

Cholera epidemics in East Africa. An account of the several diffusions of the disease in that country from 1821 till 1872, with an outline of the geography, ethnography, and trade connections of the regions through which the epidemics passed / By James Christie.

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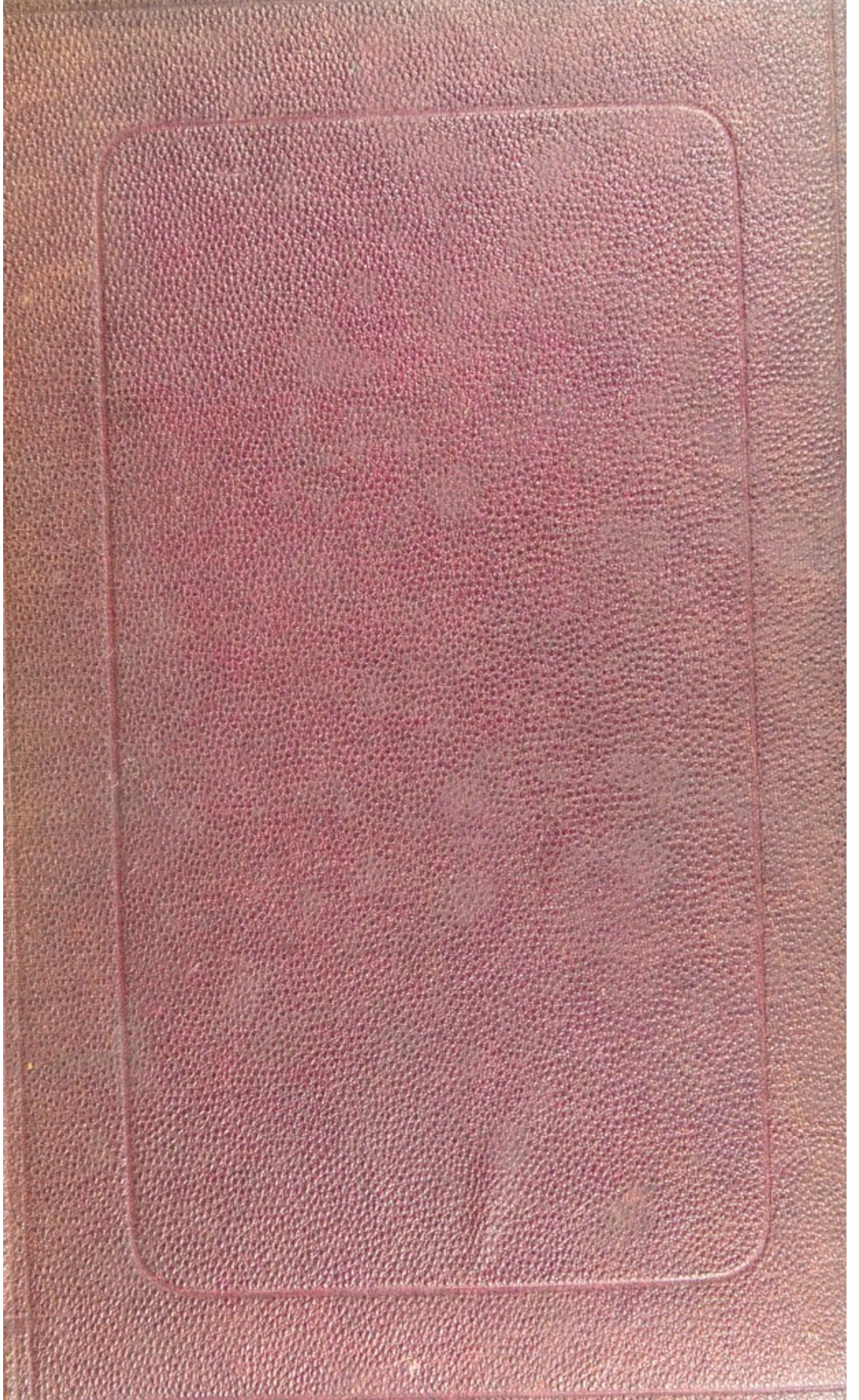
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CHOLERA EPIDEMICS IN EAST AFRICA.



CHOLERA EPIDEMICS

IN

EAST AFRICA.

AN ACCOUNT OF THE SEVERAL DIFFUSIONS OF
THE DISEASE IN THAT COUNTRY FROM 1821 TILL 1872,
WITH AN OUTLINE OF THE GEOGRAPHY, ETHNOLOGY, AND
TRADE CONNECTIONS OF THE REGIONS THROUGH
WHICH THE EPIDEMICS PASSED.

BY

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TO

J. NETTEN RADCLIFFE, ESQ., M.R.C.S.,

President of the Epidemiological Society, London.

MY DEAR SIR,

In July, 1870, I had the pleasure of receiving from the Right Reverend Bishop Tozer the following queries, regarding Cholera Epidemics in East Africa, which had been forwarded to him by you through a mutual friend.

“My purpose would perhaps be best answered if, in your next letter to Bishop Tozer, you would not object to mention that the Epidemiological Society of London (of which I am Honorary Secretary) is exceedingly anxious to obtain an account of the outbreak of Cholera at Zanzibar. The Society seeks particularly to know when Cholera first broke out in the Island; to what extent it spread, and from what source it was probably introduced: also whether the disease has ever before been known to have prevailed on the Island, and on the neighbouring mainland; especially whether it prevailed on the Island, or anywhere in the vicinity in 1864 or 1865.

“Perhaps the Bishop might induce Dr. Christie to send me this information for the Society.”

DEDICATION.

In 1870 and 1871 I had the pleasure of forwarding to you replies to your queries; but, having continued my investigations since that time, I have embodied all the information which I have been able to collect regarding cholera epidemics in East Africa, in the following pages.

I solicit the honour of inscribing the volume to you; for if there be anything in it calculated to extend the boundaries of professional knowledge, the credit is due to you, and to the members of the learned Society over which you so worthily preside.

Allow me to thank you for having called my attention to a new field of research, the investigation of which has been to me not only a source of unmingled pleasure, but the means of deriving much valuable information on one of the most important sections of State Medicine.

I have the honour to remain,

With much esteem,

Your very obedient Servant,

JAMES CHRISTIE.

cc

P R E F A C E.

So many excellent treatises on Asiatic Cholera have appeared during recent years, that it is necessary to explain to my professional brethren my reasons for presenting to them this volume, and I shall probably best do so by narrating the circumstances under which it was written.

Before my departure from this country for Zanzibar, at the close of 1865, news of the great outbreak of cholera in Arabia, and of its extension to the European and African shores of the Mediterranean, had reached England, and I had some apprehension that I might possibly

epidemic on arrival at my
as not the case. On making
the epidemic had been pre-
out that its progress south-
the south-west monsoon, and
that year the entire African

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Having had no particular interest in the study of epidemic cholera at that time, and not having been aware that the subject of epidemic cholera in East Africa was of any special interest, I made no inquiries regarding the origin of the epidemic, and the subject soon passed out of my recollection.

After an interval of four years, during which I had not heard of cholera being prevalent in any part of Africa,

intelligence reached Zanzibar regarding the advance of an epidemic from the north-west, along the Masai caravan route, towards the East African coast at Pangani. At that time my mind was unbiassed by any theory regarding the propagation of cholera epidemics, for I had none, my attention, during my previous professional engagements, never having been directed to the subject. Being certain that the epidemic would soon reach the island of Zanzibar, and that I would then have ample opportunity for its clinical study, I devoted my sole attention to the study of therapeutics, and determined upon modes of treatment. While the epidemic was prevalent on the island of Zanzibar my time was fully occupied with the treatment of cases, the clinical study of the disease, and, chiefly, in endeavouring to satisfy myself regarding remedial agents appropriate to the various stages of the disease. At the close of the epidemic, in July, 1870, I received a note of inquiry from Mr. Netten Radcliffe, then Honorary Secretary to the Epidemiological Society, and by an early opportunity I sent my first Report to the Society. I had no expectation of hearing anything more of it, and was much surprised on observing it, some months after, described in a *Lancet* editorial as a "New Chapter in the History of Epidemic Cholera." After the close of the cholera epidemic, my attention was, for a time, entirely diverted from the subject, by the singular epidemic of Dengue, which had its origin, *de novo*, in Zanzibar, apparently from the embers of the preceding epidemic. At about this time, while engaged, in conjunction with the Right Reverend Bishop Tozer, in making certain investigations regarding the slave trade, my attention was necessarily directed to the trade routes in East Africa, and among others to that through the Masai country. At that time, 1871, the geography and ethnology of that part of the country was entirely new to me, and, indeed,

the greater part of that region appeared as a blank on the maps. The accounts of the natives, whose veracity I had no reason to doubt, excited my curiosity to learn more regarding that singular people, the Masai, and their country which was said to extend towards the west to what was evidently the Victoria Nyanza, and to contain within its limits an active volcano, an extensive lake, salt on the one side and fresh on the other, and vast nitre plains. My interest at that time was purely geographical. Meanwhile I received a second communication from Mr. Netten Radcliffe, requesting me to forward to the Epidemiological Society any further information regarding cholera epidemics in East Africa which I might be able to collect, and especially regarding the tracks of the epidemics.

It was not till then that I had any conception that researches regarding the track of a cholera epidemic in a country such as East Africa, could be possessed of any possible interest, and I resolved to use every endeavour to trace the Zanzibar epidemic of 1869-70 back to its origin, and onward to its termination, and to do so without reference to any theory regarding mode of propagation. In 1871 I forwarded my second paper to the Society, and at that time I had traced the epidemic of 1865, on the Somali coast, up the Jub to Barderah and Gananah, and from the latter place, along the Ugahden caravan route, to Berbera, in the Gulf of Aden. The epidemic of 1869-70 I had followed back through the Masai country to the Soma Gurra and the Galla Borani, and also onwards to some of its terminations. At this period my correspondence with the Epidemiological Society terminated; but my investigations regarding the epidemic were continued till 1874.

My position, as a medical practitioner in Zanzibar, was peculiarly favourable for an investigation of this kind, as

I was in the habit of meeting natives from all parts of the country between Arabia and Madagascar, as also from the interior of Africa, whose head-quarters were at Zanzibar, or who were in the habit of visiting that place for commercial purposes. Such an investigation could be successfully carried out only by keeping the object constantly in view, and by collecting fragments of information from the natives with whom I was brought into contact, and also by endeavouring to get access to strangers who happened to be in the place. The period of the north-east monsoon was the time for collecting information regarding the epidemic to the north of Zanzibar, and that of the south-west monsoon for news of the epidemic to the south, and a constant look-out had to be kept up for intelligence from Central Africa and the interior generally. An investigation of this kind necessarily extended over a few years; for where there was a missing link in the track of the epidemic it was necessary to wait patiently for another year, or until the season arrived when strangers from that part of the country visited the place: it was necessary to do so also for the purpose of collecting corroborative evidence so as not to be misled by doubtful statements.

Europeans are very apt to discredit or undervalue information from natives regarding occurrences and even localities with which they profess to be familiar; but I have invariably found their statements to be very correct. On comparing notes with the Rev. Mr. Wakefield of Mombassa I found that the general features of the Masai country, as ascertained by us from independent sources, were identical, and that even distances were remarkably accurate. The different stages of a long caravan journey can be detailed by the caravan guides with the same facility as the points of the compass by a sailor.

During my investigations I received much valuable

assistance from Mr. Henry Spalding, late of Zanzibar ; the late Mr. Richard Brenner, a member of Baron von der Decken's expedition for the exploration of the river Jub ; from the late Mr. A. H. Heale, who was recently barbarously murdered at the Somali port of Brava ; from the late Rev. Charles New of Mombassa, who recently died on his second return journey from Kilima-njaro, after having been robbed and maltreated by Mandara the savage chief of Chaga ; from Dr. Morton, R.N. ; and from the Rev. Mr. Edwards, late of the Central African Mission.

Mr. Spalding used his influence in my favour with the Banyans engaged in the Masai ivory trade, and through them I was enabled to collect much valuable information from the leaders of the Masai caravans, regarding the epidemic in the district between the coast and the territories of the Galla Borani. The Galla Borani country had been deleted from the map of Africa, and as I was apprehensive that the track of the epidemic might be lost in the unknown, I applied to Mr. Brenner, who had recently settled in Zanzibar, for information regarding that tribe. Mr. Brenner not only mapped out the boundaries of the Galla Borani country, but, in addition, laid down for me the track of the epidemic of 1864-65 along the caravan route from Berbera to Gananah and Barderah on the Jub. Mr. A. H. Heale, then resident at Brava, supplied me with the first outline of the track of the epidemic of 1869-70, between the Galla Borani country and Mecca through Abyssinia, and this information was afterwards supplemented by traders from the Somali ports. To Mr. New I was indebted for interesting and valuable information regarding the track of the epidemic in the Kilima-njaro district, and in the neighbourhood of Mombassa. Dr. Morton investigated the epidemic at Johanna, and from the notes of Mr. Edwards, who was at Nossi-bey, shortly after the occurrence of the events, I received

information regarding the epidemic there. I was also under great obligations to many natives, and more especially to Captain Mohammed bin Hamees, and Sheikh Yusuf, a Somali Arab, one of the most intelligent and best informed men in Zanzibar. Comprehending fully the nature of my investigations, they collected for me information which I could not have otherwise obtained, and by the persistent efforts of the former gentleman I was enabled to trace out the track of the epidemic from the Masai country by way of Ukerewe to Tura, one of the most important links in the course of the epidemic.

During the winter months of 1874-75, after my return to this country, I employed my time in extracting from my note-books all that related to cholera and cholera epidemics in East Africa principally with the object of comparing my clinical observations, and modes of treatment, with those of other investigators on the subject, and also with the intention of forwarding to the Epidemiological Society the information which I had been able to collect since 1871. When this was finished I resumed, after an interval of nearly four years, my correspondence with Mr. Netten Radcliffe. At this time there was one missing link in the track of the epidemic from Mecca to the Galla country, viz., the course of the epidemic through Abyssinia. The statement of the Somalis that the epidemic had passed through Abyssinia was unanimous, but I was under the impression that they probably meant the coast line to the east of Abyssinia, and I expected to find traces of epidemic cholera there in 1867. Mr. Netten Radcliffe having supplied me with the dates of the epidemic in Abyssinia, I saw, to my surprise, that the epidemic of 1865 on the Somali coast and that of 1869-70 in Zanzibar were but two branches of the great epidemic of 1865. At about this time the *Last Journals* of Dr. Livingstone were published, and from them precise

information concerning the epidemic in Manyuema-land was obtained.

The great epidemic of 1864-71, appeared before me, in its central lines of diffusion, without a single missing link, so that I could almost imagine that I had seen the march of the disease throughout Africa. I then first entertained the thought of writing the history of the epidemic; but a subject which had engrossed so much of my attention, during the previous five years, may not possess the same interest to others that it did to me.

There appears, however, to be a peculiar interest attached to the investigation of the tracks of epidemic cholera in such countries as East Africa; for in Africa the great highways of human intercourse are but few, and the manners and customs of the people are of the most primitive order. The natives do not travel far beyond the boundaries of their own territories; the great highways are traversed only by traders at definite seasons of the year, and this uniformity of life is broken only by wars, and raids of marauders in quest of slaves and cattle. The track of an epidemic of cholera can, therefore, be easily traced, and its laws of propagation more readily ascertained, than in more civilized countries where there is an intricate net-work of lines of communication.

The history of the several epidemics might have been written in the abstract form and comprised within a few pages; and it was in this form that the subject was necessarily presented to me at first from native information; but the bare outline of the tracks of the various epidemics was uninteresting and uninformative until I had studied them in the concrete form; for without doing so it was impossible to ascertain the laws regulating the propagation of the epidemics. I was led, therefore, to investigate, in connection with the tracks of the epidemics, the geography of the localities, the ethnology, commercial

connections, and the manners and customs of the tribes through which the epidemics passed before the subject was comprehended in a satisfactory manner. I have, therefore, ventured to present the result of my researches in the form of a narrative, my object having been, not to write a scientific treatise on the disease, but to note everything that I imagined had any reference to the propagation of epidemic cholera as observed by me in East Africa.

A chapter on the clinical study of the disease, and another on treatment, I have left out as inconsistent with the scope of the present investigation; but, as the subject of treatment is one of the greatest importance, I may be excused for expressing my opinion that the antiseptic treatment, by the administration of Carbolic Acid, *on the first accession of symptoms*, is worthy of the attention of those engaged in the treatment of the disease.

Before leaving England in 1865, my friend, the late Dr. McLatchie of Hurlford, gave me the benefit of his extensive experience in the treatment of cholera, while acting as House Physician in the Cholera Hospital at Glasgow during the epidemic of 1848, and having spoken highly of the action of creosote at an early stage of the disease, I was led to test the action of carbolic acid, and the results seemed highly favourable, so much so as to warrant a more extended trial.

I have to express my thanks to Mr. William Ayre, of Edzell, for much valuable assistance while this work was passing through the press.

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April, 1876.

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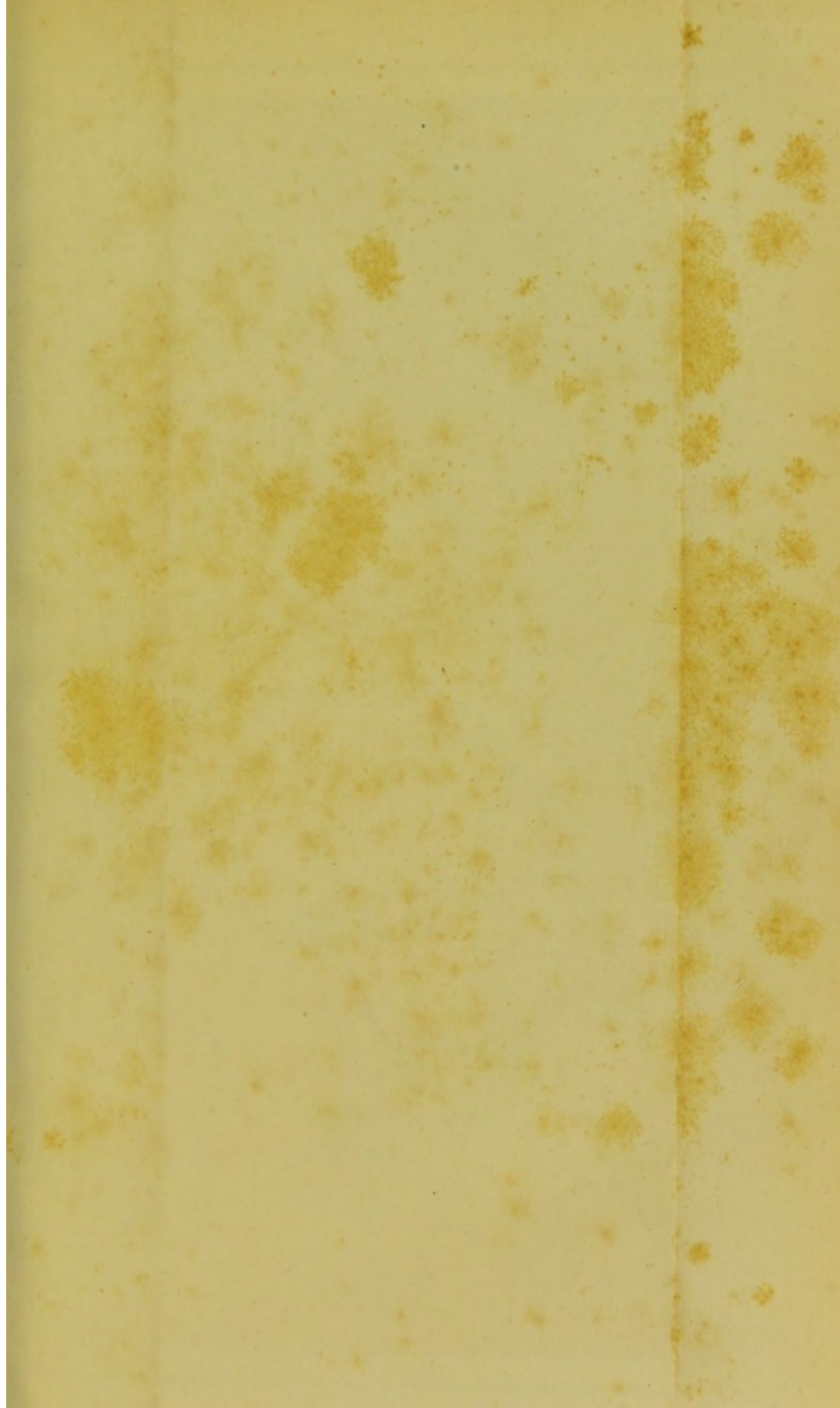
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A MAP
 showing the Geographical Diffusion
 of
EPIDEMIC CHOLERA
 IN EASTERN AFRICA
 1864-1871
 BY JAMES CHRISTIE, A.M. M.D.

Scale of English Miles
 0 100 200 250
 The track of the Epidemic is shown by red lines corresponding in numbers with the year that it prevailed.

GEOGRAPHICAL DIFFUSIONS ll
OF
EPIDEMIC CHOLERA IN EAST AFRICA.

CHAPTER I.

METEOROLOGY AND CLIMATOLOGY OF ZANZIBAR.

THE Island of Zanzibar is situated between S. lat. $5^{\circ} 42' 8''$, and S. lat. $6^{\circ} 27' 7''$, and between E. long. $39^{\circ} 14' 5''$, and $39^{\circ} 32' 5''$, the extreme length being 48.25 geographical miles, and the breadth, extending from the city across, eighteen miles. The direction of the island is N.N.W. to S.S.E. It is the largest and most important of the group of islands fringing the East African coast from Benadir to Cape Corrientes. The formation of the island is coralline, erected on a base of stratified sandstone. The most elevated parts do not attain an altitude of more than 500 feet, and the ridge of elevated land lies parallel with the longer axis of the island, running north and south. From this central ridge the land slopes or undulates towards the sea to the east and west. The madreporic structure is evidently based upon the summits of an abrupt and sharp rising submarine range, which of course must have been under the ocean level at some remote period. By the action of the gradually-subsiding waters, a coralline conglomerate has been formed. On the southern and eastern parts of the island the deposit

is more scanty, merely filling up the interstices of the coral rag, leaving exposed the bare summits, and making travelling, except by foot, exceedingly difficult. Where sufficient deposits have been left, the soil is fertile and the crops early, the porous understructure carrying off superfluous rains, but still retaining moisture and heat.

Zanzibar, like all other madrepore islands, grows towards the leeward, and on that side the most fertilizing deposits take place. Thus, the barest and most infertile parts of the island are those exposed during the greatest length of time to the influence of the long-continued south-west monsoon; and the most fertile are those sheltered from the violence of the south-west, and exposed to that of the north-east. The healthy parts of the island, and the least malarious, are quite in the opposite direction—namely, those most exposed to the south-west monsoon.

The geological formation of the island is most observable on the southern half, and the growing structure on the northern part of the island. In calm weather the shallow bed of the ocean, near the shore, looks like a garden, both in form and colour, with every variety of coralline growth and a sub-marine garden of unsurpassed beauty it certainly is. These coralline growths closely resemble in form many varieties of plants, from the lower vegetable organisms to the stately trees; and, although usually white, are variously tinted. When growing in sheltered bays their form is symmetrical; some have exactly the appearance of large mushrooms, and grow from a long stem; others are fan-shaped and spreading; others closely resemble plants and shrubs, the branches terminating in a perfectly level surface of not less than three feet in diameter. Some, in form and general appearance, are like diminutive forest trees, strong in texture, and not easily broken; while others are so fragile as to be scarcely able to bear handling, and when dead, soon crumble away under the atmospheric influence.

The microscopic architects of nature, in their present and never-ending task, going on under our eyes, show us how they have erected Zanzibar, and by the speed of the present work, afford us the means of calculating the immense cycles during which their ancestors have been at work. In a calculation of this kind a mistake of a few thousand years would be a very trivial error. The coral being constructed now is precisely the same as that found in the conglomerate of the island; the tough, tree-like structures forming the binding element, and retaining the *débris* of the lighter and more destructible forms; and, by the recedence of the ocean, leaving a solid formation ready for the reception of other deposits fitting it to become the habitat of animal and vegetable life.

With a superstructure of this kind, based upon ancient sandstone formations, it is quite evident that the immense annual rainfall cannot be drained off superficially to the sea by the swollen stream-beds; but that a very large quantity must percolate through the superficial sandy deposits, and then through the reticulated, porous, coral-line structures, collecting in spring beds in the hollows of the stratified sand rock, supplying reservoirs of the purest potable water, all ready for the use of man, merely for the digging. The entrance to these labyrinthine caverns, the source of perennial springs, I have myself seen in different parts of the island, and yet Zanzibar is perhaps the worst supplied place on the globe with pure potable water, instead of being, as it ought to be, among the very best.

The western side of the island is by far the most fertile, and is covered with a perpetual evergreen vegetation. Of this part of the coast, that portion lying between the town of Zanzibar, which is situated about the centre of the coast line and Kokotoni, is by far the most fertile and most densely populated. The fertile tract also extends along the eastern slope of the central ridge. The

windward, or southern coast, is exposed during five months of the year—April, May, June, July, and August—to the full force of the south-west monsoon, and is, comparatively, sterile and thinly populated.

Zanzibar island is covered even on the more barren side with a mass of vegetation of eternal verdure, and the land, ever productive, never assumes the sombre hues of autumn, nor the bleak desolation of winter. Having double seasons, there are the two agricultural springs and autumns, and the trees are never entirely stripped of their foliage. The island is thickly populated, and the ground is generally well cleared, being laid out in clove and cocoa-nut plantations, some of very great extent; and rice-fields take their place in the lower swampy lands, subject to the periodical inundations. Cereals are also sown in fields, and vegetables are planted frequently as intermediate crops, in the clove and cocoa-nut plantations, or in the clearances which surround the native huts. Fruit-trees also abound, suitable to both native and European taste, from the nauseous-smelling Jack fruit, sweet to natives and donkeys, to the orange and pine-apple, prized by both European and negro. At the mouths of some of the streams where the land is low and level, the tides repel and mix with the waters, forming brackish swamps, covered with mangrove bushes, the spreading roots of which intercept the subsiding mud, and gradually recover land from sea and river. These, however, are generally stated to be the miasmatic sources of agues, dysenteries, diarrhœas, deadly fevers, and other ills to which flesh is heir.

“The northern part of the Indian Ocean,” according to Mr. Keith Johnston, “is the region of the monsoons. They prevail over a tract extending from lat. 7° or 8° south of the equator, to the countries of Asia on the north; and from the Channel of Mozambique and the Red Sea on the west, to the shores of Australia and the China Sea on the east.

“The monsoons blow during six months in the year in one direction, and during the other six months in an opposite one; the change occurring about the 15th of April and the 15th of October. On the north side of the equator the north-east monsoon prevails, with little variation, from October to April; while from April to October the south-west monsoon prevails in the same regions. On the south side of the equator the north-west monsoon prevails at the same time as the north-east monsoon blows on the north, and the south-west monsoon of the north becomes the south-east monsoon of the south of the line. During the hot season, when the south-east trade wind recedes to the southward, the space between the line and 10° or 12° south, is occupied by the north-west monsoon, which then attains its southernmost limit.

“The Persian Gulf is situated beyond the limits of the monsoons, but from the position and nature of the neighbouring countries, periodical winds prevail, which blow up and down the gulf at different seasons. These produce corresponding drift currents, which run into the gulf from May to September, and out of it during the remainder of the year.

“The currents of the Red Sea appear to be entirely governed by the winds; during the presence of southerly breezes they run to the north, and with northerly winds to the southward. It is probable, also, that they increase with the strength of either, little or no current being perceptible during the prevalence of light variable airs, previous to the setting in of the south winds. In the vicinity of Jiddah harbour the current runs, in the different seasons, at a rate of from one to one and-a-half miles per hour. North of Jiddah the currents are very variable throughout the year, depending on the direction of the wind, which, when strong, causes them to run at the rate of from twenty to forty miles a day. From May to October, in the northern

part of this sea, the water is two feet lower than in the other months of the year. This is caused by the influence of north winds, which at this season prevail through the whole extent of the sea, and cause a continued current to set through the strait into the Gulf of Aden. From October to May, when the south winds prevail, in the lower part of the sea, these currents change their direction, and flow back with rapidity; the whole body of water, having no means of escape, then collects towards the northern part of this sea, which becomes greatly elevated."¹

These circumstances, the unvarying laws of these ocean highways, have hitherto regulated the seasons and times of human intercourse between Eastern Africa and Arabia, on its eastern, western, and southern boundaries.

In Zanzibar, the north-east trade wind, called Kazkazi, begins to blow about the middle of November; attains its full force about the middle of December; and usually ends about the middle of March. At the commencement the winds are slightly variable, both in direction and intensity, sometimes subsiding into short calms, and then rising into gusts or squalls, until what is called the first burst of the monsoon appears, after which the direction of the wind is steady and uninterrupted, its force varying in intensity between a stiff breeze and a gale of wind. Towards the close of the north-east monsoon the same changes occur as at the commencement, gradually verging into the variable season between the two monsoons. At about the middle of March the wind begins to prevail from the south-west, but the monsoon does not fairly set in till April.

The south-west trade wind, called Kausi, begins to blow in April, and continues till November, at which time it gradually verges into the variables and calms between the two monsoons. The north-east monsoon is much more

¹ *Physical Atlas of Natural Phenomena*, A. K. Johnston, p. 35.

regular in regard to force than the south-west, but its intensity is less.

The mean of intensity may be about the same, but the south-west wind rises to a higher culminating point, sometimes approaching the force of a hurricane.

Zanzibar is not situated within the hurricane region, and has been until recently unvisited by cyclones, which have been so destructive in other places both to the north and south.

On the 15th April, 1872, a terrific cyclone swept, with its centre, over the town and island. The storm commenced on the night of the 14th, accompanied with heavy rain, and with the wind from S.S.W. At daybreak the storm increased to a gale, the barometer having fallen two-tenths below its usual level, and during the forenoon the barometer continued to fall steadily, and the gale increased to a hurricane. At noon the barometer had fallen eight-tenths. From 1 to 2 P.M., the barometer remained stationary at nine-tenths below its usual level, and the most perfect calm prevailed. Suddenly the wind burst with increased fury from N.N.E., shifting to N. and N.W., then to W.N.W. This terrific cyclone raged with unsurpassed fury during the whole day, causing immense destruction of life and property. With the exception of one steamship, the *Abydos*, which with full pressure steamed towards her anchor, everything afloat was swept to destruction; the narrow streets became impassable torrents; houses were blown down; the native huts were swept away by wind and rain; the clove and cocoa-nut plantations were levelled with the ground; thousands of the natives were rendered houseless; and the entire island received a blow from which it will not recover for many years.

After the cyclone the island had the appearance of having been scorched with fire, or as if the burning blast of the simoom had passed over it; the leaves which were left

on the few remaining trees were brown, scorched, and withered, probably from the combined effects of the cyclone's force, and the sheets of salt spray carried from the sea over the island. The wreck of the island was so complete that reasonable fears were entertained regarding the probability of a famine combined with epidemic forms of disease and their consequent horrors. The neighbouring island of Pemba suffered but little, and the greater part of the coast was untouched. The range of the cyclone having been but of limited extent, the usual grain importations from these districts, and from Madagascar were but little interrupted.

Beyond the necessary consequences arising from great destruction of life, and much valuable property (for the cocoa-nut and clove trees afterwards planted can yield no returns for many years), no very serious results followed. For a time fever and dysentery prevailed to an alarming extent in both town and country, owing to the unfavourable circumstances in which the people necessarily lived. After the cyclone, rain in unparalleled quantity fell for weeks ; damaged roofs and walls leaked ; furniture, clothing and goods were sodden with rain and damp, and a virulent form of fever was developed which was fatal to many, the form thereof being gastric-intermittent.

In the absence of steam communication, the trade and other connections between Zanzibar and the regions to the north and south depend entirely upon the prevalence of the north-east and south-west winds, no native craft being able to beat in either direction against the monsoons. The prevalence of the winds and currents in the Persian Gulf and the Red Sea being in connection with the monsoons, all the native craft from these seas, as well as those from the southern coast of Arabia and from various ports of India, arrive at the harbour of Zanzibar during the north-east monsoon, and leave during the south-west monsoon.

Many of these native vessels having trade communications with other places besides Zanzibar, arrive with the first of the monsoon, and, after discharging, take in fresh cargo and proceed to the ports south of Zanzibar, such as Madagascar or Mozambique. At the southern ports they take in return cargo, and leave with the first of the south-west monsoon for Zanzibar, where they discharge and load for their respective ports. Other craft, having trading connections only between the harbours north of Zanzibar and Zanzibar itself, leave their respective ports as late as possible during the monsoon, and return by the first of the south-west monsoon, or as soon after as their business arrangements permit. Precisely the same arrangements take place, but conversely, between Zanzibar and the ports to the south.

At certain seasons of the year it is impossible or extremely dangerous for native craft to round Cape Guardafui, and thus trade connections by sea in the direction of the Red Sea ports are still more limited. Few, if any, except those of large size and strong build would venture to round Guardafui after June, going in a northerly direction, or after January coming in a southerly direction. The Red Sea dhows generally call at Aden or Berbera, and frequently at the Somali ports, where they trade, and fill up with cargo, such as Orchella weed and hides, for Zanzibar. Dhows from Southern Arabia and the Persian Gulf call at the northern ports, or run direct for Zanzibar, the latter frequently calling at Socotra, both in going and coming, for water. Lamu and Mombassa are frequently visited in like manner by the Cutch and Bombay dhows.

Thus Zanzibar and the neighbouring territories are for several months in the year placed in strict quarantine, as far as sea communication is concerned; and no cholera epidemic, however fierce it might be raging in Arabia or India, could reach Zanzibar by sea during the prevalence

of the south-west monsoon, and no epidemic could reach it from the south during the prevalence of the north-east monsoon. Of the four cholera epidemics on the east coast of Africa, not one has been traced direct to India. On the contrary, the universal testimony of all is to the effect that Arabia is the origin of the disease in so far as Africa is concerned. The period of invasion is thus placed within very narrow limits, as far as the sea route is concerned, but this may be indefinitely extended by steam navigation.

While all communication between Zanzibar and the northern and southern ports is closed in each direction respectively for nearly six months in the year, constant communication is kept up with the opposite mainland. Taking advantage of local variations, land and sea breezes, the dhows are enabled to run across, and to extend their trip to a limited distance, north and south. As a general rule this does not extend beyond Pangani to the north, and from that point to further north, necessary communication is kept up by the land route; thus in going during the north-east monsoon to Mombassa, it is necessary to land at Pangani or Tanga, and travel overland. Small craft occasionally go from harbour to harbour along the coast, taking advantage of occasional changes of wind, hugging the coast, punting and pulling, during calms and moderate headwinds. Local and very limited trade is thus kept up, and small numbers of slaves are very frequently, in this manner, conveyed from place to place along the coast, a mode of conveyance less fatiguing, less dangerous, and less liable to loss, by desertion and kidnapping, than by the overland journey. This mode of transit has another special advantage, as small lots of slaves can be safely conveyed along the coast, the dhows eluding the vigilance of cruisers, and, even when observed and pursued by the boats, they can run for the nearest landing-place and put their cargo in safety. By such means of communication the cholera

epidemic of 1869-70 was conveyed in the first instance to Mombassa, and as far north as Lamu; and there is every reason to believe that in the future this mode of transit will be more fully developed, seeing that slaves, according to treaty, cannot be conveyed openly at any season of the year by sea. A coasting contraband trade will be certainly set up.

The season between the two monsoons is called Tanga Mbili, "the two sails," or the season during which dhow communication may be kept up to a limited extent in either direction, north or south. This is the neutral season of calms and variables, and pre-eminently the time for speedy communication between the island of Zanzibar and the mainland opposite. At this season, occurring twice annually, that which may be designated the local trade of Zanzibar is most briskly carried on; the arrival and departure of dhows for the opposite mainland, and, to a limited extent to the north and south, being of daily occurrence.

Based upon these unvarying changes of the monsoons, all business arrangements in Zanzibar are made and business accounts are settled twice a year.

The Mausim season is identical with the Kazkazi, or the season during which the north-east trade wind blows, but the Mausim of commerce, during which the half-yearly accounts are settled, extends from March 10th till May 1st, the first period of calms and variables, or the season between the arrival and the departure of the northern dhows.

The Deman, more generally called Demani, season is, on the other hand, identical with the Kausi, or south-west monsoon, and, in like manner, the Demani of commerce embraces the period between August 20th and October 1st, the season of calms and variables, between the last arrivals and the first departures of the dhows from the south. These periods of squaring up accounts are as

unvarying as the monsoons, and they are based upon the times of the ancient dhow communication.

The general rule is that within the tropics one half of the year is characterized by extreme moisture, and the other by drought. The rainy season follows the apparent course of the sun. On the north of the equator the period of rain prevails as long as the sun has a northern declination; and on the south of the equator, the rainy season begins as soon as the sun has passed into the southern hemisphere. Generally the rainy season occurs in a given place under the tropics when the sun forms the smallest angle with its zenith.

In countries situated between 5° and 10° of N. and S. latitude, where there is a longer interval between the periods of the passage of the zenith, there are two rainy seasons and two dry seasons. The greatest of these lasts three or four months, and occurs at the time when the sun passes over the zenith in its progress to the nearest tropic. The other occurs when the sun approaches the parallel of the place, on its return from the nearest tropic, when the rains are much less copious, and last only from six weeks to two months. Towards the tropics these merge into the regular rainy seasons.

The island of Zanzibar is situated in S. latitude 6° , and has the sun in zenith twice a year, namely on March 4th and October 9th.

There are two well-marked rainy seasons, distinguished from each other as the greater and the lesser rains.

The greater rains are called the Masika Mku, and extend over part of March, April and May. In March the change of the monsoon is invariably ushered in by heavy squalls from the north-east, and with tornadoes of rain driven from the land.

From the commencement of the rainy season, about the middle of March, till the middle of April, the rains vary

greatly in different years, and are not generally steady and constant. About the middle of April the heaviest rains begin to fall steadily, the time being coincident with the full break of the south-west monsoon. This part of the rainy season is much more constant than that which precedes it, and it was at that very period that the terrific cyclone of 1872 swept over the island, it being at the commencement mistaken for the first burst of the south-west monsoon. The greater rains end at about the close of April, extending over a period coincident with the greatest strength of the monsoon ; but, like the rains at the beginning of the season, they fall intermittently till the end of May, and usher in the cold season, which is called "Kipupwe."

During the rainy season, the downfall is not continuous for lengthened periods as in Eastern India, where constant torrents may fall for weeks in succession. More frequently there are a few days of continuous heavy rain, after which a break occurs, followed by heavy downfalls at night and early morning, with frequently a clear and bright afternoon. The rains are, however, invariably tropical in their character, resembling more a solid sheet of water than the heavy pattering of rain drops. The period of downfall is uncertain, but the natives look for an indication of the time thereof in the state of the tides, and those who observe such matters connect the greatest downfall with the ebb-tides, especially of the Syzygies.

It is generally supposed that the greatest downfall is in the interior of the island. This is probably the case, although not invariably so. The rainfall gradually increases towards the northern part of the island, and is greatest along the central line. On this subject, however, no actual observations have been made by measurement.

The period of the lesser rains is called the "Vuli," the "Masika Mdogo," and the "Mvua ya Mwaka," the annual rain.

These rains begin at about the period of the sun's crossing the zenith of Zanzibar, in the southern declination; and correspond astronomically with the greater rains, which take place when the sun approaches the parallel of Zanzibar on its northern course. Commencing early in October, they continue till the close of November, and occasionally till the middle of December. During the first half of October and December these rains are fluctuating, and the rainy season proper is from the middle of October to the middle of November, after which time there is frequently little or no rain.

This season, like that of the greater rains, is introduced by sudden gusts of wind and rain, but not equal in violence to the rain tempests inaugurating the introduction of the south-west trades; neither is the rainfall so heavy nor so constant. More frequently there are heavy rains during the night and morning, and clear, cool weather in the after part of the day.

The annual rainfall varies very much, ranging from 85 inches to 167 inches. A sufficient number of annual observations have not been made to enable anything like a general average to be formed. During the first eight months of 1857, and the last four of 1858, the total rainfall was 120·21 inches, and in 1859 it was as high as 167 inches, double that of Bombay, and treble that of Calcutta. The average rainfall in England is 31·97 inches; in France 25·00; in Germany 20·00; and in Hungary 16·93. Of the 167·00 which fell in Zanzibar in 1859, 104·25 fell during the greater rains, leaving 62·75 for the lesser rains, and distribution through other parts of the year. The rainfall during the year 1859 must have been excessive, or the rain-gauge may have been tampered with. Captain Burton's measurements in 1853 are so very different as to throw some doubt on the accuracy of the former. The number of rainy days ranges from 100 to 130 per annum,

a number certainly not above the average. If the amount of rainfall depends in any degree on the number of trees on the island, then there must be a great decrease for many years to come, as the cyclone destroyed nearly all the large trees in the island. There has been no decrease as yet in the rainfall, appearances being rather in the opposite direction.

Notwithstanding the heavy annual rainfall, the effects during the rainy season, both in town and country, soon disappear.

During these seasons the filthy town is thoroughly washed, in so far as unassisted nature can do it, and were it not for these periodical cleansings it would come to be quite uninhabitable, or a very hot-bed of disease. The heavy rains fall but a short time before the narrow lanes become torrents, and the broader paths considerable streams, and during such times nothing but the direst necessity can tempt any one to move out of doors. The streets, however, soon dry, and the town shortly assumes the same appearance as before; but the rainy seasons, even in the town, are decidedly the uncomfortable seasons. In some parts of the island the effects of the rains soon disappear, owing to the lightness and porosity of the soil; but where the land is low, hollow, with a stiff clay subsoil, they are more lasting, and often lakelets and temporary swamps are formed which are not dried up for months. What are the merest rivulets in the dry season, become deep and dangerous torrents during the heavy rains, deepening their channel, or undermining their banks in places where their waters are confined, or spreading over the level plains where there may be no obstruction in their way. There are not many swampy places on the island, and where they do exist, they are generally in the neighbourhood of the sea, and connected with it by the influence of the tides. The drainage of the island is natural and easy,

the superfluous moisture being speedily carried away, and the inhabitants probably suffer less from the monsoon rains, heavy though they be, than the people of the opposite mainland from their periodic rains. The superfluous water of the latter, when unable to pass to the sea, forms extensive swamps, which never thoroughly dry up, even under the scorching summer sun. These are the mainland hot-beds of malarious diseases, much more dangerous even than the mangrove swamps which are within tidal influence.

The average amount of rain which falls under the tropics of the American and African continents varies greatly. Under the tropics of the new world the annual rainfall is estimated at 115 inches, while within the tropics of the old world it is 76 inches; the average rainfall within the tropics generally is $95\frac{1}{2}$ inches. In the temperate zone of the United States the average fall is 37 inches, and in Europe $31\frac{3}{4}$ inches. The average annual amount of rain at the equator is 95 inches, which falls in 78 or 80 days, averaging about 1·14 inches daily. At St. Petersburg the annual amount of rain is 17 inches, which falls in 169 days, averaging for each rainy day little more than 0·1 inches. When the annual amount of rain is distributed over a country in small quantities, extending over nearly the whole year, the effect of the rainfall on the climate of the country is very different from that produced by few and heavy showers. The rainfall which takes place within the tropics would deluge the countries under temperate latitudes, and produce the greatest possible changes in their climates; but in small islands, such as Zanzibar, where the drainage is easy, and the temperature high, the excessive deposit is easily got quit off, the principal inconvenience being the mechanical effects, cutting up the soil and washing away the fertilizing product from the surface thereof.

The amount of evaporation in January 1857 was 2·36

inches ; February 2·19 ; March 2·49 ; April 1·76. The least daily evaporation was in April, 0·03 inches, and the greatest in February and April, 0·10.

Colonel Sykes, in his remarks on the climatology of Zanzibar, writes thus :¹ " Another peculiar feature in the climatology of Zanzibar is that there is seldom any dew experienced ; " a statement quite the reverse of the actual facts. The entire paper of the learned colonel is a remarkable instance of how little was known of Zanzibar so late as the year 1853, as the materials from which the paper was compiled must have been of an extremely limited and inaccurate description. So far from the deposition of dew being exceedingly rare, the very opposite is the case.

The extreme heat of the day naturally causes great and rapid evaporation from the surface of the island. Sunset is quickly followed by darkness, there being no twilight, and the period of sunset varies so little throughout the year that it determines the local time, six o'clock.

By the withdrawal of the sun's rays the heated atmosphere rapidly cools down, and, being unable to retain the moisture suspended, a rapid deposition takes place in the form of heavy dews ; thus, while the grass has a dry and parched appearance from the forenoon till sunset, or six o'clock, in the space of two hours after sunset the vegetation is covered with copious dews, and although not a drop of rain has fallen, the feet and legs are thoroughly soaked in walking through the long grass. This precipitation takes place more or less during the entire night, and rapid evaporation sets in about two hours before sunrise.

In riding through the long jungle grass before day-break, a thorough soaking is inevitable, and the air feels delightfully cool.

The water contained in the young cocoa-nut is suddenly cooled down, owing to the rapid evaporation from the thick

¹ *Journal of the Royal Geographical Society*, xxiii. of 1853.

husk, and after sunrise it forms a delightful and cooling drink. The copious dews are, in fact, the great moisture fertilizers of the island, and owing to the constant evaporation of the day and precipitation of the night balancing themselves, the island is prevented from becoming an arid desert. The copious biennial rains, besides their own special action on the soil at stated intervals, supply the deficiency caused by evaporation, and keep up the equilibrium. The time from the commencement of dew deposition in the evening till it attains its maximum is dangerous to health, but not by any means to such a degree as the rapid evaporation of the early morning, which is the most dangerous period of the twenty-four hours, and the danger is greatest to those who are not moving about and who are in *déshabille*.

Retiring at night in the lightest possible costume, having the windows all open to receive the slightest breeze, with the bedstead placed in the line of the greatest current, to relieve the stifling atmosphere, bathed in perspiration, a few sleepless hours are passed. Very early in the morning a gentle refreshing breeze springs up, inducing a grateful sleep. About four o'clock in the morning the rapid evaporation takes place, suddenly lowering the temperature, and causing a chill, followed by the common fever of Zanzibar. This may be avoided by a more judicious disposal of the bedroom furniture, or by sleeping with a coverlet, or by drawing over the coverlet when about to sleep. This fever, popularly called "Zanzibar fever," is not malarious, and although it assumes the intermittent type, it is very different from the true malarious fever, which may be caused by a specific poison. The two merge into each other in symptoms, but are distinct diseases.

The frequent occurrence of these "chill fevers," although not dangerous at the time, gradually undermines the constitution and produces organic changes of the most

serious nature, necessitating permanent change of climate, or terminating in death. When the nervous centres have been weakened, or injured, by the action of the solar rays on the brain or spinal column, even although that action may not amount to a distinct *coup de soleil*, the complication is of the most dangerous nature. A person in general good health may, by judicious treatment, shake off, in a very short time, the "chill fever" of Zanzibar; and the brain and spinal cord may have been very seriously affected without much apparent disturbance of the general health; but a debilitated nervous system forms the most dangerous of all complications, and a slight attack of fever supervening is generally attended by delirium, and may terminate in speedy death.

A careful study of intertropical fevers leads to the conclusion that a specific disease varies indefinitely in its symptoms and results, according to the complications previously existing in a latent form in the constitution; and these symptoms vary so much in their nature and intensity as to give rise to the idea that diseases which are identical are totally distinct, and *vice versa*.

Many of the phenomena of cholera epidemics, both in regard to persons attacked and to the greatly varying symptoms of the disease in those attacked, may be explained by this principle.

The southern boundary of the zone of greatest heat is about 7° north of Zanzibar, and being under the tropics, is in a line parallel to the equator, crossing the continent from the Congo on the west to near Brava on the east coast. The northern boundary line passes through Arabia in about 20° N. latitude, a little to the south of Mecca, and through India a little to the south of Bombay. The average temperature of the hot zone is $79^{\circ}\cdot70$. Within this zone the line of highest average temperature passes through Aden and Eastern India close to the latitude of Madras, where the average temperature is 85° .

The tropical zone in Africa is the hottest on the earth, the mean temperature being $85^{\circ}10$.

The island of Zanzibar, although 7° south of the hot zone, is really within it as regards temperature, the mean temperature of the year being $79^{\circ}15$, in the shade, with an extreme range throughout the year of only 18° , the minimum temperature being at midnight and early morning 73° . According to the observations of Captain Burton, extending over a period of nine months, and doubtless rigidly accurate, the following results are deduced :—¹

“The medium temperature of January is $83^{\circ}30$; of February, the hottest month, $85^{\circ}86$ (according to Colonel Sykes, $83^{\circ}40$); and of March, $82^{\circ}50$. This high and little varying mean temperature then gradually declines till July, the coolest month ($77^{\circ}10$). The mean average of the year is $79^{\circ}15-90$. In September and October the climate has been compared with that of Southern Europe. On the other hand, the atmosphere supports an amount of moisture unknown to the dampest parts of India.”

In a map showing the progress of pandemic waves, by Inspector-General Lawson,² Zanzibar is placed at near latitude 30° S., and the districts in East Africa invaded by the cholera epidemics are situated between the isoclinal equator and 53° south latitude.

The chart and descriptive papers indicating the progress of the pandemic waves, year by year, throughout their course, by lines of equal magnetic dip or isoclinals, are of the greatest interest, and by more extended elaboration cannot but be of great importance to medical science.

The conception of pandemic waves of disease affecting at definite intervals, and within definite limits, the population of the entire world, is certainly one of the grandest and

¹ Burton, *Zanzibar*, vol. i., p. 153.

² *Observations of the Influence of Pandemic Waves in the Production of Fevers and Cholera*. By Inspector-General Lawson. “*Transac. Epidem. Society*,” London, 1869, pp. 216—231.

most interesting, that has ever been enunciated; and this conception, coinciding with the isoclinal magnetic lines, delineated by General Sabine, is well calculated to stimulate investigation, whereby the theory may be put to the rigid test of ascertained facts. No theory ever enunciated is so worthy of being thoroughly and most impartially investigated by the widest possible generalization within the specified limits of time and space; for although the theory may be inadequate in some respects to explain the origin and course of every outbreak of epidemic disease, still some great law may probably be found at the very basis of the theory indicating both the origin and progress of pandemic waves of ill health, or of susceptibility to disease, which would tend to explain many interesting but obscure phenomena.

The atmospheric pressure at the equator is indicated by the barometer at $29^{\circ}943$, and reaches its maximum at lat. 30° , the amount of difference between that parallel and the equator being $0.216'$. Between the equator and the first parallel of latitude the extreme difference has been observed as $0''34$.

At Zanzibar, situated so near the equator, the barometric range is extremely limited, and seldom rises above or falls below thirty inches at sea level. In May, with 24.03 inches of rainfall, the barometric extremes were from 29.90 to 30.200 , and in June, with no rainfall, from 30.088 to 30.272 . During the months in which electric discharges are most frequent the barometric indications do not vary much. Thus, in the two months of February and March, the extreme depression is 29.850 and 29.892 , and in November 29.886 .

It has been most erroneously stated that thunder is very seldom heard in Zanzibar. The loudest thunder is common in March and April, and also in October; the flash and the peal being almost simultaneous, and the

western horizon is lighted up by continuous streams of dazzling sheet-lightning. In 1873 these electric storms were more frequent than usual, and several accidents occurred in the harbour. Water-spouts are common during the two former months, March and April. On January 4th, 1874, there was a violent hailstorm at Kanyenye in Ugogo, in nearly the same latitude as Zanzibar, and about 300 miles from the coast, accompanied by a gale from the north-east. There was also heavy rain, and some of the hailstones were described as being as large as pigeons' eggs.

There are only two cases of earthquake on record. "In the early rains of 1846, about four o'clock p.m., a shock, accompanied by a loud rumbling sound, ran along the city sea front, splitting the Sayyid's palace, the adjacent mosque, and the side walls of the British Consulate, in a direction perpendicular to the town. It was probably the result of igneous disturbance below the Coralline, and it tends to prove that the island was originally an atoll; some, however, have explained it by a land-slip." (Burton, in *loc. cit.*)

This earthquake was probably connected with some eruption of the active volcano first described by Dr. Krapf, and situated at no great distance from the Zanzibar coast at Njemsi. That there is a semi-active or dormant volcano situated there, admits of no doubt. The information given by the learned missionary of Mombassa, on this and other subjects, such as the lofty Kilimanjaro mountain being capped with eternal snow, was long doubted by geographers; but on the latter subject all doubt was for ever removed by the Rev. Charles New, of the same mission, ascending to the line of perpetual snow two years ago. To the same gentleman, to the Rev. T. Wakefield, of Mombassa, and also to myself, this semi-active volcano has been described by men who could not account for the phenomena, and who had never seen nor heard of a volcano before. The

mountain was described to me as being covered with a cloud which was dark or black during the day, and red during the night.

The earthquake noted by Captain Burton is not the only one that has been felt in the island. Mr. Spalding writes to me that a sharp shock was felt in the town of Zanzibar in the month of October, 1855, between eight and half-past eight o'clock in the evening. He, along with two other Europeans, was at the time in an Arab house, situated close to the beach. It was full tide, and the house shook so much that they feared the roof would fall in, and they ran to the windows to make their escape. The shock lasted about two minutes, and many houses in the town were badly cracked. There was an American ship in the harbour at the time, and the mate reported that the ship "shook like a leaf" for about two minutes, and that, although there was not a ripple on the sea before, a big wave rolled upon the beach. Shortly after a vessel came into the harbour, and reported that in passing Comoro, the volcano there was in a state of activity, the eruption having taken place on the day, or the day after the shock had been felt at Zanzibar.

In Zanzibar, and along the coast generally, there is a healthy and an unhealthy season, which has a distinct connection with the meteorology of the region; and this is in strict accordance with the tabulated results of nine years' experience. It may not hold good when tested by the experience of Europeans; but the healthy season of the year, as regards the natives of Africa, the Arabs, and the natives of India,—the pre-eminently healthy season,—corresponds with the north-east monsoon. It has invariably been the case that the least amount of sickness has been during the prevalence of the northerly winds.

No epidemic disease, either in its origin or progress, can be satisfactorily studied without special reference to the

climatology of the country or districts invaded ; and when a special epidemic is under consideration, it is equally necessary to investigate the meteorology of the epidemic months.

Having noticed the meteorology of Zanzibar and the east coast of Africa generally throughout the entire year, we may now reconsider the meteorology of the cholera months, to ascertain what connection, if any, exists between the meteorological phenomena and the advent and development of cholera epidemics.

It is of special importance to do so, for every cholera epidemic that has visited the island of Zanzibar has appeared at a definite season of the year. There are three epidemics on record : the first in 1836-37 ; the second in 1858-59 ; and the third in 1869-70. The epidemic of 1865 did not extend so far south as the island. In every instance the epidemics appeared and spread during the early months of the north-east monsoon—and the months of November, December, January, February, and March, are the cholera months of Zanzibar. The cholera epoch, therefore, has always been the period between the sun's meridional passage to the south, and its recrossing the same line in its return to the north. This, therefore, embraces an entire season of the year, the shorter season of the double seasons of Zanzibar. The best marked and most obvious difference between the seasons consists in the direction of the winds or the prevalence of the monsoons.

The month of November may be described as a month of variable winds, the prevalent direction being still southerly, with an easterly direction in the morning and forenoon, and a westerly direction in the afternoon and evening. The wind gradually veers towards the north ; and in the month of December the north-east monsoon is established in full force, and continues in this direction throughout the whole of January and February and about

the half of March. This is followed by a short period of variables till the setting in of the south-west monsoon in April.

In different years there are variations in regard to the periods of calms and variables, and also in the strength of the monsoon ; but there is no difference year after year in regard to the general law, and the monsoons set in with the same uniformity that they have done for thousands of years. On a definite day of the year the natives look towards the north for the appearance of the first sail on the horizon, indicating the approach of the first Bombay dhow, with almost the same certainty as when they watch for the first slender crescent of the new moon. During this monsoon the air currents from the Red Sea and the Persian Gulf, Arabia and India, are all directed towards the east coast of Africa ; and if it is possible for disease to be carried by monsoon influence, or by prevalent winds, from one country to another, even over large interspaces of ocean, such as exist between these countries, then the east coast of Africa and Zanzibar island are peculiarly liable to be affected with disease-charged air currents from India and the countries contiguous to the Persian Gulf.

The period of calms and variables is also the period of the rainy season. The lesser rainy season usually ends about the middle of November, and from that time till the middle of March there is usually fair weather, with only occasional showers. There is much greater variation in the rainfall than there is in regard to the monsoons, and while the rainy seasons are constant in their periods of occurrence, they are variable in their results. The rainy season, coincident with the setting in of the north-east monsoon, is invariably the lesser rainy season. According to the measurement of Captain Burton, the rain deposit of November was 11·80 inches ; of December, 7·90 inches ; of January, 12·14 ; of February, 3·44 ; and of March, 5·34

inches. The evaporation in January was 2·36 ; in February, 2·19 ; and in March, 2·49 ; the greatest rainfall being in May, 24·03 inches.

While the rainfall is least during the months mentioned, the mean temperature is highest, gradually rising in range from November. In the month of November the mean temperature was $83^{\circ}116$; in December, $84^{\circ}434$; in January, $85^{\circ}588$; in February, $85^{\circ}856$; and in March, $84^{\circ}096$; the mean temperature after that time gradually falling, till it reached $77^{\circ}233$ in the month of July, which is always the coolest month in the year. The thermometric range is thus very limited in the island of Zanzibar throughout the entire year ; and it is upon this constancy of temperature that the debilitating effect of the climate depends. During the entire year there is a constant sweltering heat, varied only in a slight degree during the prevalence of the monsoons, and there is nothing, as indicated by our sensations of temperature, corresponding to a European summer and winter. Astronomically, there are two summers and two winters during the twelve months ; but according to the sensations of temperature, the summer season corresponds with the time of the prevalence of the north-east monsoon, and the winter season with that of the south-west monsoon ; but the temperature is always such as to preclude active exercise on the part of Europeans without great discomfort.

Whatever the explanation may be, it is undoubtedly the fact that the months comprising the period of the north-east monsoon are pre-eminently the healthy months of the year ; and that every cholera epidemic that has visited the island has made its appearance during these months, and these only.

No epidemic of cholera has ever originated in Zanzibar, and there is thus a strong presumption in favour of the opinion that the progress of epidemic cholera is intimately

connected with monsoon influence, accidentally or otherwise.

The sanitary condition of the town and island of Zanzibar, and the manners and customs of the population, need not be referred to at present, as they throw but little light, and that of a negative nature only, on the origin of an epidemic of cholera, and merely illustrate its local spread. Such subjects shall be referred to when treating of the extension of the disease in that place.

The unanimous declaration is—that no epidemic of cholera has ever originated in East Africa. Every epidemic which has occurred there has been ascribed to Arabia, to the Gulf of Aden, or the Red Sea ports.

In tracing out the epidemics, there is nothing more apparent than the connection of outbreaks in Africa with outbreaks in Arabia, more especially at Mecca; and as Mecca is certainly a great centre of dissemination, it may be made the appropriate starting-point for the investigation of epidemic cholera in East Africa.

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CHAPTER II.

THE MOSLEM PILGRIMAGE TO MECCA CONSIDERED IN RELATION TO DIFFUSIONS OF EPIDEMIC CHOLERA.

THE Kaabah, within the Bait Ullah at Mecca, is the central converging point of the Moslem world ; and to and from it there is ever on the road a continuous stream of pilgrims from the remotest parts of the globe.

In June, 1874, I saw a large party starting from the Cape of Good Hope, to be present at the Kourban Bairam of January, 1875, seven months afterwards ; but this was a short and pleasant journey on board ship, as compared with the dreadful land journey on foot from the African shores of the North Atlantic and the Mediterranean Sea. Years must elapse before many of the pilgrims can accomplish a journey on foot and without means, in some instances of over eight thousand miles ; for the Takruri pilgrims come from even the western coast of Africa and from Timbuctoo, and they cross and recross the African continent on foot. The Maghrabi also travel along the country to the north of the great Sahara from Morocco, Algeria, and Tripoli ; and the poorer pilgrims from these distant countries can never have any idea when they start of the time at which they may arrive at Mecca, and finally return to their homes.¹ “ From the western boundary of China on the east, to the limits of

¹ Mr. Netten Radcliffe. *Diffusion of Cholera in Europe. Eighth Report of the Medical Officer of the Privy Council*, 1865, p. 375.

Bosnia, and the African shore of the North Atlantic on the west, and from the southern frontier of Siberia, the northern shores of the Euxine and Sea of Azof, and the left bank of the Danube on the north, to Java and the remote Mohammedan kingdoms of Eastern and Central Africa on the south, the faithful bend their course to El Hejaz, the land of pilgrimage; and so vast is the area over which this movement extends, that before the succeeding ebb has entirely ceased, the flow of the next year has commenced.' The stream of pilgrims to and from Mecca is perennial, and has been so for many centuries.

Those who have visited Mecca during the festival vary considerably in their estimate of the numbers of pilgrims present at Mount Arafat on the 9th of Zu'l Hijjah. Seventy to a hundred thousand would seem to be a fair average estimate. Very many circumstances might conspire to make the numbers vary at different times; and even for a number of years there might be a considerable falling off owing to purely local circumstances. Internal or frontier wars in the various countries from which the pilgrims come, or on the line of the caravan route, have often hindered large detachments of pilgrims, or lessened their numbers by forcing them to take long and circuitous routes. For many years the route to Muscat was closed, and so also was the ancient caravan route through Jebel Shomar to the various provinces of Persia. Up till comparatively recent years the Joasmee pirates, in the neighbourhood of Soor, plundered the pilgrim and trading dhows navigating the Persian Gulf; and even the Red Sea was not safe. The state of the monsoons has also at various seasons an influence on the the numbers of pilgrims present at the Kourban Bairam. The Mohammedan year being shorter than the Christian year by rather more than eleven days, the annual festival gradually shifts from season to season, through spring, summer, autumn, and winter; and

takes place now during the prevalence of the north-east monsoon, and again during that of the south-west. Changes of this kind would not be of much consequence were the question of the pilgrimage merely a matter of time, for time lost in going could be made up in returning, and *vice versa*.

But the period of arrival at Mecca for those who may wish to take part in the pilgrimage, and obtain the designation of Haji, is definite; for if the pilgrim is not within the boundary of Mount Arafat on the 9th of Zu'l Hijjah, he must either remain for another year, or make the pilgrimage at some other time.

Jidda, the harbour of Mecca, being about the centre of the Red Sea, is favourable at one season of the year for navigation from the north, and at the other season for navigation from the south. The navigation of the Red Sea, which is always difficult and intricate, is doubly so with native craft during the prevalence of a head wind and a counter current, so that pilgrims are averse to risk the passage in the Red Sea to Jidda during the prevalence of head winds. Those coming from Suez, therefore, prefer the land route by the head of the Gulf of Akabah, and those from the south by Yemen and Aseer when opposed by wind and current. When the Kourban Bairam occurs during the prevalence of northerly winds in the southern portion of the Red Sea, great numbers of pilgrims will necessarily land at the various ports south of Jidda, and make their way direct overland to Mecca; and, on the other hand, if southerly winds and currents prevail to the north of Jidda, then the pilgrims from the north, instead of coming by native craft from Suez, take the overland route by the Gulf of Akabah, or pass up the Nile as far as Kench, then travel to Cosseir, and take boat to Yambu, after which they journey overland to Mecca by the coast road, or by way of Medina.

The recent establishment of regular steam communica-

tion between Jidda, Hodeida, Mocha, Aden, Makulla, Muscat, the Persian Gulf, and the various ports of India, renders dependence on the monsoons less necessary, and must eventually seriously interfere with the old pilgrim routes; but even now the great mass of eastern travellers prefer the uncertainty, discomfort, and loss of time from a long sea passage in native craft, to the payment of a few pounds for a rapid, safe, and comfortable passage in a well-appointed steam-ship. I have known parties who, instead of taking passage by steamer from Aden to Zanzibar, by which they would have reached their homes in ten days, have preferred to go by dhow to Makulla and remain there for four months, till the change of the monsoon, that they might save a few pounds in passage-money. Even at the present day wealthy natives and their families, making the pilgrimage to Kerbela, prefer to herd together like so many cattle, in native craft, rather than pay a few additional rupees for a passage in a comfortable, fast-sailing, or steaming-ship. I have seen native craft to and from India with a crowd of passengers as closely packed together as slaves usually are in slave dhows, and this not from necessity of circumstances, but from inclination and the agony of parting with money.

The agricultural season of the year at which the Kourban Bairam takes place, must also have a very considerable influence on the numbers attending the festival, and also on the health of those who make their appearance there. It was a wise provision that two months were allowed to elapse between the close of Ramazan, the month of fasting, and Zu'l Hijjah, the pilgrim month proper; and even the interval of two months is barely sufficient to admit of crossing the deserts which the pilgrims must pass before reaching their destination; and the horrors of the journey are increased during certain years by the nature of the seasons. When we take all these circumstances into account, the

wonder is that any of the wretched foot passengers can survive such a severe trial of strength.

From January till April is the spring season in Western Arabia ; and from April till October is the combined summer and autumn ; and from October till January is the winter or rainy season. The spring and early summer months are the best for travelling, as the sun's rays are not so intense, and water can be had. These months, however, in the order stated, do not designate the seasons in Arabia as a whole, so that the spring months in one district do not correspond with those in another. Burton, in describing Medina says:—"The rains begin in October, and last with considerable intervals during the winter ; the clouds gathered by the hill tops and trees near the town discharge themselves with violence, and at the equinoxes thunderstorms are common. At such times the open space between the town and suburbs is a sheet of water, and the land about the south and south-eastern faubourg a lake. . . . In winter it usually rains at night ; in spring, during the morning ; and in summer, about the evening time. This is the case throughout El Hejaz. . . . The hot weather at El Medina appeared to me to be as extreme as the winter cold is described to be ; but the air was dry, and the open plain prevented the faint and stagnant sultriness which distinguishes Mecca. Moreover, though the afternoons were close, the nights and the mornings were cool and dewy."¹

In Mecca the rains generally come down with great violence, and frequently both city and mosque have been in danger of being swept away by the raging torrents. In A.H., 1030, a violent storm burst over Mecca, and the torrents nearly destroyed the Haram. When the Kourban Bairam, therefore, takes place during the rainy season, the pilgrims, clothed in the Ihram, performing the rites of the

¹ *Personal Narrative of a Pilgrimage to El Medina and Meccah*, vol. ii. p. 173.

pilgrimage, and encamped in the plain of Muna, must be exposed to the most severe trials, and epidemic disease breaking out amongst them must be attended with dreadful consequences.

The annual gathering at Mecca is certainly the most wonderful and interesting that takes place in the world. Gathering together at a very limited and definite time, the people gravitate from every point of the compass towards the common centre, the Kaabah, to worship there. Pilgrims come from the Cape of Good Hope and Mauritius, by way of India, in square-rigged vessels, and from Madagascar and the Islands of the Mozambique Channel, by way of Makulla or Aden, in native craft. Zanzibar, and its maritime dependencies, from Cape Delgado to Guardasfui, sends its contingent, during the south-west monsoon, by Makulla or Aden, and in some cases to Hodeida or Jidda direct. The Mohammedans from Somali-land, if the season suits, pass along the great Ughaden caravan route to Berbera, and from thence ship to some port in the Red Sea; and the Moslems, from Barderah and Gananah in the upper Jub, strike north through the Moslem Galla country, and traversing the east of Abyssinia, find their way to the port of Massowah, and thence ship to Jidda. The Takruri, from the provinces of the Soudan, from Darfour and Kordofan, find their way through northern Abyssinia, to Massowah and Souakim, with the Moslems of Nubia. From the southern shores of the Mediterranean, North Africa sends its contingent to Egypt by the sea, but the pilgrims from the interior of Morocco, Algeria, and Tripoli, tramp along on foot to Egypt, to join the great Egyptian caravan, or make their way across Egypt to Cosseir, on the eastern shore of the Red Sea, and thence they find their way by boat to Yambu, from whence some travel to Medina, and await the arrival, on their way, of the great caravans from Egypt, Damascus, and Persia.

The pilgrims from Morocco, Algiers, and Tripoli; from Turkey in Europe, and the various ports of Asia Minor and Syria, proceed by the sea-route to Alexandria, and muster there. The pilgrims, on arriving at Alexandria, are divided into bodies, and are distributed by means of Tezkirehs, or passes, to the three great roads—viz., Suez, Cosseir, and the Haj route, by land round the Gulf of Akabah. This route is preferred by the great mass of the poorer pilgrims, from Bokhara in Central Asia, and even from Persia, who proceed first to Constantinople, and from thence to Alexandria. This route, although more tedious, is much less expensive and dangerous than the caravan line through the desert from Damascus and Bagdad.

When the distribution of the pilgrims is made at Alexandria, no change is allowed, even to suit personal convenience. Provision is made by the Egyptian Government for the poorer class of pilgrims, who are sent up the Nile by the grain boats as far as Keneh, and from thence they travel to Cosseir, a distance of three or four days' journey by camel.

Captain Burton travelled, in the guise of a Moslem pilgrim, from Alexandria to Cairo; from thence to Suez, through the desert; from Suez to Yambu in a sambuk; from Yambu to Medina, and from thence to Mecca. Captain Burton gives a most interesting account of his journey in company with the pilgrims, and describes most minutely the different classes of pilgrims, and the sufferings and hardships to which they are exposed during the journey.

On his way through the desert to Suez, he made his first acquaintanceship with the pilgrims *en route*. He says:—“We lay down upon the sand to rest among a party of Maghrabi pilgrims travelling to Suez. These wretches, who were about a dozen in number, appeared to be of the lowest class. Their garments consisted of a burnoos, and a pair

¹ *Personal Narrative of a Pilgrimage to El-Medina and Meccah.* By Captain R. F. Burton, L. 1855-56, vol. 1, p. 228, *et seq.*

of sandals ; their sole weapon a long knife, and their only stock a bag of dry provisions. Each had his large wooden bowl, but none carried water with him. It was impossible to help pitying their state ; nor could I eat, seeing them hungry, thirsty, and way-worn." During the summer season the desert between Cairo and Suez is described as a vast furnace. On the way through the desert they passed numerous parties of Turks, Arabs, Afghans, and a few Indians, all on their way to Mecca. "On a subsequent occasion," Captain Burton says, "I met a party of Punjabis, who had walked from Mecca to Cairo in search of 'Abu Tabaliha' (General Avatable) whom report had led to the banks of the Nile. Some were young, others had white beards, and all were weary and way-worn ; but the saddest sight was an old woman so decrepit that she could scarcely walk. The poor fellows were travelling on foot, carrying their wallets, and, with a few pence in their pocket, utterly ignorant of route and road, and actually determined, in this plight, to make Lahore by way of Bagdad, Bushire, and Kurrachee ; such—so incredible—is Indian imprudence." After an eighty-four miles' rapid ride through the desert, on camel-back, he reached Suez, where he took passage in a sambuk, called *The Golden Wire*, of about fifty tons, and undecked except on the poop. "The first look at the interior of our vessel showed a hopeless sight, for the greedy owner had promised to take fifty passengers in the hold, but had stretched the number to ninety-seven. Piles of boxes and luggage, in every shape and form, filled the ship from stem to stern, and a torrent of Hajis was pouring over the sides like ants into an Indian sugar-basin. The poop, too, where we had taken our places, was covered with goods, and a number of pilgrims had established themselves there by might, not by right. We now settled down as comfortably as we could, three Syrians, a married Turk, with his wife and family, the *rais*, or captain of the vessel,

with a portion of his crew, and our seven selves, composing a total of eighteen human beings, upon a space certainly not exceeding ten feet by eight. The cabin, a miserable box about the size of the poop, and three feet high, was stuffed, like the hold of a slave ship, with fifteen wretches, children and women; and the other ninety-seven were disposed upon the luggage, or squatted on the bulwarks. Having had some experience in such matters, and being favoured by fortune, I found a spare bed-frame, slung to the ship's side, and giving a dollar to its owner, I instantly appropriated it, preferring any hardship outside to the condition of a packed herring inside the place of torment." The sambuk was crowded with Maghrabis, from the deserts about Tripoli and Tunis, who had travelled to Suez on foot. "Most of them were sturdy young fellows, round-headed, broad-shouldered, tall, and large-limbed, with frowning eyes, and voices in a perpetual roar. A few old men were there, with countenances expressive of intense ferocity; women, as savage and full of fight as the men; and handsome boys, with shrill voices, and hands always upon their daggers. The women were mere bundles of dirty white rags. The males were clad in burnouses, brown, or striped woollen cloaks with hoods; they had neither turban nor tarboosh, trusting to their thick, curly hair, or to the prodigious hardness of their scalps, as a defence against the sun; and there was not a slipper nor a shoe amongst the party. Of course all were armed; but, fortunately for us, none of them had anything more formidable than a cut and thrust dagger, about ten inches long. These Maghrabi travel in hordes under a leader, who obtains the temporary title of 'maula,' the master. He has generally performed a pilgrimage or two, and has collected a stock of superficial information which secures for him the respect of his followers, and the profound contempt of the heaven-made ciceroni of Mecca and El-Medina. No people

endure greater hardships, when upon the pilgrimage, than these Africans, who trust almost entirely to alms, and to other such dispensations of Providence. It is not, therefore, to be wondered at that they rob whenever an opportunity presents itself, and as a plunderer seldom allows himself to be baulked by sufficient evidence, they are perhaps deservedly accused of having committed some revolting murders. . . . A few Turks, ragged old men, from Anatolia and Carmania, were mixed up with the Maghrabi, and a quarrel took place, followed by a fight, resembling mildly the more savage encounters between Orange-men and Ribbon-men, in the midst of our boasted civilization." "In a few minutes nothing was to be seen but a confused mass of humanity, each item indiscriminately punching and pulling, scratching and biting, butting and trampling, whatever was obnoxious to such operations, with cries of rage, and all the accompaniments of a popular fray." A Syrian, a poop passenger, jumped in amongst the Maghrabis to the assistance of his countrymen, but he was shortly after fished out, minus half his beard, with his forehead cut open, and the marks of a fine set of sharp teeth on his thigh. The Maghrabis wished to put some of their own class on the poop, and this being resisted, a general fight took place between the poop passengers, armed with "goodly ashen staves, six feet long, thick as a man's wrist, well greased and tried in many a rough bout;" and the Maghrabis, with their palm sticks and short daggers. The tide of battle was turned by Haji Abdullah (Captain Burton), who was defending the poop, shoving a large earthenware jar of drinking water, weighing about a hundred pounds, from the edge of the poop, among the combatants beneath, after which peace was concluded, and the maimed retired to dress their wounds.

The Golden Wire with Captain Burton, and ninety-six stand-up passengers, sailed on the 6th of July for Yambu. It was during the very height of summer; the

heat was intense, and the sun-beams were like fire. The early mornings were cool ; but when the sun was fairly above the horizon, the heat became unendurable, and even the morning beams blinded, blistered, and maddened, causing a feeling of sickness. At noon, "the wind reverberated by the glowing hills is like the blast of a lime-kiln. All colour melts away with the canescence from above. The sky is a dead milk-white, and the mirror-like sea so reflects the tint that you can scarcely distinguish the line of the horizon. In the afternoon the wind sleeps on the reeking shore ; there is a deep stillness ; the only sound heard is the melancholy flapping of the sail. Men are not so much sleeping as half senseless ; they feel as if a few more degrees of heat would be death."

Six days elapsed before they had crossed the mouth of the Gulf of Akabah, and eventually they anchored at night at Marsa Damghah, where they came upon three boat-loads of Syrian pilgrims bound also for Mecca. At noon of the twelfth day after leaving Suez they reached their destination, the harbour of Yambu. They had no more trouble with the Maghrabi during the passage. "They" (the Maghrabi) "performed their devotions in lines ranged behind us, as a token of respect, and when worship was over we were questioned about the holy city till we grew tired of answering. Again our heads and shoulders, our hands and knees were kissed, but this time in devotion, not in penitence."

Yambu is called the gate of the holy city of Medina, owing to its being the principal sea-port of that part of the coast, to which provisions and other articles of merchandise are brought from Suez and Cosseir. All the pilgrims from North Africa, and from Egypt, converge at Yambu, and from thence travel in company direct to Mecca, by the coast caravan line, or by way of Medina. The great Cairo caravan headed by its Mahmal, the emblem of royalty, leaves Cairo, and arrives at Mecca with the utmost pre-

cision, seldom varying in time more than a day. The caravan is large, well equipped, and well armed, and by it all the grandees travel. The journey from Cairo to Mecca is divided into four stages, each stage being about ten days' march. The first is Akabah, at the head of the gulf of that name; the second is Manhal Salmah—Salmah's place for watering camels; the third being Yambu, and the fourth Mecca. During the march of the caravan, there is a continual accession to the numbers, but by far the greatest is at Yambu. The poorer pilgrims travel with the large caravans, not so much for protection, as they are not worth robbing, as for the means of existence, provision being specially made by the rich for supplying the poor and destitute on the way.

Joseph Pitts in 1680, in making the pilgrimage, landed at Jidda, and from Jidda went to Mecca; and from thence he returned by the Egyptian caravan to Cairo. Pitts gives a very circumstantial account of the journey back from Mecca, and as this embraces the principal part of the African caravan route, an epitome of the account of Pitts may be given.

The pilgrims, by land, stay only sixteen or seventeen days at Mecca, and frequently a much shorter time. Each caravan has a large number of spare camels, unloaded, to replace deaths by the way. On the first day of march little or no order is observed, and everywhere there is bustle and confusion. On the second day the caravan is mustered and got into the due order of march. The camels march four abreast, and are all tied together in teams. These are formed into companies, each of which may consist of a thousand camels; and each company is headed by some grandee or person of importance, carried in a litter by two camels, one in front and the other behind. These litters are sumptuously fitted up and embellished, so as to render travelling as easy as possible.

At the head also of each company there is a sumpter camel for carrying the treasure, to which is attached two bells, one on each side. Many other camels also have bells. The caravan travels by night, and as it is necessary for each individual to be able to distinguish his company, each company is distinguished by signal lights, which answer the same purpose as colours do to soldiers. These lights are like small stoves, and are of different shapes so as to distinguish the various companies, and each has at least one, and most of them have many. They are placed on the top of long poles, and are planted when encamping at night, the fire being kept up by means of sticks. The foot passengers and poorer pilgrims work their passage through the desert, or subsist on the charity of the rich, assisting at the loading and unloading of the camels, and at the general work of the camp. In the morning the tents are pitched, and the camels are unloaded, watered and fed, all giving help at the work, and the pilgrims take food and rest for some hours. They are again loaded and the journey is resumed at about five o'clock. The caravan halts three times during the twenty-four hours, for food and rest. At the sound of the trumpet the tents are taken down; the utensils packed, and the camels are loaded, and this work takes about two hours to accomplish. At the times of prayer, called *Acsham-nomas*, and *Geganomas*, they halt and pray, and then resume the journey till morning. If water is scarce the sand ablution before prayer is practised, as it is lawful to do so when water is needed to sustain life. As the labour of dismounting and mounting again is very great, the old and feeble may defer these two night prayers till the following day. A sufficient quantity of food for the journey to and from Mecca is always taken by the caravan from Egypt. The *Hajis* provide their food, water and bedding, and they always arrange their mess in threes and fours, and generally add a

pauper or two to the number. Pitts states that there was in the caravan with which he travelled an Irish renegade. It is rather harsh to apply the term renegade to him, for he had been taken from Ireland when very young. Probably he had been kidnapped and sold as a slave, in the same manner as the traffic in Scotch slaves was carried on by the pious Aberdonians, in the north of Scotland at the same time and long after. He had forgotten both his language and religion, and had worked as a slave for thirty years in Spain, and in the French galleys. Having been redeemed he came to Algiers, where he was highly renowned for his piety, and there Pitts made his acquaintance. He says, "I remember when we arrived at Mecca he passionately told me that God had delivered him out of hell upon earth (meaning his former slavery in France and Spain), and had brought him into a heaven upon earth, namely Mecca."

The pilgrims carry their water in goat-skins, as there is frequently none in the line of march for three or four days. To the great hardships of travel there is added much personal danger from the Bedouins of the deserts. Not unfrequently a caravan is attacked and plundered by these roaming desert clans, both in the plains and narrow defiles through which they pass. Small plundering parties invariably hover about on the line of march to pick up stragglers, and steal property. During the night, when the caravan is on the march, the nimble Bedouins pass stealthily within the line of camels, and quietly detach a camel from the line, fastening the one behind to the one before it, so as to preserve the line intact, for it is in this order only that the camels travel. When this is done the Bedouin seizes the camel by the tail, and hangs on by it. The animal then starts off at full gallop, and when at a convenient distance the camel is stopped, and the sleeping Haji awakened: he is then either killed, or stripped naked

and left to find his way to the caravan, this being his only chance. It is customary also among the Somalis to strip travellers naked and leave them to find their way in the desert, and in such cases murder is mercy. The return route of Pitts was by way of Medina, as it is customary for pilgrims from Turkey, Tartary, Egypt and Africa to complete the pilgrimage by visiting Medina where Mohammed was buried. The journey from Mecca to Medina occupied ten days, and they stayed in Medina two or three days. On the third day they left Medina, travelling towards Cairo, and on the tenth day of the march they were met by many Arabs, who brought them fruit for sale. When they were still fifteen days from Cairo, they were met by large numbers of people from Cairo, who came on their camels, some to meet their friends, but the greater number to sell provisions and delicacies. When they were ten days from Cairo, they reached the heights at the top of the Gulf of Akabah, where they had to ascend a steep, stony and extremely difficult rising ground. The ground was so difficult and trying to the camels that all who were able had to dismount and walk. They passed Mount Sinai by night, and when they were still seven days from Cairo they again met large numbers of people, some coming to salute their friends, and others to sell provisions. The caravan and strangers met at night, and there was a scene of great confusion, and noise, and shouting of names for mutual recognition. On the third day before reaching Cairo they were again met by large numbers on camels bringing provisions and water from the Nile; and on the day and night before they reached Cairo, thousands of the inhabitants of that place came out to meet them with extraordinary rejoicing. Pitts says it is thirty-seven days' journey from Mecca to Cairo, and with three days' stoppage at Medina makes a total of forty days, "and in all this way there is scarcely any green thing to be met

with; nor beast nor fowl to be seen nor heard; nothing but sand and stones, excepting at one place which we passed by night, I suppose it was a village where were some trees, and, as we thought, gardens."

The hardships of the land journey from Yambu to Mecca, *via* Medina, are fully depicted by Captain Burton. He travelled to Medina in the company of a grain caravan. Even in the morning the heat was intense; the fierce rays of the sun dried up everything, and all was sun-parched; the very atmosphere quivered, "the sun seemed to have got into our throats, and the perspiration trickled from us like rain." A cloud appeared in the sky, "We hoped that it contained rain; but presently a blast of hot wind, like the breath of a volcano, blew over the plain, and the air was filled with particles of sand, 'the dry storm' of Arabia.

"Not a house was in sight (at the camping-place): it was as barren and desolate a spot as the sun ever viewed in his wide career. . . . The sun scorched our feet as we planted the tent, and after breakfast we passed the usual day of perspiration and semi-lethargy . . . When our enemy, the sun, began slanting towards the west, we felt ready enough to proceed on our journey. The camels were laden shortly after 3 P.M., and we started with water jars in our hands, through a storm of simoom. We travelled five hours in a north-easterly course up a diagonal valley, through a country fantastic in its desolation—a mass of huge hills, barren plains, and desert vales . . . Above, a sky like polished blue steel, with a tremendous blaze of yellow light, glared upon us without the thinnest veil of mist cloud." In addition to these physical discomforts, Saad, the great robber chief, and his brother were out in the mountain passes, both being equally anxious to shoot the troopers, plunder the caravans, and close the roads. The commander of the Syrian caravan, afraid of risking an attack, avoided the dangerous pass by

marching upon Mecca by the desert of Nejd. "Shortly after mid-day a *Cafila*, travelling in an opposite direction, passed by us; it was composed chiefly of Indian pilgrims, habited in correct costume, and hurrying towards Mecca in hot haste. They had been allowed to pass unmolested, because, probably, a pound sterling could not have been collected from a hundred pockets . . . The camping-ground was a bed of loose sand with which the violent simoom-wind filled the air; not a tree nor a bush was in sight; a species of hardy locust, and swarms of flies were the only remnants of animal life . . . The mid-day sun scorched even through the tent; our frail tenement was more than once blown down, and the heat of the sand made the work of re-pitching it a painful one."

They joined three or four other caravans, forming one large body for mutual defence against the Hawamid robbers; but they were attacked in a pass, and lost twelve men. They reached El Medina on the 25th of July, thus taking nearly eight days to travel over little more than a hundred and twenty miles. This journey is performed by camels in four days, and a good dromedary will do it without difficulty in half that time. The rate of a loaded camel is about two miles an hour.

The pilgrimage to the tomb of Mohammed at Medina is not obligatory; no pilgrim's dress is put on; and there is no *Tawaf*, or circumambulation. The pilgrims are forbidden to touch the tomb, or to kiss it; to press the bosom against it, or to rub the face with dust collected near it; and prostration before it is a deadly sin. From Medina "Pilgrims may take with them a few boxes of dates, some strings of the same fruit, and skins full of henna powder. Even the Ulema allow such articles to be carried away, although they strictly forbid keepsakes of earth and stone." But while around all was barrenness and desolation, at Medina "the air was soft and balmy; a perfumed breeze,

strange luxury in El Hejaz, wandered amongst the date fronds; there were fresh flowers, and bright foliage—in fact, at midsummer, every beautiful feature of spring.”

On the morning of the 23rd Zu'l Kaadah (23rd August, 1853), the great caravan from El Sham, or Damascus, arrived at Medina.

Captain Burton's description of the Damascus caravan is so graphic that it cannot be condensed. This caravan “is the main stream, which carries off all the small currents that, at this season of general movement, flow from Central Asia towards the great centre of the Islamitic world, and in 1853 amounted to about 7000 souls. It was anxiously expected, for several reasons. . . . I arose in the morning and looked out from the windows of the Majlis: the Barr el Munakhah, from a dusty waste, dotted with a few Bedouins and hair tents, had assumed all the various shapes and colours of the kaleidoscope. The eye was bewildered by the shifting of innumerable details, in all parts totally different from one another, thrown confusedly together into one small field; and, however jaded with sight-seeing one might feel, it dwelt with delight upon the vivacity, the variety, and the intense picturesqueness of the scene. In one night had sprung up a town of tents of every size, colour and shape; round, square and oblong, open and closed, from the shawl-lined and gilt-topped pavilion of the Pacha, with all the luxurious appurtenances of the Haram, to its neighbour the little green ‘rowtie’ of the tobacco-seller. They were pitched in admirable order: here ranged in a long line, where a street was required; there packed in dense masses, where thoroughfares were unnecessary. But how describe the utter confusion in the crowding, the bustling, and the vast variety and volume of sound? Huge, white Syrian dromedaries, compared with which those of El Hejaz appeared merely poney-camels, jingling large

bells, and bearing shugdufs, or litters, like miniature green tents, swaying and tossing on their backs; gorgeous takhtrawan, or litters, borne between camels or mules, with scarlet and brass trappings; Bedouins bestriding naked-backed dromedaries, and clinging like apes to the hairy humps; Arnaut, Turkish, and Kurd irregular horsemen, fiercer-looking in their mirth than Roman peasants in their rage; fainting Persian pilgrims forcing their stubborn dromedaries to kneel, or dismounting, grumbling, from jaded donkeys; Kahwagis, sherbet sellers, and ambulant tobacconists crying their goods; country people driving flocks of sheep and goats with infinite clamour through lines of horses fiercely snorting and rearing; townspeople seeking their friends; returned travellers exchanging affectionate salutes; devout Hajjis jolting one another, running under the legs of camels, and tumbling over the tent ropes in their hurry to reach the Haram; cannon roaring from the citadel: shopkeepers, water carriers and fruit vendors fighting over their bargains; boys bullying heretics with loud screams; a well-mounted party of fine old Arab shaykhs of the Hamidah clan, preceded by their varlets, performing the arzah, or war-dance; servants seeking their masters, and masters their tents with vain cries of 'Ya Mohammed'; grandees riding on mules, or stalking on foot, preceded by their crowd beaters shouting to clear the way; here the loud shrieks of women and children, whose litters are bumping and rasping the one against the other; there the low moaning of some poor wretch that is seeking a shady corner to die in; and add a thick dust, which blurs the outlines like a London fog, with a flaming sun that draws sparkles of fire from the burnished weapons of the crowd, and the brass balls of tent and litter. The commandant of the caravan is the Emir el Hajj, the title of the Pacha who has the privilege of conducting

it. He is heir to the personal property of all who die on the way, and who may die in the Holy Cities." There are few in the Syrian caravan, except the paupers, who travel with less than eighty pounds of cash. Lodovico Bartema travelled with this caravan in 1503, and he estimated the Damascus caravan to consist of 40,000 men and 35,000 camels, nearly six times the present number. Captain Burton's estimate was 7000, of both sexes and all ages.

There are three roads leading from Medina to Mecca. The Darb el Sultani, or Royal road passes along the line of coast, and is most frequented by pilgrims. It was by this road that Burckhardt travelled. The second is the Tarik el Ghabir, a mountain path through rugged passes; the third, the Wady el Kura, where there is plenty of water and a safe passage through the Beni Amr tribe, the favourite route for the dromedary caravan. The fourth joins the Darb el Sharki, the eastern road, the celebrated route through the Nejd desert, of Harun el Rashid, whose wife, Zubaydah, caused wells to be dug on the line of travel from Bagdad to Mecca, for the benefit of pilgrims.

The ordinary Damascus caravan starts first; the Kafilat el Tayyarah, or "Flying caravan," leaves two days later, on the 2nd Zu'l Hijjah; and the Rakb, a dromedary caravan, leaves last, and usually makes Mecca on the fifth day. In this caravan each person carries only his saddle bags. Captain Burton travelled by the Darb el Sharki, the usual length of the journey being eleven days, but he required to pass through the Nejd desert, where for three days there is no water. The trying nature of the journey was experienced at the very outset: "Towards evening beasts of burden began to sink in considerable numbers. Those whose throats had been properly cut, were surrounded by troops of Takruri pilgrims. These half-starved wretches cut steaks from the choice portions,

and slung them over their shoulders till an opportunity of cooking might arrive. I never saw men more destitute. They carried wooden bowls, which they filled with water by begging; their only weapon was a small knife, tied in a leathern sheath above the elbow; and their costume, an old skull-cap, strips of leather tied like sandals under the feet; and a long dirty shirt, or sometimes a mere rag covering the loins. Some were perfect savages, others had been fine-looking men, broad-shouldered and long-limbed; many were lamed by fatigue and thorns; and, looking at most of them, I saw death depicted in their forms and features. . . . The appearance of the caravan was most striking, as it threaded its slow way over the smooth surface of the Khabt. To judge by the eye, there were at least 7000 souls — on foot, on horseback, in litters, or bestriding the splendid camels of Syria. There were eight gradations of pilgrims. The lowest hobbled along with heavy staves. Then came the riders of asses, camels, and mules. Respectable men, especially Arabs, mounted dromedaries, and the soldiers had horses; a led animal was saddled for every grandee, ready whenever he might wish to leave his litter. Women, children, and invalids of the poorer classes sat upon a 'haml musattah,' bits of cloth spread over the two large boxes which form the camel's load. Many occupied shibriyahs; a few shugdufs, and only the wealthy and the noble rode in takhtrawan (litters), carried by camels or mules. The morning beams fell brightly on the glancing arms which surrounded the stripped Mahmal, and upon the scarlet and gilt litters of the grandees. Not the least beauty of the spectacle was its wondrous variety of detail; no man was dressed like his neighbour; no camel was caparisoned, nor horse clothed in uniform, as it were. And nothing stranger than the contrasts: a band of half-naked Takruri marching with the Pacha's equipage, and long-capped,

bearded Persians conversing with tarbushed and shaven Turks."

After travelling through a sandy waste for four days, during which time the camels had not had any water to drink, they entered a region of stony rocky passes, and from thence descended into an acacia barren, surrounded by hills. "Here the air was filled by these pillars of sand so graphically described by Abyssinian Bruce. They scudded on the wings of the whirlwind over the plain, huge yellow shafts with lofty heads, horizontally bent backwards in the form of clouds; and on more than one occasion camels were overthrown by them. It required little strength of fancy to enter into the Arabs' superstition. These sand-columns are supposed to be the genii of the waste, who cannot be caught,—a notion arising from the fitful movements of the wind-eddy that raises them—and as they advance, the pious Moslem stretches out his finger, exclaiming, 'Iron!' 'O thou ill-omened one!' . . . During the forenoon we were troubled with simoom, which, instead of promoting perspiration, chokes up and hardens the skin. The Arabs complain greatly of its violence on this line of road. Here I first remarked the difficulty with which the Bedouins bear thirst. 'Ya Latif!' 'O! merciful Lord!' they exclaimed at times; yet they behaved like men."

Over a wild barren country they travelled to Suwayr-kiyah, a distance of ninety-nine miles from Medina. Near to this place the route of the caravan falls into the Darb el Sharki, the route of the Bagdad caravan, and at the large village called El Sufayna, the two caravans joined. Burton, speaking of the Bagdad caravan, says: "It consists of a few Persians and Kurds, and collects the people of north-eastern Arabia, Wahhabis, and others. They are escorted by the Agayl tribe, and the fierce mountaineers of Jebel Shomar. Scarcely was our first tent pitched when the distant pattering of musketry, and an ominous tapping

of the kettle-drum sent all my companions in different directions to inquire what was the cause of the quarrel. The Bagdad Cafila, though not more than 2,000 in number, men, women, and children, had been proving to the Damascus caravan that, being perfectly ready to fight, they were not going to yield any point of precedence. From that time the two bodies encamped in different places." On the line of march at El Zaribah, the pilgrim's garb is put on; and the pilgrimage proper commences. The physical condition of the poorer class of pilgrims may be easily imagined.

The pilgrimage to Mecca, at least once in a lifetime, is binding on all true Mohammedans, with certain limited exceptions. "It is," writes Sale,¹ "so necessary a point of practice that, according to a tradition of Mohammed, he who dies without performing it may as well die a Jew or a Christian; and the same is expressly commanded in the Koran."

The duties of the pilgrimage are described as follows by Sale¹: "The pilgrims meet at different places near Mecca, according to the different parts from whence they come, during the months of Shawâl, and Dhu'l Kaada, being obliged to be there by the beginning of Dhu'l Hajja, which month, as its name imports, is peculiarly set apart for the celebration of this solemnity.

"At the places above mentioned, the pilgrims properly commence such; when the men put on the *Ihrâm*, or sacred habit, which consists only of two woollen wrappers, one wrapped about their middle to cover their privities, and the other thrown over their shoulders, having their heads bare, and a kind of slippers which cover neither the heel nor the instep, and so enter the sacred territory on their way to Mecca. While they have this habit on they must neither hunt nor fowl (though they are allowed to fish), which

¹ *Translation of Koran: Preliminary Discourse*, sec. iv.

precept is so punctually observed, that they will not kill even a louse or a flea, if they find them on their bodies. There are some noxious animals, however, which they have permission to kill during the pilgrimage, as kites, ravens, scorpions, mice, and dogs, given to bite. During the pilgrimage it behoves a man to have a constant guard over his words and actions, and to avoid all quarrelling, or ill language, and all converse with women, and obscene discourse, and to apply his whole intention to the good work he is engaged in.

“The pilgrims being arrived at Mecca, immediately visit the temple, and then enter on the performance of the prescribed ceremonies, which consist chiefly in going in procession round the Caaba, in running between the Mounts Safâ and Merwâ, in making the station on Mount Arafat, and slaying the victims, and shaving their heads in the valley of Mina. These ceremonies have been so particularly described by others, that I may be excused if I but just mention the most material circumstances thereof.

“In compassing the Caaba, which they do seven times, beginning at the corner where the black stone is fixed, they use a short quick pace, the three first times they go round it, and a grave ordinary pace the four last; which, it is said, was ordered by Mohammed, that his followers might show themselves strong and active, to cut off the hopes of the infidels, who gave out that the immoderate heats of Medina had rendered them weak. But the aforesaid quick pace they are not obliged to use every time they perform this piece of devotion, but only at some particular times. So often as they pass by the black stone, they either kiss it, or touch it with their hand, and kiss that.

