the exception that in the first the men slept three nights on shore; and in the last, being in a steam vessel, they were not subjected to the labour of pulling the boats. It is especially worthy to be noted, that the only cases of fever of an endemic nature occurred in the first party, who slept on shore, and were, in all probability, if we may judge from innumerable instances of a similar nature, contracted there.

In August and September, there were four other expeditions up the river Calebar, which were absent, as follows:—a party of six, from the 8th to the 9th of August; a party of twelve, from the 15th to the 17th; a party of thirteen, from the 6th to the 8th of September; and a party of thirty-two, from the 12th to the 14th. The last party slept in the boats, and the others in a merchant ship about sixty miles up the river. Each man of the first, second, and fourth parties had a grain and a half of the sulphate of quinine morning and evening; those of the other had the same only when in the boats. One case of synochal fever was all that resulted from the whole of these expeditions. Although fever generally assails men who sleep on shore, or who may be exposed in open boats in these rivers, more readily than those who sleep on board ship, still it is remarked:—"The crews of merchant vessels remaining at anchor, from a month to six weeks, seldom escape. The Calebar is considered by the latter to be far more destructive of life and health than the Cameroons. Its banks are low and muddy, and are covered to the water's edge by mangrove bushes, while the effluvium from the land is well marked and offensive. The lowest anchorage for trading vessels is shut out from the sea-breeze by Parrot Island."

It would appear that this vessel merited the appellation of an active cruiser, in the usual acceptation of the term; and it was fortunate for her ship's company that, during the period of her activity, no epidemic raged upon the coast. She

appears to have been at anchor off Sierra Leone in November; but on the 17th of the following month, she again took up her old cruising ground off the Calebar, and on the 13th of January, a boating party of thirty-four persons ascended that river. The following day they were above James' Island, about fifty miles from the sea, where the boats were hauled so close to the shore, that they were secured from observation by the branches of the trees. It was fortunately the season of the harmattan, although even its dryness could not entirely check the night damps of the river. On the night of the 15th, they captured a large slave vessel, and then a new source of sickness came into play. The river being rapid, full of shoals, and its navigation unknown, the vessel grounded, and they had considerable difficulty in getting her off; they were also obliged to tow her at times, and to anchor frequently; while to all this excitement "was added that of drunkenness." On the 18th, however, they got her clear of the river. The subsequent history of twelve of the party is unknown; they proceeded to Sierra Leone in the prize. Of the remaining twenty-two, six were attacked with fever, two with diarrhœa, one with ulcer, and another with all the premonitory symptoms of fever, which is supposed to have been checked by bleeding; still, no death resulted. Bark was supplied to the party in the last expedition.

There were a number of other cases of fever occurring from time to time in this vessel; but, in almost every instance, they appear to have been contracted on shore. She returned to England, it is supposed, early in the summer of 1835.

The "Griffon," during 1835, was constantly employed on the northern extremity of the station, and was much in the Gambia, where fever suddenly made its appearance on board in the beginning of September, when the rains were heavy, and the marshes behind the town extensively flooded. It attacked twenty-one individuals with considerable force, although without any fatal result. As soon as the nature of

the disease became apparent, the vessel proceeded to sea, and remained there some time, but at no great distance from the land; the attacks ceased altogether twenty days after her departure from the colony, whence it may be inferred, that the disease originated in causes peculiar to the locality, and not in the vessel. The treatment in these cases was the most simple that could be adopted, and without mercury.

Table VII.

Showing the Total Loss sustained by each Vessel during the year 1831, distinguishing the Deaths from Disease from those occasioned by External Violence or Drowning. The numbers extracted from the Pay-Books.

	Deaths		Total Deaths.
	From Disease.	From Accident.	
Ætna . . .	..	..	..
Conflict . . .	10	..	10
Atholl . . .	4	1	5
Dryad	4	2	6
Medina . . .	3	..	3
Plumper . . .	1	..	1
Favorite . . .	..	..	..
Total . .	22	3	25

Total mean force employed, 785; ratio of deaths per 1000 from disease, 28·0; ditto, from all causes, 31·8.

The Dryad lost two men by external violence: one by a fall from aloft while furling sails, the other by a grape-shot wound in the Black-Joke in action with the slave-vessel Marinerito.

Table VIII.

Showing the Total Loss sustained by each Vessel during the year 1832, distinguishing the Deaths from Disease from those occasioned by External Violence or Drowning. The numbers extracted from the Pay-Books.

	Deaths		Total Deaths.
	From Disease.	From Accident.	
Dryad . . .	7	2	9
Conflict . . .	2	1	3
Curlew . . .	..	..	..
Charybdis . .	3	..	3
Pluto	6	..	6
Brisk	..	..	..
Plumper . . .	..	..	..
Favorite . . .	..	..	..
Total . .	18	3	21

Total mean force employed, 512; ratio of deaths per 1000 from disease, 35·1; ditto, from all causes, 41·0.

Table IX.

Showing the Total Loss sustained by each Vessel during the year 1833, distinguishing the Deaths from Disease from those occasioned by External Violence or Drowning. The numbers extracted from the Pay-Books.

	Deaths		Total Deaths.
	From Disease.	From Accident.	
Ætna . . .	..	3	3
Brisk . . .	1	1	2
Trinculo . . .	1	..	1
Griffon . . .	1	..	1
Curlew . . .	3	4	7
Britomart . .	2	2	4
Charybdis . .	2	..	2
Pluto . . .	1	..	1
Raven . . .	..	..	..
Lynx	..	..	..
Fair Rosamond .	..	..	..
Forester . .	..	..	..
Favorite . . .	1	..	1
Total . .	12	10	22

Total mean force employed, 562; ratio of deaths per 1000 from disease, 21·4; ditto, from all causes, 39·1.

In the Ætna three deaths are reported from external violence: the captain and his coxswain were killed by the natives on shore near Cape Roxo, and one man on board by falling from aloft. The Curlew lost four men in the slave, or rather piratical schooner Panda, which was partly blown up immediately after she was taken possession of, by the accidental explosion of the powder in her magazine. There are no means of ascertaining the nature of the two deaths from accident in the Britomart.

Table X.

Showing the Total Loss sustained by each Vessel during the year 1834, distinguishing the Deaths from Disease from those occasioned by External Violence or Drowning. The numbers extracted from the Pay-Books.

	Deaths		Total Deaths.
	From Disease.	From Accident.	
Ætna . . .	6	2	8
Pelorus . . .	2	1	3
Brisk . . .	1	2	3
Trinculo . . .	2	..	2
Raven . . .	4	..	4
Fair Rosamond .	..	1	1
Buzzard . . .	..	1	1
Forester . . .	2	1	3
Curlew . . .	1	..	1
Lynx	..	..	..
Griffon . . .	..	..	..
Britomart . .	..	..	..
Charybdis . .	..	..	..
Total . .	18	8	26

Total mean force employed, 620; ratio of deaths per 1000 from disease, 29·0; ditto, from all causes, 41·9.

The number of accidental deaths for the year is great, but there are no means of ascertaining how they were occasioned, farther than that four were the result of external injury, and four of drowning.

Table XI.

Showing the Total Loss sustained by each Vessel during the year 1835, distinguishing the Deaths from Disease from those occasioned by External Violence or Drowning. The numbers extracted from the Pay-Books.

	Deaths		Total Deaths.
	From Disease.	From Accident.	
Pelorus . . .	2	1	3
Ætna . . .	1	..	1
Brisk . . .	3	..	3
Lynx . . .	1	..	1
Fair Rosamond .	1	..	1
Buzzard . . .	2	..	2
Forester . . .	4	..	4
Curlew . . .	2	2	4
Charybdis . .	2	..	2
Griffon . . .	..	..	..
Britomart . .	..	..	..
Pylades . . .	..	..	..
Pelican . . .	1	..	1
Rolla . . .	..	..	..
Trinculo . . .	..	..	..
Total . .	19	3	22

Total mean force employed, 815; ratio of deaths per 1000 from disease, 23·3; ditto, from all causes, 27·0.

The accidental deaths were from drowning.

Table XII.

Showing the Total Loss sustained by each Vessel during the year 1836, distinguishing the Deaths from Disease from those occasioned by External Violence or Drowning. The numbers extracted from the Pay-Books.

	Deaths		Total Deaths.
	From Disease.	From Accident.	
Raven . . .	1	..	1
Buzzard . . .	..	..	..
Forester . .	2	..	2
Curlew . . .	3	..	3
Britomart . .	1	..	1
Charybdis . .	1	..	1
Lynx . . .	..	..	..
Griffon . . .	..	..	..
Ætna . . .	3	..	3
Bonetta . . .	..	3	3
Dolphin . . .	..	..	..
Pylades . . .	..	..	..
Scout . . .	1	1	2
Waterwitch. .	2	..	2
Columbine . .	1	..	1
Fair Rosamond .	..	..	..
Rolla . . .	1	..	1
Trinculo. . .	..	..	..
Total . .	16	4	20

Total mean force employed, 965; ratio of deaths per 1000 from disease, 16·6; ditto, from all causes, 20·7.

The Bonetta lost three men by drowning, but it is doubtful whether they occurred previously, or subsequent to her arrival on the station.

PRINCIPAL DISEASES AND MODES OF TREATMENT

Adopted during the Years 1837 *and* 1838.

The "Buzzard" was hauled upon the beach at Fernando Po in June, 1837, for the purpose of repairing her bottom. During that month there were frequent heavy falls of rain, succeeded by intervals of intensely hot sunshine, the thermometer being then about 86° in the shade, and the heat at times scarcely supportable. The master and two of the crew died of fever about that time, and a fortnight afterwards other fresh cases occurred, of which there is not any record; the assistant surgeon having also died. The sick of the crew were, however, occasionally visited by the surgeons of the station. In this state of affairs, the boats were despatched to blockade a slave vessel in the river Cameroons, where during a period of several weeks, they were exposed in a low swampy situation, surrounded on all sides by extensive tracts of mangrove bushes, and constantly exposed to all the vicissitudes of the weather. After their return the fever cases began rapidly to increase in number, and on the 5th of July, when an assistant surgeon joined, there were twenty-three men on the sick report; in the course of a few days twenty more were added, making altogether forty-three cases; three of which terminated fatally. The treatment consisted in the free use of the lancet, except in the more malignant cases, in which it required to be used with a lenient hand; in the exhibition of mercurial purgatives, calomel being also administered,

so as to affect the mouth. Blisters when necessary were applied to the epigastrium, or the nape of the neck, and the subsequent use of quinine was had recourse to, to complete the cure.

No other sickness of importance occurred until the last quarter of the year, when fever was contracted by several persons, who had either been exposed to the exciting cause on shore, or had been guilty of intemperance. Two men died of fever, supposed to have been brought on by intoxicating spirits, surreptitiously smuggled on board by the blacks in Cape Coast roads.

"Bonetta."— In January, there were nine cases of fever and one death. It does not appear that any of the individuals had any communication with the shore. The cause or causes must needs therefore be sought for on board; they are thus detailed :— "Exposure to the night air from the pernicious practice of sleeping on deck, after having been heated by exercise and insolation during the day, and from washing in cold water, while in a state of excessive perspiration." This latter it seems had been practised by the man who died; it is however proper to remark, that simple ablution is by no means a frequent source of disease in a climate where it is not an easy matter to obtain cold water. Bleeding (unless in young plethoric subjects) in the more virulent cases was deemed not only unnecessary, but prejudicial. The early administration of emetics, cathartics, and calomel, combined with antimony and the nitrate of potash, until the gums were slightly affected, was considered useful; care being taken to exhibit sulphate of quinine in two-grain doses twice or thrice a-day, as soon as there was any appearance of the tongue becoming brownish.

During the spring quarter there were one or two cases of fever. In the one, calomel was freely taken, and on the second day the mouth was slightly affected, but the influence of the mineral again passed off. Stupor and drowsiness suc-

ceeded, and in consequence, blood was taken from the temporal artery, and the head shaved and blisters applied to it, and to the nape of the neck. Calomel and mercurial frictions were also persisted in, but without effect; he sank on the fourth day from the attack. It is also proper to state that this boy had been up the Bonny in H.M.S. Scout, where (in the Bonny) sickness was then prevalent. Subsequently there was another case in a volunteer who entered from the island of Fernando Po; he was seized fourteen days after coming on board.

"Charybdis."—There were two cases of fever in May, contracted on boat service in the river Benin, and one case in a boy received from the Scout, fever existing in that vessel at the time. Calomel was given in each of these, with the view of effecting ptyalism, which was accomplished in two of the cases, but not in the third, although the patient took one hundred and twenty grains, and had four drachms of mercurial ointment rubbed into his body. A doubt is expressed whether the patient was benefited by the mercury or not; unfortunately when it is so freely administered, it is seldom that its effects are so equivocal.

The ship's company of the "Columbine" having had but little communication with the shore, continued healthy, until about the latter end of May, when the rainy season set in, accompanied with frequent tornadoes. The boats were then occasionally employed in the rivers Cameroons and Bembia, watching slave vessels; the consequence being, that eight cases of fever occurred in June, the boats' crews being the chief sufferers; five were attacked and two died; one on the eighth day, the other on the eleventh. In both cases, venesection was early performed, followed by purgatives, and ten grain doses of calomel given twice a day, inunction of mercurial ointment being also practised. In one there was slight mercurial ptyalism for one day, but in the other the effects of the mineral were not observable.

The " Fair Rosamond," a short time after her arrival from England, entered the river Benin, where she remained from the 23rd September to the 3rd of October. During this period the men were much exposed in the performance of laborious duties, consequent on the capture of two slavers. They were each allowed a quarter of a gill of rum, mixed with an equal quantity of water, night and morning, in addition to their ration allowance, as a prophylactic against fever. Bark was not administered with it, in consequence of the quantity on board being insufficient to meet so great an expenditure. Notwithstanding this measure there were six men seized with fever between the 29th of September and the 8th of October, from which one death resulted. The patient in that case was bled to fifty ounces,—had mercury internally, and externally by friction, which caused soreness of the mouth and swelling of the gums, but no ptyalism.

The " Lynx " was employed on the Gold Coast and in the Bights. During the spring quarter, there were six cases of fever, four of which were contracted in the Scout in the river Bonny ; the other two from exposure to the sun and rain in an open boat in the Old Calebar ; the subjects of the latter were two seamen who had deserted from a merchant vessel, in consequence of ill-treatment. They were much exhausted when received on board the Lynx ; both these men recovered, but one of the other cases terminated fatally ; the Lynx subsequently proceeded to the Cape, and returned to England in August.

For the first six months of the year the " Pelican " was at the Mauritius ; during that period there did not occur any case of climatorial disease on board. On the 7th of July, after remaining in Clarence Cove, Fernando Po, two days only, she proceeded off the river Bonny. Thirteen cases of fever occurred within eighteen days after leaving the island ; the worst of which were in patients who had been on shore.

There was scarcely an officer or man that visited the island, who did not either contract fever or subsequently suffer from a deranged state of the biliary system. At that period the few white residents in the settlement were healthy, a circumstance which may be supposed to corroborate the prevalent opinion with regard to the dangerous nature of the locality to strangers. The weather from July to August had been damp and cloudy, with frequent thunder-storms and heavy rain; the ship's company in consequence were almost constantly clothed in their blanket dresses.

During the first quarter of 1837 there occurred eight cases of fever in the "Raven," and one death; the subject of the latter had remained on shore one night at Cape Mesurado, and slept in the bush; there was very heavy rain at the time, and the man was in a state of intoxication. This happened on the 24th of January; on the 4th of February he first presented himself for medical treatment, having been unwell for the two previous days. He died on the 11th. There was another man exposed to the same causes of disease, who was seized on the 5th July, and died in the Ætna on the 15th.

In March there was not any disease of importance, but in the beginning of April there were five cases of fever, contracted by an officer and a boat's crew (in all six individuals), who remained on shore one night, the 13th of March, at Cape Palmas, attending a "tide-pole." They were all taken ill about the same time, namely three (two of whom died) on the 3rd, and two on the 5th of April; the other man had slight febrile symptoms on the 7th. The period of incubation in these cases appears to have been singularly protracted to twenty and twenty-two days, and, in the case where the poison proved less effective than in the others, to twenty-four. The dates mentioned above, it is presumed, mark the time when the disease became fully developed; as, from a proper sense of manly feeling, it is seldom that seamen make their complaints known while they are capable of continuing

in the discharge of their duty. The weather at the time was fine, with an occasional tornado. The rest of the ship's company continued healthy.

"Scout."—From the 1st to the 19th of January, 1837, there were two, three, or four boats occasionally detached up the river Bonny, or lurking near the swamps at its entrance, watching slave vessels. They seldom communicated with the ship; their crews were therefore necessarily much exposed, and their duties were laborious. It is stated that notwithstanding the use of bark, they sent in their quota of sick; but this appears to have been exceedingly small as compared to what generally occurs on similar occasions, only amounting, during the space of three months, to three cases marked synochus, and four of ephemeral fever, with three of dysentery, for the whole ship's company, whether on board or in the boats. There was some difficulty in getting the men to take bark without wine, of which latter there did not appear to be any in the ship. When the boats ascended the river, however, on the surgeon's representation, it was given in rum, an exigency provided for by the public instructions issued about that time.

The following extracts are interesting:—"Fever, of which we have seen little or nothing during the previous nine months while cruising, was unfortunately contracted by entering the Bonny on the evening of the 8th, and remaining there until the morning of the 14th of April. As we entered the river purposely for the settlement of some disputes between our merchant shipping and the natives, it became necessary to take up a position close to the low swampy shore, that the guns might bear upon the town. The Dolphin was also present during these negotiations, and both vessels, according to the opinion of the masters of the merchantmen, were anchored in the most sickly part of the river, immediately within the influence of any noxious effluvia which might be exhaled from the contagious miry shore, and wafted towards us by the land

breezes of the night. The pernicious consequences of occupying such a position began to show themselves on the second day, and on the morning of the fourth day, the 12th of the month, the ship was moved out into the stream a mile and a-half further down the river. Diarrhœa then became prevalent, and one case degenerated into fever and terminated fatally. The predisposing cause in this instance might be ascribed to the patient's having been detached for two days on boat service in the Old Calebar, ten days previously to the attack. This is probable, as none of the other cases occurred until several days after leaving the Bonny on the 14th of April. On the 18th there was one case, three on the 24th. Five cases occurred in May, one of which proved fatal, the man having been absent in a prize, and exposed to land influence at Fernando Po and Princes' Island a few days previously to his being attacked. Two cases also occurred from boat service,—a service fraught with mischief.

"Two boats, with upwards of twenty men, were detached up the Old Calebar, between the 1st and the 19th of April. Bark and rum were regularly given to the men night and morning, and apparently with good effect, as the whole of the party, with but one exception, returned to the ship in good health."

The treatment adopted in the fever cases consisted of bleeding in most cases, the exhibition of various cathartics, cold to the head, calomel and antimony, effervescing draughts, enemata, non-purgative saline mixtures, anodynes, and warm baths in two or three instances in the latter stages of the disease, calomel and opium, or calomel alone, sometimes accompanied by mercurial frictions, yet free ptyalism was seldom established; porter, wine, brandy, opium, &c. &c.; on apyrexia taking place, quinine. The foregoing might be called the "apparatus major" for the treatment of fever, at least there are omitted few articles of the materia medica or other therapeutic means that have come into vogue during the last fifty years.

The Scout was absent at the Cape of Good Hope, St.

Helena, and Ascension during the autumnal months, and not a case of climatorial disease was observed amongst the crew.

"Waterwitch."—The health of this ship's company, although boats had been occasionally detached, continued in a very satisfactory state up to the month of October, when she took up a station off the mouths of the Bonny and Calebar, remaining almost continually at anchor close to the shore, and within the influence of the land breezes, which at this season are always more or less contaminated by the pestiferous exhalations from the neighbouring swamps; these, together with the employment of the boats on detached service up the rivers, furnished a prolific source of sickness, more particularly as regards fever and diarrhœa. The fever, it is stated, differed considerably in different individuals, as the brain, liver, or stomach were more or less affected; but in each case there were well-marked remissions and exacerbations, and all, it is supposed, had their origin in the same cause. In the first stage the practice was to bleed freely, and to clear out the alimentary canal by calomel and jalap, to relieve the heat and dryness of the skin by frequent cold sponging, and to allay irritability of stomach by saline effervescing draughts; after which, if the symptoms still continued urgent, with pain in the head or in the epigastrium, or with delirium, blisters were applied, and small doses of calomel given, so as to affect the system. Quinine was used as a tonic. In the case which terminated fatally the person was taken ill shortly after a debauch.

During the first part of the year the "Ætna" appears to have been employed surveying between Cape Palmas and Dix Cove. She then proceeded to the Canary Islands, and subsequently to Gibraltar to refit. She returned thence to the coast, and anchored at Sierra Leone on the 30th November, all on board being then in good health. The weather was hot and sultry, with calms; the land and sea breezes being

hardly perceptible. Fever was at the time committing great ravages amongst the prize crews and merchant seamen. The Ætna only remained until the 3rd of December for the purpose of completing water, which, as usual, was effected by the Kroomen; she then proceeded to sea. The weather was still calm, wet, and sultry, the thermometer ranging from 83° to 85°. On the 10th of the month two cases of fever occurred, and on the 12th there were two more; of these three died, one on the fifth day, and two on the seventh day of the disease, with black vomit and yellowness of the skin. There were not any fresh attacks until the 20th of December, when two others occurred, and on the 21st there were five. The disease then began to attack officers and men indiscriminately. As it was considered to be contagious, recourse was had to artificial means of ventilation, by swinging stoves and windsails, and to fumigation, by whitewashing the decks and sprinkling them with chloride of lime. In the meantime a course was shaped for the region of the trade winds, with the view of making Ascension; on getting into the S.E. trade however, on the 15th of January, the violence of the disease did not abate, but on the contrary, it continued to attack one after another of the remaining few who had hitherto escaped with as much virulence as it did when the ship was becalmed in the immediate neighbourhood of the land; nor did it entirely cease until the 20th of January, the day on which she anchored at the above island. The total number attacked was ninety-nine, including one Krooman and four African boys; of these twenty-five died. The total number of the ship's company, exclusive of the Africans, was ninety-eight, and of these only five escaped, two of the latter being nearly all the time on the sick list, one with intermittent fever, and the other with rheumatism.

The disease was considered to have been contracted at Sierra Leone, and its influence was supposed to have been the greater upon the ship's company from mental depression, in consequence of their being obliged to return to the coast of

Africa instead of being paid off, as they had anticipated, from a general scorbutic taint amongst them at the time from the laborious nature of the service on which they were employed, and from incidental privations peculiar to it. The fever was distinctly of a remitting character, attended with yellow suffusion of the skin and eyes, hæmorrhage from the gums and fauces, and, in the fatal cases, with black vomit.

The remedial measures consisted of bleeding largely in the horizontal posture, whether in the cold or hot stage, purging by calomel and colocynth, and afterwards the exhibition of calomel and antimony, in two and three grain doses of each, every four hours until the mouth was sensibly affected, which was generally the case about the third day; nearly all who recovered then began to show symptoms of improvement. The disease in many instances, it is stated, was cut short by the first bleeding, but there were some in which a degree of excitability remained, requiring a second abstraction of blood. And it is further remarked, that after this it would be prudent to desist, as those cases in which febrile excitement continued after such depletion, and the other means that had been adopted, generally terminated badly.

The utility of abstracting large quantities of blood having been dwelt on, it is but proper to introduce the following remark:—"The blood when flowing from the arm was very dark coloured, and when allowed to stand, was loose in its texture, neither showing a buffy coat, nor separating into serum and crassamentum."

The Ætna again returned to the coast towards the end of spring, and re-commenced surveying, the convalescents having been discharged to duty, although still in a weakly state; upon the whole however, the crew continued tolerably healthy until she returned to England in October, 1838.

CONTINUATION OF DISEASES AND TREATMENT, 1838.

The crew of the "Bonetta" were in the enjoyment of good health up to the 1st of January, when it appears she arrived at Accra, to take on board a supply of Indian corn and yams for the island of Ascension; a week after leaving the former settlement, she fell in with the Forester in a sickly state, several fatal cases of the epidemic having occurred on board. After receiving a prize crew from her, the vessels separated, and the Bonetta proceeded on her voyage to Ascension, where she arrived on the 30th of January, having lost eight men from fever on the passage. In consequence of the illness and death of the assistant surgeon, there is not any account of the origin and progress of the disease until another joined on the 3rd of February, when the state of the sick list and ship were as follows:—The commander, master, assistant surgeon, purser, and twenty-eight seamen and marines, were all lying about the deck in a most helpless and melancholy state, three with black vomit, and to all appearance beyond the aid of medicine. The vessel was in a very filthy condition, the stench from the holds being almost insupportable, and totally incompatible with health. It may also be added, that on subsequently clearing her out, the corn and yams with which she was freighted were found to be in a state of decomposition.

Shortly after her arrival, tents were erected on shore, and the whole of the crew were landed and placed in them; the sick being separated from the healthy. This precaution was unnecessary, or at least without the desired effect, as the few remaining Europeans and three Africans were almost immediately added to the list; making a total of thirty-nine, of

whom twenty-eight recovered and returned to duty, three were invalided and sent to England, and eight died.

The fever in this instance appears to have displayed all the usual characteristics of the common remittent or yellow fever;—yellowness of skin, bleeding of the gums, and black vomit. It is to be regretted that there are not any means of obtaining information relative to the first appearance of the disease, or of its progress prior to her arrival at Ascension on the 30th of January, in the deplorable condition previously described. The first assistant surgeon who took charge of her, after her arrival, does not allude to the question of contagion; the other who succeeded him on the 16th of February states, that from the information he had received, he was led to regard the disease as decidedly contagious. The sick were admitted to pratique on the 1st of March.

The treatment adopted when the disease was at its worst, consisted in the exhibition of mercurial purgatives, and afterwards the use of mercury both externally and internally, so as to produce ptyalism, blisters, and cold applications to different parts of the body, saline effervescing draughts to allay irritability of stomach, purgatives or enemata to keep the bowels open, and subsequently quinine in large doses. Venesection was not had recourse to; it was in fact regarded as dangerous, five of the fatal cases having been bled by the previous assistant surgeon, of which practice, if it were wrong, he himself was one of the victims, having bled himself on the morning that he was seized.

The vessel subsequently proceeded to Simon's Bay, at a most inclement season of the year; and it is worthy of notice, that fourteen cases of remittent fever of a milder character occurred, and in persons who had recently joined, a circumstance which goes far to show, that there existed within the ship, a local cause capable of producing fever. After leaving Simon's Bay, the Bonetta visited St. Helena and Ascension, and arrived at Princes' Island on the 11th of August; the health of the crew having greatly improved by the invigorating

climate of the Cape. There were heavy rains in September, the vessel being then at anchor off the river Borea. On the 15th two boats were sent into the Bembia Creek, to intercept a Portuguese schooner fitted for slaves; there they remained until the 17th of November, communicating occasionally with the ship. In this arduous service, which lasted seven weeks, the people were exposed to all the vicissitudes of the weather, and "all to a man" suffered more or less; notwithstanding the issue of bark and rum, five cases of fever occurred after their return to the ship, two of which proved fatal.

In May and June the "Curlew" was employed in blockading the Rio Pongos, and cruising off Sierra Leone; the weather being variable the men were exposed one while to heavy rains, and on others to the direct rays of a vertical sun. Fifteen cases of fever occurred; the most severe of which were contracted in the river; out of a boat's crew of six, five suffered severely. In the latter part of June and the beginning of July, while off the same part of the coast, ten other cases of fever occurred; the most severe attacks, as formerly, falling upon the boats' crews who had been up the rivers, where it was their practice to lie concealed upon the banks, with no other shelter, night or day, than that afforded by the boat's sail. Many of the cases of remittent fever terminated in intermittent.

From January to June the "Dolphin" was employed cruising in the Bight of Benin, and in refitting at Ascension in May; during that time there occurred altogether eight cases of fever, two of which terminated fatally. The most severe of the latter was contracted on the island when the epidemic was prevalent there; and it is proper to observe, that the patient did not transmit the disease to any other person in the ship. The fever was of the nature of "typhus icterodes," and proved fatal on the fourth day. During the succeeding six months this vessel continued cruising prin-

cipally in the Bight of Benin; the crew were several times supplied with fresh provisions at Accra, Quitta, and Princes' Island, and not a case of fever occurred.

