

IX.—*Substance of a Geographical Memoir on the Indus.* By Lieut. Burnes, E. I. C. S. Communicated by the Court of Directors of the East India Company. Read 25th March, 8th and 22d April, 13th and 27th May, 1833.

A General View of the Indus.—THERE is an uninterrupted navigation of the Indus from the sea to Lahore; and the distance, by the course of the river, amounts to about a thousand British miles.

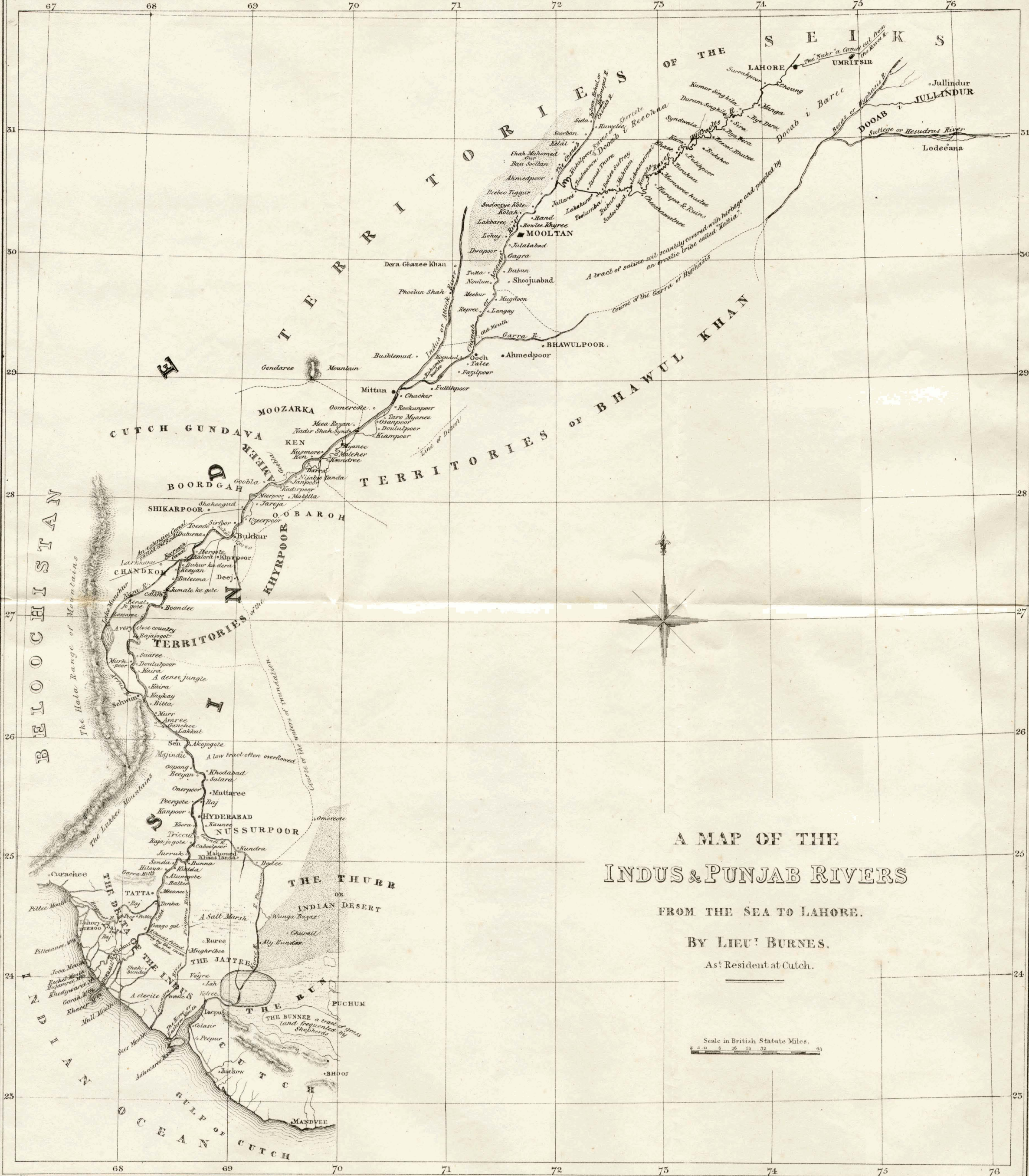
The Indus, when joined by the Punjab rivers, never shallows, even in the dry season, to less than fifteen feet, and seldom preserves so great a breadth as half a mile. The Chenab, or Acesines, has a medial depth of twelve feet, and the Ravee, or Hydraotes, is about half the size of that river. These are the minima of soundings on the voyage, but the usual depth of the three rivers cannot be rated at less than four, three, and two fathoms.