“The running between Safâ and Merwâ is also performed seven times, partly with a slow pace, and partly running, for they walk gravely till they come to a place between

two pillars, and there they run, and afterwards walk again, sometimes looking back, and sometimes stopping, like one who has lost something, to represent Hagar seeking water for her son, for the ceremony is said to be as ancient as her time.

“On the 9th of Dhu’l Hajja, after morning prayer, the pilgrims leave the valley of Mina, whither they come the day before, and proceed in a tumultuous and rushing manner to Mount Arafat, where they stay to perform their devotions till sunset; then they go back to Mozdalifa, an oratory between Arafat and Mina, and there spend the night in prayer, and reading the Koran. The next morning, by daybreak, they visit Al Mashér al Harâm, or the sacred monument, and departing thence before sunrise, haste by Batn Mohasser to the valley of Mina, where they throw seven stones at three marks or pillars, in imitation of Abraham, who, meeting the devil in that place, and being disturbed by him in his devotions, or tempted to disobedience, when he was going to sacrifice his son, was commanded by God to drive him away by throwing stones at him; though others pretend this rite to be as old as Adam, who also put the devil to flight in the same place, and by the same means.

“This ceremony being over, on the same day, the 10th of Dhu’l Hajja, the pilgrims slay their victims in the said valley of Mina, of which they and their friends eat part, and the rest is given to the poor. These victims must either be sheep, goats, kine, or camels; males, if of either of the two former kinds, and females if of either of the latter, and of a fit age. The sacrifices being over, they shave their heads, and cut their nails, burying the parings in the same place; after which the pilgrimage is looked upon as completed, though they again visit the Caaba, to take their leave of that sacred building.”

This outline, sketched by Sale, has been amply sup-

plemented by Captain Burton, the most accurate and observant of all travellers, in his *Personal Narrative*.

On the 7th of September, 1853, the 3rd of Zu'l Hijjah, Captain Burton, on his way to Mecca, on the northern caravan route, reached El Zaribah, "the valley," the mikat, or appointed place, where the pilgrimage proper commences. Between the mid-day and afternoon prayers, the necessary preliminaries are gone through. Here the head was shaved, the nails cut, the beard trimmed, the body bathed, and the Ihrâm, or pilgrim's garb, put on.

"At 3 p.m. we left Zaribah. Crowds hurried along, habited in the pilgrim garb, whose whiteness contrasted strangely with their black skins; their newly-shaven heads glistening in the sun, and their long black hair streaming in the wind. The rocks rang with their loud shouts of 'Labbayk,' 'here am I.'

"At a pass we fell in with the Wahhabis, accompanying the Bagdad caravan, screaming 'here am I,' and guided by a large loud kettledrum, they followed in double file the camel of a standard bearer, whose green flag bore in huge white letters the formula of the Moslem creed. They were wild-looking mountaineers, dark and fierce, with hair twisted into thin plaits; each was armed with a long spear, a matchlock, or a dagger. They were seated upon coarse wooden saddles, without cushions or stirrups, a fine saddle cloth alone denoting a chief. The women emulated the men; they either guided their own dromedaries, or sitting in *pillion*, they clung to their husbands; veils they disdained, and their countenances certainly belonged not to a 'soft sex.' These Wahhabis were by no means pleasant companions. Most of them were followed by spare dromedaries, either unladen, or carrying water skins, fodder, fuel, and other necessaries, for the march. The beasts delighted in dashing furiously through our file, which, being colligated, was thrown each time into the greatest confusion. And,

whenever we were observed smoking, we were cursed aloud for infidels and idolaters."

The caravan was attacked in a pass by Utaybah robbers who were repulsed by the Wahhabis, and after a long journey it reached the state pavilion of the Sherif of Mecca.

The ceremonies of the "Tawaf el Kudum," circumambulation of arrival, were next gone through. In describing the Kaabah, "the House of God," Captain Burton gives an account of the celebrated well of Zem Zem, to which special reference will be hereafter made, and of the room by which it is enclosed. "This room is beautifully ornamented with marbles of various colours; and adjoining to it, but having a separate door, is a small room with a stone reservoir which is always full of Zem Zem water. This the Hajis get to drink by passing their hand with a cup through an iron grated opening, which serves as a window, without entering the room. The mouth of the well is surrounded by a wall, five feet in height, and about ten feet in diameter. Upon this the people stand who draw up the water in leathern buckets, an iron grating being so placed as to prevent their falling in. . . . The produce of Zem Zem is held in great esteem. It is used for drinking, and ablution, but for no baser purposes; and the Meccans advise pilgrims always to break their fast with it. It is apt to cause diarrhœa and boils. Sale is decidedly correct in his assertion: the flavour is a salt bitter, much resembling an infusion of a tea-spoonful of Epsom salts in a large tumbler of tepid water. The water is often carried away by pilgrims, and a few drops are taken at the hour of death.

"We then went to the door of the building in which is Zem Zem; there I was condemned to another nauseous draught, and was deluged with two or three skinfuls of water, dashed over my head, *en douche*.

"Thoroughly worn out, with scorching feet, and a

burning head—both extremities it must be remembered were bare, and various delays had detained us till 10 a.m., I left the Mosque. Strictly speaking, after this we ought to have performed the ceremony called 'El Sai,' 'the running' seven times between Mount Safâ and Merwâ. Fatigue put this fresh trial completely out of the question."

In describing the Bait Ullah, within which Zem Zem is situated, Burton says, "Here the colonnade, projecting far beyond the normal line, forms a small square or hall, supported by pillars, and a false colonnade of sixty-one columns leads to the true cloister of the mosque. This portion of the building being cool and shady, is crowded by the poor, the diseased and the dying, during divine worship; and at other times by idlers, schoolboys, and merchants."

By many the entire night before the day of Arafat was spent in the Mosque, but Burton remained only till midnight. While there, late in the evening he saw a negro in the state called Malbus; religious frenzy. He was a Takturi. "Either their organization is more impressionable, or more probably, the hardships and privations which they have undergone whilst wearily traversing inhospitable wilds, and perilous seas, have exalted their imaginations to a pitch bordering on frenzy. Often they are seen prostrate on the pavement, or clinging to the curtain, or rubbing their foreheads on the stones, weeping bitterly, and pouring forth the wildest ejaculations."

In this mental and bodily condition, the worn-out pilgrims had to face the ordeals of the next four days.

On the morning of the 8th of Dhu'l Hijjah, A.H. 1269 (12th September, 1853), the indomitable Burton, in the garb of a pilgrim, started from Mecca, to take part in the ceremonies of the occasion. Clothed with the Ihrâm, he joined the throng of pilgrims, all of them being bare-footed

and bare-headed, some of them on dromedaries and horses, the greater part being on foot ; and mixed up with them crowds of beggars from all countries. "Dead animals dotted the ground, and carcasses had been cast into a dry tank, the 'Birkat el Shami,' which caused every Bedouin to hold his nose and show disgust. Here, on the right of the road, the poorer pilgrims, who could not find houses, had erected huts and pitched their ragged tents." They travelled on till about 11 o'clock, and then ascended a flight of stone steps, about thirty yards broad, and entered the narrow hill-girt entrance to the low gravel basin in which Mina lies. Muna, or Mina, is a place of considerable sanctity, and is distant about three miles from Mecca. It is a long, narrow, straggling village, composed of mud or stone houses of one or two stories, built in the common Arab style. After passing through the town, they came to Batn el Muhassir, "the basin of the troubler" (the scene of the temptation), at the beginning of a descent leading to Muzdalifah, "the approacher," where the road falls into the course of the Arafat torrent.

"At noon we reached the Mosque, Muzdalifah, Mashar el Haram, 'the place dedicated to religious ceremonies,' 'the Minaret without the Mosque.' Half way between Mina and Arafat—about three miles from both—there is something peculiarly striking in the distant appearance of the tall solitary tower, rising abruptly from the desolate valley of gravel, flanked with buttresses of yellow rock. Here we were overtaken by the Damascus caravan. It was a grand spectacle. The Mahmal, no longer naked, as on the line of march, flashed in the sun, all green and gold. Around the moving host of white-robed pilgrims, hovered a crowd of Bedouins, male and female, all mounted on swift dromedaries, and many of them armed to the teeth. As their drapery floated in the wind, and their faces were veiled with the 'lisam,' it was frequently difficult to dis-

tinguish the sex of the wild being that flogged its animal to speed, as they passed. These people, as has been said, often resort to Arafat for blood revenge, in hopes of finding the victim unprepared. Nothing can be more sinful in El Islam than such a deed—it is murder made 'sicker' by sacrilege; yet the prevalence of the practice proves how feeble is the religious hold on the race. The women are as unscrupulous. I remarked many of them emulating the men in reckless riding, and striking with their sticks every animal in the way.

"Travelling eastward, up the Arafat fiumara, after about half-an-hour, we came to a narrow pass, called El Akhshabayn, 'the two rugged hills.' After this we arrived at El Bazan, 'the basin;' a widening of the plain, and another half-hour brought us to the Alamain, 'the twin signs;' two white-washed pillars; or rather thin narrow walls, surmounted with pinnacles, which denote the precincts of the Arafat plain.

"Here in full sight of the Holy Hill, standing quietly out from the fair blue sky, the host of pilgrims broke out into loud Labbayks ('here am I'). A little beyond and to our right was the simple enclosure, called Masjid Nimrah, 'The Mosque without the Minaret.' We then turned from our eastern course northwards, and began threading our way down the main street of the town of tents, which clustered around the southern part of Arafat, and encamped on a vacant place at about 3 P.M.

"Arafat is about six hours' march, or twelve miles on the Taif road, due east of Mecca. We arrived there in a shorter time; but our weary camels, during the last third of the way, frequently threw themselves on the ground. Human beings suffered more. Between Mina and Arafat I saw no less than five men fall down and die on the highway; exhausted and moribund they had dragged themselves out to give up the ghost where it departs to

instant beatitude—all who die during the pilgrimage being martyrs.

“The spectacle showed how easy it is to die in these latitudes; each man suddenly staggered, fell as if shot, and after a brief convulsion lay still as marble. The corpses were carefully taken up, and carelessly buried that same evening, in a vacant space, among the crowds encamped on the Arafat plain. The Moslems endeavour to secure rapid decomposition; and they make the grave-yard a dangerous, as well as a disagreeable place. . . . Arafat, anciently called *Jebel Ilal*, ‘the mount of wrestling in prayer;’ and now *Jebel el Rahmah*, ‘the mount of mercy,’ is a mass of coarse granite, split into large blocks, with a thin coat of withered thorns, about one mile in circumference, and rising abruptly from the low gravelly plain,—a dwarf wall at the southern base forming the line of demarcation—to the height of 180 to 200 feet. It is separated by *Batn Arnah*, a sandy vale, from the spurs of the *Taif Hills*. Nothing can be more picturesque than the view it affords of the blue peaks behind, and the vast encampment, scattered over the barren yellow plain below. . . . This plain, once fertile, is cut with torrents which at times sweep with desolating violence into the holy city, and a thick desert vegetation, shows that water is not deep below the surface. On the north lay the regularly pitched camp of the guard which defends the unarmed pilgrims. To the eastward was the *Sherif’s* encampment, with the bright *Mahmals*, and the gilt knobs of the grander pavilions; whilst on the southern and western sides, the tents of the vulgar crowded the ground, disposed in *dowars*, or circles for penning cattle.

“After many calculations I estimated the number to be not less than fifty thousand of all ages and sexes, a sad falling off it is true, but still considerable. . . . From the Holy Hill I walked down to look at the camp

arrangements. The main street of tents and booths, huts and shops, was bright with lanterns, and the bazaars were crowded with people, and stocked with all manner of Eastern delicacies. Some anomalous spectacles met the eye. Many pilgrims, especially the soldiers, were in laical uniform. In one place, a half-drunken Arnaut soldier stalked down the road, elbowing peaceful passengers, and frowning fiercely in hopes of a quarrel. In another, a huge, dimly-lit tent, reeking hot and garnished with cane seats, contained knots of Egyptians, as their red tarbushes, white turbans, and black zaabuts showed, noisily intoxicating themselves with forbidden hemp. There were frequent brawls, and great confusion; many men had lost their parties, and, mixed with loud Labbayks, rose the shouted names of women as well as of men. Plunderers too were abroad. We were obliged to defend our position by force against a knot of grave-diggers, who would bury a little heap of bodies within a yard or two of our tent. One point struck me at once—the difference in point of cleanliness between an encampment of citizens and of Bedouins. Poor Masud sat holding his nose in ineffable disgust. . . . At length night came, and we threw ourselves upon our rugs, but not to sleep.”

On the morning of the day of Arafat, the 9th of Zu'l Hijjah, there was the usual discharge of cannon, and after ablutions and prayers, Burton and his party made their visitations to the consecrated spots on “the Mountain of Mercy.”

“Close to the plain we saw the place where the Egyptian and Damascus Mahmals stand during the sermon, and descending the wall that surrounds Arafat by a steep and narrow flight of coarse stone steps, on my right was the fountain which supplies the place with water. It bubbles from the rock, and is exceedingly

pure, as such water generally is in El Hejaz. Nine o'clock had struck before we reached the plain. All were in a state of excitement. Guns fired furiously; horsemen and camel-riders galloped about without apparent object. Even the women and children stood and walked, too restless even to sleep. That day we breakfasted late, for night must come before we could eat again. After mid-day prayer we performed ablutions; some the greater, others the less, in preparation for the Wukuf, 'standing.' From noon onwards, the hum and murmur of the multitude increased, and people were seen swarming about in all directions. . . . A second discharge of cannon (about 3.15 P.M.), announced the approach of El Asr, the afternoon prayer, and almost immediately we heard the Naubat, or band preceding the Sherif's procession, as he wended his way towards the mountain. Fortunately my tent was pitched close to the road, so that, without trouble, I had a perfect view of the scene. First came a crowd of mace-bearers who, as usual on such occasions, cleared the path with scant ceremony. They were followed by the horsemen of the desert, wielding long and tufted spears. Immediately behind them came the led horses of the Sherif, and after the chargers came a band of black slaves on foot, bearing huge matchlocks; and immediately preceded by three green and two red flags, was the Sherif, riding in front of his family and courtiers. The prince, habited in the simple white Ihrâm, and bareheaded, mounted a mule; the only sign of his rank was a large green and gold-embroidered umbrella, held over him by a slave. The rear was brought up by another troupe of Bedouins, on horses and camels. Behind this procession were the tents, whose doors and walls were scarcely visible for the crowd, and the picturesque background was the granite hill, covered, wherever standing-room was to be found,

with white-robed pilgrims, shouting Labbayks, and waving the skirts of their glistening garments violently over their heads. Slowly the procession advanced towards the hill. Exactly at the hour El Asr the two Mahmals had taken their station side by side on a platform in the lower slope. That of Damascus could be distinguished as the narrower and more ornamental of the pair. The Sherif placed himself with his standard-bearers and retinue a little above the Mahmals, within hearing of the preacher. The pilgrims crowded up to the foot of the mountain, the loud Labbayks of the Bedouins and Wahhabis fell to a solemn silence, and the waving of white robes ceased—a sign that the preacher had begun the Khutbat-el-Wakfah—‘sermon of the standing,’ on Arafat. From my tent I could distinguish the form of the old man upon his camel, but the distance was too great for ear to reach. The sermon always lasts till near sunset, or about three hours. . . . Presently, the people exhausted by emotion, began to descend the hill in small parties, and those below struck their tents and commenced loading their camels, although at least an hour’s sermon remained. On this occasion, however, all hurry to be foremost, as the race from Arafat is enjoyed by none but the Bedouins. Although we worked with a will, our animals were not ready to move before sunset, when the preacher gave the signal, ‘israf,’ or permission to depart. The pilgrims rushed down the hill with a Labbayk, sounding like a blast, and took the road to Mina. Then I saw the scene from which is given to the part of the ceremonies the name of El dafa min Arafat, the ‘Hurry from Arafat.’ Every man urged his beast with might and main; it was sunset; the plain bristled with tent-pegs; litters were crushed; pedestrians trampled on; camels overthrown; single combats, with sticks and other weapons, took place; here a woman, there a child, and there an animal were lost.

Briefly, it was a state of chaotic confusion. At the Akhshabayn, double lines of camels, bristling with litters, clashed, and gave a shock more noisy than the meeting of torrents. It was already dark, no man knew what he was doing. The guns roared their brazen notes, re-echoed far and wide by the voices of the stony hills. A shower of rockets bursting in the air threw into still greater confusion the timorous mob of women and children. At the same time martial music rose from the masses of Nizam, and from the stouter-hearted pilgrims their Labbayks—repeated till the pilgrim reaches Mina—and Eed kum mubarak, ‘may your festival be happy.’

“After the pass of the two rugged hills the road widened. We were at least three hours on the road before reaching Muzdalifah, and being fatigued, we resolved to pass the night there. The mosque was brilliantly illuminated. Before sleeping, each man collected for himself seven bits of granite, each the size of a small bean. . . . The night was by no means peaceful or silent. Lines of camels passed us every ten minutes, and the shouting of travellers continued till near dawn.

“At dawn on the Eed el Kurban (10th Zu’l Hijjah) the guns fired. The ceremony of Ramy, or Lapidation, must be performed by all pilgrims on the first day between sunrise and sunset.

“On one side of the road, which is not forty feet broad, stood a row of shops belonging principally to barbers. On the other side is the rugged wall of the pillar with a *chevaux de frise* of Bedouins and naked boys. The narrow space was crowded with pilgrims, all struggling like drowning men to approach as near as possible to the devil; it would have been easy to have run over the heads of the mass. Among them were horsemen with rearing chargers. Bedouins on wild camels, and grandees on mules and asses, with outrunners, were breaking a passage by

assault and battery. Scarcely had my donkey entered the crowd than he was overthrown by a dromedary, and I found myself under the stamping and roaring beast's stomach. By a judicious use of the knife, I avoided being trampled upon, and lost no time in escaping from a place so ignobly dangerous."

After the ceremony of throwing the stones, they entered a barber's shop where the head was shaved, and putting off the *Ihrâm*, or pilgrim's garb, they were at liberty to resume their ordinary dress. "We had no clothes with us, but could use our cloths to cover our heads, and defend our feet from the fiery sun." After resting for half an hour, they started at 11 A.M. for Mecca, and in half an hour entered the city. The return from Mina to Mecca is called *El Nafr*, 'the flight.'

Burton determined to enter the Kaabah, the holy of holies.

The Kaabah was open at the time, but in a short time afterwards it would be crowded, and Burton hastened to it. "A crowd had gathered round the Kaabah, and I had no wish to stand bareheaded and barefooted in the mid-day September sun. At the cry of 'open a path for the *Haji* who would enter the House,' the gazers made way. Two stout Meccans, who stood below the door, raised me in their arms, while a third drew me from above into the building. At the entrance I was accosted by several officials, dark-looking Meccans, of whom the darkest and plainest was a youth of the *Beni Shaybah* family. He held in his hand the silver-gilt padlock of the Kaabah, and presently taking his seat upon a kind of wooden press, in the left corner of the hall, enquired my name, nation, and other particulars. The replies were satisfactory. I will not deny that looking at the windowless walls, the officials at the door, and the crowds below, my feelings were of the rat-trapped description Although there were in the Kaabah but a few attendants engaged in preparing it for

the entrance of pilgrims, the windowless stone walls, and the choked-up door, made it worse than the Piombi of Venice; the perspiration trickled in large drops, and I thought with horror, what it must be when filled with a mass of jostling and crushing fanatics . . . All pilgrims do not enter the Kaabah, and many refuse to do so for religious reasons. Those who tread the hallowed ground, are bound, among other things, never again to walk bare-footed, to take up fire with the fingers, or to tell lies." The inscription on the Kiswah, within the Kaabah, is "Verily the first of Houses founded for mankind (to worship in), is that at Bekkah; blessed and a direction to all creatures."

"After quitting the Kaabah, I returned home exhausted and washed with henna and warm water, to mitigate the pain of the sun-scalds upon my arms, shoulders, and breast . . . After resuming our laical toilette, and dressing gaily for the great festival, we mounted our asses about the cool of the afternoon, and, returning to Mina, found the tent full of visitors. After their departure we debated about the victim, which is only a Sunnat, or practice of the Prophet (and therefore not binding). Those who omit the rite fast ten days; three during the pilgrimage season, and the remaining seven at some other time. It is generally sacrificed immediately after the first lapidation, and we had already been guilty of delay. Under these circumstances, and considering the meagre condition of my purse, I would not buy a sheep, but contented myself with watching my neighbours. They gave themselves great trouble, especially a large party of Indians pitched near us, to buy the victim cheap; but the Bedouins were not less acute, and he was happy who paid less than a dollar and a quarter. Some preferred contributing to buy a lean ox. None but the Sherif and the principal dignitaries slaughtered camels. The pilgrims dragged their victims

to a smooth rock near the Akabah, above which stands a small open pavilion, whose sides, red with fresh blood, showed that the prince and his attendants had been busy at sacrifice. Others stood before their tents, and directing the victim's face towards the Kaabah, cut its throat ejaculating, 'Bismillah! Allahu Akbar.' It is considered a meritorious act, to give away the victim without eating any portion of its flesh. Parties of the Takruri might be seen sitting vulture-like, contemplating the sheep and the goats; and no sooner was the signal given than they fell upon the bodies and cut them up without removing them. The surface of the valley soon came to resemble the dirtiest slaughter-house; and my prescient soul drew bad auguries for the future.

"We had spent a sultry afternoon in the basin of Mina, which is not unlike a volcanic crater, an Aden closed up at the sea-side. Towards night the occasional puffs of the simoom ceased, and, through the air of deadly stillness a mass of purple nimbus, bisected by a thin grey line of mist cloud, rolled down upon us from the Taif hills. When darkness gave the signal, most of the pilgrims pressed towards the square in front of the Mina mosque, to enjoy the pyrotechnics, and the discharge of cannon.

"But during the spectacle there came on a windy storm, whose lightnings flashing their fire from pole to pole, paled the rockets; and whose thunderings, re-echoed by the rocky hills, drowned the puny artillery of man. We were disappointed in our hopes of rain. A few huge drops pattered upon the plain, and sank into its thirsty entrails, all the rest was thunder and lightning, dust-clouds, and whirlwind.

"The heat of the night succeeding the great festival, rendered every effort to sleep abortive. On Thursday we arose before dawn, and prepared, with a light breakfast, for the fatigue of a climbing walk. After half-an-hour spent in

hopping from boulder to boulder, we arrived at a place situated on the lower declivity of Jebel Sabir, the northern wall of the Mina basin. Here is the Majarr el Kabsh, 'the dragging place of the ram.' After mounting and returning from the hill, 'we retired to the tent ere the sun waxed hot, in anticipation of a terrible day. Nor were we far wrong. In addition to the heat, we had swarms of flies, and the blood-stained earth began to reek with noisome vapours. Nought moved in the air except kites and vultures, speckling the deep blue sky: the denizens of the earth seemed paralysed by the sun. I spent the time between breakfast and night-fall lying half-dressed upon a mat, moving round the tent-pole, to escape the glare, and watching my numerous neighbours, male and female.'

"On Friday, the 12th Zu'l Hijjah, the camels appeared, according to order, early at dawn, and they were loaded without delay. We were anxious to enter Mecca in time for the sermon; and I, for one, was eager to escape the now pestilential air of Mina. Literally the land stank. Five or six thousand animals had been slain and cut up in this devil's punch-bowl. I leave the reader to imagine the rest. The evil might be avoided by building abatoirs, or, more easily still, by digging long trenches, and by ordering all pilgrims under pain of mulct to sacrifice in the same place. Unhappily the spirit of El Islam is opposed to these precautions of common sense. 'Inshallah' and 'Kismat,' take the place of prevention and cure. And at Mecca, the headquarters of the faith, a desolating attack of cholera is preferred to the impiety of 'flying in the face of Providence,' and the folly of endeavouring to avert inevitable decrees. . . . The exit from Mina was crowded, for many, like ourselves, had fled from the revolting scene. I could not think without pity, of those whom religious scruples detained another day and a half in this foul spot."

The Shafeis throw seven stones on the 10th; twenty-one

on the 11th, seven at each pillar; and the same number on the 12th Zu'l Hijjah; total forty-nine. The Hanifis remain another day, and throw an additional twenty-one stones on the 13th of Zu'l Hijjah, making a total of seventy.

Having returned from the valley of Muna they entered Mecca, and at noon went to the mosque, or haram.

"Descending to the cloisters below the Bab el Ziyadah, I stood wonderstruck by the scene before me. The vast quadrangle was crowded with worshippers, sitting in long rows, and everywhere facing the central black tower; the showy colours of their dresses were not to be surpassed by a garden of the most brilliant flowers, and such diversity of detail would probably not be seen massed together in any other building upon earth. The women, a dull and sombre looking group, sat apart in their peculiar place. The Pacha stood on the roof of Zem Zem, surrounded by guards in Nizam uniform.

"Where the principal ulema stationed themselves the crowd was thicker, and in the more auspicious spots nought was to be seen but a pavement of heads and shoulders. Nothing seemed to move but a few dervishes, who, censer in hand, sidled through the rows, and received the unsolicited alms of the faithful. Apparently in the midst, and raised above the crowd by the tall pointed pulpit, whose gilt spire flamed in the sun, sat the preacher, an old man with snowy beard. The style of head-dress called 'taylasan' covered his turban, which was white as his robes, and a short staff supported his left hand. Presently he arose, took the staff in his right hand, pronounced a few inaudible words—'Peace be with ye! and the mercy of Allah and his blessings!'—and sat down again, on one of the lower steps, whilst a Muezzin, at the foot of the pulpit, recited the call to sermon. Then the old man stood up and began to preach.

“As the majestic figure began to exert itself there was a deep silence. Presently a general ‘Amin’ was intoned by the crowd, at the conclusion of some long sentence. And at last, towards the end of the sermon, every third or fourth word was followed by the simultaneous rise and fall of thousands of voices. I have seen the religious ceremonies of many lands, but never — nowhere — aught so solemn, so impressive as this spectacle.

“Here we see no such silly frauds as heavenly fire drawn from a phosphor match, nor do two rival churches fight in the flesh with teeth and nails, requiring the contemptuous interference of an infidel power to keep peace and order. Here we see no fair dames, staring with their glasses—‘*braqués*’—at the Head of the Church; or supporting exhausted nature with the furtive sandwich; or carrying pampered curs, who, too often, will not be silent; or scrambling and squeezing to hear theatrical music; or reckless of the fate of the old lady who—there is always one on such occasions—has been thrown down and cruelly trampled upon by the crowd. At Mecca there is nothing theatrical, nothing that suggests the opera, but all is simple and impressive, filling the mind with ‘a weight of awe, not easy to be borne.’”

To perform the Umrah, or Little Pilgrimage, after morning prayers and ablutions, the ihrâm, or pilgrim’s garb, was resumed. “The way was crowded with pilgrims, on foot as well as mounted, and their loud ‘Labbayks’ distinguished those engaged in the Umrah rites from the many whose business was with the Damascus caravan.” About three miles from the city they reached the alamain, or two pillars that limit the sanctuary, and, a little beyond, the small settlement called Umrah. Entering the principal chapel, an unpretending building badly lighted, spread with dirty rugs, full of pilgrims, and offensively close, they performed

the isha, or night devotion, and then galloped towards the city shouting "Labbayk," "here am I." On the night before the pilgrims leave Mecca, each one must visit the mosque, to take his leave. They enter at the gate of Bab el Salaam, and go through their devotions. Weeping, and other demonstrations of grief are indulged in at leaving the sacred precincts. They then drink of the water of Zem Zem, and leave the temple, walking slowly backwards towards the gate Bab el Weedoh, "the farewell door," opposite the Bab el Salaam, "the door of entrance, or welcome." Stretching their hands out towards the mosque, they retire, in the same manner, till they reach the gate, and then go to their houses weeping.

In regard to the town of Mecca, Burton says: "During the heat of the day clothing is intolerable at Mecca. The city is so compacted together with hills that even the simoom can scarcely sweep it. The heat, reverberated by the bare rocks, is intense, and the normal atmosphere of an eastern town communicates a faint lassitude to the body and irritability to the mind. The houses, unusually strong and well-built, might be rendered cool enough in the hottest weather—they are now ovens."

Burckhardt¹ thus describes the sanitary condition of Mecca: "Rubbish and filth covered all the streets, and nobody appeared disposed to remove it. The skirts of the town were covered with the carcasses of dead camels, the smell from which rendered the air, even in the midst of the town, most offensive, and certainly contributed to the many diseases now prevalent. Several hundred of these carcasses lay near the reservoirs of Hadj; and the Arabs inhabiting that part of Mecca never walked out without stuffing into their nostrils small pieces of cotton, which they carried suspended by a thread round the neck. But this was not all. At this time the Meccans

¹ *Travels in Arabia*, v. ii. p. 85

are in the habit of emptying the privies of their houses ; and, too lazy to carry the contents beyond the precincts of the town, they merely dig a hole in the street, before the door of the dwelling, and there deposit them, covering the spot only with a layer of earth. The consequences of this practice may be easily imagined."

Mecca, at the time of the pilgrimage, has been visited, on several occasions, by Europeans ; and the description given by the Italian Lodovico Bartema, of Rome, in 1503, is identical with that of Captain Burton, in 1853, three hundred and fifty years afterwards. Bartema started with the Damascus caravan on the 8th of April, 1503, in the garb of a "Mamaluchi Renegado;" and Captain R. Burton, on the 3rd of April, 1853, left Southampton in the Peninsular and Oriental Company's steamer *Bengal*, in the garb of a Persian prince ; but, finding it convenient to descend in the social scale, he eventually travelled as a Pathan, or Afghan, who had been educated at Rangoon.

The season of the year during which these two travellers visited Mecca was thus identical. Regarding Mecca, Bartema says :—

"Mecca has 6000 well-built houses, but no walls. . . . At the bottom of the mountain (Arafat) there are two cisterns for containing water, the one being reserved for the camels of the caravan of Babylon or Alcayr, and the other for that of Damascus. It is rain water, and is derived from afar. . . . But to return to speak of the city. Entering, therefore, into the city, we found there the caravan of Memphis, or Babylon, which preceded us eight days. This caravan contained threescore and four thousand camels and a hundred Mamelukes to guide them. And here ought you to consider that, by the opinion of all men, this city is greatly cursed of God, as appeared by the great barrenness thereof, for it is desti-

tute of all manner of fruits and corn. It is scorched with dryness for lack of water, and therefore the water there is grown to such a price, that you cannot for twelve-pence buy as much water as will satisfy your thirst for one day. Now, therefore, I will declare what provision they have for victuals. The most part is brought them from the city of Babylon, Cayrus, or Alcayar, a city of the river Nile in Egypt, as we have said before, and is brought by the Red Sea, called Mare Erythraeum, from a certain part named Jidda, distant from Mecca forty miles. The rest of their provisions is brought from Arabia Felix, the happy or blessed Arabia, so named from the fruitfulness thereof, in respect of the other two Arabias, called Petrea and Deserta, that is, stony and desert. They have also much corn from Ethiopia. Here we found a marvellous number of strangers, and peregrines, or pilgrims, of which some came from Syria, some from Persia, and others from both the East Indies (*i.e.*), both India within the river Ganges; and also the other India, without the same river. I never saw, in any place, greater abundance and frequentation of people, forasmuch as I could perceive by tarrying there the space of twenty days. The people resort thither for diverse causes; as some for merchandise, some to observe their vow of pilgrimage, and others to have pardon for their sins, as touching the which we will speak more hereafter.

“When they intend to sacrifice some of them kill three sheep, some four, and some ten, so that the butchery sometimes so floweth with blood, that in one sacrifice are slain above three thousand sheep. They are slain at the rising of the sun, and shortly after are distributed to the poor for God’s sake, for I saw there a great confounded multitude of poor people as to the number of twenty thousand. These make many and long ditches in the fields, where they keep fire with camels’ dung, and roast, or seethe

the flesh that is given them, and eat it even there. I believe that these poor people come thither for hunger rather than for devotion, which I think, by this conjecture, that great abundance of cucumbers are brought thither from Arabia Felix, which they eat, casting away the parings without their houses or tabernacles, where a multitude of the same poor people gather them, even out of the mire and sand, and eat them; and are so greedy of those parings that they fight who may gather most."

Joseph Pitts, of Exon, England, made the pilgrimage in A.D. 1680, and has left a very circumstantial and most interesting account of his visit.¹

In an evil hour Joseph Pitts resolved to go to sea, when about sixteen or seventeen years of age. The vessel was captured by an Algerine pirate, and Joseph was detained in a state of slavery for fifteen years, during which time he acquired the Turkish and Arabic languages. He was converted to the Mohammedan religion by the frequent application of a stick to the soles of his feet, his master being anxious to save his own soul by the conversion of Mr. Pitts'. After his conversion he accompanied his master to Mecca on the pilgrimage, and received his freedom, as no one can perform the pilgrimage and remain a slave.

Pitts does not appear to have embraced with his conscience the religion driven into his soul by the soles of his feet, many years after he had passed the age of eighteen, and he does not write very favourably of the people he describes.

"Mecca is a town, situated in a barren place, about one

¹ *A Faithful Account of the Religion and Manners of the Mahometans, in which is a particular relation of their Pilgrimage to Mecca, the place of Mahomet's birth, and description of Medina, and of his tomb there, &c. &c.* T. Longman and R. Hitt, London, A.D. 1708.

day's journey from the Red Sea, in a valley, or rather in the midst of many little hills. It is a place of no force, wanting both walls and gates. Its buildings are very ordinary, insomuch that it would be a place of no tolerable entertainment were it not for the anniversary resort of so many thousand Hajjis, or pilgrims, on whose coming, in a manner, the whole dependence of the town is ; for many shops are scarcely open all the year besides. The people here, I observed, are a poor sort of people, very thin, lean, and swarthy. . . . The town hath plenty of water, and yet but few herbs, unless in some particular places. Here are several sorts of good fruits to be had ; viz., grapes, melons, water melons, cucumbers, pumpkins, and the like ; but these are brought two or three days' journey off, where there is a place of great plenty, called, if I mistake not, Habbash.¹ Likewise sheep are brought hither and sold. So that, as to Mecca itself it affords little or nothing of comfortable provision. It lieth in a very hot country, insomuch that people run from one side of the street to the other to get into the shadow, as the motion of the sun causes it. The inhabitants, especially men, do usually sleep on the tops of the houses for the air, or in the streets before their doors. Some lay the small bedding they have on a thin mat on the ground ; others have a slight frame, made much like drink-stalls, on which we place barrels, standing on four legs, corded with palm cordage, on which they place their bedding. Before they bring out their bedding they sweep the streets, and water them. As for my part I usually lay open, without any bed-covering, on the top of the house ; only I took a linen cloth, dipped in water ; and, after I had wrung it, covered myself with it at night ; and when I awoke I would

¹ Pitts is evidently mistaken in the name. Such articles could never have been brought from Habash, Abyssinia. Captain Burton states that such green fruits and vegetables are brought from Taif.

find it dry; then I would wet it again, and thus I did two or three times of a night."

Pitts remained in Mecca for four months. He thus describes the well of Zem Zem. "In the temple of Mecca there is a well called Zem Zem, the water whereof they call holy water, and as superstitiously esteem it as the Papists do theirs. In the month of Ramadan they will be sure to break their fast with it. They report that it is as sweet as milk, but for my own part I could perceive no other taste in it than in common water, except that it was somewhat brackish. The Hajjis, when they come first to Mecca, drink of it unreasonably, by which means they are not only much purged, but their flesh breaks out all in pimples, and this they call the purging of their spiritual corruptions. There are hundreds of pitchers belonging to the temple, which, in the month of Ramadan, are filled with the said water, and placed all along before the people—with cups to drink—as they are kneeling and waiting for Acsham Nomas, or evening service; and as soon as the Muezzins or clerks, on the tops of the Minarets, begin their bawlings to call them to Nomas, they fall a drinking thereof before they begin their devotions. This Beer, or well of Zem Zem, is in one of the little rooms before mentioned at each square of the Beat, distant about twelve or fifteen paces from it, out of which four men are employed to draw water, without any pay or reward, for any that shall desire it. Each of these men has two leathern buckets, tied to a rope on a small wheel, one of which comes up full, while the other goes down empty. They do not only drink this water, but oftentimes bathe themselves with it, at which time they take off their clothes, only covering the lower parts with a thin wrapper, and one of the drawers pours on each person's head five or six buckets of water. The person bathing may lawfully wash himself therewith above the middle, but not his

lower parts, because they account they are not worthy, only letting the water take its way downwards. In short, they make use of this water only to drink, take Abdes, and for bathing ; neither may they take Abdes without it, unless they first clean their secret parts, with other common water. Yea, such an high esteem they have for it that many Hajjis carry it home to their respective countries in little latten or tin pots, and present it to their friends, half a tea-spoonful may be to each, who receive it in the hollow of their hand with great care, and abundance of thanks, sipping a little of it, and bestowing the rest of it on their faces and naked heads ; at the same time holding up their hands, and desiring of God that they also may be so happy and prosperous as to go on the pilgrimage to Mecca. The reason of their putting such a high value on the water of this well is because, as they say, it is the place where Ismael was laid by his mother Hagar. I have heard them tell the story exactly as it is recorded in the twenty-first chapter of Genesis ; and they say that in the very place where the child paddled with his feet, the water flowed out."

Further, in regard to the customs in connection with the pilgrimage, Pitts states, after describing the Kaabah, that when all the ceremonies of the pilgrimage are concluded, the Sultan of Mecca, who is Sherif, with some of his favourites, washes out and cleans the floors of the Kaabah, first with water from the well of Zem Zem, and afterwards with sweet water. While this is being done, the pilgrims crowd to the place to receive the sweepings of the water, which they drink. The besoms with which the place is cleansed are also broken up, and carried away as relics. The roof of the Kaabah is flat, and is fitted with spouts for the water. The water coming from these spouts during the rains is also held in high estimation, and is used by the pilgrims for drinking.

Pitts concludes his narrative regarding Mecca by saying: "But though this place, Mecca, is so very holy, yet it comes short of none for lewdness and debauchery. As for uncleanliness, it is equal to Grand Cairo, and they will steal even in the temple itself."

The descriptions of all the travellers who have visited Mecca at this season are identical in substance.

It appears, however, that the pollutions from the sacrifices at Mina are of comparatively modern date, for there were capacious wells specially prepared at Mina in ancient times to receive the blood and offal of the animals sacrificed. These wells have been disused, apparently for centuries, and have become filled up with sand and rubbish.

Pilgrims, although not absolutely forbidden, are dissuaded, by Koranic law, from remaining in Mecca after the rites of the pilgrimage are concluded; consequently the Bagdad, Damascus, and Egyptian caravans prepare at once for leaving, and they are accompanied by crowds of pilgrims on foot, who seek the protection and support of the caravans through the desert.

But although the great caravans arrive and depart at definite times with all the regularity of Atlantic steamers, great numbers of pilgrims are in the vicinity of Mecca for a much longer period. Pilgrims from great distances, entering Arabia from the sea-ports, very frequently arrive two or three months before the Eed el Kurban, and many remain at Mecca, or its port-town, Jidda, till the close of the following month, Moharram. At Jidda there are usually about twenty-five or thirty vessels for the purpose of conveying the Indian pilgrims.

Mecca, Jidda, and the neighbouring provinces, more especially Yemen, are never clear of pilgrims. Before the ceremonies are well over the next year's stream begins to pour in, and the numbers increase as the season

advances. Mr. Consul Plowden touched at Jidda on his way home from Abyssinia, in April, 1847. One of the passengers with him from Massowah was a pilgrim, on his way to Mecca. He was a Mohammedan priest from Teegray. On their way they touched at Gonfuda. There were fifty vessels in the harbour of Jidda on their arrival. Mr. Plowden writes¹ :—"The great conversation at this time turned upon the late dreadful mortality among the pilgrims at Mecca, of whom 60,000 were said to have died of a sudden and alarming cholera—dropping down dead whilst in apparent health." The pilgrimage season would take place at the end of December, 1846, and within three months the new stream of pilgrims was pouring in on the smouldering embers of a recent epidemic of cholera. Thus an epidemic has scarcely time to die out before the materials for a fresh one are congregated on the spot. This is peculiarly the case with Yemen and Hadramaut. The desert lines traversed by the great caravans of Egypt, Syria, and Persia, are peculiarly pilgrim routes; but the lines of communication with the districts to the south of Mecca and Jidda are mercantile as well. There is also large trading intercourse with Berbera during the season of the annual fair, from the middle of November till the middle of March. Thus, while numerous pilgrim ships, loaded with passengers, regularly leave India and the Strait Settlements for Jidda, there are also considerable numbers of merchant pilgrims who visit, on their way to and from Mecca, these commercial centres; and, in addition to such, there is very frequent communication by purely trading craft. In so far as Mecca is concerned, the movements of the population to the north and east are fluctuating, while along the seaboard to the south they are constant.

¹ *Travels in Abyssinia and the Galla country.* By Walter C. Plowden, H.B.M.'s Consul in Abyssinia, p. 328.

Considering Arabia as a whole, there is no country in the world in which cholera is less likely to be endemic, and cholera has never been endemic in the province of Hadramaut. Next to Yemen, however, this province is peculiarly exposed to epidemic cholera, and more especially the seaport of Makalla, as it is a commercial centre of a large district, and a port at which vessels, to and from the Persian Gulf, and the Red Sea ports frequently call. Yemen, however, and the port of Jidda are much more exposed, and it has been affirmed that cholera is endemic in Yemen. The data accessible, however, do not seem to warrant the conclusion that cholera is endemic in Yemen, in the strict sense of the term. Exposed, as the province continually is, to fresh invasions from districts in India where cholera is endemic, and to all parts of the world where cholera may be epidemic, one invasion may succeed another with such rapidity as to give the disease an appearance of being endemic; or an epidemic actually existing may be continued for such a length of time, by the continued influx of strangers, as to lead to the belief that cholera is truly endemic there. There is every reason to believe that the epidemic of cholera of 1869-70, in Zanzibar, would have expended itself, within three months, among the resident population had not fresh material been added by the influx of strangers.

It is a well-known fact that Mecca has been a centre of diffusion of some of the most desolating epidemics of cholera that have spread over the world, and by considering the facts connected with the pilgrimage, it is very easy to see how this should be the case. Whatever theories may be formed regarding the transmission of cholera, it will not, I presume, be denied that cholera epidemics do pass along the lines of human traffic. It is possible, therefore, that an epidemic might reach Mecca by any of the caravan routes mentioned; but it is extremely improbable that such

would be the case by the Egyptian or Syrian lines, where there is a journey of forty days' hard travelling through the desert. An epidemic would more probably advance along the Persian caravan route, across the centre of Arabia, through Nejd, a comparatively short and easy track, and, more probably still, by the Persian line through Djebel Shomar. The Persian pilgrims are not at all remarkable for their cleanliness, but rather the reverse. The most filthy hordes of pilgrims are those from Persia and Central Asia. The Persian pilgrims, moreover, are in direct communication with plague spots on the Euphrates and the Tigris, with the shrines of Meshed Hussein, or Kerbela, and Meshed Ali, or Nedjef, in the pachalick of Bagdad. This, the favourite line of route for all the Shiites from Persia and India, is the only landward route from which Medina and Mecca are peculiarly exposed to infection. I am not aware that the same sentiments prevail in India and Persia, but it is certain that the Moslem natives of India, resident in Zanzibar, who are Shiahhs, disregard altogether the pilgrimage to Mecca, but all make the pilgrimage to Kerbela at least once in a lifetime, and while they would disregard the ceremonies at Mecca, they would visit Medina to curse the memories of the first Caliphs, and weep over the tombs of the parents of Fati-mah, the daughter of the prophet, and the wife of Ali.

Mr. Palgrave gives a description of the Djebel Shomar caravan route, and also mentions an epidemic of cholera which occurred on this route. The extreme importance of this line of route as liable to affect Europe is sufficient justification for making an extract from Mr. Palgrave's work¹:—"In the year 1854 or 1855 (for precise accuracy in chronology in these countries is utterly hopeless), the world-

¹ *Central and Eastern Arabia*. By W. G. Palgrave, v. 1, p. 407. Mr. Netten Radcliffe calls special attention to this route in his official "*Report on the Recent Diffusion of Cholera in Europe*," 1872.

wide visitation of cholera, after travelling over the more important and thickly peopled lands and kingdoms of the East, bethought itself of Central Arabia. Crossing the desert from the west, it fell upon Nejd like a thunderbolt, and began its usual ravages with a success totally unchecked by any preventative or curative measures. The upper mountain district of Sedeyr alone escaped; the lower provinces of Yemamah, Harek, Woshem, and Dowāsir suffered fearfully, and the Aared itself was one of the most severely treated. The capital lying in a damp valley, and close built, was depopulated; a third of its inhabitants are said to have perished within a few weeks, and among the victims were some of the Royal Family, and many others of aristocratic descent." In speaking of Djebel Shomar, which is more in the direct line with Persia, he says that Telal, the Chief, wished to improve his finances by opening up a pilgrim route through his country.¹ "Djebel Shomer exactly crosses the line drawn from the central and upper provinces of Persia to the Hejaz, and thus is right in the track which Persian pilgrims would naturally follow in their annual visits to the Meccan Ca'abah, or the tombs of Medina, whether those of Mahomet and his companions, or the more equivocal monuments of Shiya'ee devotion. . . . Many circumstances combined to favour this project. The road from Teheran and Bagdad by Djebel Shomer, traversing the narrow neck of the Arabian continent, and leading right to the sacred cities whither the pilgrims were bound, was indisputably more commodious, and more secure, besides involving far less expense than the circuitous route followed so often by the Persian caravans through Syria; or southward down the Persian Gulf, and along the coast of Oman, Hadramaut, and Yemen to Djiddah. There remained, indeed, the road

¹ *Op. cit.* vol. 1, pp. 195-197.

across the centre of Arabia, through Nejed, a comparatively short and easy track, but this was rendered almost impracticable for the votaries of Alee by the bigoted intolerance of the Wahhabees, who deemed their land polluted if trodden by such unbelieving wretches. Telal found the Persian authorities well disposed to come into his ideas, and the Shah himself, when informed of the project, notified his entire approbation. However, in spite of all opposition, a numerous band of conical caps and furred robes appear every pilgrim season in Hā'yel. I was myself witness of one caravan, and all the Persians in it expressed their gratitude in very bad Arabic for the gracious treatment they had met with from Telāl and Meta'ab, and their entire satisfaction with the Shomer government." Mr. Palgrave travelled through the country in 1862-63, and as this is the natural line from Persia to Medina and Mecca, it is certain to become the favourite, not only for the Persians, but also for their co-religionists in India, who visit the shrines of Meshed Ali and Meshed Hussein. The Shiahs of Persia and India mutually dislike the Wahhabees of Nejed, and the latter regard the former as little better than infidels. The Wahhabees regard with horror the smoker of tobacco, and they ascribed the epidemic of cholera that visited them to a judgment of God for their laxity in allowing use of tobacco, and the wearing of silk and gold. A tobacco raid was made, and every suspected smoker was seized, and summary vengeance, by means of the stick, was inflicted on him in the streets; the Persians, therefore, who are notoriously addicted to the use of the weed, would not find this a pleasant country to pass through. Captain Burton originally intended to pass across Arabia to Muscat. He says:—¹ "Anciently there was a caravan route from Muscat to El-Medina. My friends could not

¹ *Op. cit.* v. ii., p. 297.

tell me when the line had been given up, but all agreed that they had not seen an Oman caravan for years, the pilgrims preferring to enter El-Hejaz, *via* Jidda."

The Oman line was along the coast of the Persian Gulf, and through Nejed to Mecca, but this line has been frequently interrupted, and even closed for many years, by the turbulent Wahhabis, who for many years had virtual possession of the sacred cities. The Italian renegade, Giovanni Finati, or Haji Mohammed, as he called himself, was in the army of Mohammed Ali when that old chief led it against the Wahhabees for the recovery of Mecca and Medina in 1815, and he was present at the battle of Bissel, when Mohammed defeated 24,000 Wahhabees, under the command of Taysal bin Saud. The turbulent and independent tribes of Central Arabia, of Oman, and the sea-board of the Persian Gulf are in a perpetual state of feud and strife. There are ever accumulating blood feuds amongst them, and when a fight takes place, they count their slain, and the debt is placed against the victors. In the case of a peaceful death, the Bedouin mother laments only that her son did not die on the field, and, if he dies on the field, there is no mourning till the death is avenged. From the nature of the country, deserts and oases; from the pure air of both; from the simple habits of the people, the hardy life which they lead, and from the feudal state of the government, there is no country in the world more unlikely to be under the influence of endemic cholera than Arabia.

It is extremely doubtful if any epidemic of cholera ever originated at Mecca, and Mecca is the only place in Arabia where an epidemic might be supposed to originate. I have seen no evidence that such has ever taken place. Indeed, it is impossible to prove that such has ever been the case, and all evidence tends to a contrary direction.

Nowhere in East Africa, not even in the filth of Zanzibar, has cholera ever originated. The filth of Mecca bears no comparison to the filth of Zanzibar, nor to the charnel-larders in Manyuema-land; and, in such respects, the only peculiarity in Mecca during the pilgrimage consists in the decomposing blood of the victims slaughtered in the valley of Mina on the 10th of Zu'l Hijjah. Decomposing blood has never been known to *originate* the specific poison of cholera, and if it did so, there is no reason why the poison should not be produced by the blood of three hundred as well as by that of three thousand or thirty thousand victims. The blood shed on many a field of battle is greater than that annually poured out on the valley of Mina, and the troops remain in the immediate vicinity as long or longer than the pilgrims do; and in the houses of the brutal Manyuema the putrid odour of decomposing flesh in the huts kills the fowls.

Stuffing the nose with cotton-wool is a common practice among the Bedouins, and among the Arabs of Hadramaut, and I think that I have seen the Somalis doing the same. Natives of the desert, they are extremely sensitive to smell, and the common idea is, that disease enters the system by inhalation. They insert cotton-wool into the nostrils, and connect each plug with a piece of cord which hangs down over the chin. The Bedouins do so when they visit a town, and the Hadramaut Arabs frequently do so in Zanzibar, more especially if they feel slightly unwell, and if they have but recently come to the place, the idea being that the air of a town is unhealthy. I have often asked the reason of the custom, and was always told that it was to prevent the entrance of disease by the nostrils.

The nomenclature of many diseases amongst the Arabs is based upon this theory, and even the designation of cholera itself; the dreaded "Rih-él-ásfar;" "Vente jaune," or the "Yellow wind."

There are three words in Arabic used to designate cholera. "Waba" is a general term applicable to any disease of which people die, simultaneously, in great numbers. It is thus very much a general term indicating, "a plague," whatever the nature of the seizure may be, and is thus applied to cholera, to "the plague" proper, and sometimes even to epidemics of small-pox. The technical meaning of Ta'ūn is the "black death;" the "plague" proper. This term is also very frequently misapplied by the natives themselves to cholera, and during the epidemic of 1869-70, cholera was universally spoken of as Ta'ūn in Zanzibar. Rih-él-ásfar is the proper technical term for cholera, and means the "*Pallor rih*," the word *rih* properly meaning "wind." Captain Burton says that,¹ "the antiquity of the word and its origin are still disputed." *Rih*, strictly meaning wind, is a kind of generic term for "disease," and probably originated from the idea that certain diseases were caused by wind in the tissues. The word "ásfar," "yellowness," or "pallor," is connected with the term for "biliousness." Captain Burton says, "El Medina has been visited four times by the Rih-él-ásfar, or cholera morbus, which is said to have committed great ravages, sometimes carrying off whole households. In the Rahmat el Kabirah, the 'Great Mercy,' as the worst attack is piously called, whenever a man vomited he was abandoned to his fate; before that he was treated with mint, lime-juice, and copious draughts of coffee. It is still the boast of El-Medina that the Ta'ūn, or plague, has never passed their frontier."

While there is no obvious cause for the origination of epidemic cholera during the Eed el Kurban at Mecca, there are many circumstances connected with the festival well calculated to predispose to the reception and spread of epidemic disease among the assembled multitudes.

¹ Burton, *op. cit.* v. ii., p. 174.

The severe fatigue endured by all the pilgrims cannot but be conducive to the spread of disease amongst them when they are all finally congregated in one place. Although the pilgrimage proper does not commence till they assume the pilgrim garb near Mecca, still the fatigue of the journey, previous to that time, is great to all, both rich and poor, and to the latter class, who may have come from great distances, it must be altogether indescribable.

Thousands of people collect there annually who have travelled over regions greater in extent than was passed over by Livingstone during his last journey, and who, in doing so, have endured greater hardships. According to the testimony of all writers who have fallen in with the poorer pilgrims on their journey, and more especially Burton, Vambéry and Maltzan, the latter having made the pilgrimage in 1860, disguised as a Maghrabin, the sufferings endured, and the hardships encountered, are of an almost incredible nature. Even to the wealthy, a forty days' journey through the desert is no ordinary trial of strength; but to the poor negroes from Western and Northern Africa, and to those from the confines of China, it must be dreadful. The wonder is, that any survive the journey and reach Mecca. Thoroughly exhausted and worn out by the severity of their trials, they arrive at the boundaries of the sacred territory where the pilgrimage proper begins, and where they are soon to be exposed to equally great hardships and still greater dangers. Coming even from the uncontaminated air of the deserts, they are rendered peculiarly susceptible to the influence of epidemic disease. Those who live in the healthiest and best localities, and who are accustomed to breathe the purest air, are more liable to be severely affected by epidemic disease, when fairly brought within its influence, than those habitually breathing the polluted atmosphere of large cities. The Highlanders of Scotland, and those from country

districts generally, are more susceptible to the influence of epidemic disease, when they migrate into cities, than are the denizens of the cities themselves. In the cholera epidemic of 1869-70, at Zanzibar, the disease prevailed only among the Europeans in the harbour who spent their lives at sea. Amongst aboriginal tribes, and those of primitive habits, epidemic diseases, such as cholera and small-pox, decimate and depopulate entire regions, and the virulence of the type is altogether unknown in less healthy regions. A striking illustration of this is afforded by the recent epidemic of measles in Fiji. It is only such people who may be aptly described as cholera-stricken, the disease falling upon them like a thunder-bolt. These circumstances combined;—the reduced physical condition of the pilgrim consequent on their long and toilsome journey, and the very fact of their coming from uncontaminated regions, where their modes of life have been simple and primitive;—would naturally render them peculiarly susceptible to the influence of disease, and more especially to that of any disease of an epidemic nature.

There can be nothing more injurious to health, in any climate, than an arbitrary change of dress. Articles of clothing suited to one class of people, from long habit, may be entirely unsuited to those of a different class, and who come from a different country. The European, although accustomed to a climate where there is a great thermometric range, is less able to endure a downfall of rain, on the naked skin, within the tropics, than the negro who is never exposed to intense cold; and the sun's rays have a very different effect on the various races of men. The negroes expose, without fear, their shaven scalps to the fiercest vertical rays of the sun; but all Arabs and natives of India, whom I have met, are most particular in regard to the covering of the head, when exposed to the sun; and their turbans form as effectual a protection as the

sun-topos of Europeans in the same climates. Dr. Livingstone was one of the few Europeans who could dispense with any appropriate covering, and who maintained that the sun had no deleterious effect. When the pilgrimage proper begins the head is shaven, and no covering is allowed to be worn on the head or feet; the laical dress is laid aside, and the simple *Ihrâm* put on.

No matter what the season of the year may be, whether it be during the genial spring, the burning heat and simoom of summer and autumn, or during the rain and tornadoes of winter, the obligations are invariable. No exception is made for country, constitution, or age. The aged, feeble, and delicate fare the same as the young, vigorous, and robust: and those who have a cranium like an eggshell, covered with the most delicate scalp, are equally exposed with the negro, whose skull may be like boiler plate, overlaid with a scalp like hippopotamus hide.

There is no time for resting and recruiting after the long and exhausting journey, for the pilgrimage proper commences at once. Many, of course, may have an opportunity of resting, especially those who arrive by way of Yemen, or the sea-ports, such as *Jidda*; but not the mass of pilgrims by the caravan routes through the deserts of Arabia. This seems to be one of the hardest ordeals connected with the pilgrimage, and the extracts made from Captain Burton's "Personal Narrative" will be sufficient to show how this is the case.

The fatigue and privations at Mecca are not by any means less than those endured on the way, although they are but of short duration.

As the pilgrims approach the sacred city, and as their eyes fall upon the Mosque, within which is the Kaabah, to whose venerable site they have journeyed so far, encountering incredible dangers and hardships, their feelings must

be wrought up to the highest pitch of excitement and exaltation, and instead of feeling enervated they will be impelled to engage in the rites of the Kurban Bairam to the very letter.

One of the very first duties is to drink of the water of Zem Zem, and from all the accounts given, the pilgrims do so immoderately, and continue to do so as long as they remain in Mecca. The water of Zem Zem doubtlessly contains a saline purgative; and when partaken of frequently, and in large quantities, might predispose to diseases affecting the alimentary canal. It is by no means apparent that cholera is a disease of the alimentary canal, but as diarrhœa is one of the most common symptoms, the immoderate use of a strongly purgative saline, may have some effect in increasing the receptivity of the system to an attack of cholera.

There is thus suddenly thrown upon Mecca, and its immediate vicinity, a miscellaneous multitude of strangers of all conditions, and from every region, amounting to at least fifty thousand souls, the greater number being in an impoverished condition, and without the proper means of shelter during the heat of summer or the rain of winter, and even destitute of the means of sustaining life. The preliminary services at the Kaabah, and during the running were so arduous that even Burton could not complete them, and yet many passed the entire night within the precincts of the temple.

Nothing short of an excitement bordering upon frenzy could ever carry through the pilgrims, more especially the Takruri, and Maghrabi, who travel every mile on foot. Even the camels and other beasts of burden were worn out with the journey, and Burton saw five men fall down dead on the road. This would represent but a small number of the deaths from fatigue. It is a matter of surprise that the class of people especially referred to should ever attempt

to make the pilgrimage, as the making of it is not binding on any class of Moslems, except the Maliki, unless the pilgrim has sufficient means to defray his expenses, and to maintain his family during his absence. A learned Arab, when questioned by Burton on the subject replied, "By Allah, there is a fire within their hearts, which can be quenched only at God's house, and His prophet's tomb." The day of Arafat is a trial of itself.

Immediately succeeding the sermon on Arafat, when all must stand within the limits of the mount, there is the rush to Mina, and the encampment there, the ceremony of lapidation, and the sacrifices. The poorer and more wretched the pilgrims are, the more strictly they will attend to every particular of the ceremonies, and every one will be present within the crater-like valley of Mina. To sacrifice is not obligatory, but meritorious, and specially so if the entire animal slain is given to the poor; and it is no sacrifice if the whole animal is appropriated to one's own use or profit. It is upon the sacrifices that the poorer class of pilgrims depend for food, during the days of the Kurban Bairam.

Viewing the entire concourse of pilgrims, individually, we could scarcely imagine people in a more unfavourable position for being attacked by epidemic disease. The results of the sacrifices at Mina, the decomposing blood and offal, undoubtedly poison the atmosphere, lower the state of health and tend to predispose to disease, even although they are not sufficient to account for the origin of epidemic cholera.

While even more than doubting whether any epidemic of cholera ever had its origin at Mecca, there is every reason for regarding Mecca, during the pilgrimage season, as one of the most favourable spots for the germination or reproduction of an epidemic.

Whatever may be the correct theory, regarding the causa-

tion and spread of cholera, it can scarcely be denied that the apparent insignificance of the origin among a people is no indication of the immensity of the result. A single case of cholera occurring among the multitude of pilgrims assembled at Arafat or Mina might spread with fearful rapidity among them; and if isolated cases, such as might be considered as sporadic, existed previously in the neighbourhood, the circumstance would be quite sufficient to account for the most violent epidemic among the pilgrims.

There is first of all the immense concourse of individuals collected within a very limited space at Mecca, Arafat, and Mina, and afterwards within the Kaabah and the Mosque, and even the diseased and dying struggling to join the throng that they may die in the performance of the religious ceremonies. And not only are the dying commingled with the living, even the dead are introduced into their midst. Burton in speaking of the Kaabah says, "Every now and then a corpse, borne upon its wooden shell, circuited the shrine by means of four bearers, whom other Moslems, as is their custom, occasionally relieved." The circumstances connected with the ceremonies are peculiarly favourable to the rapid spread of epidemic disease, and the supporters of the various theories concerning the propagation of cholera may find in them confirmation of their special doctrines. The dying are mixed up with the living; the dead are borne through the assembled multitudes, and laid in their shallow graves in the midst of the tents of the living; the spoils of the dead are appropriated by the poorer class of pilgrims, and even the dead are frequently packed up, more especially by the Persians, to be carried, for interment, to their homes, or to the shrines of Meshed Ali or Meshed Hussein; the entire surface of the district is contaminated with dejecta, and the atmosphere poisoned with exhalations; clothing and food are tainted, and in so far as it can be, the water of Zem Zem

is saturated with the germs of disease. According to Captain Burton the well of Zem Zem is carefully built in, but it may be surmised that it is to some extent exposed by means of filtration or surface deposition to contamination. It would be difficult to conceive of any combination of circumstances more conducive than those mentioned to the spread of an epidemic of cholera.

While Captain Burton was in the Kaabah, alone, the atmosphere was suffocating, and to him unendurable, and it may easily be imagined what it would be when filled by a living stream of pilgrims. The Rev. Adam White, in describing the religious festival at Punderpoor in 1863, writes,¹ "But the peculiar seed-plot where that pestilence (cholera) germinates remains to be described. It is believed that it is *the very temple of Vithoba itself*, a small stone room, with no aperture but a small door, into which, perhaps, 50,000 persons in the course of a few days force their way, and in the immediate neighbourhood of which, in the temple court, may be seen thousands of men and women sitting closely packed, waiting for their turn to enter. So polluted does the air of the temple become, that the vapour from the breath and bodies of the worshippers condenses on the image, thus giving rise to the idea that the god miraculously perspires. The sub-assistant surgeon now appointed by government to Punderpoor, stated to me his belief that the disease, in its first origin, could usually be traced to *that spot.*"

The Kaabah at Mecca somewhat resembles in structure the temple of Vithoba, and, although it is not at all probable that cholera ever originated in either place, it is very possible that each may form a most important centre of dissemination, both during the period of visitation, and, in the former case, when the pilgrims drink the water with which the floor of the Kaabah is washed.

¹ *Eighth Report of the Medical Officer of the Privy Council*, p. 372.

In every pilgrimage season, when the ceremonies are concluded, there is always a considerable amount of sickness among the pilgrims, and many from the results of fatigue, exposure to changes of temperature while they have been wearing the *Ihrâm*, and also owing to extreme poverty, remain in Mecca and Jidda entirely dependent on charity and unable to proceed on their journey homeward.

A violent re-action must follow the unnatural excitement consequent upon the ceremonies, and it was wisely ordered that all pilgrims should leave for their homes immediately after the conclusion of the festival. While the poorer pilgrims would be animated by the greatest zeal and determination in setting out on, and pursuing their journey to the sacred cities, there would be an opposite effect in turning their backs upon Mecca, and facing the dreadful journey to their own homes.

Whenever an epidemic of cholera has broken out among the pilgrims assembled at Mecca, the results have been terrific.

Spreading rapidly amongst them, with the greatest virulence, a general panic takes place, and when the ceremonies are over there is usually a regular stampede;—a rush from the infected spot.

It is certainly the case that in proportion as sacred spots are resorted to by pilgrims, and become points of convergence to vast numbers of people, so may they become great centres of divergence, and that disease of an epidemic nature brought to the common centre from one point of the compass, may be disseminated in every direction, and over the world.

Sir S. Baker writes:¹—“I believe in holy shrines as the pest spots of the world. We generally have experienced in Western Europe that all violent epidemics have arrived from the East. The great breadth of the Atlantic boun-

¹ *Nile Tributaries of Abyssinia*. By Sir S. Baker, p. 159.

dary would naturally protect us from the West; but infectious disorders, such as plague, cholera, small-pox, &c., may be generally tracked throughout their gradations from their original nests; those nests are in the East, where the heat of the climate acting upon the filth of semi-savage communities engenders pestilence.

“The holy places of both Christians and Mohammedans are the receptacles for the masses of people of all nations and classes, who have arrived from all points of the compass; the greater number of such people are of poor estate; many, who have toiled on foot from immense distances, suffering from hunger and fatigue, and bringing with them not only the diseases of their remote countries, but arriving in that weak state that courts the attack of any epidemic. Thus crowded together, with a scarcity of provisions, a want of water and no possibility of cleanliness, with clothes that have been unwashed for weeks or months; in a camp of dirty pilgrims, without an attempt at drainage, an accumulation of filth takes place that generates either cholera or typhus; the latter, in its most malignant form, appears as the dreaded “plague.” Should such an epidemic attack the mass of pilgrims, debilitated by the want of nourishing food, and exhausted by their fatiguing march, it runs riot like a fire among combustible materials, and the loss of life is terrific. The survivors radiate from this common centre, upon their return to their respective homes to which they carry the seeds of the pestilence to germinate upon new soils in different countries. Doubtless the clothes of the dead furnish materials for innumerable holy relics as vestiges of the wardrobe of the Prophet; these are disseminated by the pilgrims throughout all countries, pregnant with disease; and being brought into personal contact with hosts of true believers, Pandora’s box could not be more fatal.

“Not only are relics upon a pocket scale conveyed by

pilgrims, and revered by the Arabs, but the body of any Faky, who in lifetime was considered extra holy is brought from a great distance to be interred in some particular spot. In countries where a tree is a rarity, a plank for a coffin is unknown; thus the reverend Faky, who may have died of typhus, is wrapped in cloths and packed in a mat. In this form he is transported perhaps some hundred miles, slung upon a camel, with the thermometer above 130° Fahr. in the sun, and he is conveyed to the village that may be so fortunate as to be honoured with his remains. It may readily be imagined that, with a favourable wind, the inhabitants are warned of his approach some time before his arrival. Happily, long before we arrived at Sofi, the village had been blessed with the death of a Faky, a holy man who would have been described as a second Isaiah, were the annals of the country duly chronicled. This great man of God, as he was termed, had departed this life at a village on the borders of the Nile about eight days' hard camel journey from Sofi; but from some assumed right, mingled, no doubt, with jobbery, the inhabitants of Sofi laid claim to his body, and he had arrived on a camel horizontally, and had been buried about fifty yards from our present camp. His grave was beneath a clump of mimosas that shaded the spot, and formed the most prominent object in the foreground of our landscape. Thither, every Friday, the women of the village congregated with offerings of a few handfuls of dhurra in small gourd shells, which they laid upon the grave, while they ate the holy earth in small pinches, which they scraped like rabbits, from a hole they had burrowed towards the venerated corpse. This hole was about two feet deep from continual scratching, and must have been very near the Faky. Although bamboos did not grow in Sofi, great numbers were brought down by the river during the rains; these were eagerly collected by the Arabs, and the grave of the Faky was ornamented with

selected specimens, upon which were hung small pieces of rag-like banners. The people could not explain why they were thus ornamented, but I imagine the custom had originated from the necessity of scaring the wild animals that might have exhumed the body."

Every caravan route from Mecca has been at some time or other a cholera track, and wherever the pilgrims have reached, in their journey homewards, centres of population, the disease has spread amongst the people. At the outbreak of the dreaded *Ríh-él-ásfar* at Mecca, every one is filled with consternation, and so much is its appearance dreaded, that any unusual phenomenon of nature, such as the appearance of a comet, is looked upon as a portent of the coming disaster. The Egyptian, the Syrian, and the Persian caravans are mustered with haste whenever the necessary services are concluded. Not a moment is lost; the camels are loaded, and prepared for the most rapid march homeward, and the caravans often start with an insufficient supply of food and water. The poorer classes and the foot passengers hasten to join their respective caravans, as they well know that no time will be lost in waiting to pick up the dilatory and the stragglers; and they, weary and foot-sore from their long journey, and from the fatigues of the pilgrimage, start, penniless and destitute, on their forty days' march over the sandy and stony deserts of Arabia, where not a green blade is to be seen.

Fleeing from the pestilence, but with death clinging to them like the shirt of Nessus, they journey at their utmost speed through the deserts, and their track is marked by the dead bodies of men, and of beasts of burden, fallen from disease and exhaustion.

The healthy cannot attend to the sick, nor can the living be allowed time to bury the dead, when it is with all a race for life; and the abandoned become food for the

vultures before life is extinct. A single caravan has lost more than one thousand men on its journey home. Even at Mecca itself the mortality has been so great that the dead have been allowed to lie unburied, and on the road from Mecca to the sea-port of Jidda the deaths on the way have been so numerous that large trenches have been excavated, and the unwashed dead have been cast into them, the appropriate Moslem burial rites being impossible to be observed. The great rush is invariably made towards Jidda, in the hope of finding ships bound from that place to the various ports of the Red Sea, to Southern Arabia, to the Persian Gulf, to the ports of India, the Straits settlements, and to the harbours of Africa. Cholera, therefore, rages with violence in Jidda and on the road between it and Mecca, and the harbour of Jidda becomes a great focus of dissemination.

While the journey through the desert is, to a certain extent, a safeguard against the invasion of an epidemic, there is no means of conveyance so favourable to its spread as a native vessel, and no district is safe to which such infected craft are bound. It is a well-established fact, that the seeds of cholera may be conveyed in a ship for at least fifteen days before an actual outbreak takes place, so that no district within that area is safe, and when an actual outbreak does take place on board ship, there is no place more likely to foster and preserve, in full activity, the seeds of disease, ready to be developed, in full activity, whenever the vessel reaches its port of destination. The horrors attendant on an epidemic of cholera on board native craft may be easily imagined, on considering the circumstances in which passengers and crew are placed in such craft as Captain Burton sailed in on his passage down the Red Sea.

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CHAPTER III.

ORIGIN AND GEOGRAPHICAL DISTRIBUTION OF CHOLERA EPIDEMICS IN EASTERN AFRICA FROM 1821 TILL 1865.

THE earliest reference to cholera on the East Coast of Africa is in the narrative of Mr. J. B. Fraser.¹ Mr. Fraser arrived at Muscat on the 8th of July, 1821, and he remarks that, during a visit the Imaum paid the envoy "he confirmed a report which had before reached us of the epidemic of cholera having visited Muscat, where it had committed considerable ravages. His Highness informed us that he had lost by the disease at least ten thousand of his subjects ; that Muscat had by no means suffered most, as it had extended over the greater part of Omaun." "It had [was said to have] broken out spontaneously, first at Rooee, a village three or four miles from Muttra, without any known means by which contagion could have been conveyed. A ship with slaves from Zanguebar, which had lost a number on the passage, had, it is true, come to Muscat, but not until after the disease had appeared there."

"On the 18th of July Mr. Fraser's party arrived at Kishmee, where epidemic cholera was raging. Many of the inhabitants had fled to Meenab to find the disease still fiercer in that locality. The disease had by that time reached Bunder Abbassee and Bahrein. On the 20th of

¹ *Narrative of a Journey into Korasan in 1821 and 1822*, by J. B. Fraser ; quoted by Dr. Macnamara, *Treatise on Asiatic Cholera*, p. 32.

August it broke out at Bushire, and on the 29th was heard of at Cauzeroon (Kazerun) and Shiraz, in which latter place it first appeared in the Prince's Harem."

Although all trace of this epidemic has disappeared from the east coast of Africa, beyond a vague and indefinite report that cholera was known previous to 1836-37, the important statement of Mr. Fraser establishes the fact that cholera existed on the east coast of Africa in 1821; and that Africa was under the epidemic at the same time as the eastern coast of Arabia, and the Persian Gulf.

In all probability the slave dhow referred to would leave the Zanzibar, or the Somali coast, in April or May, with the first of the south-west monsoon, and run for the Persian Gulf. At that period, 1821, and prior to it, slave dhows very frequently took in their cargoes at the Somali ports, contiguous to the river Jub, at Patta, and Lamoo, as well as at the Zanzibar ports further south.

When Captain Smee visited the Somali coast in 1811, he found there a flourishing slave-trade, the slaves being conveyed down the river Jub and brought to Brava and other Somali ports for shipment. French vessels at that period filled up with slave cargoes at the Somali ports, and the greater number of slaves was conveyed to the island of Zanzibar from the north, instead of, as of late, from the slave fields to the south of Zanzibar, a mode of supply which will probably be revived in the present state of affairs.

The data regarding the epidemic in East Africa in 1821 are too few to admit of any generalization; but it is to be inferred that there was an epidemic in East Africa in that year, and that every succeeding epidemic has been simply a repetition of those which preceded, modified by slightly varying circumstances.

No epidemic of cholera in East Africa, with the exception of that of 1865, has ever been connected directly with epidemics in India, but all have been associated with

outbreaks in Arabia as previously stated, and the experiences of the present century may be regarded as an index of what has taken place in the past.

The commercial and other relations between Africa and India on the one hand, and Africa and Arabia on the other, are much the same now that they were twelve centuries ago.

Sir Bartle Frere¹ gives an admirable summary of the early connections of East Africa with Arabia. "Muhammad, about A.D. 630, sent Amr to summon the sons of the Azdite Prince Julanda, who then reigned over Omân, to embrace Islam and abandon idolatry. The Omânis had previously been, as Mr. Palgrave tell us, Sabæans, and many traces of the old worship of the heavenly bodies still exist among them. The summons was, however, obeyed; but we subsequently read of a revolt against Muhammad's successors led by a pseudo-prophet of Azdite origin, and though Abu-Bekr's generals defeated the pretender in successive bloody engagements, and Omar, Abu-Bekr's successor, was able from Omân to despatch an expedition to invade Sind, it was not till the end of the seventh century, A.D. that the authority of the Moslem Khalîfah was finally established in Omân after repeated invasions in great force directed by the governor of El-Irak; and Suleiman and Sa'id, descendants of the Azdite Julanda, emigrated "to the land of Zang," with their families and a number of their tribe. This is the first reliable record of any considerable emigration of the Omany Arabs to the east coast of Africa, which, however, it is probable had been for ages well known to the traders of Omân as a land of refuge and lucrative commerce and easy of access."

With varying fortunes the relations of Arabia and East Africa remained unchanged until the period of the Portuguese invasion; but until the present day the commercial

¹ *Macmillan's Magazine*, June 1875, p. 185.

intercourse, at the regular monsoon seasons, has been substantially the same.

There is a remarkable similarity in the cholera epidemic in India of 1820-21, and that of 1865-66. Dr. Macnamara says (*op. cit.* p. 31.): "In the meantime, cholera had extended both southward and eastward of India,—Ceylon, Arracan, and the Burmese Empire being under its influence in 1819. During the following year the country of Siam was absolutely devastated by cholera. It appeared about the same time in Malacca and Singapore. It broke out with great violence in the Philippine Islands, principally at Manilla.

"We hear of it throughout the years 1820 and 1821 in China, Batavia, and Java, but it is impossible to trace the epidemic over this vast area, the information I have on the subject being principally derived from the *Calcutta Journal*, and other local papers of the period; in these frequent references are made to the fearful ravages cholera made in these parts; but in a scientific point of view they are often silent on the most important circumstances of the epidemic."

The remarkable circumstance in the two epidemics consists in the fact that a slave-dhow, with cholera on board, left the Zanzibar coast with the first of the monsoon in 1821, bound for the Persian Gulf; and that in 1865 H.M.S. *Penguin* captured a slave-dhow, with cholera on board, which had sailed from the Zanzibar coast, where cholera was present at the very same period of the year—viz., the commencement of the south-west monsoon. The coincidence will be referred to hereafter, in describing the distribution of the epidemic of 1865.

The second authenticated epidemic of cholera took place in the latter part of 1836, and the early months of 1837.

It is often extremely difficult to fix precise dates when

they have not been recorded at the time, owing to the difference in the Christian and Mohammedan year ; but the date of this epidemic is rendered certain, from the fact of a letter having been sent from Zanzibar to Captain Mohammed bin Hamees, who was then resident in London, intimating the death of his grandfather from cholera.

The historical details of this epidemic are exceedingly scant ; but in regard to what has been stated concerning it, there are no discrepancies. The epidemic, in respect to its track, was connected with Arabia. It was first heard of in the Somali ports, and its line of progress was along the coast, and by means of dhows, from north to south ; the period of its progress being coincident with the prevalence of the north-east monsoon. The Island of Zanzibar was attacked, and became a fresh centre of dissemination, and the coast towns south of Zanzibar were devastated ; all traces of the epidemic being lost at the boundary of the Mozambique territories to the south.

Arabs, who have a distinct recollection of this epidemic, all agree regarding its line of progress ; and although the mortality was trifling as compared with succeeding epidemics, it was sufficient to impress the memory and fix the date.

In my communication to the Epidemiological Society in 1870, regarding this epidemic, I stated as follows :—“ In Zanzibar there are many natives of India who recollect this epidemic, and they speak of it, not only as coming from the north, but as being of African origin, and make a distinction between African and Indian cholera ; but this distinction arose probably from the fact that, while in India their race suffered severely from cholera epidemics, they, in Zanzibar, were almost entirely unaffected by this and succeeding epidemics ; so that while warning them regarding the danger to which they were exposed while the present epidemic was progressing towards the

island, they spoke lightly of it, and said that it was only African cholera." ¹

My information regarding the epidemic was perfectly correct, but at the time necessarily incomplete. The natives of India, resident in Zanzibar, were all unanimous in the statement that none of the preceding epidemics had reached Zanzibar direct from India, although the distance from Bombay, by dhows, may be covered in eighteen or twenty days. But when the Somalis from Merka and Brava were questioned, in after years, regarding the supposed African origin of the epidemics, they were equally positive in their assertion that cholera had never originated in their country, but had, in every instance, been conveyed to them from without.

The Somali ports of Mukdeesha, Merka, and Brava, are peculiarly exposed through human intercourse to any epidemic disease that may, during certain months of the year, be prevalent in the Arabian ports. Almost every native craft from the Arabian ports touches at one or other of the Somali ports for cargo, on the way to Zanzibar, and certainly not one in twenty passes on to Zanzibar direct. This is the general rule with all the dhows, from the Red Sea, the Gulf of Aden, and the Persian Gulf. The traffic opens with the commencement of the north-east monsoon; and the months of greatest exposure are November and December. The dhows from the Arabian ports do not come with cargoes for the Somali ports, and return again with freight. They may bring a small quantity of cargo, but their chief object in calling is to pick up cargo for Zanzibar; hence, they come with the first of the monsoon, that their chances for freight may be better. The period of exposure is thus very limited in the eastern Somali ports, much more so than in the northern Somali port of Berbera, which we will see hereafter is an important

¹ *Trans. Epidem. Soc. London*, viii. p. 265.

factor regarding the spread of cholera epidemics; for while Mukdeesha, Merka, and Brava are exposed for two months—certainly not more than two and-a-half—Berbera is exposed for nearly five months. The nature of the exposure is also different, that of the ports last named being solely to the ports of Arabia, and that of Berbera being principally to the shipping of Western India, which pours in upon it from the middle of November till towards the close of February.

But there is not only a sea-ward exposure to the eastern Somali ports; there is also a land-ward exposure from Berbera along the great Ugahden caravan route from Berbera to Barderah, on the banks of the river Jub. This route will be fully described when the epidemic of 1865 is brought under review.

Every epidemic of cholera in the Somali ports has been ascribed to one or other of these two tracks; and the natives emphatically state that every epidemic has been imported.

When there are no written records to fall back upon, it is next to impossible to ascertain with certainty the particular line of invasion of an epidemic of cholera which occurred nearly forty years before. The same difficulty would occur were any one to start at the present day on the investigation of the epidemic of 1832 in this country, depending only on the memories of those now living. Many medical men could, of course, give a full and accurate account; but not one out of hundreds who was not specially interested in the subject, could give any account of it whatever. So it is in respect to the Somalis. It was impossible to ascertain whether the epidemic of 1836-37 reached the Somali ports by sea or by land. I met with no one who at the time of invasion had reached the years of manhood, and all statements on the subject were evidently conjectures. The line of invasion can be deter-

mined only by ascertaining the existence of cholera in the Arabian ports, or in Western India.

In the year 1835 there was a violent outbreak of cholera at Mecca during the time of the pilgrimage, and Arabia was subsequently under the epidemic influence. The cholera tracks diverging from Mecca, on that occasion, strikingly resemble those of subsequent epidemics; and the appearance of the disease in the basin of the Mediterranean in 1836-37 was obviously connected with it.

The diffusion along the northern tracks through Egypt was much less rapid than during the epidemic of 1865, and the means of travelling were also less favourable. There was no difference whatever regarding means, or rapidity of communication, between Arabia and Africa during these years, and a difficulty does exist in connecting the epidemic in the Hedjaz in 1835 with that in the Somali ports at the close of 1836, and the beginning of 1837.

The Kourban Bairam would occur in the month of March, 1835, and the returning pilgrims, or pilgrim merchants, might possibly have been enabled to reach Berbera before the middle of April, at the breaking up of the great annual fair; but had cholera reached East Africa by this route, it would probably have appeared at the Somali ports in June, 1835, a time at which its progress to the Zanzibar coast would have been barred by the south-west monsoon.

Throughout March, and the subsequent months, till November, there could have been no communication between the Arabian and the East African ports, but nothing would have been more natural than a diffusion from Mecca to the Arabian ports, and from some one or other of the Arabian ports to East Africa in November, 1835.

This would have exactly fitted the date of the epidemic originally given to me, and that also recorded by Captain Burton; but I am unable to resist the evidence that the epidemic really occurred in 1836-37.

Dr. Bryden, in writing regarding the epidemic of 1836-39, in India, says¹:—"There is no difficulty in recognising the fact that the epidemics of the Mediterranean and the cholera general throughout Europe and Central America, of the years previous to 1838, was connected with the cholera epidemic in India; the difficulty lies in establishing the different links in the connection. I have now to speak of a new epidemic, that of 1836-39; and while it is difficult to believe that the cholera which we find filling the Ganges valley in 1836, and fully displayed only in the beginning of 1837, was the same cholera which covered the Continent of Europe in the autumn of 1837, and Northern Africa in September and October, and which at the same time devastated Central America, and appeared in England and Ireland; still, we are forced to conclude either that the cholera of Western India of 1833 and 1834 was thrown in epidemic strength into Europe; and, in contradiction of all parallel history, maintained its vigour throughout successive revivifications up to 1838, or that the new cholera of India of 1836-38, supplemented this cholera in Europe before it finally died out; and that thus the cholera of two separate invading epidemics became blended, as I assume to have occurred also in the case of the European invasions of 1829 and 1831."

It is difficult to come to any other conclusion than that the East African epidemic of 1836-37 was an offshoot of the Meccan epidemic of 1835, and had the same connection with it that the North African epidemic had; and it need scarcely be stated that cholera may have lingered about Southern Arabia and the Persian Gulf from the close of 1835 till the end of 1836. The history of epidemic cholera in Arabia is but partly written, although the data could be collected with greater ease than was the case in regard to East

¹ *Vital Statistics of the Bengal Presidency*, by Dr. Bryden, Surgeon-Major, Bengal Army, Calcutta, 1874, p. 103.

Africa. Given epidemic cholera in the months of October and November, 1836, in any of the ports of the Persian Gulf or of the Gulf of Aden, the probability is communication to the Somali ports of Mukdeesha, Merka, and Brava.

Dr. Macnamara (*op. cit.* p. 67), in tracing the epidemic of 1836-37, says that epidemic cholera prevailed over the Madras Presidency in 1832-33-34; that it extended along the valley of the Nerbudda, and into Bombay. "In 1835 the Hedjaz was under the influence of cholera, and I have given evidence of its subsequent appearance throughout the basin of the Mediterranean in 1835-36-37, and at the same time of its being widely scattered over Europe. This outbreak of cholera, when viewed by the light of the epidemic of 1865-66, is certainly very suggestive; and I feel confident its history will yet become clearer as additional light is thrown upon it by those interested in these matters at home, and who are in a position to consult documents from the various government offices, which it is impossible for me to examine."

The only additional light which I am able to throw upon it is, to add to it the East African branch of 1836-37; an epidemic which, in all probability, had its ramifications in Eastern and Central Africa similar to those of subsequent epidemics, concerning which we have more definite information.

The Epidemic of 1858-59.—The East Coast of Africa was entirely free from cholera from 1837 till the years 1858-59, and concerning this there can be no manner of doubt. But although the coast tract was free, there are some reasons for supposing that Central Africa may not have been free during this long period. The lines of human intercourse in Central Africa are much better understood now than they were not many years ago; and in the writings of travellers we find occasional references to epidemic cholera. Captain Speke, in his *Journal of the Discovery of the*

Source of the Nile (p. 385), refers to cholera in Central Africa. In a conversation which he had with Mtesa, the chief of Uganda, he says "the whole conversation turned on medicine, and the cause and effects of disease. Cholera, for instance, very much affected the land at certain seasons, creating much mortality, and vanishing again as mysteriously as it came." From the statement of Captain Speke, one would almost infer that cholera was endemic in Central Africa, or that cholera epidemics were of very frequent occurrence; but such is not the case. Cholera is known, but it does not occur at certain seasons, but as an epidemic, after considerable, sometimes long intervals. It is highly probable, however, that Central Africa has been invaded, not only from the coast line towards the west, but also along the Nile valley, and through upper Egypt and Abyssinia from the north.

The epidemic of 1858-59 is much more accurately known than its predecessor of 1836-37, and the latter is also better known than that of 1821.

In 1858 epidemic cholera again broke out in Mecca among the assembled pilgrims. In 1858 the Kourban Bairam would be in July, and the radiation of the pilgrims would take place in August. "It," the cholera, "caused ravages at Mecca, Lohea, Hodeda, and Mocha. It was also very prevalent at Massowah. From these ports, bug-galows, with goods and merchandize, were continually arriving at Aden. A ship also anchored in the harbour from Mecca, bringing a large number of pilgrims; two had died from cholera as the ship approached Aden. From these facts it is very probable—nay, even almost certain—that the poison of cholera was imported into Aden from some of the neighbouring places."¹ "Sub-Assistant Ruttonjee Hormusjee, who was at Aden at the time, adds that, with the exception of cases of epidemic cholera, which had

¹ *Trans. Med. and Phys. Society, Bombay, for 1859. Appendix, p. 33.*

occurred in the station in 1845, the disease was absolutely unknown in Aden until the 29th of September, 1858; it then increased rapidly, and in three or four days it attained its greatest severity. About the 8th of October the number of cases began to fall, and the disease itself showed a more amenable character; and after the 28th of the month no fresh cases occurred. After the epidemic broke out at Aden, it made its appearance at Lahadge and Berbera, so that certain ports on the Red Sea, carrying on a regular trade with Aden *viâ* Mocha, Hodeda, Jidda, Lohea, suffered from cholera first of all; the disease appeared next at Aden, whilst Aden itself communicated freely with Lahadge and Berbera, where the disease was last seen.”¹

In the autumn months of 1858 the Arabian ports on the Red Sea, the Gulf of Aden, and the Persian Gulf, having trading communication with East Africa, were under the epidemic influence. Arabs from Makalla, whom I met in Zanzibar, informed me that cholera was raging there, and that it had been communicated by means of dhows from Jidda. That cholera was present in Muscat in October 1858 is certain, from the account given by Mr. Spalding, and received by him from the supercargo of the *Maryland*. Shortly after the arrival of the *Maryland* in Muscat, the supercargo ascertained from certain vague rumours that there was something wrong in the country, and that cholera or some other deadly disease was prevalent among the people. The vessel occupied a good berth with the wind blowing from the sea, and none of the men were allowed to go on shore. When the supercargo ascertained that the disease was really cholera he ordered the captain to proceed to sea at once and the *Maryland* sailed, leaving half her cargo of dates behind. No one on board ship except the supercargo knew anything of the rumours regarding cholera. The epidemic was probably not raging in Muscat at the

¹ *Treatise on Asiatic Cholera*, by Dr. Macnamara, p. 183.

time, but advancing upon it from the interior. The *Maryland* sailed from Muscat on 22nd October, and arrived at Zanzibar 15th November, 1858, a fortnight before the epidemic appeared.

With cholera rampant in the Red Sea, the Gulf of Aden, and the Persian Gulf, at the very opening of the north-east monsoon, when the great annual stream of commerce was setting in, it was scarcely possible for Eastern and Central Africa to escape. More especially on the east coast the breaking of the epidemic wave was certain, for with the first breath of the monsoon, the stream of commerce, which had been pent up for nine months would be directed to the Somali ports and from thence to the east coast generally.

It is not certainly known from what particular port the epidemic was actually communicated to the Somali ports, although it was most probably from Makalla. Neither in a historical nor a scientific point of view is it of the slightest consequence to determine this question, for the general fact is disputed by none that the appearance of cholera in the Somali ports was synchronous with the appearance of the first dhows in 1858.

The boundaries of the Zanzibar dominions, on the East Coast of Africa, are generally stated to be Cape Delgado on the south, and Cape Guardafui on the north. On the Somali coast there are four principal harbours with which annual communication is kept up, during the season; with the Arabian ports to the north, and the other East African ports to the south. Of these the most northerly is Warsheik, where there is an Arab garrison from Zanzibar; next is Mukdeesha, often called Magadoxa; next Merka, and, further south, the more important port of Brava. There are also numerous small harbours with villages, but they are of no individual importance. The commercial importance of the towns named seems to be much less now than before the Portuguese invasion of East Africa, an invasion

which left a blight which three centuries have been unable to efface. Although nothing like what they were during their palmy days, they are still important commercial depôts, and they draw towards them the natural products of the surrounding districts. While a large amount of the products of Somali-land finds its way to the Indian and European markets by way of Berbera, the northern Somali port, the products of the districts lying near the eastern sea-board naturally gravitate to the eastern Somali ports named.

It has been frequently stated, doubtless upon good authority, that the importance of Berbera, as a commercial centre, has been gradually decreasing for many years, and that it has now reached a minimum. This must depend, in great measure, if not entirely, on the increased activity in trade, of late years in the Somali ports, and in East Africa generally, and there can be little doubt but that all the commerce of the southern part of Somali-land, which is by far the richer, will be directed towards the eastern Somali ports in preference to Berbera.

Up till this time the Somali country is unknown to the outer world, except by report, for no European has ever crossed the country. The Somalis, more especially those near the coast, have, not unjustly, an evil reputation, and are remarkable for their hostility to Europeans. This feeling of hatred is more marked at the present day than it was in former times, and the reasons are very obvious. European travellers are subject to great personal danger from the blood feuds which have been accumulating for many years, owing to the loss of life which has necessarily taken place in consequence of the efforts made for the suppression of the slave trade. Members of families and tribes avenge the death of the slain, not necessarily on those who were actually engaged in the conflict, but on any one belonging to the same race, no matter to what

European nationality he may belong. Hence Somaliland is at present closed to Europeans, or rendered extremely dangerous to them. The greater part of the Southern Somali country, more especially that lying along the courses of the Webbe Shebeli, and the Webbe Gananah, or Jub river, is fertile and thickly populated, and the very opposite of an arid waste.

The epidemic appeared in the Somali ports, and not in the interior, at the very commencement of the north-east monsoon, in November, and the first news regarding it that reached Zanzibar was that it had broken out at Merka. It is somewhat singular that, in every instance, the news of an approaching epidemic actually precedes its appearance in a place. Native craft, ready to sail, bring the intelligence of the outbreak before the disease itself actually appears. There is no distinct evidence as to the land-ward range of the epidemic beyond the vague statement that it extended to three or four days' journey. This might naturally be expected, for people from the interior bring their products to the coast at about the time of the sailing of the dhows, and this would afford facilities for the spread of the epidemic in the interior. Among the population of the harbours mentioned, and the smaller towns that fringe the Somali coast, the epidemic was very severe, the mortality enormous, and in many the population was almost decimated. The epidemic did not proceed direct from the Somali ports to the island of Zanzibar, but in the first instance to the island of Lamoo, about two degrees south of the river Jub.

It is the usual custom for native craft from the Arabian ports to call, not only at the Somali ports in approaching Zanzibar, but also at several intermediate ports both on the mainland and islands fringing the coast, that they may get cargo and passengers. Lamoo is a usual place of call, and so is Mombassa, and even dhows from Bombay

and Cutch often call at these ports, more especially Mombassa.

The first case of cholera that reached Zanzibar was from a dhow that came from Lamoo and Brava at the close of November, 1868, and the case was diagnosed as Asiatic cholera by Dr. Frost, surgeon to the consulate. It is much to be regretted that Dr. Frost did not write the history of the epidemic of 1858-9 on the east coast of Africa; but his official reports, if any such were made, do not appear to have been made public. The official documents to which I had access at Zanzibar did but little more than register the fact of the prevalence of a severe type of Asiatic cholera on the African coast, and the history of the epidemic had to be gathered from the written records of Captain Burton, the reminiscences of Mr. Henry Spalding, and the fragmentary reports of natives of the island and mainland.

Captain Burton was on the east coast of Africa at the time, and was, in fact, landed from the interior in the very midst of the epidemic on the coast. He writes:¹ "In the early part of 1859, a violent attack of cholera, which extended from Maskat along the eastern coast of Arabia and Africa, committed terrible ravages in the island of Zanzibar and throughout the maritime regions;" and in his recently published work, "Zanzibar," he supplies some valuable information regarding the epidemic at Quiloa; and the nature thereof as observed by him may be safely taken as an example of the ravages of the epidemic along the whole of the coast line. Captain Burton has certainly the merit of being the best and keenest observer, and a most accurate recorder of every thing that came under his observation.

Captain Burton, on his return from the interior, was anxious to explore the river Rufiji, and with this object in

¹ *The Lake Regions of Central Africa*, by Captain R. Burton, vol. ii. p. 319.

view he sailed from Konduchi, nearly opposite Zanzibar and eventually reached Kilwa. He says, "We lost nearly all our crew by the cholera, which, after ravaging the eastern coast of Arabia and Africa, and the islands of Zanzibar and Pemba, had almost depopulated the southern settlements on the mainland. We were unable to visit the course of the great Rufiji river, a counterpart of the Zambezi in the south, and a water road which appears destined to become the highway of nations into Eastern equatorial Africa. No man dared to take service on board the infected vessel."

Captain Burton sailed from Konduchi on February 10th, 1859, in a small native craft, and on the way to Kilwa four of his men died. Cholera was raging there at the time, and Captain Burton makes the important observation, "*Of the Banyans none had died of cholera. The Indian Moslems had lost eleven or twelve men.*" Whatever the explanation may be, the Banyans always have had, in every epidemic in Zanzibar, a singular protection from the disease. "After seeing and smelling Kilwa," he writes, "I did not wonder that cholera, during the last fifteen days, had killed off half the settlement. According to the people it was the first attack ever known to East Africa; that which decimated Maskat in July, 1821, did not extend to Zanzibar; all held it highly infectious, as indeed under the circumstances it certainly was; hands would not ship on board our *Betela*, and, at first, no one would even visit us. They all agreed that it came down in vessels from Zanzibar. They all declared the disease to be dying out, yet the wealthier classes still clung to their *Mashamba*, (country seats) where the water is good and clear as it is filthy in the towns; and hyænas walked the streets at night.

"Accustomed to face cholera from my childhood, I never saw even in Italy, in India or in Scinde, such ravages as it committed at Kilwa. Soil and air seemed saturated with

the poison ; the blood appeared to be predisposed to receive the influence and the people died like flies. Numbers of patients were brought to us, each with the ominous words *he has the death*, and none hardly had the energy to start or wince at what would under other circumstances have frightened them out of their senses. They sometimes walked two miles to see us ; the only evil symptoms were dull congested eyes, cold breath, and a thready feeble pulse, which, in the worst cases, almost refused to beat. After the visit they would return home on foot, lie down and expire in a collapse, without cramps or convulsions, emesis, or other efforts of nature to relieve herself. Life seemed to have lost all its hold upon them.

“Of course we were the only doctors, and our small stock of ether and brandy was soon exhausted ; the natives, however, treated the complaint sensibly enough with opium and mvinyo, spirits locally distilled, and did not, like the Anglo-Indian surgeons, murder patients with mercury, the lancet and the chafing-dish.