In the early part of the year, and again in May, fever of a most virulent character assailed the ship's company of the "Forester" at Sierra Leone, and nineteen fell victims, being upwards of a third part of the whole; amongst them was the assistant surgeon; there is not therefore any history of the disease until the 20th of July, when two-thirds of the crew only were in existence and in a state of convalescence. The ship was in quarantine at Ascension, whence she proceeded to the Cape for the benefit of change of climate; she left the latter on the 24th of October, the greater part of the crew then consisting of healthy young men recently entered from merchantmen, and arrived in the Bights in November.

The crew of the "Fair Rosamond" appear to have been attacked by fever in May, at or in the neighbourhood of the Gambia; there occurred sixteen cases, of which five died. Nothing is stated with regard to its supposed source, the assistant-surgeon having himself suffered. In the beginning of June, at Sierra Leone, she embarked the following remains of prize crews, viz.:—Of the Scout, three men and one officer, five being left behind in hospital, and one officer in sick quarters, twelve men having died. Of the Forester, three men and one officer. Of the Bonetta, one man, the Kroomen not being included in this account. Between the 3rd and 11th of June, six of these supernumeraries, all of whom had been exposed to the baneful fever-exciting agencies of Freetown, were seized with fever, which terminated fatally in four instances. The fever was a well-marked remittent, the remission taking place towards morning. The treatment consisted in giving, in the first place, a scruple dose of calomel, with strong cathartics, until the bowels were freely opened, and then two-grain doses of calomel every second hour, with diaphoretics, and the application of epispastics

when necessary. The symptoms, it is stated, were not such as to warrant general bleeding. There were also several cases of intermittent fever among the prize crews.

On the 30th of June they fell in with the Forester, in want of medical assistance, the assistant-surgeon having been attacked with fever; the purser and one seaman being also ill. On the following day the assistant-surgeon died, and another man was seized; she then proceeded to Ascension in company with the Pylades, having previously discharged a prize crew into the Fair Rosamond, which subsequently, notwithstanding, continued free from any febrile visitation up to the end of the year.

During the months of February, March, and April, there were eighteen cases of remittent fever in the "Lynx," occurring at two distinct periods, and with different degrees of intensity; first, when the vessel was at Sierra Leone, in a mild form; and secondly, while she was at anchor near Ascension, in a more severe form. It is not stated whether the crew had had any communication with the shore.

The "Pylades" arrived on the station from the Cape of Good Hope in spring, and took up a position in the Bight of Biafra; her crew continuing healthy, notwithstanding that fever raged in several of the other vessels of the squadron, which, in consequence of the loss of their medical officers, were frequently visited by the surgeon of the Pylades. The possibility of the disease being contagious seems not to have come under consideration, at least it is not mentioned any where in the reports. In June, however, bowel complaints became troublesome amongst the boats' crews of the Pylades, which at that time were on detached service in the river Bonny; these attacks were supposed to have been occasioned by drinking the river water. On the 27th of June, the day on which they returned, two were attacked with fever, and two others on the two succeeding days; all the cases assumed a severe form, and in one instance terminated in death.

It would appear that it is by no means an uncommon occurrence for diarrhœa to precede an endemic invasion of fever on this coast; it was so in the Eclair, and it has been noted antecedently in several other instances; whether it would have proved so in the present case, can only be regarded as a matter of speculation, as the surgeon, very wisely taking into consideration the general prevalence of disease, and the great mortality on the station, together with the appearance of the above cases of fever in an aggravated form, suggested the propriety of a change of climate, which was promptly responded to, and the ship ordered to cruise to the southward as far as St. Helena; a measure, the wisdom and humanity of which cannot be doubted, as it, in all probability, saved the lives and the health of many of the crew. She afterwards returned to the coast, resumed her old cruising ground off the Bonny, and continued healthy during the remainder of the year.

"Scout."—The months of January and February 1838, were marked by a high state of health in this vessel, ascribable principally to the dry healthy season of the year on that part of the station where she was employed, to the omission of boat service, and to the ship being nearly constantly at sea in the Bight of Benin or Biafra. For an entire month, in consequence of the quantity on board being small, biscuit was not issued, except to the boats' crews, flour being substituted instead, and this was frequently eaten in a half-cooked state. In March the boats were detached for thirteen days up the Old Calebar; bark with rum was regularly issued to the crews both night and morning, and apparently with the best results, the whole of the men returning from the river in good health. In June the vessel proceeded to the Cape, touching by the way at Ascension and St. Helena, and returned to the coast in December, the crew having been healthy the whole of that time.

The "Waterwitch" was employed cruising on the north

part of the station, the crew being healthy until she arrived at Ascension in April, when numerous cases of diarrhœa occurred, supposed to have been occasioned by the water of that island having been drunk while in a turbid state. Its progress was immediately checked by abstaining from the cause. About this time a malignant fever prevailed among the inhabitants on shore, but there was not any sickness on board the Waterwitch up to the 3rd of May, when she left for the coast of Africa. On that day one case of malignant fever occurred; and again on the 13th, ten days after being at sea, there were four more added to the list, all resembling the first, but presenting more decidedly the characteristics of true yellow fever. From this time the malady continued its ravages until the 4th of June; within that period no less than sixty had been attacked, and fifteen died. The crew consisted of fifty-two Europeans and eighteen native Africans; only three of the white men escaped. Many of the Africans also suffered, but their attacks were comparatively mild, and not attended with danger.

There was not any possibility of separating the sick from the healthy; but ventilation and cleansing were had recourse to as far as circumstances would admit, although unfortunately this was next to an impossibility, so great was the quantity of provisions and other stores taken on board at Ascension for the use of the squadron. The state of the weather, together with the locality (the Bight of Biafra), where the rains had just commenced, also tended to aggravate the disease. As the vessel approached the coast, the number of cases increased with such rapidity, that there were at one time twenty-three fresh attacks within the space of three days, leaving only five white men to do duty on deck, although from the 4th to the 6th of June there had been only three!

The fever was characterised by remissions, yellowness of skin, black vomit, black urine, hæmorrhage from the nostrils, throat and mouth, and vomiting of blood. There were several recoveries after hæmorrhage from the mouth, throat, and nostrils had taken place, but there were not any after

black vomit had occurred. Such was the variety of symptoms attending the onset of the disease, that no invariable line of practice could be pursued. General bleeding, although it appeared to be beneficial in the majority of cases, could not be employed in all; and when practicable, the lowness of type, and alarming debility of the second stage, rendered it necessary to proceed with the utmost caution; the state of the pulse and tendency to congestion were the principal guides in this respect. The quantity taken away seldom exceeded twenty-four ounces, nor did the symptoms in any case require its repetition. In the majority of instances the blood abstracted did not separate into serum and crassamentum, although its solid parts did not appear to be less in quantity than usual, for in the bleeding cups the whole presented a tolerably firm mass; this took place in many cases where the symptoms called for, and were relieved by venesection; it was not considered a contra-indication to the use of the lancet, when from other symptoms it was judged necessary. Immediately after the bleeding, purgatives were given so as to produce five or six copious evacuations, which with cold sponging, shaving the head, and the liberal use of cold drinks, generally produced evident signs of amendment. Blisters were also used, and mercury so as to induce ptyalism, and this it was supposed generally caused improvement in the symptoms. In seven of the more urgent cases which recovered it was established, and also in three of those which proved fatal; but again, in the majority, mercury either did not produce its specific action, or else there was not time for that action to be developed. In consequence of the deplorable prostration of strength which followed, convalescence was, in most cases, protracted and precarious. Quinine, wine, and porter, with preserved meats, were of the utmost benefit during the stage of recovery.

The "Buzzard," "Columbine," "Curlew," "Pylades," and "Saracen," appear to have lost fewer men, and to have had less sickness on board than any of the other ships on the station during the year.

GENERAL OBSERVATIONS.

Between 1831 and 1836 the squadron, considering the nature of the climate in which it was employed, continued healthy; the active exciting cause of epidemic fever having remained apparently dormant upon the whole line of coast during that period. In December 1837, however, it came into action in the Ætna, and her tender the Raven, at Sierra Leone, where the former remained only three days; the fever, it appears, was then prevalent on shore, and amongst the shipping. Several of the cruisers also, as previously detailed, lost a considerable number of men each, but from the illness or death of their medical officers, there have not been any documents transmitted, from which any satisfactory account of the disease, or of its origin, can be obtained. Early in 1838 it attacked the ship's company of the Forester at Sierra Leone, and they appear to have again suffered severely from it during the summer months. In the Bonetta it broke out at sea, while she was running to Ascension, she being at the time in a filthy state, and loaded with corn and yams; it is proper to observe that this occurred subsequently to her receiving a prize crew from the Forester, in which vessel the disease was then present.

In the Waterwitch it first made its appearance after leaving the island of Ascension, in the beginning of May 1838; the disease was then committing great ravages amongst the people of the garrison, having broken out in the latter part of March, after heavy rains on the 16th and 17th of that month, preceded by some years of dry weather. Extensive collections of rain-water had been formed and gradually dried up by a powerful sun at the hottest part of the year. One large pool, between twenty and thirty yards in length, and about half

that breadth, formed an oblong square, on three sides of which there were dwelling-houses; two of these were occupied by thirteen Portuguese prisoners from a vessel which was detained in the roads; they lived chiefly on half putrid fish, the garbage and bones of which were washed down into the pool. Some of the earliest and worst cases came from this square. In a second square, on a more elevated site, many of the houses had more than a foot in depth of mud and filth washed into them. The inmates of these also suffered severely, one only having escaped an attack of fever. Higher up still, and at a considerable distance to windward, there was a general store for provisions of all kinds, and a great variety of other articles, into which a stream of muddy water had rushed, and filled it to the depth of six feet, forming a strange heterogeneous mixture of the soluble and insoluble contents. The men employed in pumping out the water, which emitted a most disagreeable effluvium, and in clearing out the building, also suffered most severely. The barracks for the marines, which were situated to leeward, although not directly in the track of the wind, unless it slightly deviated to the eastward, also furnished a large proportion of cases, and the new comers, with one or two exceptions, were all attacked. In short, it appears that nearly all who were exposed to the exhalations from these sources, contracted the disease in a more or less intense form, those who were most exposed being of course the greatest sufferers.

Amongst the people there prevailed an opinion that the disease was imported by the vessels arriving from the coast; some attributing it to one and others to another, according as it suited their ideas, without any regard to direct proof upon which to base their opinion. The following extract, however, from a report furnished by the surgeon of the establishment, places the matter in a different light:—

"The Ætna arrived from Sierra Leone on the 26th of January, after a long passage, during which she lost twenty-five officers and men; she was at once placed in quarantine,

and not released until the 10th of February. The surgeon then reported that he considered the ship to be perfectly healthy. There did not occur any deaths on board after her arrival, nor were there any more cases invalided or sent to hospital.

"The Bonetta arrived on the 29th or 30th of the same month from Accra; she had lost several men on the passage, and had then on board the corpse of a young officer dead of fever. She was at once placed in quarantine, and on the occurrence of numerous other cases on board, was removed to a more distant anchorage, the ship's company being disembarked and placed under canvas, where they remained for about a month; in the meantime her tanks were taken out, and her holds thoroughly cleaned. On the 1st or 3rd of March she was released from quarantine, there not having been any deaths or new cases amongst the crew for the previous ten days. Five invalids, and one patient with dysentery, were received into hospital from her on the 6th; the latter subsequently rejoined his ship, but one of the invalids died of extreme emaciation.

"The next vessel that arrived was the Forester, on the 4th of February, from Sierra Leone, having lost from fever her commander and several men on the passage. Although it was believed that she had, on the day of her arrival, only one man dangerously ill on board, she was nevertheless placed at once in strict quarantine until the 22nd of February, when she was released, there not being then any one confined to bed, nor had there been any new cases for the previous ten days. An officer was received from her, invalided, and shortly afterwards sent to England.

"On the 23rd of March the Raven arrived from the same part of the coast; she had previously lost several men and officers from fever, the last on the 11th of January, but at the time had not any sick on board except two officers, and they were partially discharging their several duties, so that it was

considered there was not anything to justify her being placed in quarantine.

" Foul linen was sent on shore from all these vessels to be washed, the officers of the first three having pledged themselves that it should be previously dipped in boiling water, while the women on shore were cautioned not to receive any unless they were assured that this had been done. Whether the precaution was observed or not there are not any means of ascertaining.

" The effects of the deceased officers who belonged to the Forester were sold on shore on the 3rd of March, having been spread out on the beach and exposed to the sun's rays for two days previously. Those of the officers of the Bonetta were sold on the 7th of March, eighteen days prior to the fever breaking out in the island. They had been kept on the quarter deck of the vessel for about a fortnight, and had been well aired and exposed to the sun's rays two days previously to their being sold.

" The disease, it was asserted, originated in the miasm from these effects; the largest purchasers therefore should have been the earliest sufferers, but this was not the case. Sergeant Warren most unquestionably made the most extensive purchases, and his wife took in washing; they both certainly died of the disease, but neither of them was attacked until a late period of the sickness, and both had been attending day and night in the crowded houses of their sick neighbours. Mrs. Scarisbrook was also an extensive purchaser; she was however the very last woman attacked, and her husband entirely escaped the disease. George Downes purchased some wearing apparel, which he took to his house, where he had a wife and three children; he has worn a thick watch coat that belonged to the late Lieutenant ——— (who died of fever) on his night-watch ever since, yet neither he nor any of his family have been attacked. They probably owe their immunity simply and solely to their house being situated

at a considerable distance to windward of the squares, and at an elevation of several hundred feet. In short, many who were purchasers escaped the disease, while others who did not make any purchases were attacked.

" A fine healthy girl, the daughter of an officer, was the first who was seized, and it is utterly impossible in any way to connect her case, either with the foul linen or the effects that had been sold. It is necessary however to state, that the room in which she slept was under the surface level of the ground, and that muddy water having found its way into it during the rains, the ventilation being bad, some time necessarily elapsed before it could be completely dried.

" If the disease had been contagious, it seems strange that it was not communicated in the first instance by the invalids received from the vessels where it prevailed to the patients in the hospital, to the hospital-attendants, or to the medical officers. The commandant and three men were attacked on the Green mountain, although there can be but little doubt of their having imbibed the poison a few days previously down below; the former and two of the latter died. The corpse of the commandant, without a coffin, was brought down by a party of the men stationed on the mountain, in the middle of the night, with great fatigue to the men, the body being heavy, while at least half the bearers must have been to leeward of it all the way. The corpse of one of the men was also brought down, but in the hottest part of the afternoon, and the men who carried it were immediately sent back again, yet not one of these, nor any of the messmates of the two men who died were attacked. In short, the men stationed on the mountain who had not been exposed to the causes which were so rife below escaped entirely." From these premises it is concluded that the disease was non-contagious and also of local origin.

Table XIII.

Showing the Total Loss sustained by each Vessel during the year 1837, distinguishing the Deaths from Disease from those occasioned by External Violence or Drowning. The numbers extracted from the Pay-Books.

	Deaths		Total Deaths.
	From Disease.	From Accident.	
Raven . . .	17	..	17
Lynx	1	..	1
Fair Rosamond .	4	1	5
Buzzard . . .	8	..	8
Forester . .	4	..	4
Curlew . . .	20	..	20
Charybdis . .	4	1	5
Ætna . . .	11	..	11
Bonetta . . .	6	..	6
Dolphin . . .	13	1	14
Pelican . . .	2	..	2
Scout . . .	6	1	7
Waterwitch .	5	..	5
Columbine . .	4	..	4
Rolla. . . .	..	..	..
Total . .	105	4	109

Total mean force employed, 815; ratio of deaths per 1,000 from disease, 128·8; ditto, from all causes, 133·7.

Of the accidental deaths, three were occasioned by drowning and one by external violence.

Table XIV.

Showing the Total Loss sustained by each Vessel during the year 1838, distinguishing the Deaths from Disease from those occasioned by External Violence or Drowning. The numbers extracted from the Pay-Books.

	Deaths		Total Deaths.
	From Disease.	From Accident.	
Raven . . .	3	1	4
Fair Rosamond.	7	..	7
Buzzard . . .	3	..	3
Forester . .	19	1	20
Curlew . . .	1	..	1
Lynx . . .	..	..	..
Ætna . . .	19	1	20
Dolphin . . .	3	..	3
Pylades . . .	1	..	1
Scout . . .	15	..	15
Saracen . . .	..	..	..
Waterwitch . .	15	..	15
Brisk . . .	7	..	7
Bonetta . . .	20	..	20
Pelican . . .	2	..	2
Termagant . .	..	..	..
Total . .	115	3	118

Total mean force employed, 885; ratio of deaths per 1,000 from disease, 129·9; ditto, from all causes, 133·3.

The ratio of mortality for the present year is extremely high, in consequence of the prevalence of fever in an epidemic form in several of the vessels of the squadron, and in the Ætna, employed in surveying duties. Three deaths occurred from drowning.

DISEASE AND MEDICAL TREATMENT

IN THE

RESPECTIVE VESSELS OF THE SQUADRON,

During the Years 1839 *and* 1840.

THE "Curlew" appears to have arrived on the coast in June, 1839; between that month and August there were ten cases of fever placed upon the sick list, two of which died. When the patients came under observation during the stage of depression, an emetic was exhibited; if they were not seen until after reaction had taken place, bleeding to syncope was practised, with the immediate administration of a full dose of chloride of mercury, combined with antimonial powder. If the symptoms continued urgent next day, the bleeding was sometimes repeated, either generally or locally. Four of these cases were convalescent when the vessel entered the Bonny; two, however, immediately relapsed and died while she lay there, making the total loss four out of those attacked. Several new cases were at the same time added to the list. In these latter, it is stated, venesection was not employed during the stage of accession as it had been in the former; exhaustion was found to be "so very great about the eighth day of the fever, that in several there was not sufficient strength to form a crisis." The vessel, during the latter months of the year, was a good deal at anchor in the Bonny, and at various other places in the Bight of Biafra.

From the beginning of January to the end of April, there

were thirteen cases of remittent fever in the "Buzzard," and fourteen of cephalalgia; the latter occurred in men who had been exposed to the rays of the sun while at work on board. It is probable that all these cases were of a febrile nature; but, like those classed under that head, were not very severe. Boats' crews were several times employed on duty in the rivers in the Bight of Biafra; and occasionally, for several days at a time, they were supplied with the usual allowance of bark mixed with their rum, and, now and then, with port wine. On no occasion did they return sick, or suffer afterwards, in consequence of this exposure; it is necessary to state, however, that these expeditions were made during the healthy season.

In March they blockaded an American schooner, the Clara, in the Nun, until the 17th of the month, when she was brought down the river; her crew, of whom four or five had died, being then in a sickly state; the master, who was also ill, was removed into the Buzzard, that his health might be better taken care of. He became convalescent, but relapsed two or three times from intemperance and excess, and ultimately died on the 12th of June, two days after he was admitted into the quarantine hospital of New York. In June three of the crew were attacked with fever—one on the 7th, one on the 11th, and one on the 29th; but in one instance only did the disease assume a malignant form, the last case which occurred terminating in death on the 3rd of July. On the 2nd and 3rd there were two other attacks, on the 4th one, on the 5th and 6th four; one of the latter date terminated fatally on the 10th with black vomit. On the 8th there were six additional cases, on the 9th one, and between the 10th and the 21st thirteen, all of which recovered; the disease in the last eight attacked being mild. Only one of the Africans suffered, and that but slightly.

The fever was remittent, each case being marked by two distinct daily exacerbations, one in the morning, and the other in the evening; the latter the more severe, and lasting

until midnight. The remissions were attended with considerable alleviation of the more urgent symptoms. In four cases bleeding was had recourse to; two of these died, and one of the others was a long time in recovering. In all the four cases the fever seemed lessened by the bleeding. Emetics afforded relief; but, like that obtained from bleeding, it was temporary. Calomel acted well when the mouth could be affected, and best in ten-grain doses given every sixth hour, or oftener. In the worst cases, the mercury was not readily taken up by the system; but in those where it was absorbed, recovery might almost be depended upon; while the period of convalescence did not exceed five or six days. Those cases did best in which a large dose of mercury (calomel) was given in the early stage; delay, it is remarked, was dangerous.

It appears that the Buzzard, after taking the supposed slaver out of the Nun, proceeded with her to New York, where the disease first assumed a malignant type. It originated in the vessel, confined its ravages entirely to the crew, and although attended by black vomit, was not contagious. It, however, seems more than probable that its remote cause, notwithstanding that a period of nearly three months had elapsed, was in some way connected with the boat duties in the river Nun, as the greater number, if not the whole of those attacked, were men who had been sent up the river. Of a crew of seventy-two persons, twenty-seven had the fever in a severe form, in fifteen it presented all the malignancy of yellow fever, which it undoubtedly was, and in four cases terminated fatally. There were others of the ship's company who were supposed to have been under the influence of the morbific poison, but the symptoms were not sufficiently developed to diagnose the character of the disease. In August and September there did not occur any illness of any consequence on board. She left New York on the 8th of November, and Bermuda on the 21st, and arrived at Sierra Leone on the 25th of December.

The "Columbine" visited the Cape in the early part of the year, but was principally employed on the West Coast, to the southward of the equator. During the months of September, October, and November, part of the ship's company were much exposed on detached service in the boats in the Congo and off Angola; and a few cases of fever occurred in a party that had been nine days in the Congo, but they were of a mild character.

The "Forester" continued healthy, generally speaking, until July, when eight cases of fever occurred in men who had been exposed on shore at Sierra Leone, while there in prizes; three of these died. In October there were a few sporadic cases; but on the 1st of November, a party, consisting of sixteen officers and men, proceeded up the Sierra Leone river, it is not stated for what purpose, and did not return until the morning of the 4th; upon that day, after one of the officers and two of the men had been discharged into the Lily, the ship left the port. On the 10th, the first of the party was attacked, and by the 16th, all the others, so that not one escaped. The vessel proceeded to the Island of Ascension, having lost eight men by fever on the passage. Several other cases appear to have occurred, although the disease did not acquire any contagious quality.

The "Lily" arrived at Sierra Leone from England on the 3rd of November; and, having received on board the prize crews of three several ships, consisting of eight or ten men each, she sailed on the 7th. On the following day there were six cases of fever put on the sick list; on the 9th there was one; on the 10th two; on the 13th, 15th, and 16th, one each day; the last, which was of an inflammatory type, was one of the Lily's men, but all the others belonged to the prize crews. The majority of these men had been left to themselves at the "barn," described in the introductory part of this report, where they consequently had it in their power

to commit every kind of excess. As a proof that the fever was contracted there, or from these causes, it is mentioned that the prize officer of the Waterwitch kept his men at his own quarters, under his eye, and not one of them was seized. The treatment consisted in calomel purges in the first instance, and subsequently, calomel in four-grain doses every fourth hour, to affect the mouth. Bleeding from the arm in one case, and from the temporal artery in another, was had recourse to without any satisfactory result. Quinine was given in the stage of convalescence. Two deaths resulted, and both in men who had been residing in the "barn."

"Saracen."—In April and May the boats were frequently sent up the rivers; the vessel was also up the Nunez for ten days, yet continued free from disease; the comforts of the men were attended to, the vessel kept clean, and the season was healthy. There were two cases of fever in July; in one of these the patient had been on shore, and the other had been very intemperate in the use of trade rum, which had been smuggled into the vessel. In the last quarter of the year there were nine cases and two deaths.

The "Viper" was constantly employed in the duties of the station, and continued healthy until September, when the boats were detached to blockade Port Antonio, Princes' Island. Notwithstanding their being fitted with rain awnings, the men got wet; eight cases of fever occurred in consequence, and one death.

In the "Wolverine," there was not any disease of much importance until the end of July, when eighteen cases of endemic fever occurred, after the men had been employed in painting and refitting the vessel at Accra; it is also necessary to observe that they had permission to go on shore in watches. The disease did not make its appearance until the 30th of July, five days after leaving the anchorage. Of the eighteen

cases nine died, and five of the survivors were sent to hospital for debility in October. The treatment consisted in bleeding when indicated, purgatives, and calomel to affect the mouth, with other means of a less active nature.

Nothing could more distinctly illustrate the risk attending refitting on the coast, than the facts just recorded, or rather the risk of giving the men leave, for to that indulgence the disease is mainly to be ascribed; while the result of the medical treatment is a melancholy instance of how little our means avail, in subjects attacked with fever, immediately after the commission of excess in the use of intoxicating liquors, and in sexual indulgences.

Nothing particular worthy of remark, whether as regards health or disease, appears to have occurred in any of the other cruisers on the station during the year 1839.

The "Buzzard" being on the Sierra Leone division of the station in January 1840, went up the Pongas, when a few cases of fever occurred from exposure, and two died. She then proceeded to the Bights, and in March her boats were frequently detached up the new and old Calebar rivers; and up the Bonny, Brass, and Nun. The men had the usual quantities of bark and spirits in conformity to the instructions. Only one case of fever occurred. The patient was a man of intemperate habits, and the case terminated fatally; he took a large quantity of calomel, but it did not affect his system in the slightest degree. In the cases previously mentioned, this medicine was given it would appear on the heroic plan, namely, a half-drachm dose to begin with, and five grain doses every third or fourth hour afterwards, in the hope of inducing ptyalism.

From April to June nearly the same cruising ground was occupied, the vessel being constantly in-shore, or at anchor off the mouths of one of the large rivers. The duties were of the most harassing nature, consisting of frequent boat expeditions. The rivers Nun, Bento, Brass, Bonny, Borea, Bembia,

Cameroons, and Calebar were repeatedly explored, the consequence of which appears to have been an accession to the sick list of twenty-nine cases of fever of various degrees of severity; four of which terminated in death. Calomel was again resorted to in large doses, to wit half a drachm or two scruples at the commencement, and five grains every third hour subsequently, the blue ointment being also occasionally rubbed in. In the cases which terminated fatally, the specific action of the mineral was not obtained, although it was fully established in those which recovered, being it may be presumed the effect, and not the cause of the restoration to health. Blisters were applied to the head on the slightest appearance of any affection of the brain; they were also extensively applied, but for what purpose it is not stated, to the neck, stomach, axillæ, and to the feet in succession. The tincture of hyoscyamus with soda in camphor mixture was given to allay the irritability of the stomach. As a substitute for a warm bath, a blanket soaked in hot sea water was wrapped round the patient, more warm water being poured over it, as it became cold. This was considered in some degree to mitigate the febrile paroxysm, and was used in the evening. Quinine and rhubarb were administered during the stage of convalescence.

During the last six months of the year, this vessel still continued on the same part of the station, being generally either at anchor within a few miles of the land, or under weigh within sight of it. The boats were repeatedly detached, yet no serious sickness resulted. The weather during the last quarter was for the most part dry with a fine clear cloudless sky, and the wind from the land frequently of considerable force. Much dew fell after sunset, and vivid lightning was often observed over the land during the night.

The "Bonetta" being stationed for the first six months of 1840 off the northern rivers, had occasion frequently to visit both Sierra Leone and the Gambia, in each of which ports she sometimes remained for weeks at a time, still her

ship's company, generally speaking, continued healthy; a circumstance that is ascribed to dry clean decks, free ventilation, personal cleanliness, sobriety, and to a due regard being paid to the comforts of the crew.

"Forester."—In consequence of repeated representations both written and verbal, it is stated that the practice of permitting men to go on shore on different parts of the station had been discontinued, with one exception, affording another instance of the necessity of carrying out this regulation more stringently. The carpenter's mate was sent on shore on the 29th of May to cut wood on the banks of the river Sestos, and was several hours in the swamps. On coming on board he complained of head-ache, and was in other respects unwell until the 7th of June, when fever developed itself, and terminated fatally on the 19th.

These isolated attacks perhaps better serve to point out the deadly nature of the country to Europeans, than when the fever occurs in the more general form of an epidemic. The above case also shews that a limited exposure of even a few hours to the fever-exciting agencies of the land, is sufficient to establish the disease.

In July another case occurred under somewhat similar circumstances; an officer who had been in the habit of recklessly exposing himself, was on shore in the same locality as the carpenter's mate, during several days in the latter end of June, and again on shore at Cape Palmas on the 1st of July. He was seized with fever on the 3rd of the same month, and died on the 16th. The ship's company remained healthy during the succeeding six months; although, in November and December, the vessel was almost constantly at anchor off the Nun and Brass rivers, and the boats were frequently detached on distant service.