This extensive inland navigation, open as I have stated it to be, can only be considered traversable to the boats of the country, which are flat-bottomed, and do not draw more than four feet of water, when heavily laden. The largest carry about seventy-five tons English. Science and capital might improve the build of these vessels, but in extending our commerce, the present model would ever be found most convenient. Steam vessels could ply if constructed in this manner, but no vessel with a keel could be safely navigated.

The voyage to Lahore occupied exactly sixty days, but the season was most favourable, as the S.W. winds had set in, while the stronger inundation of the periodical swell had not commenced. We reached Mooltan on the fortieth day, and the remaining time was expended in navigating the Ravee, which is a most crooked river. The boats sailed from sunrise to sunset, and when the wind was unfavourable, were dragged by ropes through the water.

There are few rivers in the world where steam might be used with better effect than on the Indus. It has no rocks or rapids to obstruct the ascent, and the current does not exceed two and a half miles an hour. Our daily progress sometimes averaged twenty miles by the course of the river, for a vessel can be hauled against the current at the rate of one and a half mile an hour. With light breezes we advanced two miles an hour, and only when it approached to a hurricane, could we stem the river at the rate of three miles. Steam would obviate the inconveniences of this slow and tedious navigation, and I do not doubt but Mooltan might be reached in twenty instead of forty days. From that city a commercial communication could best be opened with the neighbouring countries.

A boat may drop down from Lahore to the sea in fifteen days,

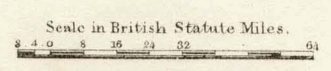


**A MAP OF THE
INDUS & PUNJAB RIVERS**

FROM THE SEA TO LAHORE.

BY LIEUT. BURNES.

As Resident at Cutch.



as follows :—to Mooltan in six—to Bukkur in four—to Hyderabad in three—and to the sea-ports in two. This is of course the very quickest period of descent, and, I may add, that it has never been tried of late, for there is no trade between Sinde and the Punjab by water.

There are political obstacles to using the Indus as a channel of commerce. The people and princes are ignorant and barbarous. The former plunder the trader, and the latter over-tax the merchants, so that goods are sent by land and by circuitous routes. The absence of trade arises from no physical obstacles, and is to be chiefly traced to this erroneous policy of the Sinde government. There are about seven hundred boats between the sea and Lahore, and this number suffices for ferrying and all other purposes.

On the Mouths of the Indus.—The river Indus is one of the largest in the world. Like the Nile and the Ganges, it reaches the ocean by many mouths, which diverging from the parent stream, form a Delta of rich alluvium. At a distance of sixty miles from the sea, and about five miles below the ancient city of Tatta, the Indus separates into two branches. The right arm is named Buggaur, and the left Sata. This is a peculiarity of this stream as ancient as the days of the Greeks, and the historian of Alexander the Great expressly mentions it in these words :— ‘ Near Puttala (Tatta) the river Indus divides itself into two vast branches.’—Arrian, lib. vi.

Of these two branches, the left one, or Sata, pursues nearly a southern course to the ocean, following the direction of the great river from which it is supplied, while the right, or Buggaur, deviates at once from the general track of the Indus, and reaches the sea by a westerly course almost at right angles to its twin river.

The eastern branch, or Sata, is the larger of the two, and below the point of division, is one thousand yards wide ; it also affords egress to the principal body of the water, and though it divides and subdivides itself into numerous channels, and precipitates its water into the sea by no fewer than seven mouths within the space of thirty-five miles, yet such are the velocity and violence of the stream, that it throws up sand-banks or bars, and only one branch of this many-mouthed arm is entered by vessels of fifty tons. The water out to sea from them during the swell of the river is fresh for two leagues, and the largest of them, the Gorah, has cast up a dangerous sand-bank which projects directly out from the land for fifteen miles.