“There were hideous sights about Kilwa at that time. Corpses lay in the ravines, and a dead negro rested against the walls of the custom-house. The poorer victims were dragged by the leg along the sand to be thrown into the ebbing waters of the bay ; those better to do were sewn up in matting, and were carried down like hammocks to the same general depôt. The smooth, oily water was dotted with remnants and fragments of humanity ; black and brown, when freshly thrown in ; patched, mottled and party coloured, when in a state of half pickle ; and ghastly white, like scalded pig, when the *pigmentum nigrum* had become thoroughly macerated. The males lay more upon the surface, diving as it were, head downwards, when the returning swell left them in the hollow water ; the women floated prostrate with puffed and swollen breasts—I have seen this included among ‘vulgar errors.’” “Limbs were

scattered in all directions, and heads lay like pebbles on the beach; here I collected the twenty-four skulls, afterwards deposited in the Museum of the Royal College of Surgeons."¹

Captain Burton further states that although there were "no precautions of quarantine, or *cordon militaire*, yet the contagion did not extend to the interior." He states also that cholera had been very destructive at Kilwa Kisimani, and that on account of the general prevalence of the epidemic he was unable to explore either the River Rufiji, or the Lake Nyassa, which he purposed doing. The great difficulty would be in procuring porters.

The fearful nature of the epidemic as seen by Captain Burton at Kilwa, is merely an illustration of its ravages along the whole of the Zanzibar coast, for General Rigby, who was then her Majesty's Consul and Political Agent at Zanzibar, states that many of the coast towns were almost decimated. The epidemic extended as far as the Portuguese settlements, but I had no means of ascertaining the limits of its southern extension beyond the fact that it did not spread beyond the Zambezi, where Dr. Kirk was stationed at the time in connection with Dr. Livingstone's expedition.

The limits of the land-ward extension are not definitely known, but it is tolerably certain that the disease did not spread inland to any great extent; for I was assured that it did not reach the Arab settlement at Unyanyembe, and there is no mention of it as having reached the Nyassa district, in the parts traversed by the Livingstone expedition, from that time till the year 1863. An epidemic of cholera could scarcely have crossed the path of the expedition, or have been in its immediate vicinity, without having been observed or heard of; but the district is large, and the party may not have been on the line of the epidemic.

¹ *Zanzibar City and Island*, by Captain R. Burton, vol. ii. pp. 345—47.

As far as could be made out, the progress of the epidemic from north to south, was by means of the coasting dhow-traffic. The spread of the epidemic along the landward coast line, had always a tendency to become extinguished, as the movements of the population from the interior converge towards the harbour towns. The coast highway is by sea, from harbour to harbour, and not by any well-beaten track along the coast line. Each coast town affected by the epidemic became a centre of dissemination, and the general statement made by the natives was that the disease extended three or four days inland. Accidental connections may, however, have been established, carrying the disease into the very centre of Africa, but such lines of human intercourse will be more fully considered when the geographical extensions of the epidemics of 1865 and 1869-70 are described.

It is much to be regretted that Captain Speke did not ascertain something more definite regarding the epidemics in Uganda. The conversation with Mtesa took place on April 16th, 1862, and Captain Speke, who was with Captain Burton at Kilwa in 1859 when the epidemic was raging there, might have had some suspicion regarding a connection of the epidemics. Mtesa was quite a young man, and he evidently spoke of an epidemic which had recently taken place in Uganda, and in his own time. He spoke of it as having created much mortality, and of its having vanished as mysteriously as it came. He asked ; what brought the scourge ? What could cure it ? Captain Speke, however, had matters of greater personal interest in his mind, and the subject was dropped. I feel assured that no chief in Africa would ever have opened such a conversation unless in connection with a very recent event, and I entertain a very strong opinion that the epidemic of 1858-59 spread to Uganda, direct from the coast to the north of the Victoria Nyanza by the old caravan route. An European traveller might

pass over the whole of Africa at the present date without hearing anything of the epidemic of 1869-70 unless he made special inquiry on the subject. The subject would not have been introduced to Captain Speke by any native chief, unless in regard to a recent event.

The epidemic of 1858-59 was very severe in the town of Zanzibar and continued to rage with great violence from the end of November till the beginning of March, after which time the epidemic ceased in the town. General Rigby estimated the number of deaths in the town and suburbs at from 7,000 to 8000, and in the whole island at 20,000.

There was also a considerable mortality amongst the Arabs, much greater than during the former epidemic of 1836-37. Three or four of the natives of India died, but the Banyans assert that none of their number died either during this or the preceding epidemic.

The mortality amongst the slaves must have been very great, and from what I have heard regarding the outbreak, I would be inclined to think that General Rigby's estimate of the mortality is not at all exaggerated, but rather understated.

No very definite information could be got regarding the progress of the epidemic among the negro population.

During the epidemic there were several deaths among the Europeans in connection with the shipping, but there were no cases among those Europeans resident on the island. Two deaths occurred in February on board the American whaler *Zantho*, then lying in the harbour. Another European seaman, in the service of the Sultan, also died. He had been taken ill on board ship but died on shore.

It is somewhat singular that similar events occurred during the epidemic of 1869-70, the mortality amongst Europeans being confined to those in connection with the shipping. None living on shore died. *W*

CHAPTER IV.

ORIGIN AND GEOGRAPHICAL DISTRIBUTION OF THE EPIDEMIC OF 1865.

THE history of the cholera epidemic of 1865 has been more thoroughly and satisfactorily investigated than that of any previous outbreak of the disease, and Mr. J. Netten Radcliffe is fairly entitled to be designated the historian of the epidemic.

Mr. Radcliffe's official report on the "Diffusion of Cholera in Europe," included in the *Eighth Report of the Medical Officer of the Privy Council*, 1865, contains all the elements of the true history of the epidemic. This report, which had been completed and published before the conclusion of the investigations of the International Conference at Constantinople, contains the key to the correct history of the origin of the epidemic, and also to that of the great East African diffusion of 1865, which was last heard of in Africa in 1871.

Much attention was paid by the Conference to the two ships, the *Persia* and the *North Wind*, supposed to have introduced the disease to Jidda, and no small degree of obscurity was in consequence thrown upon the true origin of the epidemic. Mr. Radcliffe however called special attention to the capture of two slave-dhows, with cholera on board, made by H.M.S. *Penguin*, while cruising off the East Coast of Africa, the most important fact in the elucidation of the origin of the epidemic, in so far as Arabia was concerned.

It will be necessary to quote Mr. Radcliffe in full:—

“It is not improbable that early in 1865 cholera was prevailing on the East Coast of Africa. Her Majesty’s Ship *Penguin*, while cruising off the East Coast of Africa, and in the Gulf of Aden, endeavouring to intercept slave-dhows, running north with the south-west monsoon, captured two, full of slaves, one on the 15th April, 1865, the other on the 12th May. While conveying the dhows to Aden a considerable number of the slaves died, all suffering from the same symptoms. They all complained of severe griping pains in the bowels, accompanied with vomiting, and in most cases violent purging, the stools being watery and of a yellowish colour. The surface of the body rapidly became cold and clammy, the features pinched, and the countenance expressive of great suffering; the pulse being very small and weak. All suffered from insatiable thirst. Most of those attacked by the disease died very rapidly, many being only a few hours ill. Two fatal cases occurred amongst the ship’s company during the cruise to the northwards. One died on the 17th April, the other on the 16th of May. In both cases the symptoms were precisely similar to those of epidemic cholera. In both there was extreme looseness of the bowels, with vomiting; the surface of the body cold, features livid and shrunken, and the pulse almost imperceptible from an early stage of the disease. There were also violent cramps of the abdomen and lower extremities. Both cases proved rapidly fatal, the first terminating in twenty, and the second in eight hours. The patients did not complain of any previous illness.”¹

Notwithstanding the important statement made by Mr. Radcliffe, the almost certain existence of cholera in East Africa was ignored by the Conference, and by subsequent writers on the epidemic.

¹ *Eighth Report of the Medical Officer of the Privy Council*, p. 312. *Diffusion of Cholera in Europe*, by J. N. Radcliffe.

Dr. Macnamara (*op. cit.* p. 205, 1870), writes thus in regard to the origin of the epidemic:—"I am quite prepared, however, to assent to the proposition of the Conference, that 'cholera was imported into the Hedjaz by pilgrim ships from India,' and I see no improbability in its having travelled from Singapore by this means; but to attach undue importance to such particular incidents to the neglect of those broader features presented by the disease in its course from Bengal into Arabia and the Hedjaz, is to complicate the subject, and tends to withdraw our attention from the major to the minor details in the history of this remarkable epidemic."

Dr. Macnamara's criticism is perfectly just, for undue importance was attached to the minor detail, the case of the ships, *Persia* and *North Wind*, and the major detail, the fact of the capture made by H.M.S. *Penguin*, as elucidating the track of the disease in its course from western India to Africa and Arabia, was overlooked, both by the Conference and Dr. Macnamara.

The epidemic of 1865 in East Africa remained as profound a secret for five years as if it had been locked up in a triple Milner's safe. I can scarcely imagine that anything regarding it was published, for had such been the case, it would certainly not have escaped Mr. Radcliffe's watchful eye. It is almost incredible that three years should have elapsed without a single item of additional information having appeared.

In a paper read before the Epidemiological Society of London on April 6th, 1868, Mr. Radcliffe a second time gave a true forecast of the history of the epidemic, and again called attention to the capture made by the *Penguin*. Mr. Radcliffe writes:—"The first positive fact in the history of the epidemic was the arrival of two British vessels,

¹ *Transactions of the Epidemiological Society of London*, vol. iii. part 1, p. 238, 1869.

the *North Wind* and *Persia*, at Jidda, in March, 1865, from Singapore, freighted with pilgrims, chiefly Javanese, for Mecca. On the voyage, after touching at Makalla, a sea-port on the south coast of Arabia, cholera appeared on board, and carried off 145 of the passengers and crew, before the ships reached their destination. Other ships from India, arriving at Jidda in the course of March and April, and carrying pilgrims, also had deaths from cholera on board. The captains of the ships first-named asserted that the passengers contracted the disease at Makalla, where it was present when the ships anchored there. The existence of cholera at Makalla, at this period, has been denied; but the probability is in favour of the disease being present there at that time. Prior to the malady breaking out at Mecca, it had appeared at Hodeida; and probably about the same time the disease had shown itself at Aden, and elsewhere in Lahej. Cholera, indeed, seems to have been prevalent at more than one point on the southern and western coasts of Arabia before the time of the Mecca pilgrimage. It is not improbable, also, that the disease existed on some parts of the African coast, south of the straits of Bab-el-Mandeb. H.M.S. *Penguin* captured two slave-dhows, one on the 15th April, 1865, the other on the 12th May, running north in the Gulf of Aden. While conveying the dhows to Aden, a considerable number of the slaves died from choleraic disease. Two of the ships' company also died, one on the 17th April, the other on the 16th May; and in both cases 'the symptoms were precisely similar to those of epidemic cholera.' At the appearance of the occurrences here noted, Bombay was barely recovering from the severest outbreak of cholera, from which the island, and probably the Presidency, had suffered for many years. Once before only (1852) since the registration of deaths there—that is to say, within the seventeen years preceding 1865, had the island suffered so

severely from cholera. (See *Deaths in Bombay*, August, 1864.) Now it is to be remembered that the principal trade of Makalla is with Bombay; and it is not improbable that late in 1864, or at the commencement of 1865, cholera was introduced from Bombay into Makalla (not necessarily carried by pilgrims), and transmitted to other towns of the Arabian coast as well as to the coast of Africa. It is no fanciful theory that these coasts have a traffic in disease as well as goods; for Mr. Hewlett, the Medical Officer of Health for the City of Bombay, tells us in his report to the municipality for 1867, that small-pox 'is frequently imported into Bombay from persons arriving in native craft from the sea-port towns in Arabia, Persia, and Africa.'

"Cholera smouldered in Jidda from the time of the arrival of the infected ships; and before the Mecca pilgrimage was accomplished, it broke out in the Hedjaz with great violence. Towards the close of the pilgrimage, in fact, its ravages became so alarming, that as soon as the rites were completed the assemblage broke up in a panic, and the different caravans hastened their route homewards, the disease following their steps. The events at Mecca can only be stated broadly, but of the general facts there cannot be much doubt."

The ships *Persia* and *North Wind* were minor factors in the cholera epidemic of 1865. The disease entered East Africa at an earlier date, and quite independently of them, by way of Berbera, in the Gulf of Aden.

The most remarkable circumstance in connection with the origin of the outbreak of cholera, is the absence of definite information on the matter from Aden. It is scarcely conceivable that ten years should have elapsed without the very simple question regarding the origin of the epidemic having been definitely settled by a statement of facts from Aden. Aden was situated in the very centre of the district of the epidemic, and no place could equal

it in facilities for acquiring at once the fullest information on the subject.

The East African branch of the epidemic actually started from Berbera, the principal place from which Aden derives its daily supplies of mutton, crossed the entire Somali-land from north to south; passed down the River Jub to the Somali ports of Brava and Merka; was picked up there by the boats of H.M.S. *Penguin*, and probably imported thence into Aden; and the very existence of the epidemic was unknown at Aden as also to the Cholera Conference, held at Constantinople, for the sole purpose of investigating the great and disastrous epidemic of 1865. It would be utterly incredible that such an event could have escaped the notice of the authorities at Aden, where there was a medical staff, were it not for the fact that the question of the *existence* of cholera in 1865 at Makalla, a port close to Aden, and in constant communication with it, remained unsettled for so many years.

It is singular that it should have been necessary to investigate, from London and Zanzibar, the origin of an epidemic whose sources existed at the very gates of Aden.

Slave dhows captured in the Gulf of Aden, or in the vicinity, are brought into Aden along with the slaves, that the dhows may be condemned, according to law; but it often happens that the dhows are destroyed at sea, after the crew and cargoes have been removed on board the captor. This very frequently happens, more especially in the case of a small vessel like H.M.S. *Penguin*, which would have difficulty in towing a dhow from Mukdeesha round Cape Guardafui and into Aden.

In this instance, however, both dhows were taken in tow, and all despatch would be used in conveying the slaves to Aden after the second capture; but even although both the dhows had been destroyed at sea, the *Penguin* could hardly have been free from the disease when the slaves were landed at Aden.

This constitutes a third very remarkable incident in connection with the epidemic, for it is not improbable that the *Penguin* or the dhows captured by her conveyed the disease from Mukdeesha, on the east coast of Africa into Aden, without the fact being recognised by the authorities of that place.

A somewhat similar event might have occurred in 1870. The dhow that conveyed the epidemic from Zanzibar to the Somali ports, left Brava in a few days after for Aden, with letters for Zanzibar intimating the outbreak at the Somali ports.

It will be necessary to give a short description of Berbera, and of the Somali country through which the East African branch of the epidemic of 1865 passed.

Next to Zanzibar, Berbera is by far the most important trading port in connection with the east coast of Africa. With the exception of the produce shipped from Worsheik, Mukdeesha, Merka, and Brava, which finds its way to the Zanzibar market, Berbera collects all the produce of the Somali country, and that of a considerable portion of the Galla country. It is, however, pre-eminently the shipping port of Somali-land.

Berbera, or some other part of the adjacent coast, is probably one of the oldest trading localities in the world; and the mode in which business is carried on at the present day is of the most primitive nature, and the same as must have existed many centuries ago. At Berbera there is no fixed town, no resident population; and, consequently, no merchants to make purchases from the natives at all seasons of the year. It is simply a place for commercial assignations: a place to which buyers and sellers come, and meet to transact business, by mutual consent, at certain seasons of the year. Such seasons of the year, being for the mutual benefit of all, are determined according to the facilities for reaching the place, transacting business, and departing.

Like all places within the tropics, beyond the equatorial rainy zone, Berbera is visited by regular monsoons, or seasons in which the winds prevail constantly in one direction. Vessels, therefore, bound for Berbera, are restricted to the time when the sun is in the south, or during the period of the north-east monsoon, from the 15th of November to the 15th of April, or during five months of the year.

Berbera has been visited during the season of the fair by many Europeans, and it has been fully described by Lieut. Cruttenden, and also by Captains Burton and Speke, of the unfortunate "Somali Expedition."

Lieut. Cruttenden, of the Indian Navy, writing in 1848, thus describes the place:¹—"The annual fair is one of the most interesting sights on the coast, if only from the fact of many different and distant tribes being drawn together for a short time to be again scattered in all directions. Before the towers of Berbera were built, the place from April to the early part of October was utterly deserted, not even a fisherman being found there; but no sooner did the season change, than the inland tribes commenced moving down towards the coast, and preparing their huts for their expected visitors. Small crafts from the ports of Yemen, anxious to have an opportunity of purchasing before vessels from the Gulf could arrive, hastened across, followed about a fortnight to three weeks later by their larger brethren from Muscat, Soor, and Ras el Khyma; and the valuably freighted Bagalas from Bahrein, Bussorah, and Graen. Lastly, the fat and wealthy Banyan traders from Porebunder, Mandavie, and Bombay, rolled across in their clumsy Kotias, and with a formidable row of empty ghee jars slung over the quarters of their vessels, elbowed themselves into a permanent position in the front tier of craft in the harbour, and by their superior

¹ *Journal Royal Geographical Society*, vol. xix.

capital, cunning and influence soon out-distanced all competitors.

“During the height of the fair, Berbera is a perfect Babel, in confusion as in languages: no chief is acknowledged, and the customs of bygone days are the laws of the place. Disputes between the inland tribes daily arise, and are settled by the spear and dagger, the combatants retiring to the beach, at a short distance from the town, in order that they may not disturb the trade. Long strings of camels are arriving and departing day and night, escorted generally by women alone, until at a short distance from the town; and an occasional group of dusty and travel-worn children marks the arrival of the slave *Cafila* from Hurrur and Efat.

“At Berbera, the Gurague and Hurrur slave merchant meets his correspondent from Bussorah, Bagdad or Bunder Abbas; and the savage *Gidrbeersi* (*Gudabirsi*), with his head tastefully ornamented with a scarlet sheepskin in lieu of a wig, is seen peacefully bartering his ostrich feathers and gums with the smooth-spoken *Banyan* from *Porebunder*, who prudently living on board his ark and locking up his *puggree* (turban), which would infallibly be knocked off the instant he was seen wearing it, exhibits but a small portion of his wares at a time, under a miserable mat spread on the beach.

“By the end of March the fair is nearly at a close, and craft of all kinds, deeply laden, and sailing, generally in parties of three and four, commence their homeward journey. The *Soori* boats are generally the last to leave, and by the first week in April, Berbera is again deserted, nothing being left to mark the site of a town lately containing 20,000 inhabitants, beyond bones of slaughtered camels and sheep, and the frame-work of a few huts, which is carefully piled upon the beach in readiness for the ensuing year. Beasts of prey now take the opportunity to

approach the sea: lions are commonly seen at the town well during the hot weather; and in April last year, but a week after the fair had ended, I observed three ostriches quietly walking on the beach."

This great annual gathering is thus described by Captain Burton:—¹ "On Saturday, the 7th of April, 1855, the H. E. I. Company's schooner 'Mahi,' Lieut. King, I.N., commanding, entered the harbour of Berbera, where her guns roared forth a parting salute to the 'Somali Expedition.'

"The emporium of East Africa was, at the time of my landing, in a state of confusion. But a day before, the great Harar caravan, numbering three thousand souls, and as many cattle, had entered for the purpose of laying in the usual eight months' supplies, and purchase, barter, and exchange were transacted in the most hurried and unbusiness-like manner. All day, and during the greater part of the night, the town rang with the voices of buyer and seller: to specify no other articles of traffic, 500 slaves of both sexes were in the market. Long lines of camels, laden and unladen, were to be seen pacing the glaring yellow shore; rumours of plundering parties at times brought swarms of spear-men, bounding and yelling like wild beasts, from the town; already small parties of travellers had broken ground for their return journey; and the foul heap of mat hovels, to which this celebrated mart had been reduced, was steadily shrinking in dimensions.

"Our camels, fifty-six in number, had been purchased, and the Ogadayn caravan was desirous of our escort. But we wished to witness the close of the Berbera fair, and we expected instruments and other necessaries by the mid-April mail from Europe.

"About 3 P.M. on the 9th of April, a shower, accompanied by thunder and lightning, came up from the southern hills, where rain had been falling for some days, and gave

¹ *First Footsteps in East Africa*, by Captain R. F. Burton, p. 441.

notice that the Gugi or Somali monsoon had begun. This was the signal for the Bedouins to migrate to the plateau above the hills. They prefer travelling during the monsoon on account of the abundance of water. Throughout the town the mats were stripped from their frameworks of stick and pole,—the frame-work being allowed to remain for use next fair-season,—the camels were laden and thousands of travellers lined the roads. The next day Berbera was almost deserted except by the pilgrims who intended to take ship, and by merchants, who, fearful of plundering parties, awaited the first favourable hour for setting sail. Our protectors, Jami and Burhale, having received permission to accompany their families and their flocks, left us in charge of their sons and relations. On the 15th of April the last vessel sailed out of the creek.

“ Three days afterwards, about noon, an Aynterad craft *en route* from Aden entered the solitary harbour freighted with about a dozen Somal, desirous of accompanying us towards Ogadayn, the southern region. She would have sailed that evening; fortunately, however, I had ordered our people to feast her commander and crew with rice and the irresistible dates.

“ The fair-season of 1854-55 began on the 15th November, and broke up on the 15th April. The principal caravans which visit Berbera are from Harar, the western, and Ogadayn, the southern region. They collect the produce of the numerous intermediate tribes of the Somal. The following remarks upon the subject of the Ogadayn caravan are the results of Lieuts. Stroyan and Herne's observations at Berbera.

“ ‘ Large caravans from Ogadayn descend to the coast at the beginning and the end of the fair-season. They bring slaves from the Aroosi country, cattle in great quantities, gums of sorts, clarified butter, ivory, ostrich feathers, and rhinoceros horns to be made into handles for weapons.

These are bartered for coarse cotton cloth of three kinds, for English and American sheeting in pieces of seventy-five, sixty, sixty-two, and forty-eight yards; black and indigo-dyed calicoes in lengths of sixteen yards; nets or fillets worn by the married women; iron and steel in small bars; lead and zinc; beads of various kinds, especially white porcelain and speckled glass; dates and rice.

“The Ayyal Ahmed and Ayyal Yunis classes of the Habr Awal Somal have constituted themselves abbans or brokers to the Ogadayn caravans, and the rapacity of the patron has produced a due development of roguery in the client. The principal trader of this coast is the Banyan from Aden and Cutch, facetiously termed by the Somal their ‘milch-cows.’ The African cheats by mismeasuring the bad cotton cloth, and the Indian by falsely weighing the coffee, ivory, ostrich feathers, and other valuable articles which he receives in return. Dollars and even rupees are now preferred to the double breadth of eight cubits which constitutes the well-known ‘Tobe.’

“The climate of Berbera is cool during the winter, and though the sun is at all times burning, the atmosphere, as in Somali-land generally, is healthy. In the dry season the plain is subject to great heats, but lying open to the north, the sea-breeze is strong and regular. During the monsoon the air is cloudy, light showers frequently fall, and occasionally heavy storms come up from the southern hills.

“The Berbera water has acquired a bad name because the people confine themselves to digging holes three or four feet deep in the sand, about half a mile from high-water mark. They are reconciled to it by its beneficial effects, especially after and before a journey. Good water, however, can be procured in any of the Fiumaras intersecting the plain; when the Hajj Sharmarkay’s towers commanded the town wells, the people sank pits in the low ground a

few hundred yards distant, and procured a purer beverage. The Banyans, who are particular about their potations, drink the sweet produce of Siyaro, a roadstead about nineteen miles eastward of Berbera."

Captain Speke, a member of the "Somali Expedition," also describes Berbera¹:—"3rd April, 1855. The caravan broke ground at 2 A.M., and, after travelling over much the same ground as yesterday, nearly the whole day long, without passing a single habitation, arrived in the evening at Berbera. Here I was warmly met by my companions, Herne and Stroyan, and began again a social life of great enjoyment. Berbera was in the plenitude of its prosperity. Its market was full of life and bustle, and the harbour was full of native Oriental craft.

"During the four days succeeding my arrival, I inspected the fair and shipping. The market-place was supposed to contain upwards of 60,000 people, Banyans from Cutch and Aden, Arab merchants, and Somali, who had been gradually flocking in from about the 15th of November; and as they arrived, they erected mat huts, as booths, for carrying on their bartering trade. According to Herne's investigations, the Somali took coarse cloth, such as American and English sheeting, black and indigo-dyed stuffs, and cotton nets (worn by married women generally to encase their hair), small bars of iron and steel, as well as zinc and lead; beads of various sorts, and dates and rice. In exchange for these they exported slaves, cattle, gums of all sorts, ghee, ivory, ostrich-feathers, and rhinoceros horns.

"7th.—At sunrise this morning a very interesting scene took place in the arrival of the great annual Harar caravan, a large body, composed of an aggregate of numerous small caravans, which all march together, that their combined strength may give mutual support. Down the whole

¹ *What led to the Discovery of the Source of the Nile*, by Captain Speke, p. 123.

breadth of the plain, like a busy stream of ants, they came in single file, one camel's nose tied to his leader's tail. Immediately on their flanks were Somali, armed with spear and bow, the men who tended them and looked after the loading. Outside them again were occasional detachments of men riding ponies, all armed, and guarding the caravan from sudden surprise or attack. In this caravan alone there were about three thousand people, as many head of cattle, and five hundred or more slaves, all driven chained together, for sale in the market.

"9th.—On this day the Gugi, or south-west Somali monsoon, in opposition to the Dairti, or north east monsoon, commenced in the hills behind our camp, and warned us that we would soon have to start southwards. The fair had already begun to break. Caravan after caravan streamed out of the town, wending their way across the plain like strings of ants emerging from a hole, and, like the busy habits of those little insects, kept the whole maritime plain alive in motion. At this time we were daily expecting a vessel from Aden, which would bring us some letters and instruments from England, and we saw the great Ughaden caravan preparing to leave, but were undecided what to do—whether to go with them without our things from England, or wait and rely on our strength in travelling alone. The latter alternative was unfortunately decided upon, and we saw our wonted protector depart upon its journey."

The commercial season of Berbera is thus limited to the period of the northerly monsoon, and during that time the great annual movement of the tribes in the interior takes place; the two great lines of traffic being the southerly, through the province of Ughaden, and the westerly through Harar.

The periods of travel are modified to some extent by the agricultural seasons of the year, of which there are four.

The "Gugi," or monsoon season, begins in April. It rains heavily for about forty-four days, and continues till August, when it begins to subside. This season corresponds with our summer, and is the best time for travelling, as the air is temperate, and the ground being refreshed by light showers, water is abundant, and there is plenty of forage for the cattle. At this time roads can be traversed with safety, which would be impassable at other seasons, owing to drought and consequent want of pasturage. During the Gugi, the pastoral Somali tribes are engaged with their cattle and flocks, and all seek to be at their own homes.

The "Haga," the hot season, following the Gugi, corresponds with our autumn, and extends till about the middle of November. During this season a violent dusty simoom, called Fora, prevails, which is allayed by the rains called Karan.

"Dáir" marks the beginning of the cold season. The northerly winds begin to prevail, and the harbours are open to the shipping. The rains called Dáirti, or Hais, commence at that time. Captain Speke, under date 25th January, 1855, writes:—"For two months we had not seen the vestige of a cloud, or felt a drop of rain; and now we were at once launched into the middle of the 'Dáirti,' or north-east monsoon, which had been pouring for some time previously against the north face of the mountain, and was arrested by it."

"Jilál," the dry season, extends from the beginning of December till April. This is the season of drought and famine; and the nomad tribes migrate with their flocks to the low plains, where they may be able to find pasturage and water. This is the worst season for travelling.

Although the fair commences at the beginning of November, the business transacted during the first month is not great, and is principally confined to the

tribes near the coast, and small traders from contiguous ports in the Red Sea, and the Gulf of Aden;—Yemen, Hadramaut and Sheher. Red Sea dhows also very frequently put in at Berbera, discharge passengers and cargo, and afterwards touch at the Somali ports of Worsheik, Mukdeesha, Merka, and Brava, seeking cargo for Zanzibar. It is not till towards the end of December that the fair comes to its height, and at that time, or previous to it, the great caravans from the interior arrive.

Harar, which was visited by Captain Burton in 1855, is a general rendezvous for caravans from the surrounding districts, three of which are despatched every year for Berbera. The first caravan starts early in January, and conveys to the coast coffee, tobies, ghee, gums, and other articles of produce, and with such articles the traders traffic, by barter, for cottons, silks, shawls, and Surat tobacco. The second caravan, similarly laden, sets out in February. The third, and chief caravan, leaves later in the season, and arrives at Berbera only a few days before the breaking up of the fair. This caravan, by far the most important, is commanded by one of the Amir's principal officers, who has, in consequence the title of Ebi, or leader, and generally numbers about three thousand souls. This caravan contains only valuable articles, such as slaves and mules. For very obvious reasons the chief caravan from Harar does not start till the close of the season, for that is the most favourable time for the slave trade to be carried on, the destination of all the slaves being northwards to the Red Sea ports, Southern Arabia, and the Persian Gulf. To get the advantage of the favourable monsoon, the slave traders delay till the monsoon has fairly set in, and to accommodate them, the slave caravans arrive late. Galla and Abyssinian slaves are brought by the Harar caravan from Efat and Shoa. The kingdom of Shoa seems to be the western trade boundary of the Berbera market, in the

direction of Harar. In none of the accounts of the fair is there any notice of the Gallas coming to Berbera for purposes of commerce, although they were evidently the original possessors of the land. Enarea, situated at no great distance from the kingdom of Shoa, seems to be the great market of the Gallas, and the one from which their produce finds its way to the coast, but by a different route.

Harar is a fortified town containing a fixed population of about 8,000 inhabitants, and a floating one, comprised of Bedouins, of about 3,000. The inhabitants are quite distinct from the surrounding population, and Harar is encompassed to its very gates by the Gallas. Harar is thus a commercial emporium for a very extensive district, and the people thereof conduct the stated caravans to the coast at Berbera. It somewhat resembles, in its commercial relations, the town, and small province of Gananah, on the river Jub, the inhabitants of which act as brokers between the Somali traders and the Gallas. The Somali find no difficulty in travelling among the Gallas in the neighbourhood of Harar, and the same may be said in regard to the Somalis of Gananah. The Gallas, however, are hostile to any strangers entering their country, and the Somalis are equally so. Harar is 219 miles from Berbera; and the distance, by slow caravan travelling, would be about twenty days. According to Captain Burton (*op. cit.* p. 127), "The Somali reckon their journeys by the Gedi, or march, the Arab, Hamleh, which varies from four to five hours. They begin before dawn, and halt at about 11 A.M., the time of the morning meal. When a second march is made, they load at 3 P.M., and advance till dark; thus fifteen miles would be the average of fast travelling. In places of danger, they will cover twenty-six or twenty-seven miles of ground, without halting to eat or rest; nothing less, however, than regard for 'dear life' can engender such activity. Generally two or three hours' work per diem, is considered

sufficient; and, where provisions abound, halts are long and frequent."

The Somali country may be represented by an irregular triangle, the apex being the junction of the river Jub with the Indian Ocean; the base, the southern coast line of the Gulf of Aden; the eastern side, the coast line of the Indian Ocean from the river Jub to Cape Guardafui, and the western side, the river Jub, and the mountain range of Bugama, in Southern Abyssinia. From the termination of that range to the Gulf of Aden there is no natural boundary. The greater part of this country is entirely Somali; but the eastern slopes of the Bugama range of mountains, and the adjacent territories, to a very large extent, are occupied by the Galla tribes.

In a commercial point of view, however, the country is one, and a considerable part of the Galla produce finds its way to Gananah, and from thence to the Somali ports, on the Indian Ocean, to be transported to Zanzibar. Another portion of the produce finds its way to the province of Ugahden, and is carried, along with the produce of Somali-land, by the great annual Ugahden caravans to the fair at Berbera. A much smaller portion is conveyed, as has been stated, by the Harar caravan to the same port. The Ugahden caravan route is thus the great trade artery of Somali-land.

The trade of Berbera is said to have greatly decreased of late years, and we are told that the number of people attending the fair is not much more than half what it was thirty or forty years ago. This is easily accounted for by the diversion of trade to the east coast, by the rivers Jub and the Webbe Shebeli, and the minor caravan routes trending towards the Somali ports on the east coast; thus the trade of Berbera has decreased by a large amount of the produce of the Galla, and the Somali countries, being drawn towards Zanzibar by the enterprise of the

European and American merchants who have been settled at Zanzibar since 1835.

The Somali country is high towards the north, and has a general declination to the south and eastward. It is separated by the river Jub from the main part of East Africa; and this river, and also the Webbe Shebeli, have their sources in the mountain range of Bugama. These rivers, which fertilize a large tract of country, run almost parallel to each other, but the Shebeli takes a turn to the south at Morussu, and runs almost parallel with the coast line until it disappears in the sands not far from the mouth of its sister river Jub. The country which lies between the rivers Jub and the Webbe Shebeli is by far the richest in Somali-land. The province of Ugahden is also a very fertile district. It is said to be a flat, grassy country, of rich red soil, and almost stoneless; and, as water is found almost everywhere, near the surface, it is considered by the nomad Somali to be a famous country for the grazing of their cattle. The Somali are entirely a pastoral people, and they possess large herds of cattle, such as camels, ponies, cows and sheep. The sheep are of the fat tailed variety, and large numbers find their way to the Aden market. The country also abounds in game, and the gazelle and antelopes roam about in large flocks like sheep.

No European has ever crossed, in any direction, the Somali country, so that, except from native information, it is a *terra incognita*. It is highly probable that it is much more fertile and populous than is generally supposed, and that portions of the country, appearing as blanks in our maps, are teeming with population. The Somali are exceedingly averse to strangers passing through their territory, even though they may be of their own faith, and Europeans doing so would certainly travel with their lives in their hands. The only highway through the country,

from north to south, is by the Ughaden caravan route, in a direct line from Berbera to Lhedu, on the Webbe Shebeli, and this is represented by twenty consecutive marches.

The stations as laid down in the maps cannot represent the consecutive stages of a caravan march, else we would have twenty consecutive marches, at the rate of twenty miles a day, which is absurd. To the southward of the province of Ughaden lies the province of Rahouin, the chief town of which is Shebeli on the river of that name. The important province of Rahouin maintains constant communication with Gananah on the Jub, and with the Somali ports on the Indian Ocean, along the course of the river Shebeli. Between Gananah and Mukdeesha or Magadoxa, and between Gananah and Brava, there is also direct communication by caravan routes. The current of the commerce of the country to the north of the river Shebeli all tends towards Berbera; while that to the south of the Shebeli, tends to flow towards the eastern Somali ports on the Indian Ocean, as has been previously observed.

Ughaden is the mustering-place of the southern Somali caravans, and at least two start for Berbera, one at the commencement and the other at the close of the season. During the intervening period the road is open to traffic. With the exception of Gallas the Somali export no slaves. The slaves of the Aroosi Gallas from the mountainous districts of Bugama are driven direct from Ughaden to Berbera. The Somali import slaves for manual labour, and for such purposes the Gallas would be of no use whatever, as a Galla would rather die than handle a hoe. The Galla slaves exported from north-east Africa, are principally females and young lads, intended for the houses and harems of the rich. Such slaves command a very high price in the ports of the Red Sea,

the Persian Gulf, and India, and would be shipped on the most favourable occasions.

Camels being abundant in Somali-land, the produce of the country is conveyed by cattle labour to Berbera, and not, as in other parts of East Africa, by means of porters. The exports of Ughaden are sheep, cows, ghee, mats made from certain grasses and the Daum palm, ostrich feathers, hides, ivory, gums, &c. Highly prized prayer skins, for the manufacture of which Ughaden is celebrated, are also exported. Such articles are bartered for cloth, rice, dates, beads, and a great variety of articles for use and sale in the interior of their country. The only coin current among the Somalis is the black German dollar. New dollars are of little or no use as a circulating medium; the blacker and more worn they are the better, as their venerable appearance is looked upon as a guarantee of their honesty, the reason being the same as leads the canny Scot to prefer the tattered and greasy notes to the fresh issues of the banks.

Although the great annual fair at Berbera, on the Gulf of Aden, has been fully described by Lieut. Cruttenden, and afterwards by Captains Burton and Speke, it does not seem to have attracted the attention of epidemiologists as a gateway by which an epidemic of cholera might enter, through the Somali-land, the East Coast of Africa, and also Central Africa.

When we consider the vast number of strangers, as many as sixty thousand, congregated at one spot, from Somali-land, India, the Persian Gulf, and the Red Sea ports, and all living in encampments, without any sanitary arrangements whatever, we find, at Berbera, a focus of diffusion for any epidemic disease, second in importance only to the great annual gathering at Mecca.

Mr. Netten Radcliffe, having in vain called attention, for the second time, to the importance of the capture made by

H.M.S. *Penguin*, renewed his investigation regarding the existence of cholera in East Africa when the great epidemic at Zanzibar became known in 1870.

In reply to Mr. Radcliffe's inquiries I made two reports, which were laid before the Epidemiological Society. These reports, although substantially correct, were necessarily incomplete, as I was not then aware of the capture made by the *Penguin*. They were as follows:¹—"The third epidemic of cholera on the East Coast of Africa was first heard of in April, 1865, in the Somali ports. This being towards the close of the north-east monsoon, its progress towards the south was limited, as the south-west monsoon set in early and strong, and shut off all traffic to the southward. Lamoo suffered very severely, and also Melinde. A few cases occurred at Mombassa, but the disease did not advance further south. At Melinde it struck off to the interior, and prevailed to a considerable extent in Ukambani, and further inland. At Patta and Lamoo, where the greatest mortality took place, the epidemic lingered till June. Baron Von der Decken, who was then engaged in the exploration of the coast contiguous to the river Jub, lost several of his men from the disease."

In a subsequent communication, forwarded in 1871, I state:—"While investigating the origin of the second epidemic (1858-59), I ascertained that in 1865 there was cholera at Mecca and in Yemen, but that it did not reach the district of Makalla. My informant, an Arab of remarkable intelligence, and of high standing, was in the infected region at the time (El-Hedjaz), and he stated that the disease proceeded from the Red Sea ports, and that it was conveyed along the coast in dhows. I thought that this was sufficient to connect the epidemic in Africa with that in Arabia by means of dhow communication; but, on interrogating the people from Mukdeesha, I was

¹ *Transactions Epidem. Society, London, Sessions 1869-73, p. 265.*

surprised to hear that, instead of reaching that place direct from Arabia or the Red Sea, it came from Brava and Merka, ports to the south of Mukdeesha. The evidence of these people could not be doubted, as they were positive in their assertion. At that time I had the good fortune to meet Mr. R. Brenner, at present resident in Zanzibar, but who was, in 1865, in connection with the exploring expedition of the late Baron Von der Decken, which left Zanzibar on May 6th, 1865. The party, after visiting several places on the coast, and making short excursions towards the interior, entered the river Jub in June. During the interval, they encountered the epidemic, which was raging with great violence in the coast towns. Several natives in connection with the expedition died, and the Baron himself had a very severe attack, but recovered. When the party reached the town of Barderah, on the Jub, soon afterwards the scene of the brutal murder of the Baron and the medical officer of the expedition, they ascertained that the country in that neighbourhood was, at the time, free from cholera, but that the district had been affected.

“On enquiring among the natives regarding its line of progress, Mr. Brenner was informed that it came to Barderah from Gananah, higher up the Jub, on the trade route, and that the epidemic had reached Gananah from Berbera, on the Gulf of Aden, along the great caravan route. From Barderah on the Jub, it passed towards the coast to Brava, by the trade route, and from thence northward to Merka and Mukdeesha, and to the south, as formerly stated. The epidemic reached the coast in April, and continued till August, and spread from the coast towns towards the interior, but not to any great extent. I had previously looked upon Berbera as a locality where a cholera epidemic was very likely to originate, or rather from which it would spread over Africa, owing to the great annual fair. . . . I am not certain that cholera actually

prevailed as an epidemic during the time of the fair, but there can be no doubt regarding its line of progress, or regarding its having been at about that time in the Red Sea ports."

Although no additional information, either of a positive or negative character, has since been obtained regarding the existence of cholera in Berbera in 1865, I regard the evidence of Mr. Richard Brenner as of undoubted authority. I have before me the sketch map which Mr. Brenner drew out for me during our conversation, and it cannot but be regarded as perfectly reliable. At the time of the murder of the Baron at Barderah, Mr. Brenner was higher up the Jub with the steamer. He, with his companions, fought their way through hostile natives down the Jub, and it was principally owing to Mr. Brenner's unrivalled accuracy as a good shot that they reached the mouth of the river in safety. Mr. Brenner afterwards, on his return from Europe, travelled extensively in the Galla country south of the Jub, and he was better acquainted with the regions in that neighbourhood than any other traveller, he being the only European who ever traversed the country.

From an official point of view, Berbera ceased to exist in the year 1865, but as a matter of fact this could not have been the case. A commercial mart, of probably 2,000 years' standing, could not be wiped out in a year. Still, no information is available from the Gulf of Aden side regarding the date, or even the existence, of the cholera epidemic at Berbera in 1865, and it is necessary to work out the question by tracing back the epidemic from the first definite date, namely, that of the capture of the slave dhows, made by the boats of H.M.S. *Penguin* on the 15th April and 12th May, 1865.

Mr. Radcliffe kindly supplied me with the position of the captured dhows during the preparation of this work, the information having been derived from the Admiralty.

The first dhow captured was on the 15th April, at noon, in lat. $1^{\circ} 55'$ N.; long. $45^{\circ} 25'$ E., seven miles south of Mukdeesha, or Magadoxa, East Coast of Africa.

The second dhow was captured on the 12th May, the ship that day at noon being in lat. $12^{\circ} 10'$ N.; long. $52^{\circ} 15'$ E., anchored under Abd-el-Kuri, Gulf of Aden.

These dates, especially the first, are of the greatest importance in fixing the date of the appearance of the epidemic at Berbera. On the supposition that the first dhow took in a cargo of slaves at Brava, or called at that port in passing and contracted the disease there, then it is certain that the epidemic must have been at Brava not later than the beginning of April. Assuming that an epidemic does not travel faster than the quickest means of transport of human beings along a caravan route, then the usual time occupied in the march from Berbera to Lhedu, on the Webbe Shebeli; from thence to Gananah on the river Jub; from thence to Barderah, and from Barderah to Brava, represents the interval between the beginning of April and the date of the appearance of the epidemic at Berbera, and this will indicate the latest possible date of the appearance of the epidemic on the African side of the Gulf of Aden.

I have already quoted Captain Burton's notes on the rate of travel among the Somalis, and Captain Burton is the highest authority on the subject. "Fifteen miles would be the average of fast travelling. In places of danger they will cover twenty-six or twenty-seven miles of ground without halting to eat or rest; nothing less, however, than regard for 'dear life' can engender such activity. Generally, two or three hours' work per diem is considered sufficient; and, when provisions abound, halts are long and frequent." For a journey of this distance, a rate of from eight to ten miles a day, including halts, would be good travelling.

In travelling through Africa, by an old established route, there is a regular rule of the road, which it is almost impossible to violate. There are the regular halting-places, and it is not the custom to accomplish two days' marches in one. The rule of the road on the Derby course is very different from that in the streets of London, and so in Africa inclination must bend to the inexorable laws of custom.

It is quite impracticable that the distance stated could be covered in less than three months, which would give the latest possible date of the epidemic at Berbera at the end of December, or beginning of January. The actual date of the appearance of cholera at Berbera must have been earlier than this, and was probably coincident with the appearance of the first dhows from Bombay in November 1864. The Bombay and Cutch dhows arrive in time to meet the first caravans from Ughaden and Harar. On the supposition that cholera was imported from Western India into Berbera at the opening of the annual fair, and that the Ughaden caravan was attacked, and left as early as possible, then there is just the proper time for the epidemic to reach Brava by the route mentioned, and for the boats of the *Penguin* to pick it up in a slave dhow, seven miles south of Mukdeesha, on the 15th April, 1865. Whether or no these suppositions are correct is of little or no consequence, for the evidence of the natives themselves cannot be gainsaid, and account for it as we may, cholera must have been at Berbera, on the African coast of the Gulf of Aden, not later than December, 1864.

There are no official records of any fair at all at Berbera in 1865, and the reason may be found in the fact of the appearance of cholera at its commencement. The absence of an official record, however, does not invalidate a fact and is of remarkably little consequence.

The epidemic invasion of Makalla, in Arabia, and that of Berbera, in Somali-land, are not necessarily connected

with each other, although it is almost certain that both places were infected from the same source. Berbera could have had no connection with the ships *Persia* and *North Wind*, for cholera broke out in the *Persia* two days after she sailed from Makalla on the 13th of February, whereas cholera must have been, as we have seen, at Berbera at the end of December at the latest. If these two, now celebrated, ships actually carried the Pandora's box of cholera into the Gulf of Aden, starting from Makalla on the 13th of February, a relay of race-horses would have been necessary to have conveyed it on board H.M.S. *Penguin* on the 15th of April, seven miles south of Mukdeesha.

Berbera was probably the very first point affected, and from it, the Arabian coast on the Red Sea would be contaminated. Indeed, it is difficult to see how the Arabian sea-board, south of Jidda, could escape under the circumstances. The natural course of the epidemic would be up the Red Sea from port to port, and along the provinces bordering on the coast (just, in fact, as is known to have happened), for the Somali pilgrims would travel in that direction, the time being favourable for the Kourban Bairam in May.

The existence of cholera in the harbour of Makalla in February 1865, must be admitted, although the actual outbreak in the district may have been but slight; but, as regards the general question of the outbreak in Arabia, it is a matter of minor importance. Makalla has distinct trade communications with Bombay, and its harbour is a common port of call for native craft from the Persian Gulf, and also from Cutch and Bombay, on their passage to Berbera. Makalla was probably infected by some native vessel from Bombay prior to the arrival of the two pilgrim ships mentioned, and it may have been by the same vessel, or vessels, that carried the disease to Berbera at the close of 1864.

The great highway from Berbera to the river Jub, is a second line of entrance to the east coast of Africa, by which extensive regions may be devastated by cholera, and there is every reason to suppose that the epidemic of 1865 was not the first that entered Africa by that line of route. Probably the epidemic of 1821 did so. The river Jub forms a natural boundary to the south, which would tend to arrest the progress of an epidemic in a direct line; for the Zanzibar caravan routes do not extend so far north as Barderah and Gananah on the banks of the Jub. An epidemic, however, might pass to the west, and thus enter Central Africa.

It is scarcely possible to imagine how an epidemic of cholera could invade Berbera during the fair season, and more especially at its close, without being attended with the most widespread and disastrous results; and such events, we now see, may take place without being heard of by the outside world, even by next-door neighbours.

The two routes to East Africa mentioned, namely that by the sea-board, and the second by way of Berbera, through Somali-land, are essentially trade routes, and are only subordinately and accidentally pilgrim routes. The Berbera route is that usually taken advantage of by the Somali pilgrims (except those living near the coast); and when the season of the pilgrimage agrees with the period when the annual caravans depart for Berbera, as it did in 1865, this route is always preferred; but when the seasons do not agree, the pilgrims strike off from the caravan route, and make their way direct to Massuah, their course being to the east of Abyssinia. The Somalis are much more strict in the performance of their pilgrimage duties than the Wasawahili of the east coast of Africa. While the negro Moghrabi and Tokruri, of Northern, Western, and Central Africa, have always formed one of the prominent constituent parts of the multitude of

pilgrims at Mecca, the Moslem negroes from the east coast never have, and the Zanzibar dominion sends but a very small annual contingent of pilgrims to Mecca, probably smaller than any other Mohammedan state in the world. No person living in Zanzibar could fail to have his attention directed to Kerbela, as the centre of the Shiite pilgrimage; but the pilgrimage to Mecca is seldom heard of. The Wasawahili of East Africa are a most contemptible class of men, a race whom nothing can stir into action, and they take full advantage of the plea of poverty and remain at home, so that they and other Moslem negroes from East Africa are but rarely seen at the celebration of the pilgrim rites at Mecca.

From the very first Mr. Radcliffe correctly divined the true origin, and subsequent distribution of the epidemic of 1865. When I first heard of the capture made by the *Penguin*, it was stated to have been in the Gulf of Aden; and, having a tolerably accurate knowledge of the slave trade on the east coast of Africa, the Gulf of Aden, the Persian Gulf, and the Red Sea, there was no great difficulty in ascertaining where a slave dhow, picked up in the Gulf of Aden in April, would have sailed from. Any one possessed of a little local knowledge could have said at once that the dhow must have come either from Berbera, the adjacent coast, or from East Africa.

The position of the dhow and the nature of the cargo, (Galla or East African slaves) would determine at once its sailing port. Had the dhow sailed from Berbera at the close of the annual fair, it would have indicated the existence of cholera there at that time, but having been captured seventeen miles to the south of Mukdeesha, I conjecture that it sailed from Lamoo a few days before, and that, when captured, it was in full flight before the *Penguin*. The cargo of slaves would more probably be

taken in at Lamoo than at Brava, and cholera was there in April 1865.

The capture of the slave dhow, to which attention was called by Mr. Radcliffe, together with the positive evidence supplied by Mr. Brenner, at a time when the epidemic had just disappeared from the Ughaden caravan route, affords us the means of fixing with a precision little short of certainty the latest possible date of the appearance of epidemic cholera in the Gulf of Aden, and is the major fact in connection with the chronology of the epidemic.

CHAPTER V.

THE TRACK OF THE ZANZIBAR EPIDEMIC OF 1869-70, FROM MECCA TO THE BLUE NILE, THROUGH ABYSSINIA.

IN my first paper on "Cholera Epidemics in East Africa," written at the close of the epidemic in Zanzibar, and read before the Epidemiological Society of London, in January 1871, I had not traced the epidemic of 1869-70 towards its origin, beyond the Masai country to the west of Usambara.

Mr. Netten Radcliffe, at that time Honorary Secretary to the Epidemiological Society, by whom my communication was laid before the Society, inferred at once that there most probably was some connection between that branch of the great epidemic of 1865, which invaded Abyssinia in that year, and that which appeared in the Masai country in 1869, and, consequently, that the Abyssinian epidemic of 1865, and the East African of 1869-70 were identical.

Applying the commonly accepted theory regarding the laws regulating the diffusion of cholera epidemics, and having an intimate knowledge of the geography and commercial relations of Southern Abyssinia and the Galla country, Mr. Radcliffe suggested that the epidemic had advanced from Southern Abyssinia to Enarea, the scene of the great annual Galla fair, and from thence to the Masai country. In the sketch map drawn up by Mr. Radcliffe on that occasion, to illustrate his views on the subject, the cholera track is theoretically laid down through the Galla country, by way of Enarea, and from

thence to the neighbourhood of Kilimanjaro, where the Masai are located, the course which subsequent and independent investigation from Zanzibar proved to have been that actually pursued by the epidemic. With the introduction of a few angles here and there, the map drawn up by Mr. Radcliffe five years ago would be sufficient to illustrate the real course taken by the epidemic, so that the investigations *à priori* and *à posteriore*, coincide exactly. Subsequently, Inspector-General Smart, M.D., R.N., in a paper on the "Distribution of Asiatic Cholera in Africa," read before the Epidemiological Society, 12th June, 1872, advanced the same view of the probable transmission of cholera from Abyssinia to the east coast of Africa, and the continuity of the epidemic of 1865-1870.

The East African epidemic of 1865, discussed in the last chapter, and that of 1869-70 are identical, and are but two branches of the great general epidemic which entered the Gulf of Aden and the Red Sea towards the close of 1864 or the beginning of 1865. They entered Africa, at no great distance from each other, within an interval of only a few months, and they pursued almost parallel lines from north to south, but along very different tracts of country.

There is a difference between the two epidemics in one respect, however, for the branch which entered by Berbera in 1864 was probably a direct importation from India, whereas the Abyssinian branch had no direct connection with India, but most probably entered Abyssinia from the Hedjaz by way of Soukin and Nubia, in June or July 1865. There is no evidence to show that the epidemic of 1869-70 was an offshoot of the branch which entered Berbera, and it is extremely improbable that Abyssinia would be infected directly from Berbera; indeed, it could not have been so, in the chronological order in which the epidemic actually appeared, in the districts of Abyssinia.

It would be out of place here to discuss the question as to the infection of Arabia previous to the outbreak of the epidemic at Mecca on the 10th of Zu'l Hijjah, the 6th of May, 1865. The general statement, however, will not, I presume, be questioned that cholera was present at several points in the neighbourhood of Mecca previous to May 1865, when the great outbreak took place.

In so far as the East African epidemic of 1869-70 is concerned, the only important fact is the outbreak at Mecca during the pilgrimage season in May 1865. On that occasion there was an unusually large number of pilgrims assembled, the year being a jubilee one, the numbers estimated being from eighty to a hundred thousand souls. Amongst this large multitude, assembled under circumstances described in a former chapter, the disease became fully developed before the necessary pilgrimage ceremonies came to a close, and when they were concluded, the pilgrims fled from the infected spot. It is probable that no more severe epidemic ever occurred at Mecca during the pilgrimage season.

The geographical distribution of this remarkable epidemic was investigated by Mr. Radcliffe at the time, and its history is certainly the most complete which has been written of any epidemic of cholera.

With an epidemic close at hand, and being so intimately connected with Arabia, it was impossible for Abyssinia long to escape ; for Abyssinia, although Christian, is surrounded on all sides by a Mohammedan population, and the produce of Abyssinia finds its outlet by the Red Sea ports. The pilgrim routes are also the highways bordering on Abyssinia, leading into it, and passing through it.

The earliest ascertained facts, concerning the general diffusion of this epidemic, were in connection with the outbreak in Egypt, on the return of the pilgrims from Mecca.

The highways of Egypt were speedily affected, and, at an early period, the epidemic was advancing rapidly up the Nile from Lower to Upper Egypt. Owing to the rapidity of steam communication, Suez was affected at a very early period, and Upper Egypt and Nubia may have been exposed to the epidemic by way of the Nile, sooner than by the apparently more direct routes from the coast, of which there are several, the more important being Cosseir, Souakin and Massuah.

Cosseir, on the African shore of the Red Sea, is a small town, situated on a sandy beach, and contains about two thousand inhabitants. It is supported entirely by the trade between Egypt and El Hedjaz, and the passing pilgrims to Mecca. The transit traffic consists principally of grain for the use of the Sultan's standing army, and for the inhabitants of a great part of Arabia; the principal trading connections being with Yembo and Jidda. The pilgrims return by the native craft which have discharged their cargoes at these ports, and the length of the voyage depends entirely on the season of the year. A fair passage is made in from six to eight days, but if there are head winds from the north, and a strong current against them, it is frequently a month before they reach Cosseir. From ten to fifteen days is considered to be a good average passage. The sum of two pounds is the passage-money asked from pilgrims who can pay, and the passengers are as closely packed as they are in slave dhows. At Cosseir the pilgrims arrive in thousands, and on their way to Jidda they pitch their tents close to the sea-beach, and wait for vessels to conduct them to Jidda. On the return from Jidda, the delay at Cosseir is, of course, shorter. From Cosseir the pilgrims make their way to Keneh, on the Nile, and there they diverge, some going down the Nile towards Egypt and others up, towards the frontier provinces of Abyssinia. Close to Keneh, at Bir Ambar,

a mosque was erected by Ibrahim Pasha for the accommodation of the pilgrims to and from Mecca, who go by way of Cosseir and Keneh, in place of a former one which had been destroyed by a rise in the river. The building, besides the mosque, contains baths, and seven rooms, surmounted by cupolas, for the accommodation of travellers. The present pilgrim route, by Cosseir and Keneh, is the route that was for a long time used for the transit of merchandise and passengers from India to Europe, and the journey is generally performed by caravans in three days and nights. Lady Duff Gordon gives some interesting sketches of the Tokruri pilgrims. In her "Last Letters from Egypt," writing from near Keneh, she says:—"A poor pilgrim from the far back country was taken ill yesterday at a village six miles hence; he could speak a few words of Arabic only, and begged to be carried to the Ababdeh. . . . These strange black pilgrims always interest me. Many take four years to Mecca and home, and have children born to them on the road, and learn a few words of Arabic."

The direct route, however, for the Tokruri pilgrims is by way of Souakin, to the south of Jidda; and all travellers who have an intimate knowledge of the country agree that the route *viâ* Souakin is the natural road to Khartoum.

Dr. Beke, in describing the highways to Central Africa, says¹:—"The distance to Khartoum on the Nile from the shores of the Red Sea is little more than 400 miles, through a fertile and well-watered country. . . . Khartoum itself is on the high road to Central Africa, and it is a fact pregnant with importance that the greatest movement of the population of Africa is from east to west, and from west to east. Pilgrims from the remotest regions of western and north-western Africa traverse the entire breadth of the continent on their way to and from the

¹ *The British Captives in Abyssinia*, by Charles T. Beke, p. 311.

Kaabah, and the tomb of their prophet and lawgiver. This is, indeed, the road which has unalterably been trodden during countless ages, for it existed long before the time of Mohammed. The pilgrims who frequent Mecca are almost of necessity merchants trading from place to place, often as the sole means of enabling them to perform their journey. It is by this means that the Mohammedan religion has attained its great development throughout Central Africa—not by any zealous and expensive, or indeed, international propagandism, but by the casual communication between these Moslem merchant pilgrims, and the rude pagans through whose countries their route happens to pass; and it is by the same simple means that our manufactures, and with them eventually our civilization and our religion, will find their way into the heart of Africa.”

It is quite unnecessary to speculate as to the point or points of entrance into Abyssinia of the cholera epidemic, as there is a certain amount of information of a precise nature on the subject, and nothing additional has been obtained of late years.

On the 13th of October, 1865, Mr. Rassam, Captain Prideaux, and Dr. Blanc, started from Massuah, on their mission to the Emperor Theodore of Abyssinia, relative to the release of the British captives. They proceeded westwards through the border districts of Bogos, Barea, Taka, and Kidarif to Matamma, where an escort was to be provided to conduct them to Devra Tabor, or wherever the emperor might happen to be, and from them we have some precise information regarding the epidemic.

In the month of October 1865, cholera was prevalent in Massuah and the neighbouring districts, but for what length of time we have no information. Massuah is the principal sea-port of Abyssinia both for exports and imports, and not only of Abyssinia but the northern Galla country. The produce of the southern Galla country

is shipped at the Somali ports on the east coast of Africa, and a portion finds its way to Berbera by the Ugahden and Harar caravan routes as previously described ; but the major portion of the northern Galla produce is conveyed by a caravan route, hereafter to be described, to the port of Massuah on the Red Sea. This caravan route is also a pilgrim route for the Moslems on the eastern and southern borders of Abyssinia, as far as the Somali provinces bordering on the river Jub.

There are several lines of route from Massuah to Abyssinia, one being to Adowah through the Asowarta tribe of Shihos, and the other through the Tora tribe ; but the greater part of Abyssinia being, at the time mentioned, in a state of revolt, the route ordered by the emperor, through the boundary provinces, was round about and unusual, and was dictated for political reasons.

After the expedition left Massuah we next hear of cholera at Cassala, the capital of Taka, a boundary province of Egypt, and it was reported as having prevailed at that place during the months of July, August, September, and October.

Cassala, a town of considerable size, contains the government stores and arsenal, and is under the Egyptian authority. It is a place of considerable commercial importance, and is the principal depôt of the Soudan for all European and Indian merchandise. It is highly probable that Cassala, and the province of Taka, would be infected by that branch of the epidemic which proceeded up the Nile in July, from Lower Egypt. Central Abyssinia was reported as affected generally throughout the year 1866, and the province of Tigré, probably, in May 1866. Cholera prevailed in the town of Kourata in April ; in Zagé in May, and in Devra Tabor and Gaffat in July 1866.

These are all the precise data of the epidemic of cholera

in Abyssinia supplied by the expedition, and it may certainly be relied upon that, had cholera been present at any part of the route traversed by Dr. Blanc, the circumstance would have been noted. Dr. Blanc does not refer to any course taken by the epidemic, in its progress through the country, but merely mentions the places at which he encountered it and heard of it, on the journey of the expedition from the sea-port of Massuah to the fortress prison at Magdala, where the envoy and his suite were eventually confined.

These data, although few, are very valuable, for we are supplied, not only with positive, but also with negative evidence regarding the state of the country in the districts travelled over.

The party having left Massuah in October 1865, where cholera was present, traversed the border districts of Bogos, Barea, Taka, and Kidarif, and arrived at Matamma, the capital of Gallafat, on the 21st of November, 1865. During the journey the only other place mentioned where cholera was present is Cassala, the capital of Taka.

Matamma of Gallafat—for there are many Matammas and Berberas about Abyssinia—is a place of considerable importance, commercially; being the *entrepôt* from Darfour, Kordofan, Senaar, and Khartoum, towards the west, and of Massuah, Souakin, and Egypt, towards the east and north. Matamma is more a centre of transport than a centre of commerce, and formerly, perhaps even now, the province was forced to maintain a neutral position, and paid tribute both to Egypt and Abyssinia.

The inhabitants of the province of Gallafat are Tokruris of Darfourian origin. The district is about forty miles in length, and the population is estimated at about 20,000. All the negroes from the province of Gallafat, and the countries lying between it and the west coast of Africa, are called Tokruris. At a very early period their

ancestors adopted the Moslem creed, and even to this day they are the most rigid of Moslems, and always form a prominent contingent in the annual gathering at Mecca, as they have done for many centuries.

The original settlement of the Tokruris in the province is thus explained. The Tokruri pilgrims, on their return from Mecca, originally rested from the fatigues of their journey in the neighbourhood of Gallafat, as a country preferable to their own. The establishment of a few settlers formed a nucleus; and as successive pilgrimages to Mecca were annually undertaken from Darfour, the colony rapidly increased by the settlement of returned pilgrims. Thus commenced the establishment of a new tribe upon foreign soil, and, as the number of settlers increased to an important amount, permission was granted by the king of Abyssinia that they should occupy this portion of his territory, upon payment of taxes as his subjects. The Tokruris are a fine powerful race, exceedingly black, and of the negro type.

Mr. Petherick, who spent many years in trading and travelling in the countries adjacent to the White Nile and south of Khartoum, gives some interesting information regarding the adjacent province of Kordofan, and the connection which subsists at Gallafat between the tribes on the east and west coasts of Africa. This has only an indirect bearing on cholera epidemics on the east coast, but it shows the connection, established through Tokruri pilgrims, which may subsist between epidemics on the east coast, and on the west and north-west coasts of Africa.

Kordofan had been invaded by Senaar, and the people of Senaar had settled there; but in the year 1770 the Sultan of Darfour determined to drive them out of the country, and make the White Nile the eastern boundary of his dominions.

Mr. Petherick says:¹—"When the expedition was determined on by the Sultan of Darfour, his only permanent troops acted as police and bodyguard, and consisted of negro horsemen, 200 strong, all of whom were slaves. They wore a complete suit of armour, and their only weapon was a long straight double-edged sword. In time of war the adult male population was called out, the agriculturists, with spear and shield, acting as infantry, while the nomad Arab tribes, occupying the northern and eastern deserts, first-rate horsemen, formed the cavalry. These wild and irregular hordes, appearing under their respective chiefs at the Sultan's call, received no pay; their sole remuneration was the booty which they acquired; and, at the end of each campaign, they returned to their desert homes. With materials such as these the Sultan felt that, although he might free Kordofan from its invaders, he could not permanently occupy it, and prevent its reinvasion, possibly on a larger scale than in the first instance, and which, if successful, might terminate, in retaliation, with an incursion into his own country. The necessity of a permanent force therefore became evident; and to obtain this he levied extraordinary contributions of slaves upon merchants and communities; whilst, instead of ivory, ostrich feathers and copper, he demanded slaves to be substituted for the annual tribute paid to him from the southern portion of his dominion. From *Tunis*, whither large caravans of slaves and merchandise proceeded annually, in which the Sultan himself condescended to trade—by which means he obtained luxuries in exchange for the rough produce of his dominions, constituting his tribute—he procured swords, casques and armour; and, supplying himself with horses, from his Bedouin Arab subjects, in the course of five years he saw himself possessed of a bodyguard of 2,000 picked

¹ *Egypt, the Soudan and Central Africa*, by J. Petherick, p. 265.

slaves. The command of these troops he divided among the members of his household; and, to inure them to the use of arms, he assailed turbulent chiefs in the south-west part of his dominions, and subjugated them." At length with a troop of negro cavalry, 2,000 strong, and with 3,000 Bedouin cavalry in addition, the Sultan of Darfour entered on the campaign. To enable this force to cross the sandy desert to Serooj, the first and only watering place, each horseman was attended by two camels, carrying grain and water. The desert was crossed in three forced marches, and the invaders of Kordofan were driven across the Nile to their own territory at Senaar. After this date the commerce of Darfour began to find its way through Kordofan and Senaar, and through the Soudan to Arabia and Egypt; whilst the returning caravans brought Syrian silks and cotton stuffs from Egypt, and the produce of Arabia, India, and Abyssinia to the market at Barea and Il Obeid.

"The wealthy people of Darfour, and the west, with whom they traded, unlike the simply attired Kordofanese, were fond of dress, and although their habitations were merely rude huts, and buildings of sun-dried clay, they contained rich articles of furniture, consisting of Turkey rugs and carpets, and embroidered cushions." This territory now belongs to Egypt, but the trade connections and lines of human intercourse are unaltered.

In 1848, Mr. Petherick while travelling in the district of Akaba between Hashaaba and Helbe, states that his caravan was attacked by a party of the Kababish Bedouins. He says:—"We had not proceeded far, when, turning a cluster of trees, I caught sight of our camels lying down motionless, and some score of pilgrims in precipitate flight towards me. They were Tokruri from Western Africa, and at Il Obeid had joined my caravan for safety, but fallen upon by the Kababish, and some of them wounded and beaten,

they had lost all they possessed. I could glean nothing from them regarding the fate of the soldiers, and of the camel-men, of whom I could see no trace. . . . The bows and arrows, water vessels, wooden tablets, &c., of the pilgrims were all returned." Il Obeid was, at that time, the furthest south commercial mart of any importance, maintaining extensive trading connections with Darfour; and, at this place, in travelling south, the last remnant of civilization was left behind in the form of a permanent gallows, "a terror to evil doers, and a praise to them that do well."

At Il Obeid there is a separate quarter for the Tokruri, occupied by settlers from Burnou, Burgou, and Bagirma; and, besides the trade with Darfour, scarcely a week of the winter and summer months passes without the departure of large caravans, consisting of hundreds of laden camels, by way of Dongola to Cairo. Il Obeid does not seem to be a pleasant place to live in, for, "In front and around each mud-built hut are enormous holes, into which the carrion of the place is thrown; and from this arise odours of the most disgusting nature. All around the town the bodies of putrifying animals encumber the earth, where they are devoured by dogs, vultures, and hyænas." Il Obeid is an important commercial centre and is on the great highway from eastern to western and north-western Africa.

The preceding observations have been made simply to point out the commercial and pilgrim route from Mecca to Darfour by way of Kordofan, and from Darfour to the west coast of Africa, as also to Tunis and other districts in northern Africa. An epidemic of cholera might reach any of these distant regions by the routes mentioned; by the caravan route from Cairo; by the Cosseir route, or by way of Souakin on the Red Sea; but in either case, the last traces would be seen in the Egyptian boundary provinces.

A desert waste is doubtless a great security against an epidemic of cholera, but a paradise would be an equal security if no person traversed it, and so would any natural boundary of a country were it not crossed.

When Dr. Blanc was at Matamma in Gallafat there was evidently no cholera there, else it would have been mentioned, but it may have appeared later, and most probably did so.

Mr. Rassam and his party remained at Matamma nearly a month expecting an escort to accompany them to Devra Tabor to await there the arrival of the Emperor Theodore, who had gone back into Gojam to attack the rebel Tabela Gwalu, who, for many years past, had set Theodore at defiance. From Matamma, Mr. Rassam and the escort proceeded on the way to Gondar and Devra Tabor; but, at Belloha, they were stopped by a body of troops under the rebel Tessu Gobazye, who held rule in the north-western province southward as far as Gondar; but they escaped from them, and, on January 11th, 1866, arrived in safety within twenty miles of that place. The country was in such a state of anarchy that, instead of marching direct to Devra Tabor, they had to take a circuitous route, and travel round the western shore of Lake Tsana, and on the 28th of January they reached Damot, about forty miles to the south of the south-western corner of the lake, where the emperor's camp was situated. The province of Damot is situated between the provinces of Agaumider and Gojam.

On the 30th of January they received information from the emperor that they were to proceed to Kourata, and remain there till the prisoners should be brought from Magdala; and Theodore with his army accompanied them for two days, the army numbering 45,000 men, and as many followers, male and female. On the 2nd of February they crossed the river Abai, the Blue Nile, and on the

day following they marched in the direction of Agaumider, and shortly after took up their quarters at Kourata, which is described by all travellers as being an exceedingly picturesque and pleasantly situated place. It is a sacred city and no mule is allowed to tread its streets.

In this neighbourhood the border of the lake is studded with villages, each with its church, and the whole district is in the hands of the priesthood. Mr. Plowden says:¹—“Opposite, and distant about ten miles, on a promontory stretching into the lake, is the holy town of Zagé, built on the side of a mountain, its lower houses being on the border of the water, and a church crowning the crest of the hill. Here oranges are grown in profusion, and its inhabitants boast of the most beautiful women and the most daring banditti of Abyssinia the country is almost entirely in the hands of the priesthood, who are in great force in these parts of Abyssinia, and almost independent of the secular power, enjoying in these secluded islets a reputation for extreme sanctity. I cannot vouch for the latter fact, but I can vouch for their peculiar and disagreeable insolence.”

Whilst the European party was at Kourata the emperor took up his quarters on the opposite promontory of Zagé. Meanwhile the European artisans and missionaries with their families arrived in March, and remained for a month without suspicion of danger; but they were all made prisoners again in April. The events which followed are of too recent date to require recapitulation.

It would be useless to speculate regarding the connection between the different parts of Abyssinia affected by the epidemic, for there is really no difficulty in ascertaining that a connection did exist. At all events, we may rest as-

¹ *Travels in Abyssinia and the Galla Country.* By Walter C. Plowden, chap. xiii.

sured, not only that epidemic cholera prevailed in Kourata in April, in Zagé in May, and in Devra Tabor and Gaffat in July 1866, but that, in neither of these places, was cholera present prior to these dates, for Dr. Blanc, Mr. Rassam, and Captain Prideaux were in the neighbourhood at the time. It is not to be supposed that these were the only towns of Abyssinia attacked by the epidemic: they are merely towns in which the party happened to be when the epidemic came upon them, and in which they found it. Central Abyssinia was under the epidemic during the year 1866, and it was in Tigré, probably in May 1866, as previously stated.

There is one circumstance worthy of being noted, viz., that it does not appear to have extended far into Southern Abyssinia before the setting in of the rainy season.

We may follow Captain Prideaux's narrative of events regarding the state of Theodore's army and camp.¹ "Cholera having broken out at Zagé at the end of May, the king resolved to move his camp to Kourata.

"Dr. Blanc, Captain Cameron and the Rosenthals who were all in bad health, had already left us, and were comfortably settled in that town. We commenced our march on the 6th of June, our route skirting the southern shore of the Tsana and through the province of Metcha, until we reached the river Abai, or Blue Nile, which we crossed a few miles below the bridge built by the Portuguese in the seventeenth century.

"The army of Theodore numbered at this time some 40,000 fighting men, exclusive of followers, and it was on an occasion like this that the heterogeneous character of the force could be seen to the fullest advantage. The king himself usually rode ahead with the musketeers following *en masse* behind him, but the cavalry rarely kept any order,

¹ *History of the Abyssinian Expedition.* By Clement R. Markham. Chapter by Captain Prideaux.

and generally galloped about wherever it best suited their convenience.

"On arriving at the ford, of course, a rush was made, each one striving to be before his neighbour in crossing the stream; and foot and horse, the tenderly nurtured lady on her richly caparisoned mule, and her sturdy-limbed waiting maid with a weighty jar of *tej* on her back, were all indiscriminately mingled, and huddled up together amid the turbid and muddy waves which flowed quickly from the lake over the rough boulders in the river's bed.

"But accidents seldom occurred, and few amongst the struggling and writhing throng failed to reach the opposite bank in safety.

"On crossing the river we entered the large and fertile province of Bagemder, and the next day we were able to pitch our tents near our old quarters at Kourata. But the cholera followed too, and rapidly overtook us; hundreds, amongst whom was our old friend Agafâri Golam, were stricken on the day of our arrival.

"The king, therefore, listening to advice, determined to march to the higher plateau of Devra Tabor, and we accordingly resumed our journey on the 13th of June, 1866."

The European party took up their quarters at Gaffat, a large straggling village, where the emperor's European artisans had their factories, the distance being about three miles from Devra Tabor. The large army of the emperor was quartered on the district, and supported itself by forays, and the consequences were disloyalty in the provinces, the slaughter of thousands of innocent victims, privations, and desertions of whole bodies of troops, a result which invariably follows when an Abyssinian army goes into winter quarters. To obviate the breaking up of the army by wholesale desertions Theodore again mustered his forces, and returned to the attack of his enemies at Gojam; but

he was obliged to return to Devra Tabor after a three days' march to Aibankab.

Captain Prideaux says:—"It was at Aibankab that on Monday, 9th July, 1866, we parted from Theodore, and found that all our doubts were at an end, and that we were really to be conveyed as prisoners to Magdala. Our escort, consisting of about two hundred men, was placed under the command of Bitwaddad Tadla, the officer who had arrested the Europeans on leaving Kourata. His orders were that the journey was to be made in all haste, and a distance of eighty miles was accomplished in four days, not, however, without much discomfort. Our baggage was all left behind, and we had to endure, as best we could, the cold and wet of an Abyssinian rainy season."

On the 9th of July, 1866, all traces of the epidemic in Abyssinia, and the regions to the south, are lost, from an European point of view, and the course of the epidemic falls to be investigated from Zanzibar.

It may be mentioned, as corroborative evidence of the correctness of the information obtained at Zanzibar regarding the progress of the epidemic to the south, that the Somalis distinctly stated that the epidemic, previous to entering the Galla country, proceeded from Mecca through Abyssinia, and that I was not aware until February of this year that cholera had been actually present in Abyssinia in 1866.

Mr. Rassam, Captain Prideaux, Dr. Blanc, and the other captives were removed from the southern extension of a violent epidemic of cholera in Southern Abyssinia, and shut up as prisoners in the mountain fortress of Magdala until they were relieved by the troops of the British Expedition.

Little is known of the subsequent movements of the army of Theodore during the intervening period; but there was a scene of constant warfare throughout Southern and

Northern Abyssinia, and at the battle of Axum we are told that 150,000 men were engaged.

The movements of the army are, however, immaterial to the subject, and there is no lack of information regarding the country and its inhabitants, for the writers on Abyssinia are legion, and pre-eminent amongst them is the late Mr. Consul Plowden, who spent the best years of his life in Southern Abyssinia, and who was thoroughly acquainted with the manners and customs of the people.

In most of the provinces of Abyssinia proper the tropical rains continue for three months, July, August, and September; but in Gojam, to the south of Abyssinia, they commence a month earlier and continue a month longer, but not with the same degree of violence; indeed, in Gojam, the rains cease but for a few months in the year.

The annual rise and inundation of the Nile depends chiefly on the rains in Abyssinia and the neighbouring countries, and in Southern Abyssinia, especially, the movements of the population are dependent on the rainy and dry seasons, and on the rise and subsidence of the Blue Nile.

In Abyssinia, and all the neighbouring provinces, there is a regular season of peace, and another of war; the season of peace being the rainy season, and that of war the dry season. The province of Gojam is the annual battle-field, and, during the fighting months, its plains are never free from human blood. There is fighting on a large scale, and there are innumerable blood-feuds to settle, which are ever accumulating, and there are raids and free fights whenever an opportunity occurs. There is no necessity for any declaration of hostilities, there being a chronic state of warfare, and the dry season and the fighting season are synonymous terms. The means of living are cheap, and there is no pressure of poverty to withdraw men from the battle-field and stimulate to industry. Mr.

Plowden says:—"The amount of corn requisite for the support of one individual for two years in a favourable season, and for one year in an unfavourable season, may be purchased for one dollar"—four shillings and two pence.

The military establishment in Abyssinia is partly regular, and partly irregular. In time of peace, that is during the rainy season, the greater number of the soldiers disperse, those who have villages or countries to their respective homes, and the regular soldiers are quartered upon the country, generally in regular gradation, and when the fighting months come they muster again, as a matter of course. When the military are engaged elsewhere, as at the annual battle-field of Gojam, it is usual for a whole province of agriculturists to muster in thousands, and attack and plunder some neighbouring province.

The Gallas especially, bordering on Abyssinia, are in a state of constant war with their neighbours in Abyssinia and Shoa, and also among themselves. The Galla, from his boyhood upwards, is never separate from his arms, and in youth and manhood he may be said to live in the saddle. The Wallo Gallas are the best horsemen and the most inveterate fighters in the world. When they have had sufficient fighting with the Worroheimano, the Bayt Amhara, and the chiefs of the Shoa frontier, they turn their attention to the Borona Gallas, their own kinsmen. They very rarely make a campaign, and generally, after a day's fighting, they return to their own homes. The men of Tigré, in Abyssinia, are the best gunners, but the Gallas, from Wallo, Aijjo, and Worroheimano, are the best cavalry soldiers.

Every Galla may marry as many wives as he can afford to keep. The wife prepares the food, brews the mead, &c., and when the war-cry arises, her duty is to saddle his horse at once (this being the principal duty of the wife), while he fastens on his belt and knife, and picks up his spears.

The army of Theodore would necessarily break up in July 1866, at the time that cholera was raging in the camp, and would disperse over the country. Nothing would induce his Galla cavalry to remain with him during the rainy season, although the Amhara horsemen might do so. The epidemic would probably be more widely diffused towards the east and south-east, and remain smouldering till the close of 1866, without proceeding much further south, across the Nile.

Mr. Plowden¹ entered the province of Gojam with Ras Ali at the head of a large army at a similar season of the year, but at an anterior date. He crossed the Nile by the bridge, near to its exit from Lake Tsana, and pushed on towards Gojam. At Agitta he reached the camp of Ras Ali, and found a force of at least 80,000 men on the march, without any order whatever. The path was over the dead bodies of horses and donkeys which had fallen, and he was carried on by the human torrent to the plains of Mota, and from thence they pushed on to the mountainous district of Nephsee, where they were fairly caught by the rains. "Rain was incessant; deep mud; bitter cold and often hail; the beasts dying in multitudes, and the camp, from the stench, cold and bad food, was attacked with dysentery and typhus, fatal to many." After three fearful marches they reached Gojam, and the troops were billeted on Gojam and Damot. Mr. Plowden passed the three rainy months at Yawish, and during the whole of that time the country was utterly impassable from streams and torrents, which swept along with irresistible force. He writes:— "This *stream* (in Gojam) in the month of August rolls its impetuous waters in fifty channels, a mile in width as it approaches the Nile, and with such strength that where it has but a depth of two feet, only the most practised

¹ *Abyssinia and the Galla Country*. By W. C. Plowden, H.B.M. Consul in Abyssinia, p. 413, *et seq.*

dare attempt to cross it, the water running up to the chest as against a breakwater, and when it is more swollen no human being can enter into it—stones and rocks, elephant, buffalo, and hippopotami are swept along; but during the dry season, it is merely a trickling trout stream.”

The seasons of the year in Abyssinia are unchangeable; there being no difference between one year and another for thousands of years, and the people of Egypt can calculate to a day on the rise and fall of the Nile, which mainly depends on the rains in Abyssinia. Mr. Plowden describes the rains in Gojam some years before 1866, but his description of them during the rainy season at that date is precisely the same as it would have been in 1866. The army of Ras Ali went into winter quarters at Gojam and Damot, but it would be impossible for the army of Theodore to do so, as Gojam, under Tabela Gwalu, was in a state of revolt, and had been so for years. Theodore was anxious, for many reasons, to hurry off his European prisoners—Dr. Blanc, Mr. Rassam, and Captain Prideaux being included amongst them—as soon as possible, before the rains had rendered the country utterly impassable, and before his army went into winter quarters. All communication between Abyssinia and the Galla country south of the Nile would be absolutely cut off from that date till the beginning of 1867, for until that time it would be impossible to travel over the country.

During the rainy season in Abyssinia, and the neighbouring districts, the entire population is localized and stationary. It is impossible for travellers to pass through the country at that time, not so much from the mere inconvenience of rain, as from the impassable state of the roads, owing to the torrents of water rushing down from the mountains. The arrival and departure of trading caravans is always timed so as to correspond with the unvarying seasons, and the traders do not leave before the

rains have fairly come to an end, and they always endeavour to reach their destination a considerable time before they commence. It occasionally happens that travelling parties are swept away to destruction at about the commencement of the rains, from sudden torrents rushing down with impetuous force from the hills, owing to some purely local rainfall in a mountainous district.

The data supplied by Dr. Blanc, Captain Prideaux, and Mr. Rassam, are exceedingly valuable, more especially as to the precise localities and dates, and these are the only precise dates that we have until the epidemic reached the equator. When the British expeditionary force entered Abyssinia, and marched to Magdala in 1867-68, the country, in so far as was known to the expeditionary force, was free from cholera.

The latest date of cholera in Abyssinia was Devra Tabor and Gaffat in July, but the furthest points south were Zagé and Kourata in May and April. The extreme point of south latitude does not coincide with the latest date, but that is a matter of no consequence whatever, as we shall hereafter see, in the study of epidemic cholera.

In the months mentioned the disease was in the commercial centres of Abyssinia, and on the main highway through Southern Abyssinia to the Galla country by way of Gojam. Even on the supposition that the epidemic might have advanced further south than Kourata in April, it must be conceded that its further progress south would be arrested in Southern Abyssinia, during the rainy season, till the commencement of 1867.

From the first positive date of cholera at Cassala, in Taka, a year elapsed before Central Abyssinia was covered, and from the time that Massuah and the neighbouring districts were affected ten months elapsed.

The lineal distance of one place from another affords no

indication regarding the rapidity of the spread of an epidemic. In certain circumstances, not at all unfrequent, a hundred miles may be covered in one place before ten miles is covered in another. Neither does the rapidity of the extension of an epidemic depend upon the means of rapid communication, but more on the existing state of society at the time.

About one year elapsed before the epidemic reached Southern Abyssinia, and we may reasonably infer that it would not cross the Nile circle till 1867, probably in May or June, the time of the crossing of the southward bound caravans.

After the close of the rainy season, some time would be allowed to elapse for the waters to drain off, and for the subsidence of the Nile, and then the annual movements of the population would take place.

At the period referred to, the whole of Abyssinia was in a state of utter disorganization. Hemmed in on every side by rebels and malcontents, the emperor Theodore was in the field at the head of an army of 45,000 men; at one time fighting Tabela Gwalu, on the everlasting battle-field of the plains of Gojam; then turning to attack enemies on his right, left, and rear; a king, without a kingdom, his only empire was his camp, and his force but a disorderly rabble, with cholera clinging to its skirts. Little or nothing is known precisely concerning the movements of Theodore's army after the captives were shut up in Magdala, but it is highly probable that he would turn his attention early to Gojam; and, in stirring times such as these, it is not at all likely that the Gallas would be inactive spectators. It is more probable that they would be fighting generally, now on one side, and then on the other, where there was the greatest prospect of plunder and the best chance of securing their war trophies. All those warriors, celebrated for their prowess, display some

weakness in their attentions to the slain, and so it is with the Gallas.

The fact of a country being in a state of anarchy and confusion may, in some respects, facilitate the spread of epidemic disease; as by the movements of troops, or by plundering parties, the disease might be carried rapidly over considerable distances; but such a state, in many respects, may retard the spread of epidemic disease. The movements of the population are more limited than in times of peace, and commercial parties cannot trust property and life, when the highways are occupied by thieves and murderers, as all bodies of troops are, in one point of view, whether regular or irregular. In such seasons epidemic disease would be diverted from its usual tracks, and would spread, more irregularly than at other times over the country.

In the case of the epidemic entering by Berbera in 1865, we have an illustration of an epidemic passing along a caravan route at the highest rate of travel, and the distance of 950 or more miles may have been covered in about three months; whereas, in Abyssinia, a distance of about the third of this was not covered in less than twelve months, and the progress of the epidemic through Southern Abyssinia to the Galla country would be at a slower rate than this. For reasons to be stated hereafter, the Galla country could not have been affected before the early months of 1867.

CHAPTER VI.

THE TRACK OF THE EPIDEMIC FROM THE BLUE NILE TO THE RIVER JUB, THROUGH THE GALLA COUNTRY.

FROM the observations of Mr. Plowden regarding the rainy season in Southern Abyssinia it is quite obvious that, for a period of about five months, all communication between the different tribes is at an end; but that whenever the country becomes dry and the Nile passable the movements of the population commence.

When the rainy season is over, the merchants, with their caravans, start from Massuah on the Red Sea, and push on towards the Galla country, so as to be able to cross the Nile in May or June before the rains commence, and at a time when the river is low and easily passable; and it is at that time that the influx of strangers from Abyssinia, and other countries, takes place into the mercantile mart at Enarea in the Galla country.

On the other hand, the traders, who have completed their business transactions at Enarea, endeavour to cross the Nile, on their return journey, as early as possible after the subsidence of the water in February, that they may be certain of reaching their respective destinations before the rains in Abyssinia set in.

To all traders and travellers through Abyssinia, and between Abyssinia and the Galla country, the rainy season, and the rise and fall of the Blue Nile, limits the season of travel, in the same way as the monsoons limit traffic by sea.

There are, however, local movements among the population of the Nile circle, by which intercourse is established between the people of the right and left banks of the Nile whenever that river is passable.

During the dry season hundreds of Gallas cross the Nile from the south side to hunt the elephant and buffalo, and collisions between them and their hereditary enemies on the Abyssinian side of the Nile are of common occurrence. During the rainy season, only a few daring spirits endeavour to cross the Nile on rafts, and many perish in the attempt.

Throughout the whole of Abyssinia there are no shops, even in the large fixed towns; and every purchase must be made on the stated weekly market days. The public markets are consequently great institutions in Abyssinia, and also in the Galla country. There is also, usually, an immense concourse of people at the horse markets in the provinces of Begemder, the market being supplied by the Gallas from Wallo and Worroheimano, and the purchasers come from the provinces of Semen, Tigré, and Begemder.

The great horse market at Basso, close to Yawish in the vicinity of the Nile, is also a noted gathering place for Gallas, from remote distances, and also from Abyssinia. Basso, in Gojam, close to the Galla country, is resorted to by Gallas from Kootlai, Jarso, Borona, and Goodroo, and the Agows of Damot.

During the fair there is a mutual suspension of hostilities, and seeing that the Gallas are the most horse-loving people in the world, not even excepting the Arabs, it may be supposed that the markets are well attended, although they come only to sell their screws. The Gallas of Jimma, and others to the southward of Goodroo, are exceedingly particular about their horses, and often feed them with boiled fowl and barley bread, and give them the blood of oxen to drink. They do not groom their

horses, but allow them to roll on the grass, so as to keep them in condition for hard work and rough times; speed and endurance being of more consequence than a smooth, glossy skin.

In the former chapter reference was made to Mr. Plowden's march to Yawish with the army of Ras Ali in July. On another occasion Mr. Plowden started from the neighbourhood of Kourata in June, in order to cross the Nile near to Yawish, and from thence to find his way to the great Galla fair at Enarea. He was late in the season in starting, but by a rapid and dangerous journey of six days he joined his companion Mr. Bell at Yawish, in the neighbourhood of Basso, a great market in the south of Christian Abyssinia frequented by the Gallas, and separated from the Galla district of Goodroo by the valley of the Nile, which is here a large river, impassable during the rainy season; that is, for some five months between July and February. An Abyssinian chief escorts the traders, every Saturday, with an armed force to the banks of the river.

Basso is certainly one of the most important entrances to the Galla country, both from the Red Sea coast and Abyssinia. About eight miles distant from Basso there is the large Mohammedan town of Ayjubay, where may be found all the products of Massuah, and whatever may be considered as luxurious in Abyssinia. The people of Gojam, being Christians, make the pilgrimage to Jerusalem.

Mr. Plowden found that M. d'Abbadie had crossed the Nile about a month before, and that a large caravan of merchants had crossed about a week before, bound for the fair at Enarea; and with the same object in view, Mr. Plowden, and his companion Mr. Bell, prepared to cross the Nile, as in three days more it would be impassable.

As Mr. Plowden had a most intimate knowledge of the

country and the people whom he describes, I will make a somewhat lengthy extract from his instructive volume,¹ as illustrating the track of the epidemic :—

“The first descent (towards the bank of the Nile) of a few hundred feet was precipitous, and occasioned some delay with the beasts of burden, after which, mounting our mules, we rode down a well cultivated slope, spearmen, in knots of five or six to twenty, joining us every now and then ; so that at a large tree, where is the first general rendezvous, what with merchants, Gallas, market-people and soldiers, we numbered some thousands. We proceeded now in more order ; the fighting men girded their loins, and kept in a compact body in the rear of all ; and having passed the cultivated lands, on entering the boundless waste of thorns and grass jungle, where roam only the elephant and the lion, or the wilder plunderer or hunter, scouting-parties threw themselves out to some distance on each side of the road. At the brow of each fresh descent, twenty or thirty, advancing in front of all, would throw themselves flat, and keenly examine the jungle below them. Presently were found marks of a struggle, and blood, where some one had apparently been dragged from the road into the bushes that same morning. The trace, however, was soon lost, and we pressed on, the heat of the sun having become unpleasant.

“At about eleven o'clock we had reached the brink of the ravine, though, owing to its steepness and thick woods, the river was not yet in sight—having passed Kut Amora, the scene of many a combat, without attack. Here the Gallas, from the opposite bank, yearly kill many, lying in ambush in great numbers, both horse and foot, though it is ground where none but a Galla and his horse would venture beyond a walk. A few minutes sufficed to reach

¹ *Abyssinia and the Galla Country*. By W. C. Plowden, H.B.M. Consul in Abyssinia. L. 1868.

the bottom of the precipitous road to the river's bank, already swarming with life—the river dotted with Gallas floating their goods over to the market in inflated hides, shouting and screaming in a strange language, whose echo rebounded from the rocks, that, rising almost perpendicularly above, fiercely reflected the heat of the noonday sun. The Nile rolled rapidly and calmly through its narrow bed, even here a deep and noble river. We had descended in a few hours from the climate of Italy to that of Bengal ; and though somewhat relieved by the wind, that swept down in strong gusts, the sand and stones were almost insupportable to our feet. Shade there was none, but the scene so strange and novel, checked all thought of discomfort. The Gallas were for the most part naked, and a finer-looking race of men than their neighbours. The uproar of the market-people, with the reverberation of the place, rendered hearing difficult ; and it was some time before the crossing of our goods and beasts was commenced, under the auspices of our guide and his brother, who swam over to meet him. We had been cautioned against the thieving propensities of the Gallas of the valley, but, in spite of our efforts to be careful, we found, on inspection in the evening, that we had lost a sword and a box of medicine—all, in fact, that we had.

“Towards evening, our guide and his brother, having told us that, on account of a blood-feud, they dared not land at the usual spot, proceeded higher up the river, and, tying their cloths on their heads, were received on the other bank by their friends, who brought them their arms.

“When everything was safe over, we hastened to cross, as the alligators were said to be dangerous after sunset ; indeed, we saw one just as we entered the water. We had been informed, on the road, that after having been subdued by a medicine man, they had, on his death, begun to bite again ; however, we got over in safety, though the current,

running about seven miles an hour, took us a considerable distance down. We laid our sleeping-skins on the sand, lighted a large fire, and made bread, consisting of a certain quantity of dough, wrapped round a stone previously made red-hot, and then thrust into the fire. The night was dark and somewhat stormy. The Gallas continued swimming over sheep long after night-fall, some with torches in their hands, their companions throwing in large stones along the banks, and shouting, to frighten away the crocodiles. The market-people, and the force that accompanied us down, slept on the Amhara side of the river (the north), and we were as much in a new world as if we had crossed the Atlantic, instead of that narrow strip of water. In an hour or two the hum of voices ceased; some few dark figures might be seen by the watch-fires; the wind lulled, and the stars shone clear into the ravine, and over the rapid stream that, too dark and troubled to reflect them, rolled hoarsely along. Sleepless as I was, the sound of the rushing water, then, and then only, struck powerfully on my ear, with an ill-omened murmur. My heart was sad and heavy, and that night I in vain sought relief and forgetfulness in slumber.

"The Nile filled in this week, and all communication with the Abyssinian bank was completely intercepted for some months. At daylight, with a small party of Gallas, we commenced our ascent, which was at first steep, as on the Gojam side, and afterwards more open and gradual. An alarm was raised of an attack by the Kootlai Gallas, that caused us to snatch up our shields, but it proved false. Presently we were stopped by a party of Gallas, with whom our guide, and apparent friend, had a long and stormy discussion.

"Seated under a large tree, resembling an oak, I caught occasionally the word 'gun,' which raised some suspicions in my mind; these, however, I suppressed, as return was now impracticable, and fear useless. We were then allowed to

proceed, and having arrived at the level country, towards evening, I was agreeably surprised at the fertile, and even English, aspect of the scene. The beehive-shaped huts, though small, were neat in construction, with each its grass-plot before the door; the well-marked divisions of the cultivated ground; the grass plains, with here and there a clump of trees (not thorns as in Abyssinia), or the magnificent *berbeesa* alone, with its wide shade and graceful foliage; horses feeding tranquilly, with here and there a manly-looking Galla, peacefully conversing, leaning on his spear—all accorded but little with the bloodthirsty character and the constant and ferocious warfare ascribed to the Gallas by common report.

“Now we enter the house of our worthy guide. The circular hut, thickly covered with straw, and having a second wall within, was so dark that the hand of our host was necessary to guide us to a seat, and it was some time before we could see from what quarter the salutations of his wife proceeded. A cheerful fire being lighted dispelled the gloom.”

The travellers endeavoured to reach Enarea, and overtook the Abyssinian caravan bound for that place, but they were not allowed to accompany it. Goodroo, the district in which they were, was at war with the Gallas of Jimma, an adjacent province. An attack was made by the Jimma Gallas on the Goodroo village in which Messrs. Bell and Plowden were residing, and they had a narrow escape with their lives. They were forced to retrace their steps. Mr. Plowden gives the following description of Goodroo and the neighbouring Galla countries.

“The Galla province of Goodroo is directly to the south of the province of Basso, in Gojam. On the east and south-east it is bounded by the river Mogur, dividing it from Kootlai and Chullaha; on the west and south-west by the river Fincha, dividing it from the provinces of

Horro, Gombo, and Gennateay Gombo, to the south of Noonoo. Gombo, Gennateay Gombo, Chullaha, and Tibbie, may all be included in the term Jimma, which must not be confounded with the much larger province of Jimma, situated (as nearly as I could learn) to the east and south-east of the province of Limmoo, capital Enarea. The two rivers I have mentioned each fall, after a short course, into the Blue Nile above and below Basso. The Fincha, in the rains, has a fall that can be distinctly heard during the night at eight or ten miles distance.

“The province of Goodroo is *the high road* between Gondar and Enarea, though there are several others, and is divided into seven districts. The inhabitants can scarcely be numbered, but taking the area at forty by thirty miles, I should calculate them at from 100,000 to 120,000. Of these, the greater portion, being accustomed to trade with Basso, are unwarlike; but those on the frontiers, from their numerous enemies, are brave warriors, and have no occupation but warfare, and scarce a home but the saddle—almost all the Galla tribes being a nation of horsemen.

“The frontier, between Goodroo and the province of Jimma, is an uncultivated battle-ground, where, driving their cows to graze, they dispute the pasturage in daily combats; and they have now accumulated a mass of blood-feuds with the surrounding tribes that renders peace almost impracticable, to say nothing of the habit that now renders the excitement of war necessary to them.

“The frontier warriors of Goodroo, with none to aid them, encounter with hundreds the thousands that Jimma, united, constantly pours down upon them, besides maintaining successfully their ground against Horro, divided only by a fordable river.

“Beyond Jimma is the province of Layka on the banks of the river Givvee, a deep and narrow stream that, making a course to the west, north-west, and north, by the district

of the Jiddah and Amora Gallas, finds its way also to the Blue Nile.

“Beyond Chullaha, and to the south of Kootlai is Leeben, famous for its horses, which, divided by a considerable forest, touches, to the southward, on one portion of the southern Jimma, distinguished by the name of its chief, Abba Jiffar. Not having visited these districts in person, my account must be liable to much correction by future and more successful travellers.

“Goodroo is, perhaps, a specimen of nearly as pure a republic as can exist, and one that would be almost impossible in a wealthy or civilized nation, where, as interests become more complicated, and consequently justice more intricate, the necessity for concentration is soon felt, to avoid confusion.