Between April and September 1840, there were about thirty cases of fever in the "Persian," the worst of which occurred in prize crews, and were contracted at Sierra Leone. Deple-

tion was resorted to in a few cases; but in the majority it could not be borne, as syncope followed the abstraction of a few ounces of blood. Calomel was also given in large doses, followed by saline purgatives, and was afterwards administered in four-grain doses every four or six hours, until the system was slightly affected. Cathartic enemata were exhibited, and sinapisms or blisters, when there was much irritability of the stomach, were applied to the epigastrium; when there was increased action of the brain, cupping-glasses were applied to the temples, with blisters to the nape of the neck. On the subsidence of the fever, quinine was given to complete the cure.

During the latter part of the year, there were several cases of fever, and eleven of cholera, contracted on shore at Princes' Island, where the men were exposed to the local causes, and guilty of the usual imprudences. One death seems to have resulted from fever.

Diarrhœal complaints of a choleraic nature have been known to attack the crews of vessels at anchor in this bay on former occasions, as in the Dryad in 1831, when nearly one-third of the ship's company were attacked within the space of two days.

In April, a few cases of fever occurred in the "Saracen" at St. Mary's, in the Gambia. In other respects she continued tolerably healthy, until the 19th of November, when her boats were despatched with three officers and twenty-one men, in company with the boats of the Wanderer and Rolla, up the river Gallinas, for the purpose of destroying a slave factory. There they remained until the 26th: the men occupied some open boat sheds, close to the river, but were exposed to the vicissitudes of the weather, which at that time were great, the nights being cold and the days warm. The soil upon the point on which the sheds were erected was sandy. The men had bark and wine given to them morning and evening. On the return of the party, most of them complained of pain in the limbs, as if from excessive fatigue, and

many of cough. On the 30th, the effects of the exposure became evident; two men were seized with fever, and in the course of the succeeding month, there were seven other cases, three of which terminated fatally. It is probable that if bark and wine had not been given, so many would not have escaped.

The "Wanderer" was on the windward part of the station, during the greater part of the year 1840. From January until September, only a few cases of fever occurred, and almost without exception in individuals who had been in prize vessels, or exposed on shore at Sierra Leone. The boats with about seventy officers and men altogether were sent up the river Gallinas with those of the Saracen as previously described. They left the ship on the 19th of November at half-past four in the morning, and took possession of the slave factory a little after daylight without opposition; the slave-dealers with their retinue having fled into the bush, taking with them nearly all their victims, with the exception of a few who were diseased. The country in the immediate neighbourhood of the factory, which was held until the 26th, is low, and abounds in marshes to a considerable distance towards the interior. The men, while they remained, were constantly employed searching after the slaves in these, and in the bush, frequently up to the waist in the former, and sometimes sleeping in wet clothes, and on damp ground. After destroying all the barracoons and stores by fire, and after having collected nearly nine hundred slaves, the latter were shipped on board the Wanderer, and on board an empty slave vessel that had been captured a few days previously, and were then sent to Sierra Leone. Sixteen cases of fever appear to have resulted from this expedition, but no death. In the Saracen's party there were three deaths.

In the treatment venesection was not resorted to in any instance, but calomel was given with the view of producing ptyalism.

Table XV.

Showing the Total Loss sustained by each Vessel during the year 1839, distinguishing the Deaths from Disease from those occasioned by External Violence or Drowning. The numbers extracted from the Pay-Books.

	Deaths		Total Deaths.
	From Disease.	From Accident.	
Lynx	4	3	7
Fair Rosamond	1	..	1
Buzzard	4	..	4
Forester	15	..	15
Brisk	9	..	9
Bonetta	..	..	..
Dolphin	2	..	2
Scout	2	2	4
Waterwitch	4	..	4
Termagant	..	..	..
Viper	2	..	2
Harlequin	1	..	1
Lily	..	..	..
Partridge	..	..	..
Pylades	..	..	..
Pelican	..	..	..
Wolverine	11	..	11
Total	55	5	60

Total mean force employed, 790; ratio of deaths per 1,000, from disease, 69·6; ditto, from all causes, 75·9.

The three deaths from external violence in the Lynx occurred in one of her boats, which was attacked, whilst on detached service, by the natives in the river Gaboon, when three men were killed by slug-wounds, and several severely wounded. The Dolphin lost two men by drowning.

Table XVI.

Showing the Total Loss sustained by each Vessel during the year 1840, distinguishing the Deaths from Disease from those occasioned by External Violence or Drowning. The numbers extracted from the Pay-Books.

	Deaths		Total Deaths.
	From Disease.	From Accident.	
Lynx	2	..	2
Fair Rosamond .	2	..	2
Buzzard . . .	8	1	9
Forester . . .	3	..	3
Brisk	..	..	..
Bonetta . . .	..	..	..
Dolphin . . .	1	2	3
Waterwitch . .	1	..	1
Rolla	4	..	4
Termagant . .	3	..	3
Persian . . .	3	..	3
Viper	..	..	..
Wolverine . .	2	..	2
Wanderer . .	3	..	3
Total . .	32	3	35

Total mean force employed, 855; ratio of deaths per 1,000 from disease, 37·4; ditto, from all causes, 40·9.

The mortality on the station during this year is again considerably reduced, fever having been generally less violent in its character than on either of the preceding years. The accidental deaths, three in number, were occasioned by drowning.

PRINCIPAL DISEASES AND MEDICAL TREATMENT,

During the Years 1841, 1842, *and* 1843.

It will be observed that the force during the present and subsequent years was considerably increased both as regards the number of men and vessels; while the latter, in consequence of important alterations in the treaties with foreign powers, were extended southward of the equator as far as the fifteenth or sixteenth degree of latitude; in order that they might command the slave factories along the shore, but more particularly the mouths of the large rivers, in which, from their vast capacity, vessels engaged in this scandalous traffic have invariably congregated, as well for security, as for the facility they afford for collecting the victims of their cupidity from the numerous ramifications which extend from them.

The "Bonetta" was employed between Sierra Leone and Cape Mount during the greater part of 1841, but seldom anchored near the coast. The continued healthy condition of the crew during that time was attributed to the excellent arrangements respecting the internal economy of the vessel. In December, however, while cruising off the Gallinas, several cases of fever occurred without any perceptible cause. Two seamen and two marines about the same time returned from Sierra Leone, whither they had been sent in a prize; there they contracted fever while on shore, and all died.

On the evening of the 22nd of September thirty-six cases of

fever from the vessels of the Niger expedition were transferred from the Soudan to the Dolphin. It is presumed the mortality (one death in four) would have been less, but for the unavoidably bad accommodation on board the steam-vessel, where the sick were not protected from the inclemency of the weather; most of them on coming on board the Dolphin were drenched with rain, both their clothes and bedding being wet. One man, a convalescent, on the following morning was found to be sinking, and never afterwards rallied. Eight altogether died on the passage to Ascension: notwithstanding the low and fatal character of the fever, it does not appear that it was communicated to any of the ship's company of the Dolphin.

In the "Fantome" there occurred eight cases of fever, all of which were contracted either by the cutter's crew, who had been eight days in a boat off the river Dande and one night up the Congo; or by the crew of the gig who spent one night on the banks of the last named river; all these cases were severe, and three terminated in death; of those which recovered, only one returned to duty, the others having been invalided and sent to England with apparently shattered constitutions. During the last half of the year the men were much employed in the boats off the southern division of the station, but did not suffer from any disease.

The "Iris" arrived on the coast from England in the spring of 1841. Endemic fever first appeared in the last quarter of the year, when there were twenty-eight cases put on the sick list; they all occurred amongst the people employed in the boats; the greatest sufferers were those who, contrary to the instructions they had received, not only left the boats, but were foremost in exposing themselves to the fever-exciting agencies of the shore. Two of the cases terminated fatally.

General bleeding was resorted to in only one instance, and in that, the cerebral disturbance amounted almost to phrenitis;

it afforded much relief at the time, and the patient ultimately recovered, although with great difficulty, from the debility which followed; he was subsequently obliged to leave the countryto re-establish his health in England. In all the other cases, the symptoms of debilitycame on early—upon the fifth or sixth day, and it required the utmost vigilance to prevent the patients sinking, by the timely use of wine and quinine. Emetics and purgatives were also used in the early stage of the disease, according to circumstances; and calomel in four-grain doses was given every three or four hours, until ptyalism was produced. Cold evaporating lotions, leeches, blisters, and cold affusion to the surface of the body were the adjunct means resorted to.

The "Persian" was employed principally on the southern division of the station during the year; between thirty and forty cases of fever occurred on board, and eight died. They were with few exceptions, all contracted on boat service between the fourth and sixth degrees of south latitude. Parties of men it appears were absent on these duties for a week or a fortnight at a time, some for a month, and others for even six weeks.

In the "Pluto," there were a few cases of fever, all of which were contracted on shore, or in boat expeditions. Three men of a prize crew belonging to the Dolphin were embarked at Sierra Leone; in the course of the week they were seized with fever, and all subsequently died. Seven cases also occurred in a boat's crew, which had been sent up the river Brass; one of these died. On the 29th of March, 1841, a boat which had previously been detached from the Saracen fourteen days, for the purpose of exploring the Sherbro, returned to the Pluto with five cases of fever on board; two others of her crew were seized on the day following. She had remained in the river for eight days, and to that circumstance the invasion of the disease was attributed. Two of the cases terminated fatally.

In the "Termagant" there were twelve cases of fever during the year, all of which were contracted by exposure on shore, or in boats, or from both causes; five died.

Twenty cases of fever occurred in the "Wolverine," between January and August; five of which terminated fatally. One of the latter was a prize master, who contracted the disease at Sierra Leone. The others were contracted either in the river Gaboon, or in the Bight of Biafra; it is stated that the ship's company were in a despondent state.

During the first quarter of 1841, but principally in January and February, upwards of seventy cases of fever occurred in the "Wanderer," of which nine terminated fatally. The whole of these attacks were confined to men who had been detached in boats up the rivers Nunez and Pongos; not any of that part of the crew which remained in the ship, then at anchor several miles from the land, having suffered. It is remarked that the men who remained in the boats, as boat-keepers during the night, generally escaped, although only a few yards distant from the main body who were sleeping on shore; all of whom, amounting to upwards of seventy in number, with but five exceptions, were taken ill within a fortnight after they returned to the ship. They slept in a dry and comparatively comfortable house. As an instance of the uncertainty of the effects caused by the fever poison, as compared with the immunity of the boat-keepers, it is observed, that the crews of two of the United States' cruisers, which had been in the Nunez a short while previously to the boats of the Wanderer, were attacked with fever and lost, the one ten, and the other five men, although they were strictly confined on board both by night and day.

Between the 1st day of April and the last of June, there were a few other cases in the Wanderer; two of which terminated fatally; in both instances the men had not long recovered from a previous attack; and were, while in a state of debility, permitted to go on shore at Sierra Leone under a

promise to return by sun-set, but instead of doing so, they remained there two days and two nights in a state of inebriety. One of them it is supposed slept one night in the streets in wet clothes. The fever did not fully develope itself until the twelfth day after their return to the ship in the one case, and the fifteenth in the other.

Venesection was not resorted to in any one case. Cathartics with ten or twenty grains of calomel were given in the first instance, and after free purging, calomel was exhibited in two-grain doses every two hours, occasionally combined with the same quantity of rhubarb until ptyalism was effected; if this did not occur before the fourth or fifth day, mercurial inunction was employed. Cold affusion, refrigerating drinks, blisters, according to circumstances, and quinine in liberal doses, sometimes combined with blue pill, as soon as there was a complete remission, were the other remedial measures employed. From July to the end of the year, the vessel continued cruising on the northern part of the station, and refitted at Ascension. There occurred about twenty cases of fever, nearly all of which originated in exposure to the malaria on shore.

The ship's company of the "Bonetta" did not suffer from any disease of consequence until the 21st of July, when the cutter being then on detached service, was upset off the river Sestos, and the crew, with the exception of three who were immediately drowned, exposed clinging to her, and to her spars, in the water for eight hours, when they reached the shore greatly exhausted; here they remained only a few hours, before they were discovered and taken off. On the 4th of August, however, fourteen days from the date of their having been upset, they were all simultaneously seized with fever, and two died. There was only one other case of fever in the vessel during the quarter, and that also terminated fatally; the disease was contracted by the sufferer while leading a life of intemperance at Sierra Leone.

In the early part of the year 1842, the "Lily" arrived on the south division of the station from the Cape of Good Hope. On the night of the 27th of April, a party of marines and seamen slept on shore at Loando for the purpose of protecting an English factory from a premeditated attack of the natives. In a fortnight after this exposure, six of the parties were seized with fever, of whom four died on board, and another in the Waterwitch; thus, out of six attacks, only one recovered; a circumstance which argues but little in favour of the supposed superiority in point of salubrity of this division of the station over those upon the north side of the equator.

In the "Madagascar," a few cases of fever occurred, principally in people who had been exposed in boats or on shore; those who contracted the disease on shore generally suffered most severely; two cases terminated fatally on board. There were also several deaths from disease amongst the men detached from the ship. It is to be regretted that fourteen deaths are recorded from drowning, eleven of which occurred on the 17th of July by the upsetting of a boat on the bar of the Coanza river, whilst endeavouring to communicate with a small vessel inside, that had been previously taken possession of. These bars, formed by alluvial deposit, are common to the mouths of a great many of the rivers on the coast, and are at times extremely dangerous, the surf being frequently so great as to baffle the best efforts of the strongest swimmers, while they are invariably infested by great numbers of predatory sharks, which not unfrequently attack men, while they are still alive, and struggling amongst the broken water. The Madagascar also lost three men by gun-shot wounds received in an attack which was made upon the slave barracoons at Kabenda, for the purpose of destroying them. It is also stated that three others fell victims to disease whilst absent in the boats, and one in a prize. Two were drowned while attached to a prize, and one in the river Congo. Altogether the mortality in the vessel during the year amounted to twenty-eight.

The "Rapid" joined the preventive squadron in February. No disease of any importance occurred amongst her ship's company until May, when a man, who had volunteered from a merchant brig in the Cameroon river, was seized with fever and died. Three other cases resulted amongst the crew of a boat that was upset on the bar of that river; one of these also died. In the last quarter there was only one case, the subject of which was a man who had been left behind by a merchant vessel, and was several days on shore; the disease proved fatal in his case also.

The "Albert," steam-vessel, was employed during the year between Sierra Leone and the Gambia, the crew being in the enjoyment of tolerable health until the rains commenced, when remittent fever became general amongst them. The vessel was about this time laid on the beach at Kroo Bay, where the engineers and stokers were employed almost night and day repairing the boilers and machinery; all these men, together with several others who were then employed or remained in the vessel, were attacked with fever, while those of the white crew who remained on board the Soudan, then at anchor in the stream of the river, escaped. In September she was employed cruising amongst the Bissagos Islands and in the river Jeba, when a number of the men and the assistant surgeon having been seized with fever, rendered it necessary for her to proceed to the Gambia, where the greater part of the ship's company suffered severely, but it is not stated whether any deaths occurred: seven men were sent to the military hospital.

The "Bittern" appears to have arrived on the southern part of the station, from the Cape of Good Hope, in December, 1842. Two boats were detached, and their crews being exposed in the usual manner to fatigue, privation, and the influences of the land, seventeen cases of fever of a severe character resulted, and one died. The disease was accompanied with yellowness of skin. It is to be regretted that the part of the

station is not mentioned. The vessel subsequently visited St. Helena and Ascension, but was generally employed off the southern division of the station; it continued healthy throughout the remainder of the year.

The "Ferret" arrived on the station in the latter part of 1842; until the same period next year, her crew continued exempt from any serious illness, but during the last quarter of that year, twelve cases of endemic fever occurred, one of which died, and three were sent to hospital at Sierra Leone. The worst cases resulted from exposure on shore and in prize vessels.

The "Heroine," during the first quarter of the year, was detained a week at Sierra Leone, where eight cases of fever were contracted. She then proceeded to the south of the equator, when a few others of a milder character occurred during the spring quarter; there were two, however, of a more severe type, one of which died. The patient was received from one of the boats of H.M.S. Iris, in Kabenda Bay; he had been labouring under the disease for a week previously, and, for want of proper attendance and accommodation, was in such a state, that little hope could be entertained of his recovery. The ship proceeded to St. Helena with one hundred and forty-five captured negroes, thirty-three of whom were attacked with dysentery and fever on the passage; of these, six died. The ship's company were permitted to go on shore at that island, for the first time for eighteen months, where, as might be expected from men so long confined on board, they committed the usual imprudencies peculiar to their class.

During the last quarter of the year, the ship being still employed on the south part of the station, fifteen cases of scabies are noted as having been contracted by the crews of the boats while on detached duty, by frequent intercourse with the natives, among whom it is prevalent; although it was considered to have been aggravated by the crowded state

of the boats, and exposure to the sun's rays for six weeks and two months at a time.

The "Iris" arrived on the south part of the station in the first quarter of 1843, and continued cruising between the parallels of 5° and 10° S. until the 4th of June; during that time, although the weather was very unfavourable, only seven cases of fever came under observation, all of which were attributable to local climatorial causes. Three were severe, and occurred in men who had been employed in the boats; and one, also a very severe case, in a man who had been left behind by a merchant vessel, and had been many days in the bush in a state of destitution; the other three were of an intermittent character, and originated in exposure on shore. Thus, it appears, that the influence of the land in producing disease on this part of the station is somewhat similar to that which obtains on shore to the north of the equator; although the proportionate malignancy of the diseases, with occasional exceptions, bears no equality, those contracted to the south being milder and less fatal. The Iris subsequently continued healthy, and finally quitted the station for England in the summer of 1843.

The steam-vessel "Kite" proceeded direct from England to the river Nun, which she reached in June 1842; having embarked the surviving officers and men of the ill-fated Niger expedition, she returned with them by way of Sierra Leone to England. After a partial refit, she again proceeded to the coast, and entered upon the duties of the station in the latter part of December, 1842. Early in the following year, she ascended the Congo to a distance of thirty-five miles for the purpose of adjusting certain pre-existing slave treaties with the native chiefs; as well as to wood and water. It is not stated how long she remained in the river, but nine days after leaving it, and while she was at anchor in the bay of Port Antonio, Princes' Island, coaling close to a low marshy beach, fever broke out; there were altogether fourteen cases, four

of which terminated in death. Three of the latter occurred in men of intemperate habits. At both places they had had opportunities of indulging freely in the use of intoxicating liquors; it is not possible to form any idea as to whether the poison was imbibed in the Congo, or at Port Antonio.

The Kite again returned to the coast of the mainland, and continued cruising two-thirds of the following quarter off the Gaboon. The climatorial diseases which occurred were few and unimportant. In consequence of the defective state of her boilers, she left the station for England in July.

The "Madagascar" was employed generally on the coast to the north of the Equator during the first six months of the year, and to the south during the last six. Two divisions of boats were detached to blockade some slave ports, names not mentioned, both of which escaped without any unusual sickness.

The "Pantaloon" continued healthy until August, 1843, when twenty-three cases of fever were entered upon the sick list. This is accounted for by the reception of a great number of supernumeraries from H.M. Steamer Wilberforce, at the Gambia, from the vessel lying a good deal both in that river and at Sierra Leone, and from the severity of the rains, which kept the men confined and crowded upon the lower deck. In two instances the disease proved fatal, and towards the end of the year there were other ten cases, two of which terminated in death.

In February three men of the "Rapid" contracted fever from exposure while watering the ship in the river Congo, two of which proved fatal, and it is mentioned as something remarkable that "one of the persons who died was profusely salivated, while the mouth of the other was also touched." The Rapid continued off the coast until September; she was then ordered to the Bight of Benin, where it appears she remained until the end of the year, her crew being healthy.

Table XVII.

Showing the Total Loss sustained by each Vessel during the year 1841, distinguishing the Deaths from Disease from those occasioned by External Violence or Drowning. The numbers extracted from the Pay-Books.

	Deaths.		Total Deaths.
	From Disease.	From Accident.	
Buzzard . .	3	3	6
Forester . .	..	1	1
Lynx . . .	..	..	..
Brisk . . .	1	..	1
Bonetta . . .	4	..	4
Dolphin . . .	6	2	8
Saracen . . .	2	..	2
Waterwitch . .	3	..	3
Cygnet . . .	3	3	6
Pluto . . .	2	..	2
Rolla . . .	2	..	2
Termagant . .	6	3	9
Iris	7	4	11
Persian . . .	10	1	11
Wanderer . .	12	..	12
Wolverene . .	7	..	7
Total . .	68	17	85

Total mean force employed, 1070; ratio of deaths per 1000 from disease, 63·6; ditto, from all causes, 79·4.

The Dolphin lost two men by gun-shot wounds; both were killed in the boats, in an action with the Firme slave vessel. Three men belonging to the Termagant were also killed in a boat in the act of boarding a slaver; or at all events they were so severely wounded that they went down in the boat which was swamped, and sunk alongside.

Three of the Buzzard's crew were drowned by the upsetting of a boat on the bar of one of the rivers.

It has not been possible to ascertain the particulars of the other deaths included under the head of accidental. There occurred however altogether from external violence, ten; from drowning, seven; total, seventeen.

Table XVIII.

Showing the Total Loss sustained by each Vessel during the year 1842, distinguishing the Deaths from Disease from those occasioned by External Violence or Drowning. The numbers extracted from the Pay-Books.

	Deaths		Total Deaths.
	From Disease.	From Accident.	
Madagascar . .	1	17	28
Buzzard . . .	3	..	3
Brisk . . .	..	..	..
Bonetta . . .	2	3	5
Dolphin . . .	2	..	2
Waterwitch . .	3	1	4
Persian . . .	..	..	..
Acorn . . .	3	2	5
Albert . . .	1	..	1
Rapid . . .	1	3	4
Cygnet . . .	..	..	..
Pantaloon . .	2	..	2
Ferret . . .	1	..	1
Grecian . . .	4	1	5
Pluto . . .	3	..	3
Rolla . . .	2	..	2
Termagant . .	..	..	..
Heroine . . .	..	..	..
Iris	2	2	4
Kite	..	..	..
Spy	2	..	2
Fawn . . .	1	..	1
Total . .	43	29	72

Total mean force employed 1330; ratio of deaths per 1000 from disease, 32·3; ditto, from all causes, 54·1.

The ratio of deaths from disease on the station in 1842, is great, although not unusually so; the number of accidental deaths, however, increase the ratio from all causes in a much greater degree than generally happens. The Madagascar lost fourteen men by drowning as already detailed, and three from external injury. The Bonetta also lost three men by drowning, from the upsetting of a boat off the river Sestos. There are no means of ascertaining under what circumstances the other deaths under this head occurred, but there were no less than twenty-five from drowning, and four from external violence, making a total of twenty-nine.

Table XIX.

Showing the Total Loss sustained by each Vessel during the year 1843, distinguishing the Deaths from Disease from those occasioned by External Violence or Drowning. The numbers extracted from the Pay Books and Medical Returns.

	Deaths		Total Deaths.
	From Disease.	From Accident.	
Bonetta . . .	..	1	1
Waterwitch . .	1	..	1
Cygnet . . .	..	..	..
Ferret . . .	2	..	2
Grecian . . .	..	1	1
Albert . . .	2	1	3
Heroine . . .	1	..	1
Iris	3	..	3
Kite	2	..	2
Madagascar . .	4	1	5
Persian . . .	1	..	1
Pantaloon . .	3	..	3
Rapid . . .	3	..	3
Spy	1	..	1
Alert. . . .	..	..	..
Acorn . . .	..	..	..
Espoir . . .	..	..	..
Fawn . . .	..	..	..
Hydra . . .	..	..	..
Total . .	23	4	27

Total mean force employed 1267; ratio of deaths per 1000 from disease, 18·2; ditto, from all causes, 21·3.

The ratio of mortality on the station from disease, for the year 1843, is but little above that which is observed to occur amongst similar bodies of men in climates not considered to be unhealthy. The loss from accidental causes is also satisfactory, and forms a singular contrast with that of the previous year; there having been only four deaths from drowning, and not any from external injury in the whole force.

PRINCIPAL DISEASES AND MEDICAL TREATMENT,

During the Years 1844 *and* 1845.

During the twenty-three years embraced by this Report the preventive squadron has been gradually increased, until it now numbers on an average between twenty-five and thirty pendants; one-third of which are in steam vessels. The increase in the number of men has, as a matter of necessity, been in the same ratio; there being now, it is presumed, exclusive of native Africans borne on board for special purposes, upwards of two thousand on the station, which by adding the former, is increased to a total force of no less than about three thousand men, employed in this, perhaps the most disagreeable, arduous, and unhealthy service that falls to the lot of British officers and seamen, without, it is to be feared, much prospect of its coming to a speedy termination.

The "Alert" was employed on the northern extremity of the station, during the last quarter of 1843, and lost altogether five men during that time—two from fever, and three from gun-shot wounds. The fever cases occurred in two men of a party who had been landed to "explore the borders of the great desert." The gun-shot wounds were received in the same expedition, the party having been attacked and fired upon at a short distance by the Moors. In the October of 1844, in consequence of the vessel remaining some time at anchor off Bissao, fever broke out on board; when the only medical

officer having died, she proceeded to Sierra Leone, where nearly the whole of the officers and the greater part of the ship's company were sent either to sick quarters, or to hospital.

The "Albert" proceeded up the river Nunez in February, 1844; and made an attack upon the natives in the village of Casakabull; in which four men, all Africans, were mortally wounded on shore; three were left in the hands of the natives, and the other died immediately after he had been brought on board. There were also four white men wounded; three of these were volunteers in the attack (the object of which is not explained) from a merchant vessel; the other belonged to the Albert. The weather in the river was oppressively hot at the time; and the sun's rays, striking with intensity on the mud banks, extricated malarial effluvia in great abundance; a thick haze generally prevailed during the night and in the mornings. In consequence of this exposure a considerable number of fever cases, both of an intermittent and of a remittent character, were placed under treatment.

The "Albatross" arrived on the station from the West Indies in June, and appears to have been stationed off the Gallinas in July; she also twice anchored off Sea-bar, when the boats were despatched to explore that river, the crew being then perfectly healthy. On the 28th of July, the date of the second expedition, the boats were left in the river while the vessel proceeded to sea. On the 29th, the first case of fever occurred, and on the following morning a Spanish slave vessel having been captured, an officer and a prize crew were sent into her, when the former, and one of the latter, were from previous exposure immediately seized with fever. On the 2nd of August, the ship returned to Sea-bar, when the boats came out of the river, with one man who had been previously absent, two days ill of fever, and on the same day two others were attacked.

Amongst the crews of the pinnace and cutter, there were altogether seven cases, and although the boats were not apart during the three days they were absent; and although part of both crews slept on shore in a hut, there not being sufficient protection from the rains in the boats, yet only one person (a midshipman) of the pinnace's crew suffered. On another occasion the cutter and gig were employed; fourteen days after their return, six of the men had an attack of fever, making altogether thirteen cases, only one of which proved fatal.

The "Growler" steam vessel is first noticed in the medical reports on the African station in July, 1844, as occasionally cruising, but more generally at anchor off the Gallinas, at the distance of from one to five miles from the shore, with which there was little or no communication. The thermometer during the months of July, August, and September, gave a remarkably even range, the mean being 81° at 2 P.M. for each month. The weather was characterized by a succession of heavy rains, with a clouded state of the sky; the sun being seldom visible for a whole day during the three months. The prevalent winds were from the south and westward, generally moderate, but sometimes light. There were also occasional calms, with a sultry state of the air, and at intervals slight thunder storms. Subsequently to the Growler's arrival on the station from South America, where she had been previously employed, an addition as usual was made to the crew of forty Kroomen and liberated Africans.

During the before mentioned period, twenty-five men were placed under treatment for fever, two of whom fell victims to the disease, which it is stated was the climatorial bilious remittent of Boyle; a fanciful distinction of that writer's, founded merely upon the different degrees of intensity of the symptoms, and upon certain unimportant changes accidentally occurring in the series of morbid actions, observable in all classes and denominations of febrile diseases, as well as in the endemic

remittent fever of Africa. As a proof of which the following paragraph from the same report deserves to be quoted:—" At the period of invasion the symptoms were exceedingly variable and insidious. In young and vigorous constitutions, when treated early by full doses of calomel, followed up by cathartic draughts, the disease disappeared under the type of the ephemeral inflammatory fever. Some few cases in less vigorous constitutions showed distinct remissions; passing, as convalescence advanced, into perfect intermissions, and then subsiding under the influence of sulphate of quinine. But there were two cases which assumed the malignant remittent form with vomiting of coffee-coloured fluid, both of which proved fatal on the fourth day of treatment. The men had been ill three days before they complained, and the attack in each succeeded intemperance and exposure to wet. One was an old quarter-master who had previously had an attack of hemiplegia, the other, a young man of twenty-two, with a shattered constitution from repeated excess."