The western arm which is called Buggaur, on the other hand, flows in one stream, passing Peer Putta, Bohaur, and Darajee, to within five or six miles of the sea, when it divides into two navigable branches, the Pittee and Pieteeanee, which fall into the ocean

about twenty-five miles apart of each other. These two are considered the great mouths of the Indus, and were frequented, till lately, by the largest native boats, being yet accessible to them; but, for three years past, the channel of the Buggaur has been comparatively deserted by the river, and though it contains two fathoms of water, as high as Darajee, yet it shallows above that town, and in the dry season, is in some places only knee deep, its bed, which is usually nearly half a mile broad, having at that place but a breadth of one hundred yards. The name "Buggaur" signifies "destroy," and it is said to be so applied to this arm of the Delta, from the destructive velocity with which it runs to the sea, overwhelming trees, bushes, &c., and destroying the country on its banks. Though this alteration has diverted the trade from Darajee to the banks of the Sata, the country near the Buggaur is as rich as it was previously; and though the branch itself is not navigated, yet there is frequently two fathoms in its bed, and nowhere a deficiency of water for flat-bottomed boats. During the swell it is a fine river, and will in all probability shortly regain its former eminence.

The land embraced by these arms of the Indus extends, at the junction of the rivers with the sea, to about seventy British miles, and this correctly speaking is the existing Delta of this river. The direction of the sea-coast along this line is N.N.W.

But the Indus covers with its waters a wider space than is thus described, and has two other mouths to the eastward of those thrown out by the Sata, viz., the Seer and Koree, the latter the boundary line which divides Cutch from Sinde. The rulers of that country, however, have hemmed in the course and diverted the waters of both these branches, by canals for irrigation, so that neither of them reaches the sea. With the addition of these forsaken branches, the Indus presents a face of about one hundred and twenty-five British miles to the sea, which it may be said to enter by eleven mouths. The latitude of the most western embouchure is about $24^{\circ} 40'$, that of the eastern $23^{\circ} 30' N.$, so that in actual latitude there is an extent of about eighty statute miles.

The inconstancy of the Indus through the Delta is proverbial, and there is great difficulty and danger in its navigation. It has thus, in these days, among the people of Sinde, as bad a character as has been left to it by the Greek historian. The water is cast with such impetuosity from one bank to another, that the soil is constantly falling in, and huge masses of clay may be hourly seen tumbling into the stream, often with a tremendous crash. In some places, the water when resisted by a firm bank, forms gulfs and eddies of great depth, which contain a kind of whirlpool, in which vessels wheel round and require every care to prevent accident.

The current in such places is really terrific, and in a high wind the waves rage as in the great ocean. To avoid these eddies, and the rotten parts of the banks, seemed the chief objects of solicitude to the boatmen.

It is worthy of notice with regard to the river Indus, that those mouths which are least favoured by the fresh water, are most accessible to large vessels from the sea, for they are more free from sand-banks, which the river-waters, when rushing with violence, never fail to raise. Thus, the Buggaur, which I have just represented as full of shallows, has a deep and clear stream from Darajee to the sea. The Hoogly branch of the Ganges is, I believe, navigable from a similar cause.

Having thus generalized on the leading features of the Indus below Tatta, I shall proceed to describe the several mouths with their harbours, depth of water, and such other facts relating to each, as have fallen under my notice.

Beginning from the westward, we have the Pittee-mouth, an embouchure of the Buggaur, which falls into what may be called the bay of Curachee. It has no bar, but a large sand-bank and island outside prevent a direct passage into it from the sea, and narrow the channel to about half a mile at its mouth; at low water it is even less than five hundred yards, and proceeding upwards contracts to one hundred and sixty yards in some places; but its general width is three hundred yards. At the shallowest part of the Pittee there was a depth of nine feet at low water, and the tide rose nine feet more at full moon. There is everywhere a depth of two fathoms as high as Darajee, and more frequently five and six, sometimes seven and eight. Where two branches meet, the water is invariably deep. At a distance of six miles up the Pittee, there is a rock stretching across the river, but it has nine feet water on it at low tide. The general course of the Pittee for the first thirty miles is W.N.W., but it enters the sea by a channel due north. The Pittee is exceedingly crooked, and consists of a succession of short turnings, in the most opposite directions, even from south to north; the water from one angle is thrust upon another, which leaves this river alternately deep on both sides. Where the banks are steep, *there* is the channel found; and again where they gradually slope, the water shallows invariably exist. This, however, may be remarked of all rivers which flow over a flat country. I may mention that there is no fresh water in the Pittee, nearer than thirty miles from the sea. The brushwood on its banks is very dense, and for fifteen miles up presses close upon the river. We navigated this branch to that extent, and crossed it in two places higher up, at Darajee and Bohaur, where it had two fathoms water.