“Of course the influence of comparative wealth, of personal character and courage, or of inherited name is felt here as elsewhere; but only to the extent of persuasion, not of command, and frequently even that only on the territory, or in the immediate neighbourhood of the great man. Each man, on his own father's land, is master; the public road is even thus private property, and the merchant may be stopped at the door of every hut, till he makes terms with the proprietor. The limit to this is as follows: each merchant places himself under the protection of some Galla of influence, who pleads and answers for him in every case that may arise.

“The caravan, having crossed the Nile, remains at Assandabo for perhaps a month or two, during which period, the number of loaded mules being counted, an agreement is made with each landed proprietor up to the frontier, either for the whole caravan, or the individuals composing it; which being paid, they proceed at once to that point and are received on the frontiers of Jimma by neutral Gallas. This process is repeated till they arrive at

the more monarchical Gallas, such as the chief of Enarea, who alone takes the whole tribute of Limmoo. They thus occupy about three months in the journey from the Nile to Enarea, a distance of perhaps 150 miles.

“There is a market on each day of the week in the different districts of Goodroo, and the number present at each may be, usually, from 3,000 to 5,000. The women of Jimma and Horro attend these markets unmolested, and women are at all times permitted to pass to and fro between these inimical tribes, sending notice previously to their friends to receive them.

“There are a number of different Galla tribes bordering on Abyssinia and extending to as far as 3° south lat.

“The most distant, stretching to the north, is the country of the Azobo Gallas, to the eastward of Woggerat and Lasta, separated from the Red Sea by the Danakil country, and to the south and south-east touching on the Adaiel district. These Azobos are republicans; their province is low and hot, compared to the elevation of Teegray; and though breeding no horses, they still retain the Galla habits, and import them in sufficient numbers from Worroheimano, &c., to be called a nation of horsemen. They are brave and numerous, sufficient to have baffled Oobeay, chief of Teegray, in several campaigns, and forced him to retire with considerable loss. They never make any expedition in great numbers; but small parties, as inclination urges, make secret inroads to the neighbouring nations, to kill—the great object in life of all the Gallas. On these occasions they mutilate the body in the part that distinguishes the sex. The food they take on these war-paths, when they are always on foot, is judicious enough. A fat cow is killed, and the fat being separated, the lean is dried in the sun, and then carefully pounded in a large mortar, with an equal quantity of honey and of roasted barley-flour, and made into a

paste, a small portion of which forms a nutritious meal at any brook.

“To the south and east of Lasta are the countries of Aijjo, Worroheimano, Tehaladerree, and Ambassil. The greater portion of these Gallas are Mohammedans. They touch, to the eastward, on the Adaiel country; and to the southward, Worroheimano, bordering on Eefat, connects the territories of the king of Shoa with those of the Ras.

“The province of Aijjo, the most fertile and beautiful dependent on Christian Abyssinia, resembles England in many portions of its scenery, and has the tropical rains and heat less marked than in other districts. These Gallas could join the Ras with, probably, 25,000 horse all mustered; but under his feeble government private wars occupy the greatest portion of their time.

“In a south-westerly direction from these is a high range of hills, ascending to an elevation of 13,000 feet or more above the sea-level, and occupied by the Wallo Gallas, whose territory touches the Blue Nile a little south of the junction of the Bachillo. These are all Mohammedans, and mostly speak the Amharic language. The greater portion of their southern frontier borders on the dominions of the king of Shoa, and the remainder on the territory of the Borona Gallas.

“The eastern boundary of Gojam, divided by the Nile, is now occupied by the Borona Gallas, reaching in the opposite direction to Shoa. This is a powerful tribe, governed by one chief, who is said to be able to muster 30,000 horse. With the language and manners of all Gallas, they have themselves an idea that they were at one time Christians, and what religion or customs they have border on that creed, though buried beneath a mass of pagan (not Mohammedan) superstitions. They preserve their independence against the king of Shoa, mostly speak

Amharic, and are constantly at enmity with the Wallo Gallas.

“The south-east corner of the circle of the Nile is occupied by the countries of Jarso and Toolama, inhabited by pagan Gallas, all horsemen and of renowned courage, against whom the Abyssinians make campaigns with various success in the dry season, when the Nile is fordable at certain points. The country of Jarso is described as a completely level grass-plain of vast extent and extremely fertile. The warriors of Toolama are said to be the most ferocious, brave, and treacherous of all the Galla tribes, these qualities having been probably more developed from their smaller number. These are republics.

“Next, along the Nile and south of Gojam, are the Gallas of Kootlai and Goodroo, the former having nothing particularly to distinguish them from their brethren of Goodroo, with whom they frequently intermarry.

“Both these provinces are often ravaged by the chiefs of Gojam and Damot, to avoid which they frequently pay a tribute of horses. The valley of the Nile is here a constant scene of mutual slaughter between the Gallas and the Amharas.

“Next, to the westward of Goodroo, and just where the Nile commences its turn to the north, is the district of Horro, another republic differing from Goodroo in but a few trifling customs; and to the north-west of this, following the course of the Nile, are the Amoro Gallas, a fierce and warlike race, who hold Christians in detestation. These formerly held sway over Agaumiddhur, and part of Damot, whose present chief is of their tribe, and, at the same time, a descendant from the emperors of Gondar. These Gallas still commit their depredations, and slaughter travellers, even as far as the neighbourhood of the town of Dembitcha, the capital of Damot.

“Beyond this, to the northward, the hilly range slopes

into the low and hot countries occupied by the Shankallas, a negro race."

Mr. Plowden, in a chapter regarding the commerce of Southern Abyssinia, and the Galla country, gives some interesting and valuable information regarding the trade route to and from Enarea, the great commercial centre of the Galla country proper, Enarea being to the Gallas what Berbera is to the Somalis.

The fair at Enarea draws towards it the produce of the surrounding Galla countries; but the produce of the Gallas, on the sources of the Jub river, is drawn towards the towns of Gananah and Barderah on the Jub. Mr. Plowden says (*op. cit.* p. 126):—"The countries richest in commercial produce are the Galla provinces of Enarea, Jimma, and those adjacent. They abound in ivory, zibbad, excellent coffee, wax, and spices; gold is found in the sands, and these districts are accustomed to trade with the Abyssinian caravans. Their products find one outlet through Shoa and the Adaiel country, eastward into the Indian Ocean at the port of Zeylah; another through Abyssinia by various channels, northward, and passing either through Gondar and Sennaar to Egypt, or through Adowah and Massowah into the Red Sea. A third route is frequented by the traders who, following the course of the White Nile, also reach Khartoum, and there meet the caravan from Gondar. The caravans to the Red Sea are swelled on the route by small parties with the produce of Abyssinia: wax, coffee of an inferior quality, ivory, buffalo horns, hides, ghee, honey and mules. Cotton is the universal and only dress of the country, and cotton is imported from Cutch. Everything is transported on horses, mules, or donkeys; and the large caravans, moving very slowly, are often a year in journeying from Enarea to Massowah, a distance, by the road, of about 750 miles. The slowness of their

progress is owing partly to the natural difficulties of a rugged and mountainous country, without roads; but still more to the embarrassing institutions of the tribes or nations through which they pass. The despots of the monarchical Gallas, as Enarea—where, as I have said, the richest produce is found, and which town is the great mart of this part of Africa—must be propitiated by presents and flattery. The slave trade is a great source of revenue to those kings; and for this reason the Christian merchants seldom transact business so far in the interior, leaving those wealthy reservoirs to the Moslem traders in human flesh, through whose influence all that part of the country is gradually adopting the Mohammedan creed.

“Enarea is frequented by traders from Zanzibar and Tajoora, from Massowah and Khartoum, from Darfoor and Kordofan, and it is said even from Darsala and Timbuctoo; but even the frequenters of that depôt seem to know little of any tribes on the equator. Constant as are the wars between tribe and tribe, the merchants are protected by all, and escorted to the limits of each province, where they are received, under a temporary truce, by their friends in the other. Should there be an intervening wilderness the trader must trust to his own weapons and a stout heart. When the caravans, having left the kingdom of Enarea, on the road for Massowah, enter the territories of the republican Gallas, not only each tribe, but each influential individual, and each one who has a hut on the line of march, must be propitiated. As the best way of effecting this, the merchants camp on the frontier of each district, under the protection of some influential inhabitant, and there make their bargain with all those who have claims along the road. These claims being settled, which may perhaps occupy a month or six weeks, they move on to the next district, and with each tribe the same operation must be repeated. This system continues until they arrive at

Basso, the southern province of Abyssinia on that road. To reach this halting place they must cross the river Abbai, or Blue Nile, through whose valley is the most dangerous part of their progress. This wilderness, a hunting ground for wild beasts, hot and desolate, contrasts strongly with the fertile crops of Goodroo that they are leaving, and the fresh pastures of Gojam that they hope to reach—a hope not always realized. Hundreds of Galla horse lie hidden in the long grass and thorny thickets, apprised by numerous scouts of the numbers and quality of the approaching caravan. The Abyssinian chief of Basso, it is true, furnishes a strong escort; but not unfrequently, convoy and caravan, are cut off almost to a man, and that fatal spot, yearly the scene of deadly combats, is dreaded by the merchant, and rouses all the energy of the traveller. Such are some of the labours and dangers of the traders to Enarea. After reaching Basso—the trading-depôt being named Ayjubay—they are in comparative safety; but the perils they have passed are almost preferable to the endless vexations and exactions of the Abyssinian institutions. The system of customs is, in fact, a struggle betwixt the merchants on the one hand, and, on the other, the Negadeh Rases, who farm the duties in the large towns, and numerous small military governors who exact what they can—this system leading necessarily to loss of time, and smuggling, and often to bloodshed.

“The merchants from the province of Walkait, bordering on Senaar, have another danger to encounter. Bands of negroes, called Shankallas, in bodies of 500 and 1,000, often occupy the road in ambush, and sometimes succeed in surprising and slaughtering an entire caravan. This feud is uninterrupted and no quarter is ever given. When the merchant has settled for his vexatious tolls, and averted with success all human enemies, he has also to encounter the difficulties of raging floods, precipitous mountains,

frightful roads, and wild beasts that destroy his mules. The frontier provinces of Teegray towards the sea, Kalagooza and Hamazain, are now disorderly republics, save a tribute forced on them by the arms and the fortune of Oobeay, and will probably soon entirely detach themselves from the shaking fabric of Abyssinian society; and here there is no law nor protection for the trader, save such moderation as self-interest may teach the villagers on the road. Combats are not unfrequent; but as it is known that the caravans will fight to the death in behalf of their property, being generally all they possess, even the most rapacious are afraid to push matters to an extremity. The merchants also make friends of the most influential proprietors.

“On arriving amidst the Shiho tribes, between these provinces and the coast through which they must pass to reach Massowah, they suffer great extortions under pretence of guides, and permission to pass through this territory, inhabited by Mohammedans, who acknowledge no sovereign either Turk or Christian, and amongst whom each man claims a share of the booty. Having scrambled through these valleys, the produce of Enarea at last arrives, once in the year, at Massowah, where the merchants, if Christian, were formerly subjected to insult, violence and injustice; but of late years, if not encouraged, they have at least been treated with decency and moderation.”

From the description given by Mr. Plowden, it appears that the rate of travel in Abyssinia and the Galla country is much slower than it is in equatorial Africa, both owing to the nature of the country, the rapacity of the tribes, and their hostility to each other.

Mr. Plowden's account of the Gallas breaks off at the point where the commerce of the Galla country takes a direction towards the sources of the river Jub, and towards the East Coast of Africa.

This is as might have been naturally expected, for, from the Abyssinian side, he had no opportunities of gaining information concerning the Galla tribes whose commerce is directed in an opposite direction.

Reference has already been made to the two trading centres on the river Jub, Barderah and Gananah, the latter being the more important. The town of Gananah, on the Jub, is a very important centre of commerce for a very large district, and somewhat resembles Harar, the population being distinct from that of the neighbouring territories. It is described as a walled town containing about 1,000 permanent inhabitants, engaged in commerce. Trading caravans pass through, and start from Gananah towards the Galla country, and they penetrate the territory of the Gallas for about thirty-seven days' march, carrying goods and trafficking for ivory. To the north-west of Gananah the Galla Borani occupy the Liwan country, the extent of which is about 350 miles, with a population of about 100,000, or more probably 400,000, of whom some 5,000 are said to be elephant hunters, whose custom it is to attack their prey with poisoned arrows.

In 1843 the Galla Borani occupied their proper position in the map of this portion of Africa constructed from native information by Major Harris, but for some reason or other they are not now officially recognized by geographers, their extensive territory being a blank on most modern maps. It is difficult to understand the reason of such arbitrary deletions.

The late Mr. Richard Brenner was more intimately acquainted than any other European with what may be designated the East African Galla country, and he travelled more extensively amongst the Galla people, south of the river Jub, than any other traveller. Indeed, with the exception of the late Mr. Charles New, and the Rev. Thomas Wakefield of Mombassa, the country had not be-

fore been entered by Europeans. Mr. Brenner describes the boundaries of the South Galla-land thus :¹—"The traveller who would lay down political boundaries for the tracts which are inhabited by nomadic tribes must not deceive himself as these boundaries can only lay claim to a comparative correctness. These are frequently settled according to false or one-sided statements of malevolent or ignorant natives, the worth of which statements the traveller is not able to verify, as the advance must be too rapidly made for a thorough exploration of the land. Frequently also it is entirely left to the traveller, whether, after a march of six or more days through an entirely uninhabited wilderness, he may draw the boundary lines at the beginning or the end of his march, even if the old tracks of a wandering horde of one, or the fallen huts of another tribe give a stopping point for them. But in any case the nomadic and hunting peoples of these tracts, who only obey necessity or whim on the marches, do not recognize such political boundaries.

"But the case is quite different when a tract is surrounded by natural boundaries, such as mountains, lakes or rivers. *They* form always, from the remotest antiquity downwards, recognized political boundaries ; but often only for this reason, that the crossing of them is attended with difficulties for the numerous herds of the nomads.

"The South Galla-land is surrounded by such natural boundaries. The Sabacki river (3° 12' S. Lat.) forms the boundary to which the mountains of Ukambani join themselves in the south-west with the direction towards the Upper Dana river. These mountains are only occasionally passed by the Gallas on their in-roads.

"The Gallas universally and unanimously agree in mark-

¹ *The South Galla-Land.* By R. Brenner. Translated from Petermann's *Mittheilungen*, 1868, p. 364.

ing a mountain chain, running in a N.N.E. direction, which is crowned with single high peaks, and which falls away perpendicularly towards the east, as the western boundary. According to their statements a beaten-path leads through the territory of the Ilani and Baôle Gallas towards the west, with which a pass over the chain joins itself. One can pass over by this way from the coast of the Indian Ocean in fourteen days. The Gallas are accustomed to march on an average six hours in their usual daily journeyings, according to which the distance to the western boundaries of the land would amount to about forty-two German miles.

“In the north-east and east the Galla-land is bounded by the Juba river and the Somali-land lying behind it; and from the mouth of the Jub as far as the Sabacki river, by the Indian Ocean. It is not possible to determine the northern boundary of the South Galla-land. It seems much more probable that it forms a connected whole with the territory of the northern Galla tribes on the borders of Abyssinia.

“But without doubt essential differences show themselves, as we shall point out further on, in religion, habits, customs, and in certain deeply imprinted characteristics between the two Galla races; and, if it were necessary to draw a boundary line, it would fall about from the town of Barderah, towards the near-lying western boundary, because the Borani Gallas resemble their northern kinsmen in a surprising manner.”

The conjecture of Mr. Brenner regarding the connection of the northern and the southern Gallas is well founded. There is a neutral tract lying between them at about the place mentioned, but this will be noticed hereafter. The Galla Borani country is the most southerly extension of the vast tract of country occupied by the northern Gallas, and extending from Abyssinia. The strictly northern

Galla country extends from the Galla Borani to the north along the tributaries of the rivers Jub and Webbe Shebeli. In addition to the Galla Borani, there are the Galla Rusia, probably identical with the Aroosi Gallas, and the Athree, the latter tribe occupying the tract of country from which arise the tributaries of the river Jub. These Gallas are all Mohammedans, but the Galla Borani were probably originally Christian, and are to the present day more Christian than they are Mohammedan or pagan. The territory of the Athree Gallas, on the sources of the river Jub, is temperate and fertile, and the country produces coffee, and crops of wheat and barley.

The mountain range of Bugama visible from Southern Abyssinia is inhabited by the Gallas on both its northern and southern slopes, but the connection between the different tribes and their means of communication, probably by mountain passes, are not known. This part of Africa is to the present day a *terra incognita*, except in so far as described.

On the north-west slopes of the mountain range, and at no great distance from the sources of the Jub, the river Sobât, an important tributary of the White Nile, takes its rise, and the country there is inhabited by a tribe of Gallas. The Galla country, bordering on the Sobât, is described as flat and rich in pasturage, and elephants and lions are said to be numerous. The Gallas there, as elsewhere, do not permit any of the neighbouring tribes to enter their country further than the recognized market-places on the confines.

The great Galla market, or fair, is at Enarea. There is no direct trade communication between Zanzibar and Enarea, as Mr. Plowden was informed; but it is highly probable that there is such connection with the Somalis through the province of Ugahden. It is, indeed, in this direction that the pilgrim route to Massuah lies, the ex-

treme exclusiveness of the Gallas precluding the idea of there being any open route for strangers through the centre of their territories.

The particular track of the epidemic of cholera from Abyssinia to the tributaries of the Jub, or to the confines of the province of Ugahden, cannot be determined, but that the track lay through the Galla country is beyond doubt. Mr. Heale, who was barbarously murdered at Brava a year ago, investigated the subject for me at Brava, and the Somali chiefs, at that place, were unanimous in their testimony that the epidemic advanced in that direction. The Somalis whom I met, in Zanzibar, were equally positive in the same statement, which was to the effect that the track lay along the tributaries of the Webbe Shebeli, through part of the provinces of Ugahden and Rahouin, and from thence to Gananah.

It is more probable that the track lay through the Galla country along the tributaries of the Jub, the whole district being under the epidemic, as far south as the Galla Borani, in whose country it was first heard of in Zanzibar, the time occupied in its extension thus far south, from Southern Abyssinia, being about eighteen months.

The disease did not pass direct down the river Jub to the Somali ports on the Indian Ocean, and the epidemic in the Galla country, in 1867-68, was not heard of at the time, by the Somali traders at Brava.

Taking into account the peculiar manners and customs of the Galla people, and also the extent of the country, it is not difficult to understand how the epidemic should have lingered so long in their country. Cholera having been in Abyssinia in July it is not at all likely that it would extend much further south until the rains ceased, and the Nile became passable, towards the beginning of 1867, and, as the Gallas do not travel far beyond their own boundaries, the tendency would be for the epidemic to

become extinct in the Galla country, and it would probably have become so had it not been for the merest accident.

When the course of the epidemic was entirely a matter of conjecture, I hazarded the opinion that it might have crossed from the west coast at Gondokoro, or have come up the White Nile from Egypt to that place, but there is no evidence in support of such a conjecture. There have been Europeans on the White Nile during the whole of the period from 1865 till 1870, and there is no mention of any epidemic at the time and in the countries mentioned.

Mr. Petherick was in the regions of the White Nile for sixteen years, from 1845 till 1861, and after a short residence in this country he returned again. Sir Samuel Baker was also on the White Nile, and met Captains Speke and Grant on their return from the interior.

Mr. Consul Petherick, writing at an anterior date, however, says:—"Epidemics, such as plague and cholera, are very rare, the former only having been once, and the latter twice in the Soudan."¹

Sir Samuel Baker in his recent work, "*Ismailia*," 1874, says in regard to the diseases of Central Africa:—"Small-pox is prevalent. Cholera rarely attacks the country, but is known. Dysentery is very common in the whole Nile district, but it is rare in the highlands. The complaint is generally fatal at Gondokoro. Great caution should be used, and impure water avoided. Marsh fever is the general complaint of the low country, but it is rare in the highlands of Fatiko and Unyoro. I have never met with typhoid fevers in Central Africa, although they are common at Khartoum. Measles, whooping-cough, scarlatina, croup, and diphtheria are quite unknown."²

No epidemic of cholera has passed along the Ugahden

¹ *Egypt; the Soudan, and Central Africa.* By J. Petherick, p. 334.

² *Ismailia.* By Sir Samuel Baker, p. 529.

caravan route from Berbera to Gananah or Barderah since 1865 ; and no epidemic of cholera has passed up the White Nile, or has been heard of in the contiguous countries, since that date. Indeed, in going over all that has been written on the White Nile, it is very obvious that the Gallas have no direct communication with the countries bordering on the White Nile above Khartoum.

Were it not that European travellers know the situation of the Galla country, little or nothing would be known of the Gallas from the natives on either bank of the White Nile.

Every circumstance tends to establish the correctness of the native report, that the epidemic of cholera, starting from Mecca, passed through Abyssinia, and afterwards through the Galla country, by Enarea, till it reached the Galla Borani.

A slender line merely indicates the general direction of an epidemic, but not its lateral extensions. The whole tract of country having been probably infected, both statements may be perfectly correct regarding the track, one being that it passed direct through the Galla country, and the other that it lay along the eastern boundary of the country, close to the provinces of Ugahden and Rahouin, as far as Gananah.

No estimate was given of the mortality amongst the Gallas, but we may assume that in their densely populated regions it would not be less than what it was in countries farther to the south.

CHAPTER VII.

THE TRACK OF THE EPIDEMIC FROM THE RIVER JUB TO THE PANGANI, THROUGH THE MASAI COUNTRY.

THE last attempt to explore the river Jub was made by Baron Von der Decken in 1865. The expedition ended disastrously, the Baron, and the medical officer of the expedition, having been murdered at the town of Barderah; Mr. Brenner, with the main body of the expedition, being higher up the river at the time. The fact of his death was long doubted, and the relatives of the Baron thought that he was probably detained as a captive. The natives of Barderah repudiated all connection with the barbarous murder, and the statement of a native of the place was as follows and is probably correct.

The Baron's steamer having gone on the rocks, higher up the Jub, the property of the expedition was removed from it and placed on shore under a tent. A large number of nomads, who happened to be in the neighbourhood at the time, came into collision with the Baron's party, and an attack was made upon the camp. The nomads lost several of their chiefs from the German bullets, and, having ascertained that the Baron himself was at Barderah, they hastened on to that place and demanded that he should be given up to them, threatening, in case of refusal, to destroy the place. The Baron was led out of the town to the bank of the river Jub to be disposed of. An old man came forward and demanded the privilege of being

his executioner, urging as a reason that, owing to his age, he was not able to fight, and had not killed a man for years.

The petition was granted. At the request of the Baron, his wrists, which had been previously bound, were unfastened. The old man made a crucial incision into the abdomen, then cut the Baron's throat, and the body was afterwards thrown into the river.

No doubt the natives of Barderah were implicated in this cruel murder. One of the chief men from Barderah was in Zanzibar in 1868, and, while there, he wore a scarf, which he openly boasted he had taken, while the murder was being perpetrated, from the person of the Baron.

The people of that part of Africa have now learned that they may murder a European noble, a near connection of the royal family, with impunity, and they are under the impression that the murder was not avenged owing to lack of ability. A gentleman who was sent out from Germany to investigate the circumstances connected with the murder, died near to the Somali coast, it was supposed from poison, and the privilege of burial was refused. It was only after great difficulty that his body was allowed to be placed under the sand, and the probability is that it would be exhumed, and exposed soon after. Another result followed in 1874 in the cowardly murder of Mr. Heale at Brava.

It would hold good, even in Great Britain, that could men be murdered with impunity, without even disapproval ever reaching the district of the murderers, no man's life would be safe, and the country, for both travellers and merchants, would be closed. Such is the condition of all that region of Africa at the present day. One murder springs out of another until the evil becomes too gigantic to be grappled with.

The latest victim is the Rev. Charles New, who was

robbed on his second visit to Chaga, by Mandara, the chief of Moché, Mandara having learned the lesson from the affair at Barderah that a European might be murdered with impunity. Mr. New was not slaughtered, but a man may be murdered otherwise than by the knife.

The geography and ethnology of the countries bordering on the river Jub are, till the present day, very imperfectly known. The Jub and the Shebeli both arise in the south-eastern slopes of the Abyssinian highlands, and tributaries to the Bahr-el-Azrak are discharged from the same range towards the north-west. Considerable confusion has been caused in the geography of this locality by the arbitrary imposition of names, a custom to be deprecated as tending only to render more obscure the geography of a country.

In speaking of the Webbe Shebeli, Captain Burton says:—"The Nile of Mukdeesha is supposed to issue from the Lake Kaura. Of late years it has been called Webbe Gamana, or Webbe Giredi, and by Lieut. Christopher Haines river. According to others it rises about N. lat. 9° to 10° , at a place called Denok, whence also one of its multitudinous names."

The track of the epidemic extended from the sources of the Jub through the countries of the Galla Borani, the Soma-Gurra, the Wakwavi, the Wamasai, and from thence to Pangani, in the neighbourhood of Zanzibar.

Extremely little is known regarding the country occupied by the Galla Borani to the south of the Jub, and that of the neighbouring tribe further south, the Soma-Gurra, has not been described by any writer.

Messrs. Wakefield and New, missionaries at Mombassa, mapped out the country, by the aid of native information, from the Pangani to the province of Samburu, the trade limit of the Zanzibar caravans towards the northern extremity of the Masai and Wakwavi country.

Mr. New says regarding this part of the country:¹—
“From the Wasuaheli I met at Taveta, and who had lately been to Reya, I obtained some interesting particulars regarding these regions. Reya is the farthest point north ever reached by the Mombassian caravans. I have laid it down upon the map a little below 1° N. lat., but it may be higher. Here my informants were astonished to find the people acquainted with the Kisuaheli tongue, but soon discovered that the country was often visited by caravans from Brava, so that there would appear to be a well-travelled route between the two places, an important fact; for, if practicable, it would be an exceedingly short cut for any travellers wishing to visit these unknown regions in Africa. Beyond Reya, at no great distance to the north, is the mountain Marasaviti, or El doinyo Eirobi, of Samburu, near to which is the large Samburu lake. North by west of Marasaviti, at a distance of about four days, is another great mountain called Ristian, occupied by a strange people, who keep aloof from other races, and about whom a great deal of mystery hangs. I could get no information of them whatever, except that they were very singular and exclusive in their habits. The name struck me as if it must be a corruption of Christian, and that here are to be found the lost Christians in whom some people have taken so much interest, the more so as this is the region where, I believe, Dr. Krapf, who has paid much attention to the subject, would expect to find them.

“The people of Samburu are exceedingly rich in cattle, and are said to be very kind-hearted and hospitable. They possess large numbers of horses, and are declared to be good riders. Our travellers obtained but little ivory there.”

¹ *Wanderings in Eastern Africa.* By the Rev. Charles New. London, 1873. P. 460.

Mr. New's colleague, the Rev. Thomas Wakefield, investigated the caravan routes in this district in 1867. He says :¹— "The Samburu people are subject to the Somalis, as the Wandorobo are to the Masai. They are pastoral, and have much cattle. They do not cultivate the ground. Like the Gallas and Masai, they do not eat fish, consequently their large and beautiful lake is lost upon them with regard to angling purposes. They have numerous horses and camels. They are hunters, and are said to hunt on horseback in a very singular manner; they tie a lot of spears together in two bundles, which they place one on each side of the horse. When approaching a place of game, they endeavour to conceal themselves by clasping the horse round the neck, with their heads underneath, and their feet resting in loops made for the purpose, which hang over the flanks of the horse. The horses are trained to go slowly forwards towards the place of prey, and when near, the hunters very slowly turn themselves, until they have got on their horses' backs, when they give forth their shrill hunting-cry, and pursue the game until they come up to them, when they use their spears with great effect. The people of Brava go to Samburu for trading purposes, but the Samburus do not go to the coast.

"The Wa-Samburu speak a dialect of Kikwavi; but though probably they and the Wakwavi have a common origin, they are by no means friendly, but fight whenever circumstances throw them together. They carry spear and shield, but no sword. They have also bows and arrows, the latter lubricated with a virulent poison, very strong. Those who do not carry spears have bows and arrows. The Wakwavi only carry spears, shields and *sime*;—the native sword."

Mr. Keith Johnston, jun., in his notes to the map

¹ Wakefield's "Notes on the Geography of Eastern Africa." *Journal of the Royal Geographical Society*, for 1870.

accompanying Mr. Wakefield's paper, says :—"Samburu is evidently the limit of a new watershed, and if the information is correct that the Wa-Samburu are subjects of the Somali, and speak a dialect of Ki-kwavi, there must exist an almost isolated southern portion of this race inland, as there is of the Gallas on the coast-slope, and the Somali, Wa-kwavi, Masai, and Wasagara, are connected; somewhere in the upper Juba there must be a mingling of the Galla and Somali, elsewhere hostile."

Nowhere have I been able to find any mention of a tribe of people called Soma-Gurra, to the north of Laikepya. The information regarding that tribe was spontaneously given me, and it was added that beyond the Soma-Gurra lay the territory of the Galla Borani. For some reason or other the Galla Borani country has been deleted altogether from the newest maps of Africa, a very remarkable fact, as the Galla Borani are still a healthy, vigorous race, and are gradually extending the borders of their southern frontiers. It is quite possible that Dr. Krapf or Mr. Wakefield may find among the Galla Borani, the lost Christians of whom they have been so long in search; indeed it was to reach a reputed Christian Galla tribe that Dr. Krapf left the Abyssinian Gallas, and came to Mombassa, in East Africa. Probably the Galla Borani, on the south of the Jub, and the Galla Borona who occupy the country between the eastern boundary of Gojam and the kingdom of Shoa, are identical in origin, as they seem to be in religion; for according to Mr. Plowden the Galla Borona have the tradition that they were at one time Christian, and what religion and customs they have border on that creed, though buried beneath a mass of pagan (not Mohammedan) superstitions. I was distinctly informed by a most intelligent Somali, a man of learning, that they, the Galla Borani, to the south of the Jub, were not pagan; that they worshipped a Supreme Being, but

that they were not Mohammedans. He did not know what their religion was. The latest accounts of the Galla Borani being that they have survived the epidemic of cholera, and are, at the present, well and flourishing, they are fairly entitled to be replaced on the map of Africa, in the territory which they may have occupied for more than a thousand years.

The difficulty with regard to the tribe called Soma-Gurra is greater. The nearest approach to the name is Soma Giri, "mountains of the moon." It is not improbable that the Olympian peaks of Africa, known to the ancients before the time of Herodotus as the Soma Giri, or mountains of the moon, as also the fountains of the ancient Nile, are situated in this part of Africa, but these celebrated mountains have been so often removed from one part of Africa to another, that they may now be left undisturbed wherever they may be at present located. Similarity in names, however, is often very striking; thus, the name of the district to the south of the snow-capped Kenia is Kapoteji, a name, in both spelling and sound, almost identical with Kapotesi, which, according to the Hindu Pandits, was the name of the spouse of the divine Shiwa, the pigeon goddess. Many other names in the district indicate a Sanscrit derivation, even that of the Masai themselves.

The region occupied by the Soma-Gurra seems to be, geographically, identical with the province of Samburu, the former name probably indicating the people of the district, and the latter the district itself or *vice versa*. Mr. Wakefield was told of the Wa-Samburu, but not of the Soma-Gurra; and I was told of the Soma-Gurra but not of the Wa-Samburu. Neither Mr. Wakefield nor Mr. New had ever heard of the Galla Borani. This view is confirmed by the fact that the manners and customs of the people are identical, the Soma-Gurra being an eques-

trian tribe, and the first equestrian tribe in Africa, north of the equator. They are said to be skilful horsemen, and dexterous hunters. They are strictly pastoral, and possess large herds of cattle, oxen and camels. The Somali caravans from Brava visit the country regularly, and the distance is stated as one month, with camels and horses. It is extremely improbable that the Soma-Gurra, or Wa-Samburu, are subjects of the Somali, or that they occupy the position of vassals, as the Wandorobo do to the Masai. They certainly do not. The Somalis visit the country for trade and not for tribute, and it is not at all likely that a courageous, equestrian tribe, who can protect their exposed land-frontier against the Masai on the one side, and the Galla Borani on the other, would submit to the authority of the Somali, a nation without any political cohesion. A few years ago a swarm of Majertyn Somalis, from near Berbera, opposite Aden, forced their way through the Somali country, along the Ugahden caravan route, crossed the Jub, and located themselves near Cape Bissell, much to the disgust of the Somalis on the north of the Jub, and of those in their vicinity. A similar migration of the Galla Borona from Southern Abyssinia to the regions bordering on the Jub, now occupied by the Galla Borani, may have taken place in former times, the names of these two Galla tribes being almost identical.

That the country of the Soma-Gurra cannot lie between Samburu and the Galla Borani is evident from the fact that the Masai would never have been allowed to pass through the territory of the Wa-Samburu on a cattle raid, as the chief occupation of the Wa-Samburu consists in defending their own flocks against the periodical inroads of the Masai hordes.

The whole of the tribes to the south of Samburu as far as the caravan line leading from Bagamoyo, opposite Zanzibar, to Ujiji, may be roughly divided into the hill

tribes and the inhabitants of the plains, the constant and implacable enemies of each other. The hill tribes derive their names from the various mountainous districts which they occupy, such as Unikani, Usambara, Pare, Ugono, Chaga, Teita, Ukambani, Limeru, and Dhaicho, and they are all more or less similar in manners and customs. With their flocks they occupy the mountain ranges, and are both pastoral and agricultural. Their most important occupation consists in watching, from the heights, the approaches of the enemy from below; in driving off their cattle to a secure retreat, and in defending their mountain passes. When their enemies of the plains, the Masai, are absent in some other direction, they muster their forces and make cattle and slave raids on each other. They murder the men, and return in triumph to their mountain fastnesses with the captured cattle, the young women and children. They vary a little amongst themselves, in their degree of atrocity, and several tribes are altogether avoided by passing caravans. The trade with the caravans, and also with the Masai, is often carried on by the women of the tribe, a treaty of peace being made and adhered to, while the business transactions are being engaged in. When business is over hostilities may commence at any time. The industrial arts, more especially that of Vulcan, are also followed by the hill tribes, and their home-made instruments of war are much superior in quality to the products of Birmingham and Belgium which find their way into East Africa. Some of them make a speciality of the murderous spear-heads with which the Masai are armed. The hill tribes are the settled inhabitants of the fertile and isolated highlands.

The inhabitants of the plains, throughout the entire extent of the country, are the Masai and the Wakwavi, races of robbers and cut-throats. There are, of course, several plain tribes, on the outskirts of the Masai, and

Wakwavi countries, but they have precisely the same moral characteristics as the Masai and Wakwavi, and they may be all classed together as a race of murdering villains.

The Masai and the Wakwavi are generally admitted to be of the same stock—the Masai, however, representing the original race. This is very likely, as there is a common family resemblance between them. They are both known generally as Masai, and not as Wakwavi, and the Masai who are the ruling race make raids upon the Wakwavi.

Many of the latter tribe, having been stripped of all their cattle by their brethren, the Masai, have been compelled to turn their attention to agricultural pursuits as a means of obtaining a livelihood.

The Rev. Mr. Wakefield, who has done much service regarding the geography and ethnology of these regions, loses his head when he speaks as a missionary and a poet. Of some of the murderous Wakwavi who have been compelled to earn their bread by the sweat of the brow, he says:—
“The men themselves *feel* the degradation, and no doubt cast many a sorrowful look back towards the congenial pastoral life they have relinquished,—the daily wandering with the lowing herd among the ‘green pastures’ of their beautiful and fertile plains, which was then a paradise, and, like the *old* paradise,

“ ‘———— a place of bliss, without drudgery or sorrow.’ ”

“The beautiful and fertile plains” alluded to by Mr. Wakefield would be much more of a paradise were the Masai and Wakwavi visited with the punishments usually accorded to robbers and murderers in more civilized countries, until the pastorals learned to distinguish between *meum* and *tuum*, and wandered only amongst their own “lowing herds.”

The Masai are a religious people, and their creed is

simple. They believe that, in virtue of the gift of the rain-god, all the cattle in the world belong to them. This simple faith, which does not admit of any heterodox sects amongst them, renders them extremely disagreeable neighbours, as they make inroads, twice a year, among the "lowing herds" of their neighbours for the purpose of carrying off the gifts of the rain-god, and they mercilessly slaughter all heretics who do not acquiesce in these practical aspects of their faith.

During the rainy season, when the water-courses are swollen, and when the rains would soften their huge shields, the Masai remain at home, under the shelter of their hide tents, or in their permanent villages; but, whenever the rains cease, they issue from their encampments, and the *caterans* take the road.

Captain Burton speaks of them thus (*op. cit.* p. 71):—
"The wild people of Eastern Africa are divided by their mode of life into three orders. Most primitive and savage are the fierce pastoral nomads, Wamasai and Gallas, Somal, and certain of the 'Kafir' sub-tribes: living upon the produce of their herds and by the chase and foray, they are the constant terror of their neighbours. Above them rank the semi-pastoral, as the Wakamba, who, though without building fixed abodes, make their women cultivate the ground: these clans indulge in occasional or periodical raids and feuds. The first step towards civilization, agriculture, has been definitely taken by the Wanyika, the Wasumbara, the Wanyamwezi, and other tribes living between the coast and the inland lakes: this third order is usually peaceful with travellers, but thievish and fond of intestine broils.

"But a few years ago the Wakwavi, who in their raids slew women and children, were the terror of this part of the coast: now they have been almost exterminated by their southern and south-western neighbours the Wamasai,

a tribe of congeners, formerly friends, and speaking the same dialect. The habitat of this grim race is the grassy and temperate region from north-westward and to south-westward of Chaga: nomads but without horses, they roam over the country, where their flocks and herds find the best forage: they build no huts, but dwell under skins, pitching rude camps where water and green-meat are plentiful. They are described as a fine, tall, dark race, resembling the Somal, with a fearful appearance caused by their nodding plumes, their hide pavoises or shields, longer than those of the 'Kafirs,' and their spears, with heads broad as shovels, made of excellent charcoal-smelted metal.

"According to native travellers they are not inhospitable, but their rough and abrupt manners terrify the Wasawahili: they will snatch a cloth from the trader's body, and test his courage with bended bow, and arrow-pile touching his ribs. Life is valueless among them; arms are preferred to clothes, and they fear only the gun because it pierces their shields. They are frequented, when in peaceful mood, by traders from Mombassa, Wasin, Mtanga and Pangani: this year, however, even those who went up from the southern ports feared to pass the frontier. Such visits, however, are always dangerous. If a number of persons are killed by a certain tribe, and there happen to be parties belonging to that tribe staying amongst the race which has suffered loss, the visitors are immediately put to death. Cattle is the end and aim of their forays, all herds being theirs by the gift of the rain-god and by right of strength; in fact, no other nation should dare to claim possession of a cow. They do not attack by night, like other Africans: they disdain the name of robbers, and they delay near the plundered places, dancing, singing, and gorging themselves with beef, to offer the enemy his revenge. Until this year they

have shunned meeting Moslems and musketeers in the field: having won the day (in a combat at Mombassa), they will, it is feared, repeat the experiment.

“These and similar tribes, such as the Mavite, on the west of Lake Nyassa, have always been described as possessing a certain amount of chivalry and heroism. They all disdain the name of thieves, robbers and murderers, including under these inglorious designations only petty, independent practitioners among themselves, or the weaker tribes who cannot withstand them in their murderous raids.”

The Masai are certainly the most blood thirsty people in the world, and the Gallas are not far behind them. It is said that they never drink water, and never taste vegetable food, and probably their fighting men never do so. They certainly never drink water if they can possibly get blood and milk, their favourite beverage, and, to procure it, they bleed their cattle, and apply the mouth, leech-like, to the open vein in the same way as the Gallas do. They never partake of vegetable food if beef is procurable, and they despise the flesh of fowls and fish. It is said that they spear the goat as vermin. When a bullock is killed, not a drop of blood is carelessly lost. Mr. New thus describes a scene of this kind while he was travelling among the Southern Gallas (*op. cit.* p. 189); “No sooner was the knife drawn across the animal’s throat than the Gallas, as many as could jam their heads together within the necessary compass, fell first upon their knees, and then upon the beast’s yawning neck, and sucked, and sucked at the hot, living, gushing stream of blood until they could do so no longer. Then, covered with gore, smacking their lips, and quite out of breath, they rose to make room for others standing near and longing for the horrible draught. My flesh crept, and I felt as I never felt before; my very hair stood on end! Buiya was excited

beyond measure, evidently enjoying the thing greatly, his eyes aflame with savage light. I expressed to him my utter disgust, when he replied somewhat testily: 'Oh, you are white men! We Gallas think it delicious! nothing better in the world!'

Messrs. Wakefield and New were in the Galla country at the time endeavouring to found a mission station, and it says much for their courage and Christian zeal, as the Gallas are not particular whether they get their highly prized war trophies by mutilating the dead or emasculating the living.

While they were in the Galla country they crossed the war-path of the Masai, and narrowly escaped their shovel spears. The Masai were out on one of their murderous raids, among their hereditary enemies the Gallas, and they were more than 300 miles distance from their own country, a fact which will give some idea of the extent of their raids. The Gallas were, of course, in full flight towards their swamps, having left the Masai to spear the stragglers, and devour and drive off the cattle. Mr. New had an opportunity of ascertaining the beef-eating capacity of the Masai, by some of his followers coming upon the Masai camp, where their food had been prepared the night before. He says:—"It is singular that these people *who live wholly on flesh* never eat the animals' heads. That day Wuledi counted fifty cows' heads upon the Masai camping-place. This will give us some idea of their numbers. How many will one bullock feed? Say twenty at least. Then there must have been 1,000 Masai upon that spot." Mr. New calculates that *one million eight hundred and twenty-five thousand head of cattle per annum* are required for the Masai stomach, and he asks:—"Who can wonder then that the whole of Eastern Africa should be swept to supply the necessities of such a larder?"

The Masai make their periodical raids in every direction. They go very systematically to work; and, as they are in

the very centre of a cattle-breeding country, they vary annually the line of their raids so as not to completely exhaust a district. The old men, the women and the children, and a proportion of the fighting men remain with the herds at home, acting on the defensive, while the robbers take the field in quest of plunder. Trading caravans always avoid a meeting with the Masai who may be on the road or war-path, as they are sure to be plundered. The traders, however, do business with that party of the Masai remaining at home, and from them they procure large quantities of valuable ivory. The Masai obtain their ivory by hunting the elephant, but principally by means of the Wandorobo, a vassal race who follow the chase with dogs and spears. The Wandorobo are scattered over the entire plain region, but their principal locality is amongst the dense forests and swampy jungles bordering on the lakes. They cultivate a little, but subsist chiefly on the spoils of the chase. They are the only people with whom the Masai are on friendly terms. It is said that, in return for their protection, the Masai get from them a large share of their valuable elephants' tusks. The Masai have a great dread of forests, jungles, swamps, and mountain passes, and they never cross a river to make a raid. There can, therefore, be no river, which is not easily fordable, flowing towards the west from the Kilima-njaro or Kenia mountain ranges into the Victoria Nyanza, or Lake Baringo, leading us to conclude that the main feeders of the Victoria Nyanza must flow from the south and west. The Masai never attempt to cross the Jub, and they never leave a river between them and their homes; they may pass along the banks of a river but they never cross one.

Captain Burton¹ describes a raid of the Wamasai on the neighbourhood of Mombassa, while he was there on a

¹ Burton, *op. cit.* v. ii. p. 70.

visit. He says :—" We left Kisulodini (the station of the Church Missionary Society) on January 22nd, 1857.

" Some nights afterwards fires were observed upon the neighbouring hills, and the Wanyika scouts returned with a report that the Wamasai were in rapid advance. The wise fled at once to the Kaya, or hidden barricaded stronghold, which these people prepare for extreme danger. The foolish many said, ' To-morrow we will drive our flocks and herds to safety.' But, ere that morning dawned upon the world, a dense mass of wild spearmen, numbering some 800 braves, sweeping like a whirlwind, with shout and yell and clashing arms, passed the Mission House which they either did not see or which they feared to enter ; dashed upon the scattered village in the vale below, and strewed the ground with the corpses of the wretched fugitives. Thence driving their loot they rushed down to the shore, and met a body of 148 matchlock men, Arabs and Baloch, Wasawahili and slaves, posted to oppose progress. The bandits fled at the first volley. The soldiers, like true Orientals, at once dispersed to secure the plundered cattle, when the Wamasai, rallying, fell upon them and drove them away in ignominious flight, after losing twenty-five men, to the refuge of their walls. The victors presently retired to the hill-range ; amused themselves with exterminating as many Wanyika as they could catch, and, gorged with blood and beef, returned triumphant to their homes. The old Temadar, Tangai, took from the unfortunate Wanyika all their remaining cows ; the Wanyika also retired to the interior, and the price of provisions at Mombassa was at once doubled."

One of old Tangai's sons boasted to me, some years afterwards, that he was present at the engagement, described by Captain Burton, and that he had fought the Masai, and had been wounded. On being requested to favour me with a sight of his scars, he at once turned up

his foot, and showed me the mark of a veritable wound situated near the insertion of the Tendo Achilles. He had been showing the soles of his feet to the foe, when a Masai spear carried away a portion of his heel. The antithesis of Achilles, he was invulnerable only in the heel.

On a subsequent occasion the Masai again visited the Wanyika and carried off their cattle. They left all the calves, however, with a message to the Wanyika to take good care of them, stating that they would come back for them and their offspring in two or three years when they were full grown. The Wanyika now pay less attention to cattle-breeding, and more to the propagation of goats and the feathery tribe. In 1871 the Masai were in the neighbourhood of Mombassa again. A large party of the Wakamba, whose country they were harrying, fled with their cattle to within a mile of the mission station at Ribe, and Mr. Wakefield was apprehensive that the Masai might follow up the trail of the cattle, and "wander among the lowing herds," around his own house.

Their expedition of 1869 amongst the Soma-Gurra had taught them no lesson, and society would not have suffered any great loss had the cholera epidemic swept away the whole tribe, for on that fatal raid they captured, certainly, a Pandora's box, and carried away with them the death warrant of perhaps millions of human beings.

Captain Burton in his recent volume on "Zanzibar" gives a very accurate description of the trading operations along the coast from Mombassa to Pangani, the starting points for all the expeditions to the interior of Africa, towards the north-west, and, as the tracks of commerce and of cholera are identical, we may shortly describe them.

These caravans traverse the whole country from Pangani to the south-east of the Victoria Nyanza, where they very nearly meet the caravans or traders from Unyanyembe

who come towards the same district by way of Tura. They skirt the eastern boundary of the Lake district, and formerly they drew off part of the ivory spoils of Uganda, approaching close to the regions to the west of the Victoria Nyanza traversed by the Zanzibar traders from Unyanyembe and Ujiji, and to the mercantile fields annexed by Sir Samuel Baker to the Egyptian Government. They also pass as far north as Samburu, to the confines of the Soma-Gurra, and the Galla Borani, where they meet the traders from the Somali ports of Brava, Merka and Mukdeesha, and their agents from Barderah and Gananah, on the river Jub.

This immense district constitutes the mercantile field of the Zanzibar traders, engaged in the Masai trade, who make the coast between Pangani and Mombassa their starting-point for the interior.

At the period of the cholera epidemic the greater part of the country between Kilima-njaro and the Victoria Nyanza, and from Kenia to the river Jub appeared on the maps of Africa as a blank; and it was not till 1870 that Mr. Wakefield of Mombassa filled up the blank by his notes on "Routes of Native Caravans from the Coast to the interior of Eastern Africa."¹

Mr. Wakefield's information is in strict accordance with that which (previous to the publication of his map) I received from the leaders of the Masai caravans, while investigating the cholera track, and the reduced distances on the map, by Mr. Keith Johnston, are also strictly in harmony with the distances calculated by me.

In describing Mombassa Captain Burton says:—"The harbour of Mombassa is spacious and land-locked; without exception, the best on the Zanzibar coast. Its magnificent basin is formed by one of those small coralline islands which, from Suez to Cape Corrientes, have long

¹ *Journal of the Royal Geographical Society of London*, 1870.

been the centres of commerce with peoples who, brutalized by barbarism, and incapable of civilization, would have converted mainland depôts into scenes of rapine and bloodshed. The island is a mass of coralline, that forms scarps and dwarf cliffs, forty-five to sixty feet high, everywhere except on the west, where there is a tongue of sand, and where the level ground is covered with the fertile humus of decayed vegetation: the shape is an irregular oval, about three miles long by two and a half broad, and this flat surface is capable of growing the richest produce. The soil, excessively permeable, and bone dry after a few hours following the heaviest downfalls, allows neither swamp nor bog. Eastward or outside there is good riding-ground, defended on both sides by reefs; inside a double sea-arm moats the islet in every direction from the coast.

“The climate of the island is hotter, healthier and drier than that of Zanzibar. The rains begin with storms in early April, or before the setting in of the south-west monsoon. They are violent in May, and from that time they gradually decrease. Between December and March there are a few showers, for which the cultivator longs; and as may be imagined in an island ever subject to the sea-breeze, the dews are exceptionally heavy. The people suffer but little from dysentery and fever. Europeans, however, complain that they are never free from the latter. The endemic complaint is a sloughing ulcer upon the legs, and parts most distant from the seat of circulation. The cause may be found in the cachectic and scorbutic habit, induced by the want of vegetables, and by brackish water: the pure element is, indeed, to be found in the old wells beyond the town, and on the mainland; but the people save trouble by preferring the nearer pits, where water percolates through the briny coralline. The town has suffered severely from epidemics, small-pox, and what strangers call the plague. The citizens still remember the

excessive mortality of 1818, 1832, and 1835. Mombassa trades with the Wanyika for copal; with the people of Chaga and Ukambani for ivory, and with the inner tribes generally for hippopotamus' teeth, rhinoceros' horns, cattle, cereals and provisions. Slaves are brought from Zanzibar, natives from the country about and south of Kilwa being preferred. The imports are chiefly cottons, glass beads, and hardware. There is no manufacturing industry, except a few cloths, hand-made in the town."

Mombassa is very prettily situated, more so than any town I have seen on the coast of Africa. From its natural position no town in East Africa should be healthier. Nature has done everything to make it so. It is a place, moreover, of great natural strength, and the proper point of entrance for Central Africa. There is no long sloping beach which is certain to become a nuisance in the neighbourhood of a large town, and even were every inch of the island covered by buildings, the sewage could be got quit of easily and effectually, without polluting either beach or harbour. The mangroves in the tidal river are not sufficiently near to affect the health of the population. It is to be regretted that a town occupying such an important position has been allowed to fall into such a state of decay and neglect as it is now in.

Mombassa was at one time in the possession of the British Government, but the permanent occupancy of the place was, for some reason or other, declined. As the principal natural entrance to East Africa for commerce and civilization, it would have been worth a hundred Fijis to Great Britain; and the occupancy would have strengthened and enriched any neighbouring native power. Long ere this slavery in East Africa would have been well nigh extinct.

Although no place has greater natural advantages the commerce of Mombassa is insignificant, compared with

what it might, and with what it must be in the future. As it is, the commerce is considerable, and many caravans for the Masai country make it their starting point; but it and the neighbouring country is more exposed to the raids of the Masai than any other places on the coast, and the district itself is infested with gangs of marauders who render the roads unsafe.

If any permanent settlers from Europe ever establish themselves on the East Coast of Africa, the settlement must be at Mombassa, which is only 120 miles distant from the temperate slopes of the Kilima-njaro mountains, and the line of perpetual snow. Europeans, in the future, will be able to leave the tropical heat of the coast and reach the temperate climate of Chaga in three hours by rail.

To the south, from Mombassa, the next places of any importance, having a trade with the interior, are Wanga Bandar, Tanga, and, chief of all, Pangani. These places were all personally inspected by Captain Burton, and I shall follow his description of them.

“Wasin Island, situated near to the Peaks of that name, is one of the minor commercial settlements lying between Mombassa and Pangani. The island, which does a little cultivation, belongs to Zanzibar, and the only settlement, about the centre of its length, is on the northern shore, fronting Wanga Bandar on the continent. Wasin contains three mosques, long flat-roofed rooms of coral-rag and lime ranged obliquely to face Mecca, and scattered amongst the little huts and large houses of ‘bordi’ or mangrove timber: the latter are tied with coir rope and plastered over with clay, which in rare cases is white-washed. Water must be brought from the mainland; the people own it to be brackish, but declare that it is not unwholesome. The climate is infamous for breeding fever and helcoma, the air being poisoned by cowries, festering under a tropical sun, and by two large grave-yards—here

also, as at Zanzibar, the abodes of the dead are built amongst the habitations of the living.

"The people of Wasin send small caravans of 100 men to the interior, *vid* Wanga Bandar, the environs of which belong to the Wadigo.

"The Wadigo occupy the high country which extends westward to Usumbara. They dwell in large villages, fenced to keep out the Wamasai, and they are agriculturists, fond of public markets, at which they dispose of their grain to coast-traders. Those whom we saw were poor-looking men; their bows were well turned and bent, with brass knobs and strings of cow-gut; the notched and neatly feathered arrows had triangular iron piles. The women, who veiled the bosom, were remarkably plain, and apparently had never seen any European before. These Wadigo, with their southern neighbours, the Wasegeju, are porters of the inland traffic. Caravans, if they may be so called, numbering sometimes a hundred men, slaves included, set out, at the beginning of the rains in March or April, from Wanga and other little Bandars on the coast. If the capital be 1,000 dollars, they distribute it into 400 dollars of beads, and brass and iron wires; and 400 dollars of American domestics and cotton-stuffs of sorts: the remaining serves to pay forty porters, who each receive ten dollars per trip, half before starting, the rest upon return.

"After twenty days' march, these trading parties arrive at Umasai and the adjacent countries; they remain there bartering for three or four months, and then march back laden with ivory, and driving a few slaves purchased *en route*.

"Tanga, situated in lat. 5° S., is midway between Wanga and Pangani, and far outstrips the former in commercial importance, and rivals the latter. Tanga derives its name 'sail' from the shape of the inlet, which is about five miles long by four in breadth.

“Tanga islet, a lump of green, still contains a scatter of huts, and a small square stone fort. It is well wooded, but the water obtained by digging pits in the sand is scarcely potable. As a breakwater it is imperfect during the north-east trades; when a high sea rolls up, ships must anchor under the mainland, and when the south-west monsoon blows home it is almost impossible to leave the harbour without accident. The bay, embanked with abundant verdure and surrounded by little settlements, receives the contents of two fresh-water streamlets; westward is the Mtofu, and north of it the Mto Mvoni or Kibokoni; hippopotamus river. The latter at several miles distance from its mouth must be crossed in a ferry; it affords sweet water, but the people of Tanga prefer scratching into the sand to the trouble of fetching the pure element. The hippopotamus is found in small numbers at the embouchures of these islands, and often within a few yards of where the boys bathed.

“Like all the towns of ‘Mrima’ proper, Tanga is a patch of thatched pent-roofed huts, built upon a bank overlooking the sea, in a straggling grove of cocoa and calabash. The population is laid down at 4,000 to 5,000 souls, including twenty Banyans and fifteen Baloch. The citizens are chiefly occupied with commerce, and they send, twice a year, in May to June, and in October to November, after the great and little rains, trading parties to Chaga and Umasai. At such times they find on the way abundance of water; the land, however, supplies no food. From Tanga to Mhinani, on the Upper Pangani river, passing between Mbaramo and Pare, are thirteen marches; here the road divides, one branch leading northward to Chaga, the other westward, across the river to Umasai.

“The total would be fifteen stages, at least twenty days for men carrying merchandize. These caravans are seldom short of 400 to 500 men, Arabs and Wasawahili,

Pagazi or free porters who carry fifty pounds each, and slaves. The imports are chiefly cotton-stuffs, iron wires, brass wires, and beads, of which some 400 varieties are current in these countries.

“The usual return consists chiefly of ivory, per annum about 70,000 lbs.; they bring also a few slaves, some small mangey camels, and half-wild asses. The citizens trade with the coast savages, and manufacture from imported iron, bill-hooks and hardwares for the Wasegeju. The Wasegeju, once a powerful but now an uninfluential tribe, are still a violent, warlike and furious race, and hunt the Bondei hills for slaves.”

On every fifth day the Tanga people hold at the neighbouring village of Amboni a market with the savages of the interior, called a “Golio.” Captain Burton describes his visit to the fair as follows:—

“Formerly the land was harried by the beef-eating Masai, hence the scarcity of cattle. After two miles we crossed some tidal creeks. Having crossed the river, we traversed plantations of cocoas and plantains, and ascending a steep hill, we found, after five miles of walking, the market ‘warm’ as the Easterns say. All Tanga was there. The wild people, Wasumbara, and Washenzi, Wadigo, and Wasegeju, were clothed in greasy hides and cotton wrappers of inveterate grim. Every man carried his bow and arrow, his knobstick, his club and sword, and his shield, but few owned muskets. Some had come from afar, as was shown by their low wooden stools and small churning staves. The women were more numerous, and harder worked; the girls were bare-breasted, and every matron had her babe tied in a bundle to her back, its round black head nodding with every movement of the maternal person.

“They carried, besides masses of beads strung round the neck, zinc and brass armlets all down the arms, and

huge collars and anklets of metal, heavy loads of valuable stuff; and others sat opposite their belongings, chaffering and gesticulating upon knotty questions of fragmentary farthings. These ill-used and hard-favoured beings, with patterns burnt into their skins, paid toll for ingress at a place where cords were stretched across the path, a primitive style of raising octroi. The Bedawin exchanged their lean sheep and goats, cocoas and bananas, grain and ghee, for white and blue cottons, beads and rude iron-ware—knives, bill-hooks, and hatchets, made on the coast of metal brought from Zanzibar. The luxuries were dried fish, salt, Tembo or cocoa-toddy, spices, needles and thread, fish-hooks and blue-stone used in their rude medicine. Formerly a large quantity of ivory found its way to the 'Golio;' now it is purchased in the interior by trading parties. The groups, gathered under the several trees, were noisy but civil to us. Often, however, a lively scene, worthy of Donnybrook in its palmyest days, takes place, knobsticks and daggers being used by the black factions as freely as fists and shillelaghs in more civilized lands. At noon we returned over the sands which were strewn with sea-slugs, and in places choætodons lay dead in the sun. The heat of the ground made my bare-footed companions run from time to time to the shade, like the dogs in Tibet."

The weekly fair still continues to be a primitive seat of commerce, and a general rendezvous for the surrounding district.

"Pangani¹ 'in the hole,' or 'between the highlands,' and its smaller neighbour, Kumba, hug the left or northern bank of its river; the site is a flat Maremma bounded by the sea and by a hill range, ten or eleven miles distant. Opposite are Mbweni and Mzimo Mpia, small villages built under tall bluffs of yellow sandstone, precipitous and

¹ Burton in *loc. cit.* v. ii., p. 143.

impenetrably covered with wild growth. The stream which separates these rival pairs of settlements may be 200 yards broad: the mouth has an ugly line of bar-breakers, awash at low tide; the only fair-way course is by a narrow channel to the south, and the entrance is intricate with reef and shoal. At low water in the dry season the bed of this tidal stream is partly exposed, and its produce during the flow is briny as the main; the rains cause it to swell with the hill-freshets, and then it becomes almost potable. The wells produce heavy and brackish drinking-water, but who, ask the people, will take the trouble to fetch sweeter? The climate is said to be tolerably healthy. Throughout the long and severe rainy monsoon, however, the place is rich in dysenteries and in fatal bilious remittants.

“Pangani boasts some nineteen or twenty stone houses of the usual box style; the rest is a mass of cajan huts, each with its large and mat-encircled patio, or court-yard, whose outer lines form the streets, and wherein almost all the business of life is transacted. The settlement is surrounded by a thick, thorny jungle, harbouring not a few leopards. Pangani, with its three neighbours, may contain a total of 4,000 inhabitants, Arabs and Wasawahili, slaves and heathenry; of these a large proportion are feminines and concubines.

“Twenty Banyans manage the lucrative ivory trade of the Chaga, Nguru, and the Umasai countries, which produce the whitest, largest, heaviest, softest, and, perhaps, the finest ivory known. The annual export is said to be 35,000 lbs., besides 1,750 lbs. of black rhinoceros' horn, and 160 lbs. of hippopotamus' teeth: the latter is an article which, since porcelain teeth were invented, has lost in value. The other exports are holcus, maize, ghee, and Zanzibar rafters, cut near the river mouth and up stream.

“Trading parties travel to the Umasai, Chaga, and

Nguru countries at all seasons, even when the rainy monsoon makes the higher Pangani difficult to cross. As many as 1,000 Wasawahili and slaves, directed by a few Arabs, set out laden with iron and brass wires, some fifty of the former to three of the latter; with small brass chains which, fastened together, are used as kilts (mkifu) by the Wamasai; with American domestics, indigo-dyed calicoes and checks, with beads of sorts, especially the white and the blue. Each man carries a pack worth from fifteen to twenty-five dollars; consequently the total venture is about £4,000. The caravan reaches its ground in about twenty days, and returns after a period varying between two and six months. The purchase of slaves is not on a large scale; nor is the coast journey distinguished by inhumanity. Here the free traveller dies as frequently as the servile. The merchants complain loudly of the Pagazi, or porters: these fellows are prepaid ten dollars for the trip, and the proprietor congratulates himself if, after payment, only fifteen per cent. abscond. The Hindu's profit must here be enormous. I saw one man to whom 26,000 dollars were owed by the people. Some of their gains are swallowed up by the rapacity of these savages, whose very princes are inveterate beggars."

I shall now describe the route of the caravan, which first encountered the epidemic on the confines of the territory of the Soma-Gurras, from the narrative given to me by the leaders of the caravan.

At the usual season of the year, the end of November or the beginning of December, 1868, a company of caravans, comprising about 1,000 men, left the town of Pangani for the interior. Passing along the bank of the river Pangani, or Rufu, as it is called higher up, they left Usegua, and entered the country between the mountainous districts of Usambara and Pare. They then passed due north along the eastern slopes of Pare, and the border of the Lake Jipe,

until they reached the settlement of Taveta, a rendezvous for nearly all the caravans passing towards the interior. The caravans pursue the course mentioned on account of the plentiful supply of water and provisions on the way, and they generally halt at Taveta for some days to rest, reorganize, and then they disperse to the various districts to which they may be bound. The particular part of the country to which a caravan may ultimately go is often decided upon at Taveta, for information is got there from returning caravans concerning the state of the entire country, and the parts where ivory is likely to be got at the cheapest rate. Information is easily obtained as there is but little competition between individual caravans.

There are generally three leading men who have a pecuniary interest in the caravan. An Arab of high standing in Zanzibar; an influential coast-man, such as the native Governor of the coast town, and one or more Banyan merchants. One or more Arabs often accompany the caravan, but the real leaders thereof are usually Wasawahili, or Wazalia;—domestic slaves born in the family. They are always men who have been long in the trade, and who are thoroughly acquainted with the general features of the country; the people thereof; their language, and their manners and customs. One of the leaders of the caravan from Pangani to Laikepya, had made fifteen journeys among the Masai, and the other nine.

The plains of Taita; the country bordering on lake Jipe; the district of Taveta, and the Chaga country on the slopes of Mount Kilima-njaro, constitute the finest country in the world ever ruined by savage men.

As previously observed, it is a matter of no small importance to the future of East Africa that there is a district, within a hundred and fifty miles of the coast, where Europeans will be able to recruit their health by a temporary residence as near to the line of perpetual snow as

they may wish; and that, by passing over a distance of about three hundred and twenty miles from Zanzibar, the climate of England can be reached, and any climate between that and the tropical. The Sanitarium of India is at a much greater distance from the coast line.

Taveta is a kind of neutral place, and it appears to be so by mutual consent, on account of the caravans passing through it. Mr. New speaks favourably of the people. He says ¹:—"The Wataveta are very hospitable and kind to strangers, and seem to be at peace with everybody except the Masai. . . . They owe their tranquillity as much, perhaps, to their impenetrable forest, as to their peaceable dispositions. The Masai, however, had broken through the forest a short time before, and had done some damage, but in the end they were compelled to retreat."

The caravan separated at Taveta, one company going towards Arusha on the west, the other keeping due north, and on the sixteenth day from Pangani the party going north reached the town of Urombo, near Mount Kilimanjaro; and on the twentieth, Marago ya Kanga, or "Guinea-fowl camping-place," the first Masai town in that direction. On the twenty-fifth day's march they reached the plains of Kapoteji, north of Kilimanjaro, and on the thirty-seventh day they entered the province of Kikuyu, to the southwest of Mount Kenia. On their march from Kikuyu, with the Lake Naivasha to the left, they crossed the Settima Mountain, a spur of Mount Kenia, and entered the province of Laikepya (Leikipia) on the forty-third day; and, on the fifty-first day, they reached the town of Kisima, the extreme point to the north to which the caravan as a whole went a distance of nearly five hundred miles from the coast.

Although the march from Pangani to Kisima is fifty-one days, the time occupied was between four and five months. There are many delays in travelling, more

¹ *Op. cit.* p. 361.

especially to a company carrying goods and on 'foot. Halts are frequent, and they have often to travel by forced marches in passing through a desert or deserted country, and they usually rest for a few days after, when they come to water and supplies.

The caravan route laid down by Mr. Wakefield, from Pangani to Samburu, is almost identical with that described to me by the leaders of the caravans to Kisima. From Pangani to Taveta the marches are identical, and from Taveta to Mount Settima the distances from province to province are identical, but the names of the intermediate stages are in no case the same. This may arise from the circumstance of the places indicated being merely halting places and not fixed villages; thus, the last halting place reached, Kisima, simply means a well, and is not indicated in Mr. Wakefield's map. It is situated, however, nine days due north from the beginning of the province of Laikepya, and is probably close to the Samburu of Wakefield, and in the same latitude as the Reya of New.

There is not a river of any consequence, during the whole line of march, flowing to the west towards the Victoria Nyanza. The only two described to me were the Murundati and the Mabokoni; the former was said to flow towards Lake Naivasha, and the latter was crossed three days before the caravans arrived at Laikepya. The Mabokoni, and the Vibokoni of Wakefield, are evidently identical, the former being the singular, and the latter the plural form of the same word. The Murundati and the Mabokoni both abound in hippopotami, and they must be in the vicinity of some lake such as Naivasha, for they are almost dry during the dry season, and breast-deep only when in flood. The lake was described as having both an inlet and outlet. It is dotted with numerous islands, and is brackish on one side and sweet on the other. A

person in a boat in the centre of the lake can see the land on both sides, but not at both extremities. The Naivasha is evidently a large lagoon, one side of which rests upon a nitre-bed, of which there are many in that part of the country. The Njemsî mountain was also described as a dormant or semi-active volcano. During the day its peak was always covered with a black cloud, like smoke; and during night the cloud was red, like fire. None of the men had seen it in a state of eruption.

The impression left on my mind was that the Murundati flowed into Lake Naivasha, and that the outlet of that lake is connected with the river Mabokoni,—and that both joined flow towards Lake Baingo. I had not an opportunity of having the description verified by other natives who were equally familiar with the districts. There is a very large sheet of water, much larger than the Naivasha, called by the natives Baringo, which seems to be quite distinct from the Victoria Nyanza. From all that I could learn, it appears to be an extensive lagoon, overflowing the surrounding country, and forming large swamps during the rainy season.

The Settima range is almost invariably crossed by trading parties on the march north. When they reach the mountain range at about mid-day, or the afternoon, they halt at the base till next morning, and then commence the ascent. They always halt on the plateau at the summit for one day, and commence the descent on the next, and after two days' march they enter the province of Laikepya. At Kisima the leaders of the caravan formed their encampment, and commenced trading operations, and there they remained for about a month.

While trading at Kisima they were informed that the Masai had made a raid upon a tribe to the north of Laikepya, called the Soma-Gurra, and that they had brought back with them some deadly plague of which

many of the Masai had died, but they did not understand at the time the real nature of the disease. The next tribe further north than the Soma-Gurra was said to be the Galla Borani. While they were at Kisima they also learned that the disease was prevalent among the people in whose country they were, and that there was great mortality amongst them. One of their own party died suddenly at Kisima, but there was no illness among the others. Being alarmed by the rumour concerning the disease, they packed up their goods and left the district before their trading operations were concluded. They returned by nearly the same route by which they came, and on the seventh month from their departure they reached the town of Lytoketoke, "the Spring," near to Mount Kilima-njaro. This place, where they remained for some time to recruit before their march to the coast, is probably identical with the Leta-Kotok of Wakefield to the north of Kilima-njaro.

During the journey from Kisima to this place the same rumours reached them concerning the mortality among the people, but they had never seen a case of illness. They found it, however, at Lytoketoke; and the leader of the caravan, having seen some cases there, saw at once that the disease was cholera. Orders were immediately given to pack up, and the traders with all their goods fled from the district. In their flight towards the coast they avoided the populous districts through which they had come, on their upward march, and returned to the west of Kilima-njaro, Chaga, Pare, and Usambara till they reached Pangani.

The only man that they lost was at Kisima. They appear to have marched in front of the epidemic, and without being affected by it, till they reached Lytoketoke; and from thence by a rapid march they preceded the epidemic to Pangani and brought the first news concerning it to that place, and Zanzibar.

On the sixth day after leaving Lytoketoke they reached Harush-wa-chini, "The lower Harush," and there they met a large caravan of traders from Pangani, bound for the Masai country. They informed the leaders of this upward-bound caravan that the whole district through which they had come was being ravaged with cholera, and they advised them strongly to return with their goods to Pangani. They would not listen to the advice given, but determined to move towards the north-west, the country adjoining Bahari-ya-pili, "the second sea," or, "the Sea of Ukara." Harush, where they met the caravan, is twelve days' march from Pangani, on the coast.

The upward-bound caravan, disregarding the advice given, passed on to the Upper Harush, a Masai town, and a portion remained there to trade with the Masai. The main body of the caravan went farther into the Masai country, as far as Dasikĕra (Nda-Sekera), an important trading station, on the route to Kaverond. At Dasikĕra, ivory was both dear and scarce; and hearing that it was cheap and plentiful at Laikepya, another party remained at Dasikĕra with goods to trade, and the main body of the caravan struck towards the north. On reaching Laikepya they plunged into the very centre of the epidemic, which was then raging in the district with great fury. The caravan was there attacked, and trading being out of the question, the men determined to endeavour to save their lives by flight.

They, therefore, collected their ivory and goods, and having dug a large hole, they concealed the greater part of their property, put a mark on the place and fled towards the coast. They returned by the way they came, through Dasikĕra and Harush, in order to pick up their companions, but they were too late; the whole of the trading party was reported as dead. All the people in the district who had any connection with Pangani were hastening towards the

coast in full flight, both by the east and west of the Chaga, Pare and Usambara districts; and wherever they passed they carried the epidemic with them. Out of one hundred and fifty of the party that started from Laikepya, only seven reached the coast alive.

One of the survivors corroborated the statement of the leader of the former caravan regarding the track by which the epidemic reached the country; namely, that it was introduced by a raid made by the Masai on the Soma-Gurra tribe, a tribe rich in camels, horses, and cattle. At Dasikëra the party which remained to trade was suddenly stricken with the disease, and the mortality was described as dreadful among the Wamasai. The account given was that a large party of the Masai had congregated, and that the bartering trade was going on. Several of the Masai were taken ill, and before morning there were above a hundred deaths among them. The traders lost, on the same occasion, a large number of their men.

Dasikëra, or Nda-Sekera, as playing a very important part in the diffusion of the epidemic towards Central Africa, will be referred to hereafter.

While the epidemic was clinging to the traders, every district through which they passed was rapidly becoming a fresh centre. The Rev. L. Fraser, in writing from Morongo, under date November 7th, 1869, to the Right Rev. Bishop Tozer, at Zanzibar, says:—"While I was at Magira (in Usambara), I heard that a party of Pangani people, who had gone up to the Masai country had been almost destroyed by cholera, which was very heavy in the towns about there. To-day tidings came that it had broken out in the Usambara Mountains, and that forty-four people had died in a town near Bumburri. I saw a man whose servant had died there. The people here go up into the mountains to buy samli (butter)."

Several days before the date of Mr. Fraser's letter

cholera had declared itself at Pangani; but, at the time that he wrote, it was advancing steadily from the north of Usambara through the whole district.

Towards the close of 1871 the Rev. Charles New, of Ribe, near Mombassa, organized a small caravan to investigate the country between Mombassa and Chaga, for the purpose of establishing a Mission Station, and, in the course of his explorations, he succeeded in ascending Mount Kilima-njaro, as far as the line of perpetual snow.

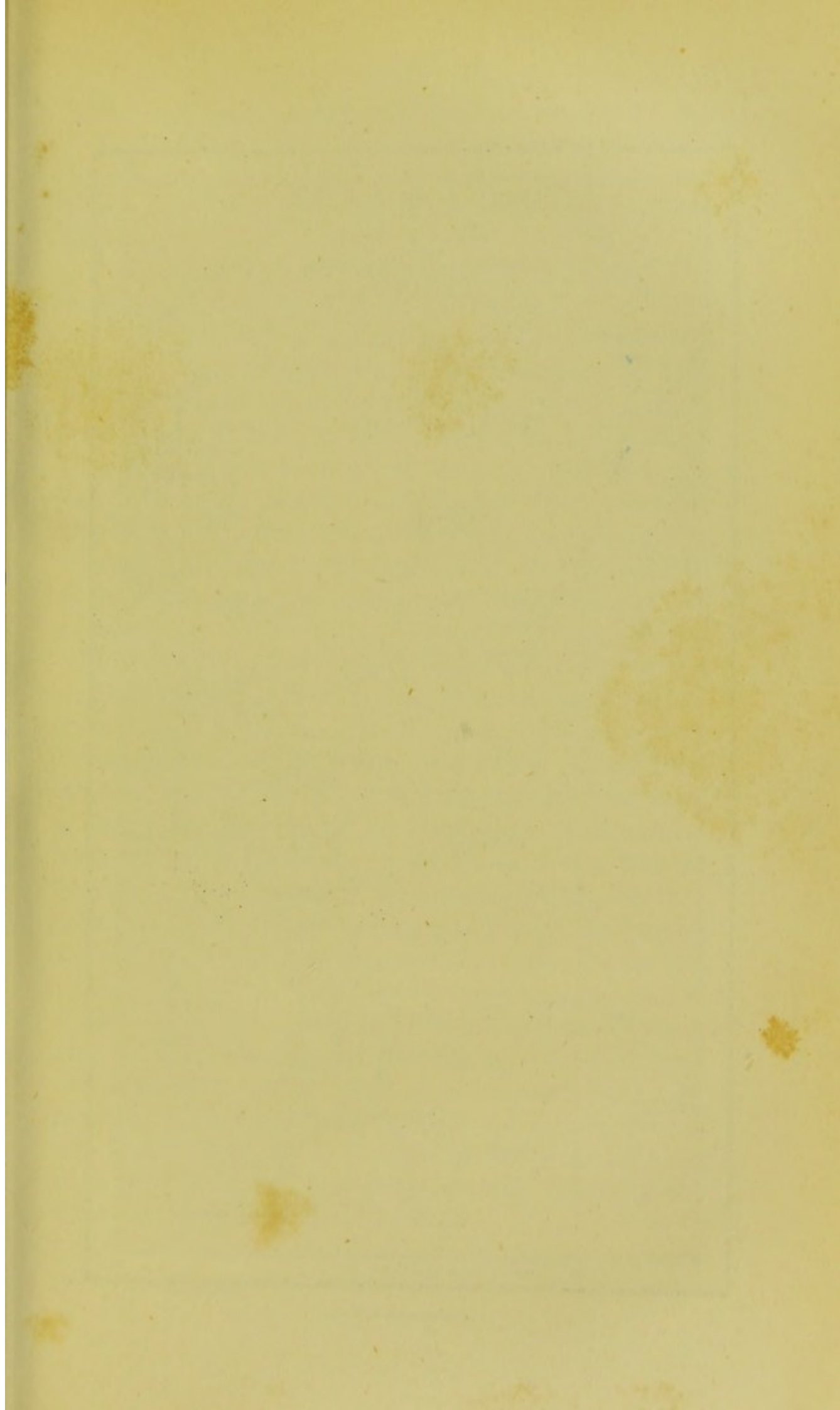
Previous to his setting out on the journey, I wrote to Mr. New requesting him to collect for me at Chaga such information as he could regarding the recent epidemic of cholera there, or in any district that he might visit, a subject which he was thoroughly competent to investigate, owing to his perfect knowledge of the native language. Mr. New left Ribe on the 13th of July, and returned on the 10th of October, 1871. Mr. New, in a communication to me, after describing his journey, writes:—"I made enquiries everywhere about the cholera and its origin. My enquiries commenced at Kisigan, or Kadiaro in Teita. At this place I met with a man who knew the surrounding country well. He had been a great traveller, and, in his way, quite a Ulysses. He was better up in the affairs of the country than most men, being of an inquisitive turn of mind, and evidently possessing a good memory. He said that the cholera visited Teita, and that many of the people died of it. As to its origin, he said:—it came from the country of the Masai, making its way through Usambara; then through the Wadigo country to Kadiaro; from Kadiaro it passed on to Ndara, and from Ndara to Bura. In questioning this man, I purposely and carefully avoided suggesting any kind of answer whatever. His statement is quite independent, and free from bias.

"At Taveta, the people of which place are half Wakwavi, or Masai (the Wakwavi being unquestionably of the same

origin as the Masai), I met a Msawahili of Tanga. He had resided at Taveta for the past year and a half, and he was acquainted with all the news of the surrounding country better than anyone in the place. Some of his friends were away at the time in the Masai country. Most of the caravans on their way from the Masai country to the coast, call at Taveta to rest and to purchase food, and so all the Masai news reaches Taveta. Nothing of it escapes this Msawahili. In answer to the question, Where did the cholera come from, and what course did it take? he said it was taken from the Masai country by caravans to Pangani, and from Pangani it was taken to Zanzibar. Mandara, the chief of Moche (an extraordinary man and very intelligent), who is about forming a marriage connection with Mbatiani, the great Nganga Chief of all the Masai, testified to the same effect. He said at once:—The cholera came to us from the Masai. It passed from west to east Harush; thence to Kahe and Taveta, and from these places it was conveyed to Chaga, by the people who are constantly going to and fro.

“A caravan which had been travelling in the Masai country for more than twelve months came into Taveta while I was there. The route the caravan had taken was one to the north of Mount Kenia: thence south-westwards to Njempsi, south of Baringo Lake, and thence in a south-easterly direction to Kilima-njaro and Taveta. The leaders said that they had not heard of cholera at the time in the Masai country; that is, in the regions over which they had travelled, but they knew of it as having raged among the Harush (west), two days west of Kilima-njaro, and therefore on the borders of the Masai country.

“Regarding the progress from Harush to the west the people all agreed. The little discrepancy between the leaders of this caravan and the statements of the others, I cannot but look upon as confirmatory evidence of the





general voice, more so than a strict agreement would have been. It will at any rate prove the independence of the testimony."

In a subsequent communication Mr. New says:—"The plague came from the Masai country, and it was conveyed by the Suaheli caravans from the Masai country to Pangani. From Pangani it proceeded among the Wadigo, and from the Wadigo it made its way over to Kisigan, and from Kisigan to Bura, on the north-west of Teita. Here again it seems to have run along the track of communication between the different peoples. The Masai caravans bring it to Pangani, and this place (Kisigan) having trading communication with the Wadigo, and the Wadigo with the Wateita, the disease is communicated from one place to another."

Mr. New, at the same time, investigated for me the course which the epidemic took at Ribe, where he was stationed at the time that the epidemic appeared at Mombassa. Ribe is situated in the Wanyika country at about fifteen miles distance to the west of Mombassa. Mr. New wrote as follows:—"The plague proceeded from Mombassa to Takaunga, conveyed thither by dhows, as it had been to Mombassa from Zanzibar. From Takaunga it proceeded inland in a north-westerly direction to Kauma, there being a great deal of intercourse between the people of these two places. From Kauma it proceeded in a southerly direction among the Wanyika, reaching first Chogni, then Jibana, then Kambe and Ribe, no doubt being communicated from one tribe to the other. There is constant intercourse between Kauma and Chogni; Chogni and Jibana; Jibana and Kambe, &c. Several of the people of our Mission were smitten, but no fatal cases occurred. Many of the Ribe people, however, were carried off."

Mr. New's account of the epidemic at Kisigan and Ribe is of great value, as these are the only two points on the

mainland of East Africa, from which the local spread of an epidemic has been investigated on the spot by a European.

Taveta was one of the earliest places attacked by the epidemic from the Masai country, and from it the disease spread at once to Chaga, there being daily communication between the two places. The distance from Taveta to Bura, due east, is about forty miles, little more than the same distance to the capital of Mandara in Chaga, but the epidemic reached Bura by an immense re-curve from Pangani, the distance traversed being at least five hundred miles. An epidemic, therefore, may start from a given point, and reach another point only forty miles distant by making a recurve of five hundred miles, and this must be in accordance with the true laws regulating the progress of epidemic disease. The spread of epidemic disease is not, therefore, necessarily in parallel lines of latitude and longitude. In reference to the laws regulating the spread of epidemic disease, dates and positions are in themselves of but little value. The information that epidemic cholera was present at Taveta at a given date, and at Bura, forty miles due east, three or four months afterwards, is of no value whatever as a *pair* of facts, having any direct lineal connection; but when we are acquainted with the fact that the people of Taveta and Teita had no friendly or commercial intercourse;—that the lines of communication were between Taveta and Pangani, and between Teita and Pangani, viâ Wadigo, then we can understand clearly how epidemic cholera may be at Taveta at a given date, and not reach Bura in Teita, forty miles distant, till three or four months after, making a circuit of five hundred miles. So in regard to Ribe, which is not more than half a day's distance from Mombassa. There is a pleasant sail up the creek, and an equally pleasant five miles' walk to Cheetham hill; but the epidemic did not

reach Ribe by this direct route; it went first north to Takaunga, and then returned by Chogni, Jibana and Kambe to Ribe, preferring the circuit of one hundred miles to the direct route of fifteen. The reason is obvious; the communication between Mombassa and Ribe direct, being occasional, while that between Ribe and Kauma is constant.

The course of the epidemic observed by Mr. New, at these two places, forms no exception to the general rule regarding the spread of epidemic disease in districts in Africa, and we may fairly come to the conclusion that the epidemic followed the same laws in all other places. To attempt to trace out the turnings and windings of the epidemic throughout such a vast area as it spread over in these regions would be futile. Mr. New traced the epidemic in the districts which he visited, with the utmost care, and without having a single theory regarding the distribution of cholera epidemics.

The leader of the caravan whom Mr. New met at Taveta had just returned from Samburu. Neither in going nor returning had he taken the same route as the Kisima caravan, but he had been in the very same district. His caravan had left Pangani for the interior, after the epidemic had entirely ceased at Pangani, and both there and at Zanzibar the epidemic was always spoken of as having come from the Masai country; and the western Harush on the frontier of the Masai country, was always associated, in name, with the epidemic, as the point where the first Pangani caravan was stricken. The leader naturally associated the origin of cholera with Harush-wa-ju in the Masai country. It is not at all likely that he would investigate, spontaneously, the origin of the disease while trading in Samburu, so that his not having heard of the epidemic there is nothing wonderful; indeed, Mr. New frankly told me that he would never have thought of in-

vestigating the track of the epidemic either at Ribe, Kisigan, or Taveta, had I not asked him to do so as a special favour; and after all he appears to have considered the matter of so little importance that he does not refer to the subject in the interesting volume which he afterwards published.¹ Such apparent indifference is not remarkable when we find that Dr. Livingstone, a member of the medical profession, makes but a very casual reference to the epidemic in Manyuema-land, and never attempts to trace it either in origin or progress.

The two leaders of the Kisima caravan, who informed me on the subject, were in the country when the Masai made their raid on the Soma-Gurra, and captured cholera, which, but for these murderous marauders, would probably have died out in the interior.

The information supplied by the leaders of the Pangani-Kisima caravan, furnishes us with the first date of the epidemic after its passage southwards from Abyssinia in July, 1866.

Epidemic cholera was in the country at about 1° N. lat., 38° W. long., in April, or May, 1869; and in Lytoketoke, near to Mount Kilima-njaro in August, 1869; and in October, 1869, it reached the coast town of Pangani, and was within one or two days from the island of Zanzibar.

The entire tract of country, generally known as the Masai country, was infected, from 1° N. lat. to nearly 6° S. lat., and from 34° to 39° W. long. The regions lying along the coast, generally known as the Galla country, were infected at a later period of the epidemic, and from Zanzibar.

Upon these extensive districts the epidemic appeared with the greatest intensity, and the mortality was described as appalling.

¹ *Life, Wanderings, and Labours in Eastern Africa*, by Charles New. Hodder and Stoughton, London, 1873.

The rate of progress of the epidemic through the country corresponds with the rate of travel of a people in flight towards their distant homes; and it is very different from the known rate of progress of the epidemic from Northern to Southern Abyssinia.

The Masai were the importers of the epidemic to eastern and Central Africa, south of the territories bordering on the Jub, and it may be interesting to ascertain by what means the epidemic was propagated, and kept in activity in their country. The dwellings of the Masai are skin-tents, and when on the march they carry only besides their arms a bullock's hide. Their food is beef, and their drink blood, sometimes mixed with milk. They wear no clothing whatever, and only women bearing children wear a goat-skin, all others being perfectly nude. Mandara, the chief of eastern Chaga, was in this state when visited by Mr. New, and he boasted that the absence of dress made people look manly. Mr. New says:—"We called for the other guide on the way, and found him busily engaged preparing for the trip [to Kilima-njaro]. Standing before his hut, he was receiving at the hands of his wife a thick covering of grease! He was a fine, tall, muscular fellow, quite a model, and absolutely without clothing! This scene brought to my mind the meeting of Ulysses with the Princess Nausicaa, on the shores of Phæacia, only that there was less of shame and delicacy, if not more innocence, in this than in the Homeric scene. Our arrival did not disconcert them in the least; the lubricating process went on till every part received its due proportion of grease, and the hero shone again." The process was equivalent to putting on an overcoat, and almost excludes the possibility of contamination by clothing.

CHAPTER VIII.

THE TRACK OF THE EPIDEMIC FROM THE MASAI COUNTRY TO CENTRAL AFRICA.

THE first intelligence of the epidemic in the Masai country reached Zanzibar in October, 1869, and the disease appeared in the island in November. Towards the end of January, 1870, a party of natives came to the town, and stated that a large and valuable ivory caravan from Ujiji had been attacked with cholera on the journey, and that so many deaths had occurred among the porters that it had been necessary to leave the ivory till additional men could be procured from Zanzibar. It was evident that some disaster had befallen the caravan, for a party of porters was despatched to convey to the coast the ivory which had been abandoned on the way.

This circumstance affords us the earliest date of the appearance of the epidemic on the great highway from Bagamoyo to Ujiji, the distance between the two places being about eight hundred miles.

Six months is the time occupied by a caravan in travelling from Bagamoyo to Ujiji, provided that there are no unusual obstructions on the way. While Mr. Stanley was at Ujiji he received, on the 13th December, letters which had been sent from Zanzibar, on the 11th June, by an ordinary trading caravan. Special messengers might make the journey in three or four months, the road being clear.

It is impossible to state at what precise point of the

road the caravan from Ujiji was attacked, but the epidemic must have been somewhere in the neighbourhood of Ujiji towards the close of 1869. On the presumption, therefore, that the caravan had been destroyed by epidemic cholera, it is evident that the disease could not have been communicated from Zanzibar to Ujiji by means of human intercourse, for the time could not admit of it, but that the track must have been in a different direction. This was actually the case, for the epidemic reached the district direct from the Masai country, by way of Kerewe and Tura.

During the early cholera months in Zanzibar, the rumours from the interior were apparently most conflicting. Reports reached the place from time to time regarding cholera in the interior, on the caravan route; various points of the road being stated as infected and intervening districts clear. We had thus, at a very early period of the epidemic the Ujiji road becoming a mass of difficulties and apparent contradictions, solely from the fact of a distinct branch of the epidemic having crossed it at more than one place. While the disease was steadily advancing from the coast towards the interior, another branch of the epidemic was advancing towards the coast from the interior, and also towards Ujiji.

The outbreaks of cholera at Ujiji and Zanzibar had no connection with each other, except as distinct branches of the same epidemic which ravaged the Masai country in 1869. In 1872 I was fortunate enough to meet an Arab from Unyanyembe, who had been long engaged in the ivory trade in connection with Kerewe. His statement was that the epidemic of cholera came from the Masai country to Kerewe, and from Kerewe to Tura. This explanation removed every difficulty from the subject, and it was seen how the epidemic, on the western third of the Ujiji road, could be extinct before the eastern third of the route was covered.

The track of the epidemic from the Masai country to Ujiji is very obvious, and we have again simply to follow the trade line.

It is well known that the Arabs settled at Unyanyembe have long had trading communications with Kerewe, situated at the south-eastern extremity of the district called "Victoria Nyanza." The Pangani caravans collect the ivory of the Masai country, lying between Samburu and Pangani, extending as far to the north-west as the shores of Baringo, and west to the sea of Ukara. The Brava caravans from the north collect the ivory and other produce of Samburu, and the adjoining Galla countries, and their operations generally lie on the river Jub and the neighbouring districts, and at Samburu they sometimes meet the Pangani traders.

Unyanyembe, however, is the great ivory depôt of Central Africa, and the traders collect ivory for the Zanzibar market from the entire surrounding country. Towards the south-east of the Victoria Nyanza the Unyanyembe traders take up the ground in the Masai country which has not been covered by the traders from Pangani. Kerewe is their centre of operations in this direction, and it has the same relation to the Unyanyembe caravans, that Harush, on the frontier of the Masai country, has to the Pangani caravans. Captain Burton says:—"The Arabs when visiting Ukerewe, or its neighbour (Mazita), prefer hiring the canoes of the Wasukuma, and paddling round the south-eastern extremity of the Nyanza, to exposing their property and their lives, by marching through the dangerous tribes of the coast. Mazita belongs to a people called Makwiya. Ukerewe is inhabited, according to some informants, by Wasukuma; according to others, the Wakerewe are marked by their language as ancient emigrants from the highlands of Karagwah. In Ukerewe, which is very populous, there are two brothers

who are Sultans: the chief is 'Machunda;' the second, 'Ibanda,' rules at Wiru, the head-land on the western limit. The people collect ivory from the races on the eastern mainland, and store it, awaiting an Arab caravan. Beads are in most request; as in Usukuma generally, not half-a-dozen cloths of native or foreign manufacture will be found upon a hundred men. The women are especially badly clad; even the adult maidens wear only the *languti* of India, or the Nubian apron of Aloe fibre, strung with the pipe-stem bead, called *sofi*, and blackened, like india-rubber, by use. It is fastened round the waist, and depends about one foot, by six or seven inches in breadth.

"The Arabs, who traffic in these regions, generally establish themselves with Sultan Machunda, and they send their slaves in canoes round the south-east angle of the lake to trade with the coast people. These races are successively from the south; the Washaki, at a distance of three marches, and their inland neighbours, the Wataturu; then the Warudi, a wild tribe rich in ivory, at about a fortnight's distance; and beyond them the Wahumba, or Wamasai. Commercial transactions extend along the eastern shore as far as T'hiri, a district between Ururu and Uhumba. . . . The savagery of the races, adjacent to the Nyanza, has caused accidents to travelling traders. About five years ago a large caravan from Tanga, on the eastern coast, consisting of four hundred or five hundred guns, and led by Arab merchants, at the end of a journey which had lasted nearly two years, happened to quarrel with the Wahumba, or Wamasai, near the lake. The subject was the burning down of some grass required for pasture by the wild men. Words led to blows; the caravan having but two or three pounds of gunpowder, was soon dispersed; seven or eight merchants lost their lives, and a few made their escape to Unyanyembe. Before our departure from Kazeh, the slaves of Salem-bin-Rashid,

having rescued one of the wounded survivors, who had been allowed by the Masai to wander into Urudi, brought him back to Kazeh. He described the country as no longer practicable. In 1858 also, the same trading party, the principal authority for these statements, were relieved of several bales of cloth during their sleep, when bivouacking upon an inhabited island near the eastern shore.

“The Wataturu extend from the Mangewa district, two marches northward of Tura, in a north north-westerly diagonal, to Usmao, a district of Usukuma, at the south-east angle of the Nyanza lake. On the north and east they are limited by the Wahumba, on the south by the people of Iramba, and there is said to be a connection between these three tribes. This wild pastoral people were formerly rich in flocks and herds, and they still have the best asses in the country. About five years ago, however, they were persuaded by Msimbira, a chief of Usukuma, to aid him against his rival, Mpagamo, who had called in the Arabs to his assistance. During the long and bitter contest which ensued, the Arabs were worsted in the field, and the Wataturu suffered severe losses in cattle. Shortly before the arrival of the expedition at Kazeh, the foreign merchants had despatched to Utaturu a plundering party of sixty slave musketeers, who, however, being suddenly attacked by the people, were obliged to fly, leaving behind them eighteen of their number. This event was followed by a truce, and the Wataturu resumed their commerce with Tura and Unyanyembe, where, in 1858, a caravan, numbering about 300 men, came in.

“Two small parties of this people were also met at Tura; they were small, dark and ugly savages, almost beardless, and not unlike the ‘Thakur’ people in Maharattaland. Their asses, provided with neat saddle-bags of zebra-skin, were better dressed than the men, who wore no clothing, except the simplest hide sandals. According to

the Arabs, this clan affects nudity, and even adult maidens dispense with the usual skin-kilt. The men ignored bow and arrows, but they were sufficiently armed with long spears, double-edged swords, and heavy hide shields. They brought calabash, or monkey-bread flour—in this country as in Ugogo, a favourite article of consumption—and a little coarse salt, collected from the dried mud of a mbuga, or swamp, in the land of Iramba, to be bartered for holcus and beads. Their language sounded, to the unpractised ear, peculiarly barbarous, and their savage suspiciousness rendered it impossible to collect any specimens.”¹

The caravan route from Unyanyembe to Kerewe, like all others in East Africa, is constantly liable to interruption from disturbances in the country, but it has been open to traffic for a considerable time. In January, 1875, Mr. Stanley encountered the Wataturu on his march, and had it not been for a goodly number of Snider rifles, the expedition would have come to an untimely end.

When internal wars render the country unsafe, the traders endeavour to reach their depôts by making a détour so as to avoid the disturbed districts.

Dasikera, the place where one detachment of a Pangani caravan perished from cholera, is at no great distance from Kerewe, and is close upon the territory from which the Unyanyembe traders at Kerewe collect their ivory. It is only two days' march from the important trading station, Nda-Serian, on the Pangani route to Ukara. For reasons stated by Captain Burton, the traders from Pangani and Unyanyembe do not cross the district lying between Ukara and Kerewe, but they collect the ivory of the district at both these places by means of the natives. It was in this region that the epidemic, probably in July or August, 1869, raged with the greatest intensity, and it would be difficult

¹ Burton, *Lake Regions*, vol. ii. p. 221.

to imagine how the people of Uhumba, T'hiri and Urudi could escape. We are not left to any conjecture on the subject, for there was an Arab caravan at Kerewe at the time when the epidemic reached that place from the Masai country.

From Kerewe the epidemic followed the caravan route to Tura, and from thence the Ujiji road was infected. It is quite correct that at this time the district between Tura and Usagara was not infected, the epidemic from Zanzibar not having passed beyond the latter place in its progress inland. Trading parties from the interior were attacked in January and February at Usagara on their way to the coast.

In August, 1870, while writing on the extension of the epidemic towards Central Africa, I expressed the opinion that cholera had not reached Ujiji, the reports current at Zanzibar having been so very conflicting in their nature.

Having been busily engaged during the prevalence of the epidemic in Zanzibar, I had neither time nor opportunity for investigating the matter, but from information received from the trading party at Kerewe, there can be no doubt but the epidemic followed the track described.

The caravan route from Unyanyembe to Ujiji is too well known to require description. It is the frequented highway to Central Africa from the east coast.

At the time of the cholera epidemic, there was a general rush of the ivory traders to the country to the west of Lake Tanganyika, where the late Dr. Livingstone happened to be at the time, and trading parties from Unyanyembe and Ujiji were hastening towards the newly discovered ivory fields. The nearest route from Ujiji to the Manyema country is across the Lake Tanganyika, but large bodies of traders were met by Dr. Livingstone to the south of Lake Tanganyika. At that time the whole

country to the west, and to the north and south of Tanganyika was being traversed by the ivory traders. It is most probable that the epidemic entered the Manyuema country with traders who crossed the Lake Tanganyika from Ujiji, but the country to the south of Tanganyika may have been infected from Unyanyembe. The next unquestionable trace that we get of the epidemic is from the "Last Journals" of Dr. Livingstone, from which I shall extract everything relating to it.