The strictest attention to cleanliness was observed on board, and free ventilation maintained by wind-sails when the weather permitted, together with hanging stoves on the orlop deck; " but, in consequence of the tremendous showers and the close state of the atmosphere, the heat below was on some nights quite suffocating, and materially interfered with the recovery of the sick."

" In none of the cases were the symptoms sufficiently severe to justify the use of the lancet, the depressing influence of the calomel being sufficient to control inflammatory action; the nervous energy of the ship's company had, however, been somewhat impaired by two years' previous servitude in the equatorial regions of the Brazil coast."

During the last three months of the year, the Growler occupied nearly the same position, being sometimes at anchor off the Gallinas, and sometimes off the Island of Sherbro, with the exception of ten days at Sierra Leone, whither she had repaired for coals and other supplies. The boats

were nearly continually away, but communicated every week or ten days with the ship. A few cases of fever and of dysentery occurred amongst the people so employed, but none of them proved fatal. Three deaths from fever occurred amongst that portion of the crew which had not been out of the ship since her arrival on the station; two of these were stokers, both men of impaired constitution from vitiated and drunken habits; the third, a stout young man in the prime of life, and not addicted to intemperance. Two other deaths occurred in men belonging to prize crews, who had contracted the disease while on shore at Sierra Leone.

During the whole quarter there were altogether sixty-three cases of fever, twenty-one of catarrh of a febrile nature, and eleven of dysentery, an amount of disease that clearly enough indicates the pestilential nature of the locality, even were there no other proof, of which, unfortunately, there is too much scattered over the pages of this Report, to be further strengthened when the history of the Eclair is detailed.

The "Heroine" was employed upon the Benguela division of the station, during the early part of the year 1844, when there occurred fifteen cases of fever, of which four, contracted while pumping out the hold of an old leaky slaver in the harbour of St. Paul de Loando, were the worst; three of the men were seized with the disease while at work, and upon examination, it was ascertained that they complained of headache, sickness of stomach, and prostration of strength, the tongue being tremulous, and the pulse full and rapid; one of these ultimately died, two recovered in the course of ten or twelve days, while the fourth, who also died, did not present the same symptoms until eight days afterwards, and they were then apparently less severe.

In March and April, the boats were absent on detached duty from six weeks to two months off the mouths of the Congo, and although it was the most unhealthy part of the year, they continued free from disease during the whole time.

While the vessel was on the northern part of the station, during the latter part of the year, the crew suffered occasionally from fever, but in only one instance could the disease be traced to any thing like irregularity; in that case it proved fatal. The patient whilst at Sierra Leone in October, secretly contrived to procure some spirits from the shore, and in the evening, having drank freely, he lay upon the forecastle all night, exposed to the wind and dew; next day he was also a good deal exposed to the sun's rays in the execution of his duty; in the evening he was placed on the sick list, and died seven days afterwards; a striking but melancholy instance of the danger of a vice which is the opprobrium of the locality, whether on board ship or on shore.

The "Hydra" arrived on the station from England, touching first at Ascension in December, 1843. During the next three months she was employed between the equator and the 9th degree of south latitude, cruising along the coast, and occasionally entering the Congo for wood and water. She also visited Princes' Island on the north of the equator. Whilst at anchor at St. Paul de Loando in January, five cases of fever occurred, and again, on the 5th of February, when in the Congo, eighteen miles up the river, the disease made its appearance, and in less than three weeks, there were seventeen cases of a most insidious character added to the sick list. Some of these, which presented every appearance of terminating fatally, recovered; whilst others, which did not at first seem of a dangerous character, terminated in death. The most severe were twenty cases which occurred after leaving the river. Of these, three died. The treatment consisted in giving an emetic in the first place, and subsequently, as a purgative, a scruple of calomel, followed up either by castor oil, or the infusion of senna with Epsom salts. After the bowels had freely acted, small doses of calomel in combination with opium or James' powder, were given every three or four hours until the mouth was affected. In

one case only was bleeding had recourse to, and in that more for the purpose of guarding against apoplexy, than for subduing febrile excitement; an effect, it is remarked, which it seldom or never produces in African remittent fever. Seventy-two cases of diarrhœa also occurred at the same time. This it may be observed, has been a frequent precursor of severe epidemic attacks of fever upon the station; it was so in the Eclair, and in many other instances heretofore noticed in these remarks; there is reason therefore to suppose that it is but a different effect of the same general morbific cause. It does not appear, however, that the diarrhœal affection has any effect in warding off an attack of fever; it is in fact more of the nature of a predisponent than of a prophylactic, while by lowering the general tone of health, it renders the constitution less capable of withstanding the shock of the disease afterwards.

The Hydra subsequently, until November, was employed pretty generally along the whole coast, and continued healthy. During the latter month and December, fever however again made its appearance on board, and seemed to assume two forms "one being mild, and the other malignant;" the former was the more general, and occurred among men who had not been out of the ship, particularly amongst the stokers; the latter, few in number, occurred in the gig's crew, who were exposed to concentrated malaria for a period of forty-eight hours in the river Sherbro; of the four men, two had severe attacks and one died; the third suffered in a less degree, but had a lingering recovery; the fourth had feverish and dyspeptic symptoms for some days; the commander of the ship, who was also in the boat, being the only one of the party who entirely escaped. It is probable that the violent exertion required in rowing, by the fatigue it induced, rendered these men more liable to the febrile attack; while the commander, who did not require to exert himself, whose blood had circulated quietly, and whose muscular energies were intact, had by the healthy and undisturbed state of all his natural

functions, the power to resist the effects of the poison. About the same time the pinnace and cutter were detached to watch the Turtle Islands, where they remained a fortnight; nevertheless not a man suffered in consequence. Bark and wine in the prescribed portions were sent with them, and duly administered during the whole time. This is another instance wherein bark seems decidedly to have acted as a preventive of fever.

Table XX.

Showing the Total Loss sustained by each Vessel during the year 1844, distinguishing the Deaths from Disease from those occasioned by External Violence or Drowning. The numbers extracted from the Pay-Books and Medical Returns.

	Deaths		Total Deaths.
	From Disease.	From Accident.	
Sealark	1	..	1
Ferret	4	..	4
Ringdove	..	..	..
Penelope	3	..	3
Growler	5	1	6
Albert	3	1	4
Ardent	1	..	1
Heroine	3	..	3
Madagascar	3	..	3
Pantaloon	2	..	2
Rapid	3	..	3
Spy	1	..	1
Alert	2	3	5
Albatross	1	..	1
Cygnet	1	..	1
Espoir	..	..	..
Eclair	..	..	..
Fawn	..	..	..
Hyacinth	2	..	2
Hydra	6	1	7
Larne	1	..	1
Prometheus	..	..	..
Star	1	..	1
Wasp	..	..	..
Total	43	6	49

Mean force employed 1715 ; ratio of deaths per 1000 from disease, 25·1 ; ditto, from all causes, 28·6.

Of the accidental deaths three were occasioned by gun-shot wounds in a party of men from the Alert, who were, when attacked by the natives, on shore on some part of the coast, to the northward of Cape Verde. One man was killed in the Hydra by part of a large block falling from aloft, and striking him on the head. Two deaths only occurred by drowning ; one in the Growler, and one in the Albert.

In the beginning of 1845 the " Albatross" was on the Benguela division of the station ; although the boats were repeatedly sent away on detached service, and at one time the crew were much exposed in getting food and water on board a slave ship, which had been captured in the act of shipping her cargo off the river Coanza, still only three slight cases of fever resulted ; she continued on the same part of the station until August, when she was ordered to the Bight of Benin. Throughout the year, however, there did not occur any disease of consequence.

The "Actæon" arrived on the station about midsummer of the year 1845. During the quarter there were thirteen cases of remittent fever and three deaths ; eleven of these occurred amongst supernumeraries belonging to prize crews. These men had all been several days on shore at Sierra Leone, under little or no control, and exposed to the full influence of a deadly climate, until an opportunity offered of joining a man-of-war ; those who were on shore in the month of August appear to have suffered more than the others who were there either before, or after that time. It is further remarked that a prize crew belonging to the Star, consisting of an officer, six white men, and three Kroomen, who remained at Sierra Leone from the 4th to the 17th of August, all had fever, with the exception of two of the Kroomen ; and two of the cases terminated fatally, one in the hospital, and one in the Actæon ; while the majority of those who survived would in all probability, it was supposed, require to be sent from the station for change of climate. The two cases of the thirteen which properly belonged to the Actæon, occurred to the captain and a seaman, who, with a boat's crew of Kroomen, ascended the Cape Mount river for some particular purpose ; where they, upon two occasions, remained the whole of the night exposed to the dews. All the Kroomen escaped, but the captain and the seaman were attacked with fever on the twelfth and thirteenth days after exposure. Had white men been em-

ployed in this boat, as in the Hydra's gig last year, when she ascended the Sherbro, it is probable that not one of them would have escaped without suffering more or less from fever.

The symptoms and character of all these cases were strikingly similar. First, there were several hours of shivering succeeded by severe headache, with occasional retching and vomiting; the state of the bowels was irregular, but more frequently there was a tendency to diarrhœa than to constipation. There were great heat of skin, suffusion of the eyes, and much thirst; the tongue was always furred, and in some of the worst cases flabby, and enlarged; it retained the impression of the teeth upon the sides. There were deep-seated pains in the limbs, joints, and back, with great weakness of the lower extremities, and inability to retain the upright position. The pulse varied, but never indicated great force; it was most frequently small and tremulous, and seldom exceeded ninety; delirium soon appeared during the exacerbation, which, with the great heat of the skin, were decidedly the prominent features of the disease, and sure indications of the severity of the attack: biliary (yellow) suffusion of the skin and eyes took place in most of the cases, as the disease advanced. In all, more particularly in the early stages, the paroxysms were well marked and the remissions perfect. The physical suffering did not appear to be commensurate with the severity of the disease. It is also worthy of remark that diarrhœa was very prevalent amongst the ship's company when at anchor off Cape Mount, some of the attacks being attended with considerable pyrexia. Between October and the last day of December there were only three cases of fever, one of which occurred to a carpenter, who had gone on shore to adjust the fire engine, when watering the ship; the second to a man who was punished at the gangway; both these were severe, but the third was not.

In January and February the "Growler" occupied nearly the same cruising ground she had been on during the preceding six months, namely, off the rivers Sherbro and Gallinas.

The weather during these two months was in general fine without rain, but the heat of the sun was very oppressive, notwithstanding the dense haze which pervaded the atmosphere. Twenty cases of fever occurred during the quarter of a more ardent character than usual: they presented the closest resemblance to yellow fever, and in every instance appear to have been caused by insolation and exposure to the endemic influence of the previously named rivers. Three of the cases terminated fatally. One was a Krooboy, whose constitution was much impaired, and who contracted fever after exposure to the sun's rays whilst assisting to haul the seine at the island of Sherbro. The other two were young robust men in the prime of life, who were attacked after severe exercise in the boats, subsequent to an engagement with a piratical felucca; on which occasion two men fell from the fire of the latter. In March the Growler proceeded to the Cape de Verde islands in order to recruit the health of her crew, then severely damaged by long servitude in one of the most pestilential localities on the whole coast; after getting fairly beyond the influence of the mainland there were not any more febrile attacks, while the convalescents rapidly recovered their health, and acquired a more natural tinge in their complexion. She afterwards returned to blockade the Gallinas and Sherbro, in April, and remained there until July, cases of fever continuing to occur from the consequences of exposure. In August she finally quitted the station and returned to England.

The "Lily" arrived in February, and was employed during the year principally on the Sierra Leone division of this station. A considerable number of cases of fever occurred, but chiefly in men belonging to other ships, who had arrived at Sierra Leone in prizes.

The "Penelope" was very actively employed during the whole year upon all parts of the station. In the first quarter there were seventeen cases of fever, three of which died, and

three men were sent to hospital. The boats were several times sent to examine shipping in the rivers, and once for the purpose of destroying the slave barracoons and villages on the rivers Sherbro and Gallinas. The crews however were protected as much as possible from the sun by day, and from the dew by night, when unavoidably detained from the ship; which was not the case on any occasion for more than two nights in succession. Previously to going on these expeditions cinchona bark with spirits was issued to each man before he left the ship, and apparently with benefit, as, during the remainder of the year, she had but few cases of fever on board, and not any of much importance.

From July until October the "Styx" was employed generally on the station north of the equator, more particularly in the Bight of Benin. In November her coals and water being nearly exhausted, she proceeded to Fernando Po to obtain further supplies, and anchored there on the 9th; she remained eight days, the crew during all that time working hard in coaling and watering. Six days after leaving the island, four cases of fever were put on the sick list; the patients in two of these had been a good deal on shore; the other two had not been out of the ship. The next day, the 24th of November, there were two more cases; one on the 25th, one on the 26th, two on the 27th, two on the 1st December, and the last on the 3rd, making altogether thirteen cases. The disease was of a malignant character, ran a rapid course, and proved fatal to five individuals; one died on the evening of the third day; three on the seventh, and one on the ninth. During the early period of the disease, the exacerbations and remissions were remarkably distinct, there being a good day and a bad one alternately; on the good day there was nearly a total remission of febrile symptoms; but as the fever advanced, and the vital energies declined, the remissions became more irregular, the skin being sometimes dry and harsh, at other times covered with a cold clammy perspiration; the thirst was then great,

the tongue became cleaner, and sometimes red and shining. One of the fatal cases occurred in a Krooman; in him the disease presented a very aggravated form, with early and restless delirium. It is also remarkable that he was the only person whose system was not brought under the influence of mercury, although it was used both internally and externally.

Respecting the cause of the fever, it is stated that when the ship went to Fernando Po, the rains had just terminated, although there were still occasional showers, succeeded by hot sunshine. There was generally a moderate breeze during the day, and a pretty strong land wind at night, which was cool. The ship was anchored within three times her own length of the shore, and completely land-locked by the two points of Clarence Cove. The land wind being pretty strong, it blew from the densely wooded island over the ship, loaded with noxious malaria, as may be supposed, and at that time of the night when it is considered to be most dangerous, namely, from six to nine. The crew were freely exposed to it on deck; at nine all hands were piped down, and every man obliged to go below.

The treatment consisted of purgatives, namely, calomel and jalap, or calomel followed by black draught, or the sulphate of magnesia. Large doses of calomel three times a day, were next had recourse to, with or without opium, according to its action on the bowels, until the system was completely under its influence; after which it was continued for a few days longer. Then the sulphate of quinine was given in combination with blue pill at first, and afterwards alone, or in sherry wine. The cerebral symptoms were greatly relieved by cold lotions to the shaven scalp, or by a blister to the nape of the neck. In some of the worst cases, during the stage of collapse, temporary relief was obtained from large doses of the sesquicarbonate of ammonia, and from brandy and water; but the general treatment adopted was not satisfactory; in some there was but little relief obtained from any plan. In all the fatal cases with the exception of the Krooman, the gums were

affected with mercury, and this was kept up for some time; but it is emphatically remarked, "I regret to say, that I did not experience that advantage from ptyalism which I expected, and was disappointed when I saw several people die while under its influence." Only in one instance was blood detracted, "which had no other effect than relieving the state of the pulse for a short time; the cerebral symptoms remained the same."

The "Waterwitch" arrived from England early in 1845, and was nearly the whole twelve months stationed off Cape Mount, the Gallinas, Grand Bassa, and the river Sestos; four cases of fever occurred in men who had been wrecked in the pinnace and obliged to remain three days on shore; one of these died.

Table XXI.

Showing the Total Loss sustained by each Vessel during the year 1845, distinguishing the Deaths from Disease from those occasioned by External Violence or Drowning. The numbers extracted from the Pay-Books and Medical Returns.

	Deaths		Total Deaths.
	From Disease.	From Accident.	
Eclair	74	..	74
Hecate	..	..	..
Larne	1	..	1
Waterwitch	2	..	2
Ferret	1	..	1
Ringdove	2	1	3
Penelope	8	..	8
Wasp	2	..	2
Growler	3	3	6
Albert	1	..	1
Star*	2	..	2
Ardent	1	..	1
Styx	5	..	5
Heroine	..	..	..
Rapid	2	..	2
Sealark	3	..	3
Albatross	1	..	1
Alert	..	2	2
Actæon	3	..	3
Cygnet	2	1	3
Espoir	1	..	1
Flying Fish	1	..	1
Hydra	2	..	2
Lily	3	..	3
Pantaloon	..	..	..
Prometheus	..	..	..
Ranger	..	..	..
Rolla	1	..	1
Total	121	7	128

Total mean force employed 2540; ratio of deaths per 1000, from disease, 47·6; ditto, from all causes 50·4.

Two men were killed in the Growler's boats in action with a piratical felucca; there were also two men killed in the Alert, by falling from aloft; and one in the Cygnet. The Ringdove and Growler lost each one man by drowning.

* One midshipman and eight men, it is believed, were massacred in the prize vessel Felicidade; but the returns give no account whatever of the circumstance.

Table XXII.

Showing the Annual Mean Strength of the Squadron, the Number of Deaths from Disease, from Accident, and from all causes, between the years 1825 and 1845, both years exclusive.

Year.	Annual Mean Force.	Deaths.		Total Deaths from all causes.
		From Disease.	From Accident.	
1825	663	41	7	48
1826	1043	57	6	63
1827	955	40	4	44
1828	958	81	3	84
1829	792	202	2	204
1830	667	72	4	76
1831	785	22	3	25
1832	512	18	3	21
1833	562	12	10	22
1834	620	18	8	26
1835	815	19	3	22
1836	965	16	4	20
1837	815	105	4	109
1838	885	115	3	118
1839	790	55	5	60
1840	855	32	3	35
1841	1070	68	17	85
1842	1330	43	29	72
1843	1267	23	4	27
1844	1715	43	6	49
1845	2540	121	7	128
	20,604	1203	135	1338

Total mean force for twenty-one years 20,604; ratio of mortality per 1000 of mean force, 58·4; ditto, from all causes, 64·9.

It would thus appear that the annual ratio of mortality from disease alone on the African station for a period of twenty-one years, was 58·4 per 1000 of the mean force employed. The fatal nature of the climate, however, becomes more ap-

parent when placed in juxta-position with the mortality on other stations, to wit :—

South America . . .	7·7
Mediterranean . . .	9·3
Home	9·8
East Indies	15·1
West Indies	18·1
Coast of Africa . . .	54·4

It is proper, nevertheless, to observe that nearly one-half of this proportional amount resulted from epidemic fever alone, which was confined to a few vessels of the squadron during the years 1828-9 and 30; again in 1837-8, and 39, and in the Eclair in 1845. Deducting the loss from epidemic fevers, therefore, the ratio of mortality from all other classes of disease on the station will be about 20·0 per 1000 of the mean force annually; this however can give no adequate idea of the permanent loss of health, which is assumed to be great. Still, from these and other data, it seems fair to deduce that if boat service were in some degree restricted; if prize crews were not permitted to land at Sierra Leone, and if all vessels contracting epidemic disease were to leave the station, and proceed directly to a colder climate, the ratio of mortality, and the permanent loss of health one year with another would be reduced at least nearly one-half.

FEVER IN THE ECLAIR, 1845.

On the 26th of August, 1844, H. M. steam vessel "Eclair" was put in commission at Woolwich, where she was fitted out and manned in the usual manner, the marines being drafted from one of the divisions, and the seamen raised on the spot or in London. Having been employed on the Home station for a short time, she underwent a partial refit preparatory for foreign service; completed her stores, water, and provisions, and finally quitted Plymouth on the 2nd of November, for the west coast of Africa. In crossing the Bay of Biscay she encountered a pretty smart gale, from which however no serious damage resulted, either to the crew or to the vessel. On the 10th of the same month she anchored at Teneriffe; where the hatchways were thrown open, the decks thoroughly cleaned, windsails let down, sails and clothing dried, and the damage of the gale repaired. The crew were supplied with fresh beef and vegetables, while they purchased alongside for themselves an abundance of the fruits of the island. On the 14th she again went to sea under sail and steam, shaping her course for the Island of Ascension, where she anchored on the 30th of the month; no sickness of any importance having as yet appeared on board.

While she remained at Ascension, the usual necessary alterations for service within the tropics were completed; the men were consequently a good deal employed in the rigging, in boats, in cleaning and clearing the decks, or to use a nautical phrase, 'variously.' They had, as usual at this island, an allowance of turtle twice a week, in addition to their usual rations.

On the 7th of December, having taken an additional quantity of coals on board, she again went to sea, and running to the eastward, reached the river Gaboon on the coast of Africa on the 20th, remained there three days, and then stood along the land to the northward; she anchored at Fernando Po on the 25th, and remained there until the 28th; she then steamed across the Bights of Benin and Biafra, touching at Whydah, where she also remained three days. She passed Accra on the 4th of January, 1845, Cape Coast on the 5th, and continuing her course up along the land, hovered off the river Gallinas from the 13th to the 15th, and at last reached the scene of her first misfortunes, the Sherbro, on the 18th.

From the above date, she continued sometimes under-weigh, and sometimes at anchor in the vicinity of Cape Mount, the Gallinas, and the Sherbro, until the 30th; she then anchored off Seabar, and there remained until the 22nd of February, when she again got under-weigh, and proceeded to Sierra Leone, arriving there on the 24th of the month.

Immediately after her arrival the Kroomen were employed in the boats bringing off coals and water, while the ship's company were engaged on board hoisting them in, and variously. Fresh meat and vegetables were issued daily, and an abundance of fruit brought alongside several times a day, by the "bumboat people."

The weather, as usual in January, had been dry and conducive to health; in February it was much the same, while the heat, except between the hours of ten and three, during the day was by no means oppressive. The general standard of health in the colony as well as in the Eclair was considered high; nothing in the form of endemic disease having yet made its appearance amongst the crew of the latter, nor any of that mental depression which subsequently affected them.

On the 28th of February, she steamed out of the Sierra Leone river, and on the 2nd of March again anchored in her former position off Seabar, latitude 7° 22′, longitude 12° 31′.

Between the 15th of February and the 16th of March, boats had several times been despatched to explore the creeks of the Sherbro, and also those in the Seabar branch of the river. The men in these expeditions were necessarily much exposed to all the vicissitudes of the weather, to the malarial exhalations from the muddy banks of the rivers, and from the contiguous mangrove swamps; they slept sometimes on shore, but generally in the boats.

Between the 8th of March and the 3rd of April a number of cases of diarrhœa came under observation; several of these were put on the sick report, but the others were of so trifling a nature as not to require exemption from duty.* On the latter date, however, the first case of fever occurred in the person of William Thorpe, aged 18, who had been in a boat detached between the 18th and 21st of March; he recovered, and was discharged cured to his duty on the 27th.

On the 18th of April William Geary, aged 21, and James Watson, aged 23, seaman, and on the 19th Henry Corry, aged 22, seaman, were attacked with fever; the first died on the 23rd, the second on the 24th, and the third on the 25th. All these men were up the Sherbro from the 1st to the 7th of April, and spent one night in a spot that was considered to be very unhealthy. The next case which appears on the sick list is that of Thomas Smith, aged 23, seaman, who had been employed in the same service; he recovered, and was discharged to duty on the 5th of June. Two cases next appear respectively on the list, one on the 3rd, and the other on the 6th of May, under the designation of dyspepsia, but which, by referring to the journal, appear to have been of the nature of ephemeral fever. The one was thirteen days, and the other three days under treatment.

On the 12th of May the vessel proceeded off Golibah; returning to her old position however on the 13th. On the 22nd two men, William Forrest, aged 30, private R. M.

* It has been previously remarked that diarrhœa is by no means an unfrequent precursor of severe invasions of fever in Africa.

and F. Ward, aged 19, seaman, were seized: both had been employed in the boat expeditions up the Sherbro. Ward died after thirteen days' illness, and Forrest after seven. The whole of these cases occurring exclusively amongst the men who were employed in the boats, it would be difficult to conceive that they were contracted from any other causes than those conditional to the service, and the locality in which they were exposed. On the 23rd of May, however, Wm. Connor, aged 22, a stoker, who had not been out of the ship, or employed otherwise than in his usual duties, was seized, and died after four days' illness. The next case was that of Geo. Fulder, aged 28, captain of the forecastle, who had been sent in charge of the Kroomen in the paddle-box boat to obtain water at Turtle island. He was seized on the 26th of May, and died after an illness of nine days.

The three cases which then followed, were those of men who had deserted from H.M.S. Lily, on the 4th of May, and who had been some time on shore on the banks of the Sherbro River. They were attacked with fever on the 26th of May, and after being under treatment for thirty-seven days, were discharged into H.M.S. Penelope, to proceed to the Island of Ascension for hospital treatment. The disease in these men, singularly enough, seems to have been of a milder character than that which assailed the boats' crews of the Eclair.

Thorpe, who was first attacked on the 3rd of April, after exposure to the sun's rays in a boat, had a second attack on the 29th of May, but again recovered, and was discharged to duty in the course of ten days.

On the 4th of June, the vessel still being at anchor in the same spot, W. Field and H. Goodhugh were seized. The former died in three days, the latter after being forty-two days on the sick list, returned to duty on the 16th of July. B. Hill, private marine, was the next; he was seized upon the 5th and died upon the 11th. All these men were employed in the cutter, which was absent from the ship seven

days, namely, from the 22nd to the 28th of May, having gone round the Island of Sherbro, but for what purpose it does not appear; the men were much exposed to rain, and subjected to great fatigue in rowing such a distance.

The crew, it is stated, about this time began to suffer from mental depression, and disappointment, in consequence of not having captured any vessel, while from the position in which the ship was anchored, they were much chagrined by seeing prizes to other cruisers stationed farther down the coast, frequently pass the Sherbro on their way to Sierra Leone for adjudication.

The only other case of fever at present to be noticed, was that of the clerk, in which there was something peculiar; like the stoker, he had not been on shore, or indeed, out of the vessel, since she left Sierra Leone, but it appears the death of his servant, Forrest, affected him so much, that his mind became completely unhinged as it were with an instinctive dread of the disease, and like the victim of the horrid Crotalus, he felt assured that he would fall a sacrifice to it; and, as generally happens when such is the case, he did so. He was taken ill on the 8th, and died on the 15th of June.

Having thus traced the movements of the vessel so far upon the station, and the progress of the disease up to the above date, a brief summary of the principal facts may be given, in order, if possible, to arrive at a fair conclusion with regard to the supposed origin of the disease, or, at all events, to the causes which led to it. The total number of white men employed in the boat expeditions, varied from twenty-six to twenty-eight, including two officers; but there are no means of ascertaining whether the same were employed each time, although it is probable they were the established boats' crews, and consequently nearly the same. At all events, amongst the men so employed, being but a fractional part of the ship's company, there occurred twelve cases of fever, seven of which proved fatal; while amongst those who remained on board, there were only two cases, both of which proved fatal. From these facts, one important inference at least seems clearly

deducible, namely, that the disease was contracted from local causes exterior to the ship; for although two cases occurred in persons who had not been out of her, still, from her close proximity to the land, the whole crew must have been more or less exposed to the same malarious emanations as the men employed in the boats, although perhaps in a less concentrated form, while not having suffered from privation and fatigue, they were not so susceptible of the disease.

Notwithstanding the great amount of sickness and loss of life, evidently the consequence of these expeditions, the practice was still continued up to the 2nd of July, when the vessel again proceeded to Sierra Leone, arriving there on the 4th. During the latter part of the previous month she had occasionally, for a day or two at a time, been under-weigh, but never stood to any great distance off the land. When she arrived at Sierra Leone, the crew were, comparatively speaking, healthy, and the last remaining cases of fever advancing favourably towards convalescence. The berth she took up was, in a health point of view, not inferior to any other in the harbour, where all are nearly equally bad.

The following passage is from the surgeon's quarterly return:—"The Eclair remained at anchor off Sierra Leone from the 5th to the 23rd of July, one of the most unhealthy months of the year. During this time the ship's company were employed in surveying the stores of the Albert, and in clearing out her hold, which, I believe, had not been done before since she left England on the Niger Expedition. As she was now being paid off, the irregularities, so common on such occasions, could only be partially prevented. Seeing it difficult to control these evils, and as our men had not had leave for nine months, the captain decided on giving them limited leave also, but, unfortunately, few of them came off at sunset, as ordered; the majority remained until late, others slept on shore, whilst some, who had straggled into the country, were brought off by the police, and seven were not afterwards heard of.