The Pieteeanee quits the Pittee about twenty miles from the

sea, which it enters below the latitude of $24^{\circ} 30'$. It is narrower than the Pittee, and in every respect an inferior branch, for there are sand-banks in its mouth which overlap each other, and render the navigation intricate and dangerous. We found it to have a depth of six feet on its bar at low tide, and fifteen at full, but when once in its channel, there were three fathoms water. At its mouth it is but three hundred yards wide, and higher up contracts even to fifty, but it has the same depth of water everywhere till it joins the Pittee. The Pieteeanee runs nearly north into the land, and from its shorter course the tides make sooner up it than the Pittee, which frequently occasions the singular circumstance of one branch running up and the other down at the same time.

Connected with these two mouths of the Indus, there are three inferior creeks called Koodee, Khow, and Dubboo. The two first join the Pittee, and Koodee was in former years one of the great entrances to Darajee; but its place has been usurped by the Pieteeanee, and it is now choked. Dubboo is only another entrance to the Pieteeanee.

However accessible these two branches have been found, yet neither of them are navigated by any other than flat-bottomed boats, which carry the entire cargo to and from the very mouth of the river, inside which the sea vessels anchor. It was an unheard-of occurrence for boats like the four that conveyed us (none of them twenty-five tons in burthen) to ascend so high up the Pittee as they did, but assuredly we encountered no obstacles.

Of the seven mouths that give egress to the waters of the Sata or eastern branch, the Jooa, Rechel, and Hujamree, lie within ten miles of each other. One of these mouths has been at all times more or less navigable, and while they are the estuaries of the waters of the Sata, a portion of those thrown off by the Buggaur reaches them by inferior creeks during the swells, forming an admirable inland navigation through all parts of the Delta. The mouths of the Jooa and Rechel are choked, but the latter was, up to a late period, the most frequented of all the mouths of the Indus. It was formerly marked by a minaret, which has, I suppose, fallen down, as this fact is particularly mentioned by our early navigators. There is a village near its mouth called "Moonara." The Hujamree is now accessible to boats of fifty tons. Its port is Vickur, twenty-five miles from the sea, which, with Shah-bunder, (still farther eastward,) seems alternately to engross the trade of the Delta. This season Shah-bunder is scarcely to be approached, and the next season Vickur will perhaps be deserted. We entered the Indus by the Hujamree mouth, and disembarked at Vickur. At the bar we had fifteen feet water at high-tide, and a depth of four fathoms all the way to Vickur, even when the tide was out.

The Khedywaree is the next mouth eastward of the Hujamree, with which it is connected by small cuts; it is shallow and not much frequented unless by boats to cut firewood.

Of the remaining mouths of the left arm, the next is Gorah, the largest of all the estuaries. It derives its supply of water direct from the Sata, which near the sea feeds numerous creeks, and is named Wanyanee. When ascending the Hujamree, we passed by a narrow creek into this mouth of the Indus. The Gorah (or as it is also called towards the sea, Wanyanee) has a depth everywhere of four fathoms. It does not exceed five hundred yards in width, and runs with great velocity; its course is somewhat crooked, but it pursues, on the whole, a southerly line to the sea, and passes by a fine village on the left bank, called Kelaun. Though the Gorah possesses such facilities for navigation, yet it is not to be entered from the sea by the smallest boats, in consequence of a dangerous sand-bank to which I have before alluded. It is clear that such sand-banks are thrown up by the impetuosity of the stream, for the *Rechel*, till it was deserted by the great body of the Indus, had as large a bar as is now opposite Gorah, and this has entirely disappeared with the absence of the fresh water. This branch of the Indus was open last century to large boats, and an English built vessel of seventy tons now lies up on dry land, where it has been left by the caprice of the river.

Below the Gorah, we have the Khaer and Mall mouths communicating with it. All three disembogue within twelve miles of each other. The Khaer, like the Gorah, is unnavigable. The Mall is safe for boats of twenty-five tons, and being the only entrance now open to Shah-bunder, is therefore frequented. The boats anchor in an artificial creek, four miles up, called Lipta, and await the flat-bottomed craft from the port, distant about twenty miles north-east.