In the course of his explorations, Dr. Livingstone returned to Bamarré, in Manyuema-land, on the 19th of December, 1869, and started due north to reach another part of the Lualaba, and to purchase a canoe. He says:—"While we were away a large horde of Ujijians came to Bamarré, all eager to reach the cheap ivory, of which a rumour had spread far and wide; they numbered five hundred guns, and invited Mohamad to go with them, but he preferred waiting for my return from the west." At that time there was quite an ivory fever in Ujiji and Unyanyembe, and large bodies of men had been pouring into Manyuema-land from these places in quest of ivory.

On the 26th December, the day on which Dr. Livingstone and the company started, he says:—"I get fever severely, and was down all day, but we march, as I have always found that moving is the best remedy for fever. I have, however, no medicine whatever. We passed over the neck of Mount Kinyima, north-west of Moenékuss, through very slippery forest, and encamped on the banks of the Lulwa rivulet."

December 28th.—"Away to Monangoi's village, near the Luamo River, here 150 or more yards wide, and deep."

December 29th, 30th, and 31st.—"Heavy rains. The Luamo is called the Luassé above this. We crossed in canoes."

January 3rd.—"We marched five hours through forest,

and crossed three rivulets, and much stagnant water which the sun, by the few rays he darts in, cannot evaporate."

January 5th, 6th, and 7th, 1870.—"Wettings by rain and grass overhanging our paths, with bad water, brought on *choleraic* symptoms; and opium from Mohamad had no effect in stopping it: he, too, had rheumatism. On suspecting the water as the cause, I had all I used boiled, and this was effectual, but I was greatly reduced in flesh, and so were many of our party."

On the 13th he says:—"Through the hills Chimunémuné; we see many albinos and partial lepers, and syphilis is prevalent. It is too trying to travel during the rains."

January 15th.—"Choleraic purging again came on till all the water used was boiled, but I was laid up by sheer weakness near the hill Chanza." No entry in the journal occurs for the next five days.

January 20th and 21st.—"Weakness and illness goes on because we get wet so often; the whole party suffers, and they say that they will never come here again. The Manyango rivulet has fine sweet water, but the whole country is smothered with luxurious vegetation."

January 27th, 29th, and 30th.—"Rest from sickness in camp. The country is indescribable from rank jungle of grass. . . . I had ere this come to the conclusion that I ought not to risk myself further in the rains in my present weakness, for it may result in something worse, as in Marungu and Liemba. The horde mentioned as having passed Bamarré was now somewhere in our vicinity, and it was impossible to ascertain from the Manyema where the Lualaba lay."

The journey was continued during rains and through marshes till the 7th February, when, knocked up and exhausted, he went into winter quarters at Mamohela. He then says:—"Rest, shelter, and boiling all the water I

used, and above all the new species of potato, called nyumbo, much famed among the natives as a restorative, soon put me all to rights."

February 13th.—"I was too ill to go through mud, waist deep, so I allowed Mohamad (who was suffering much) to go away alone in search of ivory. As stated above, shelter and nyumbo proved beneficial." At Mamohela, Katomba's camp, he remained from the 7th February till the 26th of June. "The rains had continued into June, and fifty-eight inches fell."

June 26th.—"Now my people failed me; so, with only three attendants, Susi, Chuma, and Gardner, I started off to the north-west for the Lualaba."

The journey was continued till July, when he returned to Bamarré. He says:—"For the first time in my life my feet failed me, and now having but three attendants it would have been unwise to go further in that direction. Instead of healing quietly, as heretofore, when torn by hard travel, irritable-eating ulcers fastened on both feet, and I limped back to Bamarré on the 22nd" [July].

At Bamarré he was laid up on account of illness for eighty days, till October 12th. During that interval a few entries occur in his "Journals" relative to his illness. On the 24th August he says:—"The severe pneumonia in Marunga, the *choleraic* complaint in Manyuema, and now irritable ulcers warn me to retire while life lasts."

August 25th.—"This Manyuema country is unhealthy, not so much from fever as from debility of the whole system, induced by damp, cold and indigestion. This general weakness is ascribed by some to maize, being the common food; it shows itself in weakness of bowels, and *choleraic* purging. This may be owing to bad water, of which there is no scarcity, but it is so impregnated with dead vegetable matter, as to have the colour of tea. Irritable ulcers fasten on any part abraded by accident,

and it seems to be a spreading fungus, for the matter settling on any part near becomes a fresh centre of propagation. . . . Rheumatism is also common, and it cuts the natives off. The traders fear these diseases, and come to a stand if attacked, in order to use rest in the cure."

September 26th.—"I am now able to report the ulcers healing. For eighty days I have been completely laid up by them, and it will be long ere the lost substance will be replaced. They kill many slaves; and an epidemic came to us which 'carried off thirty in our small camp.'¹

¹ ["A precisely similar epidemic broke out at the settlement at Magomero, in which fifty-four of the slaves liberated by Dr. Livingstone and Bishop Mackenzie died. This disease is by far the most fatal scourge the natives suffer from, not even excepting small-pox. It is common throughout Tropical Africa.

"We believe that some important facts have recently been brought to light regarding it, and we can only trust sincerely that the true nature of the disorder will be known in time, so that it may be successfully treated: at present change of air, and high feeding on a meat diet, are the best remedies we know."—ED. of Livingstone's "Last Journals."]

No other entry occurs till *October 4th, 1870.*—"A trading party from Ujiji reports an epidemic raging between the coast and Ujiji, and very fatal. Syde-bin-Habib and Dugumbé are coming, and they have letters and perhaps people for me, so I remain, though the irritable ulcers are well-nigh healed."

October 10th.—"I came out of my hut to-day, after being confined to it since the 22nd July, or eighty days, by irritable ulcers on the feet. The last twenty days I suffered from fever, which reduced my strength, taking away my voice and purging me. My appetite was good, but the third mouthful of food caused nausea and vomiting—purging took place and profuse sweating; it was choleraic,

and how many Manyuema died of it we could not ascertain. While this epidemic raged here, we heard of cholera terribly severe on the way to the coast. I am thankful to feel myself well. . . . The rain water does not percolate far, for the clay retains it about two feet beneath the surface: this is a cause of unhealthiness to man. Fowls and goats have been cut off this year in large numbers by an epidemic.

On the *8th December* the following entry occurs:—
“Suleiman-bin-Juma lived on the main-land, Mosessamé, opposite Zanzibar: it is impossible to deny his power of foresight, except by rejecting all evidence, for he frequently foretold the deaths of great men among Arabs, and he was pre-eminently a good man, upright and sincere: ‘Thirti,’ none like him now for goodness and skill. He said that two middle-sized white men, with straight noses, and flowing hair down to the girdle behind, came at times, and told him things to come. He died twelve years ago, and left no successor; he foretold his own decease three days beforehand by cholera.” It appears that Suleiman foretold his own death three days before the event occurred, when the population of the town in which he lived, and that of all the coast towns opposite Zanzibar, was being decimated by the cholera epidemic of 1858.

December 23rd, 1870.—“Bambarré people suffer hunger now because they will not plant cassava.”

24th.—“Between twenty-five and thirty slaves have died in the present epidemic, and many Manyuema; two yesterday at Kandawara. The feet swell, then the hands and face, and in a day or two they drop dead; it came from the east, and is very fatal, for few escape who take it.”

Dr. Livingstone remained at Bambarré, waiting for the arrival of the Zanzibar caravan, with expected letters and a fresh complement of men. The following entries occur in his Journals:

January 28th, 1871.—"A safari, under Hassani and Ebed, arrived with news of great mortality by cholera (Towny) at Zanzibar. [Between August and October, 1870, he heard of it on the caravan route between Ujiji and the coast] The men I wrote for have come to Ujiji, but did not know my whereabouts. When told by Katomba's men they will come here and bring my much longed for letters and goods. Seventy thousand victims in Zanzibar alone from cholera, and it spread inland to the Masai, and Ugogo! Cattle shivered and fell dead: the fishes in the sea died in great numbers; here the fowls were first seized and died, but not from cholera, only from its companion. Thirty men perished in our small camp, made still smaller, by all the able men being off trading at the Metamba, and how many Manyuema died we do not know; the survivors became afraid of eating the dead.

"Formerly, the cholera kept along the seashore; now it goes far inland and will spread all over Africa; this we get from Mecca filth, for nothing was done to prevent the place being made a perfect cesspool of animals' guts and ordure of men. A piece of skin bound round the chest of a man, and half of it hanging down, prevents waste of strength, and he forgets and fattens."

It is extremely difficult to make out the connection of the preceding sentences, and others which follow, although relating to a different subject, are also somewhat unintelligible.

On the *4th February* he writes:—"Ten of my men from the coast have come near to Bamarré and will arrive to-day. . . . I propose to leave on the 12th."

13th.—"Mabruki being seized with choleraic purging detains us to-day."

16th.—"Started to-day. Mabruki, making himself out very ill, Mohamad roused him by telling him I travelled when much worse."

On the 18th *May*, 1871, he writes :—"When baffled by untoward circumstances the bowels plague me too, and discharges of blood relieve the headache, and are as safety valves to the system."

On the 20th *July* he started, on the return journey, for Ujiji, and on the 26th the following entry occurs :—"Four men passed us in hot haste to announce the death of a woman at their village to their relatives living at another. I heard of several deaths lately of dysentery. Pleurisy is common from cold winds from N.W. Twenty-two men with large square black shields, capable of completely hiding the whole person, came next in a trot to receive the body of their relative, and all her gear, to carry her to her own home for burial—about twenty women followed them, and the men waited under the trees till they should have wound the body up and wept over her."

On the 23rd *September*, when near Ujiji, he writes :—"I was sorely knocked up by this march from Nyāngwé back to Ujiji. In the latter part of it I felt as if dying on my feet. Almost every step was in pain; the appetite failed, and a little bit of meat caused violent diarrhœa; whilst the mind, sorely depressed, acted on the body. All the traders were returning successful: I alone had failed, and experienced worry, thwarting and baffling when almost in sight of the end for which I strained."

The above extracts embody every possible reference made by Dr. Livingstone to the great epidemic of cholera which swept over Manyuema-land, and contiguous districts in Central Africa.

In these extracts made from Dr. Livingstone's "Journals," it will be observed that he used the terms "choleraic symptoms," "choleraic purging," and "cholera," as synonymous terms, and this leads to very great confusion. The entries in the "Journals" were made on the dates under which they appear, and several of the later entries are merely ex-

planatory of those formerly made; but even with these it is impossible to determine with certainty the precise period at which he encountered the epidemic in Manyuema-land.

The first reference to choleraic symptoms appears on the 5th, 6th, and 7th January, 1870, and a break occurs on the 13th of February. He ascribes this choleraic complaint to constant wettings and the drinking of impure water, and he states that the party was suffering from weakness and illness. No information is given concerning the nature of the weakness and illness in the camp, and we can only infer that it may have been similar to that of Dr. Livingstone himself;—weakness and illness from choleraic symptoms. There is no reference to any epidemic of a choleraic complaint amongst the natives of the country, nor to any mortality amongst them, or the people belonging to the Arab camp. We only know that Dr. Livingstone recovered from the choleraic complaint by rest, shelter, boiling all the water used, and by the use of a new species of potato, held in high estimation among the people as a restorative.

From the 13th of February to the 24th of August no entry occurs in his "Journals" regarding his choleraic complaint, but at that date he makes reference to his illness in Manyuema-land, which he describes as having been choleraic, and he endeavours to trace it to its cause:—"The Manyuema country is unhealthy from debility of the whole system, induced by damp, cold and indigestion: it shows itself in weakness of bowels and choleraic purging. This may be owing to bad water."

The next entry of importance is made a month after, on the 26th of September, as follows:—"I am now able to report the ulcers healing. For eighty days I have been completely laid up by them and it will be long ere the lost substance will be replaced. They kill many slaves; and

an epidemic came to us which carried off thirty in our small camp."

These entries may be regarded as all the original entries regarding an undoubted epidemic of cholera in Manyuema-land, those which follow being merely supplementary and explanatory.

The question as to whether the epidemic of cholera reached the Manyuema country in January, 1870, is not determined by any definite statement made by Dr. Livingstone, but the absence of a definite statement on the subject can scarcely be admitted as negative evidence, for the terms choleraic purging and cholera are employed synonymously.

It is not at all improbable that epidemic cholera entered the Manyuema country in January, 1870, for the epidemic must have been on the Ujiji road in October, 1869, and at that time there was a general rush to Manyuema-land in search of cheap ivory. Arab merchants and natives from Unyanyembe and Ujiji, and from all the surrounding districts were hastening towards the newly discovered ivory fields; and Dr. Livingstone, before any reference is made to his choleraic complaint, says:—"A large horde of Ujijians came to Bambarré, all eager to reach the cheap ivory, of which a rumour had spread far and wide; they numbered five hundred guns." This was merely one party, and several thousands of people must have entered the country to the west and south of Lake Tanganyika in November and December, 1869. When Livingstone was seized with choleraic symptoms, and when there was much sickness in the camp, he seems to have been following the track of the Ujijian horde.

In discussing the question as to the date of the appearance of the epidemic in the Manyuema country, the difficulty does not consist in ascertaining how the epidemic could reach the country at the beginning of January, 1870,

but how the settlement of Bambarré and the neighbouring districts could escape, with an epidemic of cholera on the high-road to Ujiji, and a stream of people passing along it to the Manyuema country. Apart altogether from any reference made by Dr. Livingstone, the probability of the epidemic entering the country at this early date is very apparent ; still the dreadful march of himself and his party through the Manyuema swamps during the heavy tropical rains, the great hardships which he endured, the privations from want of proper food and water, the latter being dark like an infusion of tea, would be sufficient to account for a severe attack of diarrhœa, and for weakness and sickness in the camp. Choleraic purging, he remarks, is common in the Manyuema country, and it appears to have been prevalent while he was there ; but although he does not speak of it at the time, as an epidemic, it is extremely probable that it was so.

The phraseology of Dr. Livingstone is sometimes very indefinite, and somewhat misleading. In his entry of the 26th September, while speaking of ulcers, he says :—" They kill many slaves ; and an epidemic came to us which carried off thirty in our small camp." The obvious meaning, apart from the context, is that an epidemic of ulcers carried off thirty men in the camp. The editor of the " Journals " evidently attached this meaning to it, for he appends a note stating that " a precisely similar epidemic broke out at the settlement at Magomero, in which fifty-four of the slaves liberated by Dr. Livingstone and Bishop Mackenzie died."

It will be seen, however, from the quotations made from Dr. Livingstone's " Journals," that the epidemic of which he speaks was an epidemic of cholera, and not an epidemic of ulcers. The entry of the 27th January, 1871, makes this clear, for the Doctor in speaking of the epidemic of cholera says :—" Thirty men perished in our

small camp, made still smaller by all the able men being off trading at the Metamba; the survivors became afraid of eating the dead."

The Rev. Horace Waller throws a considerable amount of darkness, instead of light, on the somewhat obscure passage of Dr. Livingstone, and lays the Doctor open to the suspicion of having mistaken at first an epidemic of cholera for an epidemic of ulcers. Dr. Livingstone could not have been so confused in his medical ideas as to have confounded ulcers and cholera, but his editor clearly lays him open to this charge, unless it be the case that thirty men died from epidemic ulcers, and thirty from epidemic cholera. The blunder is evidently that of the editor himself, and the original passage should have stood thus:—"I am now able to report the ulcers healing. For eighty days I have been completely laid up by them, and it will be long ere the lost substance will be replaced; they kill many slaves. An epidemic came to us which carried off thirty in our small camp." The editor states also in his note regarding ulceration:—"This disease is by far the most fatal scourge the natives suffer from, not even excepting small-pox. It is common throughout tropical Africa."

Having investigated this disease years ago I can only say, in reference to the entire note, in the words of the elder Horace,

". . . . *Credat Judæus Apella,
Non ego.*"

There is no disease in East Africa so fatal in its ravages as small-pox. If epidemic ulceration is the most fatal scourge that the natives of tropical Africa suffer from, not even excepting small-pox, it is singular that such epidemics should have entirely escaped my notice. I have conversed with natives from all the districts between Guardafui and the Zambezi, Zanzibar and Manyema-

land, regarding the diseases of the country without ever having heard of these fatal epidemics of ulcers. In Zanzibar there are thousands of people from the Nyassa district, near to Magomero where the fatal ulcer epidemic is said to have raged, but I never heard of it. Shortly before that time, however, there was a fatal epidemic of cholera on the East Coast of Africa; that which has already been described as the epidemic of 1858-59. Captain Burton details its ravages at Kilwa, the great emporium of the slave trade on the East Coast, and a place in constant communication with the Nyassa region. The inland track of the cholera epidemic of 1859 was lost sight of at Kilwa, but it is almost certain to have extended to the interior along the slave-caravan routes. The ulcer epidemic at Magomero would occur at about the same time that the cholera epidemic would have reached that place, and Mr. Waller probably mistook the epidemic of cholera for an epidemic of ulcers, a mistake identical with that regarding the epidemic at Bamarré.

Dr. Livingstone describes this form of ulceration as follows:—

July, 1870.—"For the first time in my life my feet failed me. . . . Instead of healing quietly as formerly, when torn by hard travel, irritable ulcers fastened on both feet, and I limped back to Bamarré on the 22nd.

July 23rd.—"The sores on my feet now laid me up as irritable eating ulcers. If the feet were put to the ground, a discharge of bloody ichor flowed, and the same discharge happened every night with considerable pain, that prevented sleep: the wailing of the slaves tortured with these sores is one of the night sounds of a slave camp: they eat through everything, muscle, tendon, and bone, and often lame permanently if they do not kill the poor things. Medicines have very little effect upon such wounds: their periodicity seems to indicate that they are allied to fever.

The Arabs make a salve of bees'-wax and sulphate of copper, and this applied hot, and held on by a bandage affords support, but the necessity of letting the ichor escape renders it a painful remedy. I had three ulcers and no medicine. The native plan of support by means of a stiff leaf or bit of calabash was too irritating, and so they continued to eat in, and enlarge in spite of everything: the vicinity was hot, and the pain increased with the size of the wound.

August 25th, 1870.—“ Irritable ulcers fasten on any part abraded by accident, and it seems to be a spreading fungus, for the matter, settling on any part near, becomes a fresh centre of propagation. The vicinity of the ulcer is very tender, and it eats frightfully if not allowed rest. Many slaves die of it, and its periodical discharge of bloody ichor makes me suspect it to be a development of fever. I have found lunar caustic useful: a plaister of wax, and a little finely-ground sulphate of copper is used by the Arabs, and so is cocoa-nut oil and butter. These ulcers are excessively intractable; there is no healing them before they eat into the bone, especially on the shins.”

There are several varieties of ulcers common in East Africa, but the most severe are the rodent and the sloughing ulcer.

The heretofore undescribed sloughing ulcer of East Africa, called “donda-ndugu;” the “brother's ulcer;” or, “the ulcer that clings to one like a brother,” is certainly the most dreadful form of ulceration I have ever seen.

Captain Burton makes mention of this form of ulceration in his works on East Africa, and the disease closely resembles his description of the Yemen ulcer of Arabia. Captain Burton says:—“Ulcers are common in El-Hejaz, as indeed all over Arabia. We read of them in ancient times. In A.D. 504, the poet and warrior, Amr-el-Kays,

died of this dreadful disease, and it is related that when Mohammed-Abu-See-Mohammed, in A.H. 132, conquered Yemen with an army from El-Hejaz, he found the people suffering from sloughing and mortifying sores, so terrible to look upon that he ordered the sufferers to be burnt alive. Fortunately for the patients, the conqueror died suddenly before his mandate was executed. These sores here, as in Yemen, are worst upon the shin bones. They eat deep into the leg, and the patient dies of fever and gangrene. They are treated, on first appearance, by the actual cautery, and when practicable by cutting off the joint. The drugs popularly applied are Tutiya (tutty) and verdigris. There is no cure but rest and generous diet, and change of air."¹

This formidable disease was the first which I had to encounter in Zanzibar in 1865—66, and out of a local population of about five hundred negroes there were about fifty on the sick list, many of whom suffered from it. Several of the cases were of the severest type, and the disease surpassed in loathsomeness anything that I had ever seen or read of, with the exception of cancer.

This disease, when first seen, is generally in the form of a large slough, and the account given by the patient, regarding the progress of the disease is almost incredible, owing to the rapidity of development. I had opportunities of seeing a few cases in the early stage, and before the surface was broken, and in one case I made an incision with the bistoury. The incision simply exposed an extensive slough, deep-seated, and extending beneath the tendo achilles. The case was instructive as it showed how a patient, not under treatment before, might suddenly present himself with a large open, sloughing sore. In severe cases, the disease advances with wonderful rapidity; tendons are laid bare and slough, and the bone is denuded

¹ *Pilgrimage to Mecca and Medina*, vol. ii. p. 183.

of periosteum. At each time the sores were dressed, large portions of slough had to be removed with the scissors, and they were so loathsome in appearance and odour that the negroes would not assist me in dressing the sores of the diseased.

In a few cases death resulted from sudden hæmorrhage ; in some, from extreme exhaustion, and the greater number of those who recovered were permanently lamed. No one can be long in Zanzibar without seeing on the shin bones, near the tendo achilles, or on the foot, the marks of this formidable disease. The disease is not confined to slaves, but is common to all who are similarly exposed, whether they are bond or free, African or Arab. I never saw a case of the disease above the knee, nor in the hands or arms. It is always situated in the parts exposed, while the natives are travelling with bare feet and legs through mud and water. The disease probably depends on the development of larvæ, from ova deposited by some species of insect.

It would be out of place to describe the disease at greater length ; but, in regard to mortality it is not for a moment to be compared with the dreadful ravages of small-pox, and it ranks but low as one of the causes of death in East Africa.

A considerable number of people may suffer from this disease at the same time, and in the same place, but in no case does it ever assume an epidemic form, unless such diseases as tape-worm are to be considered as epidemic.

Dr. Livingstone seems to have suffered from the rodent ulcer, which is invariably multilocular, the sloughing ulcer, or rather sore, the donda-ndugu, being almost universally unilocular.

For eighty days Dr. Livingstone was a prisoner in his hut at Bamarré from this dreadful disease, and the suffer-

ing endured by him during this long period must have been most severe. While confined in his hut, epidemic cholera was decimating the population, and he could only have known of its ravages by report, and very probably he was but imperfectly informed regarding the nature of the epidemic, for he speaks of it only as an epidemic when he makes his first entry in his "Journals" regarding it.

That the epidemic mentioned on the 26th of September could not have been an epidemic of ulcers is most obvious from the entry which immediately follows on the 10th of October, in which he says:—"My appetite was good, but the third mouthful of any food caused nausea and vomiting; purging took place and profuse sweating; it was choleraic, and how many Manyuema died of it we could not ascertain. While this epidemic raged here, we heard of cholera terribly severe on the way to the coast."

Although it is somewhat doubtful whether or no the epidemic entered the country to the west of Ujiji at the beginning of 1870, it is perfectly certain that it must have been there between the 22nd of July and the 10th of October. During this interval, while cholera was raging in the neighbourhood of Bambarré, a trading party from Ujiji brought to that place intelligence of a fatal epidemic of cholera which was raging between the coast and Ujiji, but no mention is made of the precise locality where the epidemic was at the time. On the 27th of January, 1871, a year after the first mention of a choleraic complaint, another trading party arrived with the first news of the great mortality from cholera at Zanzibar, and Dr. Livingstone was informed that the epidemic had extended inland as far as Ugogo and the Masai country.

From these two entries it is apparent that the Ujiji road must have been infected at different times. By the first party no mention was made of the epidemic at Zanzibar, and probably nothing was known of it as existing there,

for Dr. Livingstone would most assuredly enquire regarding all the news of Zanzibar. The epidemic reported as raging between Ujiji and the coast would be that branch of the epidemic which extended from the Masai country to Kerewe and Tura; and the epidemic reported on the 27th of January, 1871, as having extended as far inland as Ugogo, would be the inland extension, along the Unyanyembe caravan route from Zanzibar. Without the knowledge of the direct extension of the epidemic from Kerewe to Tura, it would be impossible to connect the epidemic at Zanzibar with that which appeared in the Manyuema country as described by Dr. Livingstone; and it would be equally impossible to reconcile the different statements made regarding the chronology of the epidemic on the caravan route from Zanzibar to Ujiji.

The full force of the epidemic, in the neighbourhood of Bamarré, seems to have been expended prior to October, 1870, for at that date he speaks of it as a thing of the past. When the news reached him in January, 1871, of the epidemic at Zanzibar, and of its extension inland to Ugogo, he remarks:—"Now it goes far inland and will spread all over Africa." He evidently expected a fresh diffusion of the epidemic from Zanzibar, just as we at Zanzibar had fears regarding a re-appearance of the epidemic from the interior of Africa, along the same route.

The epidemic continued in the district of Bamarré till about the 13th of February, 1871, at which date the last reference is made to choleraic purging.

The symptoms of the disease, as described by Dr. Livingstone, may be stated in very few words, as choleraic purging:—"The feet swell, then the hands and face, and in a day or two they drop dead: it came from the east, and is very fatal, for few escape who take it."

The information supplied by Dr. Livingstone, regarding the Central African extension of the epidemic, is not so

full as might have been expected, but it must be borne in mind that the entries in his "Journals," even if given without curtailment, are merely memoranda of passing events; and that, had his life been prolonged, the records of his travels would have appeared in a very different form. Having been confined to his hut while the epidemic was raging in the district, and being without medicine of any description, it is probable that he may not have seen a single case of the disease, and hence his description of the symptoms would merely be from information derived from the natives. Swelling of the feet, hands and face, followed by sudden death in a day or two, were not, in any case, the symptoms of the disease as observed by me in the island of Zanzibar, and the simple report of an epidemic marked by such symptoms would not lead anyone to suppose that the epidemic was one of cholera.

Regarding this, however, there can be no doubt whatever, for the natives reported a great epidemic of cholera in the country of the Manyuema, and also at Cazembe's, and among the Wabisa. The epidemic was general over the entire region, and the mortality was very great.

It is not possible to give any reliable report regarding the track of the epidemic throughout Manyuema-land. When reports reached Zanzibar first concerning that country, nothing whatever was known regarding it, the territory being new to the Arabs as it was to the Europeans. Trading caravans had never been previously sent into that country from the East Coast, and it was an entirely new field for both traders and explorers.

In the absence of definite information regarding the progress of the epidemic in the Manyuema country, we can only form a general idea regarding it, from considering the state of the population of the region.

From the "Journals" of Dr. Livingstone, and also from native reports, we learn that Manyuema-land, and all the

adjacent regions, are densely populated. "The number of the people is prodigious; the country literally swarms with people, and a chief's town extends upwards of a mile." Immense tracts of country in Africa represented by blanks on our maps, and supposed to be sandy deserts without a single human habitation, are teeming with a population much greater than that of the richest agricultural districts of England.

Society in Manyuema-land is peculiarly constituted, and the political institutions of the country have a remarkable similarity to those of the republican Gallas of the province of Goodroo, close to Southern Abyssinia. Moenekuss, "King Grey parrot," exercises sovereign sway at Bambarré, but in other regions there is no settled government. Every headman of four or five huts is a mologhwe or chief, and glories in being called so; but his dominion may shrink to the limits of his own hut, and his subjects to those of his own family. In Manyuema-land and Goodroo we have examples of the purest republics in the world, a perfect paradise for Communists and Socialists.

Although the country is densely populated, the people do not seem to travel far, more especially the male section of the community, and they seldom pass the limits of their own village and neighbouring district of land. When it is necessary to do so, the travelling is done by the women in precisely the same manner as by the women of the Galla country.

Exchange of commodities is accomplished by means of periodical markets or fairs, which are held every eight or ten miles from each other; and to these the people come from afar. These markets are as great institutions in Manyuema-land as they are in Abyssinia and the republic of Goodroo, and visiting the markets is the same as shopping among the civilized. Every purchase and sale is effected at the public markets. To attend the markets the

women may travel with safety beyond their own districts, but the men cannot do so without incurring the risk of being killed. The women have a safe pass to and from the markets with their goods, and this arrangement is necessary for commercial reasons.

The territory has been visited by traders both from the East and West Coast; but it would appear that heretofore the entire trade has been done by middle-men, and there is no regular caravan track through the country. Part of the products of the country finds its way to the east coast, and part to the west coast; and in a commercial point of view it resembles the Galla country on the upper Jub, where a portion of the produce reaches the European markets by the Red Sea, and another portion by the Indian Ocean.

Such districts of country, which may be called trade-sheds, neutral regions, the commerce of which flows in opposite directions, are invariably the least known, and they form barriers most difficult to be crossed by either trader or traveller, as in the upper Jub, Samburu, and Ukerewe.

The Manyema are certainly the most remarkable people who have ever been described by any traveller, ancient or modern. They are at one time represented as a very superior race of people, with a fine physique, and phrenological appearances indicative of a high mental endowment. They are also stated to be very industrious, strictly honest, possessed of a strong love of country and liberty, and of such an exquisitely-balanced sensitivity that they die of broken hearts when deprived of their liberty; yet the Manyema are certainly the most brutal and degraded people that exist, or that ever existed on the face of the earth. Dr. Livingstone himself says:—"The Manyema are the most bloody, callous savages I know; one puts a scarlet feather from a parrot's tail on the ground, and

challenges those near to stick it in the hair; he who does so must kill a man or a woman! Another custom is that none dare wear the skins of the Musk cat unless he has murdered somebody; guns alone prevent them from murdering us all, and for no reason either." Amongst these people the most brutal and cold-blooded murders are of common occurrence, and the relatives of the murdered person are satisfied with the payment of a goat or two; and the chief reason why such payment is demanded, seems to be because the relations have been deprived of their rights of eating the dead body of the murdered person; for they are not only a race of murderers, they are a nation of cannibals. Murder is with them one of the fine arts. Dr. Livingstone met a dandy adorned with a number of human jaw-bones suspended from his neck. This Manyuema *exquisite* said that he had killed and devoured their late owners; and he described the delicate process of cutting up, and dividing, Manyuema fashion, the quarters of the dead.

Some savages devour the bodies of their enemies slain on the battlefield; but it is only amongst Africans that murder and cannibalism are reduced to a system, and recognized as public institutions. When those of the Neam-Nam tribe are supposed to be moribund, their relatives give them the *coup de grâce*, and place their members on the spit, and in the cooking-pot; but the Manyuema are more aristocratic in their tastes, as they are in their appearance, and being noted gourmands they prefer their meat high in flavour. Dr. Livingstone says:—"They are said to bury a dead body for a couple of days in the soil in a forest, and in that time, owing to the climate, it soon becomes putrid enough for the strongest stomach."

The Manyuema people disposed of the dead bodies of their cholera patients in this fashion, and doubtless the

epidemic months would be a noted festive season to them worthy of being celebrated in Homeric strains. The mortality, however, was so great amongst them that they became afraid of eating the putrid bodies of the dead.

It is fortunate that Dr. Livingstone is the historian of their virtues; their exquisitely adjusted sensitivity giving rise to a new disease called broken-heartedness; and their delicate appreciation for high food leading them to revel over the putrid flesh of the victims of epidemic cholera.

Shades of Epicurus and Soyer! A grave for a larder! A charnel-house for a banqueting hall! Mr. New's hair stood on end when he was looking at the Gallas drinking the blood gushing from the gaping throat of a bullock; but it would have started out entirely had he seen a Manyuema convivial supper-party.

Had any other traveller recorded such customs regarding natives of Africa, he would not have been believed; he would have been stigmatized by all the friends of humanity as a liar; but Dr. Livingstone is fairly entitled to be styled the apologist of the African race, and nothing but a stern regard for truth would ever have led him to put on record the fact that the Manyuema refrained from eating the dead bodies of those who died from cholera because they became afraid of the consequences of doing so.

These noble savages are said to die of broken hearts when separated from their kindred, and much sympathy has been expressed towards them by philanthropists; but were they within the jurisdiction of any Christian Government, the collar of jaw-bones would be replaced by a hempen rope, and a very large number would die annually of broken necks.

In recording his thoughts concerning the origin of the epidemic of cholera which swept the Manyuema country, Dr. Livingstone says:—"This we get from Mecca filth, for nothing was done to prevent the place being made a

perfect cesspool of animals' guts and ordure of men." This observation does more credit to his heart than his head, for he informs us, in addition to the above extraordinary details, that the Manyuema store up in their huts the flesh of the elephant till its state of putridity is such that the pet grey parrots of the Manyuema drop dead from the effect of the horrible effluvium. The "cesspool of animals' guts and ordure of men" at Mecca is a healthy state of matters as compared with that which exists amongst these interesting savages in Manyuema-land, and epidemiologists are not likely to be much influenced by the *argumentum theologicum*.

It would have been interesting to have known the effects of eating a person who had died of cholera; but it is probable that no other medical man will have an opportunity of making observations on this subject. Probably the alarm of the Manyuema was unnecessary, and the mortality might not have been increased had they continued to indulge in their usual feasts. In civilized countries great vigilance is exercised to prevent the sale of unwholesome meat, on the supposition that animal food in a state of disease or putridity is deleterious to health; but we are informed that the Manyuema country is densely populated, that "the country literally swarms with people," and that their favourite article of diet is flesh in such a state of putridity that even the feathered tribe drop dead when exposed to the noxious effluvium. Not satisfied with the putrid flesh of the inferior animals, their favourite and most highly prized article of diet consists of the spoils of the tomb without regard to the diseases causing death, and seeing that they devoured the remains of those who died from cholera, we may conclude that they would devour their dead indiscriminately, whatever the cause of death might have been—cholera, small-pox, leprosy, or syphilis.

The marvel is that in a country where such customs are prevalent there should be a dense population, and that the people should have a finer physique, and a nobler phrenological development, than is to be found amongst the members of the highest literary circles of Great Britain, the "Anthropological" being specially instanced. We cannot gainsay Dr. Livingstone's statements, regarding facts observed, but we may suggest that the Manyema die of broken hearts, not from love of country and friends, but from being separated from those dear relatives whose putrid flesh they had hoped to devour at their cannibal feasts.

All trace of the epidemic was lost in the Manyema country and contiguous districts; but it is quite possible that even at this late date it may appear in some part of Central Africa, or even on the west coast, from a slow extension down the Congo. In Central Africa there are immense numbers of people almost entirely isolated from the rude civilization of the east and west coast, and the progress of an epidemic would be very slow, as the country is not intersected by continuously frequented lines of commerce.

Native merchants have crossed the continent of Africa from the east coast at Zanzibar, and also from the Portuguese settlement at Mozambique; but there is no commercial or pilgrim route such as there is from the eastern shore of Africa on the Red Sea. Dr. Beke is perfectly correct in his statement that the movement of the population in Africa is from east to west, and from west to east, but in the extensive tract of country lying between Southern Abyssinia and the Zambezi, and probably much farther south, there is no direct line of commerce or human intercourse between east and west. There is a neutral territory at about the centre of the continent, beyond which traders from the east and west coasts respectively

do not usually pass, and in such a territory any epidemic disease would have a tendency to become extinct. Unusual circumstances might occur leading to an extension of epidemic disease beyond such territories, a very striking example of this being the cattle raid of the Masai on the Soma-Gurra, by which the epidemic was introduced into East Africa.

The epidemic was stated to have been prevalent amongst the people inhabiting the district at Casembe's town on Lake Moero, and also amongst the Wabisa; but I could get no very satisfactory information regarding it amongst the natives to the west of Lake Nyassa.

A considerable portion of the commerce of these regions finds its way, by means of the Wabisa, to the Portuguese settlements at Mozambique. The Malachite from the copper mines of Katanga is brought by native traders to Mozambique, and is shipped from thence to British India, and to Goa. Small quantities are brought to Zanzibar from Mozambique, but not directly from the interior. This proves, beyond doubt, that the Portuguese have had for a great length of time trading communications with Katanga on the west of Lake Moero.

It is highly probable, if not absolutely certain, that Mozambique was infected by this branch of the epidemic; but this subject will be referred to while considering the diffusion of the epidemic from the Island of Zanzibar.

No estimate can be formed of the mortality amongst the natives throughout these extensive and densely-populated regions, and we can only conjecture that it was similar to the mortality among the Masai, the inhabitants of Zanzibar, and the coast towns from Worsheikh to Quilimane.

That branch of the epidemic extending from Pangani to the town and Island of Zanzibar comes next for consideration.

CHAPTER IX.

SANITARY CONDITION OF THE CITY OF ZANZIBAR.

ZANZIBAR city is built on a triangular spit of land jutting into the sea, and, during high water and spring tides, it is very nearly converted into an island by the flow of the sea into the creek. At low water the creek is quite dry, and at its narrowest part it is crossed by a bridge which connects the main part of the town with the island.

A considerable extent of ground is covered by water during high tides, and this plain and the slightly elevated neck of land separating it from the sea is called Nazemodya, a district of infamous notoriety to which it will be necessary to refer hereafter.

The creek divides the city into two parts which are connected by the bridge only. The narrow neck of land at Nazemodya connects the city with the main portion of the island, but not directly with that portion of the city lying to the west of the creek, called Ngambo.

The entire traffic of Zanzibar, with but a slight exception, passes over the bridge at Ngambo.

There is no shipping at Ngambo, but the shelving sea-bank is utilized by native craft for the purpose of careening. The dhows are placed in position during high or spring tides ; and, supported on each side by poles, they are allowed to remain till they have undergone the necessary repairs, or till the season arrives when they must enter the harbour to take in cargo for the voyage. That part of

the creek between the bridge and the sea is the natural dry dock of Zanzibar.

The triangular spit of land on which the principal portion of the town is built, may be described as foot-shaped, the sole being exposed to the north-east monsoon, and the ankle to the south-west monsoon, the arch representing that portion separated from the main-part of the island by the creek.

Zanzibar has thus, in addition to the natural dry dock, two harbours, the one being safe to the shipping during the north-east monsoon, and the other during the south-west monsoon. The two harbours are separated by the heel, or angle, on which stands the building of the Universities Mission, now the British Consulate. The northern harbour being sheltered from the powerful and long continued south-west monsoon is the more important of the two, but both are filled with native craft during the respective seasons. While the south-west monsoon blows hard, vessels cannot ride with safety in the southern harbour, and during the north-east monsoon, native craft are not safe in the northern harbour, and vessels cannot discharge and load owing to the surf on the beach. There being no jetty or pier, the loading and discharging of ships is accomplished by cargo boats only.

The rise of the tide is thirteen feet, and the port varies in depth from nine to thirteen fathoms with overfalls.

During the busy trade seasons, one or other of the two harbours is invariably blocked up with native craft, so that it is difficult to steer through their midst in a boat.

The town of Zanzibar is exposed to the full force of the monsoons, and at high tides the water reaches the dwellings on the line of the beach, rendering its natural position, in a sanitary point of view, unexceptionable.

The town of Zanzibar is crossed by three main streets, one leading from the bridge, and the other two from Naze-

modya. There are also three main thoroughfares extending along the length of the town, and crossing the others at right angles, one passing along the side of the lagoon, the other through the centre of the city, and the third along the seashore of the north harbour. The principal buildings of the town face the sea towards the north, and in the line of street, facing the beach, the palace of the Sultan, the fort, the customs house, the consulates, and the European houses are situated. The town is divided into about eighteen distinct quarters which have each distinguishing names, but which it will not be necessary to mention in detail. The portion cut off by the creek is generally known as Ngambo. The northern section separated by the street crossing from the bridge is named Malinde; the southern, bordering on the creek, is known as Nazemodya; and the neck of land, lying between the creek and the sea, is the celebrated burial ground of Nazemodya, through which it is necessary to pass on leaving the town otherwise than by the bridge.

The main thoroughfares are all occupied by native shopkeepers, and they all converge at the central market-place and the customs house, which are both situated in close proximity to each other. The streets are all very narrow, so much so that no wheeled carriage can pass along them, and they are scarcely wide enough to admit of two donkeys with their panniers passing each other. The houses in these streets are not generally more than two storeys high, and they are built of the usual coral rag and mortar, and all are flat-roofed.

The structure of the houses and their internal arrangements will be described hereafter, when the different sections of the community fall to be considered.

The slope of the land on which the town is built is towards the lagoon and the seashore, and the superficial drainage is natural and easy. During the heavy monsoon

rains the streets are torrent beds, but when the rain ceases they become dry in a very short time.

In Zanzibar city there are no sewers for carrying off the water from the place, and all the filth and rubbish of the town is swept to the beach by the street torrents. Some of the streets are paved with Chunam, a mixture of small coral-stones and lime, a kind of concrete, which when beaten down resembles an asphalt pavement, but the greater number of the thoroughfares and lanes are merely damped earth, trodden down by the feet of crowds of foot passengers.

There are neither sanitary laws nor regulations regarding the cleansing of the place, and everyone is left to do precisely as he thinks proper, without let or hindrance. Within the last few years something has been done to remedy this state of matters by the employment of criminals for removing the filth of the town, but this is more advantageous as a punishment than as a sanitary measure, for it merely encourages laziness, and the householders are glad of the opportunity of having their filth removed free of expense.

In Zanzibar there are no local taxes for any such purposes, and consequently no means for taking even the initial step regarding any sanitary measure. I am not aware of the existence of any other city in the world where there is no taxation, except an import duty on goods brought to the island by sea.

The sewage of the town is not utilized for agricultural purposes, and the excrementitious matter is never removed from the vicinity of the dwellings except by the means mentioned.

The latrinæ, which are in connection with every house, with the exception of the small negro huts, are merely shallow pits or wells, and the contents are not discharged by sewers to the sea-beach. If sewers ever existed they

are not now visible. They are always in connection with the bath-room, and the fluid contents percolate the porous soil, and gradually find their way to the adjacent shore. When the latrinæ become blocked up with the accumulations of a generation or two, as the case may be, they are either closed up and new ones excavated, or the slimy, semi-solid contents, are baled out on the public streets, and left to find their way by the nearest slope towards the sea-beach according to the laws of gravitation, and it is only when a heavy rainfall occurs that such abominations are washed away.

A very short time ago a putrid, slimy mass of this kind was emptied from a public building, belonging to the most influential native community in the place, and was allowed to pursue its snail-like course to the lagoon, along half the breadth of the town. Pedestrians had, of course, the option of walking through the abominable mass, or of deflecting their course by the intricate side lanes. The endurance of the horrible stench for some days was regarded as a less evil than the expense of washing away, or carrying to the sea the mass of corruption. Such cases are by no means singular, but are of common occurrence, and the fact that the public building referred to belonged to the Khojahs, Indo-British subjects, shows that the custom is one sanctioned by the law of Use and Wont.

Without any sanitary arrangements whatever, the people do precisely what they think proper, and the course adopted is that attended with the least possible trouble and expense. The streets undergo a superficial sweeping, else they would be blocked up, and rendered impassable during the dry season, but this merely removes ashes, droppings of cattle, fragments of leaf-bags, skins and stones of fruit, and such like matters.

But there is another means of defilement in the place. In the town there are large numbers of cattle, and beasts

of burden, horses, donkeys and camels. The cows are driven out to their pasturage in the morning; and, in the evening, they are penned in the court-yards of the houses, or in neighbouring enclosures. In a very few cases the cattle-pens are kept tolerably clean, but in general the droppings are allowed to accumulate till the cattle are standing knee-deep, or until the nuisance becomes so intolerable as to render a clearing out a matter of necessity.

Countless myriads of ants and beetles, millions of rats, and armies of wild dogs, aid in removing the garbage of the town and suburbs, and the rain sweeps away to the ocean much of the filth of the place.

In Zanzibar there are always a number of houses in a state of ruin, and such are immediately converted by the negroes into dung-hills. They become the receptacles for ashes, the sweepings of the streets, and every description of rubbish; and for the same purpose the spaces between houses, and the narrow lanes are utilized. To block up a narrow lane, some ingenuity is exercised, but when the deposit is fairly commenced, it is seldom ever removed, and it becomes a permanent structure in the course of time.

When there are no convenient places in the vicinity for depositing such refuse, it is carried to the sea-beach, but it is never placed within the reach of the ordinary tides, and thus the beach all around the town is made at every available part the site of a dung-heap, and the lanes leading to the shore soon become impassable to any but natives, from deposits of filth and rubbish.

These dung-heaps fringe the entire shore in the native quarters of the town, and in many places a solid, permanent deposit has been formed, upon which native huts are erected. When such deposits become inconvenient, or offensive beyond endurance, in the European quarter of

the town, it is necessary to employ a gang of negroes to remove them ; but a fresh accumulation begins immediately.

Nothing could induce a negro to go a step beyond the nearest place where he could empty his basket, the predominant idea in his mind being to do the least possible amount of work. There are very few points of the shore, even at high tide, where a European can get into a boat without crossing one of these dung-heaps, and no one would ever think of doing so except from urgent necessity.

But there is another mode of defilement more disgusting still. Civilization in Zanzibar has not yet reached that point at which the public mind becomes alive to the fact that common decency is a subject worthy of consideration. From Zanzibar negroes, destitute of shame and of the slightest sense of propriety, not much can be expected, but one would naturally imagine that some reasonable regulations would be enforced to prevent them from outraging public decency, and creating a nuisance intolerable to all.

Attempts have been made to prevent this, but the sea-beach continues to be used as the public convenience for negroes of both sexes, at all hours of the day, and with no more regard to decency than if they were brute beasts.

This shocking state of affairs, in so far as the negroes and the poorer classes are concerned, ceases entirely to be a matter of surprise, and sinks into insignificance among the minor sins, when we see the same customs indulged in by the native merchant-princes of Zanzibar. These men, the *crème de la crème* of native society, expose themselves in this disgusting manner, and create a nuisance under the very windows of European houses where European ladies are resident. The Banyans are not an unreasonable class of men, and are the very opposite of a pugnacious race. Being under British jurisdiction, this disgusting custom could be put a stop to in a single day, and without the

slightest trouble, merely by the imposition of a fine in case of disobedience; but so long as wealthy British subjects are tolerated in their shameless practices, it will be of no use to attempt to restrain the negroes.

No stranger ever lands at Zanzibar without expressing extreme disgust at the odious state of the sea-beach, even in the best-kept part of the town. To some it causes nausea and vomiting, and both olfactories and optics are most painfully affected. Except at high tide no one ever thinks of boat exercise, and it is only at that time that European ladies can approach the shore; but at low tide it is the native Bois de Boulogne, the place of assignation, and the ball-room, at which the negroes assemble on moonlight nights, when summoned by the irresistible music of the tom-tom and fife. Negroes are not, as a general rule, very sensitive in sight or smell.

Dr. Livingstone in his "Last Journals" gives a brief but forcible sketch of the Zanzibar sea-beach. He says:—"The stench from a mile and a half to two miles of sea-beach, which is the general depository of the filth of the town, is quite horrible. At night it is so gross or crass that one might cut out a slice and manure a garden with it; it might be called Stinkibar rather than Zanzibar. No one can long enjoy good health here."¹ The idea of cutting out a slice of stench to be used as manure is somewhat novel, but if such a thing could be done anywhere, it could be at the sea-beach of Zanzibar. Dr. Livingstone was at Zanzibar in 1866, during the north-east monsoon, and he occupied a small wooden house on the flat roof of the English Consulate, close to the sea. A commodious house was also placed at his disposal near the shore at Ngambo. He was very sensitive to smells, and was thoroughly disgusted with the odours of the place.

The beach, facing the principal part of the town, instead

¹ *Last Journals*, vol. 1. p. 17.

of being clean white sand, as it might be, is converted into a pestilential mass of corruption from the causes mentioned, the most noxious being from the filtrations of the latrinæ of the town ; and during the ebb of the tide, while the filthy sand is still moist, gaseous fumes bubble up all along the shore, and poison the atmosphere.

During the north-east monsoon the wind frequently dies away in the evening, and the nights are calm ; and when there is low tide in the evening, or early morning, the noxious fumes collect and hang over the shore like a solid mass, which the slightest movement of the atmosphere rolls over into the houses contiguous to the sea—namely, those occupied by the European section of the community. The nauseous odour does not extend much beyond the second row of houses, but even there it is often sufficiently strong to awaken one during the night. When the breeze freshens up the noxious vapours are soon dispersed, and during the day they are not much felt. When the south-west monsoon blows, these deleterious gases are driven towards the ocean.

Difference of opinion may exist regarding the effect of sewage gases on the human system, but no one would elect to live in an atmosphere of dilute sulphuretted hydrogen, however pure it might be. Burckhardt says :—
“ The Arabs in general, even the Bedouins, are much more sensitive than the Europeans concerning the slightest offensive smell. This is one of the principal reasons why the Bedouins never enter a town without repugnance. They entertain a belief that bad smells affect the health by entering through the nostrils into the lungs ; and it is for this reason, more than from the disagreeable sensation itself arising from the smell, that Arabs and Bedouins are often seen covering their noses with the skirts of their turbans in walking through the streets.”¹

¹ *Travels in Arabia*, vol. ii. p. 85.

Arabs who have been born and brought up in Zanzibar, or who are permanently resident in the place, become accustomed to the odours thereof; but strangers from Arabia, and from Somali-land, are frequently seen covering their noses with the ends of their turbans, or walking about with their nostrils plugged with cotton wool. These customs are most certainly practised from the conviction that diseases enter the human system by the air passage, and that a covering to the mouth and nostrils acts as an air filter. When in a tainted atmosphere the Bedouins do not swallow the saliva, but expectorate freely to prevent disease from gaining an entrance by the digestive passage. Arabs from the province of Hadramaut have a reputation among the natives as physicians, and in the treatment of certain diseases they order the stuffing of the nostrils with cotton-wool to prevent the entrance of the odour of perfumes, which they suppose has a deleterious effect. In prescribing this plan of treatment, they merely take advantage of the popular conviction that disease or noxious matter enters the system by the pulmonary passage, the air being contaminated with the seeds or germs of disease. Modern science has not advanced much beyond the simple belief of the natives of the desert;—that the germs of disease are present in the atmosphere, and that the natural indication of their presence is an offensive odour. The odour may, of course, be present without the germs of disease, and the germs of disease without the odour; but offensive odours are certainly danger signals. The inhalation of sulphuretted hydrogen does not produce typhoid fever or cholera, but the germs of these diseases may possibly be held in suspension by the noxious effluvia of polluted streams or rivers, cesspools and filth-heaps, and produce these diseases when inhaled by man.

Europeans prefer to occupy houses situated close to the north harbour, both for the convenience of business and

that they may enjoy the cool and salubrious sea-breeze ; but these immunities are dearly purchased by the intolerable sights and odours to which they are exposed.

As previously remarked, the period of the north-east monsoon is the most healthy to the natives in general, but not to the Europeans resident in the town of Zanzibar, the local plagues at that time being boils, prickly-heat, general debility, and low fevers, owing chiefly to the increased temperature and the closeness of the evenings and nights. Boils and prickly heat are most absurdly ascribed by many to the eating of mangoes and other fruits, which come into season at that time ; but there is no other connection than mere coincidence, and the mango and fruit eaters are as free from boils as those who never partake of them. The bounties of nature are always supplied to man at the proper time, and if partaken in good condition can never be detrimental to health.

Prickly heat and boils probably depend upon the increased temperature, but the state of general ill-health and debility, and the low fevers common to Europeans at this season, are owing to a large extent, or entirely, to the noxious emanations of the sea-beach which pervade every European house during the north-east monsoon. Dr. Livingstone says truly :—"No one can long enjoy good health here." Europeans cannot live much longer, in the vicinity of the beach of Zanzibar, than three or four years without danger to health, and a change of climate becomes necessary. The climate of Zanzibar is as healthy as that of any part of the world where the temperature is the same, and the only reason why it is unwholesome and deadly is that the inhabitants themselves make it so.

The drainage of the town would be easy, and a complete system of sewers, which would be adequate for the wants of the place, could be cheaply constructed. With a tidal rise

of thirteen feet the seashore of the town should be of sand as pure as it is in any other part of the island ; and with reasonable regulations regarding the cleansing of the streets, and the removal of filth from the environs of the houses, the town could be kept tolerably clean.

All the principal streets in the town constituting the main thoroughfares are occupied by British subjects, who are under Consular jurisdiction, and that only.

The commerce and wealth of the place is in the hands of British subjects, and any improvement in the sanitary condition of the town can only take place with the sanction of the Consuls, European and American. The initial step, in a matter such as this, ought to be taken by the Consuls, and the present enlightened ruler of Zanzibar would doubtless enter with energy into any such beneficial scheme ; but the difficulty would be with the wealthy Indo-British subjects.

If nothing of this kind is done by those interested in the place, Zanzibar must continue to be a place of death, a graveyard to Europeans, and also to natives. It is impossible that it can be otherwise. True, men can live and work in the sewers of great cities, such as Paris, and also in the most filthy abodes, but they would scarcely do so as a matter of choice ; and a well-constructed, well-ventilated sewer may have a much purer atmosphere than is to be found on the sea-beach of Zanzibar, or in the European houses contiguous to it during the calm nights of the north-east monsoon season.

The Disposal of the Dead.—The manner in which the dead are disposed of cannot fail to have a most important bearing on the health of the community, more especially in a tropical climate.

In Zanzibar there are no Parsees, and consequently no towers of silence on which the dead are exposed to be devoured by the vultures.

Mohammedanism is the established religion, but there is toleration on all religious matters, and the manners and customs of all are respected.

In Zanzibar, as in all tropical countries, the dead are disposed of as early as possible, and with a rapidity which is apt to shock the nerves of Europeans who have never been abroad ; for within six or eight hours at the longest the body is placed in the grave. A person who dies during the night is always buried in the morning, and those who die during the day are interred before sunset. Europeans follow the same customs, and it is necessary to do so, as decomposition very soon sets in.

Mistakes, however, are liable to occur, and a secret but confirmed opium-eater runs a great risk of being consigned to the tomb prematurely, and I have no doubt but that a very large number of this class come to an untimely end in oriental countries. On one occasion I was requested by the British Consul to make a *post-mortem* examination, as death was supposed to have occurred under suspicious circumstances. The body, fastened up in the usual manner, was lying on the bier in the centre of the street, but the assumed corpse was afterwards resuscitated, and the man thus escaped death by one of three ways within one hour ; first, from opium poisoning ; second, from being buried alive ; and third, from vivisection.

Captain Smee, of the late Indian Navy, who visited Zanzibar in the year 1811, describes the modes of burial and the places of interment, and his description is applicable at the present day. He says :—"It is a habit all over the town to bury amongst the houses, commonly under a tree, close to the deceased person's former habitation, which presents to the stranger the appearance of a churchyard, and it would be well if the eye were the only organ offended. Though the Arabs and wealthy people are properly covered, and have neat tombs erected over

them, the poor are only wrapped up in a mat, and have scarce sufficient sand thrown over them to hide the corpse from the view ; indeed, some part is generally seen sticking through, and as to the slaves, they are often laid out to putrefy on the beach. In consequence of this disgusting practice, the stench in and about the town is intolerable, and, co-operating with the noxious effluvia which arises from the putrid vegetable matter during the rainy season, tends to produce fevers and fluxes, which, we learned, make annually dreadful ravages among the inhabitants. Notwithstanding the heat of the climate, the vast quantity of wood, and the filthy manners of the inhabitants, it does not appear that Zanzibar is an unhealthy island, except during the rainy season when fevers and fluxes are, from the above causes, very prevalent, but which, by proper regulations, might be easily obviated. The small-pox, that scourge of the human race, often visits the natives of Zanzibar. We were told that about two years ago, 1809, it made dreadful ravages all over the island ; 15,000 are said to have perished in the town alone." Captain Smee states, however, that 5,000 is a more probable number.

In 1811, there were but few Arabs, or natives of India, resident in Zanzibar as compared with the present time, and the negro and the negroid population seem to have been allowed to do just as they liked. Such revolting scenes as those described do not take place within the city now, but they are of daily occurrence in its immediate precincts, and, after a lapse of seventy years, the place remains much as it was when visited by Captain Smee.

There are great differences as to the modes of sepulture among the inland tribes of Africa. One of the largest tribes, the Wanyamuezi, simply throw out the dead bodies, without any semblance of burial ; others fasten them up in bark, and place them in the hollows of trees, and the

Manyuema eat them, a mode of disposal of the dead overlooked by the author of an interesting article on that subject in the *Indian Medical Gazette* of April, 1875.

The Moslem natives of India have their places of sepulture in the suburbs of the city, in parts specially set apart for the purpose, and their cemeteries are carefully attended to, and well kept. Intra-mural interments, although less frequent than formerly, are not forbidden by law, but are quite common, and graveyards and solitary tombs are scattered over the entire town. The habitations of the dead are so mixed up with those of the living, that it is impossible to move for many yards from the main line of the streets without encountering graves and graveyards. Any man may bury on his own property as he thinks proper, and it is the general custom, when a property is disposed of, that a stipulation is made that a grave, or any erection over it, should not be interfered with. It is not common to open a grave for the purpose of making a second interment, and if such is done it is considered to be sacrilege to disturb the remains of the dead. When a grave is dug the Moslem custom is to make an excavation at the side of the bottom thereof sufficient to contain the body. This is either built in or planked, so that the earth may not press upon the body, and the body, fastened up in mats, is placed in it on its side with the face towards Mecca. The grave, when filled up, is usually enclosed with masonry, but in no case are coffins used.

Europeans are interred, according to the custom of their country, in coffins.

Moslems do not allow the earth to press upon the dead body, as they are said to believe that the body still retains sensation. When this custom is departed from it is through carelessness, or from indifference regarding the body of one who may be a stranger, or an unbeliever.

There are several places of sepulture in the outskirts

of the town, but the best known of these is that called Nazemodya. The narrow neck of land separating the creek or lagoon from the sea was given to the Khojah section of the population as a cemetery by the late Seyyid Sa'ed, the Imam of Muscat, and the part used by the Khojahs for this purpose is enclosed and well kept. The adjoining portions are used as a common burying ground, and several Europeans are interred there. The part next to the sea is covered with bush, and is the place usually selected by the negroes for exposing their dead.

The large flat, which is dry at low tide, serves the purpose of a public park on *fête* days, and is the favourite gathering place for natives on festive occasions. It is also the fashionable promenade, the Hyde Park, and Bois de Boulogne, for Europeans, and here, at low tide, fast young Arabs test the speed of their horses and donkeys, and on high occasions the place has a very gay appearance.

Nazemodya, however, is a place of many horrors, and those who have explored that narrow neck of land seldom think of it without a shudder. It is rather a troublesome matter to dispose of the dead body of a large animal, so that dying dromedaries, aged and infirm horses and donkeys, and hopelessly diseased cattle of all sorts, are led out to Nazemodya in the evening to shuffle off the mortal coil, and there become food for the wild dogs before morning. When the supply is greater than the dogs can dispose of, portions of the putrid carcasses defile the atmosphere, and Europeans are scared away for a time. Few natives and fewer Europeans, however, visit the precincts of the sea-beach in this neighbourhood, although it is but a few yards distant, for sights may be seen there sufficient to shock even those who have been familiar with the dissecting-room. I have seen, on many occasions, human remains lying there in the bush, *membra disjecta*, the fragments of the last night's meal of the

Shamba dogs. When the death-rate is low among the negroes the wild dogs become ravenous and dangerous after sunset, and they have frequently attacked human beings trespassing on their haunts. At such times it is dangerous to be in the streets at night, as they parade the town in troops in search of garbage, but, without their excellent services as public scavengers, the town would be scarcely habitable.

Negroes who are Moslems are buried according to Mohammedan usage, and those who are Pagan according to the fancy of their friends, or the inclination of their masters, should they be slaves. The usual mode is to fasten the body in a piece of old matting, and two men carry it, slung on a pole, to the place of interment, very frequently the sea-beach at Nazemodya. If the bearers are friends of the deceased they dig a shallow grave, and cut a few twigs from the bushes to plant over it; but very frequently they merely scoop out with their hands a slight hollow in the sand, place the body in it, and scatter over the body some loose sand. The wild dogs at night supplement the laziness and indifference of man. The poorer classes of negroes are more summarily disposed of. Poor freemen, who are nobody's property, and for whom nobody cares, beggars and thieves of the various branches of the profession, are generally thrown on the nearest part of the sea-beach, to be washed away by the tide; but it is much less common now than formerly to see corpses floating in the harbour, and the present Sultan, when dead bodies are found lying in the town, orders an investigation previous to interment as to the cause of death, to ascertain if violence has been used.

In Zanzibar there are many Hindoos, and their customs, in regard to the disposal of their dead, are entirely different from those described: they practise cremation.

A writer in the *Indian Medical Gazette* describes the

mode of procedure as follows :—“The body is dressed in its best garments, and, after being decorated with flowers, is placed in the sitting posture, and is surrounded with piles of wood, the richer classes using the scented sandal-wood. Then, if the deceased be a noble or native magnate of some part of India, the heir first breaks open the skull of the corpse with a hatchet (to make sure, we presume, that the assumed dead man shall not be buried alive), after which he (the heir) lights the funeral pyre. If there be sufficient wood, and the wood is a good fuel-wood, and has been artistically arranged, nothing offensive is presented to either the sense of smell or of vision. The devouring element rapidly envelops the different faggots until the whole is a mass of blaze, giving the beholder a very vivid idea that the ‘rite’ of Suttee could not have entailed a very painful or prolonged death. Even should the looker-on allow the wind to pass between the flames and his nobility, he distinguishes nothing except, perhaps, the odour of the burning wood, and sees nothing except fire. Above the blaze, and below the smoke, when the latter occurs from damp wood, there is a bright ethereal glimmer, somewhat resembling, but more diamond-like by far, the appearance of the distant atmosphere on a hot day. Then, as minutes pass, the glimmer subsides, and the flame lessens until nothing remains but an insignificant heap of greyish ashes. The body has changed to something else as different as the soul in its new Pythagorean abode. A pyre as big as that of Sardanapalus affords no protection to the ashes of the dead. Everything has gone, not, perhaps, to dust, but into those still more subtle ultimate elements from which dust itself is derived. There is, indeed, as the result of a well-conducted funeral pyre, an utter annihilation of the body. It can never again, as a substance, do either harm or good, either by resolution or putrefaction. It has, in short, ceased to exist. Of course

consumption is not thus complete at every funeral pile. At most Hindoo burning-places bodies half destroyed by fire may be seen in great numbers, and it not unfrequently happens that during the process of burning there is some unpleasant effluvium. This, however, is simply the result of want of precaution, or want of fuel, and is, therefore, only, or at least chiefly, noticed at the funeral rites of the poor and needy. With sufficient wood the destruction may always be rendered as complete as has been described."¹

The Banyans, at Zanzibar, dispose of their dead in this manner in a secluded spot in the vicinity of the town. To render combustion rapid and complete large quantities of Ghee are added to the pile, and it is said that the ashes are collected and thrown into a running stream, or into the sea.

Water Supply.—There can be nothing of greater importance to the health of a community than a plentiful supply of wholesome drinking water. Captain Burton gives a good description of the drinking water at Zanzibar; and also some important statistics regarding the effect of the water supply on the shipping. He says:²—"Zanzibar, city and island, is plentifully supplied with bad drinking water. Below the old sea-beach, and near the shore, it is necessary only to scrape a hole in the soft ground. Throughout the interior the wells, though deep, are dry during the hot season, and the people flock to the surface-draining rivulets. West Africans, generally, will not drink rain-water for fear of dysentery; and so with us, when showers fell in large drops, men avoided it, or were careful to consume it soon, lest it should putrefy. The purest

¹ "The Disposal of the Dead," *Indian Medical Gazette*, Calcutta, April 1st, 1875, quoted in *British and Foreign Medico-Chirurgical Review*, July 1875, p. 121.

² Burton, *Zanzibar: City and Island*, vol. i. pp. 98—101.

element is found at Kokotoni, a settlement on the north-west coast of the island, and in the Bububu, a settlement some five miles north of the city, where Sayyid Suleyman bin Hamed, once governor of Zanzibar, had a small establishment, and where Hasan bin Ibrahim built a large house, called Chuweni, or Leopard's place. So at São Paulo de Loanda the drinking water must be brought from the Bengo river. The best, near the city, is from a spring which rises behind the royal Cascine, Mto-ni. Here the late Sayyid built a stone tank and an aqueduct 2,000 yards long, which, passing through his establishment, came out upon the beach. Casks could then be filled by the hose, but soon the masonry channel got out of repair, and sailors will not willingly drink water flowing through a dwelling-house.

“The produce of the town greatly varies. Some wells are hard with sulphate and carbonate of lime, whilst others are salt as the sea itself; and often, as in Sind and Cutch, of two near together, one supplies potable and the other undrinkable water. A few to the south of the city are tolerably sweet. The well-pits are numerous, and a square shaft, usually from twelve to fifteen feet deep, may be found at every forty or fifty yards. There are no casings; the edges are flush with the filthy ground around them, and the sites must be frequently changed, as the porosity of the coral rock, and the regular seaward slope, direct the drainage into them. Similarly, nearer home, the bright sparkling element is not unfrequently charged with all the seeds of disease. When rain has not fallen for some time, the water becomes as thick as that of a horse-pond, and when allowed to stand it readily taints. I could hardly bear to look at the women as they filled with cocoa-shells the jars to be carried off upon their heads.

“Formerly Europeans were not allowed, for religious reasons, to ship water from the wells near the town. Also,

cask-filling was carried on at low tide, to prevent the supply of the Mto-ni being brackish, and the exhalations of the black mud were, of course, extra dangerous. It is no wonder that dysentery and fever resulted from the use of such a 'necessary.'

"The French frigate, *Le Berceau*, after watering here, was visited by the local pest, and lost ninety men on her way home. Even in January, the most wholesome month, Lieut. Christopher had sixteen deaths among his scanty crew. In this case, however, the lancet, so fatal near the Line, and the deadly zerambo, or toddy-brandy, were partly to blame. As early as 1824 Captain Owen condemned the supply of Zanzibar, as liable to cause dysentery. It has this effect during and after heavy rains, unless allowed to deposit its animal and vegetable matter. During the second visit of H.M.S. *Andromache*, in August, 1824, Commodore Nourse and several of his officers spent one night in a country house, after which the former and a great number of the latter died. The water, as well as the air, doubtless tended to cause the catastrophe. In the dry season the element sometimes produces, according to natives and strangers, obstinate costiveness. Between Zanzibar and the Cape five brigs lost collectively 125 men from fever, dysentery, and inflammation of the neck of the vesica; whilst others were compelled to start their casks, and to touch at different 'aquadas' *en route*. Hence skippers learned to fear and shun Zanzibar. During her fourteen months' exploration of the island and the coast the *Ducouëdie* lost sixteen men; and to keep up a crew of 122 to 128 no less than 226 hands were transferred to her from the naval divisions of Bourbon and Madagascar. Each visit to Unguja (Zanzibar) was followed by an epidemic attack. Formerly as many as seven whalers lay in the harbour at one time; now (1857) they prefer to water and refresh at Nossi-beh, Mayotta, and especially at the

Seychelles, a free port, with a comparatively cool and healthy climate, where supplies are cheap and plentiful.”

The description of the drinking water, given by Captain Burton in 1857, is equally applicable at the present day, and the effects upon the crews of sailing vessels are much the same, the water supplied to ships being of the most abominable description. The supply of water of this kind is by no means necessary, although sometimes unavoidable, and the villains who supply it are quite aware of its impure qualities.

So early as 1811, Captain Smee writes:—“The water when first taken up is good, but, from the quantity of putrid vegetable matter in suspension, upon keeping a short time it becomes very offensive both in taste and smell; in a few weeks, however, it regains its original sweetness. Ships ought always to fill at low water, else they will have it brackish.”

The statements made, by the authors quoted, are not exaggerated in the slightest degree, but are, on the contrary, considerably within the truth, for a more detestable water supply for drinking purposes could not be anywhere procured. The potable water of Zanzibar may be said, without any exaggeration, to consist of the diluted drainage of dunghills and graveyards, a saturated solution of every conceivable abomination.

Through the kindness of Mr. John Webb, American Consul at Zanzibar in 1872, samples of water from Zanzibar were forwarded to America for analysis. The following qualitative analysis was made by Mr. B. Webb, Analyst, Salem, Mas., U.S. America¹:—

No. 1. From well in yard, used for washing copal, &c., but not generally used for drinking or cooking. This well is situated near the sea-beach:—“The water has a thick

¹ The analysis made was not intended for publication. Mr. Webb's notes were merely a private communication.

black deposit consisting of decomposing organic matter. Fumes of sulphuretted hydrogen escape on opening the bottle, and the water is found to be perfectly saturated with the gas. It contains a large amount of lime, magnesia, chlorine, and sulphuric acid, with traces of iron. It is probably contaminated by salt water. Nothing else would account for the very large quantity of solid matter. The amount of organic matter is very large, and it takes prolonged boiling to free the water from sulphuretted hydrogen."

The only reason why this water is not used for drinking purposes is that it has a brackish taste. In other respects it is of precisely the same quality as that from the other town wells largely used as potable water.

No. 2. From town wells, near the beach :—"Very slight smell of sulphuretted hydrogen when opened. It contains a large amount of free carbonic acid, of lime,—sulphates and chlorides,—the latter especially, nitrate of silver giving a dense lumpy precipitate of chloride of silver. The deposit consists of organic vegetable matter, with numerous crystals of carbonate of lime. This water is the most impure ;—that is, as regards inorganic ingredients,—of any examined and seems hardly fit for drinking purposes."

No. 3. From town well :—"This, on opening, is found to contain a large amount of organic matter. Moistened lead paper, held in the nose of the bottle without touching the water, is instantly blackened. This water, on exposure to the air, becomes milky from the escape of carbonic acid gas and deposit of lime. On boiling there is a deposit of shining films of phosphate of lime, traces of magnesia, small amount of sulphuric acid, larger of chlorine, combined with lime and magnesia. Deposit in bottle of organic vegetable matter. A number of diatoms are found on microscopic examination."

This sample was obtained from the best well in the

town, and that least exposed to contamination of any sort, and it may be regarded as the best water procurable from wells in Zanzibar, and that in general use among the people. All the other samples of town water vary in quality from this, down to the wells in the vicinity of the sea-beach described formerly.

No. 4. From Mwarra, a spring in the interior of the island:—"On opening, the water is found to be perfectly sweet; there is no smell of sulphuretted hydrogen, showing the absence of decomposing vegetable matter; no free carbonic acid, but considerable lime; no sulphuric acid, but chlorine in considerable amount. The deposit in bottle consists of fresh, undecomposed vegetable matter. On microscopic examination, numbers of diatoms are found, and among them a 'Hyalodiscus,' species not determined."

This water is brought from a distance of about five miles or more, and is considered to be the finest in the island. Europeans, resident in the town, get their water supply brought from a place called Chim-Chim, or the spring, but they do so only in imagination. Truly they pay well for having a supply brought daily from this place, but they seldom if ever get it. There is plenty of good water to be got, but it is next to impossible to get it for any money, simply because the lazy negresses will not bring it, the trouble being too great. The female water-carriers, although paid highly to bring a small supply of good water from a distance, frequently bring it to Europeans from the town wells, and when allowed to do as they like, unchecked for a time, bring it from the nearest town well, and, during the rains, they even collect it from the thatch of their own huts. A common plan is for half of a water party to go to the country to bring water which is sweet or fresh, while the other half sit down at one of the half brackish town wells, and await the return of the others. They then mix the water, and, with the banana leaf tied

over the mouth of the jar, bring it to the house as pure spring water. To get a negress to act otherwise is simply impossible, and only Arabs can manage to get a purer element.

Arabs of the better class are very particular regarding their drinking water, and they get it brought to their houses by their slaves from considerable distances. They recognise water of different kinds with a delicacy of taste quite unappreciable to Europeans, and are able to tell, on tasting it, whence it has been brought. A clear, cool water is that most highly prized by Europeans, but Arabs make numerous distinctions as to quality from the supposed effect upon the system; thus, some kinds are called cold and hot, light and heavy, not from any quality which they present to taste or sight, but from their supposed cooling and heating properties. The higher class of Arabs pride themselves as much on the quality of the water which they offer to a visitor as Europeans do in regard to their wines. Endemic diseases, and even occasional attacks of illness, are usually ascribed by them to the quality of the water which they have imbibed, and when a district is spoken of as unhealthy, it is generally designated as a place where the water is bad. To counteract the deleterious effects of impure water they sometimes fumigate it by passing through it the smoke of odoriferous wood.

The Arab and European tastes, as to the quality of drinking water, do not correspond, but probably the Arabs are favoured with a purer beverage than the Europeans are. The sample from Mwara is that of a water highly prized by the Arabs. It contains fresh, undecomposed vegetable matter, but it may be proper to state that it and all the other samples were collected after the close of the heavy rains, in the month of May. This will account for a considerable amount of vegetable impurities, and also for the absence of other impurities of a more deleterious nature.

No. 5. Water from country wells, or Shamba water — “On being opened, it has a strong fæcal smell, and gives off sulphuretted hydrogen, the gas instantly blackening lead paper, held in the mouth of the bottle. The water contains only small amounts of lime,—chlorides and sulphates,—not more than ordinarily found in well-waters; slight traces of iron; but there is a very large amount of organic matter, both in solution and deposited in a black offensive mass.”

This is the most highly prized drinking water among the negroes of Zanzibar, and is that commonly used as such when an article superior to that of the town wells is desired. Europeans will not touch it owing to its white colour, it being something like diluted skim milk. They must have a water clear, however impure it may be; but the negroes and the Moslem natives of India love it owing to its sweetness. When a negro wishes to express his admiration for a lenient master, who allows him to do whatever he may wish, he calls him Maji ya Shamba,—“Shamba water.” This water must be full of the ova of the earth-worm, as worm-disease is universal among those who use it. The intestines of native children, especially, are often literally full of lumbrici, and I have known, in many cases, masses of lumbrici, as many as a hundred and fifty, being expelled in the course of two days.

Captain Burton (*in loc. cit.*) describes with horror these wells. If, however, he had examined them as minutely as I have done, on many occasions, he would have expressed himself in much more forcible terms, for there is nothing more calculated to excite one with horror and disgust at the whole negro race than the sight of the water-women at the Shamba well-pits. These pits are simply excavations in the sandy soil to about the depth of ten feet or more, gradually narrowing towards the bottom, and generally situated on a sloping ground. There is seldom, during

the dry season, more than a few inches of water at the bottom of these pits, and round the top about thirty or forty women, with their water-jars, are squatted, waiting for the percolation of the water. This, one after another, they ladle into their water jars, by means of a cocoa-nut shell fastened to a long stick; and this work generally occupies two or three hours. Meanwhile, the gossip goes on. The border of the pit is used as a convenience, and, as the women adopt the custom of washing, Moslem fashion, there are other ingredients mixed up with the excreta; the frequenters of the well-pits belonging, for the most part, to the Corinthian order of ladies. The American analyst confirms Captain Burton's description, as well as my own, when he says regarding this water: "on being opened it has a strong fæcal smell." I am not at all surprised that it had so, even after four months' keeping; and had it not been the first thing that attracted the analyst's attention, I would scarcely have ventured to enter upon these disgusting details, even to indicate the probability of contamination of such a nature. Within a quarter of a mile of the place where I have seen such things done, whenever I happened to pass, there is a stream of good clear potable water, where the women could fill their jars in five minutes, but the allurements and attraction of two hours' gossip and filth is to them irresistible. Sir Samuel Baker describes the habits of the negro Tokroories, at Metemma, in Abyssinia, as similar. He says:—"Upon our arrival at the extremity of the valley, we were horribly disgusted at the appearance of the water. A trifling stream of about two inches in depth trickled over a bed of sand shaded by a grove of trees. The putrifying bodies of about half a dozen donkeys, three or four camels, and the remains of a number of horses, lay in and about the margin of the water. Nevertheless, the natives had scraped small holes in the sand, as

filters, and thus they were satisfied with this poisonous fluid. In some of these holes the women were washing their filthy clothes. I immediately determined to follow up the stream until I should arrive at some clear spot above these horrible impurities that were sufficient to create a pestilence. I ordered my men to dig a deep hole in the sand, and fortunately discovered clear and good flavoured water."¹ So it is in Zanzibar, and all over Africa. The natives will not be at the trouble to bring good water, even although it may be quite at hand.

No. 6. Water from Cement Tanks in Zanzibar, used for drinking water:—"Contains some organic matter; small quantity of sulphuretted hydrogen escapes when opened, but the water is quite pure compared with that from the wells. Only small amount of lime, no sulphates, and only slight deposit of chlorides. Small deposit of organic vegetable matter at the bottom of bottle."

No. 7. Water from Mtoni:—"Water clear; no escape of sulphuretted hydrogen, and no disagreeable smell. There is a little sediment at the bottom of the bottle, and upon the sides what looks to the naked eye like fine sand. The water contains free carbonic acid, a considerable amount of lime, faint traces of sulphuric acid, and a large amount of chlorine. This water must contain, when fresh, a very large quantity of lime in solution, for what looks like sand on the sides of the bottle, proves on analysis to consist entirely of crystals of carbonate of lime, which were probably held in solution by carbonic acid, which, escaping, has deposited the crystals on the sides of the bottle. The deposits at the bottom of the bottle consist of fresh vegetable matter without a sign of decomposition, and, on microscopic examination, diatoms are found, and a number of species of pleurosigma among them."

No. 8. Water from Bububu:—"Contains free carbonic

¹ *Nile Tributaries of Abyssinia*, by Sir S. W. Baker.

acid, and has the same crystallization of carbonate of lime on the sides of the bottle, and the water is almost identical in every respect with that of Mtoni. What is remarkable is that this water contained living specimens of 'Actinophnys Sol,' or Sun Animalcule, as active and healthy as if just taken from the water."

The water from the cement tanks has been but recently used in Zanzibar as potable water, and when filtered is of a quality decidedly superior to all the other samples. Water filters, however, are only used by Europeans and not by the community generally.

The samples Nos. 7 and 8, from Mtoni and Bububu, represent what has always been supplied to the shipping at Zanzibar, as described by Captain Burton, and which has undoubtedly been productive of much disease and death. Both streams are identical in quality at their source, but they are polluted to a different degree in their passage to the beach, the channel of the former being much more clean than that of the latter. Hundreds, or even thousands, of people wade through and bathe in these waters daily, and foul clothing of all kinds is being washed in them constantly. The samples sent for analysis were taken from the stream in the evening, when it was in flood, and seem to have been then free from excrementitious impurities.

The water is not fit for use at any time, or only at the early morning, before the daily pollutions have commenced. It is a matter of surprise that no attempt has ever been made to rectify this evil, although it has been so destructive to human life. I have frequently examined water-tanks on board merchant ships, which had been filled with this water, and a more filthy decoction of every abomination could not be seen elsewhere. It is not surprising that dysentery should have played such dreadful havoc among our seamen; the wonder is that any who

used such water for any length of time should have survived it. I have actually seen excrement in the water-tanks. In some regular trading ships deaths were so numerous, and of such frequent occurrence, that a supply of drinking water was taken on board prior to sailing, sufficient for the voyage out and home, but beyond this no steps were ever taken to remedy the evil. The shipping is now beginning to be supplied with rain water from the cement tanks, of an infinitely superior description, for drinking and cooking purposes, and at as cheap a rate as formerly.

It may be said, without fear of contradiction, that there is not a single well in the town of Zanzibar that is not contaminated, and that the most of them are so to the greatest possible degree. The only difference between the cesspools and the wells is that the latter are deeper. The cesspools are so constructed as to retain the solids, and admit of the drainage of the fluid contents by filtration. The wells are dug so as to collect all the water that may be percolating through the earth, and they must, of course, receive a considerable quantity of what passes from the cesspools on its way to the beach. I have no doubt whatever but that the water supply of Zanzibar has much to do with the spread of disease, but more especially with the causation of several diseases common in the place.

Water may be clear and fresh to the taste, and still be exceedingly impure, containing organic matter, and inorganic salts in solution, in large quantity. Water may also be pronounced as free from such impurities after minute chemical and microscopic examination, and still ingredients, highly detrimental to health, and productive of organic and other diseases, may contaminate it, for no analyst has ever been able to say that his examination as been exhaustive. Smell, taste, and colour are the

natural means of testing the quality of water. Chemical and microscopic examination affords us a higher and more minute analysis as to what kinds of water should be avoided; but it will be admitted by all that water containing the filtrations of grave-yards and privies is unfit for human use; is loathsome to all civilized beings, and can only be voluntarily used by a class of people with tastes little higher than the brute creation.

The town wells are all open at the top, and they are never cleaned out unless they become completely choked up. They are almost flush with the ground, and are merely slightly elevated round the brim, so as to prevent the water of the streets from flowing into them. Some are on the sides of the streets, and accidents occasionally occur from people falling into them.

The sanitary condition of Zanzibar is as bad as bad can be, and so long as the inhabitants are content with the existing state of affairs they must reap the consequences—disease and death. If excrementitious matter be not removed from dwelling-houses, and the vicinity of wells, then the inhabitants must eat it, drink it, and inhale it, and this is by far the most expensive mode of getting quit of it. A bad sanitary condition may not give rise to an epidemic, but when an epidemic does occur, everything is, in the highest degree, favourable to its spread. From the great attention that has been paid of late years to sanitary measures in the chief cities in Europe, and to an ample and pure water supply for the inhabitants, it is not likely that any epidemic disease would assume the same dimensions as formerly; and although the expense may have been great, the system is the cheapest in the end, and, even as a matter of comfort, people would not willingly revert to the old state of affairs.

CHAPTER X.

MANNERS AND CUSTOMS OF THE INHABITANTS AS AFFECTING THE SPREAD OF EPIDEMIC DISEASE.

THE epidemic of cholera of 1869-70 did not affect the entire population of the city of Zanzibar simultaneously, nor did it spread in any definite direction, such as from north to south, nor from east to west: neither did it attack quarter after quarter, and street after street, in immediate contiguity; but, on the contrary, it pursued a definite course through the several sections of the population, indicating the existence of some general law of propagation which may be sought for in the manners and customs of the people.

It will be necessary here to call attention to certain facts regarding the spread of the disease in the city—facts which admit of no question, and which are of great interest and importance. Two sections of the Zanzibar population almost entirely escaped the epidemic, and neither in this instance, nor in any former epidemic of cholera, did the disease ever spread amongst them as an epidemic. The two classes were the Europeans, stately resident on the island, and the Hindu natives of India, generally called Banyans. The epidemic fell with extreme violence upon the negroes, and the Arabs suffered severely, more especially the poorer class, as the Arabs from Hadramaut. Common nationality or race afforded no protection, for while the Banyans escaped, the Khojahs, likewise natives of India, suffered severely; and although the Europeans resi-

dent in their own houses on shore escaped, those living on board ship in the harbour were severely attacked.

This apparent susceptibility and immunity did not depend on mere locality ; for, in so far as that was concerned, Arab houses, ravaged by the disease, were as favourably situated as those of their European neighbours, and the houses of the Khojahs were in no respect more unfavourably situated than those of the Banyans. In regard to structure, the houses of the Europeans and the Arabs are identical, and those of the Khojahs and Banyans differ in no respect. The general sanitary condition of the city, or of any portion of it, does not enable us to account for the immunity of the Banyans, and the Europeans resident on shore. During the epidemic the north-east monsoon was blowing strongly, and the ships attacked were anchored at a good distance from the shore in the north harbour. In so far as purity of atmosphere was concerned no situation could have been imagined more favourable than that of the ships in the harbour ; and, on the other hand, those who escaped, the shore Europeans and the Banyans, were fully more exposed to the impurities, and the deleterious sewage gases of the sea-beach than other sections of the population ; for the European houses are situated close to the beach, and the avocations of the Banyans lead many of them to spend nearly the whole of their time at the Custom house, a place more exposed than any other to the impure atmosphere of the shore.

As no general causes of disease, such as those referred to, are sufficient to account for the immunity of the two sections of the population named, and the great severity with which other parts were attacked, it will be necessary to search for such causes or conditions in the manners and customs of the people, or in the business and social customs of the community.

In all countries, both European and Oriental, society is

divided into different classes which have little or no social intercourse with each other, and the distinctions are as definite in Europe as they are in Asia and Africa, although based upon different principles. While in England we have the aristocratic, the mercantile, and the working classes, each with their numerous sub-divisions, India is divided into many nationalities, and these undergo further sub-division by caste, out of which it is impossible for individuals to pass without becoming outcasts and pariahs. Individuals of the middle class, in Europe, may pass into the aristocratic circle directly or by marriage, or they may descend, out of their own circle, in the social scale; but caste, in India, is rigidly exclusive and inclusive, and those of one caste are bound together by immutable manners and customs.

In Zanzibar, caste distinctions are not so manifest as they are in India, but the Oriental mind seems to be deeply imbued with the idea, and society, even there, is divided into different sections, each standing aloof from the other, and connected only by business necessities.

The word *custom* is, probably, more frequently used in Zanzibar than in any other city in the world, and is equivalent to the term *law*. When an explanation is required for anything extraordinary in conduct or procedure the invariable answer is—*custom*. In business matters, individuals of different races and castes may be intimately connected, not only as buyer and seller, but as employer and employed, and even as mercantile partners, but the connection does not extend beyond the shop and office, and never enters into the family circle. The different classes never intermarry, and consequently there is no blood relationship, and no family intercourse.

The domestic establishments of Europeans and Orientals are unlike each other in every respect; the English home having nothing in common with the Oriental harem, or

even with the household where monogamy is the custom. Domestic work is also managed in a very different manner; for, while in England domestic services are performed by those of our own nation, in Zanzibar negroes only are employed in menial work. No Arab woman would take service in the house of an Arab, far less in that of a Moslem native of India or of a European, and no daughter of a Hindee, however poor the family might be, would serve in the house of another. Household work is almost exclusively performed by negroes, male and female, and not one half of their time is spent at work within doors, the remainder being dissipated in the native quarters of the town. Thus, while each section of the community may occupy a position of social isolation, for business arrangements can always be temporarily suspended, the negroes permeate the whole, and are to be found in every house, even the poorest. They form the connecting link in every social circle, and, in a certain manner, they connect the component parts of the entire community. Domestic servants in Europe do not appear as a distinct class as they do in Zanzibar, for they do not belong to a distinct race, and they are not associated among themselves so closely as domestics are in the east. If epidemic disease is capable of being propagated by contact or intercourse then we might expect that the negroes in Zanzibar would be important factors in the distribution of disease in the event of an epidemic breaking out in the negro quarters of the city.

The negroes constitute by far the largest section of the population of Zanzibar, and I shall notice first their manners and customs in so far as they may throw light on the propagation of epidemic diseases, both amongst those of their own race, and amongst other sections of the community.

The coloured race is composed of members of almost every tribe in East Africa, and amongst the higher class of

domestics there are also Nubians, Abyssinians, and both Northern and Southern Gallas. Of the latter class there are but few, and of several of the more savage tribes, such as the Masai, there are none, as they could not be trusted in households owing to their savage disposition. They are bond and free, probably in about equal proportion, but the majority of the negroes have been imported slaves, and, as may be supposed, they bring with them the manners and customs of the several tribes to which they originally belonged.

Many of the negroes live in the houses of their masters and conform to the usual regulations of the household, but that class will be more particularly noticed when the other sections of the community are brought under consideration.

The negro huts are not confined to any distinct part of the city, but are scattered over the whole place. That portion, however, called Ngambo, and that, forming the northern section of the town, called Melinde, are more particularly the habitats of the negro race, and there the native huts are placed. As it is generally admitted that the homes of a community have an intimate connection with the health of the inhabitants, and probably with the spread of infectious diseases, the construction of such huts as are usually erected in East Africa, and in Zanzibar, may be shortly described. I shall adopt Mr. New's description of a Kinika hut, and a royal residence in the Chaga country, as no European had a more complete knowledge than he had of East African life. He says (*op. cit.* p. 123):—"The dwellings and utensils of the Wanika are of the most primitive kind. The ordinary hut is an oblong frame-work of poles, say eight feet high at the ridge pole; from twelve to eighteen feet long, and eight or ten wide. It is thatched from top to bottom with hay or straw, and looks when complete like an oblong hay-cock. There are no windows nor any means of light or ventilation, except

a small hole in the centre of one side, three feet high by two feet wide. This hole is the only means of ingress and egress for the family and all else. Goats, fowls, &c., are often accommodated with the family. Entering them from the outside glare, they appear pitch dark, and as a wood fire is kept perpetually burning on the floor, and there being no outlet for the smoke, nor inlet for air, the atmosphere is suffocating, breathing, except to those who are inured, being almost impossible." The inflexible law of custom admits of no alteration in the form, size, or internal arrangements of a Kinika hut. As it was, so it is, and ever shall be, is the *dictum*, and no bold innovator may dare to extend the door beyond the normal dimensions of three feet by two, or to break an air hole through the wall. Such a hut frequently contains three generations, besides fowls and goats, and is comparatively sumptuous, for Mr. New describes the huts of the Gallas as far inferior in architecture to birds' nests, consisting merely of bent branches of trees with a covering of thatch.

The royal residence in the Chaga country is thus described:—"I was next taken to the hut occupied by the ladies that I might take a formal leave of them. I found them sitting in such a state! that is, on the floor! within an ordinary small cone-shape dwelling, thatched down to the ground—filthy, smoky, and as dark as night! Yet they had not even this residence all to themselves, one half of it being occupied by cattle; how many of them I cannot say, for it was too dark to see them distinctly. It was some time before I could make out the ladies, but by degrees the outlines of several developed themselves sufficiently to give me some idea of what they were like. They were not those I had seen before. Their dress was very scant; for ornaments they had thick, heavy, pewter bracelets on their arms; necklaces of small red beads, and thin iron and copper chains, and anklets of the same material. Of

their personal charms the less said the better. Most of them looked scared. I did not remain with them more than a minute or two."

In Abyssinia, the Galla country, and throughout the whole of Eastern Africa, the huts are of a similar structure, merely varying in shape, some being circular, and others oblong, and nowhere have I heard of native houses of two flats except in the Manyuema country. If such are to be found in other places they are exceptional, and are derived from the Arab or European model. The tents of the Masai and other nomades, are constructed of branches of trees stuck into the ground, tied together at the top, and covered with hides. The hut merely serves the purpose of a sleeping place, and a shelter from rain and tempest, and is, in no respect, a dwelling-house according to the European designation of the term. There are but few circular huts in Zanzibar, most of them being of the oblong form, as described by Mr. New, and, with the exception of the door being larger, they are precisely the same.

Under the heading of "Black Town," Captain Burton (*op. cit.* p. 96) describes the native part of Zanzibar as follows:—"A filthy labyrinth, a capacious arabesque of disorderly lanes, alleys, and impasses; here broad, there narrow; now heaped with offal, then choked with ruins. It would be the work of weeks to learn the threading of this planless maze, and what white man would have the heart to learn it? Curiosity may lead us to it, in the early morning, before the black world returns to life. During the day, sun or rain, mud or dust, with the certain effluvia of carrion and negro, make it impossible to *flâner* through the foul mass of densely crowded dwelling places, where the slaves and the poor 'pig' together. The pauper classes are contented with mere sheds, and only the mildness of the climate keeps them from starving. The meanest hovels are of palm-matting, blackened

by wind or sun, thatched with cajan or grass, and with or without walls of wattle-and-dab. They are hardly less wretched than the west Ireland shanty. Internally the huts are cut up into a 'but' and a 'ben,' and are furnished with pots, gourds, cocoa-rasps ; low stools, hewn out of a single block, a mortar similarly cut, trays, pots and troughs for food, foul mats and kitandas or cartels of palm-fibre rope, twisted round a frame of the rudest carpenter's work. The better abodes are enlarged boxes of stone, mostly surrounded by deep projecting eaves, forming a kind of verandah on poles, and shading benches of masonry or tamped earth, where articles are exposed for sale. The windows and the doors are miracles of rudeness. Lastly there are the wretched shops, which supply the few wants of the population."

This description is very accurate. In the strictly native part of the town the huts are placed without any regard to order. Sometimes they are laid out in narrow lanes, but they are preferred when slightly detached. They vary considerably in form, according to the fancy or the nationality of the owner. The simplest are those composed of a rude framework of poles, surrounded by old matting, and covered with a sloping roof of palm-leaves. The occupiers of these huts fear no thief but the kidnapper, as the huts contain nothing worth stealing except the tenant himself, and even he may be quite useless to the captor. The next class of huts are of wattle-and-dab. A site, slightly elevated, is selected, or if low-lying, the level is raised by a layer of mud, so as to prevent flooding during the rains. A rude double framework is then erected, the cross sticks being fastened to the uprights by fibre-cord. The framework of the roof is then placed, and after being thatched with palm-leaves, the eaves reaching nearly to the ground, the building operations commence. The interspace of the double

framework, representing the thickness of the walls, is then filled up with mud, and stones of small size, until near the level of the roof, where an unfilled space, from six inches to a foot, is left for ventilation. Internally it is generally divided into two portions by a thin wall of the same material, and sometimes one or both of these spaces is subdivided, for the purpose of subletting, or for the accommodation of lodgers. The outside door is a piece of rough planking, and the inside doors are formed of a curtain of matting. The furniture consists of a bedstead of the value of a shilling, and a few cooking pots. A smouldering fire of damp sticks or rotten cocoa-nut husks, secures the necessary amount of heat, and the acrid fumes are useful for expelling the mosquitoes. The sleeping places are generally about the size of the cartels, and a hut of this kind is sufficient for the accommodation of three or four families if the encumbrances be not numerous. It is difficult to understand how people in the tropics can exist, even during the night, in such hovels; but how they can prefer them to more commodious and better ventilated places, is a mystery greater still. When a negro servant in a European house is sick, he cannot be prevailed upon to remain in the house; he must go to the hut, and, when in it, every aperture is so closed, that, even during the glare of the mid-day tropical sun, the interior of the hut is dark as midnight, and to this custom there is no exception whatever. No labour is ever expended in cleansing the hut. The mud floor and walls soak up all fluid impurities; myriads of ants and cockroaches remove the more solid ingredients, and countless rats are ready for anything of greater bulk than the insects can remove. Although the atmosphere of the hut is suffocating, there are not usually any very disagreeable smells. The huts smell sweeter, and are decidedly more healthy than the abodes of negroes, composed of stone and lime. In

the stone and lime house every aperture is likewise carefully closed, and the walls and concrete floor have less absorbing power than the mud wall and the dry tamped floor of the hut. In cases of severe injury, I always found the best and speediest cures in the hut, where pyæmia seldom occurred, simply because cleanliness can never be secured, and the want of it is less injurious in the hut than in the square stone-box. The dry mud of the walls, and the tamped earth of the floor, may act as a deodorizing agent, and if it has any tendency, as has been supposed, to preserve the active properties of the choleric miasma, then we might expect to find among the mud huts of Zanzibar recrudescences of epidemic cholera. Such, however, are unknown, and it may be inferred that the vitality of the miasma speedily becomes extinct.

In Zanzibar there are no slave-huts proper. The native huts merely vary in size and form, bond and free living together, and under similar circumstances. The owner of a few slaves lives with his slaves in a hut such as has been described, the accommodation and diet of master and slaves varying but little. The native huts, however, are the head-quarters of all the coloured population, and not only of those who permanently occupy them, but also of those engaged as servants in European houses, and of those who reside in the houses of their Arab masters.

As a vehicle for the dissemination of infectious disease, great importance has been attached to clothing, and the evidence collected, regarding the diffusion of disease by means of contaminated clothing, very clearly establishes the fact that such is the case.

Clothing, in Oriental countries, and more especially in tropical Africa, is worn more for decency and appearance than as a protection against the extremes of weather; hence among the inland and more barbarous tribes clothing is entirely dispensed with, or worn only as an ornament.

The simplest article of dress in use among some barbarous tribes, seems to be the horse tail, or an imitation thereof, used by adult women who require to enter on hands and knees the small entrance to their huts. The Kafirs employed in the South African colonies are compelled to wear some covering while they are within the colony, but whenever they are out of sight, or beyond the colony, all clothing is dispensed with. Over the whole of tropical Africa, grease, oil, or some fatty substance is the article used as a protective against the extremes of temperature, both of the cold rainy season, and the scorching sun of summer. Both sexes smear the body with oil or some fatty substance, and the want of it is a deprivation almost equal to the want of food ; for without it they shiver from cold during the rainy season, and the skin becomes dry, parched, and blistered under the fierce rays of the sun. The custom of lubricating the body with oil is not a freak of fashion, but is adopted from experience of its beneficial effects, and the universality of the custom shows that there are good reasons for its existence.