"Having sent one case of fever to the military hospital,

there remained two more on the list, when we left Sierra Leone on the 23rd of July with the Albert in tow, and anchored at some distance off the coast; there we remained twelve or fourteen days, a party of our men being still employed clearing out the Albert, in which there was found a strange collection of rubbish and dirt. They had next to refit her sails and rigging, and paint her. Thus were our people, previously reduced in health by exposure in one of the worst situations on the coast, employed at an unhealthy period, and in the worst month of the year, in very disagreeable work, which they knew was quite thrown away, the vessel being worn out, and utterly useless for any purpose whatever."

Upon the 9th of August she again weighed, and, with the Albert in tow, steamed up to the Gambia, where she anchored on the 10th. Thirteen cases of fever during that time were put on the sick list, six of which terminated fatally. A private gentleman, who had been permitted at Sierra Leone to take a passage in the Albert, also took fever and died, making, altogether, seven deaths. In all these cases the men had been one, two, or three nights on shore at Sierra Leone. "The fever appears to have been as distinctly remittent as that contracted at the Sherbro; and some of the men had unequivocal black vomit; whilst several of the bodies, it is said, became yellow after death, although, in the medical journal, the latter appearance is not mentioned. Probably the obscure light of the deck where the men were treated, may have rendered any change of colour in the skin less obvious than on the upper deck, where the bodies were seen by the crew previously to their being sewed up in their hammocks for burial." *

On the 15th of August the fever continuing, and two other deaths having taken place, the Eclair prepared to quit the Gambia. It was then a question whether she should proceed to Ascension or to Bona Vista, but as fresh provisions can

* Dr. Stewart's Report.

only be obtained in small quantities at the former, and as the latter was upon that part of the station to which she was attached, and was reported to be healthy, it was determined to give it a trial. In the first place, however, it was necessary for her to call at Goree for an additional supply of coals; there she was refused pratique, but the coals were supplied by being towed off in boats from the shore, which were left at a short distance to be taken alongside by one of her own boats; on being emptied they were again cast off and allowed to drift to leeward.

After being thus employed from the 15th to the 17th of August, she weighed and stood across to Bona Vista, anchoring there on the morning of the 21st. Pratique was at once offered, but declined by Captain Estcourt, until he should have communicated to the authorities on the island the state of the sick, and the fact of the French at Goree having kept the vessel in quarantine while there. Dr. Kenny, an English surgeon resident at Bona Vista, was then directed by the Governor-General to repair on board, and to give pratique, if the two or three cases of fever said to exist should prove to be the common African fever. Dr. Kenny returned, and reported that he had seen the medical officers of the Eclair, that the fever cases were as had been described, and that he had given the vessel pratique. "Free intercourse was then established between the Eclair and the shore. The captain and first engineer landed the same afternoon, and John Jamieson, the consul's storekeeper, accompanied the engineer on board in the evening, and brought on shore with him several bags of soiled linen, which he deposited for the night in one of the consul's store rooms, and the next day distributed them amongst the washerwomen in the town."*

Upon the 24th of August, the healthy part of the ship's company commenced removing the tanks and clearing the holds, and on the 25th, five of the worst cases, that they might have the benefit of a freer ventilation, were removed

* Dr. McWilliams' Report.

into the captain's cabin, he having taken up his residence on shore.

Upon the 30th of August, sixteen new cases of fever having been added to the sick list, and other five to the list of deaths, since the ship anchored at Bona Vista, Captain Estcourt expressed a wish to the consul to have the former removed to the shore. "A report, however, had gone abroad that black vomit had occurred in some of the fever cases, and I mentioned the fact to captain Estcourt, who assured me that he had heard nothing to cause foundation for such a report. Dr. Kenny wrote officially, and communicated with the medical officers of the vessel, but they declared the fever to be common African fever. I then waited upon the Governor-General with Captain Estcourt, and asked permission for the landing of the sick. The Governor-General advised with the Portuguese surgeon (who happened to be present) upon the propriety of such a step, and as to the danger of contagion, when he answered promptly, 'Oh, no, your Excellency, there is no danger at all; I have often brought sick men on shore, coming in vessels from the African coast, and I never knew any ill effects to arise.' The Governor-General then ended the interview by offering Captain Estcourt the use of the fort upon the island, which was at once readily and gratefully accepted, and the crew, the sick as well as the healthy, were landed there. On the 31st, several of the officers were permitted to live in the town, a house having been taken for them."*

After the crew were landed on the island, the duties on board were carried on by the Africans under the charge of Lieut. Harston, and two white men. The holds, although found to be perfectly clean, were thoroughly cleared out, well ventilated and whitewashed, as well as every other part of the ship, including cabins and store rooms. The operations of coaling and watering were performed by boats from the shore, manned by mulatto and negro natives; forty of these men were also

* Consul's letter.

employed from the 11th to the 13th on board, hoisting in coals and water, and severa lassisted in clearing, whitewashing, and re-stowing the holds.

From the day the sick were landed, until they were re-embarked on the 13th of September, thirty-seven additional cases of an aggravated type occurred, twenty-five of which proved fatal. It appears that the room in which the sick were treated was badly ventilated, and by their daily increasing in number became at last much crowded. In this alarming state of affairs, it may well be supposed, that what with constant watching, and anxiety, the physical as well as the mental energies of both medical officers were nearly exhausted. The feelings of bitter disappointment are freely, and it may be believed honestly expressed, in the following paragraph, taken nearly verbatim from one of Mr. Maconchy's last reports. "In two of the first four cases, we bled until the pulse was slightly affected; cleared out the primæ viæ, and then gave a pill composed of three grains of calomel and a quarter of a grain of opium every six hours; with the exception of bleeding, the same treatment was followed in the other two cases. Two of the four however died, and certainly with very sore mouths; in only one of the cases which had been bled, did free salivation and recovery take place. My confidence in calomel having been thus shaken, I next attempted to treat symptoms as they arose; bled when I thought it requisite, gave calomel as a purgative, together with saline diaphoretics, and cupped and blistered according to circumstances; but this mode of treatment proved even worse than the former. Foiled in all our best endeavours I next in subsequent cases, simply gave two grains of calomel with an eighth of a grain of opium, every two hours, and attended to the relief of particularly urgent symptoms, by the administration of the usual remedial means placed at our disposal, but this method was of no more avail than the others, as we continued to lose one out of every three."

On the 4th of September Mr. Charles Hartman, the assistant surgeon, whose kindness and attention from the first outbreak

of the disease, had been unremitting, was seized with fever, and died upon the 8th. His place nevertheless was promptly filled by a Mr. Charles Coffey, assistant surgeon of the Growler. But of all the medical officers, and there were not a few, who voluntarily proffered their services for the Eclair, none deserves more credit than Dr. G. M'Clure; on the arrival of the Growler at Bona Vista on the 6th of September, in which vessel he was returning to England, he at once and unconditionally volunteered to take a share in the duties at the fort, which were then of a most harassing nature. Captain Estcourt has stated that at this period, Mr. Machonchy, the surgeon of the Eclair, was "scarcely able to move about from the incessant watching and anxiety of the last six weeks." On the evening of the day upon which these words were written, Captain Estcourt himself was stricken with the malady, while residing in the town of Porto Sal Rey; and as it would appear, impressed with the necessity of making an effort to save the remainder of the crew, he wrote to Captain Buckle, requesting that he would direct "the surgeons of the Growler and of the Eclair to report their opinions on the steps which they might consider the most conducive to the recovery of the health of the ship's company." These officers, in conjunction with Dr. M'Clure, reported in these words. "We are decidedly of opinion that from the extremely malignant character of the fever, which has resisted the treatment usually found successful in the common endemic fever of the coast, from its continuance since the removal of the Eclair from the coast under the present high temperature, as well as from the extreme liability that all convalescents from fever have to a return of the disease on again approaching the coast, the object will not be obtained, if the Eclair remain within the tropics; and that the services of that vessel will no longer be available on the coast of Africa with her present ship's company."

"The most desirable measure, therefore, to be adopted for the benefit of the ship's company, is, for the Eclair to proceed immediately to England, or at least as far as Madeira."

Preparations were then made to quit these regions which had proved so inimical to the crew of this ill-fated vessel. On the 12th and 13th of September, the sick and the healthy were again embarked, and on the evening of the latter day, she steamed out of the harbour of Bona Vista for Madeira, but not before Dr. M'Clure, who a few days previously, in a state of robust health, had so generously tendered his services, was added to the list of sufferers, and his case, it is proper to observe, was the first, (as noticed in Sir William Burnett's letter to the Lords of the Admiralty, dated October 7th, 1845), which could lead to a suspicion that the disease had acquired contagious properties.*

The fever, the violence of which had apparently somewhat abated from the 9th to the 13th, seemed to have acquired additional malignancy as soon as the Eclair reached the open sea, and the cases became more numerous than before; to add to the general despondency which prevailed over all hands, on the 16th Mr. Maconchy, worn out with anxiety and want of rest, was at last attacked. On the 17th, Captain Estcourt paid the common debt of nature, and on the succeeding day was followed by Dr. M'Clure; several men had also died in the meantime. On the 20th, she anchored at Madeira, and on the 21st, Mr. Maconchy and three of his shipmates were also numbered with the dead.

Mr. Sydney Bernard, who was also returning to England in the Growler, that vessel having followed up the Eclair from Bona Vista, was then appointed, *pro tempore*, to act as surgeon in the latter; and there being no appearance of the disease abating while there were fresh victims for it to attack, on the evening of the 21st, she steamed out of Funchal Roads, and, after a passage of seven days, anchored at the Mother-bank on the 28th, having lost four other men, with an addition of eight new cases to the sick-list.

Mr. Bernard, in his first report, states "that the cases which

* It is nevertheless proper to state, that, as he had only recently left the colony of Sierra Leone, he may have imbibed the poison of the disease there.

presented during the above period were characterized by intense frontal head-ache, and a sensation of weight over the eyes, severe pain across the loins, and in some cases there were general pains; the tongue loaded with a white mucus in the centre, leaving the edges and apex of a bright red, its substance firm; thirst urgent, the skin hot and dry, bowels constipated, the pulse small and without any hardness. In the course of about six hours, vomiting of a greenish yellow fluid took place, accompanied with pain in the epigastrium, or across the chest. The vomiting then became continuous. The dejections procured by purgatives or enemata were dark and fetid. On the evening of the second day brownish flocculi might be detected in the fluid vomited, which increased on the third day, by which time a sinking of the pulse was observable, with coldness of the extremities, and sometimes low delirium, whilst at others there was a wildness of manner, and a disinclination or absolute refusal to take either food, drink, or medicine. The tongue then became of a bright red colour; in some it was quite moist, but generally dry. From this state none rallied. Such were the prominent symptoms, although the latter sometimes did not occur until the fourth or fifth day. The Kroomen, who are still on board, and have been employed in attendance on the sick, have not suffered.

"I have in the treatment endeavoured to induce a mercurial action in the system, and in some cases have succeeded, but the great debility which so speedily ensues has made me abandon it, and rely on saline aperients, diaphoretics, and an early use of stimulants. I regret, however, to say that medicine has throughout proved of little avail. On account of the recent melancholy events, there exists amongst all on board, officers and men, the sick as well as the healthy, a degree of mental depression that is exceedingly distressing and injurious. I am therefore very apprehensive of the disease increasing, and would beg to represent for your consideration, whether a removal from ship-board would not materially assist in preventing the further progress of the fever."

Unfortunately for him and his fellow-sufferers the above measure, although also strongly urged by men of higher authority and of sound practical knowledge, could not be effected; the quarantine laws were so rigidly enforced, that nothing whatever was permitted to be taken from the ship, not even letters, until she arrived to Stangate creek.

Rear Admiral Hyde Parker, however, prompted by a just sense of what was due to their situation, had in the meantime directed a supply of medicines, bedding, and other necessary articles to be immediately sent them. He also directed the chief medical officer of Haslar hospital to visit her, and to report upon the sickness; the latter, at once, and with a perfect consciousness of the responsibility he incurred, declared his willingness to take charge of the sick, and recommended their being sent to a wing in Haslar hospital, stating "that notwithstanding the extraordinary mortality that had swept off so large a portion of the crew of this vessel, he entertained no fear of her being the means of introducing epidemic disease into this country, or that there would be any risk even to the attendants, further than occurs in wards set apart for cases of typhus fever. "It had also been directed by the Commander-in-Chief, that a frigate should be removed from the ordinary to the Mother-bank, with the view of separating the sick from the healthy. These salutary and humane measures were about to be carried into effect, when it appears, by a letter from the Superintendent-General of Quarantine, that he arrived on the spot on the 30th, and "taking into consideration the very sickly state of the crew, and the difficulty of communicating with the vessel at the Motherbank, in the event of boisterous weather, he thought it advisable to order her round to the Foul Bill Quarantine station at Stangate creek, where she would have smooth water, and the assistance of the regular Quarantine station."

Thus were the shattered remains of the crew of this devoted vessel, not only compelled to abide for a number of days longer in the pestilence which surrounded them, but with the

fresh and wholesome shores of their own country in view, they had once more to weigh their anchor and proceed to sea, simply that they might have smooth water, and the assistance of the regular Quarantine station. Whether the natives on the shores of the Sherbro, in whose cause they first contracted the disease, would have acted with more humanity is a question that might fairly be mooted.

It would be highly improper to burthen the pages of this Report with any remarks relative to the present state of the quarantine laws; but, as in this instance, in opposition to the more humane, safe, and equally practical views of the naval departments, they bore with a rigid severity, if not with harshness, upon the crew of the Eclair, less could hardly be said, particularly as the danger of subjecting others of Her Majesty's cruisers similarly situated, to a like mode of treatment, still exists. The sending the ship to one of the most bleak and sickly places on the whole coast of England, the fever being merely of a typhoid character, was surely unnecessary, when there could have been no more risk of its spreading, had she been moored in one of the creeks of Portsmouth harbour, or in the neighbourhood, than there was in Stangate creek. Whether any of the men or officers belonging to the ship, who subsequently fell victims to the disease, would have been saved, no one can tell; but that the pilot would have escaped, there are just grounds to believe.

She left the Motherbank at 9 P.M. on the 1st of October, and, on the afternoon of the 2nd, arrived at the "Foul Bill Quarantine Station" in Stangate creek. On the following day, Mr. Sidney Bernard reported the loss of five other men since the 28th of September; three of these died upon the day the report was closed; on the same evening, he also was attacked, and on the 5th, Mr. Coffey, the only other medical officer on board; the last case however was slight. Drs. Rogers and Stewart, having both volunteered their services, joined, the one on the 6th, and the other on the 7th; upon the latter day, Lieutenant Isaacson and the pilot were seized,

and on the 11th, Dr. Rogers; his being the last case of any importance. Mr. Bernard died on the 9th, the pilot on the 10th, and Mr. Isaacson, the last victim of this fatal scourge, on the 12th.

Having thus traced the fever of the Eclair from its first appearance on board at the island of Sherbro, until it ceased previously to her arrival at Sierra Leone, and from its reappearance there in a more concentrated form, until it finally disappeared sometime after her arrival in England, it is impossible not to be struck with the close similarity it bore to that of the Bann. Both vessels contracted the disease at Sierra Leone, and apparently from the same cause or causes, and under similar circumstances. In both vessels, in the course of a few weeks, it assumed an epidemic character, if it did not acquire contagious properties; the one vessel proceeded to the barren rocky island of Ascension, a few degrees to the south of the equator, where a disease of the same character made its appearance amongst the inhabitants, and committed great ravages; the other proceeded to the nearly equally barren island of Bona Vista, a few degrees to the north of the equator, where in like manner a disease a short time afterwards broke out, and raged with equal severity. This is not the place, however, to trace the progress of the fever on the island of Bona Vista, nor is it perhaps the time, considering that the subject is still under investigation.

ON THE CAUSES OF DISEASE ON THE AFRICAN STATION.

The foregoing part of this Report, it is presumed, clearly establishes the following important facts:—

First, that which has been generally assumed, namely, that there is no spot upon the whole coast within the tropics, whether upon the main land or the adjacent islands, that is not highly prejudicial to the health of Europeans stationed there; secondly, that bad as the climate indubitably is, there is every reason to conclude that by far the greatest amount of sickness, and at least four fifths of the mortality in the squadron, have been occasioned by exposure to the fever-exciting agencies of the land, which in many instances might have been avoided; thirdly, that notwithstanding the liability of the European constitution to be affected by the aerial or telluric agents inimical to health, that liability has been greatly increased in a majority of instances by an immoderate indulgence in the use of intoxicating liquors; fourthly, that a large proportion of the cases of fever have occurred among the people occasionally detached in boats for the purpose of capturing slavers in rivers or creeks at a distance from their own vessel; fifthly, that a considerable loss of health and life has occurred to the service from disease, principally from fever contracted by prize crews, while disembarked at Sierra Leone and awaiting the arrival of a man-of-war; and sixthly, that there have been occasionally other causes peculiar to the station, affecting the general health of the squadron, and rendering it at times more obnoxious to endemic or epidemic diseases,

such as impairment of the physical powers of the body, from the effects of the depressing passions, from long continued cruising, or from the laborious duties of surveying, together with a long continuance on salt provisions.

Before proceeding to notice more in detail the causes which operate injuriously upon the health of the naval force employed on the African Station, it may not be considered superfluous briefly to advert to the nature of the climate, particularly as regards its effects upon the health of Europeans residing within its influence. It is not, however, deemed necessary to enter into any investigation of the various theories that have been advanced from time to time, respecting the effects of certain supposed abnormal conditions of the atmosphere in the production of disease, especially as regards the fevers of the country, whether they have been promulgated by medical officers of the navy, practically acquainted with the nature of the climate, and therefore capable of judging of its effects; or by others who have not enjoyed any such opportunities, but who have chosen to theorize upon the information they may have gleaned from books or from other sources; whatever be the grounds on which they rest, they seem to be all nearly equally defective and unsatisfactory. We know not whether the true essential cause of fever be aerial, earthy, aqueous, or electrical, or whether it be the result of certain conditions or combinations of these or other elements; it may even be averred that we are as yet ignorant whether it be, or be not, an agent appreciable to our senses, or to the most delicate chemical tests. That it is a marsh production, however, and aerial in its form, or at least capable of being conveyed to a short distance by the wind, has long been considered clearly deducible from the fact that fever is generally more prevalent in these localities, than in those which are dry; nevertheless, there are marsh localities where fever does not prevail, and on the other hand, there are dry sterile soils, where it is found identical in type, and equal in virulence with that of marshes; distinctly showing that although the action of the poison is generally more effective in

marshy than in dry localities, it also exists in a powerful form in the latter. Hence, without any great stretch of imagination, it might be inferred, that the cause of fever, whether in Africa or elsewhere, is not absolutely and essentially a marsh production, but rather that it exists equally in dry and marshy places: although in the latter, from some contingent local cause impairing the general health, such as abounds on all parts of the coast, the system becomes more susceptible of its influence.

The temperature along the intertropical shores of Africa is much more equable than seems to be generally supposed. From the Gambia on the north to Benguela on the south of the equator, the general range in the hottest part of the year, is between 80° and 86° in the shade on board ship, even in the most central of the equatorial regions, while on the extremes of the station, during the winter months, it rarely falls below 58°; during a tornado, however, on all parts of the station, it will sometimes fall in the course of a few minutes from its maximum to 75°, rising again gradually to its natural standard as soon as the storm has passed away. These latter sudden transitions may occasionally bring on a paroxysm of fever in the debilitated or aguish, but it is seldom, even when they come from the land loaded with dust and the aroma of a thousand plants, that they produce what may be called a regular attack of fever, or otherwise interfere with health; by cooling and clearing the atmosphere, they have rather an agreeable and an invigorating effect upon those whose constitutions are still unimpaired.

There are times, however, when the heat, although the instrument indicates but little increase, is exceedingly oppressive and enervating, particularly during those sultry humid states of the weather which are familiarly described by the word "muggy;" the physical prostration then induced, is generally so great that most people find themselves totally disqualified for even the most passive employments or amusements. The day is spent in weary listlessness, and the night, from the

discomfort of excessive perspiration, and the intolerable annoyance of cockroaches, musquitoes, and ants, in broken unrefreshing sleep. This wretched state of lassitude, it would appear, is principally the result of a diminution, or rather an almost total cessation of the usual evaporation from the skin, which consequently remains covered with an unctuous clammy perspiration, that is exceedingly disagreeable, while the heat, which it would otherwise carry off, seems to accumulate in the system. It has even been observed at these periods that it is impossible to cool wine by the ordinary simple method of obtaining evaporation from wet cloths, wrapped round the bottles. There is yet another fact tending to corroborate this view of the case, namely, that the Africans, so long as the harmattan prevails, the evaporation being then excessive, suffer severely from cold, although the thermometer may indicate but little diminution of heat.

The moist state of the atmosphere is chiefly observable after the rains, when the "smokes" commence; these dense masses of vapour sometimes envelope the land for days, either generally or partially, and are also driven seaward to a considerable distance, bearing with them, as some suppose, the active exciting principle of fever; but of this there is no proof. While the smokes last, wet clothes hung up in the rigging of a ship to dry, after being exposed to the wind and glimpses of hot sunshine during the day, are frequently taken down in the evening in nearly the same state as that in which they were hung up. Boots and shoes, leather belts, and similar articles are speedily covered with a thick mould, and rapidly decay; even iron rusts and crumbles with a rapidity that is truly astonishing, while at the same time the great increase of minute animal and vegetable life singularly enough shows, as it were, the aptitude of all substances to pass from the inorganic into the organic state, and *vice versâ*.

Considerable stress has been laid upon electricity as an agent in the production of disease, but of this nothing satisfactory seems to be known, or to have been advanced beyond rude

and groundless speculation; to say that fever is occasioned by, or might depend upon a peculiar electrical condition of the atmosphere, explains nothing. The rapid and concentrated form in which it is discharged from cloud to cloud, or from the latter into the earth or sea, during a tornado, is appalling enough, but there is no reason whatever to suppose it even then exerts any influence upon health, unless, indeed, where the fluid by actual contact with the body produces mechanical lesion.

The effects of the harmattan have been already noticed. Upon the vegetable kingdom, they are more conspicuous than upon the animal; trees appear to be suddenly blighted and are stripped of their leaves, the long rank grass withers, becomes desiccated, and it is believed at times ignites spontaneously, although this may be doubted; the parched earth is also rent in every direction, in wide reticulated fissures, out of which it has been stated issue the noxious malaria that give rise to fever; unfortunately for this theory, these are generally the most healthy seasons of the year, so far as Europeans are concerned. The direct rays of the sun are neither more oppressive nor more dangerous than they are in any other tropical region, and hardly indeed so much so, if we may judge from the few cases of *coup de soleil* that occur. The presumed influence of the moon upon health being purely chimerical, is hardly worthy notice, unless it be in a secondary point of view, by its action on the tides, when it materially affects health. During the springs, from the greater reflux of water into the estuaries of all large tidal rivers, such as the Nunez, Pongos, Niger, and Congo, there is necessarily, by its stealing far over their deltoid flats, a great increase of marsh surface, and consequently a corresponding increase in miasmatic exhalations; hence it is supposed that fevers are of more frequent occurrence at these periods than at others. It would therefore appear that the principal appreciable difference in the African climate, as compared with others in the same degrees of latitude, is in its greater humidity, dry winds similar to the harmattan being common to many other countries.

It will now be necessary to advert to one of the most prolific sources of disease on the station, namely, boat service. This, for a long series of years, has proved both a dangerous and destructive employment to those engaged in it, whether as regards health or life; while in some instances, it is to be feared, from the unavoidably rough and irregular mode of living it involves, it has also been in a slight degree occasionally subversive of good discipline and sound morality. There was a period of a few years subsequent to 1830, when the practice was in a great measure abandoned, in consequence, it is presumed, of instructions from home, owing to the many melancholy proofs of its injurious effects, and it is to be deeply regretted that it ever again became general, even under the extenuating plea that has sometimes been adduced in its favour of being performed by volunteers only; as men, ignorant of the danger, and impatient of long confinement on board, will in general gladly avail themselves of the opportunity of embarking in any enterprise that offers a chance of adventure, or a change of life, without the slightest regard to its ulterior consequences upon their own health; this feeling influences alike both officers and men. The former, particularly the young and ardent, have besides an additional inducement to volunteer for such duties, in the hope of meeting with a fair opportunity of enhancing their own reputation in the service, by some spirited attack upon the ruffians who infest these seas in the double capacity of pirate and slave dealer. Under these circumstances therefore, it is evident there will seldom be found, where all are alike emulous and willing, any want of volunteers, ready to hazard their health or lives, whether on the open sea, in the surf along the shore, on the treacherous bars of rivers, or amidst the pestilential swamps that everywhere abound upon the banks of the latter. The policy and wisdom, and it may be added, the humanity of commanding officers in planning or sanctioning these expeditions, is a subject which may not be entered upon here.

When boats are detached to lie in wait for slave vessels, or to seek them out in the branches and creeks of navigable rivers, they are manned, armed, and provisioned according to the

exigency of the case. If it be intended that they should be absent for more than a few days, and without the prospect of landing, they are furnished with a small cooking apparatus, which, however, is as frequently dispensed with as possible, for although it does not occupy much room in the boat, it is inconvenient, while the heat and smoke arising from it when in operation, materially add to the discomfort of all on board. If on the other hand it be intended that their absence should not exceed a few days, provisions ready cooked may be taken with them. In either case, however, the mode of living is materially different from that on board ship. The same regularity can hardly be observed; the cooking is often indifferent, and frequently dispensed with altogether; the ration of salt pork, for instance, has sometimes from choice been eaten raw, as it came from the brine, while from a want of water, or as an indulgence, the allowance of rum is not unfrequently drunk in an undiluted state; these and other similar matters may seem trifling in detail, but they are not so in the aggregate; independent of the more adverse climatorial agencies, they produce too frequently such functional derangement, as tends to the general deterioration of health, and consequently sooner or later to the induction of organic disease.

Blanket dresses are invariably worn at night, and not unfrequently both night and day, as experience has proved them to be more safe and more comfortable, than any other species of clothing. They are by no means so warm as might be supposed, while, by their absorbent nature, they speedily rid the skin of its superabundant moisture; which from their open texture is freely permitted to escape by evaporation without cooling the surface below what is compatible with health. During wet weather, when at anchor, the awning, if the boat be furnished with one, is sloped, and in a calm it throws off the rain tolerably well; but if there be wind, it is of little or no avail. All hands being then exposed to wet, their plight becomes truly miserable, particularly during the night, when they are compelled to sleep packed closely together in the

bottom of the boat, damp, perhaps cold, and at all events comfortless; while if lying at anchor outside the bar of a river, or at a short distance from the land, they may be still further incommoded by the boat rolling "gunwales under," in the heavy swell that constantly sets in upon the shore. Few, therefore, as might be expected, return from expeditions on which these severe privations have been experienced, without suffering more or less in health. In some, this is manifested by catarrhal, rheumatic, and bowel complaints, or by a general sense of soreness over the whole body, as if from a severe beating, together with a feeling of lassitude and mental dejection; all of which however may give place in a vigorous constitution to returning health; while in others fever is the immediate and direct result; and although in these instances the majority may survive the violence of the primary attack, still the probability is, from the nature of the exposure, that the disease will linger long with them in the form of irregular intermittent, until their health becomes so completely undermined as to demand their removal from the climate; otherwise they will gradually assume a bloated unwholesome appearance from enlargement of the spleen, or of the liver, together with dyspeptic ailments and a tendency to general dropsy, until at last they sink fairly worn out by the repeated attacks of the disease.

The health of men employed on boat service is also much influenced by the nature of the locality in which they may be exposed. Rivers with wide and almost imperceptibly sloping banks, upon which the dwarf mangrove is abundant, are much more insalubrious than the open sea, although the exposure in the latter be in the immediate neighbourhood of extensive swamps, as along the entire coast of the Bight of Benin; of the former none seems to exert a more baneful influence upon health than the Pongos, Nunez, Sherbro or Seabar, and the Gallinas, on the northern division of the station, although the Melacoorie, the Scarcies, and the Sierra Leone rivers have also proved equally destructive to health; the deadly nature of

the whole of the mouths of the Niger, from the Benin to the southernmost creek of the Old Calebar, together with the Cameroons, is so well known as hardly to require notice here. The rivers to the south of the equator have not been so frequently explored by the cruisers, unless perhaps within the last few years, as those to the north; their influence on the health of the squadron is not therefore so well understood; but it would appear they also abound in swamp emanation, and in all the other commonly acknowledged causes that give rise to remittent fevers, although it seems that they have less frequently assumed the malignant form peculiar to those contracted on the opposite side of the equator; this, nevertheless, may depend entirely upon accidental circumstances, as fever of a very violent character has been known to assail casual visitors in the Congo since the time of Captain Tuckey's expedition, and has lately shown itself on board several of the cruisers as well as amongst boats' crews, when they have remained there for a few days at a time. Loango also possesses a fever soil. The Gaboon, on the other hand, although much nearer the equator, is considered to be more healthy, but this with the experience we have is not to be relied on.