About five-and-twenty miles below Mall, we meet the Seer mouth of the Indus, but have salt instead of fresh water. There are several minor creeks which intervene, but they do not form a communication. The Seer is one of the destroyed branches of the Indus. A dam has been thrown across it below Mughribee, fifty miles from its mouth, and though it ceases to be a running stream on that account, yet the superfluity of fresh water from above forces for itself a passage by small creeks, till it regains the Seer, which thus contains fresh water twenty miles from its mouth, though it is but a creek of the sea. The river immediately below Mughribee is named Goongra, higher up it is called Pinyaree, and leaves the parent stream between Hyderabad and Tatta. The Seer is accessible to boats of one hundred and fifty *candies* (thirty-eight tons), to a place called Gunda, where they load from

the flat-bottomed boats of Mughribee. With some extra labour these same boats could reach the dam of Mughribee, and from that town the inland navigation for flat-bottomed boats is uninterrupted to the main Indus, though it becomes irksome in the dry season. The dam of Mughribee is forty feet wide. The Seer, at its mouth, is about two miles wide, but it gets very narrow inland; within it has a depth of four and six fathoms, but below Gunda there is a sand-bank with but one fathom water on it. There is a considerable trade carried on from this branch of the Indus with the neighbouring countries of Cutch and Kattywar, for rice, the staple of Sinde, which is to be had in abundance at Mughribee.

The Koree, or eastern branch of the Indus, completes the eleven mouths of the river. I have little to say regarding it. It once discharged a portion of the waters of the Fulailee, which passes Hyderabad, as also of a river that quits the Indus near Bukkur, and traverses the desert during the swell; but it has been closed against both these since the year 1762, when the Sindias threw up bunds or dams, to inflict injury on their rivals the inhabitants of Cutch. Of all the mouths of the Indus, the Koree gives the grandest notion of a mighty river. A little below Lukput, it opens like a funnel; and at Cotasir is about seven miles wide, and continues to increase till the coasts of Cutch and Sinde are not visible from one another. When the water here was fresh, it must have been a noble stream. The depth of this arm of the sea (for it can be called by no other name) is considerable. We had twenty feet of water as high as Cotasir, and the channel continues equally deep to Busta, which is but eight miles from Lukput. A Company's cruizer once ascended as high as Cotasir, but it is considered dangerous, as there is an extensive sand-bank at the mouth, called Adheearie, on which the water is only knee-deep at low tides. There are also several sand-banks between it and Cotasir, and a large one opposite that place. The Koree does not communicate with the Seer, or any other mouth of the Indus, but sends off a back water to Cutch, and affords a safe inland navigation to small craft from Lukput to Juckow, a port on the Indian Ocean, at the mouth of the Gulf of Cutch.

The Sindians, it will therefore appear, have destroyed both the eastern branches of the Indus, and yet managed to reap advantages from the navigation of one of them, as well as from the irrigation. There being no communication by water between Sinde and Koree, but little of the trade of that country is exported by it. It finds a vent by the Seer, but this has not given rise to any new town being built on its banks; indeed, such is their humidity

that they are only tenable for a part of the year by the tax-gatherers of Mughribee.

The sea abreast of the Indus is shallow, but the soundings are regular, and a vessel will have from twelve to fifteen feet of water a mile and a half off shore. The Gorah bank causes the only difficulty to the navigation of the coast from Mandvee to Curachee. Breakers are to be traced along it for twelve miles. The sailors clear it by stretching at once out of sight of land, and keeping in twelve fathoms water till the danger is past: they even state that a vessel of twenty-five tons would be wrecked on a course where the depth is ten fathoms. This bank is, however, much resorted to by fishermen, and may generally be distinguished by their boats and nets.

The coast of Sinde, from its entire exposure to the great Indian Ocean, is so little protected against storms, that the navigation is much sooner suspended than in the neighbouring countries. Few vessels approach it after March, for the south-west monsoon, which then partially commences, so raises the sea, that the waves break in three and four fathoms water; while the coast is not discernible from its lowness till close upon it, and there is a great risk of missing the port, and no shelter in such an event.