In Zanzibar some article of dress is always worn by the natives, though it be, in some instances, of a very slight description. The simplest dress of the males is a piece of blue cotton cloth, tucked round the loins, and the female dress is of the same material, but of greater breadth, passing under the arm pits, covering the breasts, and extending to the knees. Material of a better description is used when it can be procured, but the fashion is the same. In addition to the loin-cloth, the males, when circumstances permit, wear, above this, a white cotton shirt, something in appearance like a night-dress, and this, with a red fez, is the full dress of the negro, the only articles beyond these being the Arab turban, the waist sash, and the cloth coat. There are also various modifications of the female dress. With a taste for dress, the Zanzibar slaves have taken the initial

step in civilization, and, as may be surmised, there is always a strong desire for the possession of such articles, although they may be considerably the worse for wear.

Bleached cotton cloth of the purest white is the fashionable material in Zanzibar, and, when the loin-cloth and shirt are of this description, they are generally kept scrupulously clean, and this necessitates a certain degree of cleanliness of the body; but when the loin-cloth is of coloured material, and there is always one of this description, there is much less attention as to its cleanliness, and it is apt to be used for a great variety of purposes.

The bedding generally consists of a mat spread over the cartel, and the only covering used is the loin-cloth spread over the body. A pillow stuffed with cocoa-fibre or cotton-wool is sometimes used, and a mattress of the same material, but more rarely. Such articles of clothing and furnishings are always regarded as most desirable articles, and they very frequently change hands in the public market-places frequented by the negroes. Soap is largely used for washing material of a white colour; much more sparingly for articles of a coloured texture, but seldom or never for washing the body.

The food of the negroes is very simple, the staple article being green or dried mahoga or cassava root, and matama. The green, undried cassava root is very often eaten uncooked, more especially by slaves newly brought from the interior of the continent, who prefer it in this state to all other articles of diet. When cooked it forms an excellent substitute for potatoes, and when dried and pounded, it is prepared as arrow-root. Matama, Indian corn, and rice, are in common use, as also sweet potatoes, and fruits of various kinds, such as bananas, mangoes, oranges, Jack-fruit, pine-apple, &c. Beef and mutton are scarce and dear, but fowls and fish are used instead, and there is no disposition for the use of animal food in a putrid or semi-

putrid state. The Wanyamwezi, however, form an exception to this rule, for they revel in a meal of putrid carrion. I have seen them cutting up the carcass of a hippopotamus in such a state of putridity that it was impossible for a European to approach within a hundred yards of it. Negroes in Zanzibar do not object to eat fish in a state of semi-putridity, and some kinds they actually prefer in such a state. Salted shark in a semi-putrid condition is the most highly prized article of diet amongst East Africans, and from the coast it finds its way, as a commercial article, even to the far interior. It is used with the cooked matama, or rice, in the preparation of a kind of curry, and is used as a delicacy, but not as a substantial article of diet. The odour of the shark bazaar is of such a peculiarly disagreeable nature, that Europeans, instead of examining it minutely, hurry past it with bated breath. It is, however, a rendezvous for negroes, who there feast in imagination over the putrid delicacy. In all probability this semi-putrid shark was the "unwholesome kind of fish" which the passengers and crew of the ships *Persia* and *North-Wind* indulged in at Makalla, and which was suspected to have had some connection with the outbreak of cholera on board ship. The use of semi-putrid shark, or any other kind of fish, can have no connection with the origin of cholera, for it is an article of daily consumption over East Africa, and has been so doubtless for centuries. Shark-fins are exported from Zanzibar, and find their way to the Chinese markets. The drinking-water used by the negroes has been described in the last chapter, but that most highly prized by them is the fæcal-smelling water from the well-pits, called *Shamba water*.

The negroes of Zanzibar are variously employed, from occupying situations of trust, through all the grades of labour, to the lowest menial services. The manual labour of the place is performed exclusively by the negroes,

with the exception of a very small portion of artificers' work, engaged in by the natives of India, who represent in a rude way the higher classes of artizans. Every kind of work is performed by hand labour, and every load, light or heavy, is carried from place to place. Owing to such customs there is a large labouring population in the town, out of all proportion to what there is in any European city, and ten or twenty times more than what would be necessary, were labour economized as it should be. The principal employment of the negroes is in the portorage of the place, the heavy-porters being called *hamalies*, and the light-porters, or ordinary unskilled labourers, *kiburuas*. The former are principally employed in carrying bales and heavy goods, in connection with the shipping, and the latter in working on board ship; in the discharging and loading of cargo, and in various occupations on shore, such as the cleaning of gum copal, picking of orchella weed, sorting of cowries, and a great variety of other work in connection with the mercantile houses. Women are employed as water carriers, and a favourite occupation is that of masons' labourers, but the most popular of all work is the pounding of floors and roofs of houses, at which singing and yelling is freely indulged in. Men and young lads only are employed as domestic servants in European houses, women being utterly useless for such kind of work from their lazy and filthy habits, and their thievish propensities. The town negroes look down upon their country cousins with a good deal of contempt, and consider themselves a superior class.

The condition of the country population is, in many respects, different from that of the town. The Arabs are the principal proprietors of the soil, and many of them possess very large estates, or *shambas*, on the island. The more wealthy Arabs reside constantly in the city, but many lead a quiet retired life on their estates, and only visit the town to dispose of their produce, transact business, and

visit their friends. Agricultural labour is performed by negroes alone, and cattle are not employed in the cultivation of the soil, or in the conveyance of its produce to the harbours or markets. It has been alleged, and probably with truth, that the Arabs dare not employ oxen for such purposes, owing to the prejudices of the Banyans, and that the former, being under pecuniary obligations to the latter, are bound to submit. It is certainly true that a Banyan would have no dealings with any one who employed cows for such purposes, and that every means would be used to effect the ruin of any one doing so.

In carrying on the work of an estate there are always three head-men: the Msimamizi, who is generally a free man; the Nokoa, who is the head-slave, and the Kadamu, or the second head-slave, the two last being invariably slaves of the same class as those under them. There are also other slaves who have minor charges in carrying on particular work, and such are usually selected from among the Wazalia, that is, those born on the estate. Practically, the carrying on of the work is under the supervision of those selected from among the slaves themselves, the master, or his deputies, interfering but little in regard to the actual amount of work done. Each slave on an estate has his hut, and a patch of land sufficient in extent for the support of himself and family. The huts are scattered here and there in small clusters, and with their garden plots, which are generally in a state of good cultivation, they have a very neat and comfortable appearance, much more so than the native huts on the main-land among the free Wanika at Mombassa, the shanties of the Irish peasantry, the hovels of the Scotch highlanders, or the wretched abodes of the crofters of recent times. The huts seem well enough adapted to the habits of a negro rural population, and it is only when a large number of such dwellings are crowded together in a city, that they and their

occupants become an intolerable nuisance; but the same results would follow were there a suburb of London with a few thousand shanties, occupied by their original tenants, who brought with them the manners and customs of the bog and the heather.

The value of an estate in Zanzibar depends chiefly on the number of cocoa-nut and clove trees in full bearing. The cocoa-nut crop is continuous throughout the year, but the produce of the clove trees must be gathered and cured within a definite season, and the proprietor of the estate must have a sufficient number of people to accomplish this, as labour beyond the estates cannot be procured during the crop season. A large number of people, out of all proportion, apparently, to the size of the estate, is therefore necessary, and the proprietor can afford the outlay in the purchase of slaves, by allowing them to cultivate intermediate crops, on their own account, when their labour is not required by him. On many estates the sugar cane, cereals, and green crops are cultivated, and as the labour is by hand and hoe, the island is densely populated, and the number of people employed on the estates is much greater than is to be found in the most densely populated agricultural districts of Great Britain, being more like what would be found in districts cultivated as orchards or market gardens.

The slaves are at the disposal of their masters for five days in the week, but the two remaining days, Thursdays and Fridays, belong to themselves, and on these days they cultivate their own allotments, and bring their produce to town for sale. At day-break the drum is beaten at the house of the Msimamizi, and the slaves muster for the work of the day, the length of the day's labour depending on the season of the year. During the busy season it may extend to sunset, and at other times till mid-day. The hardest work which the slaves have to

perform consists in carrying on their heads the produce of the estates to the town of Zanzibar, or the contiguous harbours, for the only roads are mere bridle-paths, and not suitable for cartage of the rudest description. A duty of five per cent. is levied on every article brought to Zanzibar by sea, even on what is brought from estates on the island to the town, and to avoid this payment the produce, even of distant estates, is carried to the market in town on men's heads. By such customs a large resident population is necessary on the estates, and the agricultural labourers from all parts of the island are thus brought into daily communication with the people in the town, but more especially on Thursdays and Fridays, the days which the country or shamba slaves have at their own disposal; for on these days they come to town to dispose of their goods, make their purchases, and spend part of the day.

The state of the population in the rural districts of the island is much like that of the serfs of former times in some parts of Europe, and closely resembles that which existed in the feudal times in our own country, but the slaves have greater security of life and property owing to the absence of feudal fights in which the serfs were constantly forced to engage. The native huts are not generally scattered over the estate, but are grouped together much in the same way as the farm-towns formerly were in this country, and still are in many parts of the continent, and they are quite distinct from the villages or coast towns of the island.

The villages of the island are principally occupied by the Wahadimu, the aboriginal inhabitants. They are of small size, about sixty or seventy in number, and each village is governed by its head-man or Sheha, who is responsible to the native Sultan, who, in turn, exercises his authority with the permission and under the control of the Arab Sultan of Zanzibar. The Wahadimu are an

industrious, hard-working class of people, who are occupied principally in agriculture, fishing, and cutting of firewood. During the clove crop season they are obliged to work on the estates of their sultan. Many possess land of their own which they cultivate; but others make arrangements with neighbouring Arab proprietors for the cultivation of rice land, and, in return for the use of the land, they give to the Arab a certain proportion of the crop according to a definite scale. The villages of the Wahadimu are much superior to those of the ordinary negro population, and the larger of them have a school and mosque, or place of worship. The Wahadimu live much by themselves, and have but little intercourse with the negro population of the island, except in the case of their own slaves, with whom they live and fare very much alike. The slaves on the various estates of the island form also so many distinct communities, and those on one estate have but little intercourse with those on another. If the master is an Arab of high position his slaves regard themselves as superior to those on the estate of an Arab of lower position, and treat them accordingly as inferiors; and, hence, there is frequently not only a rivalry but a positive hostility between the slaves of different estates.

When the last epidemic of cholera appeared on the island it did not extend gradually over the estates in any particular direction, but found centres in different estates, sometimes at great distances from each other; and slave-villages, at remote distances from the town, were often attacked with the disease before those in its immediate neighbourhood were affected by it. The reason of this will be apparent when we consider some other customs common to all the negroes.

There is a great diversity of custom among the negroes as regards the attention paid to the sick and the dying;

and this might be expected as they belong to so many different nationalities and tribes. Those who have been born on the island, or who have been brought to it in their infancy, and have been admitted to the Moslem creed, follow the customs of their masters; but many are not Mohammedans, and seem to do as they were accustomed when associated with their own people. In their attentions to their sick they vary from kindness to indifference, and extreme brutality.

Those who have been recently brought to the island from the main-land show great indifference to each other, and manifest a want of sympathy which one does not expect to find in the human race. Even Dr. Livingstone, with his strong partiality for the negro race, admits the fact; for in his *Last Journals* (v. I, p. 156), he says:—"A poor child, whose mother had died, was unprovided for; no one who is not a relative will nurse another's child. It called out piteously for its mother by name, and the women (like the servant in the case of the poet Cowper, when a child) said, 'She's coming.' I gave it a piece of bread, but it was too far gone, and is dead to-day." Similar cases I have, myself, seen in Zanzibar, but only amongst those recently brought from the main-land.

While negroes of this class show no sympathy, they seem to expect none, and when seized with mortal illness they endeavour to crawl into the bush there to die alone. I have seen negroes lying on the sea-beach in a dying state, and persons of their own race laughing and jeering at them in passing: but I have also known a case in which a negro carried his wife, who was in a dying state, a distance of twenty-five miles to his hut; she died on the same night, and her place was filled next day by her successor.

The mode in which the negroes dispose of their dead has been described in the last chapter, and although there

is nothing very striking in it, nor in their treatment of the dying, as bearing upon the spread of infectious diseases, the mode in which they appropriate and dispose of the effects of the dead seems to have a very important bearing upon such propagation.

This leads to the consideration of the negro market-places, which are great institutions in the town of Zanzibar for the coloured race generally.

At early dawn, and sometimes even long before, negroes from distant estates on the island set out for town, carrying on their heads the agricultural products of the country; cloves fastened up in bags of matting, cocoa-nuts, oranges, and fruits of various kinds, in long leaf-baskets. Such articles are conveyed to the store-houses of previous purchasers in town, or to the public market-place, there to be exposed for sale. From six till nine o'clock the main thoroughfares leading from different directions to the town are thronged with people, and for miles out of town there is a continuous crowd moving along in the same direction, like a stream of black ants, and the resemblance is more striking from the custom which prevails of those belonging to the same estate marching along in single file. On Thursdays and Fridays, more especially, the number of negroes flocking to the town is immense; as on these days, which are at their entire disposal, they bring to the market their own commodities for sale, such as goats, fowls, eggs, sweet potatoes, bananas, vegetables, and fruits of various kinds. Such articles are hawked through the streets for sale, or exposed in the public market-place. The crowd at the market-place is swelled by the town negroes, who come there to dispose of articles of dress and ornament, and rob and swindle their cousins from the country; and from eight till ten o'clock the large open space is a dense and impassable mass, through which it is impossible to elbow one's way.

Stolen goods of every description are exposed for sale, and prominent amongst them are the spoils of the dead, filthy loin-cloths, and shirts; jackets and caps; soiled mats; miscellaneous rags of various sorts, and rickety bedsteads or cartels. While the late owner of such articles is being fastened up in a piece of old matting, previous to being carried off to the common receptacle for the dead at Nazemodya, some self-appointed legatee may be disposing of his effects in the crowded market-place; for when a negro dies, he is at once stripped by his friends, and whatever his disease may have been, his clothes and all his belongings are immediately disposed of in this way. Such articles are generally purchased by the negroes from the country with part of the produce of their sales, and the buyer usually adorns himself with the article at once, as being the easiest mode of carrying it; and should it happen to be a bedstead, he balances it on his head, and starts for his home.

The public market-place is to the negro what the custom-house is to the mercantile classes, and thither all who can do so resort for business or pleasure. The approaches to it are lined with negroes selling betel-nut, pepper-leaf, lime, and tobacco, for the convenience of those addicted to the Oriental custom of chewing: there are also rows of barbers who, without the aid of soap and water, shave the negro scalp and axilla with saw-like razors, or ordinary sheath-knives: there are also the water-girls disposing of the fæcal-smelling water for drinking purposes, and others selling small square pieces of that highly-prized delicacy, semi-putrid shark.

By eleven o'clock the market-place is usually empty; and the morning's business and recreation being over, the negroes return to their huts with their purchases, too often saturated with the poison of small-pox or cholera, as the case may be.

There is another circumstance connected with this daily influx of negroes to the town of Zanzibar which merits special notice, as probably tending to the propagation of epidemic disease, and of cholera especially.

In describing the general configuration of the island, it was stated that the slope of the land was from the central ridge towards the west and east, and in these directions all the streams run. There is only one stream in the island, in so far as I am aware, that is crossed by a bridge, and that only at a single point. The negroes, therefore, in passing backwards and forwards, wade through these streams in hundreds, and through those near the town in thousands every day. I certainly speak from my own observation when I say that not one out of a hundred crosses those streams near the town without bathing in them and polluting them. Thousands of people must do so daily in the streams of Bububu and Mtoni, from whence the shipping is supplied with water now, and has been from the beginning of the present century, and probably for long before. In these streams the negroes also wash their clothes, and allow them to dry on their bodies during their journey. All the foul clothing of the town is washed in the streams contiguous to it, and the two streams, Bububu and Mtoni, are frequented more than all the others put together.

While all this traffic is going on—while thousands of negroes are crossing the streams, bathing in them, and using them as a public convenience, a gang of negroes may be at work, at not many hundred yards distance, filling water casks for the shipping with what Captain Burton calls this “necessary.”

I have considered it proper to invite attention to such manners and customs of the negro population, as some of them have an important bearing on the spread of epidemic cholera, and may tend to explain some of the more

obscure movements of the epidemic when the diffusion of the disease throughout the city comes under consideration.

The negroes, as previously observed, constitute by far the largest section of the population, and the Arabs are next in order as regards number.

The Arabs are the ruling race in East Africa, and they form a considerable section of the population of the island of Zanzibar, and more especially of the city, the seat of government. They nearly all belong originally to Eastern and Southern Arabia, and especially to the provinces of Omân and Hadramaut. They are all Moslems, but they are not the only Moslems in Zanzibar, for the natives of India, usually called Hindees, belong to the same creed, but to a different branch thereof. In Zanzibar, as elsewhere, creeds form the basis of distinct communities, and those holding the same common faith are sub-divided into sects, owing to differences regarding theological tenets—those of one sect having as little intercourse with those of another as if they severally belonged to a different faith. The Arabs of Zanzibar are separated socially from the natives of India by nationality, and the only connection between them is that of contiguity, resulting necessarily in a certain amount of business intercourse. In all other respects they might as well be, the one on the western side of the Persian Gulf, and the other on the eastern. But they are, in addition, separated by a still more impassable gulf, that of theology; for although the Arabs and the Hindees are adherents of the Moslem creed, they belong to rival sects, the Hindees being Shîa'ahs, or Separatists, a term applied to the followers of 'Aly, the cousin and son-in-law of Mohammed. There is an equally well-marked sub-division among the natives of India; for, although they are nearly all from Western India, the Hindees are as entirely distinct, socially, from the Bhattias, commonly called

Banyans, as they are from the Arabs, who are of a different nationality.

In Zanzibar there are thus different sections of the community in a state of social quarantine, or isolation, as complete as is possible without their being separated by walls of stone and lime; and this distinction may be expressed by the well-known saying:—"The Jews have no dealings with the Samaritans." Although there are several orthodox Moslem sects, there are but two which appear, in Zanzibar, in strong contrast to each other, viz. the Sunnis and the Shîa'ahs. The relationship which subsists between these two rival sects is somewhat like that with which we are familiar as existing between Roman Catholics and Protestants, with this exception, that the Moslem controversy is conducted with more suavity of manner, and less display of temper, than is usually witnessed among Christian polemics. The two sects hold different views regarding the Khalifate, and the difference in doctrine somewhat resembles that regarding Apostolic succession among Christians. The Shîa'ahs regard 'Aly, the son-in-law of the Prophet, and his descendants, as the successors of Mohammed, and the only legitimate Khalifahs; and, consequently, they regard Abu-Bekr, Omar, and Osman as usurpers, and curse their memory as the murderers and spoilers of 'Aly and his two sons, Hussein and Hosayn. Those opposed to them maintain that Abu-Bekr having been appointed by Mohammed, during his last illness, to lead the daily prayers, was his successor, and the first Khalifah, and they regard the followers of 'Aly as usurpers of the divine right of prayer-leading, and as being guilty of high treason. At a very early period, however, another sect appeared, not conciliatory, but opposed to both, for they denied the divine right of descent altogether; opposed the claims of the Shîa'ah Khalifahs, as also of the Sunnis, and maintained that there

had been no Khalifahs since Abu-Bekr and Omar. This sect, called the Ibâdhiyah, took its origin in Omân, and is that represented by the reigning family in Omân and Zanzibar, the 'Al-bu-Sa'id clan. The distinction is thus both theological and political; and the Omâni Arabs, while differing from other Mohammedan sects on points of faith, have always asserted their political independence, resisting the territorial claims of both Turkey and Persia, it being one of their cardinal doctrines to deny that 'Aly and his successors, or the Khalifahs succeeding Abu-Bekr and Omar, were legitimate representatives of the Prophet. The Moslem Arabs of Zanzibar are thus widely separated from the Moslem natives of India of that place, not only by nationality, but also by political and theological tenets; they have no connection with each other except in business matters; they do not worship in common, neither do they intermarry; and in their differences they agree to be separate even in death, for their cemeteries are apart. Such differences do not give rise to any ebullitions of popular feeling except at the anniversary of the death of 'Aly, when the Shîa'ahs lament, and their opponents rejoice.

But while the Arabs are thus isolated by nationality and faith from the other sections of the community, they themselves are sub-divided socially according to tribal and family distinctions. The 'Al-bu-Sa'id clan, the head of which is H. H. Seyyid Burgash, is the ruling family of Zanzibar, and, as such, the Seyyid exercises authority over all the Arabs through their respective Sheikhs or chiefs. The Arab community, based upon the feudal system, is composed of members of many different tribes, principally from Eastern and Southern Arabia, each of which is presided over by its Sheikh or chief. It does not necessarily follow that he who is a Sheikh in Zanzibar is also one in Arabia, for the designation is often applied

merely as a title of honour, and he to whom it is accorded may be selected on account of intelligence and wealth. All Arabs are placed under their respective Sheikhs; and in cases where there may be only one family of a tribe, such are incorporated with other tribes. The arrangements in Zanzibar are somewhat artificial, and are liable to occasional change.

The Seyyid, or Lord, the representative of the Al-bu-Sa'id clan, sits daily in Durbar to receive the stated visits of the Sheikhs and the leading Arabs resident in the city, and to discuss public matters, although the visit may be ostensibly for congratulation only. The Sheikhs have also their own private Durbars, attended by the members of their own tribe, family, and friends; and a large portion of the time of a city Arab is taken up with such visits. The Arabs observe their laws of etiquette more rigidly than any other people, and some of their customs have an important bearing on the spread of disease, more especially their visitations of the sick in serious illness.

When an Arab Sheikh is seriously ill, it is customary for the Seyyid, attended by some members of his family, and by his Sheikhs, to pay the sick person at least one visit, and remain with him for some time. During his illness he is constantly attended by the members of his own tribe, who in reality constitute themselves his attendants, and are more constantly in waiting upon him than the members of his own family. Indeed, it is only on such occasions that his friends, generally, are admitted to the inner apartments of his house, as at all other times these places are sacred to privacy.

At certain periods of the day the sick-chamber is literally crowded by people coming to inquire personally after the sheikh's health, and at all times a number remain constantly with him. This custom seems to be satisfactory and agreeable to both parties, although the

reverse of that which prevails in European society, immediate relatives only being admitted, and even they but rarely. The visitors look upon their calls as a personal service that they are bound to afford, and consider that their attendance is as necessary as if it were in response to a call to arms. They imagine that the sick man requires society, especially during mortal illness, and also comfort and support from pious ejaculations. They also like to see their friend die with the fortitude of an Arab Moslem ; and when the last moments are approaching, the dying man's face is turned to the wall ; the sheet is tucked over his head, and he breathes his last. His kinsmen are also there to attend to his wishes regarding his business matters, and to see that they are executed. The main part of his property goes after death by Koranic law, but during his lifetime he may give as he likes, and he may wish to free his domestic or other slaves, to distribute money to the poor, or to endow the Church.

These, and all such matters, are noted and witnessed by his family and kinsmen, so that disputed wills but seldom occur. Undue influence is obviated when all are admitted, and the rationality of the testator is easily ascertained. The European physician is at first astonished at this crowd in the sick-room, and is inclined to order expulsion in cases where quiet is deemed of the utmost importance, but his request, although politely complied with at the time, soon ceases to have any influence. His kinsmen imagine that quiet is necessary only to secure rest and sleep ; but they consider that this can be equally well secured by their remaining quiet in the chamber, where they are ever ready and watchful to attend to the patient's wishes when sleep may have passed off.

There is another custom among Arab Moslems which is of considerable importance as regards the spread of disease. The greatest care is manifested to prevent con-

tamination of clothing from dejecta, fæces, urine, and blood. In cases of severe diarrhœa, dysentery, and cholera, the patient, as long as his strength permits, goes to the bath-room and closet. When his strength fails, or when he is unable to walk, he is supported and often carried to the bath-room. I once saw a young Arab of high family, who was suffering from an attack of dysentery, die, after being carried from his bath-room to his couch. He would never consent to use any convenience in his room. Determined to the last to perform the usual Moslem ablutions, he was carried from couch to bath-room till he died. To avoid, as much as possible, the contamination of fæces and urine in the bath-room, clogs are used, cut out of the solid wood, with the sole part about three inches thick. Ablutions are invariably made, and in the bath-room all clothing is laid aside. When utensils are used, or when linen is soiled, they are removed at once. After use the bath-room is washed out by an attendant.

In point of personal cleanliness there seems to be a very great difference amongst Moslems in different countries. There is, indeed, a very marked difference in Zanzibar, and I have no doubt whatever but that the spread of contagious, or infectious diseases, depends much upon this circumstance.

Amongst respectable Arabs in Zanzibar personal cleanliness is attended to in the strictest fashion, and forms the very basis of their religion. Without cleanliness it is sacrilege to approach God, even in prayer—to enter a mosque, or to touch the Koran; and while belief in the one God is essential as a doctrine of faith, frequent daily ablutions are as essential as a doctrine of practice. In several circumstances, such as while travelling in the deserts of Arabia, water may not be always procurable for the purposes of ablution, and in such exceptional

cases sand may be used instead ; but in all circumstances the prescribed ablutions must be performed by water, or by sand.

Some sects are stringent in the observance of prescribed rules, even to fanaticism. The neglect of a wife to intimate to her husband her condition at certain periods is not only a valid cause of divorce, but a divorce must take place. It is virtually a dissolution of marriage, and they cannot live afterwards together even in a state of concubinage. The wife is simply sent back to her friends. This is mentioned merely as an illustration of how stringent Arabs may be in regard to their semi-religious rules.

The bath-rooms and closets in an Arab house are very important parts of the establishment. Below the ground floor there is a large excavation like a dry well, roughly built in or walled, sufficient only to prevent the falling in of the earth. This is connected with the bath-room in the upper room by means of a large shaft. The bath-room itself is generally large, and varies in its internal arrangements, but it always contains a large tank, generally of concrete, which is filled with water from without. The floor is made to slope towards an aperture, through which the water of the bath-room, and all matter passes to the cavity below. No seats are used. The shaft is large ; not narrow and pipe-like. If these excavations were connected, by any system of sewers, with the neighbouring sea-beach, which is at no great distance at any point, an Arab house would be a model of cleanliness, in so far as excrementitious matter is concerned, and the drains would be cleansed by a constant run of water from the bath-room. The bath-rooms do not communicate with the other apartments, and the nuisance is not so great as in European houses. In many bath-rooms a closely-fitting stone is placed over the aperture.

As regards cleanliness, the ideas of the European and

the Arab are diametrically opposed ; what is not offensive to the one is disgusting to the other, and *vice versâ*. The Arab does not care much about spots on white-wash or paint, or dust on furniture. He does not object to fowls and goats being about the entrances and central enclosure of his house, nor to a donkey standing in the passage. Hence the house is an abomination to a European. Arab houses, although untidy, are not uncleanly as regards health ; but from the very fact of their being untidy, a large margin is left for negro accumulations. True to his innate principles, the negro will not exert himself in the slightest degree to prevent, by timely removal, any accumulations of rubbish. There are crowds, even gangs, of negro domestic slaves, male and female, about an Arab's house, but they will not keep even themselves clean. Nearly their entire time is spent in absolute idleness. Lying asleep, like so many dogs, on the stone seats in the front of the house, and in the passages, or taking a comfortable *siesta* on their cartels, they get through the heat of the day. An Arab's wealth seems to be indicated by the number of his domestic slaves, and his easy temper and amiable disposition towards them by the amount of filth which they are allowed to accumulate under his eyes and nose.

An Arab house is a plain, square, detached building, surrounding an open court, and is generally two or three stories high, the ground floor being considerably elevated above the level of the street. In the front there is a stone bench for loungers during the day. The lower front rooms are reception or waiting-rooms, and the upper front rooms may be called the private drawing-rooms or parlours. The side rooms and back rooms are occupied as bed-rooms, or are used as bath-rooms, sculleries, and kitchen. Slops are discharged into the central court, or the interspaces between the houses, and this gives the house a filthy

appearance; but when near the sea, they are sometimes carried off by means of a drain. Some of the houses are elegantly, but not tastefully, furnished. The furniture is generally Indian, and is placed more for appearance than use. The floors are covered with fine matting, and that again by rich Persian carpets. Before entering an apartment the sandals are removed, so as to prevent the possibility of contamination from filth. The custom is as rigidly observed as uncovering the head by the European, but the reason for it is better. Their habits and modes of life are simple, and in no way transgress the laws of health. In the Arab house there are none of those appearances of Oriental luxury which one is led to expect. They may be found in India and Persia, but not in Zanzibar.

The houses of the Arabs from Omân are much better ordered than those of the Arabs from Hadramaut. The houses of the latter are smaller; they are situated in more confined parts of the town, and in them much less attention is paid to cleanliness. The Omâni Arabs are wealthier, and of higher status, and they have frequently, as head servants or stewards, poorer Arabs, or Comoro men. The Hadramaut Arabs, on the contrary, are entirely dependent on slaves. In their houses there may be one or two tolerably well furnished and clean rooms, but, taken as a whole, the house is a filthy mass. Goats and fowls have the free run of the house and every corner is stocked with negroes of both sexes and every age. In the open spaces, even on the flat roof, the negroes are accommodated under palm-leaf sheds, and when all are collected they swarm like beetles. It was in these spots that cholera, in 1869—70, took up its first abode, and from them it gradually extended over the city, and eventually over a considerable part of East Africa.

The Hadramaut Arab is a hard-working, shrewd business man, and his life is spent in anything but a state of

lethargic indolence. He is a large slave-holder, but his operations are principally confined to the business of the city and the shipping. The great mistake into which he falls in regard to his domestic arrangements consists in massing his negroes within his own house.

The Hadramaut Arabs are the largest slave-owners in the city. All the portage is performed by their slaves, and as no beasts of burden are employed a very large number of porters is necessary, as every article, large or small, is carried. The loading and discharging of vessels, and the conveyance of goods from one part of the town to another is performed by contract, and the Arabs are accountable for losses by theft and breakage. Heavy responsibilities being thus involved, the masters keep their slaves as much as possible in their own houses that they may be more directly under observation. Every Hadramaut Arab who has any means invests his money in slaves, and his slaves, if strong and robust, work as porters; but if they are not, physically, able for heavy work of this kind they seek casual employment in various kinds of work, such as on board ship, or in the stores of European and native merchants. Large numbers are thus employed on board ship, working under the immediate superintendence of the sailors in the hold and on deck; and, in the stores on shore, thousands find daily employment in a great variety of work, such as the washing and sorting of gum copal, picking and packing orchella weed and cloves; drying and curing of hides, sorting and packing of cowries, &c. Males only are employed on board ship, but both males and females are engaged on shore in similar kinds of work. The dress of such slaves is a blue loin-cloth alone, which is generally as filthy as it can possibly be. Such slaves usually live in the houses or huts of their masters, in the native quarter of the town, and if the master be poor both fare and lodge much alike, the house and the hut being

invariably crowded. Servants in European houses, and also those employed by Indo-British subjects (who are not allowed to own slaves), belong to the same class of slaves. Those who act as European domestic servants are more cleanly in external appearance and dress, but all are intimately associated with their master's hut, and all consider it a privilege to be allowed to sleep outside their employer's house. Negroes all gravitate to the native quarter of the town whenever an opportunity occurs. The epidemic having broken out amongst the negroes in the houses and huts of the Hadramaut Arabs, the foregoing account may explain how the disease might be rapidly conveyed to the shipping, and to the houses of the Europeans and Indo-British subjects. It may be observed, however, that sailors on board ship are brought into much closer contact with the negroes than are Europeans on shore, for the former work along with them, while the latter merely exercise an occasional and general superintendence. The domestic servants of Europeans, abominably filthy though they be in their habits, are more cleanly in person than those employed by the Indians, for they always get a liberal allowance of soap for washing their clothes.

In regard to the dress of the slaves, employed in general work, it may be observed that the one loin-cloth is their entire clothing, for both day and night, and that it is worn till it falls in pieces. During rain it may be taken off and washed under one of the spouts from a house-top, and then fastened round the loins and allowed to dry on the body, or it may get a dip in the sea while the owner is bathing, but beyond this it is never cleansed.

There are good reasons for suspecting that this article of dress has played an important part in the propagation of cholera, more especially at its first outbreak in the houses and huts of the Hadramaut Arabs where cholera took its first firm hold.

Next to the Hadramaut Arabs may be ranked the natives of the islands of Johanna and Comoro, of whom there are many in Zanzibar. They occupy a lower position in the social scale than the former class, but their connection with the slave population is much the same. Large numbers of these people come to Zanzibar to improve their position in life, and many of them settle permanently there. Being naturally averse to anything like manual labour, they seek employment in European houses as head servants, and as overseers of work, in such occupations as have been described, and being frugal and provident they soon manage to accumulate a few dollars. Their savings are invariably invested in the purchase of one or more slaves, usually children or young lads. They are careful about their slaves as they constitute their entire fortune, and some of them are considerable slave holders. They seek employment for their slaves also as under-servants in European houses, or in light remunerative work, and they and their slaves almost invariably occupy the same hut, as it is necessary for them to exercise great vigilance to prevent their being kidnapped. These people are both slave holders and slave dealers. The Comoro and Johanna people form a distinct class; they associate only amongst themselves, and are not admitted on terms of equality by any class of Arabs; they nearly all occupy huts which are extremely filthy. While they themselves are clean, as regards clothing, their abodes are abominable, worse even than those of the negroes. They are extremely attentive to each other during illness, and are also careful regarding their slaves, although possibly they may have no higher motive than self-interest. The epidemic committed dreadful ravages both amongst masters and slaves.

Besides the settlers from Johanna and Comoro there are many from other countries, associated amongst themselves in like manner, and similarly mixed up with the slave popu-

lation. One quarter of the district called Ngambo is almost solely occupied by settlers from Madagascar, and is named Malagash town. These immigrants originally fled from the persecutions of the late tyrannical Queen, but for long before her time there seem to have been the same trading connections between Zanzibar and Madagascar as there are at the present day. There are also settled in Zanzibar a considerable number of Persians who originally came as soldiers, and even now the body-guard and artillery of the Sultan is composed of Persian mercenaries.

There are also many Wasawahili, sometimes called Aborigines, but quite distinct from the Wahadimu. They may be described as a negroid, or a mixed race, but the distinction between them and the negroes is very slight indeed. The Wasawahili inhabit the coast towns and villages, from the Jub to Delgado, and they constitute the principal part of the free coloured population of the various islands that fringe the African coast. They are all Moslems, but their religious practices are mixed up with many heathen superstitions, derived probably from the idolatrous Arabs who had settled in the coast towns and islands long before the time of Mohammed.

The Wasawahili do not engage in manual labour, and although some are tradesmen on a rough scale, such as carpenters and builders, they are nearly all engaged in petty commerce, and in connection with the caravans trading in the interior for ivory and slaves. Dr. Livingstone invariably calls them Arabs, and black Arabs, but they are no more Arabs than the West Indian negroes are Englishmen. They are Islamized negroes. Many of them are extensively engaged in the slave trade, and they are met with all over Eastern Africa.

There is one custom, regarding the clothing of the dead, prevalent among the Wasawahili, and probably amongst other sections also of the Moslem community, which has

a very distinct bearing on the propagation of disease. I think that the same custom is observed also by the natives of Comoro and Johanna. When the Wasawahili are seriously ill their kinsmen and friends assemble in full force, and crowd the hut of the dying person. The females also muster in large numbers to take part in the customary lamentations, and, before the dying man has breathed his last, every preparation is completed for the funeral.

When he is supposed to have departed life (but little time being allowed for the possibility of suspended animation), the body is washed and wrapped up in a perfumed winding-sheet, purchased at Mecca, should he have made the pilgrimage to that place. As is usual with Moslems, the body is interred on the day of death, and the preparations for the funeral are hurried on. Placed by the door of every Mosque is the funeral bier, somewhat like the cartel, with elongated side-poles for convenience of carrying. When the body has been washed and dressed, according to custom, it is placed on the bier, covered with a white sheet, and carried to the grave by four men, who are frequently relieved by others of the funeral party, or by passers along, who regard such acts as a pious duty. While the mortal remains of the Moslem are being carried to the tomb by the male relatives, in a solemn and decorous manner, the females commence the celebration of the funeral rites in their own peculiar fashion. Howlings and lamentations are indulged in freely by the female mourners, and outside the house or hut a procession is formed. The clothing of the departed is made up into one or more bundles to be carried to the sea-beach to be washed. The female mourner-in-chief is placed at the head of the procession, and surrounded by a bevy of old crones, who are employed in supporting her head and wiping away her tears, they wend their way slowly to the beach, where the bundles are unfastened and the form of washing the

clothes is gone through. This is evidently the vestige of a good old custom of washing the clothes of the newly dead ; but the clothes are not washed, they are merely dipped in the water, and brought back to the house.

When the burial has been concluded, and the form of washing the clothes gone through, the party assemble at the hut, and, what is technically called the "winding-sheet" is sent round, a term equivalent to "the hat," and a collection is made for the funeral feast, contributions being received either in material or specie, and after the feast the dance is indulged in.

The clothing of the deceased, usually of small amount, is divided among the relatives, and, without further cleansing than the dip in the sea described, the clothing is either worn at once, disposed of by private bargain, or put up to auction next day in the public market.

There are no conveniences in huts such as the majority of these people occupy, and no utensils except their earthenware water-jars and cooking pots. Evacuations from the sick are emptied out in the small enclosure in connection with most of the larger huts, or are left to be absorbed by the dry mud-floor.

When the epidemic appeared amongst the Wasawahili and their slaves, it carried them off rapidly and in great numbers.

The next class to be considered is the Moslem natives of India, subdivided into the Khojahs, Bahorahs or Borahs, and Mehmans. Each of these sects forms a totally distinct community, connected only by the necessities of trade and business, and even in such respects they have but little to do with each other. There is but little rivalry between them in business matters, for they follow different branches of trade and commerce ; they select different fields for business operations in the city, and on the mainland ; they meet and worship in different places ; they

settle their own disputes among themselves ; they have each their peculiar dress, and their manners and customs ; and they agree to be separate even in death, for their cemeteries are far apart. Amongst these people there is no such thing as proselytizing ; no system of propagandism. They are isolated from each other by descent and theology, which, combined, result in a rigid caste. The Khojahs are the most numerous and influential of the Moslem natives of India. In religion they are Ismaeliyahs, a heterodox Shîa'ah sect, who differ from the orthodox on some points regarding the seventh revealed Imâm some four hundred years ago. They form by far the largest section of the native mercantile community, permanently resident on the island. They are natives of Cutch, the Kattiwâr ports, Surat, and Bombay, but they may now be regarded as permanent settlers on the island, most of them having been born there. They are rigid Mohammedans, and, although they disregard the pilgrimage to Mecca, large numbers annually make the pilgrimage to Meshed 'Aly and Meshed Hussein, a religious duty incumbent on all Shîa'ahs. In doing so they do not usually sail direct for the Persian Gulf, but go by way of Bombay or Cutch, where they leave their wives and families among their relations in their original homes. A journey of this kind, which is undertaken primarily from religious motives, but also for business and pleasure, is never accomplished in less than a year, and frequently occupies two years.

The Khojahs of Zanzibar are exclusively engaged in business, wholesale and retail, being the principal merchants and shop-keepers of the place. They have thus extensive business connections with all the ports on the mainland, both in the sale of European goods and in the purchase of native produce ; and thus they are brought into intimate connection with the European and American merchants as middle-men, and also with the natives in the

city and on the main-land, as retailers. The Khojahs are essentially a business caste, their entire time from their earliest years being devoted to mercantile transactions, leaving little or no margin for other pursuits, or, for the enjoyment of what is so much prized by Europeans, the pleasures of the domestic circle. Business is commenced early in the morning, generally about six o'clock, and is continued till late in the evening, that is, till there are no more customers, or till it is time to retire. The outside business is conducted by the husband, who is in the shop only when not otherwise engaged, and the retail, or shop-keeping part of the business, is attended to by the wife and the junior members of the family. The wife is thus, not only the domestic partner in life, but also an active and indispensable partner in business; and, as every youth must engage in business, marriages cannot be dispensed with, and neither old maids nor bachelors are to be found in the community. The sole attention of the wife being devoted to business, from the very day of her marriage, household duties are entirely ignored, and the comforts of domestic life, as Europeans understand such, are quite unknown.

The houses of all the Khojahs, whether they be rich or poor, are all very much alike in size and arrangement, and their mode of living is identical, the only exceptions being in the case of some half-dozen wealthy, wholesale merchants. Their houses, arranged in narrow streets, converging towards the market-place, and custom-house, are generally without interspaces, and are two stories high, being built of coral-rag and lime. Along each side of the street and in front of the shops, there is a high, broad bench of masonry, used as a step and as a place for exposing goods for sale, and shaded from sun and rain by a narrow verandah of cocoa-nut leaf. The frontage of the shop, being the valuable part, is very narrow, seldom more than

twelve to fourteen feet, and is entirely open during the day time. The goods are exposed for sale on the floor of the shop, and on some narrow shelving surrounding it, the wife being seated on a low stool at the entrance with some rolls of copper money by her side. The purchaser stands outside in the street, that his movements may be completely under observation. Behind the shop there is a general store-room, and a narrow passage sometimes leads to a small open court behind. If the business is small, this store-room is used as the sleeping apartment, and the open court behind becomes kitchen, scullery, &c. In many houses the second flat is merely a room over the shop, and of the same size, about twelve feet square, and the entrance to it is by means of an almost perpendicular ladder through a hole in the floor, little more than sufficient to admit the body. In more commodious houses, the building extends further back over the store-room below, and is of equal size. The entrance to this is by means of a ladder or steep wooden stair, passing through the floor of the apartment above, which is invariably a combination of kitchen, scullery, bath-room, and closet, and from it a door opens to the bed-room in front. A stout rope, fastened to a beam in the roof, passes through the hole of entrance, by the side of the stair or ladder, to be grasped by anyone passing up or down, a highly necessary precaution to avoid a rapid and dangerous descent, fractured skulls being a common form of accident among the juveniles. The apartment, called the bedroom, is destitute of all but the necessary articles of furniture, and contains only one or two bedsteads, a few stools, a swinging cradle, a rickety American chair or two, and a chest. It is very difficult to understand where all the members of the household are stowed away at night, for the family is often large, and not unfrequently there is a grandfather and grandmother to be accommodated. This, however, is managed by turning the shop

into a sleeping room at night, when the goods are removed from the floor.

The cooking apparatus consists of a few broad-mouthed, earthenware jars, some tinned-copper cooking-pots, a few ladles made from the polished shell of the cocoa-nut, and some tinned platters, or trays, for the rice and curry, fingers and hands being used instead of forks and knives. There are always one or two water-jars, for drinking purposes, and for use in the bath-room and closet, all the different apartments being comprised in the one, the latter being separated by a low wall about four or five feet high, but not extending to the roof. The houses of the Khojahs vary a little in structure and furnishings, but not much, and as regards their sanitary condition they are as bad as bad can be, worse even than the poorest slave huts of the negroes; for such have no latrinæ within them.

There is always one, generally two, female domestics, whose sole duty is to attend to the work of the kitchen. They are of the pure negro race, portly, unprepossessing in appearance, of the mature period of life, and are generally named "Marashi" or "Rose-water." The name could never have been suggested by the odours which surround them, for compared with them assafœtida is a sweet-smelling perfume. The sight of Marashi cleansing her cooking dishes, or carrying on her culinary operations, or ladling out some drinking-water, is a sickening sight, and the stranger vows a great vow never to eat in a Khojah house, and never to drink, unless it be the water of the cocoa-nut. Negroes may be a most admirable class of people elsewhere, but in Zanzibar their presence in the kitchen and scullery is a sad necessity. In the Khojah house everything is left to the negresses, and the state thereof may be better imagined than described. The shop is the sitting-room and nursery combined, and the premises up-stairs are never visited, except at night, or when absolutely necessary.

The food of the Khojahs is exceedingly simple, and the principal meal consists of a rice and fowl curry. They are not particular about their water, and are generally supplied with the fæcal-smelling water from the Shamba well-pits.

But while that part of the establishment, so essential to the maintenance of good health, is entirely neglected, they are in general particular regarding personal cleanliness, more especially of clothing; but this arises principally from the circumstance that the use of white clothing is universal, and that it is considered shameful for anyone to appear except in a snow-white dress. The Khojahs, however, pay a heavy penalty for their inattention to all the laws of health, and outraged nature avenges itself by the infliction of an unusual amount of disease. They certainly suffer more than any other section of the population from fever, dysentery, hypertrophy of the liver, and more especially of the spleen, hydrocele, and various skin diseases. Their progeny are sickly and delicate, and the mortality amongst children is high. In some districts, such as Ngambo, about half the children, under ten years of age, suffer from enormously enlarged spleen, which in some cases fills half the cavity of the abdomen. The Khojahs would soon die out, from preventable disease, were they not recruited by fresh blood from India. The condition in which they live is not the result of poverty, for many who live thus are very wealthy men; neither is it altogether the result of inclination, for many would wish to see a better state of matters, but the invariable answer is—It is our custom. If the Indo-British subjects in India are allowed to live in the same insanitary condition that they are in Zanaibar, there can be no difficulty in understanding how cholera is endemic there. Limited as these people are to certain streets, occupied solely by themselves, it would not be unreasonable to compel them to do, as a

body, what would be invaluable to them, namely, to put their locality in a sanitary condition compatible with ordinary health.

The Khojahs, although destitute of the comforts of home life supply the inevitable vacuum by many public gatherings and festivities, and as such customs may have some bearing on the spread of infectious diseases, such as cholera, I may refer to some of them briefly.

The *Karamu* of the Khojahs are evidently supplementary to their defective domestic system, and they are entirely unlike any institution known amongst Europeans. It is unnecessary to explain the constitution of the Jumaat, further than to mention that on Friday of every week, the several individuals of the Khojah community are expected to meet in a public building set apart for the purpose, and among other duties to partake of food, or indulge in a substantial meal, according as they may feel inclined. The head of the Jumaat is elected annually, and he holds office for one year, his functions being something like that of chief magistrate, or Lord Mayor. His duties are honorary, and both onerous and expensive, as the responsibility of the weekly, and all other feasts, falls upon him, in addition to many other functions, such as that of Registrar. He supplies the provisions for the feasts, according to a scale fixed at the time of his acceptance of office, and sufficient merely to cover expenses. It very frequently happens that, on account of a rise in the price of provisions, a very heavy loss is sustained. These feasts are attended by the entire community, and the majority make a thoroughly substantial meal, more especially the juveniles.

In addition to the stated weekly feast, there are many others, in connection with deaths and marriages, on which occasions a feast is held to be necessary. Such feasts, however, vary in magnitude according to the circumstances of

the relatives, from a few bags of cooked rice to a series of expensive repasts often extending over several days, and sometimes for one or two weeks. Rich and prosperous men also frequently entertain the entire community on special occasions. The poorer classes habitually frequent such entertainments, and to them the feast constitutes the principal meal of the day. The community spends a considerable portion of its wealth in this way, and the custom is not without special and important advantages. At the Jumaat they meet on common ground, and a kindly feeling between the individual members is engendered. They take care of their own poor, and exercise a supervision over the conduct of all, besides looking after the interests of the whole as a class. Members who are a disgrace to them by their conduct may be expelled from the Jumaat, but such are generally quietly removed out of the island and sent to India, their native country. The custom, however, is attended by corresponding disadvantages, for it has the effect of making the people more careless concerning the comfort of their own homes. A more cheerless, uninviting abode, is not to be seen than a Khojah dwelling-house.

On festive occasions, such as marriages or holidays, there is a great display of wealth in female dress and ornaments, silks and satins of decided hues and patterns, massive gold bracelets, anklets and necklaces being worn, but the common attire is of a very plain and inexpensive material.

But there is another custom which is worthy of special notice, namely, their visitations during illness. The community being comparatively small, and belonging almost exclusively to certain districts in Western India, the members thereof are all known to each other, and are more or less closely connected by marriage. Family ties of this kind are regarded very differently from what they are in Europe, and social reformers would benefit their country fully as much by learning as by teaching. Every

degree of relationship, even the more remote, is recognised, and poverty, or lowness of station, is no reason for anyone being discarded. Visiting the sick, more especially during severe illness, is incumbent on all the relatives, male and female, and this is not with them a mere matter of form, but an actual and often a dangerous service. No custom amongst Europeans bears the slightest resemblance to this. The care and treatment of the sick person, if supposed to be dangerously ill, devolves more upon the congregated relatives than upon the actual head of the house, and not unfrequently one of acknowledged influence gives sole directions regarding the treatment of the case. A wife, during illness, is under the care of her mother and female relatives, and the husband, when ill, is looked after in a similar manner. Generally speaking, every individual is attended to in sickness by his or her relatives, even of remote degree.

In no class of society, civilized or uncivilized, Christian or Mohammedan, have I ever seen so much kindness and genuine affection displayed towards each other as I have constantly witnessed amongst the members of this community. During the epidemic of cholera, when it prevailed amongst them with extreme severity, such traits of character were particularly observable, and the presence of a deadly disease in their midst never prevented them from hurrying to the houses of their afflicted friends.

The Bahorahs, or Borahs as they are sometimes called, form another section of the community, quite as distinct as the former. They are less numerous than the Khojahs, and are similarly occupied in commerce, but some are artizans, such as tin-smiths and watch-makers. They are well known throughout India as pedlars. The Bahorahs are a highly respectable class of people, and quietly pursue their own avocations without interfering with anyone else. They are rigid Moslems, but worship in their own mosque,

and have no connection with other Mohammedan sects. They have their peculiar dress, and are the only class in Zanzibar, with the exception of the Persians, who wear a kind of trouser. In manners and customs they resemble the Khojahs, and during illness they attend to those of their own class, in the same way as the Khojahs do. Their houses are of similar structure, and some are mixed up in the same streets with those of the Khojahs, but in general they are grouped together in different localities.

The Mehmans are but a very small body, comprising only a few families. They are not Shîa'ahs, like the Khojahs and Bahorahs, but are more closely connected with the Arabs in religion. All the Moslem natives of India form three distinct communities, each living in a state of isolation, except in regard to business.

The Banyans, as they are called in Zanzibar, are Bhattias of the trading caste, and they form a very important section of the native community in Zanzibar, and most of the trading towns on the coast of the main-land. As they have always enjoyed a singular immunity from the various epidemics of cholera in East Africa, it will be proper to give some details regarding their mode of life in Zanzibar. I am not aware to what extent this class of people have suffered from epidemic cholera in Cutch, their native country, or in the various districts of India in which they are settled; but information on this subject, interesting though it would be, is of minor importance, for the Banyans in Cutch and India, generally, live under very different conditions, as will be seen hereafter, from the Banyans in Zanzibar and East Africa.

The natives of India previously described, the Khojahs, Bahorahs, and Mehmans, are usually called Hindees, in contradistinction to the Banyans, who are designated Hindus. Besides the Bhattias there are other Hindu castes, but the members thereof are few in number, and

unimportant. Such are the Khattri, and Sutar, or carpenters; the Wani; the Lohar, or blacksmiths; and the Sonar, or goldsmiths. The Hindus, although natives of Western India, are very widely separated by religion, and by caste peculiarities, from the Hindees, or Moslem natives of India, and also from every other section of the population. Cutch is a native state, under the protection of the British Government, and all Banyans, as well as other natives of India in Zanzibar, are under the jurisdiction of the British Government and are by treaty entitled to manage their own affairs, without the interference of the local government. Nearly the entire commerce of Zanzibar passes through the hands of British subjects, over whom the native local authorities have no jurisdiction whatever. The Banyans, and other natives of India, have doubtless had mercantile connections with the East Coast of Africa from time immemorial. It is probable, however, that the Banyans have not been settled, in the manner in which they now are, for any great length of time, in Zanzibar, perhaps only from the beginning of the present century. They never, even now, settle permanently, as it is not lawful, or according to their customs, for their women to cross the sea, and consequently their wives and families remain in Cutch, or some other part of India. Their mode of life, in these two places, is thus entirely different; for, in Zanzibar, they never live in family, and there are none of their race there except those who are engaged in the active pursuits of business, and youths who are commencing their business life. The Banyans are the capitalists, and the merchant princes of Zanzibar, and in many respects they are the real ruling power. They farm the customs, and draw all the duties levied, paying to the Seyyid a certain sum, annually, according to contract. They have agents at all the ports of the Zanzibar territories where duties are levied, and, being extensive merchants

as well as the capitalists and bankers of the place, they are connected directly with the principal mercantile transactions thereof. Directly, and indirectly, they hold almost unlimited sway over the commerce of the place; but although they have drained East Africa of millions upon millions, and although families have realized princely fortunes, not a single copper has ever been expended by the fraternity for the benefit of the country. The Banyan, born to be a trader, commences business life at his teens, and there being no choice of profession, he pursues it eagerly: having no ideas beyond business, he devotes himself to it with assiduity for life; for in its successful pursuit his sole happiness consists. Although settled on the coast, the Banyans never leave the seaboard to go into the interior, but from their peculiarly favourable position as collectors of customs, they have an intimate knowledge of all the traffic thereof, and are more or less intimately connected with every trading caravan. Although the Banyans are detested by all Mohammedans, on account of their religion, they successfully, and quietly, maintain their position at the head of native society, on account of their wealth and position; and, were they to insist on the immediate realization of their outlying capital, it is highly probable that more than half of the entire island would come into their possession.

The Banyans are not all, ostensibly, merchants on the large scale, for many of them do business, apparently as small shop-keepers, but those of this class generally carry on a considerable and lucrative business as pawnbrokers and money-lenders, money being always advanced on good security, and on terms highly advantageous to the lender. This branch of business, the pawnbroking, necessarily merges into that of the purchasing and resetting of stolen property, and those, thus occupied, are under no supervision. The pawnbroking business belongs almost entirely

to the lower class of the Banyan community; and it is worthy of observation that the only case of cholera amongst the Banyans, in 1869, occurred in a place of this kind, and one of the lowest of the class, where all kinds of articles—clothing and jewelry—were taken in pledge or purchased. There is a very extensive business of this kind done, and stolen property, more especially jewelry, is seldom recovered; for ornaments of gold find their way instantly into the crucible.

As a class the Banyans are quite as honourable in their mercantile transactions as the merchants of Europe, and in Zanzibar at least, they appear in quite as favourable a light as those with whom they have to deal.

The manners and customs of the Banyans are very peculiar, and necessitate some description. The most of them occupy houses such as have already been described; but their shop, or their place of business, is their sole abode, and their bedroom is simply the four-legged cartel on which they recline. Their mode of life is the simplest possible, and it is difficult to see how any luxuries that they can indulge in can add to the pleasures of life. Their necessary food and clothing are of the plainest possible description, and cannot cost more than 30*l.* or 40*l.* a year.

Their food is entirely vegetable, and even of vegetables some are forbidden. No animal food of any kind (not even eggs) is ever partaken of. They do not eat jowary; but rice, wheaten bread, and mung or other pulse, vegetables, ghee, milk and sugar, are their staple articles of food. Their food, when cooked, is generally flavoured with assa-fœtida, turmeric, and other warm spices. They chew tobacco, but do not smoke, and they are addicted to the truly Oriental custom of chewing the betel nut and pepper leaf. Their food must be cooked by themselves, or by those of their own caste, and everything connected with their cooking and meals is according to their unvarying

manners and customs. They thus fortunately escape the pollution of negroes, and the cook of the house, one of their own class, is also water carrier; and, as the cooking is of the simplest nature, the services of negroes in the culinary department are not only dispensed with, but are not allowed by custom.

The water used must be drawn from their own wells, and by one of their own caste. No Banyan would touch, or allow himself to be touched, by water drawn by another save of his own caste.

This custom does not seem to depend upon any idea regarding the purity of the water; for, however pure it may be, the Banyan considers himself defiled if his person or clothing is touched by water drawn by another. The restriction has reference only to the vessel in which the water is drawn, or in which it is collected, for while rain water does not pollute, the use of rain water, collected by another, however pure the vessel may be, is forbidden by their customs. Wherever it is practicable, they have their own wells from which they alone draw water, and no others are allowed to approach them. When travelling, they take with them a supply of their own water for drinking purposes. One of the samples of water analysed, from the town wells, is from the best Banyan well in Zanzibar, and was drawn for me by a Banyan. The Banyans never use the fæcal-smelling water of the Shamba well-pits. When I first came to Zanzibar I was not aware of this custom of the Banyans. My first patient was a Banyan, and I considered it necessary to syringe his ears with water, and not being then acquainted with the language, I proceeded to do so at once. He eyed me very suspiciously while I was manipulating the syringe; but, when I approached him with it he tucked up his garments, uttered a loud cry, and fled. Ever afterwards, when the external application of water was necessary, they brought that drawn by themselves, and

cleansed according to their custom the apparatus to be used. When it was necessary to administer medicine in solution, the Banyans invariably brought water in a clear, glass bottle, and the bottle was completely covered with a clean white cloth, so as to prevent the contents from being seen. When the medicine was weighed out, it was put on a piece of paper, handed to the Banyan, and he himself put it into the bottle. The bottle used was invariably a *new* decanter of clear glass, never one that had been used before, unless the medicine was for external use.

It was not until very recently, within the last two years, that a Banyan would take any liquid medicine, even such as a small quantity of a tincture added to the water. Now some do, but the custom is not by any means universal. Recently the bottle has been brought to me, wrapped up in a scarf, and handed to me uncovered, and no objection was offered to me putting the medicine into the bottle myself, but this has only been of late. While a Banyan would give another a drink of water, he could not use the same vessel himself again. I have never seen a Banyan drink water. When I had any operation to perform where there might be fainting, water was brought, and partaken of, under the large scarf held up as a screen. It is said that they do not allow the vessel to touch the lips, but pour the water into the mouth, and then gulp it down.

The same rigid rules are applied to their food, both in cooking and eating. The food used I have already mentioned, and animal food of all kinds is held in abhorrence. Even to speak of animal food, naming it as such, in the hearing of a Banyan, would be regarded as equivalent to cursing Christ in the hearing of a Christian. All animal life is sacred amongst them, and, while they would drive or sweep vermin out of their abodes, they would avoid killing them. I have seen a Banyan lift a bug carefully, carry it to the door, and deposit it on the street to shift for itself, and find

quarters elsewhere. A Banyan will take a vermifuge, saying that the worms must be expelled either alive or dead. He may kill, but only in self-defence. They are averse to talking about their modes of cooking and eating, but all is done in secret except among themselves. They never eat with others, nor in the presence of others, on any occasion. I have seen all classes at their meals, and have been admitted into the Harem, the *sanctum sanctorum* of the Arabs, but I have never seen the Banyans at their meals. The more rigid Moslems will not eat with others, not of their own faith, but they may be seen eating. Not so with the Banyans. If the eye of a stranger rests upon their cooked food, it must be thrown out, or given away as unclean. Their platters are made of leaves stitched together, and when the meal is finished, the leaves, and all that is left of the meals, are thrown out to the cows, who are regularly in attendance at such hours. They use no stimulants of any kind. Their diet is thus of the simplest possible description, and as free from contamination of any kind as it is possible for human diet to be. It is also rigidly clean in its preparation. In a large house, where there are many resident, they take food in a separate room, and wear only the loin-cloth, other articles of clothing being laid aside, and they always wash after meals. Some time ago, while in attendance on the chief Banyan of the place, during illness, I observed that as long as he was able to walk, he left his couch, and was supported by two men, to and from the usual dining-room, at the hours of meals. At one time a change to Cutch was recommended, and although prepared to charter a large steamer for the purpose, he said that he would be certain to die on the passage as he could not have a supply of milk, which was almost the only thing that he could take. When told that he could take a number of cows with him, he answered that it was not according to custom to do so—that the Banyans when making a passage by sea had

to prepare a sufficient supply of provisions beforehand, as they were not allowed to prepare or cook anything on board ship. The expense of chartering a steamer would have been very great, but that the reason alleged was *bonâ fide* was evident from the fact that after his death a steamer was sent to Aden with intelligence of his decease to his friends, and the firm which he represented.

The same scrupulous attention is paid by the Banyans to personal cleanliness, their clothing being washed by themselves ; and being invariably of fine white cotton, any impurity is readily seen. They rise at dawn, and the first hour or two of the day is devoted to the semi-religious rites of personal cleanliness. The most important part of the proceedings consists in "going to the beach," or to what we call the w.c. Previous to doing so, they put on a special dress, used on this occasion, and on no other ; and it is laid aside immediately on their return. While at the sea-beach they wash part of the body in the sea, and sometimes the whole body. They only wear the loin-cloth at such times, and the scarf, which they usually wear over the shoulder, is placed over the head, which is then turbanless. A fresh-water bath is afterwards taken, and the whole body is washed, sometimes with soap and water, but more generally with water only. At least half an hour is spent in cleansing the teeth with the tooth stick, scraping the tongue, and washing the mouth and throat. This is generally done at the shop doors, and, a considerable number being engaged in the operation at the same time in the morning, a small stream of water flows along the street. Such matters are never neglected by any Banyan, more especially the washing of the teeth, mouth, and throat, and the scraping of the tongue, and this is never accomplished in less than half an hour. When a Banyan is unable, from sickness, to cleanse the teeth and mouth, he is generally considered to be very close to the funeral pyre.

The Banyan next passes through the hands of the barber. With the exception of the crown, the entire head is shaved, and the whole of the face, with the exception of a slight moustache. The arm-pits are also shaven, and the hand and toe-nails pared, and cleansed. As is common with other orientals, the pubes is also shaved. The skin is usually softened by rubbing in a little fine oil. The cow being a sacred animal, it is said that they sometimes wash the face with its urine, and that they use the dry dung for cooking their food, but this I have never seen done. The Pokarna, the priests proper, do not cross the seas, and consequently there are none at Zanzibar. They have three or four religious houses, which they visit regularly, but they have no daily prayers. Their festivals, or feasts, are frequent, and are celebrated on their estates in the country, but the only excesses indulged in consist in an inordinate consumption of sweetmeats, sugar, and ghee or butter.

With the exception of an hour for the mid-day meal and *siesta*, the whole day, till late in the evening, is devoted to business. The last meal is eaten about 10 o'clock in the evening, and they then bathe, and retire for the night. A Banyan considers himself as out of order, and in an unsatisfactory state of health, unless his bowels are moved at least twice a day freely.

Sickness being to a Banyan the greatest possible misfortune, he is exceedingly careful of his health, in his own way. If confined to bed, he is in a state of unmitigated misery, being deprived of his only source of pleasure, business. To obviate this, parties are frequently made up to spend a day or two at the country, there to undergo a short course of purgation. An Arab is rather fond of appearing to be ill, and takes advantage of the slightest indisposition; as he is pleased, and gratified by seeing a number of people crowding to his house to inquire after his health, and attend to him. Time hanging heavily on the hands of

an Arab, feigned sickness is a pleasing variation and a source of great pleasure. The business Banyans have no leisure for such pastimes. When sick they get what attention is absolutely necessary, but no more; and the beds and surroundings in a Banyan house are not calculated to produce any desire for a lengthened occupancy. They are more ready than any other class of natives to apply for medical assistance on the first appearance of the symptoms of disease. No matter how bitter or nauseous the dose may be, they are ready to swallow it if it will cure them; and, if forced to lie down, they generally do so in their shops or places of business, and they are up and moving about whenever they are able to stir.

In some of the Banyan houses there are conveniences, as in those of the Hindees or Khojahs; but they are not generally used, or only at night. Their houses are the opposite of clean, in the European sense of the term; for there is abundance of dust, cobwebs, &c.; and the walls of the inner apartment may never have been white-washed. Paint, white-wash, highly-polished furniture, and speckless carpets do not, however, indicate the perfection of cleanliness. On the contrary, a European mansion may be kept in a worse sanitary condition than a Banyan house which might be pronounced a mass of filth.

In some respects the Banyans are very peculiar and inconsistent. They delight in having a number of cows about their houses, and where there is a central court it is filled with them at night. They often prefer to sleep in cellar-like rooms adjoining the central court that they may enjoy and derive benefit, as they suppose, from the odour of the cow-dung.

In their domestic life the Banyans are more secluded than any other section of the Zanzibar community. Their religion and peculiar customs separate them effectually from all classes;—from the Arabs, and also from their

countrymen, the Moslem natives of India. They are also separated more widely than any others, not even excepting Europeans, from the negroes. Negroes are, of course, employed by them for many purposes ; but in no Banyan house do they appear, as they do in all others, as domestic servants. If they are so employed I have never seen them during several years' experience. No commercial section of society could be more completely isolated from all other classes than the Banyans are. In their business transactions they come into contact with all ; but in their domestic life, such as it is, with none.

Soon after death the funeral pyre is prepared at a secluded part in the outskirts of the town. Sometimes it is composed of ordinary firewood, and blocks of odorous wood are added. The body is laid on the pile ; fire is applied, ghee or oil being added, with additional firewood if necessary, until the body is entirely consumed. When all is over, the ashes are collected and scattered on the nearest stream, or on the ocean. I have been told that unconsumed pieces of bone are collected and sent to Cutch, but of this I am not certain. The clothing worn by the deceased is also consumed on the funeral pile, and those who actively conduct the operations are unclean, and fast for three days.

I am not aware what is done with the cast-off clothing of the Banyans. I have never seen such articles exposed for sale ; nor have I seen the dress of a Banyan worn by others save those of their own caste.

The Europeans and Americans resident in the town and island form but a small section of the community, the total number not being more than fifty or sixty ; and they, like the Banyans, have always enjoyed a singular immunity from the ravages of cholera. It will be unnecessary to give any description of their mode of life ; for it differs in no respect from what is customary in

the countries to which they belong, unless in trifling respects modified by climate. In most of the European houses, Goanese and natives of Johanna and Comoro are employed as stewards, cooks, and head-servants ; but negroes are also employed in the kitchen and scullery, and generally as under-servants. The houses are as scrupulously clean as it is possible for such to be where native servants are employed ; and personal cleanliness amongst the servants is not only encouraged by liberal allowances of soap and water, but is constantly insisted upon. Although the operations in the kitchen, more especially in the cleansing of the cooking-pots, would not meet the approbation of the European housewife, there is no liability to the contamination which exists in the kitchens of the Khojahs. Europeans are also very particular about their water supply, and that ladled out from the Shamba well-pits is never on any occasion used. The drinking water is invariably filtered, and every precaution is used to secure a supply of the purest description ; so that even when mixed it is purer than the best water supplied to the Arabs, or than that drawn by the Banyans from their own wells. It may be superfluous to observe that, in personal cleanliness, Europeans are perfection, the bath and a complete change of clothing being habitual at least once a day, and very frequently twice. Cleanliness in the European house is the one thing constantly insisted upon, and the purity of the water is a subject carefully attended to, spring water being that which every one insists upon having supplied for drinking purposes.

While the different sections of the Zanzibar community are thus isolated from each other by nationality and creed, they are all closely brought together by business in the Bazaar and Custom-house. There are bazaars in different districts in the town for the sale of special articles, such as the shark bazaar, the fish and the goat bazaar ; but the

term is applied, generally, to the streets occupied by the retail shop-keepers. With the exception of the houses of the Arabs and the huts of the negroes, all others are more or less shops; and all the main thoroughfares consist of lines of retail shops. The majority of these shops are general stores; but several are devoted to the sale of specialities, such as grain, ironmongery goods, salt-shark, &c.; and the entire business is in the hands of the natives of India. In such streets buying and selling goes on from morning till night, and day after day, without intermission, bringing all classes into contact with each other; but, as a general rule, the purchaser never enters the shop, negroes not being trusted in the vicinity of loose articles.

The Custom-house is the place, however, where the great business meeting of the day is held, and where merchants and people of all classes gather together to transact business, it being a combination of exchange and market-place. The Banyans, who are the presiding deities of the place, appear on the sphere of action at an early hour, after having gone through their elaborate morning ablutions, and, with an air of supreme indifference, but with minds intent on business, they take their seats at the receipt of customs. The wives of the Hindees having taken up their position for the day at the shop doors, their husbands, from all the different quarters of the town, gravitate towards the centre of commerce, and all are dressed in snow-white clothing. Arabs engaged in business also assemble there, and Europeans are generally to be met with between eight and nine o'clock. Nearly all vessels are discharged and loaded through the custom-house, so that the negroes supply a considerable contingent to the crowd, and from seven o'clock till mid-day the place is a scene of the greatest bustle and activity. The Custom-house yard and sheds are thus the general places of meeting for all the inhabitants of Zanzibar without exception. Porters and coolies

required for the work of the day are hired there early in the morning, and they are engaged all day long carrying through it loads of every description to and from the shipping. During part of the period of the cholera epidemic, slaves in thousands passed daily through the Custom-house, as the open season for the slave importation commenced in May ; and outside the gate there was a regular slave-market, where money to defray the custom-dues of a gang was raised by the immediate sale of a portion thereof.

At the Custom-house there is thus, during the morning and forenoon, especially, a congregation of all the inhabitants of the place, who mix freely together, and not a single section of the community is unrepresented there. Negroes, whose only dress is a ragged loin-cloth, elbow their way through the crowd, and gangs of slaves from the interior of Africa, without a single article of clothing, are landed there from the closely-packed slave-dhows ; and, as was the case during the last epidemic, with cholera in their midst.

CHAPTER XI.

NARRATIVE OF THE EPIDEMIC OF 1869-70, IN THE ISLAND OF ZANZIBAR.

NO great importance is to be placed upon the statement of the natives regarding the relative severity of the epidemics of 1836, 1858, and 1869; for events of this nature are soon lost sight of, or entirely pass out of recollection. Even now a person might spend a year or more in Zanzibar without hearing anything of the last epidemic unless he made special inquiries regarding it.

The various epidemics from which the island has suffered have all reached it during the same season of the year, the period of the north-east monsoon, and there is no reason to believe that there was any difference between the meteorological conditions of the cholera years and those which were exempt from the epidemic. Neither does there seem to have been any essential difference in the sanitary condition of the city, or any great change in the manners and customs of the people since the beginning of the present century, when the island was first described by Europeans; for the descriptions of that date are identical, in so far as they go, with what I have myself constantly observed. For seventy years European and other ships, and all the native craft have taken in their water supply at the foul and polluted streams of Bububu and Mtoni, as most European vessels and all native craft still do. Drinking water contaminated with the excrement of men and cattle, diseased as well as healthy, skippers wondered then,

as they have done till the present day, why sailors died, and have persisted in ascribing the mortality to the deadly climate.

In some respects, however, there have been a few changes, during the last forty years, which may account for an increased mortality among the Arabs and the natives of India. Previous to 1835 there were but few Europeans at Zanzibar, and it was about that time that the first English mercantile houses were established, the consular flag having been hoisted in 1840. There were then fewer Omâni Arabs settled at Zanzibar and the opposite main-land than there are now, and but little was known of the interior of Africa. The Moslem natives of India had been settled in the place long anterior to this ; but their number was small, and their mode of life and business was very different from what it now is. At that time, and for many years afterwards, the natives of India possessed large and valuable estates which they cultivated, and then they paid fully more attention to agricultural than to business pursuits ; for there was no restriction to their owning slaves, although most of them were protected British subjects. They generally resided a considerable part of their time on their estates, and they occupied much the same position, in regard to the slave population, that the Arabs do at the present day. At that time the Hindees thus occupied a very different position to the slave population from what they have done during the last few years. Formerly every one was the owner of the negroes employed by him, both on his estate and in connection with his business as a merchant, as also in his domestic establishment. As every one possessed his own slaves, it was not necessary to go into the labour market to hire, for occasional work, the slaves of others. But when the slave enactments were enforced, according to which it was penal for a British subject to possess a slave, the slaves held by the Hindees were freed, and the latter were

ultimately obliged to part with their estates on any terms to the Arabs. Those slaves also, employed by them in connection with their business and domestic establishments being also emancipated, they were obliged to hire labourers. This gave rise, gradually, to an entire change in the condition of the slave population of the town, and a most disastrous one in so far as the slaves themselves were concerned. The Indo-British subjects being excluded from the market, and domestic slavery amongst them being at an end, the poorer Arabs, the natives of Johanna and Comoro, and every negro who could raise five or ten dollars, went into the market for the purchase of slaves to make profit by hiring them out as daily or monthly labourers. Domestic slavery amongst the Hindees ceased by the intervention of Great Britain, and there was great self-laudation in consequence; but its place was supplied by a new institution, a hundred-fold more galling to the negro, in the form of a slave-labour market, which scarcely existed before, the slave being obliged to work every day of the week, and to hand over daily or monthly, as the case might be, a portion or the whole of his gains to his master, receiving food, shelter, and an occasional loin-cloth in return. A distinct slave population, located in a distinct quarter, has thus been formed, and hence the labour market is supplied. Formerly the domestic slaves of the Hindees were resident in the house, and formed a permanent part of the household of their masters; but now the domestics, being hired slaves, are frequently changed, and are intimately connected with the households of the slave-dealers. Epidemic disease, therefore, breaking out among the slave population, would more readily affect the Hindoo population now than formerly, and this may account for the greater severity of the epidemic of 1869 among the Hindees than those of 1836 and 1858. Whatever the explanation may be, it is an undoubted fact that the

Hindees suffered most severely during the last epidemic, and but very slightly during the former ones, and that their altered relationship to their domestic servants is the only change which has taken place in their mode of life. It is not by any means unreasonable to suppose that being brought, through their domestic servants, into a closer connection with the quarters in which cholera first appeared, they were more exposed to the infection thereof.

The period of the north-east monsoon, as stated in a previous chapter on the climatology of Zanzibar, is the healthiest season of the year, although Europeans suffer then from increased temperature, and from certain exceptional causes, such as the impure atmosphere of the sea-beach being directed into their houses which face the northern harbour. In such respects, however, there was nothing markedly different during the season of 1869—70.

During the month of October 1869, previous to the advent of the cholera epidemic, the rains were rather lighter than usual, and terminated earlier, the weather, during that month, being very pleasant and moderately cool. The monsoon set in early in November, and throughout the month there were occasional light rains. During the preceding rainy season the rainfall was not excessive; but apparently less than usual. From about the middle of November the temperature in the sun was unusually high; but in the shade the sensation of heat was moderate, owing to the strong monsoon which was then blowing. During the months of December, January, and February, the heat was intense in the sun, and these months, more especially December and January, were the hottest I have ever experienced in Zanzibar. The sky was like a dome of polished steel, and the rays of the sun scorched and blistered; not a drop of rain fell, and but for the strong monsoon, the burden of life would have been almost insupportable. During the calms which

occasionally prevailed at night and in the early morning, the atmosphere in the native houses was suffocating, and could not be endured by a European for any great length of time. It may be stated generally that the monsoon rains were unusually light; that the north-east monsoon set in early and strong; that the temperature was unusually high, and that the monsoon months, proper, were unaccompanied by rain.

During the rainy season, immediately preceding the setting in of the monsoons, in March and October, there is always a considerable increase in sickness; but in the month of October, 1869, the population of the town was unusually healthy, and in the early part of November I had not a single case on my sick list, with the exception of a few surgical cases which had no connection with the climatology of the season. During the whole of my residence in Zanzibar I have never seen the town so free from general disease as it was during the period immediately preceding the epidemic, and during the first two months of its prevalence. There was little or nothing for a medical man to do; and, although this is invariably the case during the north-east monsoon, it was peculiarly so in the month of November, 1869. It has been alleged that invasions of epidemic cholera are usually or frequently preceded by a widespread tendency among the population to diseases of the alimentary canal of a choleraic nature; but there was nothing of the kind observable among the inhabitants of Zanzibar prior to the appearance of the epidemic. Atonic diarrhœa is common; but acute diseases of the alimentary canal, such as dysentery, are not of frequent occurrence, and as a general rule purgative medicines are much more extensively used than astringents. I had not a single case of diarrhœa of any kind under treatment, and I can state with perfect confidence that diarrhœa was not prevalent in Zanzibar prior to the invasion of the epidemic of cholera, nor during

the months that the epidemic was in the island. The term choleraic diarrhoea appears to me to be a most objectionable designation for any disease, and one leading to great confusion. It would be quite as correct to describe a disease as choleraic vertigo, choleraic suppression of urine, or choleraic apoplexy; for diarrhoea is but one of a series of symptoms of true Asiatic cholera, and by no means an essential one.

On the 6th October, 1869, there was no cholera in Zanzibar, and no report of its existence in any part of East Africa had reached the island. At about the middle of that month reports reached the place from Pangani that a caravan, which had recently arrived from the Masai country, had brought intelligence that a dreadful plague was raging in the interior of Africa; that an immense number of the Masai people had died, and that the disease was rapidly extending towards the coast. This was the news brought by the caravan, the inward and return journeys of which have been already described; but at this time the epidemic had not declared itself at Pangani.

From the description given, it was evident that the disease was cholera, and it was called by the Pangani people Ta'uni, the usual, though not strictly correct, designation of cholera. This, the first warning note of the fate of some 20,000 people in Zanzibar, within the next few months, attracted little notice from the foolish many, who said,—“It is nothing; cholera never came to us in this direction before.” Not a single precautionary step was taken to secure the population of the town and island against the impending invasion. Towards the close of October, additional intelligence was received that cholera had reached the sea-port town of Pangani, having passed rapidly along the caravan route from Harush, the frontier Masai town;—that there had been a dreadful mortality in the interior, and that the Pangani people were dying in

great numbers. This was the news brought to Pangani by the detachment of the caravan that remained at Harush to trade with the Masai, a few only having saved their lives by flight. This second warning was, like the former, disregarded, and not a single effort was made to avert the impending calamity, to mitigate its expected ravages, or to devise measures for the assistance of those who were soon to become its victims. The position taken by the authorities was thoroughly consistent with the idea that epidemic cholera was a disease the advance of which into an island was not to be averted; that its inroads were not to be stayed or modified by any human means, and that there was not the slightest necessity for concerting any measures for medical attendance on those attacked, for the purpose of saving life or mitigating suffering.

On the 27th of October the intelligence regarding the outbreak of cholera at Pangani was confirmed, and it was reported that a case had occurred at Mungapuani, a small village on the island of Zanzibar, about ten miles to the north of the town. This village, situated at a small harbour of that name, is a place at which dhows occasionally anchor for the night, when unable to reach the harbour of Zanzibar before nightfall, or to beat in against headwinds; and very frequently passengers land and proceed on foot to the town. Dhows very often anchor at this or other small harbours, during the season of variable winds, both in coming to, and departing from Zanzibar, there to await a favourable wind for running into the harbour, or for clearing the island when outward bound. October being a month of variable winds, there is then constant communication between Zanzibar and the opposite mainland, and dhows very frequently touch at Mungapuani. A dhow from Pangani touched at Mungapuani on or about that date; and, some passengers having landed during the night, a death from cholera was said to have occurred

next day. The precise date of the appearance of the epidemic on the island has not been determined, but the date to within a few days is certain. The question as to the precise day is of no practical importance whatever; neither is it of any consequence whether it appeared first at Mungapuani, or in the town of Zanzibar.

The official date of the appearance of the epidemic was 22nd November; but frequent deaths from cholera occurred during the preceding two or three weeks, although it was not till about that time that epidemic centres distinctly appeared in the city. The only important fact is that the appearance of cholera on the island was synchronous with the arrival of dhows from Pangani, then violently affected by the epidemic, which had reached that place from the Masai country. After the 27th of October various reports were circulated in the town regarding cases of sudden deaths among the negroes, the cause being ascribed to cholera; and the veracity of such reports was placed beyond all manner of doubt by the outburst of cholera, as an epidemic, amongst the slave population in the quarter called Melinde, at the north-west end of the town.

While the disease was reported as having appeared in more than one quarter of the town, the most important centre was in the district named, and in the house of a Hadramaut Arab, an extensive slaveholder, and the active partner in the firm which enters into contracts for the portorage of the place. The disease in this case had been directly imported from Pangani. The first cases imported into the island, at the close of October, did not become epidemic centres, or they were not apparently so, and probably a considerable number of cases had been imported until at last one appeared like a spark among the combustibles, and then the epidemic broke out with uncontrollable fury.

If the native reports are to be believed, and I see no reason why they should be discarded, the earliest cases did not become epidemic centres, and many deaths occurred before the disease showed any tendency to spread. Single cases of cholera may thus be imported into a large community without a subsequent spread of the disease, the conditions for its spread being absent, but when a single case finds in a locality its appropriate material for propagation, it may appear with invincible virulence, and poison the life fountains of an entire community. The epidemic of 1869 found its appropriate nest in November of that year in the household of a Hadramaut Arab in the district of Melinde.

The dwellings of the Hadramaut Arabs, and the connections of these Arabs with the slave population, have been described in the preceding chapter, the district in which they are located being that described by Captain Burton as "Black-town." The district of Melinde is included in the northern section of the town, and is the filthiest quarter in Zanzibar. In that portion of it facing the sea to the west, the salt market and the shark bazaar are situated, and the adjoining sea beach is not sand, but sewage mud. All along the beach, as far as the bridge which connects the main part of the town with Ngambo, there is an ancient deposit of dung-heaps, sufficiently solid to resist even the spring tides, and fringing the shore there is a mass of native huts, occupied by negroes, Wasawaheli, and natives of Comoro and Johanna. In the central part of the district the houses of the poorer class of Arabs are situated, as also those of the Arabs from Hadramaut and Sheher, neighbouring provinces in Southern Arabia. Goats' flesh being the principal kind of animal food used, and the butchery business being a monopoly of this class of Arabs, the butchery and the market for the sale of goats' flesh are also situated there. The central part of the district is

intersected by lines of streets, called the Melinde Bazaar, occupied by Khojah shopkeepers and a few Bahorahs. The district is densely crowded with a miscellaneous population, and is superlatively unhealthy and unclean, the mass of the slave population being assembled there. The Kiburuas and Hamalis crowd the houses of their masters, or live in huts in their immediate vicinity, and from hence they emerge in the morning for the labours of the day. The Hadramaut contingent of soldiers have also their quarters at Melinde, and formerly the district was crowded by large numbers of slaves, collected for shipment to the northern ports, the Persian Gulf, and the Red Sea. The streets of this district terminate in a *cul de sac*, so that the Hindee shopkeepers depend principally on the trade thereof, and the Melinde Bazaar is simply the bazaar of the slave population of the town. The houses of the Hindees in this quarter especially are exceedingly filthy, and the people themselves are of a lower class than in other districts of the town.

It was in this quarter of the town that the epidemic first broke out, and for some time it was confined to the slaves of the Hadramaut and Sheheri Arabs, the hamalis, or porters, being first attacked, and afterwards the kiburuas, or ordinary day-labourers.

The reports which I first received regarding the suddenness of the seizures, and the rapidly fatal results, led me to doubt their truth, and to conclude that they must have been gross exaggerations. Day after day, but gradually increasing in number, cases were reported to me of negroes being taken suddenly ill while at their work, and of their staggering home to die; and some were said to have dropped down in the streets in a state of fatal collapse, dying before they could be carried to their huts.

Regarding the fact of sudden death there could be no doubt, and as the cases at first were not numerous, I ascribed

the probable cause of death to heat-apoplexy, or sun-stroke, and not to cholera. In every outbreak of cholera during the summer season, or when the heat had been intense, medical men, who were not previously familiar with this dread disease, have made the same mistake as I did, and have ascribed the probable cause of death to heat-apoplexy, or sun-stroke.

The heat, as I have already mentioned, was intense, and the sun's rays scorched like fire: it was not unreasonable therefore to suppose that of a large number of negroes, working in the open air as coolies and porters, staggering along the streets under burdens sufficient to test the strength of as many horses, or working at orchella weed, gum copal and cowries, in close, ill-ventilated sheds, some might be attacked with apoplexy and sun-stroke. Conjecture, however, was soon brought to an end, and death was ascribed to its proper cause, epidemic cholera. From the first the disease declared itself in its greatest strength, the earliest victims being struck down at once, as if a deadly and rapidly-acting poison had passed into the system, producing within an hour, or even less, fatal collapse, ending in death.

Three and a half years before, while the epidemic was on its deadly march through Abyssinia on its way to Zanzibar, Dr. Blanc wrote of it thus:—*June 9th, 1866.*—"Cholera had by this time broken out in the camp [of the Emperor Theodore], and hundreds were dying daily. In the hope of improving the sanitary condition of the army, the Emperor moved his camp to some high ground, a mile or so north of the town; but the epidemic continued to rage with great violence, both in the camp and in the town. The church was so completely choked up with dead bodies that no more could be admitted, and the adjoining streets offered the sad sight of countless corpses surrounded by their sorrowing relatives,

awaiting for days and nights the hallowed grave in the now crowded cemetery. Small-pox and typhus fever also made their appearance, and claimed the victims cholera had spared."¹

Dr. Blanc was the only physician who had an opportunity of observing the peculiarly malignant nature of the disease from the time that it entered Abyssinia until it reached the island of Zanzibar in November 1869, and during the intervening period the progress of the epidemic through Africa was probably marked by the same virulence.

It was near the end of November before I saw a single case of the disease, and I imagined that the epidemic, confined as it then was to the negro population, might disappear altogether without my having an opportunity of observing any cases. As I was not usually asked to attend negroes during illness, except in surgical cases, I made efforts to see cases of the disease by arranging with the Arabs to send for me when any of their slaves were taken ill, and my own servants were also instructed to let me know at once of any case that might come within their knowledge. Still I only heard of deaths, and was informed by the Arabs that their slaves were dead before they heard of their illness. The epidemic, however, continued to spread among the negroes; and the number of deaths which had occurred, during the day and night, became the general topic of conversation among all classes; but the general impression was that the pestilence would not extend beyond the negro population. Up till the beginning of December I had seen but a few cases, and these only in a state of collapse.

Early in December an event occurred which, I have no doubt, had a very important bearing on the spread of the disease, and probably tended to increase its virulence; that event was the feast or the fast of Ramazan. The religion

¹ Dr. Blanc: *Story of the Captives*, pp. 66, 67.

of the inhabitants of the island is distinctly Mohammedan, the Christians and the Banyans being the only exception, and they are but few in number. It may be conjectured that the latter classes may have enjoyed some degree of immunity from their not having observed the ceremony ; but this is very doubtful. Still the cholera epidemic, breaking out amongst a population observing the fast of Ramazan, renders desirable a short description of the Mohammedan fast and festival, as it was the season of greatest mortality among the people.

The month of Ramazan embraces the period between the first appearance of the crescent of the new moon of the month of that name, and the first appearance of that of the new moon of the following month. The month of Ramazan, although following the other months in regular sequence, is not confined to any particular season of the year ; but, in course of time, gradually shifts over the entire year—the length of the Mohammedan year being only 354 days. For several years this fast must, therefore, be observed during the hottest months of the year, by which the hardship arising from its observance must be greatly increased. The number of hours of the twenty-four during which it is necessary to fast vary in different latitudes, as the time of fasting extends daily from before sunrise, or the appearance of the morning star, till after sun-set. Zanzibar being near the equator, and day and night being of nearly equal length throughout the year, the time of fasting is nearly uniform, being about fourteen hours.

Captain Burton observed this fast at Cairo, in 1853, with all the rigidity of a genuine Moslem, and he records his impressions regarding it in a very graphic manner.¹ The fast of that year, at Cairo, took place in the month of June, and was strictly observed by him, for sixteen and a quarter

¹ *Personal Narrative of a Pilgrimage to El-Medina and Meccah.* By Richard F. Burton, vol. i. p. 108.

consecutive hours, each successive day for a month. Few Europeans could have passed through such an ordeal, at such a time, and in such a climate, and the doing so was a good earnest of the accomplishment of what he proposed to undertake in the journey, which he eventually performed in such a daring manner.

Shortly after midnight, during the month of Ramazan, the signal is given by the firing of a cannon to prepare for the Sahur or morning meal, and water is brought for the semi-religious rite of ablution. The Sufrah is then spread, and the morning meal is partaken of, which is, strictly speaking, the supper, being the last meal of the twenty-four hours. This usually consists of what has been left from the principal meal of the evening, and when finished, the Salaam, or "Blessing on the Prophet" is sounded, this being introductory to the call to morning prayers. At half-past three in the morning the second gun sounds the Imsak, or the order to abstain from all food and drink until the evening gun announces the setting of the sun.

After the Imsak the Azan is sounded, which is the call to morning prayers. The formula of Niyat, which is preliminary to every act of devotion, is then observed, after which the devout Moslem proceeds to worship. The Niyat is simply a declaration of intention or purpose, and the morning Niyat of the month of Ramazan is a declaration of the intention of fasting. The customary prayers having been offered, the majority take some repose before the commencement of the active occupations of the day, and the rich and more lax often rest from dawn till noon. The great mass of the people go through the work of the day as usual, and to business men and the labouring population there is no difference whatever, either in the amount of work done or in the length of time employed. If a short repose is taken in the morning, till about six o'clock, the first thing done on rising is to perform the Wusu or Lesser

Ablution, which is invariably performed after sleep in a reclining position. Without performing the Lesser Ablution, it is regarded as sacrilegious to pray, to enter a mosque, to approach a religious man, or to touch the Koran. The occupations of the day are then entered upon and continued till the hour for mid-day prayers, after which there are the prayers at three o'clock in the afternoon.

Burton relates his own experience during this trying fast as follows:—"Weakened with fasting, the body feels the heat trebly, and the disordered stomach almost affects the brain. Every minute is counted, with morbid fixity of idea, as it passes on towards the blessed sun-set, especially by those whose terrible lot is manual labour at such a season. A few try to forget their afternoon miseries in slumber, but most people take the Kailulah, or Siesta, shortly after the meridian, holding it unwholesome to sleep late in the day. As the Maghrib, the sun-set hour approaches—and how slowly it comes—the town seems to recover from a trance. People flock to the windows and balconies, in order to watch the moment of their release. Some pray, others tell their beads; while others, gathering together in groups, or paying visits, exert themselves to while away the lagging time." At length the sun-set gun is fired, and the people hear the voice of the Muezzin calling to prayer, after which the second gun announces the breaking up of the fast of the day. "You exhaust a potful of water, no matter its size. You clap hurried hands for a pipe; you order coffee, and, provided with these comforts, you sit down and calmly contemplate the coming pleasures of the evening. Poor people eat heavily at once; the rich break their fasts with a light meal; a little bread and fruit, fresh or dry, especially water melon, sweet-meats, or such digestible dishes as 'Muhallabah,' a thin jelly of milk, starch, and rice flour. They then smoke a pipe, drink a cup of coffee, or a glass of sherbet and recite the

evening prayers, for the devotions of this hour are delicate things, and, while smoking a pipe after sixteen hours abstinence, time easily slips away. Then they sit down to the *Fatúr*, breakfast, *the* meal of the twenty-four hours, and eat plentifully if they would avoid an illness." Afterwards they go to the Mosque for the "Tarawih" prayers. The extra prayers during the Ramazan month occupy about an hour, and consist of twenty-three prostrations, with the Salaam, or blessing on the Prophet, after every second prostration. "And sometimes, high above the hubbub, rises the melodious voice of the blind Muezzin, who, from his balcony in the beetling tower rings forth, 'Hie ye to devotion! Hie ye to salvation! Devotion is better than sleep! Devotion is better than sleep!' Then good Moslems piously stand up, and utter, previous to prayer, 'Here am I at thy call, O God; here am I at thy call.'"

Again, half an hour before midnight, the "Abrar" or call to prayer sounds, and then those who have been late out return to prepare for the "Sahur," the morning meal.

Youths begin to observe the Ramazan fast at from thirteen to fourteen years of age. While there are minor differences regarding less important matters, all Moslems agree in practice in one point, namely, the strict observance of the fast from before dawn till after sun-set. Amongst the Shafei sect the fast ends whenever the sun sinks below the horizon; but those of the more strict Ibádhiyah sect wait till daylight has entirely disappeared, and they then perform their devotional exercises and afterwards eat. It is usual in Zanzibar first to drink a "madafu," the water of the young cocoa-nut, and then take some food of a light nature, the more substantial meal, in course of preparation, being partaken of an hour or two afterwards.

The greater number of the inhabitants observe the forms which have been described in the most scrupulous manner, and during the hours of fasting nothing is swallowed, not

even the saliva. It is not to be supposed that the great mass of ignorant slaves, who, previous to their being brought to Zanzibar lived in a state of heathenism, observe all the details of prayers during the night and day ; still they observe the fast of Ramazan in so far as it relates to total abstinence from food and drink from the appearance of the morning star till the setting of the sun. Every negro is indoctrinated by his Moslem master into the two fundamental doctrines of Islamism—the unity of God, and the Ramazan fast. Even in notation, when the Arabic numeral, Wahhid—‘one’—is used, it is customary to associate it with the word, Ullah—‘God ;’ so that when unity is spoken of it is always associated with the Deity. Negroes born in the household are all circumcised ; but a considerable term of probation is allowed to elapse before the rite is performed on recently imported slaves. The exceptions, however, are so few that it may be said that all the negroes profess the Mohammedan religion, and that all observe strictly the Moslem fast of Ramazan, and that they do so with the utmost rigidity. The observance of the fast is not necessary in cases of severe illness ; but, in such cases, the fast must be observed at some other time, after the restoration of health. As a general rule, even during illness, those who are sick do not swallow any medicine during the hours of fasting, and nothing short of the direst necessity, such as the burning thirst of fever or cholera, could induce them to swallow water, or even allow it to enter the mouth.

Fasting during the month of Ramazan, with the sun nearly at zenith, scorching and drying up everything, the human body included, causing the very atmosphere to quiver, and rendering the chunam pavements hot like the floor of an oven, must be a trial most severe to all, even to those who from their circumstances can abstain from labour. The want of food for fourteen hours is nothing ;

but the suffering from want of water must be dreadful. It is difficult to understand how business men, and more especially the labouring population, can endure such a severe trial, and yet they do so. Had I not been cognisant of the fact, I would have doubted not only the willingness, but the very possibility of people working under a tropical sun, within the hottest zone in the world, abstaining from water from before dawn till after sun-set, and this for thirty consecutive days. The hamalis stagger along the streets under their burdens, their only article of dress being the loin-cloth ; the kiburuas work as usual ; but instead of leaving during the dinner hour, they stop an hour earlier in the afternoon, many of them being engaged at the sifting of gum-copal on the flat roofs of the houses, without the slightest shelter from the fierce rays of the sun. Females are similarly employed as masons' labourers, and in pounding the flat roofs of newly built houses, and they keep time in their beating, singing, and lullalooing to the accompaniment of one or two shrill-noted fifes. The Ramazan month of the cholera year was, I am certain, the hottest ever experienced in Zanzibar, and yet labourers, engaged in such occupations, worked, and observed the fast, without compulsion. It is currently believed, but on insufficient grounds, that Moslems make no converts.

The first appearance of the slender crescent of the new moon, on the 6th December, 1869, announced the opening of the "Blessed Month," the month of Ramazan, 1285, A.H., and it was welcomed as usual by discharges of cannon, firing of muskets, illuminations, and other manifestations of general rejoicing. Little did those imagine, who took part in the festivities of that night, that the cannons' boom was the death-knell of thousands ; that the reign of death was established in the island, and that before the crescent of the moon of Shaowal appeared, at the close of the "Blessed Month," ten thousand of their number would

have closed their eyes in death. I pointed out to several leading men of the different Moslem sects the extreme danger that would occur from a rigid observance of the fast under such peculiar circumstances, more especially as the heat was so intense, and as the liability to seizure would be greatly increased by a fasting population; but such representations were of no avail. Actual sickness was a valid excuse for breaking the fast; but there was no excuse for the non-observance of the fast as a prudent or precautionary measure. It was soon evident that all classes of Moslems were determined not only to keep the fast, but to do so with the utmost rigidity, more especially the Khojahs and Bahorahs, and to make the month of Ramazan one of special prayer, and intercession with God, as the best means of averting the pestilence: they would suspend all business, and attend solely to the religious duties of the month: they would abstain from all work during the day, if necessary, and devote the night to prayer; but they would observe the fast, and if death came amongst them they would accept their fate, and die in the observance of their religious duties although they were cut off to a man. Such was the resolution which they came to, and to which they adhered throughout the month.