It is also obvious that the nearer boats approach the shore the greater the risk of contracting disease; this again is much increased by landing, and still more so by sleeping on shore, whether on dry or marsh ground, whether in the bush or out of it, under cover, or without cover; such imprudences are generally followed by fever of a most virulent and dangerous character.

The time occupied upon boat expeditions has varied from one day to thirty or even forty. A curious circumstance has been observed in men who have been away so long as the last-mentioned periods, namely, that when they returned and reached the deck of their own vessel, they have been seen to reel and stagger, as if they were under the influence of spirits, from weakness, giddiness, and loss of balance in the muscles of the limbs, affording unequivocal proof of the severity of the

service. The boats, moreover, when long absent, have sometimes become so sodden with water, and their bottoms so covered with sea-weed, that they have been with great difficulty dragged through the water by their exhausted crews.

The following account of a boat expedition, from the medical reports of the Owen Glendower, will, however, afford a better idea of the nature of that service, than can be given by any general description. The assistant surgeon being unwell, the surgeon took his place in the boats. Having premised that the ship was in the Bight of Biafra in June, either under weigh or at anchor off the mouth of one of the large rivers, that the weather had been exceedingly bad, and the men almost constantly employed in the boats, that they had in consequence suffered much from fatigue, poor diet, and exposure to atmospherical vicissitudes, he states that on the 30th of that month, they were again called upon to ascend one of the branches of the Bonny.

In the eight boats there were one hundred and fifty-four officers and men; they left the ship on the 30th, being then about twenty-five miles from the bar of the river. At three o'clock in the afternoon it commenced raining, and the rain fell in torrents all that night, accompanied with much thunder and lightning, and so continued without intermission until the evening of the 2nd of July. The atmosphere was so thick that the boats were obliged to come to a grapnel outside the bar. Being thoroughly wet, a chill sensation of a very disagreeable nature was experienced by many of the party; it was felt to increase after the cessation of the rain, the air being then saturated with a dense vapour which prevented their clothes from drying; about noon, however, on the 2nd, this was dispelled by the rays of the sun, when they began to dry rapidly; their situation is described as being then much more agreeable:— "It was passing as it were from a state of misery to one of comparative comfort." They crossed the bar, and spent the afternoon in the creeks of the Bonny, examining French vessels, all of which were employed in the slave trade.

In the evening they again came to a grapnel at the end of the flats, the weather being calm, serene, and beautiful; every one immediately stretched himself out in the best way he could, and went to sleep.

About midnight they were aroused by a tremendous thunder storm with torrents of rain, which continued without intermission until after daylight. The morning was foggy and raw, until the rays of the sun about eleven o'clock dispelled the mists, and once more dried their clothing. The thermometer then stood at 80° in the shade. About two in the afternoon, after a long and tiresome pull of about forty miles, they reached the object they were in search of, namely, a Spanish schooner with one hundred and ninety-one slaves on board; which although she made some slight show of resistance, was speedily captured. After disposing of her crew with a view to safety, they made arrangements for the night, when the men, worn out with fatigue and over excitement, threw themselves down to sleep, some on the deck of the vessel, and others on the thwarts of the boats.

The night was clear and the dew heavy, the thermometer 76°, but falling to 74° on the morning of the 4th, which was also characterized by a dense vapour floating in the atmosphere until near mid-day. Five of the men during the night were attacked with vomiting and purging, accompanied with severe pain at the pit of the stomach, general debility, a quick small pulse, and a white tongue; a scruple dose of calomel with two grains of opium, soon allayed the most urgent symptoms, and a mild purgative afterwards effected a cure. As soon as the sun's rays broke through the fog, the weather became fine, and not too warm, the thermometer being only 78° in the shade. This day was spent in forming treaties with the king of Calebar. Three other men were attacked in a similar manner to those on the previous night, but were speedily relieved by the same means.

The morning of the 5th, like the preceding, was again ushered in with fog. Towards noon they began to move

down the river, but later in the day the schooner, through the ignorance of the pilot, got aground amongst the breakers. Their efforts to get her off having failed, about midnight it became necessary to attempt to save the slaves, which was effected with great difficulty, as they had to take them out of the vessel by the jib-boom, shortly after which she went to pieces. They had now neither provisions nor water, these having been embarked in the prize, and the boats were so crowded that they could barely swim. Their situation consequently became both dangerous and distressing, particularly as they did not reach the frigate until the 7th, having been upwards of twenty-four hours without either food or water. This is not given as a specimen of a disastrous expedition; unfortunately there have been many worse, but to bring more distinctly under observation the true nature of the service and the various incidents peculiar to it, in the order in which they generally occur.

Intemperance as a source of disease has already been adverted to, when speaking of Sierra Leone, where its immediate influence upon men landed there is more particularly observable. Unfortunately this vice is so firmly, although artificially, engrafted upon the nature of our seamen, that there is but little hope of its being even partially eradicated, until the daily issue of spirits in Her Majesty's service be either totally discontinued, reduced in quantity, or issued only at more distant periods; and, so long as the naval service is recruited from the merchant shipping, until the infamous system there practised of plying men with ardent spirits for the purpose of nefariously exacting an undue amount of labour from them, be also discontinued.

To advocate the abolition of the spirit ration in the navy, or its restriction to one day in the week, may, it is feared, appear an absurdity to most individuals conversant with the character of seamen, and the nature of the service; and it is not to be denied that it might be impolitic at the present moment to attempt such an innovation upon old esta-

blished custom; still, that it is the acknowledged bane of the service, and independent of spirits otherwise obtained, the cause of at least two-thirds of the offences committed against discipline at sea, while by fostering a morbid desire for intoxicating liquors, it is also the cause directly and indirectly of a great amount of disease, are, it is most respectfully submitted, incontrovertible facts. It is to be hoped, therefore, and the great alteration in the conduct and character of seamen of late years, and the probability of still more rapid changes in years to come, give good grounds for the hope, that the time is not far distant when it may be attempted,—when by a new and better order of things it will not be found necessary to debase the habits and the minds of men for the purpose of fitting them for the public service, or for retaining them in it,—when it will be deemed unwise, at least, to train them up from their boyhood to regard the daily use of ardent spirits either as necessary or beneficial, or to consider its issue as a conventional right, and its stoppage a heavy penalty. Seamen, at least those at present in Her Majesty's service, are by no means the rude and ignorant men they appear to have been in former years; nor is it requisite that they should be so; they have happily changed in character, as the nature of the service has changed, until they begin to be regarded as rational beings, differing but little either in habits or education from the generality of mankind.

As an adjuvant to diet the quantity of rum daily issued to each man and boy on board is not only unnecesary, but absolutely and positively prejudicial to health in many instances, particularly to young people of irritable and nervous temperaments. The human constitution may for a time withstand the shocks of occasional inebriation, or be only temporarily affected by them, but the constant daily use of a powerful stimulant poison, like the drop on the stone, must, with but few exceptions, sooner or later wear it out, however vigorous and healthy; hence the premature old age and death of many of our seamen, are not so much from hardship and privation,

or exposure to the influence of unhealthy regions, as from long-continued hard drinking and its consequences. The confirmed drunkard on board ship, it should be borne in mind, can always find the means of obtaining considerably more than his own proper allowance of spirits. Seeing the great evils that result from this cause alone, and the almost daily opprobrium it brings upon the service, it is respectfully suggested that in the meanwhile the daily allowance of spirits might safely and with considerable ulterior benefit, as one move towards a change, be altogether withheld from boys, and more particularly from the junior officers, upon all classes of whom it exerts a most pernicious influence, that is not unfrequently felt even in riper years;—unhappily there are too frequent convincing proofs of this fact. There is not perhaps throughout the entire force any portion of it where the effects of intemperate habits are more clearly exemplified, than in the squadron serving on the inhospitable shores of Africa. The tedious monotony of cruising, during several successive years, upon a savage coast, cut off from all civilized society, without books, means of recreation, or of amusement, beyond the periodic recurrence of the hours for eating and drinking, with absolutely nothing in view beyond the ship but the sea upon one hand, and the same dark clumps of trees or distant hills on the other, has perhaps too frequently been the means of driving men of sound sense, and otherwise untainted morals, who in any other position in the world would have been ashamed of such practices, to seek for mental distraction in the besotting dreams, which, under these conditions, both spirits and tobacco too readily afford.

The great risk attending even casual acts of intemperance in this climate, whether on board ship or on shore, has been strikingly evidenced in numerous instances throughout the body of this Report. A man by stealth obtains spirits from the shore, drinks to excess, and sleeps all night on the forecastle; a few days afterwards he is seized with fever and dies. Two other men, as in the Vigilant ketch, on an accidental visit to the coast,

land at Sierra Leone where they commit a debauch, sleep in the streets, and share the same fate. Examples of the same kind might be given almost without number; but it is considered unnecessary farther to follow out the subject. It is one nevertheless of vast importance even in a moral point of view. Unfortunately, with but few exceptions, whenever men have been permitted to go on shore, notwithstanding the strictest injunctions, and the best endeavours of their officers, the results have been the same,—immediate and gross acts of intemperance speedily followed by retributive disease. Were it not for this degrading propensity, which in a manner sinks the white man in the scale of reason below the savage of the bush, there are several places where they might be permitted to land during the day, under the same restrictions as the officers, with the view of relieving the tedium and discontent too frequently engendered by long confinement on board, and which in the end materially impair the healthy functions, both of mind and body. But this is altogether incompatible with their safety.

There is no part of the station, no tribe, however rude and primitive, that have not at hand some species of intoxicating liquor, ready to offer to the men for a small remuneration, the instant they set their foot on shore. Trade rum of the worst description at the Gambia, Sierra Leone, and on the Gold Coast, aqua ardiente at Bissao, Princes' Island, and the Island of St. Thomas; and palm wine in every creek and river where there are palm trees in the bush, and natives resident on the shore. All these, when drunk to excess are exceedingly injurious to health, but the two first named, from their being sometimes, it is said, adulterated with tobacco juice and other poisonous articles, produce the most violent excitement, more especially when aided by the heat of the sun, unusual exertion, and a consequent hurried circulation of the blood; this is succeeded by a state of apathy and prostration, of all others that in which the system appears most

easily to succumb to the action of the fever-exciting poison. In this deplorable condition, men, regardless of advice and the prudence which experience might have taught them, recklessly wander about until they drop upon the ground, where they sleep off the effects of one poison, whilst another of a more deadly and subtle nature is stealing into their system.

A considerable amount of disease, as previously noticed, has also been contracted in prize vessels, although it is after the prize crews have disembarked at Sierra Leone, that they chiefly suffer. When the vessel is in good order and well found, and when there are not any slaves on board, the duties are neither so severe nor so harassing; while intemperance at least in a great measure may be prevented by throwing overboard the whole of the spirits of the cargo, if there be any, before proceeding on the voyage. This, as a measure of health and of safety, is absolutely required. Should there be female slaves on board, it is utterly impossible to prevent irregularities of another kind taking place, which, together with exposure to the sun, rain, and constant excitement, and the over-crowded and filthy state of the vessel, are sufficient to engender disease, or at all events to occasion fever, even although the prize crew should not require to land at Sierra Leone. At St. Helena, where prizes are also now sent for adjudication, the crews are landed without the slightest risk of contracting any serious ailment.

Refitting ship, where due precaution has not been observed, has also been productive of fever in other places besides Sierra Leone, more particularly at Fernando Po, at Princes' Island, and in the Gambia during the wet season; whereas, at Ascension, vessels may be refitted at all times of the year, not only with perfect safety to their crews, but with great advantage, although the Cape of Good Hope, as affording a climate more congenial to the constitution of Europeans, as well as from the greater abundance of fresh provisions, vegetables, and fruits, is better calculated to the re-invigoration of a ship's

company, when the general health has been much impaired by protracted cruising, together with a long continuance upon salt rations; at the same time the men can have liberty to go on shore and to mix with their own classes of the community, a thing more essentially necessary for their moral well-being than seems to be generally acknowledged or understood.

CAUSES OF DISEASE AND MEANS OF PREVENTION.

THERE is not any means likely to prove so effectual in diminishing the sickness and mortality of the squadron serving on the western shores of Africa, as a strict avoidance of the several causes which tend directly to the production of febrile diseases. Sufficient proof it is presumed has been adduced to show that these have hitherto been generally dependent on personal communication with the land, and on the train of unfavourable consequences too frequently involved in such communication; it now remains to be seen how far they may be evaded, or at least modified, with the view of lessening the former evils.

That the station is one of great privation is but too certain, and that the climate is also one of the most inimical in the known world to Europeans, is equally true, particularly as regards men resident on shore, or who have frequent personal communication with it; there is not, however, any reason to believe that it is equally inimical to those who are constantly on board ship at sea, although in close propinquity to the land, and partly within the influence of its supposed malarial exhalations. Were it, therefore, possible that the duties of the station could be performed by the cruisers without their approaching at any time within a few miles of the shore, it is highly probable that the mortality of the squadron would be reduced to an equality with that of the East and West India stations, although the permanent injury to health, generally, might not be diminished in the same ratio, unless the period of servitude were at the same time considerably reduced.

The great loss of life and health occasioned by the frequent employment of boats detached for long periods of time, in bad weather and in unhealthy localities, does not require any further elucidation; the instances given in the preceding pages are both numerous and, as regards the facts, conclusive; still, by proper care and some alteration in the system at present practised, it is apprehended it might be materially lessened, without greatly if at all impairing the general efficient discharge of the service. In the first place, unless there be strong reasons for the contrary, the men on leaving their vessel to take up a position on the coast, or in one of the rivers, should be enjoined, contrary to what usually takes place, to pull leisurely that they may arrive at their destination without any great physical exhaustion from fatigue and excessive perspiration. They should not on any account be permitted to land unless under unavoidable circumstances. This is the more necessary to be observed where there is a surf on the beach, as well from the risk of their being upset in it, as from the possibility of its rising in the course of an hour, so as to prevent their getting off again probably for days. It will also be imprudent to permit men to land in the neighbourhood of extensive mangrove swamps, or if there be any probability of their obtaining palm-wine or other intoxicating liquors, or of their straggling into the bush; unfortunately, in these particulars, no reliance whatever can be placed on their promises to conform to the most ordinary rules of prudence. Should circumstances, however, such as a want of water, occur to justify their landing, they should not be permitted to remain more than an hour or two, and never after nightfall, nor on any account to sleep on shore, unless the boats be overcrowded and so leaky that it is impossible for the whole crew to sleep in them without great inconvenience; and even then it should only be attempted when there is a certainty of obtaining either the shelter of a house or of a hut, or of their being protected by the boat's sails rigged up as a tent. It should moreover be borne in mind that a com-

plete screen between the body and the sky is of more importance than laterally, particularly on a still clear night. The men should invariably be protected, as much as possible, from long continued exposure to the direct rays of the sun, which alone is frequently productive of the most intense fevers. When practicable they ought to have all their meals regularly and properly cooked, and never more than their ordinary allowance of spirits, one portion after dinner, and the other in the evening before going to rest, in the usual form of grog; for this purpose a sufficiency of water would require to be taken in the boats, or sent to them from time to time during their absence. Under circumstances of great fatigue and exhaustion, however, or during heavy rains, when they appear to be suffering from cold and mental depression consequent on the extreme discomfort of their situation, an additional half allowance of spirits at least will be advisable.

It being the object of this report to furnish, with other matters, facts from which useful deductions may be made, the following account of two parties detached from the Avon for surveying purposes, is given to illustrate the danger of communicating with the shore. They were each furnished with a paddle-box boat, exclusively of other boats, as a rendezvous at night-time, and as a depôt for provisions and water. The officers in command were enjoined on no account to remain during the night in any river, but invariably to retire with the crew by sunset to the paddle-box boat, which was to be anchored at a distance from the shore; never to expose the men unnecessarily during the day, either to the sunshine or to rain (awnings being provided), and not to permit the introduction of spirits into the boats. "The first party and the larger, left the ship on the 25th of January, and did not return except for a few hours to obtain provisions, until the 8th of April, during the whole of which time they were employed in surveying the river Nun, the adjacent rivers, and intervening coast. Rigid obedience to the orders issued, and the enforcement of discipline brought their own reward.

After three months' absence they returned, the men in the enjoyment of more robust health than when they left the ship." The result of an opposite system is next to be adduced.

"The second party left the ship on the 9th of March to survey the bar, and entrance of the river Benin; the Avon then proceeded to the southward to communicate with the first party, returned on the 22nd; left additional provisions; and then proceeded to the northward. On the 9th of April she fell in with one of the boats, which communicated the sad intelligence of disease having become general in the Benin party; she therefore immediately got under weigh, and arrived there on the following day, when it was ascertained that the captain of the forecastle had died after five days' illness, and that the officer in charge and a seaman were so reduced as to require immediate removal from the climate. A midshipman, who recovered from the fever, but subsequently relapsed, and another seaman who passed through a most dangerous attack, were also some time afterwards invalided and sent home. One European only of the whole party escaped the fever. It was afterwards ascertained that the rendezvous boat had been removed to a position within the river; that intercourse with the shore had been frequent; that discipline was not maintained; that the cinchona bark ordered as a preventive was not regularly issued; nor the coffee distributed on rising in the morning, as in the other party; in fine, that a heedlessness of ordinary precaution had most likely caused a calamity which might have been avoided by a little care and forethought." The criminality of such heedlessness must surely carry with it some sense of compunctious feeling far different from that arising from a mere consciousness of neglect of duty. The whole of the arrangements for the boat duties in this vessel appear to have been most judicious, and with the above exception effectively carried out. The adaptation of the paddle-box boats as a rendezvous is especially deserving of imitation in all future surveys on the coast of Africa, or in other unhealthy climates.

It would be advisable to have all boats furnished, whatever be the state of the weather when they leave the ship, with a sufficiency of tarpaulins (besides those for the arms and ammunition) to cover the provisions and the men's spare clothing, unless a chest be fitted for the purpose; a duck dress and a light flannel waistcoat occupy but little space, and are from the nature of the climate absolutely required, in addition to a whole suit of blanket clothing. Under every precaution however, this service, from its certain detrimental effects upon the constitution, physically and morally, combined with the nature of the exposure, must still remain one of great danger, unless it be made imperative that no boat shall remain absent during the night; were this regulation instituted and adhered to, it is confidently asserted it would do more to reduce the mortality and sickness of the squadron than perhaps all the other means of prevention put together, provided the cruisers kept as much at sea as they have generally done during the few last years; never remaining longer than a week or two at a time in any of the harbours on the coast, and not a day, were it possibly to be avoided, in the event of fever being prevalent as an epidemic on shore, and particularly at Sierra Leone. It would necessarily greatly limit the distance to which boats might be sent for the purposes of interception or exploration, but this is also a subject of no minor consideration. The muscular efforts required in rowing are excessive; in temperate climates even, when long continued, they severely test the constitutional powers of the most athletic and healthy; in a climate like that of Western Africa, therefore, where the vital energies are low, the meteoric changes frequent and sudden, and the poison of disease wafted on board by every breeze that comes from the land, it may well be supposed that their effects are trying in a tenfold degree. Hence the necessity of moderating the efforts of men, when they seem disposed to waste their strength in foolish strife, one boat pulling against another. In chase, when the excitement produced by the prospect of making a capture, urges them to use their utmost

endeavours, it is a different matter; there is then a legitimate object in view, and it would neither be possible, nor would it be consistent with the true spirit of the service, to hold them in in the slightest degree. Unfortunately for them by far the greater number of these expeditions end in disappointment; the "promised prize to hope" turning out to be some harmless trading vessel pursuing her course along the land.

It is hardly necessary to add, that when boats' crews, after rowing to a distance of fifteen or twenty miles, return on board worn out and dispirited, it would be greatly to their advantage, were they to be obliged on the instant to put on an entire suit of dry clothing; and, more particularly if they arrive during the night, were they to be furnished with some sort of warm meal. Tea or coffee requires but little preparation; they are both refreshing, and are at all events far preferable to spirits in any form; particularly raw spirits, which has been too frequently resorted to on these occasions. A stove can always be kept burning and properly guarded in the same manner as when it is required for the sick. This, although it may in some slight degree break in upon the established routine of a ship, is nevertheless a measure of heedfulness strictly due to men employed on these arduous duties. It would also be proper to prevent them from going to sleep immediately afterwards upon the upper deck, unless there be an awning with curtains spread, or in places exposed to currents of cold air.

Exposure to the chilling air of night when there is a copious deposition of dew is also productive of disease; this does not arise from any noxious quality in the dew itself, but from the condition of the atmosphere under which it is deposited. The greater danger of sleeping on shore compared with that of sleeping in the boats, has already been noticed; the danger however under any condition is materially aggravated by sleeping on the cold damp ground. Sleeping in a boat without an awning is also attended with much risk, particularly on a calm night with a cloudless sky; the expenditure of animal

heat by radiation being then excessive: wearing blanket dresses, or enveloping the body in a quilt does not obviate this so effectually as an awning. From the utter regardlessness of seamen to everything appertaining to their own health, however, it is to be feared that officers too frequently find a difficulty in causing even the most ordinary precautionary measures to be observed; such as drying the body thoroughly from the perspiration before the system suffers a chill; or changing damp or wet clothes for dry ones; the latter being of a quality to afford protection from the cold during the night, or while asleep.

Cinchona bark and the sulphate of quinine are both extremely useful agents for the prevention of fever, when properly administered on these expeditions; and although it would appear their powers have been considerably underrated, and their administration it is apprehended but indifferently understood, still the numerous instances on record in which they have been successfully employed, leave no room to doubt that their more general use upon the station is most urgently required. In the North Star, for example, twenty men and one officer were employed on boat duties at Sierra Leone; they all took wine and bark with the exception of the officer; he was the only person who suffered an attack of fever. Two boats were detached from the Hydra in the year 1844 to examine the Sherbro river; the whole of the men were supplied with bark and wine, and not one of them was taken ill, while the whole of the gig's crew, with the exception of the captain, who were similarly exposed for two days only, without being supplied with either, contracted fever of a dangerous character. Facts like these are not to be mistaken; the previous pages of this report contain many others of nearly equal value. Moreover it seems but reasonable to suppose that if bark and quinine have the power of averting a paroxysm of ague consequent on marsh effluvium, they will also have the power of averting an attack of remittent fever, the result of the same cause; although there may be conditions

of the body in which their effects are rendered nugatory by others, the result of some more powerful contingent circumstance: such as extreme physical prostration, from long continued muscular or mental exertion, inanition, the depressing passions, cold, or a depraved state of the blood from causes which are not always obvious.

From previous observations made on the coast, followed by a careful review of the various circumstances connected with exposure on shore and on boat service, it is firmly believed that although neither bark nor quinine has the power of preventing the germs of fever from lodging in the system, where they may lie dormant for a period of from fourteen to twenty days or even longer, nevertheless, from their peculiar antagonistic properties, they most decidedly have the power in many instances of preventing their development in pyrexial action. Hence the frequently supposed failure of the medicine is undoubtedly to be attributed to its use not having been persisted in for a sufficiently long time after exposure to the exciting causes; namely, throughout the entire probable period of incubation. It is therefore suggested that it would be advisable not only to administer, daily, one of these febrifuges to men so long as they are exposed to the influence of the land, and the vicissitudes of the weather in open boats, but to continue its use for at least fourteen days after their return on board. As the sulphate of quinine is more certain in its action, infinitely less nauseous than bark, and therefore less objectionable to fastidious people, it should invariably be preferred for exhibition: whether it be given in wine, water, or rum is of no great consequence; the latter will generally be the most acceptable to seamen, although they will seldom object to it in wine.

It may seem like trifling to notice the use of tobacco in its various forms; but as it has been supposed to possess prophylactic properties, and has been used for that purpose on the coast, it may be as well to state, that there are not any just grounds for believing it to be of the slighest value in this respect, or at all events, that its virtues are on a par with

those supposed to belong to a camphor bag, or a Krooman's gregorie; to the timid and credulous, it may perhaps impart some slight degree of confidence. Although the more remote effects of this narcotic on the constitution as compared with those produced by spirits are unimportant, still when carried to excess it causes considerable disorder of the nervous system, creates a desire for stimulant potations, and both directly and indirectly interferes with the healthy functions of nutrition; while it is much to be feared it not unfrequently leads to habits of idleness and intemperance, particularly among the junior branches of the service. When the use of cigars has been indulged in to that extent that the air expelled from the lungs in respiration, independently of the odour of tobacco, becomes from its peculiar fetor offensive to a second party, the practice it may be supposed has been carried beyond all bounds of prudence, and cannot be otherwise than injurious to health; yet smoking to such an extent, filthy as the habit undoubtedly is, is by no means uncommon in the public service. The grateful and soothing stimulus of a cigar or pipe amidst the "rotten fens" of Africa, to those long habituated to their use, is however a totally different matter; to such they are of undoubted utility. It is not the use, but the abuse of the practice that should be deprecated.

Cleanliness both personal and local is one of the most important adjuvants to health that can be employed; not so however is that system of universal scrubbing and washing occasionally adopted, without any regard to the state of the weather, for the purpose of obtaining a superlative whiteness or cleanness of the decks. Such measures, surely, when carried to excess, can only be viewed by an intelligent mind as a waste of labour, if not worse; for by the general diffusion of dampness over the vessel, they tend greatly to the deterioration of health and to the discomfort of all on board. On the coast of Africa, it is confidently but most respectfully affirmed that the lower deck, or that on which the men mess and sleep, should be as seldom wetted as possible; not perhaps

more frequently than once a week, and then it would be advisable to have it thoroughly dried by swinging stoves, unless during the prevalence of the harmattan, when it will be unnecessary to resort to any artificial means. An erroneous idea prevails, which is frequently taken advantage of, that washing the decks with hot water is less prejudicial to health than with cold, or that it dries sooner; the difference, however, if there be any, must be trifling; the additional heat contained in the water is instantly absorbed by the deck or otherwise dissipated; while all the influence it can have upon evaporation is not of the slightest moment, and altogether it is presumed beyond hygrometrical computation.

Dry holy-stoning, although objectionable to a certain degree from the dust it occasions, is far preferable to the wet method in a health point of view. The latter, or otherwise wetting the lower decks, even in the more salubrious climates, speedily impairs the general tone of health in a ship's company; and if not directly productive, is at least inductive of several diseases of an asthenic character, together more especially with rheumatic and catarrhal affections. Facts illustrative of this occurred on the South American station. The Vernon and Eagle, two vessels of the same class, both commissioned about the same time, and manned to the eastward (where an inferior class of men are generally obtained, as regards their physical and moral attributes), the one at Chatham, and the other at Sheerness. In the former the lower deck while off the river Plate was cleaned by the wet method, in the latter by the dry; the sick list of the first consequently far exceeded that of the second, so much so as to attract the observation of the officers of both ships. After the Admiral shifted his flag into the Vernon, however, the practice of wetting her lower deck was discontinued, and from that time the standard of health in the ship's company began to rise, until it gradually approximated to that of the Eagle. It stands to reason that a practice so palpably injurious in one of the most healthy regions of the

globe, will be infinitely more so on the coast of Africa, where evaporation, from the great moisture of the atmosphere, is at particular seasons completely suspended for weeks in succession.