The tides rise in the mouths of the Indus about nine feet at full moon; and flow and ebb with great violence, particularly near the sea, where they flood and abandon the banks with equal and incredible velocity. It is dangerous to drop the anchor unless at low water, as the channel is frequently obscured, and the vessel may be left dry. The tides are only perceptible seventy-five miles from the sea, that is about twenty-five miles below Tatta.

The waters of the Indus are so loaded with mud and clay, that they discolour the sea for about three miles from the land, but yet they do not so much predominate as to change the water to fresh anywhere but at the Gorah mouth during the floods. Floating out from the Indus are to be seen numberless brown oily specks, which are called *pit* by the natives: on examination I found them to be round globules filled with water, having a brown skin, and very like a small egg without the shell; when placed on a plate they were about the size of a shilling, and were easily burst. The natives informed me that they were detached from the sand-banks by the sea and river water joining, and then floated out. They give a particularly dirty and oily appearance to the water, and always denote the presence of fresh water among the salt.

It is difficult to imagine a more miserable country than the low tracts at the mouths of the Indus. When out at sea land is barely to be distinguished at the distance of a league; not a tree

is to be seen, though the mirage often magnifies the stunted shrubs which fringe the coast, and gives them a tall and verdant appearance; but this delusion vanishes with a nearer inspection. The tide overflows the banks of all the mouths, and recedes to leave a desert dreary waste. If a vessel be unfortunately cast on this coast, she is buried in two tides, and the greatest exertion can hardly save a cargo. We had proof of this in an unfortunate boat which stranded near us: and, to add to the miseries of this land, the rulers of it, by a barbarous law, demand everything which is cast on shore, and confiscate any vessel which from stress of weather may enter their ports.

The trade by the Indus is such as an evil government might lead one to expect. Excepting the rice produced on its own banks, there are in fact no exports whatsoever; and the merchandise that is brought into the country is landed at Curachee. It may appear remarkable that this port should thus be the principal one of Sinde, when its rulers are also in possession of the Indus; but this is easily explained. Curachee is only fourteen miles from the Pittee or western mouth of the Indus, and there is less labour in shipping and unshipping goods there than were they carried by the river, from Darajee or Shahbunder, in flat-bottomed boats. Curachee can also throw its imports into the peopled part of Sinde without difficulty, by following a frequented and good level road to Tatta. The unshipment, too, at that port supersedes the necessity of embarking the cargo first in flat-bottomed boats; and the actual distance between Curachee and Tatta (about sixty miles) is half exceeded by following the windings of the stream to any of the bunders in the Delta. As the ports in the river and Curachee are both subject to Sinde, it is conclusive that the seaport has advantages over those of the river, which have led to their being forsaken by the navigator. In former years, before Curachee was seized by the Sindians, the exports from the Delta were more considerable, but since then all articles of value are brought to Curachee by land, and there shipped; and the opium, in particular, from Malwah, is never put into a boat, but to cross the Indus on its way to Curachee.

The boats of the Indus also claim attention. Including Curachee and all the ports of the country, there are not perhaps a hundred dingies or sea-vessels belonging to the dominions of the Ameer. These are of a peculiar construction, sharp-built, with a very lofty poop; the large ones never ascend the rivers, and are principally used at the bunder of Curachee, sailing from that port to Muscat, Bombay, and the Malabar coast. They carry no guns. A vast number of smaller dingies are also used at the mouths of the Indus, chiefly for fishing. They are good sea-boats, and sail very fast.

The traffic on the river, however, commencing from its very mouth, is carried on in flat-bottomed boats, called doondees. These boats are large and unwieldy; never exceeding one hundred kurwars (fifty tons), and drawing, when laden, about four feet water. They have two masts, the larger forward, and hoist their sails behind. The foresail is of a lateen shape; that aft is square and very large: with these set, they can stem the current, with a good wind, at the rate of three miles an hour. When the wind fails, they are dragged or pushed up by spars against the stream. With ropes they can be pulled at the rate of a mile and half per hour. The helm is shaped like the letter P; and, in the larger vessels, is managed by ropes from each side: at a distance it seems quite detached from the doondee. These vessels are also furnished with a long supple oar astern, which is worked backwards and forwards, the steersman moving it on an elevated frame:—it reminded me of what is called sculling. It is possible to impel the doondee with this oar alone, and nothing else is used in crossing the different ferryboats. When coming down with the stream, this oar is also in requisition; and they work it to and fro, to keep the broad side of the vessel to the current. In descending the river the masts are invariably struck, and the helm even is stowed away. I can compare these boats to nothing so correctly as the drawings of Chinese junks; the largest are about eighty feet long, and eighteen broad, shaped something like a ship, high astern and low in front, with the hull slanted off at both ends, so as to present less resistance to the water. They are floating houses, for the people who navigate them take their families, and even their birds and fowls, along with them. All the boats on the river, large and small, are of the same description. In navigating the doondees, the boatmen always choose the shallow water, to avoid the rapids of the river.