While the people were thus resolved at all hazards to observe the usual rites of the season, they were not averse to avail themselves of human means as a protection against the disease; and the Hindees, especially, applied for medicines, and directions for their use, that there might be no loss of time in case of their being attacked. Several of the more influential men applied for small supplies that they might have them at hand should any of their relatives be attacked; for it is invariably the case that a physician is not sent for until the head-man of the family has been apprised of the illness. A uniform system of treatment being absolutely necessary where a

general epidemic is to be met, and having had but little to do for nearly a month, there was ample time to resolve upon a plan of treatment, and to make preparations for facing death, which was already rampant in the district of Melinde. In a very short time I was relieved from the necessity of searching after cases. An Arab, a near neighbour of my own, sent for me at about midnight to see one of his household who was sick. She was an Abyssinian, or more correctly a northern Galla. Several cases of cholera, of a very severe type, had occurred in the house for two or three days previously, all of which terminated in speedy death. She complained of illness whenever the first symptoms were experienced, and I was sent for at once, and saw her within a quarter of an hour. She was a remarkably handsome woman, about nineteen or twenty years of age, and had all the appearance of being otherwise in perfect health. There had been no vomiting, no diarrhoea, no cramps; in short, none of the usual symptoms of cholera. She complained only of having been suddenly seized with vertigo, and the sensation experienced was of such a peculiar nature that she told her master that she was certain she had been attacked with cholera, and that she would die. When I saw her, I examined her most carefully, and there was then no nausea, no abdominal tenderness, no pain in any part of the body, no coldness of the extremities, and no apparent depression in temperature of the surface of the body. There was only a certain wildness in the expression of the eyes, a restlessness of manner, and an anxious aspect of countenance. Power of locomotion was as perfect as ever, and there was no failure of strength; but she was pulseless at the wrists. Sometimes I imagined that I detected a thread-like quivering of the radial artery now and again. The heart's action seemed to be unusually strong and rapid, and this, combined with the quivering motion of the pulse, seemed

as if the greatest possible cardiac power was being exerted to propel the blood to the remote capillaries. Within less than a quarter of an hour she was *absolutely pulseless* at the wrists. I imagined that the case was not hopeless, and endeavoured to impress her with the idea that she might yet get better ; but it was of no use.

Turning to her master, she said :—“ Oh, my master, I am dying ;” and she threw herself down upon the cushions on the floor. She said that she felt herself getting worse and worse every minute. It was most evident that hers was no fancied case of illness ; no instance of the working of a morbid imagination ; no illustration of the effect of intense fear acting on a susceptible frame ; for there was no evidence of the fear of death. It was more like a mental state induced by the consciousness that the fountains of life were being rapidly, though gradually, dried up.

In a very short time there was a marked change in the temperature of the body ; a peculiar coldness, altogether different from that induced by changes of atmospheric temperature—a coldness which would be more properly described as an absence of natural heat—the cold clamminess of death, which, when once felt, can never be forgotten. Coincident with this, there was the most remarkable symptom of all, a sensation of burning heat, ascribed not so much, at first, to the internal organs as to the surface of the body—a sensation so intense, that nothing could alleviate it but the external application of cold water. After the extremities, and the general surface of the body, this cold clamminess was most observable in the nose, and afterwards in the lips and tongue. Intense thirst was then experienced, which nothing but cold water could satisfy.

The pulsation of the temporal arteries ceased, and the carotids throbbed laboriously and spasmodically ; the plump rounded form of the body began to be effaced ;

the skin of the fingers, toes, hands, and feet became shrivelled; the features pinched; the eyes sunken, and glaring; and the entire aspect of the countenance changed. The voice became hollow in its tones, and sepulchral; the pulsation of the carotids entirely disappeared; the breathing became laborious, and the breath was as cold, or colder than a current of atmospheric air, and the heart's action began rapidly to fail.

The nervous system seemed to be intact, or only secondarily affected, and that to but a slight degree; for the intellectual faculties were clear to the last, and motion and sensation were but slightly impaired. She was dead in four hours from the first recognised accession of the symptoms. In all cases observed by me of true cholera, the first symptoms were invariably more or less psychical. Before the accession of pain, sickness, or other symptom of illness, which could be definitely expressed, there was a consciousness of something being wrong of an unusual nature; and almost every one seized seemed to know instinctively the deadly nature of the seizure. This was peculiarly the case with children, and young persons who could not definitely explain their sensations. Children, when first attacked, invariably cried, and showed other manifestations of terror, without being able to explain what was the matter with them. In every case that came under my observation, and before the close of the epidemic they were to be numbered by many hundreds, such were the first symptoms; and I have not a single case noted in which premonitory diarrhœa was first in the order of appearance. The gradual draining away of the blood by hæmorrhage would produce a different set of symptoms; but the same consciousness of approaching dissolution would be present, and it would be equally evident to the spectator that death would inevitably result, were the cause to continue in operation. Except in regard to suddenness of accession, and rapidity

of progress, the symptoms preceding death from hæmorrhage and death from cholera resembled each other in no respect whatever.

In this case there was no purgation; the bowels were moved once, but only slightly; there was slight vomiting once after taking some medicine, and at another time, after taking a full draught of water, which she could not be restrained from doing—the matter ejected being about the same in quantity as what had been swallowed.

In the more severe class of cases, death was reported as having occurred in from one to three hours. That such cases did occur, and that frequently, I have not the slightest doubt; for information concerning them was derived from different and independent sources. One man, whom I knew, felt himself taken ill, and he at once went to his hut, and fastened the door. He then wrote out some directions regarding the disposal of some little effects he had, and the liberation of his slaves: he was found lying dead three or four hours afterwards. I have seen cases of this sudden seizure, and they were altogether unlike cases of sun-stroke, or cases in which the nerve centres are primarily or secondarily affected. They more closely resembled cases of syncope, from failure of the heart's action. The negroes were so attacked while pursuing their usual avocations—when passing along the streets, and, in many instances, even at the graves of those whom they were engaged in burying. It was no unusual thing for those thus attacked to be carried, or supported, back to their huts, and within a few hours after to be fastened up in a mat and carried to the burying-place at Nazemodya, where they had been engaged digging graves for their friends six hours before. The month of November was emphatically the period of the epidemic among the negroes of the town of Zanzibar, and it raged with the greatest violence in the district of Melinde.

It may be worthy of observation that by far the most severe form of the disease appeared among the purely negro part of the population, the seizures being more sudden, and the deaths more rapid, than amongst the Arabs and Hindees. There was also, generally, an absence of premonitory symptoms, such as are common in cases of Asiatic cholera among Europeans. A variety of causes may be assigned to account for such severity of symptoms; but it is only necessary in the present narrative to record the fact, and to observe that whatever the cause may have been, it did not depend on anything connected with mode of life, or apparently so; for although others of the population living in the same localities, and under the same conditions, were affected with the disease, they were so in a different degree of intensity.

Amongst the negroes the most marked change occurred in a very short space of time, and within three or four hours the change was so great that one could scarcely recognise a well-known face. On one occasion I was called to see a negro whose face was perfectly familiar to me—one whom I could not avoid seeing almost every day. He had been about four hours ill, and when I saw him I could neither recognise features nor voice. He had vomited copiously once only, but his features were so pinched, his eyes so sunken, and his whole aspect so cadaverous, that I failed to recognise him.

The epidemic amongst the negroes in town did not by any means cease in the month of November; for it still pursued its course with almost equal severity throughout the month of December, in different parts of the town.

Towards the close of November, and the beginning of December, the entire population of the district of Melinde was affected, both slaves and masters. Indeed there was neither house nor hut into which death did not enter. It is by no means intended to be advanced as a fact that up

till this time the disease had been limited to this district ; for it had already appeared in other quarters, and even in distant parts of the island ; but the epidemic centre was there. The centre of the labour market being thus severely attacked, great difficulty was for a time experienced in carrying on the work of the place, as neither porters nor day-labourers could be got in sufficient numbers ; and this was the first indication of the severity of the epidemic. The Hadramaut and Sheheri Arabs suffered severely ; but the natives of Comoro and Johanna, who were more closely mixed up with their slaves, and who lived in the same huts with them, suffered much more severely than the Arabs, the percentage of deaths amongst them being quite as great as amongst the slave population. Arabs from Omân, resident in that district, were also attacked ; but in every case that I could trace, one or more slaves, resident in the house were first attacked by the disease. At length it appeared amongst the Khojahs, the Moslem natives of India.

Towards the end of November and the beginning of December the mortality in Melinde was dreadful, and the entire district was casting out its dead. Throughout the whole day, but more especially in the early morning and afternoon, negroes were to be seen hurrying along to the different burying-places in the outskirts of the town, carrying dead bodies, fastened up in a piece of matting, lashed to the centre of a pole ; and, when the epidemic in this district was at its height, frequently the matting was not sufficient to cover the body, and the head and legs protruded, the trunk only being covered. Every one began to look forward with awe and consternation as to what the next month would bring forth, the "Blessed Month" of Ramazan ; for the enemy was already in their midst, and the carnage had begun.

The Hindees are not located in any particular quarter of

the town, but occupy the main thoroughfares, and, although the epidemic was general all around them, they remained untouched for several weeks. At last, however, a case occurred in the district of Melinde, and two or three others, apparently isolated, and having no connection with each other, in different parts of the city; but it was not till the month of Ramazan that the disease appeared amongst them with the full force of an epidemic. In the cases which occurred, the disease appeared in the household among the negro domestics, and the females were attacked. The filthy abodes of the Hindees; their slovenly domestic arrangements; the disgusting habits of their negro domestic servants, and other circumstances combined, render it impossible to ascertain anything definite regarding the particular mode by which the disease reached them. In every Hindee kitchen there is not only the liability, but the certainty of both food and water being contaminated by excretal matter, in more ways than one; but chiefly from the Moslem custom of ablution as practised by the negroes. Hands are never washed, unless dipping in water may be called so. I have seldom ever seen in any Khojah house a separate article, such as a towel, used for such purposes, some article of dress being the only thing used. The kitchen and the closet being in close contiguity, frequently in the same apartment; the cooking being conducted with unwashed hands, and the cleansing of the cooking-pots and dishes being effected by any foul rag, or bunch of coconut fibre, that may be lying about, it is needless to go further than the kitchen in search of means by which the disease may have been communicated. The epidemic among the Khojahs did not spread from street to street, nor from district to district, and there was no appearance of the operation of any distinct local cause. When it appeared in a household there were generally two or more

attacked, but contiguous houses were not usually attacked at the same time, or in regular sequence. When the epidemic became more general amongst them, the disease appeared in families, the various branches of which were frequently situated in distant parts of the town, and this seemed to depend principally on the communications which they had with each other during illness, all being more or less brought within the influence of the same cause. Even during the great violence of the epidemic, the customs of the Khojahs were rigourously adhered to, and especially their visitations to the sick. Whenever one of their number was seized with cholera, intimation was sent to the relatives, and the house was immediately crowded with people, and by day and night relatives and acquaintances were passing out and in from the sick chamber. The small room in which the patient lay was crowded to suffocation, and I had generally to give a distinct order to keep the room clear, while I was present, as breathing would have been otherwise impossible. It was not idle curiosity that brought the people together; for all were anxious to afford what assistance they could, even to shampooing the extremities, an operation always grateful, and in certain stages of the disease, beneficial to the patient. By night and by day they hurried to the houses of their stricken relatives, and often remained with them for hours, or until death closed the scene; and it was often the case that they returned to their own homes, and families, bearing with them the germs of the deadly disease under which they themselves soon fell victims.

While the epidemic was commencing its ravages among the Khojah population the town was distinguished by its usual abominations of fœtid sea-beach, filthy abodes, pestiferous latrinæ, polluted wells, and some two thousand cholera corpses, in various stages of decomposition, lying in their shallow graves within the city, in its immediate

precincts, or exposed on the sea-beach of Nazemodya, poisoning the atmosphere of the place. Every possible condition for the spread of the epidemic was present, with the single exception of eating the bodies of the dead as was done in Manyema-land; for the people were drinking the filtrations of grave-yards and latrinæ, and those in the harbour were imbibing the excrement-tainted water of Bububu and Mtoni streams.

To attempt to trace the epidemic, during the month of Ramazan, with anything like scientific accuracy, would be a vain endeavour; for my time was entirely occupied, day and night, in going from patient to patient; but certain general facts were too deeply impressed upon the memory ever to be effaced. It is impossible to say anything regarding the period of incubation, for the period of exposure could not be ascertained; but the symptoms were marked by suddenness of accession, and the disease ran a rapid course.

Amongst the Khojahs there were no cases of sudden death, so common amongst the negro population throughout the epidemic; but there were frequent cases of death within from four to six hours, and it was manifest that the earliest appearance of the symptoms was usually during the night, or within a few hours after sun-set, when the fast of the day had come to a close.

It would be difficult to describe the state of the city, during that memorable month of Ramazan, without laying oneself open to suspicion of exaggeration; but the sights were very dreadful, and it could be compared to nothing but a beleaguered city, the inhabitants of which were daily falling in hundreds under the rifles of an unseen foe. In justice it must be said that the Moslem inhabitants of Zanzibar—Arabs, Hindees and Negroes—acquitted themselves nobly in the unequal struggle with death. In the history of almost every epidemic there are accounts of

the flight of a third or a half of the population, of the sick being left neglected, and the dead unburied. In a narrative of the epidemic of plague at Marseilles, in 1720, we read :—"As soon as one person in a house is seized with the distemper, that person becomes an object of horror and affright to the nearest relations ; nature instantly forgets all ordinary duties ; and the bonds of flesh and blood being less strong than the fear of certain death, shamefully dissolve in an instant. As the distemper which has seized that person threatens to attack them ; as the contagion communicates itself with extreme quickness ; as the danger is almost equal to him that suffers, and to those who approach him ; and as those who tend and help him have no other prospect than that of following him in a few days, they take at first the barbarous resolution either to drive him out of the house, or to fly and desert it themselves, and leave him alone without assistance or relief, abandoned to hunger, to thirst, and to all that can render death the more tormenting. Thus wives treat their husbands, and husbands their wives, children their parents, and parents their children : vain precaution, inspired by love of life, and horror of death ! By the time they take their resolution they have already caught the subtle effluvia of the fatal poison they would secure themselves from ; they are soon sensible of its malignity, and a speedy death is the punishment of their cruelty and baseness : others have the same hardness of heart towards them ; they are forced into the open street in their turn, or are left alone to perish in their houses without help."

No such scenes as those recorded regarding Marseilles were witnessed in Zanzibar : the population was not diminished a thousandth part by flight. Several of the more wealthy Arabs, who had no particular business matters to lead them abroad, remained more than usual in their houses, a judicious and a proper precaution ; but that was

all. Even when the pestilence was at its height—when death was in every house, and when homes were being laid desolate—the inhabitants were not panic-stricken, and there was no rush from the place to escape danger. A gloom, however, spread over the entire town, as if every individual was under the impression that before night or morning he might be a tenant of the tomb. Even amongst the lowest grades of the community, there was no indifference manifested towards each other; but all the more delicate and kindly sympathies of human nature were elicited towards the stricken of their own class; and the living and healthy accorded to the sick and the dying those kindly offices which they themselves might soon require at the hands of others. Without exaggeration it may be said that the chief occupation of the negroes consisted in attending to their sick and burying their dead; and during this time they were observing the fast of Ramazan. Believing as they did that death was inflicted by the hand of the destroying angel, and that the black race was doomed, but the European exempt, some endeavoured to save their lives by giving themselves a coating of white-wash, to lead, as they said, the evil spirit to believe that they were Europeans. The pestilence fell heavy upon the negroes, and, before the month of Ramazan closed, they must have buried several thousands of their number; but at last, tired of scooping out even the shallow graves, they began to expose the dead on the sea-beach, and to throw them over the bridge into the sea.

Ramazan month was a month of death to the Khojahs. Day after day the disease spread amongst them until at length all business, except what was necessary, was suspended. Few visited the Custom-house and the market-places, and nearly all the shops, except those where the necessaries of life were sold, were closed; for, as was the case with the negroes, the sole occupation of the living

consisted in attending to the sick, and in burying the dead. Even this, during the intense heat of December, was a severe trial to those unaccustomed to bodily fatigue and labour, and more especially during the fasting month of Ramazan. Early in the morning those who had died during the night were carried out to the burial-place at Nazemodya, and very frequently the same journey had to be undertaken for others on their return: these and other duties had to be performed during the day with a burning sun overhead, and without their allowing a drop of water to touch their lips from before sun-rise till the evening gun announced the close of the fast. Their sufferings in this respect must have been intense; but they were borne without complaint, and even without remark.

The scenes in the houses, and on the streets, by day and night, were of the most painful description. The silence of death, except sounds indicative of its reign, pervaded the entire city, and even the sports and merry laughter of the children were suppressed; for disease and death had invaded every family circle. Had the sun been less bright, the sky less clear, the more sombre aspect of nature would have been more in accordance with the feelings of the people. The physical accompaniments of the cyclone, the earthquake or the thunderstorm, rob death of some of its terrors; and the excitement of the battle-field renders men reckless of life; but when a population is being decimated by an unseen foe, when homes and hearths are laid desolate, and when one does not know but that within a few hours he himself may be writhing in the tetanic spasms of cholera, the scene in the "Narrative of the Plague in London" is easily understood, in which a woman, opening the casement of her chamber, in the agony of despair, "gave three frightful screeches, and then cried, *Oh! Death, Death, Death!* in a tone which struck the hearer with horror."

The people sat quietly at their shop doors, and only small parties were passing hurriedly and silently along to assist their suffering relatives. Even in the death-chamber there were no frantic demonstrations of grief, no tearing of hair and rending of clothes; but only a natural expression of grief, common to all, when ties of the closest nature are severed for ever; tears were hidden and sobs suppressed or only given vent to in private. After death the body was washed, wrapped up in the winding-sheet, placed on the simple bier, covered with a snow-white sheet, and reverently carried to its final resting-place, there being no difference whatever between the funerals of the rich and the poor. Everything connected with the Moslem funeral is plain, simple and appropriate, and forms a striking and pleasing contrast to the ostentatious, and vulgar displays of Christendom. At the Moslem funeral there are no hired keeners; no mutes, depending for their daily bread on their lugubrious expression of countenance; no mockery of black Flemish horses in mourning. Instead of being decorated with crapes, scarves, weepers, and other paraphernalia of mourning, each one comes in the usual dress of white, scrupulously clean; and on the way to the tomb appropriate passages from the Koran are chanted, and solemn responses are made by the company. From morning till evening, and day after day, the silence of the streets was broken only by the chanting of mourners which sounded more like the strains of victory than the dirge of death. According to their custom, when the funeral ceremonies were over the relatives paid their visit to the house of mourning, and seated themselves for a time in solemn silence along the street in front of the house.

It is a very unusual thing for anyone to be abroad on the streets of Zanzibar after eleven o'clock at night; but on moonlight nights the negroes usually assemble on the beach, and in the outskirts of the town, to dance to the music

of the tom-tom. During this Ramazan month the sound of the tom-tom was never heard, and even the negroes had no heart for the festivities of the season with epidemic cholera raging in the city. Instead of mirth there was mourning, and instead of laughter there was the wail of death.

When the plague was at its very height, raging in every quarter of the city like a devouring element, threatening all with destruction, praying parties, and Koranic chanters were organized, and they perambulated the streets by night, invoking God to stay the pestilence, and spare the living. Sounds of prayer and solemn Amens issued from the mosques, and from private houses in the streets, and in the early morning the call of the Muezzin to prayers sounded over the city.

Before sunrise, while the people were yet buried in sleep, the stillness of the streets was most oppressive; and there was usually a dead calm, with a thick mist hanging over the shore. When it was necessary to be near a patient for an hour or so, during the critical period, when the administration of medicine might be of some avail, I generally sat outside the house under the palm-leaf veranda. Often while sitting thus, near the bridge, the only sounds that broke the dead stillness of the night were the footsteps of negroes passing along to the bridge, bearing a dead body to be thrown into the tide below; but from no great distance much more disagreeable sounds greeted the ear, and sent a shudder through the frame, proceeding from the wild dogs at Nazemodya growling and fighting over the bodies of the dead. The stench from the dead bodies penetrated the outskirts of the town; and this, combined with the horrid effluvia from the sea-beach and lagoon, before the morning breeze had set in motion the stagnant air, was often overpowering, and caused nausea, which led me sometimes to dread an impending attack of cholera.

The ground set apart for burial was soon filled up, and fresh fields had to be opened in the suburbs. When the violence of the epidemic was somewhat abated, I had leisure, on one occasion, to walk over part of the suburbs devoted to interments at Nazemodya, and the entire space was red like a newly-ploughed field. Thousands must have been buried there within the preceding two months : fresh bones and skulls were scattered about on the surface of the ground ; and in the vicinity of the sea-beach headless and limbless trunks were lying in the bush, emitting a dreadful odour. It was about this time that the negroes commenced to throw the dead bodies over the bridge, and to expose them on the sea-shore, within reach of the tide. I believe that one reason for doing so was the dread of approaching the usual place of interment or exposure. The town and suburbs at this time was one reeking mass of abomination.

Shocking as were some of the scenes in Zanzibar, they were trivial as compared to what has been observed in other places visited by a calamity of a similar magnitude, and even in communities which claimed the highest position in civilization. The author of the "Journal of the Plague at Marseilles," in 1720, writes thus regarding the condition of a portion of that city during the plague:—"There lie extended about a thousand dead bodies close to each other, the freshest of which have lain there about three weeks; so that had they not been infected, the lying so long in a place exposed to the hot sun all the day, might have sufficed to render them contagious. All one's senses are affected at approaching a place where one smells afar off the contagious vapours which exhale from it. Nature shrinks, and the firmest eyes cannot bear to behold so hideous a sight ; those bodies have no longer any human form ; they are monsters that give horror, and one would think that all their limbs stir, the worms are in such motion

about them. Nothing, however, is of more urgent necessity than to remove these bodies from that place; every moment they are let lie there furnishes exhalations that must poison the air; but how shall they be taken up and carried to the pits without the town, which are at a very great distance? Bodies so putrified will not hold in the carts; the entrails, the limbs which are loosened at the joints by worms, would run out or drop off, which would scatter the plague and venom through the city.”¹

The Moslem negroes of Zanzibar acted better than the inhabitants of Marseilles; they buried their dead as a rule, and the exposures were exceptional cases, and common to all times, as well as that of the epidemic.

During the early part of December, while the disease was spreading among the Khojahs, one Bahorah and one Banyan died from cholera, and I attended both during their illness. The Bahorah was a stranger in the place, and came to Zanzibar, shortly before his illness, from the island of Pemba. He was lodged in an extremely filthy house, and he seemed to have had very little connection with those of his own class permanently resident in the city. Shortly afterwards two Bahorah females, who were sisters, died; but the disease did not spread among the community at the time. In an after period of the epidemic several deaths occurred among the Bahorahs; but not among those permanently resident on the island. Those who were attacked were strangers from the opposite mainland, and their cases will be described hereafter.

There was only one case of death from cholera among the Banyans. The singular immunity of the Banyans, during this and former epidemics, led me to describe, in a previous chapter, their manners and customs, and their

¹ *A Journal of what passed in the City of Marseilles while it was afflicted with the Plague in the year 1720.* Done at Marseilles, in the Town House, the 10th December, 1720.

peculiar modes of life, as contra-distinguished from those of other sections of the population, that an opinion might be formed as to any peculiarity in such modes of life which may have secured for them this immunity. I called attention also to the different branches of business in which the Banyans were engaged, varying from merchants on the largest scale to that of pawnbroker. The Banyan who was attacked with cholera, and who died in the course of a few hours, was one of the very lowest class among the Bhattias, and was a disgrace to that respectable community. He belonged to that class described as pawnbroker, old clothes man, purchaser and resetter of stolen goods, a veritable old Shylock. I was fortunate enough to be passing the door at the time of his illness, and, seeing a small crowd in his shop, I stepped in, as I knew that something unusual must be taking place. His shop was the most filthy den I ever entered, and contained old articles of dress of every description. The wretched old miser, suffering from the agonies of cholera, had not sufficient strength to drive the crowd of thieves from his shop, and he was struggling with some who were attempting to remove him by force to a space behind. He died in the course of a few hours. This Banyan was distinguished from the others of his class only by business. There was another case which I was suspicious about; but it was nothing more than diarrhœa. I may here observe that during the epidemic of cholera, diarrhœa was not common among the people. With this single exception, and this made me suspicious regarding the case, I had no cases of diarrhœa or of dysentery under treatment during the epidemic. At a later period, one or two Banyans died, and common report attributed death in one case to cholera. I did not see the case prior to death, but I made personal inquiries regarding it at once, and was satisfied that death was not caused by cholera, nor by any like disease.

However it may be explained, the immunity of the Banyans must be accepted as a fact.

Towards the beginning of January, the disease gradually abated, and hopes were entertained that its force had been expended, and that it had ceased as an epidemic. The mortality was still considerable, and isolated cases occurred here and there throughout the town; but my time was principally occupied, for about a week, in attending to the convalescent.

During these terrible two months it was estimated that there fell from this dreadful disease, in the city and suburbs, not less than ten thousand people, and amongst them, out of a population of about two thousand, one hundred Khojahs died in the month of Ramazan; and during that month I had never more than two consecutive hours of repose, day and night being spent amongst cholera patients. To have secured a night's rest flight or concealment, in some other house than my own, would have been necessary.

The Diffusion of the Epidemic in the Island.—Shortly after the appearance of the epidemic in the city, different estates on the island were affected, and several at considerable distances from the town; but it was not till towards the middle of December and the beginning of January that the epidemic appeared generally and in its greatest intensity in the rural districts. The only estate on the island from which I received any precise information was the sugar estate of Kokotoni, situated on the north-west part of the island, at about twenty-five miles distance from town.

I had medical charge of the people on the estate; but, owing to the severity of the epidemic in the city, I was unable to be present, and had to trust to the reports of the manager. The first case to which I could fix any definite date occurred during the first week of November. The

negro attacked had been in town, and was taken ill shortly after his return. The case terminated fatally. The second case occurred on the 12th of November, and the patient recovered. The attacks were generally described as being sudden, and they very often occurred while the people were at work on the cane-fields, so that there was considerable doubt at first whether they were not cases of partial, or complete sunstroke. Cases of sudden death from cholera occurred till towards the close of January, when the disease began to abate in severity, being much less acute than at first, the prominent symptoms then being nausea, vomiting, diarrhœa, and cramps.

Before the appearance of the epidemic at Kokotoni, medical stores had been sent, as also directions for their administration, in case of an outbreak, and there is reason to believe that everything possible was done, under the circumstances, for the medical treatment of the patients, for the isolation of those attacked, and for the prevention of the spread of the disease by such means as contaminated clothing; but, at the close of the epidemic, the mortality was estimated at six and a half per cent. of the population of the estate. The blocks of native huts on the estate are for the most part placed in hollow squares, and the huts are much closer than they are on the neighbouring Arab estates; but there was a detached building, used as an hospital, sufficient to accommodate from twenty to thirty patients.

The epidemic appeared at Kokotoni at a very early period, before it was officially recognized in town; and the disease was communicated from the town, and not from any of the neighbouring Arab estates. It was at an after period that the disease appeared, in its greatest intensity, on the Arab estates in the neighbourhood, and committed great havoc amongst the slave population.

It would be futile to attempt to trace out in an island so

thickly populated the lines of progress of the epidemic among the people, or to ascertain accurately the rate of mortality which ensued. The only reliable basis for a calculation of the mortality among the rural population of the island is to be derived from the death-rate at Kokotoni, and it may be inferred, from the following circumstances, that the death-rate there would represent the lowest rate of mortality among the inhabitants generally. The people on that estate were better fed and clothed, and in better bodily condition, generally, than the negroes on the other estates of the island. They were also more isolated from the surrounding inhabitants than those engaged on the Arab estates, and they had much less direct communication with the town's-people during the epidemic. An attempt was also made at isolation when the epidemic appeared, and those who were attacked were all under medical treatment. If such circumstances and precautions had any tendency to limit the spread of the disease, and to lower the rate of mortality, then we may safely assume that a mortality from cholera of six and a half per cent. would represent the lowest death-rate. It is perfectly certain that the mortality, on some of the estates, was as high as twelve per cent. ; but the average mortality would probably be about ten per cent.

It is impossible to estimate correctly the population of the island, and I am not aware that any one who has attempted to do so has ever visited all the different parts of the island ; and, even were this done, no correct estimate could be formed from simply seeing the people at work in the fields. In riding over densely populated parts of the island, very few people may be seen actively engaged in field-work ; but the island is more densely populated than rural districts in Europe ; and this may be accounted for by the almost entire absence of machinery and cattle labour.

At the period of the epidemic, the population of the island had reached its maximum, and since that time there has been a gradual decrease, which must continue to go on for many years, occasioned, first of all, by the mortality from the epidemic itself, and, secondly, from the subsequent suppression of the slave-trade. It is doubtful if the island will ever be so densely populated as it was then; for, as manual labour becomes more scarce and expensive, it will be necessary to employ cattle labour and to introduce machinery, a change which will be, eventually, for the benefit of all concerned.

The disease, in December and January, was reported as raging in every part of the island, each estate and each village becoming a separate centre. It did not spread over the island by a gradual, wave-like extension, having the city for its centre; but broke out simultaneously in different and distant parts of the island. This very evidently points to the town as being the centre of the disease, and to the population, passing to and fro between the estates and the city, as the means by which the epidemic was conveyed.

In a previous chapter, I have described the connection between the people of the country and those of the town, and the daily communication, more especially on the Thursdays and Fridays, which subsists, affording ample means for the communication of disease to distant parts of the island simultaneously. During the months that cholera was raging in the city and suburbs, there was no apparent diminution in the number of negroes coming from all parts of the country to the town to dispose of the produce of the estates.

The month of Ramazan, although a month of fasting, during the day, is also a month of feasting and festivity, during the night. Mutual entertainments are the order of the season, and every one is expected to feast his friends, according to custom. Expensive luxuries are also

indulged in, and every one is expected to be generous ; so that, while there is actual starvation for fourteen hours, there is often gorging and gluttony during the evening. December is also the beginning of the fruit season, and during that and the following months mangoes, in large quantities, are consumed by the natives. The month of Ramazan is thus a harvest for the people of the country, and large quantities of fruits and other produce are brought to the market for sale. The negroes from the country consequently flocked to the town, both to dispose of their produce, and to make purchases for their own family circles. Articles of clothing, worn by those who had died from cholera, were hawked about the market-place, and disposed of to the highest bidder, and an unusually large business was done in such articles at low prices. During the Ramazan month there is a tendency to turn everything available into ready money, to meet the expenses of the season, and the Banyan pawnbrokers drive a large business in superfluous clothing and ornaments. Throughout this deadly month of Ramazan and cholera, the country people were brought into close contact with the population of the town, and, if it be possible for disease to be conveyed from one spot to another by means of contaminated clothing, then the negro market-place, at the centre of the town, must have been a great focus of dissemination to every rural district in the island. Every day, numerous articles of clothing, supersaturated with infectious matter, like so many shirts of Nessus, must have found their way to every part of the island, forming minor centres of dissemination among every section of the populace.

In so far as the natives of Zanzibar were concerned, or more strictly speaking, those permanently resident on the island, the disease ceased as an epidemic towards the end of January. Isolated cases, however, occurred here and there, both in town and country.

The epidemic seemed to exhaust itself on the different sections of the population in about two months. Amongst the different classes, these periods overlapped each other, but the period of intensity was distinctly limited by a length of time not exceeding two months, and after that period the disease gradually subsided.

It would be extremely interesting to ascertain the law regulating this phenomenon of the disease. Whatever the law may be it has no connection with any change in the manners and customs, or in the habits of the people; for in every respect such remained unchanged. No sanitary measures were introduced, and no prophylactic or remedial treatment was adopted to arrest the progress of the pestilence: it died away, and disappeared for a time.

Diffusion of the Epidemic in the Harbour, and amongst Strangers.—From a very early period of the epidemic, the mortality in the harbour, among the crews of the native craft and square-rigged ships, was very great, and among the former especially.

The period between the monsoon, the "Tanga Mbili," or "double sailing," at the close of which the epidemic appeared, is the time for communication between Zanzibar and the opposite main-land, and the harbour is then generally well filled with native craft, of various builds.

The Mtepe is the favourite coasting vessel with the natives between Lamu in the north and Kilwa in the south. The beam is about one-third of the length of the vessel, and both prow and stern are long and projecting. The arched prow, adorned with strips of hide, is painted red, and has two round eyes, painted white, so as to make it resemble the head of a camel. The planks are not nailed, but pegged together, and the mast is long, tapering, and rakes forwards. The vessel is propelled by an immense square sail, made of matting, and carries from twelve to twenty tons or more. Such vessels carry

cargo between Zanzibar and the mainland, and are those generally employed in the conveyance of slaves, as a large number can be put on board, and have standing-room. It is well known that a ship, unless kept thoroughly clean, very soon becomes a floating abomination, and what these native craft are likely to be may be easily imagined. Never, on any occasion, being cleansed, the timbers are supersaturated with filth, and the stench is almost intolerable. When the huge square sail is hoisted, it is made fast; the vessel runs before the wind towards its port of destination, and the crew go to sleep, or sit down with their knees up to the chin and the arms clasped round the legs, the fatigue of standing or leaning being too great. Whenever the anchor is down, all the crew, if possible, make for the shore. There is generally but a very small portion of deck, and to protect the cargo from rain and sea, it is covered over with a low roof of palm-leaf thatch. The crew seek shelter and repose among the cargo, by day and night, and the Nakhoda sits and steers, being relieved every now and again by his subordinates. Except in cases of urgent necessity the bilge-water is never baled out, and it is needless to remark that the vessel never undergoes any process of cleansing from the day it is launched till its timbers are broken up.

It is not at all difficult to understand how such filthy craft should become plague-spots during an epidemic of cholera, and not only disseminate the disease in their immediate neighbourhood; but be the means of conveying it wherever they go.

The Badans, from Soor, Sohar, and Muskat, have towering stern-posts and powerful rudders. They are decked with a standing plank-covering, and have the usual large sail.

The Dhow, which is common all over the Indian Ocean, is distinguished by its low, sharp prow, and its towering, square stern. The deck is generally about a quarter longer

than the keel, and has an open poop. It has a single mast, raking forwards, placed a little ahead of midships, and has a huge square, coarse sail.

The Baghlah, "Shee Mule," is something like the former in appearance. The prow is so low and sharp, and the stern so huge and elevated, that the vessel looks, even when at anchor, as if it were about to dive to the bottom of the sea. Such are generally elaborately carved and painted, more especially the stern, and they have the usual enormous sail.

The Kidhow is of similar construction to the dhow, but only smaller. Instead of being pegged, the planks are generally sewn together with coir fibre, and are caulked with the same material. Native craft are usually smeared over with a composition of lime and shark-oil, instead of being sheathed with metal.

The conveniences are over the ship's side, or on small gratings fastened close to the poop, to which a leather bucket is attached for drawing water for washing purposes.

The Baghlahs are from Bombay and Cutch; and the Dhows and Badans from the Persian Gulf, the Gulf of Aden, and the Red Sea; the smaller craft being more strictly confined to the Zanzibar waters.

The arrivals take place throughout the entire period of the monsoon, the greater number, however, being at the beginning and towards the close, the general custom being to remain no longer at Zanzibar than is necessary for business. The greatest influx of strangers, therefore, is towards the close of the north-east monsoon, and the addition to the resident population is at that time very great indeed. At the very time when cholera, although dying out among the resident population, was still prevalent all over the island, the great influx of strangers took place, and the number of native craft in the harbour was unusually large. The harbour was literally

packed with native vessels, so that it was difficult to pass amongst them in a boat, and there being no harbour regulations, each was anchored according to the pleasure of the master. The mortality in the shipping was immense, and the harbour became a fresh centre of dissemination. The negroes pitched their dead overboard, and the crews of almost every vessel that came to an anchorage were attacked by cholera.

Towards the close of January the city had been considered nearly clear of the disease, and but few cases were reported as occurring in the island. The people began to breathe freely, under the impression that all danger was over. Religious services were held by the Moslems, and a special service of thanksgiving was also held by the Europeans; but almost immediately after this the disease broke out again, with great virulence, first among the strangers; and for the second time among the permanent inhabitants of both city and island.

There was one prominent and distinguishing feature in the epidemic of 1869-70;—it was a double epidemic. In the months of March, April, and May, I have cases, in my note-book, recording deaths among the negroes as sudden as during the earliest period of the epidemic. At the beginning of March, cholera reappeared at Kokotoni, and on the 4th of April there were 180 on the sick-list, the greater number being cases of cholera.

The earliest case of cholera among the European shipping in the harbour occurred in connection with the outbreak of the epidemic in the Oxford and Cambridge Universities' Mission, which originated as follows. On the 4th of December, 1869, the Rev. Mr. Fraser arrived at the Mission House, in Zanzibar, from Usambara, on the mainland, where cholera was raging at the time. He came by dhow from Tanga; and, there being head-winds, the dhow anchored at Kokotoni, at which

place he landed, with the intention of proceeding to the town of Zanzibar, a distance of twenty-five miles overland. He left Kokotoni in the morning, and rode to town, where he arrived about mid-day. The day was burning hot; one of the hottest I ever experienced in Zanzibar. He was in delicate health at the time; and, on the way to town, he drank water copiously, and very frequently, and he must have done so at the various streams which he crossed. He had been about five hours in making the journey. I happened to see him immediately on his arrival, as I anticipated serious results from his exposure to the sun. His face was much flushed, his eyes blood-shot, and he looked as if about to drop down from heat apoplexy. He did not complain of illness that day or the next; and, what was most unusual, his appetite was morbidly voracious. On the following day he became seriously ill: the abdomen was much enlarged, and tympanitic: diarrhœa set in; but not with the characteristic rice-water stools, the appearance of the dejections being more dysenteric. I had doubts about the nature of the case at first, as there were none of the usual symptoms of cholera present. All doubt, however, was soon at an end by the appearance of one symptom of an unmistakable nature, coldness of the surface of the body, accompanied with a sensation of burning heat. He could not bear the slightest covering, nor could he be restrained from pouring cold water on his naked body. He died on the 11th of December, a week after his arrival in town; and by his death the Mission lost a most sincere, zealous, and singularly good missionary.

Previous to Mr. Fraser's arrival, there was no case of cholera at the Mission. On the 7th of December H.M.S. *Dryad* sailed from Zanzibar, mainly for the purpose of getting away from the epidemic, which was then raging with great intensity in the town. A negro boy, from the

Mission, had been taken on board to be conveyed to Seychelles, and, two days after the sailing of the vessel, he was attacked with cholera. Previous to going on board, he was in his usual state of health, and there was no suspicion whatever of his being ill. The boy recovered from the attack; but the sick-bay man of the *Dryad* who attended him during his illness, sickened and died. The disease did not spread in the ship, or, at all events, no other fatal cases occurred.

On the 9th of December, a negro boy in the Mission died of cholera after a very short illness; and on the 26th of December, another death occurred. Several other cases happened which did not prove fatal, and the epidemic terminated at the close of December.

It is impossible to determine accurately how the disease was introduced into the Mission. It may have been introduced by Mr. Fraser, or he and the two negro lads may have been infected from some common source. The epidemic was confined to the Mission-house in town, where the boys were located, and no case occurred among the females who resided on the Mission estate, about two miles from town. The supply of water for both branches of the establishment was got from the same source; and, although not of the best quality, it was superior to that drawn from the town wells. Although not capable of absolute proof, it is highly probable that the disease was introduced by Mr. Fraser, and was contracted by him on his way from Kokotoni. No other cases occurred in the Mission until nearly three months after, at the time when the epidemic reappeared with great violence in the town and island. There was one death on the 22nd of March, and another on the 13th of April.¹

¹ I cannot but notice the noble, self-denying conduct of the Right Reverend Bishop Tozer during this trying period; for, without any thought of personal danger, he attended personally to the stricken, and not only administered the medicines with his own hands, but took into his own room, during the night, sufferers from cholera, lest they should be neglected in the hands of others.

Cholera, as has been mentioned, was prevalent in the harbour from the very commencement of the epidemic; and the crews, even of the European ships, did not escape. The American barque, *Sterling*, arrived from Aden on December 11th, and sailed for New York on December 27th. On the night of the 16th, two of the crew were attacked on board ship, and the stewardess, who was on shore at the time, was attacked either on the same night or the morning following. Another of the crew was attacked on board ship, and died on the 19th. The two first cases terminated fatally within a few hours; but the symptoms in each were markedly dissimilar. These were the earliest cases that I saw of cholera, as affecting Europeans, and it was very obvious that the symptoms of cholera were very different among Negroes, Orientals, and Europeans. It was more usual for the negroes, and the more primitive tribes, to be, as it were, overwhelmed with the poison at once, and they succumbed to its influence very rapidly; but with the Europeans there was much greater suffering, and a more dreadful struggle with death. One of those first attacked had gone to bed in apparently good health; but about midnight he awoke, feeling himself unwell. He was a powerful young man in the full vigour of health and strength. I never saw any human being suffer as he did: his agony was terrific, and his degree of suffering seemed to be in exact proportion to his strength and muscular power. Vertigo, vomiting, and diarrhoea had been the early symptoms; but, when seen by me, three hours after the apparent commencement of the attack, he was writhing under an agony of cramps and tetanic spasms. When under the influence of cramps, his muscles felt like bars of iron, or knotted iron ropes: sometimes he was doubled up from excruciating abdominal pains, and again bent back as in the spasms of tetanus, the body resting on the crown of the head, and the heels. His

features were distorted with pain ; his eyes appeared as if they would start from the sockets, and a cold perspiration was literally streaming from his body. When I first saw him he was pulseless, and he died in three hours afterwards. The other case was very different from this, but the patient died with all the symptoms of Asiatic cholera on the forenoon of the same day.

These four cases on board the *Sterling* had all, doubtless, a common origin, although it may be difficult to state precisely what it was. The barque was anchored in the north harbour, near the shore, and not far from Shangani point. It was not exposed to the effluvia of the sea-beach, unless during calm weather at night ; for the monsoon was blowing strongly during the day, from the north-east. There was of course communication with the shore, and negroes were employed on board ship.

There were three other square-rigged vessels in the harbour which were all attacked at about the same time ; the steamship *Malta*, the barque *Corsair's Bride*, and a Portuguese brig. The two former vessels were manned with English crews, and the latter, with a mixed crew from Mozambique and Malabar. The *Malta* was anchored pretty close in shore, towards the northern part of the north harbour. The *Corsair's Bride* was anchored well off Shangani point, at such a distance from the shore as to render loading and discharging cargo inconvenient ; and it was completely out of the reach of any effluvia from the sea-beach. In a sanitary point of view, the position of this vessel was all that could be desired. The Portuguese brig had been anchored previously in the north harbour ; but had moved round to the south harbour, well off the beach, and had merely taken up her position there, awaiting the arrival of the ship's papers, as all the cargo was on board, and she was ready to proceed to sea at once, her destination being Mozambique.

The crew of the Portuguese brig, which arrived from Bombay on January 2nd, 1870, was first attacked, and one man died on the 21st of January. The captain, who was a native of Portugal, was living on shore at the time, waiting for the ship's papers, and orders to proceed to sea. On making inquiry, I was informed that the man who died had not been on shore for several days; and that there had been no communication whatever with the shore, neither from the ship to the shore, nor from the shore to the ship, for two days. The chief officer said that after all the cargo had been taken on board, the men had been engaged in filling the water tanks and casks, and putting in the necessary provisions; that they then shifted the anchorage, and were ready to put to sea on a moment's notice. The ship had the appearance of being very clean, and in good order. The disease spread rapidly among the crew, and, preparations having been made, the whole of the crew, with the exception of three or four, were removed to native huts on shore. The ship was fumigated to a certain extent, and disinfectants were used. No other case occurred on board. Sixteen of the crew were attacked, and there were four deaths. Only one of those, who came on shore to attend the sick, was attacked with the disease. When no fresh cases occurred amongst those on shore, several days were allowed to elapse before the men were allowed to go on board. The vessel was detained in the harbour for more than a week after all the men had gone on board, as it was necessary to await the arrival of another vessel to supplement the disabled crew; but having anchored as far out as possible she was practically at sea. No fresh cases occurred, and she sailed for Mozambique on the 6th February. After a passage of eight days, she arrived at Mozambique, and during that time no fresh cases occurred; but, having a foul bill of health, she was put into quarantine for a month.

The *Corsair's Bride* arrived on the 17th of January, and on the 24th two of the crew were attacked, one of them being a man considerably advanced in years, and the other a young man who had been taken on board on a trial trip. I was informed that they had never been on shore, and that no natives had been on board. The elderly man died on the 28th, but the young man recovered. The *Corsair's Bride*, from the position of her anchorage, was practically at sea: in regard to cleanliness and order, the ship was a perfect model, and in such respect could not have been surpassed. The ship must, of course, have had some connection with the shore, although only by means of the captain's or agent's boats. The disease did not spread further in the ship.

The steamer *Malta* arrived on the 19th of January, and on the 24th cholera appeared among the crew. The two ships, although attacked on the same day, were far removed from each other in the harbour.

The *Malta* had decidedly an unhealthy berth. She was lying pretty close in-shore, opposite the foulest part of the sea-beach, and close to numbers of native craft, saturated with cholera. All hands were busily employed with the coals and cargo, and the deck was literally swarming with negroes. The probable sources of contamination were thus legion. It was deemed necessary to have the sick removed on shore at once, and completely isolated from the crew. A building, the property of the Indian Government, which was originally designed for a prison and hospital, was set apart for the use of the shipping, as an hospital, and to it the sick of the *Malta* were transferred, arrangements having been made for attending the patients by employing natives on shore. One of the stokers was attacked with the disease, and was removed to the hospital. He was progressing favourably, but was attacked on the second day with erysipelas of the head

commencing at the lips, and he died on the afternoon of the 28th. This was the first case of idiopathic erysipelas I had seen or heard of in Zanzibar.

The second case was that of the chief engineer. He went ashore on the 27th, contrary to orders; but was at work on the 28th in the boilers. He was attacked with diarrhœa at three o'clock in the morning of the 29th, and vomiting commenced at seven o'clock. He refused at the time to be taken on shore to the hospital; but was removed next day, the 30th. He appeared to be convalescent, and reaction had set in. On the 1st, he appeared to be still improving; but he suddenly became delirious, and died on the 2nd of February. This was the only cholera patient I had seen with the dry typhoid tongue. Another patient, belonging to the *Malta*, died in the hospital on the 31st.

A fourth was sent from the same ship on the 31st. He had been taken ill on the night of the 30th, and he died on the day of admission. He was a deserter from a whaler, and had joined the *Malta* on the day he was taken ill.

There were no other fatal cases on board the *Malta* while in harbour nor during the passage home.

While these cases in the harbour were occurring, there were, besides the *Sterling*, three other American vessels at the anchorage. An American whaler put in for provisions; but the captain made his stay as short as possible, and put out to sea, within two or three days. The American barque, *Glide*, also put in on her way to the States, but hurried off with the utmost despatch, and had as little communication with the shore as possible. In neither of these vessels did cholera appear after leaving.

The American barque, *Sachem*, which arrived on January 21st, was also lying off the south harbour. This vessel was detained longer than usual, owing to some necessary repairs which she had to undergo before sailing. When

the vessel was ready for sea, one of the crew deserted, and the captain set off in pursuit of the runaway. After searching, in vain, several parts of the town, he got sight of him among some native huts, near Nazemodya; but the deserter took to flight and made for the country at full speed, with the captain in pursuit. They had a run for about three miles before the captain captured the man. He then brought him back, and got him put on board ship. The weather was intensely hot, and when the captain returned from the pursuit, he seemed to be suffering very much from the heat. From such imprudent exposure and exertion, the most serious consequences might have been expected. On the same day, the 4th of February, I examined the crew. One man complained of diarrhœa; but there was nothing seriously the matter with him. The *Sachem* sailed next day, the 5th of February. On the afternoon of the day on which the vessel sailed, the man who had deserted was attacked with cholera, and died at sea on the morning of the third day. From the symptoms described, there can be no doubt but that the attack was cholera, of a very severe type. Two days after the death of the deserter, the captain was himself taken ill, and the *Sachem* was put back to Zanzibar for medical assistance, and dropped anchor on the eighth day after her first departure. It was doubtful whether the captain had really sickened from cholera; but when seen he was suffering from a severe attack of acute hepatitis, and he, and two of the crew who complained of illness, were removed on shore for treatment. The vessel eventually sailed for Aden, and the captain died thirty days after sailing from Zanzibar. No cases of cholera appeared on board ship after the vessel sailed for the second time.

During the latter half of February, and the first half of March, there were several European ships in the harbour, and, amongst others, the *John and Mary*, and the *Montrose*.

The captains of both of these ships had arranged to sail on the 12th of March, the former for Bombay, and the latter for the United States. The wife of the captain of the *John and Mary* had arranged to go as a passenger in the *Montrose*. Every arrangement had been made, and she was to go on board the *Montrose* early on the morning of sailing. She complained of being slightly unwell in the evening; but there seemed to be nothing unusual. She became seriously ill at midnight, and died early in the morning. The duration of the illness could not have been more than eight hours, at the longest; that is, from the period of perfect health till death occurred. No other cases of the disease appeared on board the vessel.

The *Montrose* put out to sea on the 12th; but anchored off the island of Chumbe, a distance of about eight miles from the harbour, the captain feeling himself unwell, and dreading an attack of cholera. I visited the ship during the night. The symptoms were suspicious, sufficiently so to render a short delay necessary; but the captain recovered, and the ship went to sea.

The change in the monsoon was beginning, and, during the early days in March, the dhows for the southern ports were clearing out, and the strangers from the northern Somali ports were pouring in, fresh fuel being thus added to the flame. There were, occasionally, heavy squalls of wind, accompanied by torrents of rain, and there was an increased mortality among the crews of the native craft.

No sooner had the dhows and mtepes taken their cargoes and passengers on board, and set sail, than cholera broke out, and in some cases the entire company with the exception of one or two perished. When the dhows were thus attacked they generally ran for the nearest harbour, or endeavoured to put back and reach Zanzibar, which they frequently did in a disabled state; and sometimes as many as six or eight arrived in one day in this condition.

Entire crews were in several instances swept away, and the dhows abandoned. The harbour was thus steaming with cholera, and if the cholera poison can be conveyed for short distances by the air currents, then the sporadic appearance of the disease amongst the shipping can be easily accounted for. Dhows are perpetually passing to and fro in the harbour, and they generally pass close to the windward of ships, so as to avoid having the wind taken out of their sails; and, when passing, any one on the deck of the ship, who may not be particularly engaged, generally leans over the side and examines the passing dhow.

The month of March is one of the busiest in Zanzibar, owing to the great number of strangers who pour into it about that time from the northern ports. According to Captain Burton, the population of the town is increased by about one quarter during the north-east monsoon. The Mausim season of commerce, during which the half-yearly accounts are settled, extends from March 10th till May 1st, the season between the arrival and the departure of the northern dhows; and, at this time, the native agents of the merchants come from the various ports of the mainland for the purpose of adjusting their accounts.

At this time there was also, as usual, a considerable accession to the population by the arrival from Arabia of a class of people called "tenda hulwas," a popular designation for slave-dealers and kidnappers. Crowds of these strangers of the clans Jenabah, Bimani, Benu Katub, Benu bu Ali, Benu Riyam, and Soor Arabs, all from Southern Arabia, occupied with the Somalis the Melinde quarter, and with their slaves completely blocked up the district. Slave depôts were formed in that district, and an extensive business was transacted in the town and neighbourhood by these desperadoes, in the way of kidnapping negroes. Armed to the teeth, these men, being

assembled in large numbers, were wont to defy all authority, and frequently lively scenes occurred among themselves, when they chanced to quarrel. In defiance of all authority, slaves were shipped openly by them in large numbers; and it is not only possible, but highly probable, that the epidemic may have been conveyed on this and on former occasions to ports in Southern Arabia or the Persian Gulf. The slave trade being in full vigour in 1869-70, there was a very large number of strangers present, both from Southern Arabia and the Somali ports; and they unwittingly dropped in on the smouldering embers of the cholera epidemic.

In the month of March the mortality in the town amongst the strangers was about fifty daily, and the epidemic was raging with great violence on the estates. At Kokotoni the number attacked, and the mortality amongst the people, was greater than at the early period of the epidemic there, and up till the 4th of April there had been thirty-four deaths among the natives, out of a population of about five hundred. In the month of March one death from cholera was reported among the Banyans, and also one in April. I did not see either of the cases myself, but in answer to my inquiries at the time, it was denied that the cause of death was cholera in either case.

In the month of April, the mortality continued at about the same rate among the strangers in the town; and they hurried on in making their preparations for leaving the place by the earliest opportunity, or whenever the south-west monsoon had fairly set in.

It was in April that the disease appeared among the Bahorahs, and, in this instance, strangers who had come from the opposite mainland were first attacked. It was somewhat singular that Bahorahs who had escaped the epidemic at Pangani on the mainland were attacked when they came to Zanzibar. The cases which occurred at this

time were as severe as those which were observed at the commencement of the epidemic.

The disease spread among the Bahorahs, and several deaths occurred during the month of April.

Towards the end of March and the beginning of April, the last of the Bombay dhows arrived, and both passengers and crews were attacked; and, in consequence, several deaths occurred among the Khojahs.

On the 16th of April the first Brava dhow left, and in a short time all the Somali dhows cleared out with their cargoes of cloth and cholera.

On the 1st of April, the Hamburg barque *Feiga* anchored at Zanzibar. While in the harbour there were no cases of cholera on board. She sailed towards the end of the month; and, two days after sailing, cholera appeared among the crew, two of them being seized. She immediately put back and anchored on the 30th; and one of the men died that night. No other cases occurred, and she sailed again on the 3rd of May. The usual heavy rains commenced in April. Communication to the south was stopped by the setting in of the south-west monsoon, and every stranger who could leave cleared out of the place for the various ports to the north.

At the beginning of May there were very few cases of cholera in town. The dhows for Bombay and Cutch, which leave at the beginning of the south-west monsoon, had sailed: nearly all the strangers, with the exception of some slavers, had left; and the population of the town had been lowered to its usual dimensions. Hopes were entertained that the epidemic was now at a close; but a new source of danger suddenly appeared.

According to the treaty then existing between the Zanzibar government and Great Britain, no slaves could be imported from the mainland to the island during the north-east monsoon, from the 1st of January till the 1st

of May, the intervening period being called the Close Season, in contradistinction to the Open Season, from May till January. The slave traffic being principally from the ports to the south of Zanzibar, the restrictions placed by treaty were almost identical with those placed by nature; for slave dhows could not beat up against the north-east monsoon. The great influx of slaves for the Zanzibar market consequently took place at the beginning of May, and the first slave dhows arrived on the 3rd and 4th of that month. At that time it was calculated that about twenty thousand slaves passed annually through the Zanzibar market, commencing in May and continuing throughout the period of the south-west monsoon; so that there was good reason for suspecting that the epidemic would be kept alive by this addition of fresh fuel, and that the disease might become endemic on the East Coast of Africa. This apprehension was very reasonable; for cholera had previously broken out at Kilwa, the principal port from which slaves are shipped for Zanzibar, and the mortality there among the slaves collected for shipment had been dreadful. On the first of May the dhows at Kilwa were packed with slaves, and hurried off to the Zanzibar market with all despatch. Every soul in Kilwa was interested in having this business forwarded with the utmost expedition; for the slaves were dying daily in hundreds, and this represented heavy loss to the Arabs,—to those who had ventures in the slave caravans, and to the farmers of the Customs; for the death of every slave involved a loss of two dollars for duty. The dhows were literally packed with slaves as close as they could possibly stand, some of them suffering from cholera, many of them in a dying state, and all of them in a condition of extreme emaciation. In this condition, and without having had either food or water on the passage, they were landed at the Custom-house of

Zanzibar. On the passage, not only the dead but the dying were tossed overboard; and not only the dying but those who were in such a state of emaciation as not to be deemed worth paying the dollar of duty for, were treated in the same way before entering the harbour. Gangs of living skeletons were landed, with death imprinted on every feature; full grown men and women as naked as at the hour of their birth. On the 4th of May a large cargo was landed from a dhow, and amongst them I observed a woman quite naked. She was carrying in her arms a child of about four years of age; but it was quite dead, and she was apparently not aware of the fact. The upper half of the body was hanging over her shoulder; the arms flapping about, and the tongue protruding. It had evidently died in that position a few minutes before. Cattle were never treated in such a manner. A Banyan would not have taken part in the shipment of cows in such a condition; and had he been connected with such a transaction, even indirectly, he would have been expelled from his caste, and thrown as a pariah and an outcast on Indian society. Thousands of negroes were rushed into Zanzibar in this condition, and the most pitiable sights ever witnessed by human eye were daily to be seen on the streets in open daylight. The epidemic at Kilwa was so severe that slaves were a drug in the market: they were dying at the rate of two hundred a day, and human beings were offered for sale at fifty shillings a dozen, without finding a purchaser. Lots of this kind were purchased at a lower figure by speculators, and sent to the Zanzibar market in the expectation that a sufficient number might survive and leave a margin of profit.

The population of the town was thus exposed to a third epidemic, with the prospect of its being kept up for an indefinite time. Isolated cases occurred in the town, and the harbour was infected till the end of June. Reports

reached me of cases till the middle of July ; but after that date I heard of none, neither in town nor country. Solitary cases, however, may have appeared till a later date than this.

When the cholera epidemic was disappearing, the population of the town was in a state of general ill-health. Fever of a very severe type appeared, and the people suffered much from boils and carbuncles. Several cases of erysipelas also appeared, a disease which I had never before seen in Zanzibar, except on one occasion, several years previously. The first case that I observed, during the cholera epidemic, was on the 28th of December, the stoker of the steam-ship *Malta* having died from its effects. Several cases of this disease occurred during the epidemic, and one very well-marked case, in the district of Ngambo after the epidemic had disappeared. This patient had suffered from a severe attack of cholera, but was convalescent when he was attacked with erysipelas.

The Arabs, like the ancient Jews, never number the people, and they make no registrations of births, deaths, and marriages. An Arab will not make any definite statement regarding the number of his own family, or the individuals in his household, as such would, in his estimation, be a violation of the laws of God. All estimates of population, and of mortality, must, consequently, be merely approximations. Estimates of the population of the town, and island have been made by Dr. Ruschenberger, in 1835 ; by Dr. Krapf, in 1844 ; by Captain Guillain, in 1846 ; by the English Consul, in 1849 ; and by Captain Burton, in 1857. According to the Consular estimate the population of the town, in 1849, was 60,000 ; but Captain Burton gives his estimate, in 1857, as 25,000, rising during the north-east monsoon, when there is a great influx of strangers, to from 40,000 to 45,000. While I would be inclined to place

great importance on any statement made, regarding population, by that distinguished traveller, and most accurate observer, I cannot but think that his estimate of the population of the town and suburbs of Zanzibar is much below the actual number. The population is nothing like doubled during the north-east monsoon, and even during the months of May and June, when there is a large influx of slaves, there is no appreciable difference in the population. I never estimated the population of the town and suburbs as less than from 80,000 to 100,000, and that of the entire island as from 300,000 to 400,000. With many parts of the island I am but imperfectly acquainted, and some I have never visited, but with every portion of the city and suburbs I am thoroughly familiar.

The mortality from cholera amongst the higher class of Arabs was not very great ; but amongst the lower the epidemic was most severe. The number of deaths among the Khojahs and Bahorahs was known, as a register was kept ; but the mortality amongst the other classes could only be ascertained proximately.

An attempt was made to form a general average of the mortality amongst the negroes, by ascertaining the number of deaths in certain houses and in different portions of the town ; and also by having the number of interments counted, daily, in some of the burying grounds. In one house, close to my own, there were thirty deaths among the negro domestics, but I never saw a corpse taken out of the house except on one occasion, and I was not aware, until the close of the epidemic, that there had been more than one death.

It was not difficult to form a general estimate of the mortality among the negroes of the town ; for the smaller slave-holders, such as the natives of Comoro and Johanna, answered questions freely regarding their losses from death among their slaves. Some lost nearly all their slaves ;

others a half; the general average could not be estimated at less than twelve per cent.

The number of deaths, in the city and suburbs, must have ranged from 10,000 to 15,000. I regard the former number as the lowest possible, and consider that from 12,000 to 15,000 would be nearer the actual number.

Throughout the entire island, the probable mortality would be from 25,000 to 30,000.

The number of Europeans resident on the island at that time was about sixty, and amongst them there were no deaths, and only one case of cholera. The Rev. Mr. Fraser, who died of cholera, was evidently attacked with the disease on his way from Kokotoni. Nineteen Europeans and Americans died; but they were all strangers in the place, and were living on board ship in the harbour, where they enjoyed a purer atmosphere by far than the sixty who were resident on shore.

CHAPTER XII.

THE DIFFUSION OF THE EPIDEMIC FROM THE ISLAND OF ZANZIBAR.

EVERY dhow, before sailing from Zanzibar, takes in a supply of water for the passage, at the streams of Bububu or Mtoni, and the water is stored in wooden tanks, or casks, which are, of course, never cleansed.

When all the cargo has been taken on board, and stowed away, the dhows anchor at the mouth of the streams, and the process of watering commences. The water being shallow, it is necessary to cast anchor at a considerable distance from the shore, and to use boats for bringing the water on board. On one occasion, I was a passenger on board a dhow, bound for the Persian Gulf; but which was to touch at Mombassa, and other ports, on the voyage north. The dhow left early in the morning, and anchored at Bububu, a distance of about two miles from the harbour of Zanzibar. A number of native craft were anchored there at the same time, and I had an opportunity of observing the mode by which watering was effected. The crew, taking with them some water-skins, went ashore in a canoe, and anchored it, by means of a large stone, close to the beach. They then went to the mouth of the stream, and filled the goat skins with water, which, on returning, they emptied into the boat. When the canoe was nearly full, the men stepped into it; and, sitting in the water, they pulled alongside the dhow; filled the goat-skins, and handed them over the side of the dhow until the canoe

was empty, when they returned for another load of water. There were more than a dozen dhows taking in a supply of water at the same time; and, in every instance, the process was identical. I would not have believed that dhows were watered in such a manner, had I not seen the process going on. The water-skins might have been brought on board without emptying them into the boat, and afterwards re-filling them; but this was not done. The object in watering as they did, was not to save time, but to save trouble; for there was a dead calm at the time, and no prospect of the breeze freshening till the afternoon. On expressing surprise at this filthy and disgusting mode of taking in a supply of water for drinking and cooking purposes, I was told that it was the customary mode. There was no previous washing out of the canoe: no cleansing of the legs of the men: they simply stepped into the boat; sat down among the water, and paddled alongside.

During the epidemic of cholera, the dhows, doubtless, took in their water supply in this manner, and it is not unreasonable to suppose that such a custom may have had a very important connection with the dreadful mortality which took place among the crews of native craft after sailing from Zanzibar. The water supply is usually taken in on the day of sailing; and, as a general rule, cholera broke out on the second day after sailing. In many instances, as related in the last chapter, crews were decimated and dhows abandoned, or the loss of life was so great that the survivors put their craft before the wind, and ran for the nearest harbour. One of the Sultan's steamers, with a native crew on board, had to put back on her way to Mombassa, owing to the loss of life from an outbreak of cholera on board.

While the epidemic was raging at Zanzibar, the disease was gradually extending from Pangani along the coast

line, and from thence returning towards the interior, along the lines of human intercourse, in the manner described by Mr. New in his account of the re-curve from Taveta to Bura. Neighbouring coast towns were infected directly from Pangani; but the harbour of Zanzibar became the great focus of dissemination for all the harbours within the Zanzibar dominions. It may be stated, generally, that not a single harbour-town escaped where the red flag of Zanzibar was flying, between Worsheik and Cape Delgado.

The harbours opposite the island of Zanzibar, and those a little to the north and south, with which communication is constantly kept up, were first attacked; and, at an early period of the epidemic, the disease reached Mombassa and from thence passed by coasting dhows to Takaunga, Melinde, Patta and Lamoo. The disease was ascertained to have been communicated to Mombassa by means of a slave dhow running a contraband cargo, it being then the close season. Regarding the outbreak at Mombassa, the Rev. Mr. New, who was resident there at the time, wrote to me as follows:—"The two following cases produced a great sensation at Mombassa. First: a dhow, with a cargo of seven slaves, arrived at Mombassa from Zanzibar. The party hired a hut in the town, and they all lived together within it. One of the party was attacked with cholera, and died; and one after the other was taken ill, and all perished. Second: a dhow arrived from Zanzibar containing three individuals,—a young man, a middle aged, and an old man. They had no sooner stepped on shore than the younger of the three staggered, and fell on the beach, complaining of sickness. The middle aged man, under the impression that it was simulated illness, began to chide his younger companion; but almost immediately he himself was seized, and fell on the beach. 'What!' shouted the old man, 'are you also sick?' The words were

no sooner uttered than he also fell, a stricken man. The three men died on the beach. The disease soon became general, and some hundreds of the Mombassians died."

In 1872, when Mr. New was in Zanzibar preparing to start with the "Livingstone Search Expedition," I had frequent opportunities of conversing with him regarding the epidemic at Mombassa, and its course through the Masai country; and he stated that the above account was precisely as he received it from those who were cognisant of the facts; and that there was no variation in the statements of different individuals whom he interrogated on the subject. He could vouch for the truth of the statement, that a small native craft with three men on board, arrived at Mombassa from Zanzibar, and that the three men on landing fell down on the beach, one after the other, and that they all died on the sea-beach, close to where they fell. There was no evidence to show how or when they had been infected with the disease; but the obvious conclusion is that all three had been exposed to the poison at the same time, and that it had passed into the system under the same circumstances, producing in all similar effects. According to Mr. New's account, the Mombassa branch of the epidemic did not spread towards the interior in a direct line; for, as previously mentioned, Ribe, the head-quarters of the "Free Methodist Mission Station," situated about fifteen miles to the north-west of Mombassa, was attacked by that branch of the epidemic from Mombassa, which passed, in the first instance, in a northerly direction to Takaunga, thence inland to Kauma, and afterwards in a southerly direction to Ribe. Had this subject not been investigated on the spot, and at the time of occurrence, I would have supposed that the epidemic had passed directly from Mombassa to Ribe, and not by this long and circuitous track. Very little of so positive a nature can be said regarding the diffusion of the

epidemic towards the interior from the various coast towns ; for it is obvious that although there are caravan routes from them towards the interior, the epidemic may not have passed along all of them from the probable circumstance of there having been no traffic on some of them while the epidemic was raging at Zanzibar.

When the news of epidemic cholera, as raging in the interior of Africa, reached Zanzibar, and when the reports were confirmed by the returning traders from the Masai country, commercial transactions with the interior of Africa were, for the time being, suspended. The valuable property of many trading caravans having been abandoned, owing to deaths among the porters, the merchants delayed sending property into the interior, so long as the disease was prevalent in the country ; and, even had they been willing to do so, porters could not have been procured ; for the journey would have been regarded as one to certain death. While the epidemic was raging in Zanzibar, it was not known to what extent it was prevailing on the continent of Africa ; but from the reports which reached that place at an early period of the epidemic, it was evident that it had crossed, at more points than one, the caravan route from Bagamoyo to Ujiji, and that a southerly diffusion was taking place as well as the one to the south-east, from the Masai country to Pangani. Business operations were consequently suspended while the epidemic lasted, and but little definite information was obtained regarding the diffusion of the epidemic to the interior, from the various harbours on the East Coast of Africa.

Every harbour along the coast, from the Somali ports in the north to Cape Delgado in the south, is the site of a trading settlement, doing a more or less extensive business with the inland tribes. From Mombassa, Pangani, Bagamoyo, and Kilwa, large caravans are sent to the distant interior ; but from other small harbour-towns a

local trade only is carried on with the tribes near the coast. Captain Burton's description of Sa'adani may be quoted as an illustration of coast towns of this kind. "Sa'adani stands upon a swampy green flat, defended, as are most of these places, against the sea, which is apparently but little below its level, by a high sand-bank and natural dykes. Constant troubles with neighbours have caused this port village to be surrounded by a strong stockade of tree-trunks, and have greatly reduced its extent. The hundred huts of thatch, wattle and dab, may now contain from 700 to 800 souls, including a Banyan, a Kasimi Arab, and a stray Baloch: a few years ago it could turn out 300 matchlocks. The two stone mosques, which the people declare to be ancient, are in ruins. Here the Wasawahili, who in a thin fringe line the whole coast, appear to be healthier than on the island of Zanzibar. As usual there is less rain, and the little Msika is often wanting. They send, at all seasons, foot caravans to Nguru, a hilly region seven or eight days' march nearly due west. The normal ventures are beads, cloth, and wire; and the returns are ivory and slaves, with smaller items such as rhinoceros' horn and various kinds of hides. The trading parties are absent about six weeks, when no news of them will be good news: formerly the wild Wanguru used to visit the coast, till deterred by the Moslem 'Avanies.' The village exports sheep and ghee, holcus, maize, and especially copal. A little cotton is grown for domestic use on the sandy, land-ward slope of the natural dyke, about one mile from the sea: the shrub is allowed to run to wood."

This port has increased considerably since Captain Burton wrote his account of it, and several Banyans and Khojahs are now permanently resident there. Although very close to Zanzibar, and accessible at all times, it has been seldom visited by Europeans from that place.

In former times, the produce of the countries bordering on the coast, was brought to the neighbourhood of the coast towns for disposal, by barter, on stated days, as is still the case at the Golios of Tanga; but owing to the natives being frequently captured and put on board dhows for conveyance to the slave-market at Zanzibar, the Golios were discontinued, and the Wasawahili traders are now obliged to carry their wares to the various villages of the natives.

An extensive slave trade is carried on by these petty traders, for the internal slave trade of East Africa has never been touched by treaties. Chiefs and head-men sell those of their own tribe, under the pretence of their being criminals or sorcerers; parents sell their children, and young men not unfrequently sell their parents. The uncle, under the pretext of being in want, has the power of selling his nephews and nieces, and even the parents cannot interfere with this, his indefeasable vested right. Throughout the whole of East Africa, the stronger tribes prey upon the weaker; and they plunder and make slaves of each other, not necessarily for exportation, but for performing their predial work. Their own system reacts on themselves, and the Wasawahili of the coast make raids on the weaker villages, capture the inhabitants, and kidnap every negro upon whom they can lay their hands. There is no occupation so gratifying to the negroes as a slave raid on some neighbouring tribe; for it combines all the pleasures of the chase, the battue, and the foray, and is accompanied with but little personal danger. There is in it all the excitement of the fox-hunt, with a result more tangible than the *brush*.

The smaller caravans, such as those described by Captain Burton, traverse the whole of the coast tract to barter their wares for the produce of the country, and for slaves, principally children.

The population of this tract of country, generally called

Mrima, extending to about ten days or more inland, was described as generally affected by the epidemic, and as having suffered very severely.

Bagamoyo, situated on the mainland, nearly opposite the island of Zanzibar, is the principal trading depôt on the East Coast of Africa. The construction of the town is similar to that of Pangani, and the other coast towns previously described. It is the starting point for all the great trading caravans proceeding to Central Africa. The goods intended for traffic in the interior are sent by native craft from Zanzibar to Bagamoyo, where porters are hired and the caravan organized. The Wanyamuezi are the porters of the inland traffic, and this occupation amongst them is a regular branch of business, it being customary for those of that tribe to make at least one trip to the coast, in the capacity of porters. They are hired in their own country to carry ivory to the coast, and while remaining there, awaiting an engagement by some caravan going to the interior, they seek various kinds of daily employment, such as the cutting of firewood. Their hair is twisted in long ringlets like bunches of cord, giving to the head the appearance of a mop, and their wrists are generally ornamented with broad ivory bracelets. They are but seldom seen in the town of Zanzibar, as, it is said, they are not allowed to land without paying duty on their ornaments of ivory. They can rarely be persuaded to enter a house of stone and lime, probably from fear of being kidnapped.

The caravans for the interior start from Bagamoyo at two seasons of the year; viz., before and after the rainy seasons. The country in the neighbourhood of Bagamoyo being low-lying and swampy, is flooded during the rainy season; and the river Kingani becomes at that time impassable. Trading caravans consequently start before the rains on the coast set in, or after their close, when the

country has become sufficiently dry to admit of travelling. All the goods are carried by men, and no cattle labour of any description is employed. Arabs sometimes ride part of the way on donkeys ; but, as a general rule, the entire journey, however long it may be, is performed on foot. The route to Unyanyembe is divided into regular stages, and there are often tedious and prolonged delays by the way, owing to the impositions of the natives who occupy the country in the track of the traders. The peculiarities of travel in this part of Africa have been so fully described by recent travellers such as Burton, Speke, Grant, and Stanley, that it is unnecessary to enter upon further details.

The epidemic appeared at Bagamoyo in the month of December, shortly after it had broken out in full force in Zanzibar, and it raged with great violence in Usegura, Usagari, Ugogo, and extended as far inland as Mgunda Mkhali. In a previous chapter, the track of the epidemic, from the Masai country to Ukerewe, and from thence to Tura, a little to the west of Mgunda Mkhali, has been described ; and it was there pointed out that the Bagamoyo-Ujiji caravan route had been infected by the epidemic from the Masai country having crossed it at several points. It is highly probable, although not certain, that Ugogo was also infected by a branch of the epidemic proceeding due south from the Masai country. The Wagogo are an extremely turbulent race. Their predial labour is performed by serviles, and their entire time is occupied in plundering, and in making captives of their weaker neighbours. The Central African trade route passes through their country, and they vary their usual occupations by levying black-mail on every caravan that passes through their country. They are a constant terror to travellers and traders ; for at every village the caravan is stopped by an armed force, and is not allowed to pass till

an exorbitant duty is paid. It frequently happens that a travelling party is stopped, and compelled to pay duty four or five times in a single day. The Arabs, although prepared to fight in case of extremity, generally endeavour to get out of their troubles peaceably, as they have usually with them very valuable merchandise and they are averse to run risks if such can be avoided. For many years, however, they have been vowing vengeance in silence, and they long for an opportunity of avenging themselves on the robbers of Ugogo. The Wagogo despise all strangers except the Warori and the Wamasai, their northerly neighbours; but whenever the alarm is given of the approach of the Wahumba or Wamasai, they beat a precipitate retreat, and leave everything to the plunderers without ever attempting to strike a blow.

From an early period of the epidemic at Zanzibar, until after it had completely disappeared in the island, reports of cholera on this caravan route were current; and, even when Bagamoyo was clear, porters could not be got to carry merchandise to the interior. Even so late as the month of August, 1870, a caravan from the interior was attacked by cholera in Usagari, and six of the porters died after reaching Pangani. Previous to that date, caravans coming from the interior were attacked by the disease between Unyanyembe and Bagamoyo, and in several instances the Wanyamuezi porters abandoned their loads of ivory, refused to proceed further, and returned to their homes. In like manner caravans proceeding to the interior were attacked by the disease, and the porters were either decimated or forced to return to the coast with what goods they were able to carry back. On two occasions supplies forwarded to the interior, for the use of the late Dr. Livingstone, could not be conveyed through the infected districts as the porters were attacked with cholera, and many of them died. In the month of April the epidemic broke out

at Bagamoyo, among the natives in connection with the Roman Catholic Mission there, causing them several deaths; and, in August, one of the priests in connection with the Mission, while travelling towards the interior from Bagamoyo, encountered the epidemic, and the mortality had been so great on the caravan route that he was under the necessity of deflecting his course, owing to the great number of putrid bodies lying near the path. The mortality among the pagazi, or porters, had been very great; and as the Wanyamuezi do not bury their dead, they had exposed them near to where death had taken place.

It is highly probable that the Pangani epidemic had also a landward extension to the south, through Usegura; for the Wasegura, who occupy the country south of the Pangani river to the Cape of Utondwe, and westward as far as the Nguru range of hills, are inveterate slave-hunters, and have trading connections with both Pangani and Bagamoyo. Nothing, however, was ascertained beyond the statement that the district was generally infected. The same may be said regarding the territory lying between the rivers Kingani and Rufiji, and from thence to Delgado. The coast towns were all infected; but there was also, at the same time, an inland extension among the tribes towards the south; although I found it impossible to decypher the track of the epidemic. It is very evident that this could not have been accomplished except by some one who, like Mr. New, in the Kilima-njaro district, was on the spot at the time, or shortly after the occurrence of the event.

Kilwa Kivinja, as playing an important part in the epidemic, merits some notice. There are a number of places, in one neighbourhood, called Kilwa, and this has led to considerable confusion regarding locality. The now well-known Kilwa, of slave-trade notoriety, is properly termed Kilwa Kivinja, or Mgongeni. It is situated

in S. lat. $8^{\circ} 42' 59''$, and was built in the time of the late Seyyid Sa'ed, Sultan of Zanzibar, near to the ruins of an older Kilwa. Kilwa Kisiwani is an island about fourteen miles to the south of Kilwa Kivinja, and is the site of an ancient settlement, as is evident from the ruins of mosques and other buildings.

The settlement of Kilwa Kivinja is said to be extremely unhealthy, as it is surrounded by mangrove swamps, which render the inhabitants liable to malarious fevers. It contains a large stone-built Custom-house or Fort, and has a bazaar with a line of shops. The town consists for the most part of the usual native huts seen in every part of the east coast. When the Portuguese first visited Kilwa, there was a considerable town of commodious, well-built houses, a wealthy population, and a flourishing trade. The once flourishing trade of Kilwa is now in the hands of a few Arabs, Banyans, Khojahs, Borahs, and Mehmans.

Sheep are brought from the districts bordering on the Rufiji river, goats from the Washenzi of the interior, and black cattle from Chole island. Although Kilwa is represented to be very unhealthy, many of the natives of India are permanently settled there, and they do not seem to suffer much in health. Banyans also remain there for lengthened periods in good health.

In former times, Kilwa was a place of much greater importance than Zanzibar, and was the seat of government of independent sultans of the Shirazi dynasty, the last of whom held the land until he was seized by the late Seyyid Sa'ed, and deported to Muscat, when the tribe was dispersed. Late, in the last century, the French attempted to form a slave depôt on the island, which led to its occupation by Zanzibar.

The modern Kilwa Kivinja, on the mainland, depends entirely, for whatever prosperity it may enjoy, on the

slave trade ; but now it is doomed to undergo, once more, a reverse of fortune, owing to the abolition of the export slave traffic. At the time of the epidemic, Kilwa was in the zenith of its slave-trade prosperity ; as, at no former period, had the number of slaves, passing annually through the Custom-house, been greater. It occupied the same position, in regard to the slave trade, that Bagamoyo, Pangani, and Mombassa do in respect to the ivory trade. Every caravan that left Kilwa was equipped for the slave trade ; but the statement, which has been so frequently made, that such expeditions were marauding, is not correct. Deeds of violence, of course, were frequent ; but the expeditions were conducted on mercantile principles. The operations of the slave-dealers were principally confined to the districts lying between the coast-line and Lake Nyassa ; Usewa, on the eastern side of that lake, being one of the mustering places, and the place where the slave-dealers crossed the lake by means of dhows constructed for the purposes of the traffic. The southern boundary of the Zanzibar traffic lies at about this point, the ground further south being traversed by the traders from Mozambique and Quilimane. The whole of this region is a scene of constant rapine and bloodshed, there being no security whatever for life, liberty, or property. The stronger prey upon the weaker, and nothing is possessed except by force of arms. The Mavite, who occupy the country to the north-west of the lake, closely resemble the Masai both in ferocity and in their modes of life, and they seem to be an allied race of Kaffir origin. After the rainy season they make periodical raids over the entire surrounding country, and within the last ten years they have invested Kilwa twice. When on their plundering raids, their path is marked by fire and blood ; and, with the exception of young women, they spear every one whom they meet. When the Mavite are out in a district, the entire population

abandon their homes, and seek safety in flight; but only to be captured, and sold into slavery by those of their own race whose protection they seek, and who, themselves, may have been similarly treated on a former occasion. When the fragments of the tribe return, after the raid is over, it is merely to blackened villages and plundered crops; and the wretched inhabitants are compelled to sell their children and relatives to the slave-dealers as a means of subsistence. Such is the evil drama of East African life. The Mavite, like the Masai, vary, annually, their lines of operation so as not to exhaust a district, and they always return to their fastnesses at the commencement of the rainy season, as their huge shields, large enough to cover the whole body, become softened by the rain. A tribe of negroes, in flight before the Mavite, is thus a harvest to neighbouring tribes; for those whose protection they seek at once capture the fugitives, and dispose of them to the first slave-caravan, knowing that the same fate may be in store for themselves at some future day.

I was unable to ascertain at what particular date the epidemic broke out at Kilwa; but that it did break out during the month of January was a terrible fact. Slave-caravans from the interior generally arrive in April, and the following months, as the slaves cannot be shipped to Zanzibar from Kilwa before the first day of May. Every one interested in the traffic is anxious to get his lot of slaves to the market as early as possible, for at the beginning of the season the demand is great, and prices are high. There was, consequently, a great number of slaves congregated at Kilwa in the month of April awaiting shipment for Zanzibar, and at that time the epidemic was raging in the place. The scenes of misery at Kilwa in the month of April, and during the intermediate passage, and at the harbour of Zanzibar, in the month

of May, 1870, form one of the blackest pages in history. Human beings were offered for sale at four shillings and twopence each without finding purchasers, the investment being insecure owing to the ravages of cholera among the slaves awaiting shipment.

It is always very difficult to get information regarding the district lying between Kilwa and Lake Nyassa. It has been usually represented as almost entirely depopulated, in consequence of the raids of the slave-traders; but such is not the case. Slaves from the borders of Nyassa, and even from the western side of the lake, were constantly brought to Kilwa; and no slave-caravan could march through a depopulated country. Water and provisions must be procured by the way, and deserted regions are always avoided, the slave-caravans making long and circuitous routes for this purpose. The slaves, on their route to the coast, are fastened together, not so much to prevent their escape, as to prevent their being kidnapped by the people through whose country they pass. There is no escape for the slaves; for, when they attempt to regain their liberty, they are at once captured by the natives, and sold to the next passing caravan. The country is populous, except in those parts exposed to the raids of the Mavite.

The progress of the epidemic among the inland tribes bordering on the Lakes Nyassa and Shirwa was not ascertained; but it probably met, about the southern extremity of the Nyassa, that branch of the epidemic which proceeded from Tura to the plateau of Lobisa, and here the southern diffusion of the epidemic from Zanzibar ceased.

The city of Mozambique, the capital of the Portuguese possessions in East Africa, is situated on an island of the same name, in lat. $15^{\circ} 2'$ south and long. $40^{\circ} 48'$ east, in an inlet of the Indian Ocean. The island of Mozambique,

with the two islands of St. Jago and St. George and the neighbouring mainland, form a secure harbour five miles deep and five and a quarter miles broad; and into the neighbouring harbour of Mokambo, on the mainland, three rivers discharge themselves.

Mr. Lyons McLeod, late H.M.'s. Consul at Mozambique thus describes the place:¹—"The town is irregularly built, the houses being substantially constructed to resist the heat, and perhaps the earthquakes which are occasionally felt from the volcanic eruptions in the north-west end of Madagascar, and the hurricanes which every five or seven years visit the island with great severity. The streets are very narrow; and the houses being all whitewashed, the glare is distressing, and the heat from these two causes, is considerably increased, so that the thermometer is always from six to ten degrees higher in the town than on the mainland. . . . The city of Mozambique is exceedingly dirty, from the filthy habits of the Portuguese, and without going into particulars, it may be briefly stated that it is the filthiest city in the universe, not even excepting that of Lisbon. For which there is not the shadow of an excuse, as there is an over-abundance of slaves without employment; and the town being built on the beach, where the tide has a rise and fall of twelve feet, there can be no difficulty in keeping it clean.

"That indolence which to the modern Portuguese has now become proverbially natural, has here an opportunity for its fullest development, so that the air they breathe, both here and in all the settlements along the coast, is as foul as the immorality in which they live.

"The inhabitants of Mozambique are about 7000 in

¹ *Travels in Eastern Africa, with the Narrative of a Residence in Mozambique*, by Lyons McLeod, Esq., late H.B.M.'s Consul at Mozambique, 1860, p. 292.

number. The garrison, consisting of Portuguese soldiers, in all under 200, are principally convicts, some portion of them convicts who have already passed a term of penal servitude at Goa, and are sent from that place to serve a further period of punishment at Mozambique for crimes committed at the former settlement.

“There are a few Portuguese officials connected with the Customhouse and the Treasury, some half-caste descendants of Portuguese or Canarines from Goa, and natural children of slave-dealers by native women from India or Africa. Add to this one German merchant, and an agent of a house from Marseilles, thirty or forty Banyan traders from Cutch, Goa, and Bombay; a few Arabs, or as they are called at Mozambique, Moors, and you have all that portion of the inhabitants of the island who call themselves free. The remaining portion of the inhabitants are slaves, called *Négros*, or, by the Christian Portuguese, they are more generally styled *Gentiles*. . . . There are generally a few vessels, principally Portuguese, lying in the harbour; and in the healthy season, which is also the trading season here, a great number of dhows from different places on the west coast of India, the Persian Gulf, Red Sea, Madagascar, Comoro Islands, Zanzibar, and along the whole east coast of Africa.”

The Portuguese appear to have little or no power on the mainland except on the coast line; but the peninsula on the north side of the bay belongs to them. The village of Mesuril is situated on the isthmus which joins it to the continent, and there trade is carried on with the natives who come from the interior, at certain seasons, with the products of the country. The Portuguese officers and merchants have their villas and gardens nearer to the island, at Cabeceira Grande; and at the extremity of the peninsula, the Arabs, and other

Mohammedan inhabitants of the place, occupy the village of Cabeceira Pequena. The Banyans reside at Lumbo, a village situated between the two last-named places.

The inhabitants of Mozambique depend, for their supplies of grain and cattle, on the north-west coast of Madagascar and the Comoro Islands; and they conduct a considerable trade with various tribes in Central Africa. The tribes on the southern extremity of Lake Nyassa, as also the intervening coast tribes, supply their slave-market; and a considerable portion of the ivory from the regions between Bangweolo and Tanganyika, and the districts traversed by the late Dr. Livingstone, to the west of Tanganyika, finds its way to the market at Mozambique. Malachite, from Katanga, is also a well-known article of commerce there. The inland traffic seems to be conducted in a different manner from what is customary in the Zanzibar possessions, and the Wabisa, whose country is situated to the east of Lake Bangweolo, collect the ivory of the surrounding districts, and convey it and the malachite to the Portuguese towns on the coast.

News of the epidemic of cholera, as existing at Zanzibar, and the north-east coast of Africa, reached Mozambique at the end of January at the latest; for on the 28th of that month the Portuguese vessel from Zanzibar, the crew of which had been attacked by cholera, arrived at that place, and, having a foul bill of health, was put in quarantine for a month. After the arrival of this vessel quarantine was established at Mozambique, and other Portuguese coast towns, and no case of cholera occurred within the Portuguese territories during the prevalence of the north-east monsoon. There was no great difficulty in maintaining a blockade of this kind, and in making quarantine effective, in so far as the seaward exposure was concerned; for there is but little

traffic between the Zanzibar and the Mozambique possessions. The immunity of the Portuguese possessions, throughout the prevalence of the north-east monsoon, shows that the rapid spread of the epidemic towards the south, as far as Delgado, did not depend upon monsoon currents charged with the cholera-genic miasma, but upon some other less mysterious cause.

Cholera did not appear at Mozambique, nor at any point of the Portuguese possessions, north or south, until the 6th of May 1870, a month after the setting in of the south-west monsoon. It is not possible for any native craft to make Mozambique, from the north, during any period between the 6th of April and the 6th of May. Square-rigged ships from Western India, which may have started late in the season, are frequently unable to reach the harbour of Mozambique by beating against the south-west monsoon, and have to put back to Zanzibar and anchor there till the monsoon breaks.

When the south-west monsoon set in with its full force at the middle of April 1870, the epidemic had not passed beyond Cape Delgado, and its southerly, seaward extension was arrested at about 11° south latitude. The dhows from Zanzibar, bound for the Mozambique coast, for the Comoro Islands and the north-west coast of Madagascar, left Zanzibar at the commencement of the north-east monsoon, before the epidemic had become general in Zanzibar, and thus they did not become carriers of the disease; and those which left at the close of the monsoon, when the epidemic was at its height in the harbour, were unable to reach their ports of destination, and had to put back disabled or were lost at sea. As previously related, it happened that as many as eight dhows, in one day, bound for Madagascar, had to put back in this disabled condition, from an outbreak of cholera on board after sailing, and also from the fact

that the south-west monsoon set in early, rendering the run to the distant southern ports tedious, or all but impossible, by means of disabled crews. Several dhows also, bound for the Comoro Islands, had to put back to Kilwa, where the whole of their crews perished.

The southerly diffusion from Zanzibar by sea, did not, therefore, extend beyond 11° south latitude, and the extension further south and east, proceeded from Mozambique, the disease having reached that place from a landward direction. From the infected harbours between Kilwa and Delgado, it was ascertained that the epidemic did not pass along the coast line to Mozambique; for upon this subject there was very definite information from Ibo. It is quite possible that a branch of the epidemic may have extended along the slave-caravan route from Kilwa to Usewa, on the east of Lake Nyassa, and from thence through the country of the Makuas to Mozambique; but it is much more probable that it reached Mozambique by the extension from the Wabisa country to the southern extremity of Nyassa. The precise line of the epidemic, from the Nyassa region to Mozambique, was not positively ascertained, but that it lay in that direction is certain. The trade movements in that district would be, at the commencement of the south-west monsoon, from the interior towards the coast, and, in the months of March and April, the currents of commerce would be towards Kilwa and Mozambique.

On the 20th of April, the *Letitia* sailed from Mozambique for Zanzibar, and at that date the epidemic had not appeared within the Mozambique territories. The Governor General, H. E. Fernando da Costa Leal, and his secretary, Eusebio Coelhos, were reported as having died shortly before from an attack of malignant fever. The first case at Mozambique was reported to me by a Khojah merchant resident there, as having occurred on the 6th of May, 1870,

and the disease lingered in the island and neighbourhood till March, 1871.

The mortality was reported as having been very great ; but no estimate was given as to the number of deaths ; and, being under the impression that full details would be published by the Portuguese Government, I made no investigations except regarding the line of invasion, and the dates of the appearance and the disappearance of the epidemic.

Mozambique, being the trading centre of the country lying between Cape Delgado and Delagoa Bay, became a new focus of dissemination, and infected both Majunga, on the north-west coast of Madagascar, and the island of Johanna, one of the Comoro group, in the month of August, 1870. Between Mozambique and both of these places there is a regular traffic, and it is a well-known fact that an extensive slave-trade is carried on in the Mozambique Channel. Dhows, with slaves and other merchandise, run for these ports towards the close of the monsoons, and during the period of variable winds ; and they return by the earliest opportunity with grain, cattle, and other produce. A few years ago the export of slaves by Christian nations in the Mozambique Channel far exceeded the exportation by the Moslems to the north from the Zanzibar ports ; for at that time large vessels used to take from 700 to 800 slaves at a time to Cuba or Brazil ; but even now as many as 10,000 are annually taken from the African coast to the north-west of Madagascar, and principally to the Hova port of Majunga.

Majunga is situated on the north-west of the island of Madagascar, near to the entrance of the Bay of Bemba-tooka, in lat. $15^{\circ} 44'$ S. ; long., $46^{\circ} 13'$ E., very nearly the same latitude as Mozambique. It is a long, straggling town, about a mile in length, and the style of the buildings vary, as do the inhabitants of the place. In Madagascar

the Hovas are the dominant race, the Sakalavas comprising the aboriginal population; but in the harbour towns, and specially Majunga, there is a mixed population. A direct trade is carried on between India, and the north-west of Madagascar, which has probably existed for ages. Dhows leave Bombay at the beginning of the north-east monsoon, and frequently touch at Lamoo and Zanzibar, on the passage to Majunga, at which place there are resident several natives of India, Bahorahs and Mehmans. At Majunga there are also some half-caste Arabs resident, and a considerable number of the natives of the Comoro group of islands, the most notorious slave-dealers in existence. Majunga is a hot-bed of slavery, and rivalled Zanzibar as a central depôt for the direct supply of Madagascar, and for the supply of the French settlements under the specious "*engagé*" system.

The epidemic of cholera was conveyed to Majunga from Mozambique in the month of August, 1870, in an infected dhow; and, during the epidemic, two Bahorahs died; but no other natives of India. The epidemic raged for two months in the town and neighbourhood, and the mortality was very great. The north-west coast of Madagascar was reported as being generally affected by the disease; but I was unable to collect information from any who had sufficient local knowledge, regarding the track of the epidemic through the country.

In December, 1870, a quarantine of fourteen days, which was afterwards extended to twenty-one days, was established at Mauritius in consequence of the disease being prevalent in Madagascar, and as cases of sporadic cholera were reported as having occurred in Mauritius. In January, 1871, it was reported that several fatal cases had occurred; and, fearing that the disease had been conveyed from Madagascar, a petition was presented to the Government, praying that all communication between

Madagascar and Mauritius should be entirely prohibited until the latter island might be free from cholera.¹

Shortly after the appearance of the epidemic at Majunga, it extended to the French island of Nossi-bey, by means of dhow communication, there being an intimate commercial connection between the two places.

Nossi-bey on the north-west coast of Madagascar, is an island about fourteen miles in length by eight in breadth. It is mountainous, and the peak of Loucoubè in the centre of the island has an altitude of 1,800 feet. It is well-watered, wooded, and fertile, and has an estimated population of about 12,000. The native town is called Ambanourou; but the chief centre of population is Helleville, which is also the seat of government. The city is situated upon a flat about thirty feet above the level of the sea. Nossi-bey possesses a considerable commerce, and is the principal mercantile depôt of the north-west coast of Madagascar. Cholera was conveyed from Majunga to

¹ "For some time past it has been reported that cholera was at Zanzibar; at length it reached the north coast of Madagascar, and vessels from Tamatave and other parts of the island coming to Mauritius have been subjected to a quarantine of fourteen days, since increased to twenty-one days. This measure was thought to be the more urgent when cases of sporadic cholera appeared here, some of which proved fatal. The uneasiness which prevailed among a portion of our public was so great, that a petition was prepared and numerous signed, requesting the Government to exclude all vessels from Madagascar for five or six months. The Board of Health, as may be expected, could not recommend this extreme and, we must say, extravagant measure."—*Commercial Gazette*, Mauritius, 16th December, 1870.

"Several more cases of cholera have occurred here since the date of my last, which have, in most instances, resulted in the death of the persons attacked. However, a fortnight has passed without any fresh instances of the disease having been reported; and hopes are, in consequence, entertained that we shall not see any more of it. The cholera still rages on the coast of Madagascar, and the people here are apprehensive that the few stray cases, which have happened in Mauritius, may have been imported from thence. A petition has been presented to Government by a large number of the inhabitants of Port Louis, praying that communication between this and Madagascar may be *entirely prohibited* until the latter island may be free from cholera."—Mauritius Correspondent of the *Cape Argus*, 26th January, 1871.

Nossi-bey in September, 1870, and the first cases having appeared in the native town of Ambanourou, that place was surrounded by a *cordon militaire*, and the epidemic did not spread to Helleville. About 160 deaths were reported as having occurred at Ambanourou. The disease continued in Nossi-bey till December. The spread of the disease seems to have been arrested by the precautions used; for no more cases were heard of till March, 1871, when the epidemic reappeared at Nossi-bey, and, in this instance, in the town of Helleville, on or about the 13th day of March. The disease continued for forty-three days; the mortality was considerable; but the number of deaths was not ascertained by my informant. No deaths occurred among the Khojahs or Bahorahs; but one Mehman died. The second outbreak was stated to have occurred at about the time of the arrival of a mail steamer from Seychelles, and three of the crew of the steamer are said to have died in the harbour. The epidemic, however, did not extend to Seychelles.

The track of this second epidemic to Nossi-bey was not very satisfactorily ascertained, as I had not an opportunity of interrogating many on the subject. It was stated to me by a Bahorah merchant resident there, that the epidemic was then extinct on the north-west coast of Madagascar (and there is every reason to suppose that it was so); and that it had been conveyed to Nossi-bey from Mozambique. This, indeed, is almost certain; for at that time the epidemic was active at Mozambique; and, during the early months of 1871, that place was infecting the Portuguese ports both north and south. Mozambique infected Nossi-bey through Majunga in September, 1870; and, as was reported, a second time, directly, on the 13th of March, 1871.

The island of Johanna, one of the Comoro group of islands, was infected from Mozambique on the 16th of

August ; and, a second time, from Nossi-bey, on the 14th of November, 1870. My former statement in the *Transactions of the Epidemiological Society*, that Johanna was infected directly from Zanzibar, requires correction on this point. The island, which is nearly equidistant from East Africa and the north-west coast of Madagascar, is about twenty-four miles long, by eighteen broad. It is an extremely beautiful island, with verdant and fertile valleys, and mountain peaks reaching an elevation of from 3,000 to 4,000 feet. It is, consequently, well watered, and has a population of over 20,000 inhabitants, scattered in villages, and hamlets over the island.

There are two populous towns on the island, Makhadou, on the north of the island, about half a mile from the roadstead where vessels usually anchor, having a population of about 4,000 ; and another, on the eastern shore of the island, with a population of about 2,000. The Johanna people, although keen slavers, are a very enterprising race ; and, during recent years, they have made rapid advances in agricultural pursuits, considerable portions of the island being planted with sugar-cane and cocoa-nuts.