A clean state of the holds of a ship of war in a sickly climate is a matter of greater importance, however, than a similar condition of the decks; the latter when foul offend the eye, and attract immediate attention, although it is hardly possible, exposed as they are to the external air, and with the rage for white decks which now prevails in the service, that they can ever be permitted to remain a day in such a state as to prove injurious to health. In the holds it is different; the cause of offence is hidden, difficult to be got at, and can only be removed by disturbing the whole internal economy of the ship, at the expense of considerable labour, and, what is frequently considered of more importance on the coast of Africa, loss of time. It therefore not unfrequently happens that a foul state of the holds proves detrimental to health before it is suspected; or at all events before a convenient opportunity occurs for clearing them out. It is not always possible to account for the dirt and rubbish which may be found in the bottom of a ship; fragments of wood, vegetable substances, and dirt of all kinds, however, gravitate by the form and motion of the vessel towards the kelson or limbers; where by the heat of the climate and the action of the salt water they rapidly decay, and form a blackish mud, not dissimilar to that observed amongst the roots of mangrove thickets on the banks of rivers within the influence of the tide; it sometimes even acquires a consistence sufficient to block up the passage of the limbers. In small vessels with a flying-deck there is less difficulty in accounting for the presence of foreign matters in the hold; dust, fluids of various kinds, the sweepings and scrapings of the decks, and a thousand other things, will find their way there notwithstanding the greatest care both on the part of the officers and men; although the latter, nevertheless, are frequently wilfully careless in this respect. In steam vessels it is much more difficult

still to keep the hold clean, while it is impossible on a foreign station to clear them out so thoroughly as in a sailing vessel, the boilers and engine occupying a large portion of the floor of the hold which cannot be got at; it might therefore be advisable, in the event of the bilge water being very offensive, to admit frequently a sufficiently large quantity of water thoroughly to wash out the bilge limbers and pump well. This indeed has been practised it is said with advantage. The holds of the Eclair it was supposed had been made perfectly clean, while her crew were disembarked at Bona Vista; but there was afterwards found, when she was recommissioned, a large collection of mud fully three inches in depth, upon that portion of her bottom occupied by the boilers and machinery, which apparently had not been disturbed for a long time. An idea therefore naturally suggests itself, that were it possible to leave space enough somewhere on each side of the kelson, for a boy to crawl along under the platform on which the boilers and engines rest, this might in a great measure be obviated.

It by no means follows, however, that because a ship has foul or offensive holds that she will be sickly; still there are so many instances on record where this has been the case, that the converse may be considered the exception to the rule, and where from ocular proof or the prevalence of unusual effluvia such condition is supposed to exist, it would be erring on the safe side to have them cleared out in some harbour where the labour might be conducted without risk to the men. Unfortunately there are not any such on the coast, or in its contiguous islands, with the exception, perhaps, of St. Helena and Ascension. At the latter, however, fever has prevailed at least on two occasions in a most destructive form.

The etiology of disease, although apparently a much less complicated matter on board ship than on shore, still, from the want of any thing like positive data, is subject to the same unsatisfactory modes of reasoning. Properties are ascribed to the gases evolved by substances in the hold similar to those of marshes, but in the former as in the latter instances it has been

found that they are not always hurtful; the most intolerably offensive bilge water being sometimes the least noxious, while disease may rage, and be referable to internal miasmata, where the odour is hardly if at all perceptible. However, that the veritable essence of fever is frequently combined with these effluvia is morally certain. When the holds of the Growler were opened at Woolwich, after her return from the coast of Africa, two men who slept directly over the hatchway were seized with fever possessing all the characteristics of yellow fever, and in the course of a few days they both had black vomit and died in the Marine Infirmary, where they had been taken at the commencement of the disease. It has been previously noticed that four men of the Heroine, who were exposed to the miasm of the hold of an old leaky slaver which they were pumping out in the harbour of St. Paul de Loando, were seized with fever while at work, the symptoms being sickness, headache, and prostration of strength; two ultimately died as if from the effects of a narcotic poison, all the powers of life being prostrated without any particular organ being affected by the disease. The writer of these remarks, when serving on the African station, landed on the south bank of the Sierra Leone river, in order to collect objects of natural history. The early part of the day had been extremely wet, but it afterwards became clear and hot. On passing along a wide path on King Tom's point, with thick bush on each side, he had to cross a small shallow straggling pool of rain water, about twenty feet in breadth; near its centre he experienced a slight swimming sensation in the head, or rather a consciousness of an impression having been made on the system by some external agent. To satisfy himself that such was the case, after wandering about a short while, he again crossed the pool, and again experienced the same sensation. To save a walk of nearly two miles, the bush on each side being wet and impenetrable, he had once more unwillingly to cross it, and on the same spot was perfectly conscious of the same effect. The earthy odour of the soil, and of the plants peculiar to these regions, was strongly

perceptible at the time, as it generally is after rain, but there was nothing sickening in it, nor was it more marked at the pool than elsewhere. As to whether or not this was febrific miasm in a concentrated form, similar to that from the slaver's hold, he is unwilling to express an opinion, but would have been extremely loath to have remained long exposed to its influence.

Various means have been employed for fumigating and disinfecting purposes; but without any very obvious or satisfactory result. Vinegar may partly cover the odour arising from the bodies of the sick, or from the decomposing matters in the hold, but it has no power over the infectious nature of miasmata, nor of staying the march of disease. The chloride of lime (chlorine) and nitric acid fumes are equally inefficacious; the former may partly destroy hydrogenous compounds, but of itself is nearly as intolerable to the olfactories as the smell of bilge water, while if freely used it causes considerable irritation of the bronchial tubes, corrodes metallic bodies, and injures both rope and canvas. The heat of charcoal fires is perhaps a better disinfectant than either of the foregoing. But there is one substance that remains to be mentioned, namely, the chloride of zinc, which possesses, at least so far as has been yet ascertained, all the requisite properties. Without being in any way unpleasant to the senses, or injurious to health, it has the power of most completely destroying the effluvia arising from animal or vegetable substances in a state of decay. By numerous experiments performed in various vessels in different parts of the world, which but for the time and space they would occupy might be enumerated, it appears that the instant the slime or rubbish in the limbers of a ship becomes saturated with a solution of the salt, the process of decomposition—putrid fermentation, is instantly arrested, and consequently also the liberation of mephitic gases. Such being the case, it certainly seems a fair application of the rules of deduction to infer, that if this substance has the power of destroying these effluvia, it will also have the power of destroying the

exciting cause of fever, if indeed they be not identical. A solution of the salt is equally useful in correcting the smell arising from bilge water, where there is not any great accumulation of filth, if the channels and limbers of the hold be merely freely washed with it. Seeing the complete control this substance has over the extrication of effluvia from putrid and decaying substances, its more general use in the cruisers on the African station, but more particularly in the steam vessels, cannot be too strongly urged as a substitute for chloride of lime, which has not been found to possess any power over the decomposition of vegeto-animal substances, nor in preventing the spread of disease.

Next to a clean dry state of the decks and holds, ventilation is of paramount importance; in the first place, for the maintenance of general health, and in the second to prevent fever acquiring contagious properties, should it unhappily become prevalent in the ship. Wind-sails are only partially effective in this respect when there is a breeze, and totally useless in a calm.* The practice of permitting only one watch of hammocks down at a time is a good one, and deserves to be generally adopted, as it allows a much more free circulation of fresh cool air; for, as it has been remarked, "if a vessel cannot berth her hammocks on the lower deck in England, what must be her condition on the coast of Africa?" As another means of keeping the lower deck dry and well ventilated, the ship's company have been permitted in fine weather to take their meals under the awning on the upper deck; it would be hard, however, and is not essentially necessary, to interfere with their ideas of comfort so far as to compel them to remain there when off duty. Contentment and hilarity, together with a seeming temporary release from the yoke of discipline, in as far as the nature of the service and the confined space will admit, being in a high degree

* Air-pumps have been recommended, and under certain circumstances might be worth a trial. The cells on the orlop deck of the Trafalgar are so ventilated, and apparently with good effect.

conducive to health, are objects by no means undeserving the attention of officers in command, where there are otherwise so few opportunities of getting rid of the harmless ebullitions of youthful minds, and the querulous complaints of the sick and disaffected by any change in the mode of life, or by wholesome recreation on shore.

Great attention has been paid by all considerate officers to keeping the men dry, and for this purpose when a tornado threatens to cross the track of the ship, sail is generally shortened some time before it reaches her, and all hands with the exception of the officer of the watch, and the men at the wheel sent below: the violent commotion in that part of the horizon whence these furious gusts approach will invariably give timely warning to the moderately alert whether by night or day to effect this. It is also a proper regulation to prevent dampness, slovenly habits, and encroachment on space below, to have all damp clothes and blanket dresses hung up in the rigging during the day; and if practicable, when watering ship, to have the latter well scoured with soap and fresh water.

In Africa most people suffer from languor and exhaustion in the morning, particularly after a disturbed night's rest, consequent on the vitiated atmosphere of a crowded deck, excessive heat, and profuse perspiration; it is therefore a wise and a humane rule, when there is more than ample time for all the duties of the day, not to rouse the men from their hammocks before day-light, and, considering the early hour of dinner, it is also of consequence that they should have breakfast as soon as possible; the system will thus be reinvigorated and fortified against the assaults of disease: this is the more necessary the nearer the vessel is to the shore and its swamps.

In the Niger expedition, the men, while the vessels were in the river, were supplied with a cup of coffee before they went upon deck.

In the event of a ship's company being attacked by fever,

whether from external or internal causes, which shows a disposition to become general, and to assume a malignant form, characterized by intensity of action, early yellowness of the skin, and black vomit, it will be of the greatest importance for the safety of all on board, that she should immediately quit the locality where the disease originated, and proceed with all possible haste to some colder region, if in the south to the southward, and if in the north to the northward, avoiding the neutral ground between the trade winds. The great utility of this measure was practically tested by the Vestal in 1835, when her crew were assailed by fever at Port Royal in Jamaica, which did not cease, although she was shifted from the inside to the Keys on the outside of the harbour; nor until after she had gone far beyond the precincts of the island, and entered the 27th degree of north latitude on her way to Bermuda. The crew of the same vessel, although not the same men, she having been paid off and recommissioned, were again violently attacked by fever, whilst cruising amongst the windward islands of the West Indies in the latter part of 1839. Instead of running at once to the northward, she proceeded to Carlisle Bay, where she remained about a fortnight; during that time the disease evidently increased in malignancy, and carried off a considerable number of men. She was then directed to proceed to the northward, and again the disease disappeared a few days after she had crossed the tropic.

The ship's company of the Vesuvius were promptly relieved of an invasion of fever by her being ordered from Sacrificios, where it was contracted, to Halifax. The unfortunate Eclair might also be cited as a case in point, although she lingered too long within the tropics after the disease had declared its fatal character.

It would be well to avoid, under all ordinary circumstances, attempting to clear out a vessel on the spot where the disease originated; more particularly if there be reason to suppose it has arisen from a foul state of the holds, for by opening and

disturbing the various matters contained in them, the cause must necessarily be let loose upon the men with increased force, while the latter, in a state of fear and despondency, being aware of the danger, are rendered more obnoxious to its influence, and brought, by the nature of their duties, more immediately within its sphere of action. It will be time enough, after the entire cessation of the disease, when by a change of climate and diet the general health of the ship's company has become invigorated, and when confidence has been restored, to commence the work of expurgation in the vessel. It is by no means uncommon for an epidemic to become aggravated by opening up the holds of a ship within the tropics.

The doctrine of fever being the product of some unknown gaseous body resulting from the decay of the timbers and planks of a ship, as it was supposed to have been in the Sybille in 1829, stands upon the same basis with that which attributed the fever of Hong Kong to the laying bare a few square yards of the solid rock; both suppositions, although it is difficult to conceive whence they are deduced, may be correct; the probability however is, that they are not, seeing that fever can only be said to have appeared occasionally or fortuitously under either of these or other circumstances of a similar nature; at all events it is hardly fair to embarrass this part of medical science with these crude conjectures, which to say the best of them barely come within the bounds of possibility. That green fire-wood is favourable to the production of disease on board when closely stowed, seems however to be an opinion somewhat more consonant with the rules of legitimate induction; it becomes heated, and emits an effluvium strongly perceptible to at least one of the senses. The Vestal, in the year 1839, had a quantity of green wood on board, from which there arose so disagreeable a smell as to annoy the men who were at work in the hold; and when it was got upon deck to be stripped of its bark, the fever then prevalent on board seemed to become more virulent and fatal, while the men who

were empolyed stripping off the bark were all within two or at most three days seized with the disease in an aggravated form. As a measure of precaution therefore in unhealthy climates, wood has been entirely denuded of its bark, split into moderate-sized pieces, and partly charred, previously to being sent on board.

The liability of prize crews to contract fever when disembarked at Sierra Leone, is a subject that especially deserves consideration, although so long as the present system is continued, it will be difficult to devise any means by which it may be avoided, unless the men were absolutely made prisoners the moment they landed, confined within the walls of a barrack, and restricted to their own ample allowance of spirits; measures, it is apprehended, it would not be prudent to attempt to put in force, as much from their impracticability, as from their seeming severity. For several years the hull of the Conflict gun brig, roofed over, was moored off the town, and appropriated for the reception of prize crews and other portions of the force, whether intentionally or accidentally detached; but great difficulty was found in restraining the men from going on shore, while from the want of a sufficient number of responsible officers, many irregularities occurred on board. The vessel at the same time appeared to have acquired within herself the power of generating disease; the same was observed to have occurred to the Magnificent, moored in the harbour of Port Royal in Jamaica; and it is believed to the Serapis before her: the Grampus hospital-ship in the Thames, at one time, seemed to have acquired similar properties, or to have become impregnated with some principle obnoxious to health. It is therefore probable that a vessel stationed in the river of Sierra Leone would neither be found adequate to the preservation of health, nor to the enforcement of sanitary rules of restriction.

There are two other methods which it is respectfully submitted might be adopted, with some reasonable hope of at least lessening the present amount of sickness and mortality.

First: that there should be constantly one of the vessels of the squadron stationed off the mouth of the river, although she might be relieved every month, to watch, without having any other duties to perform, the arrival of all prize vessels, to follow them in, and to remove their crews on board before they could have an opportunity of landing, or of obtaining intoxicating liquors, and to proceed instantly with them to her position outside of the river; or secondly, that one of the small islands of the Banana group, about thirty miles distant from Sierra Leone, should be exclusively appropriated for their reception; to this they might be conveyed by the pilot or commissariat boats, the instant the vessel they were in charge of was condemned; or rather with the exception of the prize-master who requires to appear in court, the instant she arrived, provided there were at least one officer on the island at the time. The only ostensible object, however, in removing men to the Bananas, would be to prevent their having opportunities of obtaining spirits, the abuse of which may be said to be the cause of by far the greatest proportion of diseases contracted at Sierra Leone. Were there any other residents on the island, or were spirits permitted to be sold, the object would therefore be totally defeated, and disease as likely to occur after intemperance and exposure as upon the mainland: although by a comparative statement of the health of the troops in garrison at the Gambia, in Freetown, and on the Isles de Los, it would appear that the latter had a considerable advantage over either of the two other places. The same might therefore be anticipated of the Bananas; in fact, it is reported that the few Europeans who have made these islands their residence are generally speaking healthy.

TREATMENT OF FEVER ON THE AFRICAN STATION.

With regard to the treatment of fever upon the African station, it appears that for the last twenty-five years it has varied but little, less indeed than might have been expected; while the difference that has existed has been more in degree than in kind; that is, in the more or less energetic application of the same means that may be called common, rather than in the application of different and dissimilar means not in general use; consequently there is little to be extracted from the reports, beyond what has already appeared, that would prove either useful or interesting.

There is one thing, however, peculiarly striking, namely, the contrast between the tone of confidence, which generally pervades the reports of the young and inexperienced practitioner, on his first arrival in the country, with respect to the supposed advantages obtained by the exhibition of the common remedies in general use, strengthened perhaps by the successful issue of a few unimportant cases, such as are denominated seasoning fever, in his own hands; compared with the tone of sad reality, which characterizes the style of those men who have encountered the disease in its most destructive forms, applied the vaunted means, and tested their efficacy; and who in the end, have too frequently been constrained to acknowledge that the more intimately they became acquainted with the disease, the more they were convinced of their ignorance of any rational plan of treatment, beyond that of simply following out the indications of nature; by administering such remedies from time to time as seemed most efficacious in alleviating the sufferings of the patient, or in lessening the violence of the existing

paroxysm at the least possible expense to the general vital energies. There being here, in fact, as elsewhere, no direct cure for fever, the symptoms are necessarily the indications which must regulate the practice.

It would perhaps greatly tend to simplify the method of treating fever, and certain other maladies, were it possible to trace more closely the disease in every instance to its primary source; to detect in the former, for example, the first deviation from health, whether in the fluids or solids, whether vital, chemical, or mechanical, and to discover the cause of such deviation; to know why six men in a perfect state of health, who had been sent on shore at Cape Palmas on the coast of Africa to watch a tide pole, should pass the night there, without suffering any inconvenience whatever; return on board, continue apparently in the enjoyment of uninterrupted good health for a period of from twenty to twenty-two days, and then be seized with fever. That the disease was contracted while watching the tide pole, there can be no reason to doubt; as none of the other men belonging to the vessel, then at anchor within a short distance of the shore, who had not been so exposed, were attacked. That the cause was the presence of some morbific agent in the atmosphere seems probable; and that it was conveyed into the blood through the medium of the respiratory apparatus seems possible, or at least admissible; but why it remained dormant in the blood, or at all events in the system for twenty two days, without causing the slightest observable functional derangement, is altogether incomprehensible. Why after such a lapse of time the first signs of its presence, or of its effects, should be made manifest by languor and debility, a sensation of cold with dull aching pains, is not at all understood; and why the blood should leave the surface and accumulate for a time in the large central venous trunks, and then be driven with violence through the arterial vessels to the periphery, is equally mysterious. The method of explaining reaction, as a result consequent on depression, is not satisfactory in this and similar instances.

Still, that fevers so contracted are the direct results of any miasmal body proceeding from the soil, or "soil products," is after all, as previously observed, but a purely hypothetical conclusion. Reasoning, however, upon the facts connected with the propagation of contagious or infectious maladies, we are induced, in the absence of more direct evidence, to lean to such hypothesis, it being, at least according to our ideas respecting things appreciable to the senses, more reasonable to allow such to be the case, than to suppose fever to be the result of a negative state of things, namely, a deficiency of some unknown gas-product or effluvium in the surrounding atmosphere requisite for the normal discharge of the vital functions.

It is with great diffidence, and much respect for the better-formed opinions of other men, that these observations are introduced; but it was in some degree necessary to do so in order to express a belief, that we are still utterly ignorant of everything relative to the production of fever, and it is also to be feared, that we are nearly as much in the dark with regard to its nature when it has occurred. With the series of morbid actions constituting the disorder, every one is familiar; but those who have had most opportunities of examining the bodies of men who have died of it, have been constrained to admit, that they have often failed to discover any lesion or change, the immediate result of these actions, sufficient to account for death. Hence it would appear that in pure idiopathic fever, we know not whence it comes, how it is sustained, or in what way it causes death.

A disposition to adopt a milder plan of treatment, than was formerly practised upon the station, seems to have been gradually gaining ground during the few latter years. The attempt to cut short, or to annul an attack of fever in its earliest stage by violent means, such as a powerful emetic, or a large abstraction of blood, is less frequently made; experience having proved the general inutility of either of these plans, as well as the danger attending the latter. Emetics are however still occasionally had recourse to, and apparently sometimes

with benefit, when the attack is observed to be developed immediately after a full meal. It is a practice at all events apparently sound in principle, as nature, if not anticipated, will generally, although less effectively, urge the stomach to the expulsion of its contents; the function of reducing them into a healthy chymous mass being for the time in a measure suspended, it becomes intolerant of their presence. Emetics, however, under any other circumstances, or in the more advanced stages of the disease, from the danger of causing an irritable state of the stomach, are clearly inadmissible.

Blood-letting, when required, is generally the next remedy in the order of application, and although it is still practised pretty freely upon robust subjects, where an inflammatory or a congestive action is supposed to exist in one or other of the vital organs, or in the serous textures lining the important cavities, it is seldom carried to the extent it used to be some fifteen or twenty years ago. With regard to either of these conditions, however, it is clearly evident, that they are not of frequent occurrence in the endemic or epidemic fevers of Africa, at least to such a degree of severity as to endanger life; as the symptoms generally considered indicative of their presence, will speedily disappear with the remission of the paroxysm, whether blood-letting has been resorted to or not, particularly if the brain, the organ most frequently supposed to be endangered, be affected: this it is apprehended would not be the case, had there been positive inflammation. Moreover, it has seldom, if it has ever, happened that congestion of the brain from pyrexial action has been productive of death, as occurs in apoplexy of that organ; and it is equally seldom, that any trace of inflammation or congestion (if fairly estimated by comparison) is found upon inspection of the organ after death, sufficient to account for the fatal issue. The small quantity of serous effusion generally found, together with probably slight venous turgescence, are appearances frequently observed in the brain, from whatever disease death may have resulted.

The liver has also long been considered in the fevers of hot climates as one of the most peccant organs in the system, and to require for its safety the abstraction of blood: why, it would be difficult to discover, as it is seldom, during the progress of the disease, that it indicates by pain or tumefaction any great danger from inflammation or congestion, nor is it frequently found otherwise than in a normal condition after death, unless in the bodies of those who have led an intemperate life for a considerable length of time: it is an organ of which it may be said that it is more sinned against than sinning.

Before proceeding to the abstraction of blood, therefore, in fever, it might perhaps be as well for us to be guided less by the arbitrary rules of practice, and more by a common-sense view of the case before us; to satisfy ourselves, in as far as may be possible, that the means we are about to adopt are calculated to produce the objects we have in view; otherwise we may be greatly disappointed. By glancing at the preceding pages, it will be observed, that the system of active depletion, after the most painful proofs of its inutility, has been generally abandoned, or at least practised with much more discrimination by those who have had the courage, independent of established doctrines or educational bias, to think and judge for themselves. They found that by blood-letting, they could generally, although not always, moderate for a time the violence of the disease, but that, with the returning paroxysm, pyrexial action returned with undiminished vigour; while all that had been gained, or rather all that had been effected, was the loss of so much of the circulating medium, which could not by any artificial means be afterwards recovered, were it necessary to determine the favourable issue of the disease; they had in fact reduced the force of the vital energies, without moderating the violence of the fever. A second bleeding on the recurrence of a paroxysm, only served to increase the physical prostration, and so it proved even to the fourth or fifth bleeding at Fernando Po: on that island, indeed, it might

be supposed, the plan in view had at one time been to bleed out the disease; an idea which, however untenable it may appear, seems nevertheless to have been entertained and acted upon. In a report recently sent into office, a case is detailed in which venesection was largely employed in the first instance, and repeated, because the blood was found to be black, upon the supposition that it could not be wrong to remove as much of it as possible. The debility induced by over-depletion has sometimes been so great, as to lead to the idea that the disease had not afterwards strength enough left to form a crisis, or to work itself to a head,—a somewhat singular mode of expression, but evidently intended to convey the meaning, that such was the impression made on the functions of life that the supposed inherent power of reaction was totally annihilated by the combined effects of the disease and of the remedy.

Should there be, as it is supposed there is, in essential or idiopathic fever, a depressed state of the nervous system, the direct result of morbid poison, with an exalted state of the circulation, by virtue of a supposed inherent power of reaction, and consequently the indirect result of the same poison, the abstraction of blood in the early stage of the disease may be viewed in a suspicious light; unless there be a condition of the nervous system, the reverse of that in health; or unless it can be proved that while the abstraction of a certain quantity of blood equalizes and moderates the force with which the whole is circulated, it at the same time imparts a proportional degree of nervous force—or rather permits the nervous system to exert a greater degree of power than it did previously; a state of things for the existence of which we have not any reasonable grounds of proof. The vital forces, therefore, having the same relation to each other in fever as they have in health, or at all events not being opposed, the removal of a large quantity of blood in the early stage of the disease may justly be supposed to depress the nervous energies still further, and thereby to co-operate with the primary cause of morbid action.

The abstraction of blood from the temporal artery, where there is a state of high vascular action with determination to the head, for the purpose of relieving the congested vessels of the brain, has also been recommended; but if this be admissible, the application of cold water by affusion over the head and shoulders would seem to be inadmissible, for inasmuch as the former may relieve the brain by admitting a greater quantity of blood to flow to the exterior, or rather by diminishing the quantity in circulation; the latter most unquestionably by constringing the exterior vessels, skin, and subcuticular tissue, as well as by the sudden shock it occasions to the muscular system, will cause a greater volume of blood to be thrown upon the interior, and consequently upon the oppressed organ; yet both these means have been practised in the same fever, and within a few hours of each other. Whether either of them has been productive of much permanent good may be fairly doubted. "The cold affusion has occasioned for a short time after each application, an intense feeling of pressure on the brain;"* and, "shrieks have been uttered." The same reasoning, although in a diminished degree, applies of course to the use of cold lotions to the head, which are well known to be generally productive of great relief, and are at the same time extremely grateful to the feelings of the patient, when there is much heat of the scalp, together with severe headache. Cold applications to the head have been sometimes immediately succeeded by a blister. These modes of treatment when fairly examined seem to be contradictory, and are at least in a logical point of view unsatisfactory; but in most men's minds an over-anxiety begets a disposition to do too much, while, in the absence of a proper reliance on the salutary efforts of nature, they impatiently resort to a frequent change of measures which can only tend to harass and disturb the patient.

When, however, the fever is accompanied by unequivocal symptoms of inflammation, the necessity of abstracting blood,

* Dr. Christison.

either by the lancet, leeches, or by cupping instruments, is then evident, at least according to our views of reducing that species of morbid action. Still it should be borne in mind that there is a stage of the primary disease approaching, when it will be necessary to rouse the vital energies by artificial means to the reparation of that fluid, then greatly wasted, and deteriorated by the influence of the disease; the amount of depletion, therefore, should be strictly limited to the apparent exigency of the case, the operator guarding himself against being led away by the idea of subduing the febrile action by lessening the quantity of the vital fluids; or that they are frequently either so destructively superabundant, or so irregularly distributed, as to require reduction. It would, perhaps, relieve the medical officers of the African squadron of much anxiety, and their patients of some degree of over-treatment, were they to rest satisfied that the fevers on the coast do not require a different mode of treatment from that pursued for fever of this country. They are not the result of causes producing an undue degree of plethora, nor do they destroy by sthenic action; they are, therefore, not to be cured by inducing an opposite state of the system. It will seldom be advisable to resort to bleeding after the first twenty-four hours from the commencement of the fever, and certainly never after forty-eight; in fact, when necessary, the more early in the stage of accession it is performed the better, as it then generally assists the action of purgatives, relieves the skin, and lessens the headache for the time, together with the accompanying sense of general distress. If the blood drawn exhibits a deficiency of colouring matter, and a loose imperfectly-formed clot, it would hardly be prudent to repeat the operation, however high the symptoms ran.

The early exhibition of cathartic medicine in ardent fever, in whatever country it occurs, is very properly held to be a sound rule in practice, as the alimentary canal from sharing in the preceding atony is generally in a loaded state; a combination of calomel and jalap, from its acting promptly, has been more

generally used in the naval service within the tropics than any other purgative, or combination of purgatives, and is not unfrequently followed by a solution of Epsom salts with tartarized antimony, in the more advanced stages of the disease, when it is supposed danger may be apprehended from arterial excitement or actual inflammation. In the irritable state of the stomach, or in the typhoid stage, however, they are better omitted, as they can only tend to aggravate the former troublesome affection; while in the latter, by irritating the whole mucous membrane of the alimentary canal, and consequently interrupting the process of nutrition, they still further depress the vital powers, and disturb the patient, when rest and tranquillity are, of all things, absolutely and essentially necessary. Morbid secretions it has been argued must be got rid of; but unless there be some evident proof of their presence, or of their being detrimental, it will be unnecessary to solicit their expulsion by too frequent an application of artificial means, more especially in the latter stage of the disease. Purgatives, themselves, when often repeated, may induce a vitiated state of the secretions, and are thus productive of the effect it was desired to obviate. These opinions are advanced with the utmost deference, not with the view of presumptuously dictating rules of practice, but rather after considerable experience upon that pestilential shore, with ample opportunities for observation at all the principal settlements, from the Gambia to the Equator, to confess with regret how little it is we know of the means requisite to counteract the deadly nature of the malady; and at the same time deliberately to record an opinion, however humble, that violent measures will seldom succeed, where, from the effects of the climate, and from other adventitious causes, there already subsists so much mental and physical prostration.

After the free operation of cathartics, and the employment of other necessary preliminary measures, the administration of calomel, in order to induce salivation, has in general been

commenced in doses varying from two to five grains, sometimes from five to ten, and occasionally from ten to twenty, given every second, third, fourth, or sixth hour, according to the violence of the attack, or the views of the medical attendant. Opium has been combined with it in small doses to allay irritation, and facilitate its influence on the system, and one of the preparations of antimony has been occasionally added, in order that the diaphoretic action of that medicine might be obtained at the same time. If the fever run high, however, and the danger be imminent, it has with few exceptions been considered necessary to resort to more active measures; inunction with the common blue ointment upon the legs and thighs has therefore generally been had recourse to twice or three times a day; the ointment has also been applied to blistered surfaces in order that the mineral might be more abundantly taken up by the absorbents; no means, in short, were left untried by those favourable to this mode of treatment to induce ptyalism, which was considered to be the great desideratum, and the goal of safety; but with what justice, may be inferred by a reference to the details of treatment under the head of Fernando Po, Plumper, Eden, and Eclair.

During the earlier stages of the disease, when the stomach is in an irritable state, a scruple dose of calomel has sometimes had the effect of arresting vomiting; in the same dose it has also been useful as a purgative, having frequently from its small bulk been retained when every other cathartic was rejected.

These observations it is believed may be relied upon; and they constitute advantages of no small importance when compared with the action of other purgatives in a disease where so much seems to depend, even as regards the exhibition of remedies, on a tranquil state of that organ.

In the more advanced stages of the disease, it has been given in combination with the disulphate of quinine, when it was considered desirable to keep up the specific action of the mineral, and at the same time necessary to have recourse to tonics.

With regard to the specific action of mercury in fever, it is to be feared that views of a very erroneous nature have been entertained by a large body of the profession; in proof of which the preceding pages will furnish abundant and ample testimony. The most dangerous opinion seems to have been that which attributed to the mineral the power of checking the disease the instant the system was brought under its influence; and hence it may be presumed arose the supposed necessity for exhibiting it, not only in large and frequent doses, but for urging it upon the system by means of external frictions. Experience has effectually taught us the fallacy of this doctrine; and further, that ptyalism is not to be hastened, however great the quantity absorbed. The gums may become spongy and bleed, and the teeth may be loosened by its influence, yet there may be no increased flow of saliva, and hardly if any mercurial fetor of the breath perceptible. In this state fever may continue, collapse ensue, and death terminate the sufferings of the patient. Still the gums and mouth will exhibit unequivocal evidence of the system being saturated with the mineral, notwithstanding the non-respondence of the salivary glands. This has been so repeatedly remarked, that it would be a waste of time further to insist on ptyalism being the effect, and not the cause of returning health.

Sufficient evidence it is believed has been adduced to show the inapplicability of over-active measures with regard to other remedies, in the adynamic forms of African fever; it is also believed that the same may be said with regard to the use of mercury, or at least with regard to the plan of attacking the disease by pouring immoderately large quantities of it into the system, within a short period of time. This in fact has been so repeatedly tried without success, that it would be for the credit of the profession were the plan abandoned altogether. Still, however, in case it should be considered that proof enough has not been brought forward of its positive inefficiency, or of the system having been followed out with that degree of ardour and method which would warrant its being condemned without

further trial, it may be satisfactory to know, that there are not wanting documents in this office to show that it has been carried to a still greater extent than appears by any instance brought forward in this report. From three to five hundred grains of calomel have been systematically given in individual cases of yellow fever within the space of four or five days, not in a few cases only, but in many and for months in succession, blue ointment being at the same time sedulously rubbed into the arms and legs, and also applied as dressing to extensive blister sores, with certainly no better results; for, as under the comparatively mild treatment herein noticed, some patients died with their gums spongy and slightly swollen, and their teeth loose, while others recovered, and of course suffered severely during convalescence from profuse salivation and ulceration of the mouth, together with considerable swelling of the cheeks, lips, and tongue.

There are even instances on record in which it appears that the bichloride of mercury has been given in conjunction with calomel; but that powerful preparation also failed in producing the desired effect on the salivary glands.

So great has been the desire to induce a state of ptyalism, and the determination to enforce it, that after all these methods have failed, and as a dernier resort, two drachms of calomel have been suspended in a small quantity of mucilage, and thrown into the rectum, in the hope that some of it would be absorbed; but with no better effect, as might have been expected, indeed, from such an extraordinary use of the remedy. It would therefore seem that it may be assumed as an axiom that, although the same quantity of mercury may produce different degrees of salivation in different individuals in health, there is not any quantity, however large, that will produce any degree of the same effect in persons labouring under yellow fever, or the common remittent of the coast.

In conclusion, it may be stated that of late years its utter inutility, as a means of arresting the onward course of the disease, has been frequently experienced by the medical officers of the

squadron, and as frequently animadverted upon, apparently with much regret, from the disappointment it has occasioned; while it has also been noticed, as a thing quite unexpected, that ptyalism is no safeguard against a recurrence of pyrexial action; for patients in that state are as apt to relapse and die, as other convalescents who had not taken any of the mineral. It has been sometimes argued that if mercury does no good, it does but little harm, and that it is as well to let the patient have the chance, if there be any, of benefiting by its use. This however is a most dangerous doctrine; for in some constitutions, when given to excess during the more violent stages of the disease, it acts as an irritating poison, and consequently has a most injurious effect; while on all who survive, it entails a long and painful convalescence, and not unfrequently shatters the constitution for life.

Of all the remedies employed in fever or in its sequelæ, upon the west coast of Africa, there is not any so unequivocally valuable as the disulphate of quinine; cinchona bark of course being understood to possess similar qualities, although from its bulky and rude form, compared with the former, it is less admissible in delicate health, or where its continuance is required for a long period; and is seldom used when the former can be obtained. So general has the use of quinine now become, that there is hardly any part of Western Africa, where there are resident Europeans, in whose houses it is not to be found; it is in fact considered to be one of the necessaries of life, where life is of all things the most uncertain.

Formerly, in some of the Windward settlements, it was at one time the practice to give it much more freely to patients recovering from remittent fever than at present; namely, in doses from five to ten grains, three or four times a day, until slight deafness or buzzing in the ears took place, and in many instances this plan was found to be decidedly beneficial, particularly with the older residents. The same mode of giving the medicine has lately been resorted to in this country, and apparently with the same result; still, when convalescence pro-

gresses satisfactorily under the smaller doses, it will not be necessary to resort to the larger.

In the squadron it has generally been given to the extent of from two to four grains every fourth or fifth hour during the day, dissolved in water slightly acidulated with dilute sulphuric acid, or in white wine; and with abundant proof of its high tonic powers, as well as of its specific effect in counteracting the tendency to those irregular paroxysms of fever which so much retard recovery in the African climate. The most approved time to commence its administration in the remittent, is the moment a perfect state of apyrexia is observed; some, however, consider it advisable to wait until the tongue begins to clean about the tip and edges, although it frequently happens that these changes are contemporaneous. That form in which it is least objectionable should be preferred; and its use persisted in for at least two, three, or four weeks, if the patient remain under the influence of the climate.

When it fails in arresting the irregular intermittents which succeed the common endemic or the epidemic, it is seldom that any other medicine will succeed; the patient had better then be recommended for a change of climate, before organic disease occurs, which it most assuredly will, if he remain on the coast. In these cases arsenic has been tried, but it seldom succeeds when the vegetable tonic has failed. Men in this broken-down condition frequently recover their health by a short residence on the island of Ascension; but are apt to be again attacked by irregular intermittent, if they return to the coast during or immediately after the rains.

Antimony, whether it be exhibited to reduce the force of the circulation, or to determine to the skin, or for both purposes, requires to be used with considerable caution in the more intense forms of African fever; as to induce either of the above results, it must be given so as to cause more or less nausea, a condition very properly dreaded during its most active stages, the period of all others when diaphoretics and depressants are more particularly indicated, for, should they

once produce vomiting, the chances are that this troublesome affection will continue until death or convalescence put an end to the disease; the exhibition of all other internal remedies, nourishment or drinks, being in the mean time necessarily suspended. The preparations of antimony have also sometimes the effect of producing intense headache; the indiscriminate use therefore of these, and even of other more simple nauseating diaphoretics, is not always admissible in the dangerous forms of fever; while in those which are comparatively mild, they are not required.

The application of blisters is generally had recourse to; in the first place to the head or nape of the neck, when the brain is much affected from sanguineous congestion, whether that condition be accompanied by a tendency to stupor, somnolency, or to watchfulness and delirium, or when similar effects appear to be the result of nervous derangement. In the second place, to the epigastrium, with the view to relieve pain or uneasiness in that region, or to arrest troublesome vomiting. In the third place, they have been applied to the extremities, in the last stage of the disease, to rouse the vital energies when they begin to flag, as much perhaps in accordance with long-established custom, as in the hope of their being of the slightest advantage. Muscular contractions may be produced by irritation in an animal when life is apparently extinct, but it may be fairly questioned if life can be prolonged by the same means. When blisters are used with either the first or second object in view, they have frequently been found of service; but it does not appear that there are any instances on record where they were considered to be of the slightest utility when applied to the extremities. Moreover, whatever effect they may be considered to have in rousing the sinking efforts of dying nature by the local irritation they produce while in contact with the skin, they most undoubtedly are remedies that cause great physical prostration if allowed to vesicate; a moderately-sized blister will perceptibly lower the strength of a person when in robust health.

Considerable distress has sometimes been produced by blistering the whole scalp (the night-cap blister, as it has been called by way of distinction); the patient being unable to bear the pressure of the raw surface against the pillow without considerable pain. This circumstance, trifling as it may appear to those who are advocates of energetic measures, is worthy of being taken into consideration, particularly if other parts of the body are at the same time in a similar condition. Evidence of the suffering it occasions may be obtained by observing the frequent distortion of the muscles of the face when the patient is asleep or dozing; by the motions of the head and hands, the latter frequently being raised to tear off the dressings; by constantly-broken rest, and repeated murmurs of discontent. The absorption of the irritating principle of cantharides, moreover, while it produces more or less strangury, does not, it may be supposed, tend to diminish the general irritation of the fever.

Under the head of Fernando Po the effects of extensive blistering have been already noticed. It is indeed extremely painful and humiliating, in a professional point of view, to look upon a person recovering from fever whose head, neck, breast, abdomen, and probably limbs, have been extensively blistered, and the raw surfaces irritated by the application of mercurial dressings; whose mouth and gums are in a state of ulceration, with loose teeth, swollen face, profuse ptyalism, and a fetid breath, from the effects of mercury; particularly if there be at the same time an opportunity of observing in a series of subjects that have been similarly treated for the same disease, the almost total absence of any pathological change in any of the vital organs, except perhaps in the colour and consistence of the blood contained in them.* Two questions then naturally arise—first, for what purposes were these measures put in practice? and, secondly, did they tend to evil or good? No such violent measures being ever resorted to in

* The spleen perhaps may be excepted, as it is generally enlarged, friable, and engorged with dark-coloured blood.

the treatment of fever in temperate regions where the vigour of the constitution remains intact up to the period of invasion, their applicability in the adynamic fevers of Africa, which are generally preceded by impaired health, judging moreover from the results, is a subject that seems yet to require the most serious consideration of the Naval surgeon; lest he be accused of continuing to employ means to counteract effects that he does not rightly understand, or to obviate results that are seldom seen to take place.

Cold sponging, either generally or partially, is often resorted to when the fever runs high with great heat of surface, and in most instances with considerable temporary relief; it has the advantage over the cold bath that it can be employed with less trouble and annoyance to the patient. Dashing cold water over the whole body, either in a standing or crouching posture, in the hot stage, whether with the view of cutting short the disease, or of mitigating the strength of the existing paroxysm, is not to be recommended; the superabundant heat may be diminished with better effect, by washing or sponging in the horizontal position: according to theory, however, it is more particularly inapplicable where local inflammation or congestion is supposed to exist. Warm baths have also been used in all stages of the disease, with the exception perhaps of the last; although, from the difficulty of preparing them on board ship, especially in small vessels, their employment at sea has not been frequently had recourse to. They have generally a soothing effect for a short while, and are supposed to equalise the circulation; but as they greatly harass and exhaust the patient, and in the more advanced stages of the disease tend to prostrate the vital powers already too much impaired, they may be classed with the doubtful expedients in the catalogue of remedies. Rest and quietude, particularly if the patient be inclined to sleep, are, it is assumed, of more importance in these cases than any means with the effects of which we are yet acquainted.

The other remedial measures, which have been employed

in the treatment of the fevers peculiar to the African station, are so well known to all medical men, as to preclude the necessity of entering into any detailed account thereof, farther than has already been incidentally brought under observation; more particularly as their exhibition under any circumstances must depend greatly upon the nature of the disease, and of the individual symptoms; upon the constitution, habits, and idiosyncrasy of the patient, and not a little upon the degree of importance the medical practitioner himself attaches to their use.

It has not been considered necessary to adhere strictly throughout this Report to the various names which have been applied to remittent fever in the nosological returns; partly from the conviction that to do so would only lead to misapprehension and confusion; partly because it was in many instances altogether impossible to reconcile the classification there adopted with the symptoms recorded in the cases which were contained in the journals for the corresponding periods; their number was also an objection; moreover names had been applied which were totally devoid of any definite or distinct meaning, such for instance, as jungle, mixed, and coast fever. The bilious remittent of one person was found to be the climatorial of another; the endemic of a third was the typhus icterodes of a fourth; the adjectives ardent, yellow, congestive, inflammatory, had all been used in describing the same disease. A more simple phraseology was therefore, unless under peculiar circumstances, deemed advisable. The character of these fevers, in fact, is such that the synochal of one day may become a remittent on the next, and probably ere long terminate in an intermittent; the ephemeral of little force may suddenly become one of high vascular action; or at the same time, but in a different subject, pass rapidly through the stage of excitement, and at once enter upon the typhoid; while that which invades with great intensity of action may frequently be of ephemeral existence only. It is therefore obvious that it is not until the fever approaches its termination that it can be brought under any one of the previous

heads; consequently in a practical point of view such visionary distinctions are of little or no importance.

The fevers of Africa, strictly speaking, are only divisible into two kinds; namely, into the remittent and intermittent. The former, however, may be subdivided into the endemic, epidemic, and contagious; but as either of the former, as in the Bann, may be converted into the latter by improper ventilation, the depressing passions, and physical prostration, and as it—the contagious—does not originate or even exist for any length of time except under these conditions, the subdivision is again reduced to two heads—the endemic and epidemic, both of which are remittent, and both generally, according to their persistence, attended with more or less yellowness of the skin, and occasionally in the more severe cases with black vomit. It becomes a question if the latter be not an aggravated type of the former, in consequence of the more general prevalence of a common exciting cause. Still, from its uncertain modes of invasion at distant periods; from its apparent restriction to certain bounds; and from its greater severity, the appellative distinction, at least until the subject is better understood, remains strictly warrantable.

The laws which regulate the types and periodicity of fevers are about as indifferently understood as any other part of the subject. If, however, the disease in the majority of cases depends upon an active external agent, and not on a mere physical change in the constitution, the result of a combination of causes, differing at different times and in different places, it would be rather too preposterous to suppose that each type of fever had its own peculiar source. It is hardly conceivable that there can be any difference in the causes operating in the production of remittent and intermittent fevers, whether acting directly or indirectly upon the constitution; it is probable that they are essentially the same, and that the type and character of the disease is regulated either by the state of the general health at the time, or depends on the moment when the morbid action establishes its sway over

the vital functions; the latter being subject to periodic changes, with the nature of which we are little acquainted, these when interrupted or deranged, may have some effect in modifying the order and intensity of pyrexial action. The results in epidemic disease being somewhat different, although constant in the order of their occurrence, we are bound to admit that there may be a difference in the primary exciting cause either as regards its quantity or quality. These ideas are hardly worthy of notice; but they are offered with the view and in the hope that the subject may be further investigated by those who have ample opportunities, and are more competent to the task.

The term bilious is highly objectionable, as it seems to direct an undue degree of attention to the liver, and to call for the administration of mercury when it is by no means required; although in fact, within the tropics, this mineral appears to be employed indiscriminately in all diseases of that organ, be they functional or structural, acute or organic. Whether the peculiar suffusion in yellow fever is due to the presence of bile, or to a broken-down or depraved state of the blood, is a question that certainly demands evidence of a more positive character than any we are yet in possession of; at all events it is an established position, that there may be great yellowness of the skin without any apparent derangement of the liver, or undue secretion of bile; when the latter state does exist, it occurs more frequently as a secondary than as a primary disorder, being simply a derangement of function in common with that of the other organs of the body, consequent on febrile action.

The term inflammatory is nearly equally objectionable, and for somewhat similar reasons; there is, in fact, no such state as an inflammatory diathesis ever observed in the ordinary fevers of the African coast. When inflammation actually exists in one or more parts of the body, the disease in that case falls more naturally under the head of phlegmasiæ.

Next to fever the most fatal climatorial disease on the station

is dysentery, although it is seldom seen in that intractable form so peculiar to it in certain parts of India, neither does it appear as an epidemic. It has been supposed to be of more frequent occurrence on the Gold Coast, than upon any other part of the station north of the equator; this, however, will prove to be correct only when there has been considerable personal communication with the shore, or when the pool water peculiar to that part of the continent has been used. It is more generally prevalent both on shore and in the squadron on the southern division of the station, and has occasionally been supposed to be produced by the water of the Congo, when drank previously to depuration. It is also of frequent occurrence at all seasons of the year on the Island of Ascension.

The treatment of this disease being nearly the same in all parts of the world, it is not considered necessary to advert to it here; although it may be proper to remark, that turpentine in doses of half a drachm, in a proper vehicle, or in combination with other remedies, has been lately tried on the West India station, and is considered to have had a decided beneficial result in the chronic form of the disease.

The only other disease peculiar to the tropics that remains to be mentioned is inflammation of the liver, although it also appears to be of less frequent occurrence in this country than in India. By reference to the earlier returns, however, it seems to have been much more common than it is at the present time, particularly between the years 1822 and 1825, and frequently proved fatal. At that period, and for several years subsequently, the sea rations were seldom obtained on the coast in anything like the state of preservation in which they are now issued; the bread was frequently so bored by that destructive insect, the weevil, and by maggots, that it was not unusual for it to crumble to pieces between the fingers; presenting little else than the excrementitious dust of these animals and the more hardened and flint-like portions which they could not penetrate. The beef was often dry and vapid from long maceration in the brine, innutritious and unwhole-

some; while the ration of rum was nearly double what it is in the present day.

If to these circumstances be added a greater amount of communication with the shore, and consequently a greater latitude as regards the use of intoxicating liquors, it need not excite astonishment that nearly all classes of disease were then both of more frequent occurrence, and more virulent when they did occur.

DISEASES MOST PREVALENT AMONGST CAPTURED SLAVES.

It comes not exactly within the scope of this report to allude to the traffic in slaves, or to the probability of its ever being put a stop to by any system of maritime blockade; but as it is a subject that bears an important relation to the prospective health of the naval service, as well as to the health and condition of the negroes, both before and after shipment, the following cursory observations by the way may not be considered as out of place. That the preventive measures have hitherto signally failed there is but too much lamentable proof, and that they will still fail in producing the desired result, there is every possible reason to believe; for, admitting that the squadron should be increased until every point of the coast is guarded, and that, from an absolute want of access, the export trade is extinguished, it may be asked how long would such stringent guard require to be enforced to perpetuate the cure? because, if at the end of ten years, or even twenty, it were withdrawn, under the present aspect of affairs with other nations, it is but too evident the trade would be renewed with redoubled vigour.

It is a consideration of even more unqualified regret, that, notwithstanding all that has been done, notwithstanding the vast loss of health and life, years of banishment, and mental waste endured by a large proportion of the naval service, it is clearly evident we have only added to its horrors, and rendered not only the "horrors of the middle passage" more dreadful, but have made, within the last ten years, the period of detention one of indescribable suffering also; for since the treaty authorizing the capture of vessels fitted for the trade

came into operation, together with the increase of the squadron, and the employment of steam, whole cargoes of these unfortunate creatures have actually been so long detained on the beach, that the provisions destined for their support having become exhausted, they have been left to die of starvation and disease, or, as it is reported, have been shot down, if compelled by hunger to straggle into the bush. In addition to all these miseries, it not unfrequently happens that they are hurriedly driven from place to place along the coast during the night as the cruisers shift their ground, or as opportunities offer for their embarkation, by which they suffer the greatest privations and no small amount of diabolical treatment from their inhuman masters, while they contract diseases which subsequently carry them off in vast numbers during the voyage. What between their vendors, buyers, and protectors, their case is indeed much to be pitied.

A somewhat mistaken zeal in the cause of suppression, it is submitted, arising doubtlessly from the most philanthropic motives, has upon several occasions been exhibited in burning down the barracoons on the beach destined for the reception of the slaves, and in destroying the stores necessary for their sustenance. The former, being generally at best but mere wooden or wicker-work structures, are in point of value of no importance to the slave-merchant; but to the negroes, after a long and toilsome journey performed in chains, they are of the greatest possible advantage as places of rest and of shelter from the cold winds of the coast. It may also be observed that these expeditions have had the effect of exasperating the tribes resident on some parts of the coast. At Whydah, where refreshments were formerly liberally supplied, it would be dangerous now to land, or venture too heedlessly in a boat within gunshot of the beach. The approach of men-of-war, or the movements of their boats, are made known by signal from place to place, with as much precision and regularity as in many of the more civilized parts of Europe.

The diseases from which negro slaves suffer most severely

on board the vessels destined for their transportation, are, dysentery, fever, small-pox, ophthalmia, and diarrhœa; the first two are by far the more generally destructive, and it not unfrequently happens that they acquire such virulence, as to carry off a fourth, or even a third of the whole cargo in the short period of a few weeks. Medical treatment is too often, under these circumstances, of little or no avail, or rather totally inapplicable; not so much from the virulence of the disease, however, as from the want of space and accommodation for the sick; from the character of the people themselves, who, when they are attacked by sickness, with something like the instinct peculiar to the inferior animals, retire into some secluded corner, if they can find one, where they doggedly refuse all tenders of assistance, even when proffered by the hand of friendship, or by people of their own tribe. Overcome as it were by a sense of their misery and desolation, they are indifferent to everything that may be going on around them, and frequently even obey the calls of nature without moving a limb. In this horrible state, if left alone, they will sullenly repose crouched amongst their own filth, until death, which they seem to desire, relieves them of their misery. There is perhaps not any condition in which human nature may be viewed in a more revolting aspect than in that of a crowded slave-vessel, with dysentery on board. Of all the horrors attending the middle passage, with the exception perhaps of small-pox, it is the worst. The effluvium which issues from her decks, or rather prisons, is peculiar and sickening beyond conception, and is generally perceptible at a great distance to leeward.

All that a medical man can do or recommend to be done in such an emergency, common sense will dictate. If the chase has been a long one, it will be necessary after the capture, in the first place, and as soon as possible, to separate the sick from the healthy; not with the view of preventing the propagation of disease however, for if it were contagious that would indeed be a vain attempt, but to protect the

former from the latter; for such is their deplorable condition, that anything of the nature of a kindly feeling, or of compassion for one another, is totally extinguished amongst them. Generally, it will be unsafe at first to unshackle the whole; but when a sick person is shackled to one that is in health, it will be requisite to separate them, or the former will suffer most injurious treatment from the latter. The slaves will require to be got upon the upper deck, while the slave deck is being cleansed; as it is generally in a most filthy state in consequence of their being confined on it during the chase. It will be well, when circumstances admit of it, to have this accomplished before the vessels separate. The slaves in the meantime will begin to perceive in what relation they stand to their liberators, as their comforts are attended to, and their wants, particularly as regards water, are more freely supplied; their sullenness and despondency will diminish in proportion. The cook of the vessel is generally a useful person to retain on board until she be condemned in one of the Courts of Mixed Commission, and the slaves landed. If he has been long in the trade, and is intelligent, much useful information may be obtained from him, not only with regard to messing and berthing the slaves, but particularly with regard to the treatment of the sick, with whom proper diet both as a means of prevention and cure, is of much more importance than medicine; of the latter also he generally understands a sufficiency for all ordinary purposes. It is by no means uncommon to meet with a person of this stamp who has been several times captured, and who has by that means picked up a slight smattering of English, which makes him more valuable in this capacity.

In the treatment of dysentery all the usual remedial measures, with the exception of bleeding, have been resorted to; most reliance however seems to be placed on calomel or blue pill and opium. To take blood from beings so feeble and emaciated as newly captured slaves, labouring under any form of disease, would be attended with almost immediately fatal

results. It will also be of importance to defend them as much as possible from the inclemency of the weather, as in their naked and bloodless state they suffer more than can be imagined from the comparatively speaking cold sea-air.

If however the slaves are found to be labouring under small-pox, a somewhat different mode of precedure would be advisable. The cruiser should instantly get to windward and there remain, having as little communication with her as possible, and then only by means of men bearing distinct marks of vaccination upon them, or such as have previously had the small-pox; and on no account should the Kroomen be permitted to have any communication, unless it be those who are protected by a previous attack. It would be prudent not to take the crew of the vessel on board, but to run for the nearest point of land; or if it were possible, for the sake of humanity, to the place where they embarked their unhallowed freight, and there land them; as by this means there would be less risk of planting the disease amongst some unoffending tribe, where perhaps it was unknown at the time. The treatment of small-pox, like that of dysentery, must indeed under such circumstances be a most difficult task. From the surgeon's utter ignorance of their language, and the difficulty to get them to attend to signs, or to understand them when made, there is no possible means of treating them otherwise than as dumb animals. To keep them as clean as possible is in fact nearly all that can be done, with the exception of guarding their eye-sight, a point of great importance.

Craw-craws is generally found rife in every cargo of slaves, and is frequently communicated to the prize crew in the course of the voyage; it principally infests the outer parts of the arms from the wrists up to the elbow, but also spreads over the whole body, if neglected. Being a disease consequent on depravity of the blood, and an unclean state of the skin, although it is also infectious, it is to be cured by an improved diet and cleanliness, together with the internal and external use of sulphur; it is also benefited by the preparations of

mercury and zinc. It resembles the itch of Europe, but is considerably more inveterate and annoying.

Little can be done for the relief of these unfortunate creatures when labouring under fever. Diarrhœa may be arrested by the usual means, although it frequently terminates in dysentery; in phthalmia, whether occurring as a simple inflammation of the organ, or as a complication of small-pox, medical assistance is of paramount importance, and without it, the lot of many must inevitably be permanent blindness.

The dracunculus, or Guinea-worm, principally infests the natives, or those who have been for sometime resident on the Gold Coast; although it is also met with along the shores of the Bights of Benin and Biafra. It is generally found irregularly convoluted amongst the muscles and tendons on the lower part of the leg, about the ancle, and on the back of the foot. When the head or end of the animal presents, which it generally does in the centre of a small inflamed patch, like a flattened boil, it may be laid hold of by a pair of forceps or tweezers, and drawn out little by little every day, until the whole of it is removed. Nothing beyond the most gentle traction should be used, or it will break, and perhaps not be found again, until after considerable suffering its small black head is protruded at another part of the limb at the end of several weeks. These animals, from mal-treatment, frequently cause the natives to lose their toes, or part of their feet, and sometimes produce permanent lameness by contraction and adhesion of the tendons of the lower extremities, preceded by ulceration. The popular belief is, that they exist in the form of larva in the pool water, (although ova would be a better idea,) and being swallowed in this state, subsequently find their way to different parts of the body, where, in consequence of their adventitious position, they acquire a sort of monster form. It is however more conformable to reason to suppose, that they enter the body by passing through the skin, as they are generally found in those parts that are most exposed to the influence of external objects.

Yaws is the only other disease which occasionally proves troublesome amongst this class of people; like craw-craws it is engendered by filth, insufficient food, and the over-crowding of many people into a small, badly-ventilated space; it is also propagated by contact. When once seen it can hardly again be mistaken; in fact, from the resemblance some of the excrescences present to the raspberry, it can generally be recognised at first sight. When the slave-dealers were less hampered in their operations, negroes labouring under this and other infectious diseases, were generally, particularly at the larger establishments retained for some time in the barracoons previously to shipment, in order that they might recover prior to embarkation. Of late years, however, from the strictness with which these depôts are watched, it has more frequently happened that both the sick and healthy have been hurriedly shipped at all hazards; the resident merchant being only too happy to get rid of those likely to prove troublesome, or to die on his hands; while the purchaser, in the event of his having no responsible agent on shore, having neither time nor opportunity to make a proper selection, has been obliged to receive them on board, whether sound or diseased, and make his escape without delay. Happily, the disease seldom proves fatal, and whether the vessel be captured, and the slaves landed in one of our colonies, or escape and reach her destination in the Brazils or Cuba, those labouring under this complaint, on obtaining a more nutritious diet, comparative freedom, and moderate exercise in the open air, are soon cured; frequent ablution of the person, some slight tonic, together with the application of a solution of the nitrate of silver, or of that substance in its solid form to the diseased parts, being the only remedial means required. Astringent applications to moderate the discharge, are also useful; and to prevent the disease spreading, segregation is necessary.

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