The first case of cholera appeared at Johanna on the 16th of August, subsequent to the arrival of an infected dhow from Mozambique, and the epidemic continued till October, causing 285 deaths. For about two months and a half afterwards there were no cases of cholera on the island ; but the epidemic reappeared on the 14th of December, subsequent to the arrival of an infected dhow from Nossi-bey, and continued till January, 1871, the last case having occurred on the second of that month. During the second epidemic there were 378 deaths. The authorities at Johanna did everything in their power to limit the spread of the epidemic, and especially to prevent its extension to the labourers on the sugar estates of the Sultan, and Mr. Sunley, the latter gentleman having

had at the time about 800 persons employed on his estate. All communication between the town, where the epidemic raged, and the sugar estates was interdicted; and means were used to enforce the order. The result was that no deaths occurred on the sugar estates on either occasion. Dr. Morton, of H.M.S. *Wolverine*, carefully investigated for me on the spot, and shortly after their occurrence, the facts connected with the epidemic at Johanna. A register had been kept of the dates, and of the mortality, during the double epidemic. The escape of the labourers on the sugar plantations cannot be regarded as a merely accidental occurrence, having no connection with the isolation of the estates, and from what I know of the Johanna people, I feel assured that they would use every possible means to secure the fulfilment of any such order were they convinced that it would limit the ravages of the disease among their kindred and their slave property.

Mozambique sent another branch of the epidemic north to Ibo in January, 1871. Ibo is a small island of the Querimba group, in nearly the same latitude as Johanna, about a degree south of Delgado, the northern boundary of the Portuguese possessions. It is nearly divided into two islands by a deep inlet from the north-west, and the southern part of the island is called Querambo. Ibo, although a place very little known, does a large trade with the interior, and is the depôt of a large coast district. It is presided over by Portuguese officials, and has a small garrison.

On the 11th of January, 1871, cholera appeared at Ibo, subsequent to the arrival of an infected dhow from Mozambique, and it continued to rage with great violence for forty-five days, and caused 1,300 deaths. No natives of India were attacked. Five wealthy Portuguese died, and also twelve men of the Portuguese garrison. The epidemic extended inland, among the coast tribes, for about five

days' journey. My informant, the principal Banyan merchant at Ibo, supplied me with the above details in the month of April following, and the facts had been noted by him at the time of occurrence. One year before the disease appeared at Ibo, the Zanzibar branch of the epidemic reached its utmost southern extension by sea, at the mouth of the Rovuma, the distance between the two places being about 160 miles; but these two places were infected by distinct branches of the epidemic which separated from the main branch at Dasikera, in the Masai country, in August, 1869. Prior to the appearance of the epidemic at Ibo, there were no rumours regarding the existence of the disease on the mainland opposite the island.

At about the same time that Ibo was infected, Mozambique sent another branch of the epidemic south to Quilimane, near to the mouth of the Zambezi. Quilimane is situated on the left bank of the river of that name, and about fifteen miles from its mouth, in lat. $17^{\circ} 51' 48''$ S.; long. $37^{\circ} 1'$ E. It is built on an unhealthy marsh, and without any regard to regularity. The main part of it is a native town, of the usual construction, wattle-and-dab; but there are several substantially built houses, including a church, custom-house, barracks, and a prison. The population of the town and suburbs is estimated at about 15,000. Quilimane is one of the most important of the Portuguese possessions on the East coast of Africa, as commanding the navigation and commerce of the Zambezi river, and the Shiré, which flows from Lake Nyassa, and is, consequently, in constant communication with Mozambique, the residence of the Governor-General. The Portuguese government has always been unfortunate in its relations with its East African possessions, and revolt has been the normal condition of the Zambezi tribes for years. In 1869, a military expedition was organized in Portugal

and Goa for the re-conquest of the Zambezi from the notorious rebel chief, Bonga; but the Portuguese troops having been defeated were forced to retreat from before the enemy's stockade, leaving their ammunition and other warlike stores behind. A second expedition was organized, and was ready to take the field in the beginning of 1871, for the relief of Sena and Teté, and the maintenance of the communication between Quilimane and the Upper Zambezi. Mozambique was, consequently, in constant communication with Quilimane at that time.

In February 1871, the epidemic appeared at Quilimane, subsequent to the arrival of an infected dhow from Mozambique. The military expedition was about to start for immediate service on the Zambezi; but cholera broke out among the European and native troops; about one-third of them died, and the expedition had to be abandoned. The deaths were estimated at from four to five thousand, and the disease passed up the Zambezi towards the interior. At the beginning of June, 1871, the disease was still raging in the districts adjoining the mouths of the Zambezi; but after this date and further south than the parallel of latitude named I was unable to trace the epidemic. The interruption of commercial communication by the hostile state of the natives under the robber chief, Bonga, may have arrested the progress of the epidemic in the regions adjoining the Zambezi, until the epidemic became extinct; but there were no means of obtaining information, at Zanzibar, regarding districts south of Quilimane.

The tendency of the epidemic was evidently to spread towards the southern extremity of the Portuguese possessions at Delagoa Bay; and, in accordance with the natural history of the epidemic, there would have been, at the limit of the Portuguese possessions, a tendency to facilitate the further progress of the epidemic towards the

south. The British South-African colonies were, however, in great danger of an invasion at that time from two points, the one at the extreme north, Natal; and the other at the extreme south, Cape Town. Had the epidemic reached Delagoa Bay, the population of Durban would have been in a very precarious position; and had the epidemic become general at the Mauritius, or more especially at Tamatave, the inhabitants of Cape Town would have been in great danger. The cases of sporadic cholera which are said to have occurred at Mauritius, were, probably, cases of true Asiatic cholera, imported from Madagascar, which did not result in the formation of epidemic centres. Cases of a precisely similar nature occurred in the island of Zanzibar; for the first imported cases from Paganí did not result in the formation of epidemic centres in the town and island.

The extension of the epidemic from Zanzibar, in a southerly direction, was arrested by the setting in of the south-west monsoon in April, 1870; but at that time the diffusion to the distant northern ports commenced. Mombassa, as previously mentioned, was infected, during the season of variable winds, or shortly after the setting in of the north-east monsoon, when small native craft sometimes work their way along the coast from harbour to harbour. By such small coasting boats the disease was communicated from Mombassa to Takaunga and Melinde, and from Melinde to the island of Lamoo, in January. On the 16th of April, 1870, the first dhow sailed for the Somali port of Brava, and in the course of a very few days every dhow for the north had sailed, with the exception of a few which remained to make the passage to Western India at the close of the monsoon. Many of the dhows call at intermediate ports, such as Mombassa, Melinde, Lamoo and Kismayo, on the voyage north, and to many of the coast towns which had suffered at an earlier date, the disease

was re-introduced. It re-appeared in Lamoo, subsequent to the arrival of the Zanzibar dhows in April, and continued to commit great ravages among the inhabitants for about four months. The mortality was very great among the Arabs and negroes, but no natives of India died. The disease broke out in the various Somali harbours, generally on the second day after the arrival of the dhows. From information communicated to me by the late Mr. A. H. Heale, who left Zanzibar for Brava on the 16th April, the number of deaths at the Somali ports was estimated as follows:—Merka, 500; Mukdeesha, 1,000; Brava, 400. The disease continued in each of these places for about two months, and the number of deaths among the negroes was very great.

Little of a definite nature was ascertained, regarding the diffusion of the disease towards the interior from the coast towns occupied by the Wasawahili as far north as the river Jub. These people, who occupy all the coast towns, and a narrow fringe of land along the shore, do not penetrate far into the interior with their merchandise; for, were they to attempt to do so, they would certainly be plundered and murdered by the inhospitable Gallas. The chief towns and villages on this coast are Mombassa, Takaunga, Melinde, Mambrui, Ngomeni, Kau on the river Ozzi, Lamoo, Patta, Siwe, Paza, and Kismayo, close to the river Jub. The river Sabaki, the southern boundary of the Galla country, and an important commercial highway to the interior as far as Ukambani, enters the Indian Ocean between Melinde and Mambrui; and the rivers Tana and Ozzi, connected with each other by an inosculation in the interior, enter Formosa Bay, a little to the south of Lamoo. The Tana is by far the most important river between the Pangani in the south and the Jub in the north, and is said to be navigable far into the interior. The sources of the Sabaki, the Tana and the Ozzi must be

entirely distinct; for in the months of December and January the Sabaki and the Ozzi shrink to their smallest dimensions; but the Tana is then in flood, and inundates the surrounding country. The sources of the Tana are evidently at the snow-capped mountain of Kenia to the north of Kilima-njaro, and the river is swelled to overflowing during the dry and hot season in the interior by the blazing sun melting the snows of Kenia. The river Tana is an important highway to the far interior, and is used as such by the Wapokomo who occupy its banks. The Wapokomo are a civil and harmless people, occupied in cultivating the land on both banks of the Tana, and in navigating the river with their canoes and dhows, conveying the produce of the interior to the coast; and, like the Wabisa, they are traders, or middle-men of the inland traffic. They are tributary to the Gallas, and are constantly plundered by their brutal superiors. For several months their country is under water, and the air is then thick with mosquitoes. The greater part of their time is spent in their canoes.

The country along the coast line, but behind the fringe occupied by the Wasawahili, is inhabited by the Wasania, who are also tributary to the Gallas. The Wasania are an aboriginal tribe, and in ancient times they possessed extensive tracts of country in this region; but they have been dispossessed of their territory, and hemmed in on the coast by the inroads of the Gallas from the north, to whom they are still subject. The Wasania live entirely by the chase, and hunt the elephant, the buffalo, and the hippopotamus, with arrows, knife and axe. Like the Gallas, they live almost entirely on flesh-meat; and after parting with the greater part of their ivory, horns, and teeth to the Gallas as tribute, or for permission to hunt, they traffic with the remainder for tobacco, beads, &c., with the Wapokomo. Being nomades

they seldom reside in their permanent villages, and either sleep in the open air, or occupy bee-hive huts, so small that a hut will only cover a single person sitting on his haunches; so that when the owner is stretched out at full length the upper part of the body only is covered, and the legs protrude beyond the entrance. The Gallas occupy the country behind the Wasania, and in their occupations they are exclusively pastoral. They are not, however, equestrian; but this depends on the fact that the horse does not live in these regions. The men do nothing but superintend their flocks and herds, eat, drink, plunder and murder. They live principally upon flesh-meat, blood and milk; and, like the Masai, they bleed their oxen, and suck the blood from the open vein. They eat the flesh of wild animals; but they despise fowls as a kind of vulture, and fish as being allied to serpents. The Gallas do not allow strangers to enter their country; so that the only commercial routes are by the rivers named, and even these are closed, except to the tribes occupying their banks, such as the Wapokomo. Messrs. Wakefield, New, and Brenner are the only Europeans who have succeeded in gaining an entrance to the country.

Nothing definite was ascertained regarding the epidemic amongst the Gallas, beyond the statement that it passed into the interior, among the Wapokomo and the Gallas. The people of Tula and Kismayo suffered very severely, and from both of these places the disease proceeded inland, and came near the central track of the epidemic through the Galla Borani country to the coast. From statements made by natives from the district I was led to regard it as very probable that a branch of the epidemic extended previously from the Galla Borani, and reached the Indian Ocean through the Galla country, and by way of Kore to Tula at Port Durnford. No estimate can be formed of the mortality in the interior.

The furthest point north to which I was able to trace the epidemic was the island of Socotra. This island is about 70 miles in length, by 22 in breadth, and is about 120 miles from Guardafui, and 220 from Ras Fartak, on the Arabian coast. The surface of the island is generally elevated, consisting of a table-land about 800 feet above the level of the sea, from which mountain peaks arise, some of which are 5,000 feet above the level of the plateau. The island is best known for the aloes which it produces, and which have rendered it celebrated. The *Pterocarpus draco* also flourishes there, and both aloes and dragon's blood are produced in large quantities. It is singular, but nevertheless true, that the greater part of the produce of Socotra finds its way to the Zanzibar market, during the monsoon season. Socotra was well known to the ancients, and seems to have been formerly a place of much greater importance than it now is. The population was formerly Christian; but now not a vestige of that religion remains. The island is said to be thinly populated, and the natives who are evidently a mixed race, are governed by a native sultan. At the time of the cholera epidemic there were no natives of India resident on the island; but since that time an agent of a Khojah house has taken up his residence there.

The Socotra dhows leave Zanzibar whenever the southwest monsoon fairly sets in, and they sometimes call at Mombassa on the passage, the average duration of which is about fifteen days. Dhows bound for the Persian Gulf, frequently call at Socotra for a supply of water, and the place has been often suspected as a rendezvous for slavers. There were two or three Socotra dhows at Zanzibar during the epidemic, and by one the disease was carried to the island. One of the crew died on the passage; and, subsequent to the arrival of the dhow at its destination, the disease appeared in the port town, named Bunder Kadu.

The disease was confined to that town, the number of deaths being about twenty; but the epidemic did not spread generally throughout the island. The principal town, Bunder Kalasia, was not infected. The natives of Socotra informed me that the island had been previously visited by an epidemic of cholera, which was very fatal at the chief town, Bunder Kalasia, and the epidemic referred to was evidently that of 1858—59. Between 1859 and 1870 there were no cases of cholera on the island of Socotra.

The last trace of the epidemic in the north was thus at Socotra, in the month of June 1870, and within about a hundred miles of the track by which it entered the Gulf of Aden in the month of November 1864. The southern limit, in so far as I was able to trace it, was at the mouth of the river Zambezi in July 1871. The western limit was at the Manyema country in July and probably later, in 1870; and the eastern at Mauritius, in December 1870.

Such were the ascertained limits and dates regarding the diffusions of the East African branch of the general epidemic of cholera which entered the Gulf of Aden at the close of 1864. The mortality attending the epidemic during its march through Africa must have amounted to several hundreds of thousands.

CHAPTER XIII.

REVIEW OF DR. BRYDEN'S ACCOUNT OF THE EAST AFRICAN EPIDEMIC OF CHOLERA IN 1869-70.

IN 1869, and the early months of 1870, official reports from the Consulate at Zanzibar, regarding the outbreak of cholera, were placed before the Government of India, and the Home Government. Those sent to the Indian Government appeared shortly after in the Indian papers, and were, probably, published *in extenso*. Various communications from residents in Zanzibar appeared in the leading English papers, and in every one that came under my observation, the disease was represented as having reached the coast of Africa at Pangani from the Masai country.

In 1870, Dr. Bryden, *Statistical Officer attached to the Sanitary Commissioner with the Government of India*, embodied in his "Report on the General Aspects of Epidemic Cholera in 1869," a narrative of the epidemic of cholera in East Africa, derived from official sources, reported at the time of the occurrence of the events. When the report was written the epidemic in the island of Zanzibar had ended; but the diffusion on the East Coast of Africa had not terminated, and Dr. Bryden had no other data to proceed upon than the official reports, and letters which appeared in the public press. The Report was published by the Government of India, at Calcutta, in 1870, and forms one of a number of reports drawn up by Dr. Bryden,

and published by Government, at Calcutta in 1874, under the title of "Vital Statistics of the Bengal Presidency. Epidemic Cholera, from 1817 to 1872." The Report, however, is continued till the close of 1873, for events are noted as having occurred at the close of September of that year.

In that part of the Report referred to Dr. Bryden discusses the East African epidemic as follows :—¹

"The general results of this movement [of cholera] of September and October [in India] are contained in the following letter addressed to the Secretary to Government, in the Home Department, during the absence of the Sanitary Commissioner in England, dated 3rd February, 1870 :—

"Movement of cholera in the first week of September, and later in the year in countries beyond the limits of Hindostan.

"Referring to letter from the Sanitary Commissioner with the Government of India to your Department, No. 394, dated 31st May, 1869, in reply to your No. 174 of the 27th idem, with enclosures from the Secretary of State for India, forwarding, for the consideration of His Excellency the Governor-General in Council, the suggestion that the British Delegate to the Board of Health at Constantinople should be supplied periodically with correct information regarding the state of the public health in India, in anticipation of the possibility of the introduction of epidemic disease into the Ottoman ports of the Red Sea and thence into Europe, I have the honour now to invite your attention to the contents of a despatch from the Political Agent and Her Majesty's Consul at Zanzibar, dated 25th November last, and transmitted to this Office with Foreign Department docket of 27th January.

"This despatch announces the appearance of epidemic cholera towards the end of October on the eastern coast of

¹ *General Aspects of Epidemic Cholera in 1869: a Sequel to a Report on the Cholera of 1866-68.* Calcutta, 1870, p. 20.

Africa, and an outbreak at Zanzibar which commenced on 20th November.¹

"2. I believe it to be a matter of great importance that the epidemic relations of this cholera should be clearly comprehended, in order that the sequence of the events that may follow in the current year, and in 1871, may not be misunderstood.

"In the last paragraph of the first section of my lately published report,² written in June last, you will find the appearance of this cholera on the eastern coast of Africa at this time anticipated in relation to the history of the epidemic cholera of India of 1868, and the spring of 1869, and its significance defined. At this time no advance of the epidemic cholera of 1868-69 beyond the limits of Hindostan had occurred, although the movement was regarded as imminent.

"3. Following the epidemic movements of cholera in the Bengal Presidency of June and July, it was reported to the Government of India that cholera invading Persia had committed great ravages at Shiraz and Ispahan, and, while still existing in Northern Persia, had entirely ceased elsewhere about the middle of August. The cholera of this advance appears to have been felt also in Southern Russia,

¹ "It is most interesting to note that it was on this very day, fifty-one years ago, 20th November, 1818, after the setting in of the north-east monsoon, that cholera first appeared at the Mauritius. Even after the lapse of all these years, the evidence of importation, which appeared to Sir Gilbert Blane to be conclusive, requires to be reviewed in the light thrown upon it by the parallel invasion of Zanzibar in 1869. The age of the epidemic was in both cases the same; it was the cholera of the invading epidemic of 1817 that appeared at the Mauritius on the 20th of November, 1818, and it was the cholera of the epidemic of 1868 that arrived at Zanzibar on 20th November, 1869."

² "The great cholera now in progress in the Central Provinces, and which is epidemic also over Guzerat, is the exact counterpart of the cholera of 1864 following the invasion of 1863; and we shall wait to see whether or not it is destined at the close of this year, or in the spring of 1870, to transgress the boundaries of Hindostan, and to make its appearance in Arabia or Syria, or in Eastern Africa."

and in July a few cases occurred at Kieff. The disappearance of this cholera in August is, I believe, the homologue of the disappearance which towards the end of August occurred over an enormous tract in our Presidency in the Gangetic and Central Provinces.

“In my progress statement bringing up the epidemic history of 1869 to a late date in August, I remarked on the probability of a further epidemic movement of cholera over Northern India in the first week of September, my anticipation being founded on a parallel event in the epidemics of 1856 and 1861, which will be found noticed in my printed report. The movement did occur, and its extent to any one unaccustomed to regard cholera as air-conveyed, will appear almost incredible.

“It might be argued that in Persia and Russia the cholera of the first week of September was a revitalisation under a special meteorology of the invading cholera of July. But to us in Northern India, the epidemic history of the previous months proved, that this cholera of the first week of September was a cholera truly invading an unoccupied area, and therefore I am disposed to believe that the invading cholera, which in the Meerut district, and in Southern Russia, dates from the same week, was the cholera of one and the same movement. Be this as it may, both manifestations were beyond question due to the cholera of the same epidemic. In the same week the Sirsa district was occupied, and the southern border of the Bhawulpore State touched; Upper Scinde was covered, and the Peshawur Valley filled with cholera; Astrabad, on the Caspian, was struck on the 8th September, and in the same week the cholera broke out in Kieff.

“In a postscript to a progress statement dated 8th September, written on receipt of the first telegram reporting cholera in Peshawur City, it will be found that I stated my belief that this appearance of cholera will be found

coincident with epidemic advance on Northern Scinde, and not upon the Punjab generally, and the sequel showed that my conjecture was correct.

“4. This cholera of Northern India, of Northern Persia, and of the Caspian Provinces, will be found described in my report as the northern invading limb of an Indian cholera. It progresses along the track which I have called the northern epidemic highway, and has its termination in Russia and Northern Europe.

“5. It is the southern invading limb of the same Indian epidemic which has reached the eastern coast of Africa, and which is the subject of Dr. Kirk's despatch.

“As early as June, some cases of cholera were reported in the eastern districts of Lower Scinde; but it was in the end of August, and in the same first week of September that the invasion of the province actually occurred. This cholera wave appears to have extended to the Southern Provinces of Persia, and of this the effects are detailed in a report forwarded by the Government of Bombay, dated 11th November.

“As on our North-Western frontier, so in Lower Scinde this invading cholera was still in epidemic vigour up to the first week of November. At the end of October many people were dying daily at Kurrachee. From my notes I find that I again anticipated the appearance of the cholera on the African coast, towards which the north-east monsoon was now steadily blowing. In the last week of October, Her Majesty's transport, *Euphrates*, when 550 miles west of Bombay, passed through an immense cloud of locusts, blown from the Indian shores, the wind being N.N.E. The steamer *Krishna*, which left Aden on 30th October, ‘experienced fine weather to longitude 53° E., but then there was a very strong north-east monsoon, and heavy head sea to about 68° E.’

“It is just at this time that Dr. Kirk's narrative reports

the appearance of cholera on the main land north of Zanzibar, indicating the progress to the west of the southern limb of our Indian cholera of 1868-69.

“6. Invasion beyond Hindostan has in various epidemics progressed on both the northern and southern highways; but in other epidemics one highway only has been occupied, and the epidemic journey has been continued along one only of the routes. The termination of the journey begun on our northern highway is Russia and Northern Europe; when our Indian cholera moves on the southern, Arabia, Eastern and Northern Africa, and the shores of the Mediterranean generally are threatened.

“7. In the light in which I read parallel history, the epidemic now in progress has still before it a vital existence of at least two years, since it was in April 1868 that its movement from out of the endemic area occurred.

* * * * *

“The fact that the cholera of the current epidemic has already reached Russia and Eastern Africa, may, perhaps, be considered of good import as regards the prospects of Central India, and our Northern Provinces in 1870, showing, as it does, that a certain amount of the materies of the epidemic is certainly lost to us; for in relation to this diminution, the material of the fresh invading waves, which we have still to fear in Northern India, may have been to a great extent pushed on beyond the frontier.

“8. It is important that we should consider what is the parallel in the history of the last invading cholera of Europe of this Zanzibar cholera of November, 1869.

“At page 356 of the Indian edition of the proceedings of the Constantinople Conference will be found mention of the invading cholera of the end of 1864, upon which I grounded my anticipation of a parallel cholera on the African coast in the end of 1869. Indications of the

presence of cholera in Southern Arabia should now be carefully inquired after; and even the most trifling number of cases may be true forerunners of epidemic invasion. I should be inclined to accept the mere empirical fact of the parallel occurrence of 1864 as indicating the probability of the appearance of a great cholera in the districts now occupied, and in Arabia in May, and in Egypt in the same month, or more probably at the usual season of invasion in July from the evidence which the event affords of epidemic progress on the southern highway.

“9. Under any circumstances it is right that the warning should be given. We may never again hear of this Indian cholera when driven so far to the south. But whether Arabia and Europe is invaded or not, there can be no question as to the significance of this cholera of Zanzibar in epidemic history. Two years of vitality remain to the cholera of the current epidemic; and in the event of the spread to Europe of this cholera, and that now present in Southern Russia, persistence throughout 1870 and 1871 may be expected.”

In Part II. of the same report, Dr. Bryden narrates, “The History and General Aspects of Epidemic Cholera in 1869,” and at page 38 returns to the consideration of the Zanzibar epidemic of 1869-70. He evidently places very great importance upon certain facts brought before him in the Official Reports, and considers that the East African epidemic places the aërial theory regarding the transmission of cholera upon an immovable foundation, as the following extracts will show:—

“*Cholera of Zanzibar—October 1869 to February 1870.*—My letter regarding the epidemic relations of the cholera of Zanzibar was written on the receipt of Dr. Kirk’s first despatch of 25th November. This cholera was heard of first on the continent of Africa. Dr. Kirk writes—‘It is now more than a month since the first rumour reached us

of the approach of cholera from the west ; now it is my painful duty to record its presence amongst us. Two distinct centres of the disease have appeared in town, in one of which there have been three deaths, while nine have fallen in the other. It is but three days since cholera first appeared here, and there are twelve well-authenticated cases already.' This was Dr. Kirk's first report.

" Five weeks later, on 1st January, he writes—' The mortality in town may be estimated at 9,000 or 10,000. The Arab estimate of the mortality over the island is from 25,000 to 30,000 ; but this I consider too high. In five weeks we have lost upwards of 12 per cent. of the population of the town. The disease is still raging in the interior of the island, and along the African coast. Northwards it makes slow progress against the strong monsoon, which set in early this year. South of Zanzibar, cholera has already passed Quiloa, and all the coast villages have suffered dreadfully.

" ' The first epidemic of cholera in Zanzibar, of which we have any knowledge, occurred about thirty years ago. In December of 1858, and in the beginning of 1859, it returned, and carried off 7,000 or 8,000 in this town. It is said to have come along the coast from the north, and to have reached as far south as Mozambique, but it did not pass to the Zambezi Provinces, where I was then stationed.

" ' In June and July of 1865, cholera again came down the African Coast, but it did not pass Lamoo, as the southwest monsoon had set in strongly, and with the ocean current stopped all trade southwards.' "

" On 26th January, and 4th February, Dr. Kirk reports that cholera still hangs over the island, and that five men from the shipping in port have died ; that it is still raging up and down the coast, and has again been reported from the interior of Africa.

" What will become of this cholera it is impossible to

predict; but should a cholera anywhere appear which we may conjecture to have had this African cholera for its base, it will be of extreme interest to watch its geographical connections. Europe escaped the great cholera of 1858 of the Red Sea, Aden, and Zanzibar, and it is to be hoped that the cholera of 1869 may follow this parallel; but it is worth calling to mind that the cholera of 1858 was a cholera in its fourth year of epidemic life, while the cholera of 1869 was in its second year when the invasion of Africa occurred. This much is certain, that without a definite and intimate knowledge of the cholera of every month in Hindostan we grope helplessly for a knowledge of the epidemic relations of a cholera which suddenly springs up, it may be thousands of miles away. Whether it be at the Mauritius in 1818, in Central America in 1837, the Cape de Verdes in 1856, or Gibraltar in 1860, we fail utterly to comprehend the place in epidemic history of the cholera of such outbreaks until the base and origin of each epidemic is traced in the Bengal Presidency; and it is from future history, and not from the history of the past, that we shall learn to appreciate what it is that is meant when we speak of the arrival of cholera in foreign lands.

“The meteorology accompanying the invasion of Eastern Africa.—I have often said that no palpable manifestation realized to my mind the idea of the diffusion of the impalpable agent cholera except a locust flight. At one time leaving not a trace behind, at another dropping individuals only from the locust cloud, at a third sending down powerful offshoots, the locust flight darkening the sky overhead, traverses the widest tracts until it alights at the extremity of a natural province, because the flight has struck against the aërial wall of obstruction which I have described. It broods thick upon the terminal area over which the locusts have settled, rising and falling on the same area as me-

teorological influences bear upon the localised body. It sows seeds to be developed when the proper season comes round and not before, and it dies when the date of death arrives.

“As at Simla in 1869, numerous individuals of the locust flight will be found on the tops of the highest hills, and other detached bodies can be seen as clouds of more or less density in the valleys around. But the main body from which these locusts were detached was far away—in Central India. As the cholera of May 1865 of the districts south of the Jumna suddenly projected over the Himalayas a detached body, or as the cholera of Central India of the first week of June 1869 sent out its offshoot almost to the snows, so did the locust swarm of 1869 project over these hills the detachment of which I have spoken.

“The particular section of the locust swarm of 1869 in which we are now interested is that which settled over the cholera area in Central India and Rajpootana. At the end of August the Lieutenant-Governor, North-Western Provinces, writes :—

“‘The flights of locusts appear to have deposited their eggs, and the larvæ are described as covering the country from Aboo to Ajmere.’”

“At the same time the Agent for the Governor-General in Rajpootana reports :—

“‘Locusts are out over almost the entire western portion of Marwar, in Serohi, and in the country around Dessa. They are now doing little harm; but great apprehensions are entertained for the result in October when the young crops are produced.’”

“This was the base of departure of the flight met by the *Euphrates* in the last week of October, between Bombay and the African Coast. They left India with the north-east monsoon. In the first week of November the *Krishna* reported, as already quoted, that she experienced

fine weather from Aden to long. 53° E., but then there was a very strong N.E. monsoon, and heavy head sea to about 68° E., and the *Euphrates*, which arrived at Bombay in the same week, reported that while about 550 miles from Bombay, the wind N.N.E., she met an immense cloud of locusts. They were visible for about three days, great numbers of them falling on the ship and in the sea around.

“ Here is palpable evidence that at this date air-borne influences from Western India were being directed towards Eastern Africa, and immediately follows Dr. Kirk’s report of 25th November, that about a month before, that is, towards the end of October, cholera had begun to show itself on the main land of Africa.

“ *Monsoon Cholera of 1870 in Eastern Africa.*—Delay in printing this report enables me to append the most recent intelligence regarding the cholera of Africa. That the monsoon cholera of 1870 has made its appearance in some part of Africa is evident from the correspondence which follows.¹ This is the July cholera alluded to in my letter of 3rd February. Should Egypt escape, it will still be of the greatest interest to watch the future of this African cholera of July.

“ The following is an extract from a letter addressed to the Government of Bombay by the Political Resident at Aden, dated 14th July, 1870 :—

“ ‘ There is a report that the cholera is in the Dunkelli country, and that boats and vessels from that coast are placed in quarantine at Mocha. I have made every enquiry, but cannot find that there is any disease on the coast of the Dunkelli country. Vessels and boats from Aden are also made to undergo quarantine at Mocha. I

¹ “ This conjecture has since been confirmed. A letter from the Political Agent at Zanzibar, dated 17th August, announces the re-appearance of cholera on the African coast, opposite Zanzibar. He states that the deaths are from thirty to forty daily, chiefly among natives coming from the interior.”

trust, therefore, the report of the disease may be incorrect. The Dunkelli coast extends from south of Annesley Bay to Tajura Bay. I keep as strict a watch as I can on all boats from the African coast.'

"A week later, however, the Political Agent again writes to say that he is disinclined to believe in the truth of the report, and he thinks that the rumour may have been caused by reports of cholera prevailing much further to the south. He concludes—'One term, Bir Azim, is used for the whole African coast; hence the mistake.'"¹

Dr. Bryden having thus exhausted the history of the epidemic of 1869-70, in East Africa, proceeds to detail the "History of the cholera of the same epidemic in Assam in 1869."

In Dr. Kirk's first report, dated 25th November, 1869, as quoted by Dr. Bryden, he says:—"It is now more than a month since the first rumour reached us of the approach of cholera from the *west*."

Dr. Bryden, it must be mentioned, does not quote Dr. Kirk's Official Report, dated 6th February, regarding the epidemic, in full. He says:—"On 26th January, and 4th February, Dr. Kirk reports that cholera still hangs over the island, and that five men from the shipping in port have died; that it is still raging up and down the coast, and has again been reported from the interior of Africa." This is an extract from the Official Report, dated February 6th, 1870, which also contains the following statement of a

¹ "The conclusion arrived at may be correct, or it may not. My experience of such reports regarding cholera is that they are almost invariably true. The very presence of cholera in the interior of the Simla Hills, and in the south of the Bhawalpore State, in 1869, was denied, although the fact was afterwards authenticated. The severity of the cholera of the hills, of June, 1869, is attested by the inquiries of recent travellers; and the people recognise this as the only epidemic which has struck the hills beyond the Sutledge since the outbreak of the mutiny year, 1857, when these same localities suffered to an extreme degree."

fact which was well known to every one in Zanzibar:—
“It [cholera] came to us by the Masai or northern caravan route, and re-enters Africa at a point [Bagamoyo] only sixty miles south of where it first reached the coast [Pangani] in November last.” When Dr. Bryden wrote his Report the important fact that the epidemic, previous to its appearance on the coast, had proceeded along the caravan route from the Masai country appears to have escaped his attention. The Zanzibar Report also states:—
“I trust that, in consequence of my previous letters, the Commanders of Her Majesty’s ships of war coming to this station have been made aware of the very unhealthy state of the coast, and the danger of taking on board the cargoes [of slaves]. I have already informed the Resident at Aden in order that he may take any necessary measures should the disease enter the Somali country, or continue during the south-west monsoon.” The primary object of the Official Reports from Zanzibar was evidently to supply to Government information concerning the epidemic area on the East Coast; but the facts recorded in them were sufficient to show that the conclusions arrived at by Dr. Bryden were at least premature; for the statement is distinctly made that the epidemic came to the coast from the *west*, along what is known in Zanzibar as the Masai or *northern caravan route*. I feel assured that Dr. Kirk would repudiate the conclusions arrived at by Dr. Bryden, and maintain, on the contrary, that the epidemic in East Africa was not air-borne, by the north-east monsoon of 1869, but was propagated along the lines of human intercourse, as he distinctly states, from the Masai country.

In 1870 Dr. Bryden had not before him full details regarding the East African epidemic; but in January and February, 1871, a fuller account of the epidemic in East Africa, forwarded by me from Zanzibar to the Epidemiological Society of London, appeared in the

columns of the *Lancet*, and was subsequently commented upon by the medical journals. An additional article written by me appeared in the same journal in the early part of 1872; but neither of these communications appears to have arrested his attention.

Dr. Bryden, in confirmation of the theory regarding the transmission of cholera by atmospheric waves, writes as follows:—"At page 356 of the Indian Edition of the *Proceedings of the Constantinople Conference* will be found mention of the invading cholera of 1864, upon which I grounded my anticipation of a parallel cholera on the African coast in the end of 1869."—"At the beginning of the cholera season of 1869, I deduced, that from the geographical situation of cholera, a certain sequence of events would happen at certain dates; and since the sequence of events did occur as anticipated, I recognise that what was then recorded is entitled to a place, not in the province of theory, but in that of legitimate deduction."—"It was the cholera of the epidemic of 1868 that arrived in Zanzibar on 20th November, 1869."

Dr. Bryden's aerial theory, as tested by ascertained facts regarding the East African epidemic collapses, if it can be proved that the epidemic was present on the East Coast of Africa prior to the commencement of the north-east monsoon. I accept Dr. Bryden's statement that at the beginning of November, 1869, the steamer *Krishna* encountered the north-east monsoon in long. 53° E., between the island of Socotra and Ras Fartak, in Arabia. So as to leave a wide margin for disputed dates, I may give Dr. Bryden possession of the entire month of variables, October and even part or the whole of September, when the province of Scinde was invaded by cholera. The aerial theory, it must be observed, is not established by a sequence of dates; for that sequence may be accidental; but it necessarily collapses without a sequence. According to Dr.

Bryden's own statement, the epidemic in East Africa appeared subsequent to the setting in of the north-east monsoon at the close of October; but such was not the case. From April till June, 1869, cholera was prevalent in Africa at about lat. 1° N., long. 38° W., and in the region about Kilima-njaro in August and the following months (page 233). I was enabled to ascertain, from business records, the exact date of the departure of the caravans from Pangani for the interior; the length of time they had been absent; the directions in which they had gone; and particulars regarding the disease in the interior were got from one of the seven survivors of a party of one hundred and fifty men, who managed to reach the coast alive, the others having perished in the interior. I have already quoted the letter of the Rev. L. Fraser, dated 7th November, 1869 (page 227), in which he says:—"While I was at Magira (in Usambara), I heard that a party of Pangani people, who had gone up to the Masai country, had been almost destroyed by cholera, which was very heavy in the towns about there," &c. The disease was thus prevalent on the East Coast of Africa long before the first breath of the north-east monsoon of 1869 could possibly have reached that place.

Dr. Bryden's theory may be tested by other facts. The position of the *Krishna* in the beginning of November, 1869, was to the north of Socotra, between that island and Ras Fartak, with the wind blowing from the north-east. It is to be expected that a sequence in the periods of infection of the various districts from north to south would be apparent; that is, that the epidemic would appear in the regions to the north at an earlier period than in those to the south, or, at all events, at about the same time, but certainly not at much later periods. Socotra was the first place exposed to the north-east monsoon; but the epidemic did not appear there till May 1870, and so also with the Somali

ports, Mukdeesha, Brava, and Merka. Proceeding from north to south, in the direction of the monsoon, we find that Kismayo was infected in March, 1869, Lamoo in January, 1869, and April, 1870; Melinde, Takaunga, and Mom-bassa, in December and January, and Pangani in October. The Samburu region, in the same latitude as Merka, was infected eleven months previously; and the Kilima-njaro district, in the latitude of Melinde, seven months before.

Passing to the south of Zanzibar, the epidemic reached the mouth of the Rovuma in January, 1870; but it did not reach Ibo, about 120 miles further south, till January, 1871. It may be reasonably asked—upon what theory connected with monsoon influence was the epidemic arrested at Cape Delgado, the boundary of the Zanzibar territories, in the month of January, 1870? The monsoon continued to blow in January and February as before, and there was no aerial or other wall of obstruction in the Mozambique channel. It may be said that the material of the epidemic may have been exhausted in Scinde; but another question arises; how did Mozambique happen to be infected in May, 1870, while the south-west monsoon was at its height? At that date there was no report of cholera south of Mozambique. Majunga, in nearly the same latitude, was not infected till August, and Nossi-Bey, in September, 1870, and March, 1871. Johanna is in the same latitude as Ibo; but Ibo was infected on the 11th January, 1871, and Johanna on 16th August, 1870, and a second time on November 14th of the same year. Such dates and positions are utterly irreconcilable with the theory of the transmission of cholera by monsoon influence. The monsoon had some connection, indirectly, with the propagation of the epidemic; but only in so far as it filled the sails of cholera-infected dhows, and blew them to the harbours to which they were bound.

The position taken by Dr. Bryden, that cholera does not

advance against a monsoon wind, is quite untenable, and opposed to the evidence afforded by the East African epidemics. The progress of the epidemic from Abyssinia, in 1865, to Zanzibar, in 1869, was irrespective of monsoon influence. Even in the Consular Report, quoted by Dr. Bryden, the following occurs:—"Northwards, it [the epidemic] makes slow progress against the strong monsoon, which set in early this year" [1869]. During the epidemic of 1865, cholera advanced from the Jub as far south as Mombassa, in the very teeth of the south-west monsoon, in May and June. In 1869 it pursued the same course, in the same district, against the full force of the north-east monsoon, and reached Lamoo in January. In 1871 it advanced against the full force of the north-east monsoon, and passed from Mozambique to Ibo.

Dr. Bryden's prediction, previous to the appearance of epidemic cholera in East Africa, I shall again quote:—"The great cholera now in progress in the Central Provinces, and which is also epidemic over Guzerat, is the exact counterpart of the cholera of 1864, following the invasion of 1863; and we shall wait to see whether or not it is destined at the close of this year or in the spring of 1870 to transgress the boundaries of Hindostan, and to make its appearance in Arabia, or Syria, or in Eastern Africa." I maintain that Dr. Bryden's prediction or anticipation was never fulfilled. That epidemic which, according to Dr. Bryden, "moved out of the endemic area in April 1868," and was prevalent in Western India in 1869, never reached any part of East Africa. The epidemic which reached Zanzibar in October or November 1869 was the epidemic which entered the Gulf of Aden towards the close of 1864. One branch of it entered Africa at Berberah, passed along the Ugahden caravan route to the Jub; from the Jub it advanced south as far as Mombassa, and north to the Somali ports. At the Somali coast, off Mukdeesha,

it was observed in a slave dhow on the 15th of April, 1865, and at the island of Abd-el-Kuri on the 12th of May; and from thence was probably introduced into Aden on the 22nd of May. In May, 1865, the epidemic which entered the Gulf of Aden in 1864, broke out with great violence at Mecca, and from thence passed to the sea-board of Upper Egypt and Abyssinia. Central Abyssinia was reached, probably, both from Souakin and Massowah, and the epidemic was general there in 1866. From Abyssinia the track of the epidemic lay through the Galla country, and would most probably cross the Blue Nile in 1867, and in that year appear at Enarea in November. The central track is definite, but the precise dates in that region, as to *months and days*, are hypothetical. The epidemic reached the territory of the Galla Borani, and from thence extended to the Soma-Gurra, among whom it was prevalent not later than the month of March, 1869. In consequence of a cattle raid made by the Masai, or their congeners, the Wakuavi, the disease was carried into the extensive regions between the Victoria Nyanza, and the Kilima-njaro and Kenia range, inhabited by the Masai in its central portion. From Nda-Sekera, in the Masai country, a western branch extended along the trade route to Ukerewe, and from thence to Tura, and an eastern one to Pangani, and Zanzibar. At Tura one branch passed due west, crossed the Lake Tanganyika and reached the Manyuema country, where all trace of it was lost, in 1870. A second branch from Tura passed to Cazembe's on Lake Moero, and another to the plateau of Lobisa. The Lobisa branch infected Mozambique, but whether it crossed the Lake Nyassa, or passed it at its northern or southern end I am unable positively to state. This, which was the direct continuation of the Central African branch, reached Mozambique in May, 1870, and from Mozambique it crossed the channel to Johanna and Majunga in August; passed north to Ibo in January, 1871;

to Nossi-bey in March, 1871, and south to Quilimane in February, 1871, where the southern extension was lost sight of. Majunga infected Nossi-bey in September, 1870, and the northern part of Madagascar generally. From Madagascar, Mauritius was slightly infected at the close of 1870, and the epidemic was also reported at Bourbon. In the Masai country the eastern branch of the epidemic passed along the caravan route to Pangani and Zanzibar. From Zanzibar the entire coast under the dominion of that Government was infected; but it did not advance beyond these territories, either north or south, except to Socotra. It re-entered Africa at Bagamoyo, and covered the caravan route to Mgunda Mkhali. During the north-east monsoon it infected the southern ports between Zanzibar and Delgado; and during the south-west monsoon, the northern ports as far as Socotra, where it was last heard of in June, 1870.

Whilst these events were transpiring on the East Coast of Africa, the epidemic was advancing in a precisely similar manner and at a similar rate of speed in Northern and Western Africa. While the coast towns of Upper Egypt and Abyssinia were extending the disease along the lines of human intercourse, towards Central and Eastern Africa, the disease was advancing through Lower Egypt, and attacked the harbour towns on the shores of the Mediterranean, both on the European and the African side. From Marseilles the epidemic crossed to Algiers, in Northern Africa in September, 1865, and continued in the city for four months, till the opening of 1866. In 1867 the epidemic was general throughout every province of the country. At the close of October of that year the epidemic ceased in the Province of Algiers, but was present in Oran and Constantine. From Oran the disease passed to Morocco in 1867, and in the early part of that year it appeared in the Regency of Tunis. From the city of

Tunis it was conveyed by troops to the different parts of the Regency. It appeared in Tangiers early in 1868, and in the sea-ports on the Atlantic coast, the adjacent districts being also infected. The extension of the disease appears to have been not from the coast towns to the interior, but from the interior to the coast towns, the diffusion having been from the Province of Oran, in Algeria, where the epidemic had been prevalent in 1867. From Morocco it crossed the Sahara to Senegambia, appearing at Podor, on the river Senegal, subsequent to the arrival of an infected caravan from Morocco. From Podor it passed up the river towards the interior, and downwards towards its mouth, appearing at St. Louis towards the close of November, 1868. From St. Louis it spread to the Joloff country, situated between the rivers Senegal and Gambia, and from thence it extended by propagation from village to village to the Mandingo country, where it appeared in February, 1869. On the 10th of March, 1869, it appeared at McCarthy's Island, 180 miles from Bathurst, on the river Gambia. When the disease broke out at McCarthy's Island the natives employed there, who belonged to adjacent districts on the banks of the river, fled, and the fugitives carried the disease up the river as far as the Bonadu country, between the upper waters of the Gambia and the Senegal, a distance of about 800 miles from the coast. From McCarthy's Island the epidemic passed down the river to Doomasangsang and Bathurst, where it was first recognised on 1st May, 1869. Bathurst infected Albreda, the coast of Dakar, and the Cape de Verde peninsula. From Dakar the disease extended to Rufisque, and from thence it spread in June to the adjacent island and town of Goree. From Bathurst it extended southwards, and appeared in September, 1869, at Cacheo, at the mouth of the river of that name, as also at Bulama, the most eastern of the Bissagos islands. At

this date the epidemic appeared also at Bissao, and the adjacent mainland, at the mouth of the Rio Grande, and also on the banks of the river. In October 1869 the epidemic was making its way up the river towards the interior, where further trace of it was lost. This, the first reported epidemic on the West Coast of Africa, was lost sight of at the mouth of the Rio Grande in October, 1869, in lat. 11° N., the same month of the same year in which the East African branch of the epidemic, which started from the same point at Mecca in May, 1865, reached the mouth of the river Pangani and the island of Zanzibar, and three months before it appeared in the Manyema country, in Central Africa.

The overland distance travelled by the north-western branch of the African epidemic, which started from Algiers in September, 1865, is almost identical with that traversed by the south-eastern branch which started from Souakin in July 1865, the former extending to the Rio Grande in October, 1869, and the latter to Mozambique in May, 1870.

Dr. Bryden's "southern aerial epidemic highway," covering "Arabia, Eastern and Northern Africa, and the shores of the Mediterranean generally," studied in the light of the detailed history of the great diffusions from Western India, in 1864-65, here summarized, and of the secondary diffusion from Mecca, in the latter year, has no existence; for the disease moved solely along the highways of human intercourse, and in certain definite relations to that intercourse.

CHAPTER XIV.

CHOLERA EPIDEMICS IN EAST AFRICA STUDIED IN THE LIGHT OF THE CONCLUSIONS OF THE INTERNATIONAL SANITARY CONFERENCE.

THE International Sanitary Conference, during its sittings at Vienna, in July, 1874, came to the following conclusions, regarding the scientific aspects of the cholera disease:—¹

“I. *Origin and Genesis of Cholera: Endemicity and Epidemicity of this Disease in India.*—Asiatic cholera, susceptible of spreading (epidemically), is spontaneously developed in India, and when it breaks out in other countries it has always been introduced from without. (Unanimously affirmed). It is not endemic in any other country but India. (Unanimous.)

“II. *Questions of Transmissibility.*—I. *Transmissibility by Man.*—Cholera is transmissible by man coming from an infected medium; but man is not considered as the specific cause, apart from the influence of locality; he is regarded as the propagator of cholera when he comes from a place where the germ of the disease already exists. (Unanimous.)

“2. *Transmissibility by Personal Effects (clothing, linen, bedding, &c.).*—Cholera can be transmitted by personal effects coming from an infected place, especially such as have served for the sick from cholera; and certain facts show that the disease can be carried to a distance by

¹ *The Practitioner; a Journal of Therapeutics and Public Health*, Sept. 1874, p. 220.

these effects if shut up so as to prevent free contact with the air. (Unanimous.)

"3. *Transmissibility by Foods and Drinks.*—(a). *Foods.*—The Conference not having conclusive proofs of the transmission of cholera by foods decided by eleven States against seven that it was not justified in coming to a conclusion on this question.

"(b). *Drinks.*—Cholera can be propagated by drinks, particularly by water.

"4. *Transmissibility by Animals.*—No proof exists of the transmissibility of cholera by animals, but it is reasonable to admit the possibility of such transmission. (Affirmative, 10; negative, 2; no opinion, 6.)

"5. *Transmissibility by Merchandise.*—Although proof is wanting of the transmission of cholera by merchandise, the possibility of such transmission in certain conditions should be admitted. (Affirmative, 13; no opinion, 5.)

"6. *Transmissibility by Cholera Corpses.*—Although it is not proved that cholera corpses can transmit cholera, it is prudent to consider them dangerous. (Unanimous.)

"7. *Transmissibility by the Atmosphere alone.*—No fact is yet known which proves that cholera can be propagated to a distance by the atmosphere alone, whatever its condition. Moreover it is a law, without exception, that an epidemic of cholera is not propagated from one place to another in a shorter space of time than it takes man to travel.

"The surrounding air is the principal vehicle of the generative agent of cholera; but the transmission of the malady by the atmosphere, in the immense majority of cases, is restricted to the close vicinity of the focus of emission. As to facts asserted of transportation to a distance of one or many miles, they are not conclusive. (Unanimous.)

"8. *Action of the Air upon the Transmissibility.*—It results from a study of the facts that in free air the generative principle of cholera rapidly loses its morbid

activity ; but that in certain conditions of confinement this activity may be preserved during an undetermined time. Great deserts form a very efficacious barrier against the propagation of cholera. This disease has never been imported into Egypt or Syria, across the desert, by caravans from Mecca. (Unanimous.)

“ III. *Duration of Incubation.*—In almost every case the period of incubation—that is to say, the time which elapses from the moment when an individual has contracted the choleraic intoxication to the commencement of the premonitory diarrhœa, or of confirmed cholera—does not exceed a few days. All the facts cited of a more prolonged period of incubation refer to cases which either are not conclusive, or in which the premonitory diarrhœa has been included in the period of incubation, or in which contamination (the contraction of the choleraic intoxication) has occurred after departure from the infected place.

“ Observation shows that the duration of the choleraic diarrhœa called premonitory—which must not be confounded with other kinds of diarrhœa that may exist where cholera prevails—does not exceed a few days.

“ The facts instanced as exceptional do not prove that cases of diarrhœa of lengthened duration belong to cholera, and are susceptible of transmitting the malady, when the person affected is removed from all cause of (choleraic) contamination. (Affirmative, 13 ; negative, 1 ; no opinion, 4.)

“ IV. *Questions as to Disinfection.*—Are any means or processes of disinfection known by which the generative or contagious principle of cholera can be *certainly* destroyed or deprived of its intensity ? (Negative, 12 ; no opinion, 7.)

“ Are any means or processes of disinfection known by which the generative or contagious principle of cholera can *with some chance of success* be destroyed or deprived of its intensity ? (Affirmative, 13 ; negative, 5.)

“ Science does not yet know any certain and specific

measures of disinfection ; but the great value of hygienic measures, such as ventilation, thorough cleansing, &c., is to be recognised, combined with the use of the substances regarded as disinfectants. (Unanimous.)”

Dr. Seaton, who along with Dr. Dickson, of Constantinople, was delegated to the International Sanitary Conference of Vienna, as representing the United Kingdom, explains, in an Abstract of the Proceedings,¹ the conclusions arrived at by the Conference.

The scientific questions Nos. 2, 3, 4, 8, 9, and 10 illustrated by the East African Epidemics, are explained by Dr. Seaton, in his abstract, as follows:—

“On the second question, ‘*Le choléra est-il transmissible par l’homme?*’ some discussion took place, not in reference to the main question, in which the Conference was entirely in accord with that of Constantinople, but on an exception taken by the German delegates to the wording of one of the conclusions of the Constantinople Conference on the subject. With certain qualifications to meet this view, and which recognised the influence of localities, the Conference accepted those conclusions, thereby affirming that cholera is transmissible by the human subject coming from an infected locality ; that the rapidity of its transmission is in correspondence with the activity and rapidity of human communications ; that the introduction of a single cholera patient may give rise to the development of an epidemic ; and that there are facts which tend to prove that a single individual (and *à fortiori* several) coming from an infected place, and affected with diarrhœa only, may be enough to give rise to the development of an epidemic of cholera, or, in other words, that the premonitory diarrhœa of cholera may be the means of transmitting the disease.

“On the points raised in the third question, ‘*Le choléra*

¹ *Reports of the Medical Officer of the Privy Council and Local Government Board.* New Series, No. V., 1875, p. 206.

peut-il-être propagé par des effets qui, provenant d'un lieu infecté, ont servi à l'usage, et spécialement par ceux qui ont appartenu à des cholériques?' the conclusions of the Constantinople Conference were unanimously accepted, viz., that cholera is transmissible by goods employed for personal use coming from an infected place, and especially by such as have been used by cholera patients; and that there are even facts which show that the disease may be conveyed to a distance by such goods if they have been kept close and unexposed to free circulation of air.

"The fourth question, '*Le choléra peut-il-être propagé par des comestibles?*' was one which had not been considered at Constantinople. This question it was decided, after a short discussion, to divide into two, the one having reference to food, and the other to drink, especially to drinkable water. To the first branch of the question, '*Le choléra peut-il-être propagé par les aliments?*' the answer given by a majority after considerable discussion, was that the Conference having no conclusive facts of the transmission of cholera by food, was not in a position to give a formal decision on the point. To the second division of the question, '*Le choléra peut-il-être propagé par des boissons, particulièrement par l'eau?*' the reply was unanimously in the affirmative."

It appears to me that the fourth question would have been more satisfactorily considered as a whole, and, as it has some bearing on the mode of propagation of epidemics in East Africa, I may submit the following considerations:—The real question is, Does the *materies morbi* enter the system by the alimentary canal? It was unanimously affirmed that it does so by water, and it follows, as a corollary that it may do so by food. The *materies morbi* may be introduced into food, *directly*, from the hands of those who handle it, or from the vessels in which it is prepared or served; or, *indirectly* by means of the water used in its preparation.

“The fifth question, ‘*Peut-il-être importé par des animaux vivants?*’ is not illustrated by any circumstance in the East African epidemics, but it may be worthy of observation that epizootic disease was prevalent in the Masai country, and in Manyuema land during the prevalence of epidemic cholera. If the possibility of such a mode of transmission be admitted, the doctrine that the rapidity of the transmission of cholera is in correspondence with the activity and rapidity of human communications, must be extended so as to include the movements of the inferior animals.

The sixth question, “*Le choléra peut-il-être importé par les marchandises?*” is comprehended in the third question. Personal effects, contaminated with the *materies morbi*, may be sent to distant places as merchandise, and merchandise may be contaminated *en route* by the *dejecta* and *ejecta* of those suffering from cholera, and thus the disease may be transmitted to distant places. During a caravan journey in Africa, the porters sleep on and among the goods which they carry, and, in the coasting craft, the crew rest and sleep among the cargo. This I have myself done, and seen done repeatedly, and I have not the slightest doubt but that contaminated merchandise was an important factor in the transmission of the disease in East Africa.

The seventh question, “*Le choléra peut-il-être propagé par les cadavres des cholériques?*” is not illustrated by East African epidemics.

The eighth question being of considerable importance I shall quote from Dr. Seaton in full.

“On the eighth question, ‘*Le choléra peut-il se propager au loin par l’atmosphère seule?*’ the Conference adopted with equal unanimity the conclusions of that of Constantinople, which were as follows:—No fact up to the present time has shown that cholera can be propagated to a distance by the atmosphere alone, whatever the atmo-

spheric conditions may be ; and it is further a law, without exception, that no epidemic of cholera has ever been propagated from one point to another in a shorter time than was requisite for a human being to travel from the one point to the other. The surrounding air is the chief vehicle of the cholera-producing agent, but the transmission of the disease by the air is limited, in the immense majority of cases, to a distance very close to the source of infection. None of the facts which have been cited of transport of cholera by the atmosphere to the distance of one or of several miles is sufficiently conclusive.

“The Conference consented also with unanimity to the answer which had been given at Constantinople to the ninth question, viz., ‘*L’air frais arrivant du dehors aux agents donnant naissance ou propageant le choléra, et les aérant, ou bien l’isolement de ces agents de l’air extérieur, constituent-ils des éléments ayant ou non une influence sur le caractère contagieux du choléra ?*’ This reply was to the effect that in fresh air the generative principle of cholera rapidly loses its morbid activity, but that under special conditions of confinement of air such activity might be preserved for an undetermined time ; that it was under these conditions of confinement of air (as already stated in reply to question 3) cholera might be transmitted even to a distance by goods employed for personal use ; that great deserts were a very efficacious barrier against the propagation of cholera, and that there was no example of that disease having ever been imported either into Egypt or Syria across the desert by caravans coming from Mecca.

“Question ten was, ‘*Quand il y a contagion, quelle est la durée de l’incubation ?*’ The resolutions of the Constantinople Conference on this point had been as follows :—In almost all cases, the period of incubation, *i.e.*, the time which elapses between the moment at which the individual receives the cholera infection and the commencement of the

premonitory diarrhœa, or of the confirmed cholera, does not exceed a few days [elsewhere more precisely limited by the words, 'a week at the outside']. All facts which have been cited of a longer incubation relate to cases which are inconclusive, either because the premonitory diarrhœa has been included in the period of incubation, or because the infection might have taken place after the person's departure from the infected locality. Observation shows that the duration of the choleraic diarrhœa which has been termed premonitory (which must not be confounded with every diarrhœa met with at cholera times), does not exceed a few days. The facts which have been cited as exceptional do not prove that the cases of diarrhœa prolonged beyond this period are really choleraic, and are susceptible of transmitting cholera when the individual suffering has been withdrawn from all sources of infection." After a very long debate, the Conference of Vienna assented to these conclusions by 13 affirmative votes to one negative, four delegations abstaining from voting.

"The difference of opinion, at least between the delegations which voted in the affirmative and those which abstained from voting, was, I apprehend, more apparent than real. I did not gather from the discussion that it was at all disputed by the latter that in the immense majority of cases (perhaps the expression 'almost all' might have been felt by them a little too strong) the period of incubation does not exceed the limits stated in the resolution. Their objection attached rather to the too small importance, which in a prophylactic point of view, the resolution seemed to attach to the exceptional cases, of which the most reasonable explanation consisted in admitting a longer period of incubation. As Professor Pettenkofer put it, the question was to be regarded from a prophylactic not a clinical point of view; adding, that from the latter 'il accepterait la thèse d'une courte durée.' On the other

hand it was by no means intended, as the limiting word 'almost' shows, by those who supported the resolutions to deny the possible, nor the probable, existence of a longer period of incubation in some cases, nor that dangers might, though rarely, arise therefrom."

The concluding scientific question, regarding disinfectants, is not illustrated by any occurrence during the prevalence of the East African epidemics.

Mr. Simon, in a Memorandum issued from the Medical Department of the Privy Council Office in 1871, writes as follows on the same subject :¹—

"Happily for mankind, cholera is so little contagious, in the sense in which small-pox and scarlatina are commonly called contagious, that, if reasonable care be taken where it is present, there is scarcely any risk that the disease will spread to persons who nurse and otherwise closely attend upon the sick. But cholera has a certain peculiar infectiveness of its own, which, *when local conditions assist*, can operate with terrible force, and at considerable distances from the sick. It is characteristic of cholera, not only of the disease in its developed and alarming form, but equally of the slightest diarrhœa which the epidemic influence can cause, that all matters which the patient discharges from his stomach and bowels are infective, and that, if they be left without disinfection after they are discharged, their infectiveness during some days gradually grows stronger and stronger. Probably, under ordinary circumstances, the patient has no power of infecting other persons except by means of these discharges: nor any power of infecting even by them, except in so far as particles of them are enabled to taint the food, water, or air, which people consume. Thus, when a case of cholera is imported into any place, the disease is not likely to spread, unless in propor-

¹ *Precautions against the Infection of Cholera*, by Mr. Simon, Medical Department of the Privy Council Office, August 10, 1871.

tion as it finds, locally open to it, certain facilities for spreading by *indirect* infection. In order rightly to appreciate what these facilities must be, the following considerations have to be borne in mind :—*first*, that any choleraic discharge cast without previous thorough disinfection into any cesspool or drain, or other depository or conduit of filth, infects the excremental matters with which it there mingles, and probably to some extent, the effluvia which those matters evolve ; *secondly*, that the infective power of choleraic discharges attaches to whatever bedding, clothing, towels and like things, have been imbued with them, and renders these things, if not thoroughly disinfected, as capable of spreading the disease in places to which they are sent (for washing or other purposes) as, in like circumstances, the cholera patient himself would be ; *thirdly*, that if, by soakage or leakage from cesspools or drains, or through reckless casting out of slops and wash-water, any taint (however small) of the infective material gets access to wells or other sources of drinking-water, it imparts to enormous volumes of water the power of propagating the disease. When due regard is had to these possibilities of indirect infection, there will be no difficulty in understanding that even a single case of cholera, perhaps of the slightest degree, and perhaps quite unsuspected in its neighbourhood, may, *if local circumstances co-operate*, exert a terribly infective power on considerable masses of population."

The International Sanitary Conference was composed of delegates from Austria, Hungary, Belgium, Denmark, Egypt, France, Germany, Great Britain, Greece, Holland, Italy, Luxembourg, Norway, Persia, Portugal, Roumania, Russia, Servia, Spain, Sweden, Switzerland, and Turkey, and most of the delegates were persons holding office in the public service, sanitary or medical, of their respective countries ; so that the conclusions arrived at, based, as they

were, upon the widest generalization of facts, elucidated in connection with every epidemic of cholera which had been recorded, may be regarded as little short of demonstrations.

The study of the several epidemics of cholera, in East Africa, leads to the same conclusions ; so that the evidence supplied is strongly cumulative, and fortifies, if need be, the deductions of the Conference, the more important of which were that cholera is propagated by man, by water, and by personal effects.

The peculiarities of the great African epidemic of 1864-72, may be briefly stated as follows :—Introduced from without the disease appeared in certain great centres of population, or in their neighbourhood ; first in what may be called a sporadic form, and afterwards with great intensity, vast numbers of people being fatally attacked at about the same time. In the town of Zanzibar, for example, sporadic cases first appeared : afterwards, the disease was developed with great epidemic intensity in a distinct locality, and chiefly amongst a section of the population, allied in habits and modes of life. While the disease was raging in this locality, groups of cases occurred in other localities, and even in distant parts of the island. These facts indicated the probable existence of certain local foci of dissemination, having some connection with each other. The disease, at the same time, pursued a more erratic course, amongst distinct sections of the population, as the higher class of Arabs, and the Khojahs. In some instances there was a possible connection with local foci ; the disease may have been contracted in the houses of sick relatives ; but in many cases, probably the majority, there were other and more obvious connections ; for in every case which I had an opportunity of tracing, there had been, previously, cases of the disease among the negro domestics. Arabs and Khojahs may thus have been

infected from the local foci, and Arabs and Khojahs, respectively, probably infected others of their own class ; but in many cases the negroes were apparently the connecting link with the local foci.

The most important fact, during the epidemic, was the immunity of two sections of the population, the Europeans, living on shore, and the Banyans. This indicates that the generative agent of the disease was not disseminated from the local foci by any vehicle, such as the atmosphere, acting generally on the neighbouring population ; but that the vehicle was of such a nature that only certain sections of the population were brought within the influence of its infective power ; and, *à fortiori*, that many individuals of every section of the population may have enjoyed immunity from a similar cause, and that the foci might have been rendered inoperative by isolation. It was also characteristic of the epidemic that it spread along the highways of human intercourse ; that it was capable of being developed, after being conveyed for a distance of twelve days' journey ; and that in 1871 its intensity was as great as it was in 1864. I am not aware of the disease having prevailed in a populous place so long as one year. It is granted, by almost universal consent, first, that *the generative agent of cholera is contained in the alimentary canal of a person suffering from the disease* ; second, that *the discharges (dejecta and ejecta), either in a fresh or dried state, of a person suffering from cholera may produce, when swallowed, the same disease in others*. These propositions are not necessarily exhaustive, nor are they intended to be so ; for the generative agent may be contained also in other parts of the body, and may produce its effects when inhaled, when absorbed, or when injected into the circulation. An exhaustive examination of the etiology of the disease is foreign to the present inquiry as general principles only are necessary to explain great epidemic outbreaks, and subsequent movements.

The really important question to be determined is—By what means does this destructive agent gain access to the alimentary canal? It is now generally admitted that water is the principal vehicle by which it gains entrance into the system and, if so, it must be of the greatest importance that the fact should be clearly understood, as, if such be the case, it is not unreasonable to expect that, by judicious sanitary arrangements, the ravages of a cholera epidemic may be rendered impossible in a community.

In explanation of this mode of dissemination, Mr. Simon writes :—“If by leakage or soakage from cesspools or drains, or through reckless casting out of slops and wash-water, any taint (however small) of the infective material gets access to wells, or other sources of drinking-water, it imparts to enormous volumes of water the power of propagating the disease.” In the light of the two major propositions, and the explanation of Mr. Simon, the main facts connected with the East African epidemics may be tested, first, in regard to local dissemination, and secondly, as regards propagation along the highways of human intercourse.

Local dissemination.—The great outbreak of cholera at Mecca, in May, 1865, is so intimately connected with the last African epidemic that it may be appropriately referred to. The main facts connected with the outbreak were as follows :—Cholera was prevalent in an adjacent province in 1864, and in ships conveying pilgrims to Jidda in 1865. It is not necessary to give a minute detail of the circumstances, but they were of such a nature as to render it almost certain that the disease would be imported into El-Hejaz, and that it would appear amongst the pilgrims assembled at Mecca, at least in a sporadic form. At the beginning of May, 1865, the number of pilgrims assembled at Mecca was estimated to be about 100,000. It is not known at what date the disease first made its appearance

amongst them, but it most probably did so in a sporadic form previous to the celebration of the rites. It broke out with fearful intensity during the Kourban Bairam, and it was estimated that from 10,000 to 15,000 fell victims to the disease, and that two-thirds of the deaths took place in the course of the six days over which the rites extended, while the pilgrims were at Arafat and the valley of Muna.—“The streets of Mecca and its mosques, the twelve miles of road lying between the city and Mount Arafat, the valley of Muna, and the plain of Arafat were cumbered with the dead.” Such results must have had an adequate cause, and I can conceive of no other than a tainted water supply. Previous to the celebration of the rites proper (see page 54) certain ablutions are performed at the well of Zem Zem. One hundred thousand people had skinfuls of water poured over them, at the side of the well, and every one of them, then and on various occasions, drank largely of water drawn from the well. Much of the water, poured over the pilgrims, must have found its way, by *soakage*, back into the well, and if any of the pilgrims were at the time suffering from cholera or had cholera-tainted garments about them, the well would be exposed to pollution. To those acquainted with the filthy habits of the natives of India, the Persians, and the negroes, it would appear marvellous if the well should have escaped pollution. If the well of Zem Zem had been contaminated, it would have been a cause adequate to produce the results. There was every probability that it was contaminated. There was no other known cause adequate to produce the results, for contaminated clothing, the dejecta and ejecta of sporadic cases of cholera patients, singly or combined, cannot be regarded as an adequate cause, and it follows that the great outbreak which was attended with such disastrous results, within such narrow limits of space and time, must be referred to a local focus of contaminated water, such as

the well of Zem Zem. This conclusion is practically verified by ascertained facts regarding the duration of the period of incubation, for the deaths took place within six days after exposure.

The progress of the epidemic in the town and island of Zanzibar can be explained on the same principles, and on no other. The water supply has been fully described in a preceding chapter (page 285); but I omitted to call attention to a very important circumstance regarding the position of the town wells. All the town wells are liable to contamination by means of soakage from the cesspools, but they are so in different degrees. Some are situated at considerable distances from the cesspools; others are close to the houses, and not a few are within the houses, and separated from the cesspools by but a few feet. Thus part of the contents of the cesspools, in some cases, passes into the wells with little or no filtration, while in other instances there is a considerable extent of filtering medium.

When the disease appeared in Zanzibar the cases were sporadic or solitary, and when small groups of cases occurred they were confined to single houses. At a very early period of the epidemic, however, and before it had attained any considerable proportions, a number of deaths occurred in a house in the district of Melinde. About a year after, I had occasion to be in the house, it being then unoccupied, and I examined the different apartments. From the first flat, and in adjacent rooms there were openings to two shafts, the one leading to the cesspool and the other to a well. On the ground flat there was an opening in the shaft leading to the well, so as to admit of water being drawn from it at the street level. The well was open to the public, and as the water was highly prized in the district, owing to some local tradition, it was much resorted to. The well and the cesspool were so situated that the contents of the latter could not but pass into the

former, and I remarked that negro domestics would be as likely to empty slops into the well as into the latrina, and that the former apartment would be more likely to be used as a bath-room than the latter. I had always a difficulty in accounting for the great and sudden mortality which appeared in the Melinde district at that time, and this led me to the conclusion, while the epidemic was raging, that there must have been, in the district, some local cause of which I was not cognisant. I could not, at the time, trace it to the water supply, and I was led to entertain the opinion that the generative agent of cholera was air-borne, in some mysterious, unknown manner, an opinion which I entertained until I came to analyse the facts recorded in the preceding pages, during the preparation of this work. Nearly all the inmates of this house died of cholera: the well received the soakage of the cesspool; it was extremely liable to direct contamination; the water was largely used in the district; the deaths in the house preceded the general outbreak, and there was an absence of an otherwise adequate cause to account for the great mortality which prevailed within a short space of time among the population supplied from the well. Viewed in the light of other facts, I have no hesitation in regarding this and similarly situated wells as having been the chief foci of dissemination in Zanzibar. The principal stumbling-block regarding the reception of the theory that water was the one important vehicle of conveyance of the disease, consisted in the fact that the Banyans who used water drawn from the town wells escaped the epidemic, although it was raging all around them. I considered that the Banyans were as liable to contract the disease as any other section of the population, were it the case that the impurity of the drinking water was indicative of the presence of the generative agent of cholera. The reasoning was so far correct; but one important fact was overlooked, viz., the

relative proximity of the wells to the cesspools, and their liability to direct contamination. The Banyans draw water from their own wells, and the principal well belonging to their community is not in the immediate vicinity of cesspools. The wells used by the Banyans may be liable to be tainted by excrementitious matter, but not by cholera-tainted dejecta or ejecta of others, save of their own caste, and the disease never got a footing in the community. The manners and customs of the Banyans have been fully described in a previous chapter (page 347), and their extreme fastidiousness regarding water is one of their chief peculiarities at Zanzibar, and all other places where they are resident as strangers. When attending the fair at Berbera they have their water conveyed from Siyaro, a distance of nineteen miles, and in all the coast towns they procure their water from sources not used by the population in general.

All the wells in Zanzibar are contaminated, immediately or mediately: those contaminated immediately may be so by leakage, or by soakage of such a nature as practically to amount to leakage. Such wells would be extremely liable to be tainted with the discharges of cholera patients during an epidemic, and those drinking the water from such wells would be exposed to infection. Water, thus liable to contamination, was largely used for drinking purposes among the general population of Zanzibar, and the mortality was great. Two sections of the community never used such water, and neither of them was affected by the disease. The case is rendered still stronger when it is taken into account that the Europeans living on shore, and the Banyans, have never been attacked by the disease on former occasions, and that they have never changed their customs in regard to their drinking water. I feel assured that had the entire population of Zanzibar drunk of such polluted water in one day the scenes at Arafat and Muna would have been reproduced,

and that the houses and streets of the place would have been cumbered with 10,000 dead within six days, instead of six weeks.

But while the Europeans and Americans resident on shore escaped, the crews of certain ships in the harbour were severely attacked. The appearance of the disease among the latter may be explained as follows:—

With one exception, and one doubtful case, the crews of the ships were attacked shortly before sailing, or when they were on the eve of sailing, or within two days after they had sailed. Some ships take in water immediately on coming into port; but in general, ships are watered shortly before sailing, and not till all the cargo has been taken on board. One ship had not taken in a supply, and concerning one I am unable to speak positively, but all the others had taken water on board before the epidemic appeared amongst the crews. The source from which the water is supplied to the shipping has been described previously (page 295), and it may be observed that the water is not purified by filtration previous to being used. The water supplied to the shipping is taken from the stream close to that part of it where it is liable to the greatest amount of pollution. It is polluted by hundreds of people every day, and by thousands on certain days of the week. At certain times, however, as early in the morning and in the evening, it may be tolerably pure. Subsequent to the watering of the ships, sailors were attacked with the disease, indicating an obvious connection between the use of the water and the fatal result. The crews of native craft also were attacked generally on the day after sailing. Europeans resident on shore drink of the same water, but they never use water drawn from the point at which it is supplied to the shipping: they are careful to have their daily water supply brought from the sources, and from a considerable distance, and it is filtered before being used. Those Europeans who

used water drawn from above the points of pollution escaped, but those who used that drawn from the stream after it had been polluted were attacked, and many of them sickened and died. A polluted well and a polluted stream would operate very differently, for in a stream the generative agent would be soon dispersed, while in a well it would be equally diffused, or held for a time in suspension. All drinking of the stream would not be equally exposed, but all drinking of the well would be liable to an attack. The well water used by the Banyans, and the running water used by the Europeans living on shore, was not liable to be immediately tainted by the infective matter of cholera, and they escaped. Other sections of the native population, and the Europeans living on board ship, used well water and running water liable to be tainted with the infective matter of cholera, and many of them sickened and died.

It would appear that the infective matter soon loses its infective power by a process of natural filtration, and that wells are contaminated immediately and not mediately, an opinion at variance with the theory of Professor Pettenkofer.

In so far as I have been able to ascertain, it holds good throughout the whole of East Africa, that the water supply is obtained from the nearest possible place, either from a shallow well or a stagnant pool, without regard to its purity. Examples of this are to be seen all over Zanzibar, and the quotations I have given from the writings of Captain Burton and Sir Samuel Baker afford proof of the custom on the African continent. The immediate vicinity of wells and of stagnant pools is liable to constant contamination, as is shown in the analysis of the water from wells of this description. When it is considered necessary to wash the body or any filthy articles of clothing, this is generally done in such reservoirs of water, or in their immediate vicinity. Those suffering from the disease would drag themselves to the nearest water to assuage their burning thirst, and cool their

skin, and I have no doubt but that many of them would die there. During the epidemic in Zanzibar I have seen negroes carried from their huts to be dipped in the sea, in accordance with their urgent entreaties. I have not the slightest doubt but that every well or place from which water was drawn, in every populous locality where the epidemic appeared, would be speedily poisoned with the discharges of people suffering from the disease. The disease prevailed for years in regions which have never been traversed by Europeans, and amongst tribes whose manners and customs are but imperfectly known; but amongst them the epidemic would be propagated according to its unvarying laws, and we may reason from the certain to the uncertain by analogous circumstances.

It is apparent that, without the vehicle of contaminated water, imported cases of the disease could not in East Africa result in a general epidemic of any great dimensions; but there are other means by which the disease may have had a limited local spread. The African epidemics afford no conclusive proof that the disease is transmissible by food; but, as the possibility must be admitted, it is highly probable that it was, in certain cases, propagated in this manner. Many of the higher class of Arabs are as particular regarding their drinking water as Europeans are, yet several of them fell victims to the disease. Arabs of this class have large numbers of negroes in their household, and the disease appeared first among their negro domestics. Every one acquainted with the mode in which cooking operations are conducted by negroes in an Arab house will admit that the risk of food contamination is much greater there than in a European household. The Banyans were not liable to have their food contaminated by such means, for they invariably cook their own food, and they escaped. The Khojahs could scarcely avoid having had their food contaminated in this manner; but when the

disease acquired a footing in the community, every mode by which propagation could be effected was in operation, so that no definite conclusions could be formed. The same may be said regarding other sections of the population; the complications were so numerous that the actual mode of transmission could not be disconnected.

In the case of the Banyan who died, the disease was most probably transmitted by means of contaminated clothing. The single case of illness among the Europeans on shore, which had no connection with water from a contaminated source, occurred in my own household, and the mode of introduction was obvious. Towards the close of the epidemic I spent several hours with a patient, who was in a dying state, to try the effect of electro-galvanic currents. I was handling the patient during the whole of the time, and my clothes were sodden with discharges. I neglected to put my clothing aside on my return, and the consequence was a case of cholera in my household on the following day.

The course of the epidemic in the harbour could not altogether be explained without reference to the theory that the disease is transmissible for short distances by currents of air. None of the cases, however, were entirely conclusive, as in all there were other possible modes of infection. The infection of the barque, *Corsair's Bride*, had obviously some reference to this mode of transmission. Previous to infection no water had been taken on board, and neither of the two men attacked had been on shore; no natives had been employed on board, but the captain had been on shore; the boat's crew, however, had not left the beach. I can see no more probably way of accounting for two of the crew being attacked at the same time than through infection from some passing dhow. Native craft usually pass ships, lying at anchor, close to windward, and infective matter might have been conveyed from a passing dhow to the ship, in the same

manner as took place when the two pilots in their boat were infected by the steamship *England* at Halifax in 1866.¹

¹ The following report of this case was made by Deputy-Inspector General Barrow, the principal Medical Officer of the forces in Halifax :—

“At break of day on the 9th of April, [1866] a pilot named Terence was in his open boat, lying off Cape Sambro, five miles north-east from Sambro island, and about fifteen miles from Halifax. An assistant, named Purcell, and his son were in the same boat. Between four and five a.m. the steamship *England* came in sight, on which Terence hailed the ship, and asked if a pilot were wanted. Hearing there was sickness on board, he did not leave his boat. A bucket was lowered over the ship's side, and in it the pilot placed some official papers, showing that he was properly licensed. The documents were not returned until the next day. A ten fathom rope was thrown to him, by which the boat was towed astern at some considerable distance. These details I obtained during a conversation with Purcell. He told me the boat was towed as far as the quarantine ground between George's island and the eastern shore, which would be a distance of about 12 miles. The *England* anchored here for an hour or two, whilst the pilots went to Cunard's wharf for further instructions how to act. On their return to the *England*, she was again got under weigh, the pilots now keeping their boat at a still greater distance astern. They took the ship to the west of McNab's island (about two miles further from Halifax), where she remained anchored in the main-channel until she left for New York. Here all communication between Purcell, his son, and the *England* ceased, for after seeing the steamer anchored for the second time, they went ashore in the boat with Terence. It will be better to complete the history of the Purcells before I again refer to the incidents connected with Terence. It is proved to a certainty by the corroborative testimony of Captain Grace and others that neither of the Purcells was at any time on board the *England*. Purcell returned home next morning (April 10th) to Portuguese Cove, eleven miles south of Halifax, and had an attack of diarrhœa on the following day, (April 11th) which gradually got worse on the 12th, 13th, and 14th. By the 15th he was greatly prostrated, and then vomiting appeared for the first time. He was always free from cramps. Two of his children (aged five-and-a-half and three years) were seized on the 15th with slight symptoms, with vomiting and debility, but quickly recovered. On the 16th April, the eldest daughter, aged fifteen, was attacked. She was dangerously ill with every symptom of true Asiatic cholera, and the attack was followed by reactionary fever of a low type. Thus, four individuals were attacked out of a family of nine persons, but there were no deaths. The type of the disease was probably greatly modified by the fair sanitary condition of the house and immediate locality. I found Purcell's house to be in an airy situation, on elevated ground, that is, at least fifty feet above the level of the sea. It was open to all winds. During the epidemic all the windows were kept open; the rooms were of a fair size though not lofty.

“I must now return to the history of the other pilot, Terence. He left the anchorage ground of the steamship *England* on the 9th April, in the same

Apart from the theory of propagation by water, I could not account for the spread of the disease in the city of Zanzibar, and I could offer no explanation for the immunity of the Europeans resident on shore and the Banyans. The

boat as the two Purcells, and went ashore. Next day (10th April) he was employed to pilot the block-ship, *Pyramus*, from near the dockyard to the steamship *England*, as the block-ship was about to be made use of as a hospital for the cholera cases. He then returned to Halifax without going on board the *England*, as he himself affirmed, and Captain Grace, who commanded the steamship, also bears out the statement. I have, in addition, the evidence of the Rev. J. Carmody, that Terence on his death-bed declared he had never, at any time, been on board the *England*. Terence slept that night (10th April), or rather, went to bed at a boarding-house in Water Street, Halifax. While in bed he was seized with vomiting, cramps, and purging, and next morning (April 11th) got into a boat and was rowed home to Portuguese Cove (where Purcell also lived), a small fishing settlement, about eleven miles distant by sea, to the south of Halifax. In his (Terence's) case there was much collapse, but it was followed by reaction and low fever from which he died on the 19th April, after an illness of nine days' duration.

"On the 14th April, or three days after Terence returned to his home, his daughter Elizabeth, aged five years, was seized with acute cholera at 6 a.m., and died the same evening at 9 o'clock. Next day, 15th, three children were prostrated. Mary, aged three years, who slept with her father, had a severe attack and died on the 17th, all the symptoms of Asiatic cholera having been present. Catherine, aged nine years, was dangerously ill; she recovered after consecutive fever. Susan, a year old, at one time seemed almost at the point of death, but reaction took place, and she recovered.

"Out of the five children living at home, only one (a boy aged eight years), escaped an attack. He slept in a room by himself, and was out of doors all day. Mrs. Terence, to the great surprise of herself, escaped. She declared she was frequently covered with the cholera discharges from the children. When I inspected her cottage it did not appear to me astonishing that the disease should have shown more malignancy than in the house of the man Purcell. Terence's cottage was on the lowest level of the village, pretty close to the sea. The land sloped upwards, very near the back of the house, and in wet weather the surface water ran, or found its way under the flooring, where it was more or less dammed up. The rooms were small, with low ceilings, and badly ventilated.

"Nine cases appeared among the two families of greater or less severity. Two of them were so slight that they could scarcely be called cholera; but it will be interesting to determine the probable period of incubation of the disease. I find one person suffered on the second day after exposure to contagion, two on the third day, three on the fourth, two on the fifth, and one on the sixth. The two pilots contracted the disease, strictly speaking, by means of infection, one forty hours after exposure, the other fifty-two hours after." "Reports of the Medical Officer of the Privy Council and Local Government Board, 1875," p. 90.

Banyans explained their immunity by saying that it was an evidence of the truth of their religion—that the disease was a punishment sent to the beef-eating Masai and others like them, and that they, the only vegetarians, were the only people spared. Transmissibility by clothing and by a confined atmosphere, explain solitary cases and groups of cases which may result in the formation of a most powerful focus; but, apart from such foci as a contaminated water supply, they do not explain an epidemic outbreak such as occurred at Mecca during the six days of the Kourban Bairam, or in the city of Zanzibar in November and December, 1869, the victims in each instance being about 10,000 people, and the rate of mortality nearly the same. I entirely concur in the conclusion that water tainted with the discharges of those suffering, or who have suffered from cholera is, immeasurably, the most important medium of diffusion of the disease in an epidemic outbreak.

Propagation along the Highways of Human Intercourse.
—The possibility of the disease being transmitted from one point to another, at a considerable distance, is clearly demonstrated by numerous facts in connection with the East African epidemics. The infection of Socotra was a case in point. The passage of the infected dhow from Zanzibar to Socotra occupied fifteen days. On the second or third day after leaving Zanzibar one of the crew died from cholera. No other case of the disease occurred on the passage; but twelve days after, on the arrival of the dhow at Socotra, the disease broke out at Bunder Kadu. The intervening period, twelve days, and not the space traversed, is the important fact. Possibly the generative agent of the disease may be conveyed to a distance of twelve days' journey by the quickest means of human travel, such as by rail, without infecting intervening localities, and thus, in the future, the Metropolis of

England may be infected directly from Bombay. This clearly established fact is quite sufficient to explain the propagation of an epidemic along the highways of human intercourse by land or by sea.

The disease may be propagated for short distances by atmospheric currents, and by running water; for greater distances, by persons affected by the disease, as during the period of incubation, which may be two or more days, and for still greater distances, twelve or more days by means of contaminated effects.

By such means of propagation, and local dissemination, the advance of epidemic cholera in East Africa is easily explained. Along a caravan route there is no road, in the usual sense of the term, the highway being merely the most accessible line between two places where water and food can be obtained, but specially water. The wells are not such as we, in this country, are familiar with, they are merely holes in which water collects, or stagnant pools, and in their vicinity the caravans camp. It is customary in East Africa, as in every other country, for the survivors to appropriate the effects of the dead, without any reference to the danger incurred in so doing. Clothing, tainted with the discharges of cholera patients, would be conveyed along the caravan routes to their termination, and, most probably, they would be washed in some hole or pool from which drinking water was obtained. Such is no fanciful theory regarding the mode of propagation, for such are universal customs in East Africa, and the water-pools are contaminated in the same manner as they are by cattle. It is said that the Masai drink blood and milk only, but this can only mean that they never drink water if blood and milk can be procured. The males of the Masai and other tribes whose principal occupation is warfare, generally come to an untimely end, and but few die a peaceful death from natural causes. Living

in a state of savage nature, they would, when attacked by cholera, crawl, like poisoned rats, to the nearest water-pool and there lie down to die. The extension of an epidemic along a line of traffic would most probably be from station to station, and not from point to point twelve days' journey apart. The rate of advance would thus be somewhat slower than the rate of human travel, and such appears to have been actually the case, for the report of the advance of the epidemic generally preceded its actual appearance. The males and unmarried females of the Masai, and many other tribes, wear no clothing whatever, but there are always some articles of clothing, or ornaments worn by some of the tribe, and such articles are highly prized by them, and are regarded as of great value. Wherever the Masai marauders go on their murdering and plundering raids, there are such articles as would excite their cupidity, even although it be but a fashionable skin-kilt, and by means of plunder, tainted with cholera discharges, the disease may have been conveyed from place to place. However various the conditions under which human beings exist in Africa, and such are numerous, there is one condition common to all, for in every community, and on every line of travel there is a common water supply, and generally a contaminated one.

The facts narrated in the preceding chapters appear to me to supply data for the following conclusions regarding the movements of epidemic cholera in East Africa:—

I. The generative agent of cholera is contained in the alimentary canal of a person suffering from the disease.

II. The discharges (*dejecta* and *ejecta*) of a person suffering from the disease may produce, when swallowed, the same disease in others:

1. they possess their morbid power when recently evacuated:
2. they retain their morbid power in a dried state.

III. The generative agent of cholera may find a fixed, local focus of dissemination which may exist in activity for an indefinite length of time :

1. by the suspension or solution of the discharges in more or less stagnant water, such as wells or pools, the discharges having been introduced either in a fresh or dried state :
2. by the suspension or homogeneous diffusion of the generative agent in confined air such as in the vicinity of excremental matter.

IV. The generative agent of cholera may be conveyed, for short distances, by natural causes, such as :

1. by currents of water, contaminated with discharges, introduced in a fresh or dried state :
2. by currents of air, contaminated with discharges, in a fresh or dried state.

V. The generative agent of cholera may be conveyed for considerable distances :

1. by persons affected with the disease, as during the period of incubation :
2. by articles to which discharges, in the dried state, may be attached, as tainted linen.

It follows from these conclusions that the progress of a cholera epidemic may be arrested by the absence of local circumstances necessary to its propagation, and, in such a case, the disease would be said to have died out ; and it also follows that the disease may be arrested by sanitary and such other measures as may secure the absence of these local circumstances.

From 1864 till 1872 the epidemic was extending its lines in East Africa, but for three years, 1867-69, nothing whatever was known regarding it beyond the unknown regions in which it prevailed. The epidemic, therefore, may be still spreading in the interior of Africa, although nothing has been heard of it since Dr. Livingstone's last report, and the

north-west and the south-east branches may yet meet, or may have met in Central Africa. An epidemic never dies of natural decay, for the disease was as virulent when last heard of as it was at its beginning. There are certain natural circumstances, however, which facilitate the extinction of an epidemic in a locality in East Africa. In so far as I have been able to ascertain the disease invariably began to decline, and frequently disappeared entirely in a locality during the rainy season. This may be accounted for by the heavy tropical rains thoroughly cleansing the surface of the land, the borders of rivers and wells, and carrying away the infectious matter from both rivers and wells. In populous places, such as Zanzibar, well and river water is but little used during the rainy season, for rain water from the flat roofs of the houses is used instead, and the negroes use that collected from the thatch of their huts. The rainy season is also the period taken advantage of for the washing of clothes, and the water used for such purposes is discharged into the streets and lanes. During the rainy seasons there are thus natural causes in operation for the removal and the destruction of the infective matter. It has not been clearly ascertained for how long a period the infective matter, in a state of suspension, may preserve its potency, but it cannot be for any great length of time, certainly not for a longer period than is covered by a tropical rainy season. The propagation of an epidemic, beyond a populous centre, is also limited during a rainy season, for the rainy season is a time of isolation. Traders and marauders start on their expeditions after the close of the rains, and during the dry season, or at such times as when there are but light rains, and the extension of an epidemic is thus limited, on account of the highways of commerce and war being deserted. The close of the rainy season is the time for the extension of an epidemic, and the dry season is naturally marked as the period of its local dissemination with greatest

intensity. Such were the general characteristics of the disease in its East African diffusions. By whatever means the movements of a population may be arrested, so will the propagation of an epidemic come to a close. In many parts of Africa there are tribes almost completely isolated by savageism, but in nearly all there are some evidences of intercourse with the outer world, and there are but few places where the beads of Venice are not found. Some regions thus isolated are occasionally visited by traders, although there may be no trade route through the country. Travelers coming from opposite directions enter the borders of the country, and they hear of each other, but they seldom meet, and they do not pass through the country. The Galla country, especially that part of it south of Enarea; the territories of the Samburu, and of the Soma Gurra; the regions to the north-east of the Victoria Nyanza; those also to the south-east of the Lake, through which Mr. Stanley had to fight his way, and Manyuema land may be cited as examples of this kind. The tribes do not pass beyond the limits of their own territories, and traders do not pass through their country, so that an epidemic of cholera may reach them accidentally by traders or marauders, say, from the north, and may become extinct amongst them before they are visited by traders or marauders from the south. Such regions may be described as trade-sheds, and are, consequently, epidemic boundaries. The Somali branch of the epidemic of 1864 seems to have been arrested at the trade boundary of the Jub, and the Abyssinian branch, which extended along the caravan route to the Galla country, would probably have been arrested at its southern extremity, but for a warlike raid of the Masai. In Manyuema land, where it was last heard of in that part of Africa, there is also an isolated population, the eastern borders of it being visited by occasional traders from Zanzibar, and the western by Portuguese traders from the west coast.

Lieut. Cameron came upon the track of the Portuguese traders at Kasongo capital. The tendency of the epidemic would be to become extinct in such a region, but it may have been carried out of it by accidental circumstances.

The decline of an epidemic in a populous locality such as Zanzibar, after it had been raging with great intensity for one or two months, may also be explained on the theory of water contamination. Wells in the immediate vicinity of cesspools, are always liable to contamination, but not always to contamination from the infective matter of cholera. When, therefore, no more cases of the disease occurred in the houses, the cesspools of which were in close contiguity to the wells, the water would be no longer contaminated by the infective matter, and the local foci would disappear. It is not, therefore, necessary to suppose that the disease disappears because the people are no longer susceptible to its influence or that they become in a manner acclimatized; it disappears simply because the local cause no longer exists.

It follows from these considerations that a community may be protected from the ravages of an epidemic of cholera by precautionary and sanitary measures; but it is not within the scope of the present inquiry to discuss these measures in an exhaustive manner. Quarantine, or, as it may be more properly designated, isolation, may be effective in certain localities; but it is evidently a measure that can never be depended upon. It is possible, but in most cases impracticable. A quarantine station at the entrance of the Red Sea could never secure the immunity of Europe, simply because it would be impossible to completely control the currents of commerce so as to render quarantine effective. The sea-blockade would be ineffective as regards pilgrim-carrying ships, for the pilgrims would evade it by means of native craft, and by journeying for short distances overland. To secure the immunity of a nation by means of

quarantine or isolation, and the bare possibility must be admitted, would be attended with incomparably greater trouble and expense than to secure immunity by sanitary and hygienic measures. Great commercial nations would sooner risk the possible invasion of an epidemic than sanction the passing of quarantine laws of such a stringent nature as would be effective; for the carrying out of such enactments would be the ruin of the commerce of a country. Quarantine laws are, however, advantageous and of great importance, for although the disease may not be arrested thereby, it may be confined within narrower limits, and by attention being called to its existence, means may be employed to limit its diffusion.

If the foregoing conclusions be correct, a community can secure immunity by sanitary measures alone. Cholera is essentially a filth-disease, and the statement that "the person who contracts cholera in England is *ipso facto* demonstrated, with almost absolute certainty, to have been exposed to excremental pollution, excrement-sodden earth, excrement-reeking air, or excrement-tainted water," is confirmed by every known incident connected with the several East African epidemics. In order to secure immunity from the disease the main endeavour must be to secure such local circumstances that the infective matter of cholera shall be unable to act upon the population generally, and such local circumstances are a water supply and an atmosphere, untainted with excretal matter.

Mr. Simon's observations on this subject, in 1871, are so apposite that they may be quoted, as some of them have the same bearing in regard to epidemic outbreaks in Zanzibar, as they have to impending outbreaks in England. He says:—"In view of any possibility that the infection of cholera may again be present in this country, it is desirable that in each locality the public should ascertain to whom it practically has to look, in case of need, for its collective

safety against such dangers as the above. The responsibility is, in a large proportion of cases, mixed. The most critical of all its branches, the responsibility of providing for the unpollutedness of water-supplies, is, in very many important places, in the hands of commercial companies; and it is to be hoped that these companies, informed as they must be of the calamitous influence which some of their number have exerted in previous epidemics of cholera, will remember, if the disease should again be present here, that each of them, in its daily distribution of water, has hundreds, or even thousands, of human lives in its hands. But, except to that extent, the responsibility for local defences against cholera, both as regards water supply and as regards local cleanliness and refuse removal, is vested in the Local Authorities, the "Sewer Authorities," and the "Nuisance Authorities," of recent statutes.¹ These authorities—the Town Councils, Improvement Commissioners, Local District Boards, Boards of Guardians, and select and common Vestries, of their respective areas of jurisdiction—are all, either electively or directly, so constituted as to represent the will of the local rate-paying population; and each such population has had almost absolute means of deciding for itself whether the district which it inhabits shall be wholesomely or unwholesomely kept. It is greatly to be wished that the former of these alternatives had, from long ago, been the desire of every local constituency in the country. It may fairly be believed that, in considerable parts of the country, conditions favourable to the spread of cholera are far less abundant than at former periods of visitation; but it is certain that in very many places the conditions of security are wholly or almost wholly absent; and it is to be hoped that, in all this large class of cases, the Authorities, under present circumstances, will do everything which, in the remaining time, can be done, to justify

¹ *The Urban and Rural Sanitary Authorities of the Public Health Act, 1875.*

the trust reposed in them by the Legislature for the protection of the Public Health.

"It is important for the public very distinctly to remember that pains taken and costs incurred for this purpose cannot in any event be regarded as wasted trouble and expense. The local conditions which would enable cholera, if imported, to spread its infection in this country, are conditions which day by day, in the absence of cholera, create and spread other diseases—diseases which, as being never absent from the country, are in the long run, far more destructive than cholera; and the sanitary improvements which would justify a sense of security against any apprehended importation of cholera would, to their extent, though cholera should never reappear in England, give amply remunerative results in the prevention of these other diseases."

The sanitary measures necessary to secure to a populace immunity from epidemic cholera are simply such as ought to be adopted by every civilized community, and the adoption of such measures ought to be compulsory. From a tainted water supply and an impure atmosphere the health of the general population is deteriorated, and organic diseases are produced. This is the case, not only in large centres of population, but also in country districts, and even in detached houses. In ordinary circumstances people may be allowed to poison themselves as they think proper; but they should be restrained from poisoning others, for the question is one having an important bearing on the Public Health. No community is safe so long as any section of it is allowed to exist under conditions of filth, for so long as people may do so enteric fevers can never be eradicated, and cholera epidemics will have destructive foci ready for them whenever the disease may be imported. The water supply of a great city ought to be guarded with the most scrupulous care, as regards filth contamination, and people resident on the banks of rivers or streams used

for this purpose, ought to be placed under stringent regulations, otherwise an epidemic outbreak may be the result.

The rigid analysis to which epidemic outbreaks have, during recent years, been subjected, has entirely stripped them of their mystery, so that instead of being regarded as special dispensations of Providence for the punishment of national sins, they are seen to be but the inevitable results of living in a state of semi-barbarism. Epidemic outbreaks, disastrous though they be, have been productive of much good, and will probably continue to be so, for they have been effective monitors in regard to measures affecting Public Health.

It is not improbable but that in India the endemic area of cholera may be gradually reduced, until it finally disappears; or that the conditions which originate the infection there may be reduced to a minimum when it becomes possible to carry out such sanitary measures as have been effectual for the limitation of cholera in the great centres of population in Europe.

The recent Report by Mr. Netten Radcliffe on the "Diffusion of Cholera, and its Prevalence in Europe, during the Ten Years 1865-74,"¹ is certainly one of the most suggestive that has ever been written, not only as showing the great extent of country covered by the epidemic, and the fearful mortality which it produced within that period, but as defining with the utmost precision the initial etiology of the disease outside of India, the unity and simplicity of the laws by which it was propagated in all quarters of the globe, and in every state of society from the highest circles of civilisation in Europe to the lowest grades of cannibalism in Central Africa.

¹ *Reports of the Medical Officer of the Privy Council and Local Government Board. Papers concerning the European relations of Asiatic Cholera, submitted to the Local Government Board in Supplement to the Annual Report of the Present Year, 1875.*

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