On the Delta of the Indus.—Herodotus said of Egypt, that it was ‘the gift of the Nile;’ and the same may be said of the country at the mouths of the Indus. A section of the banks of the river shows a continued succession of earth, clay, and sand, in layers parallel to one another, and deposited, without doubt, at different periods. It would be hazarding too much to state that the whole of the Delta has been gradually acquired from the sea, but it is clear that the land must have greatly encroached on the ocean. Nothing is more corroborative of this fact than the shallowness of the sea out from the mouths of the Indus, and the clayey bottom and tinge of the water.

The country from Tatta, which stands at the head of the Delta, to the sea downwards, is in most parts influenced by the periodical swell of the Indus. The great branches of this river are of themselves so numerous, and throw off such an incredible number of

arms, that the inundation is general; and, in those places which are denied this advantage by fortuitous circumstances, artificial drains, about four feet wide and three deep, conduct the water through the fields. The swell commences about the end of April, and continues to increase till July, disappearing altogether in September. It begins with the melting of the snow in the Himalaya mountains. At other times the land is irrigated with the Persian wheel, which is turned by a camel or bullock, and in general use everywhere.

The Indus first throws off its branches about sixty miles from the sea, and each of the sides of the triangle is about one hundred British miles in length.

The base of the Delta, extending for one hundred and twenty-five statute miles, faces the ocean. It may thus be said to contain an area of seven thousand square miles; one-eighth of which, perhaps, may be occupied by beds of rivers and inferior streams.

But singular as it may appear, this valuable expanse of fertility lies nearly neglected. Not a fourth part of the land is brought under cultivation; and instead of aspiring to agriculture, the people mostly pursue a pastoral life. The Delta of the Indus is therefore overgrown with tamarisk and other wild shrubs; and instead of fields we find a hard caked surface of clay, cracked by the heat, and of a most miserable and barren description. This neglect originates in an evil government, for it requires little or no labour on the part of the husbandman to prepare the land, and the seed, scattered without care or attention, yields a plentiful harvest. Heavy taxation and oppression hold out no encouragement even where so little energy is required.

In a tract peopled by a pastoral race, there are, as may be expected, few permanent towns or villages. When we except Darajee, Vikkur, Shah-bunder, Mughribee, and one or two others, the inhabitants reside in temporary villages, called by them "raj," which they remove at pleasure; and their huts are constructed of reeds and mats made from rice-straw, each being surrounded by a grass "tatty" or fence, to exclude the cold wind and humid vapours which prevail in this low country, and are considered noxious. These are the houses remarked by Nearchus, and are, I believe, peculiar to the river Indus. They very much resemble the huts of dancing girls in India.

It becomes a difficult matter to form any correct opinion as to the number of inhabitants in such a country, where the body of the people are wanderers, and not confined to narrow limits. Huts are, however, to be seen everywhere, and, excluding the city of Tatta, the population cannot be rated at less than thirty thousand souls; of this estimate, one-third may be composed of those

who reside in the fixed towns. This census gives four and a half to the square mile.

The erratic tribe in the Delta of the Indus is called Jut ; these people are the aborigines of the country ; they are a superstitious race of Mahomedans, and exceedingly ignorant. The different banks of the rivers are peopled by watermen, of the tribe of Mooana ; they are emigrants from the Punjab, and are employed in navigating the boats or in fishing in the sea or river. There is also another tribe from the same country, called Seik Labana, whose occupation it is to make reed mats. They also kill wild animals and game ; but are held in no estimation by the rest of the people. Jookeas or Jokreeas, an aboriginal race from the mountains over Curachee, are to be found, but they are not numerous. Some of their chiefs have land assigned to them. There are also a few Belooches. Of the fixed population there is little to remark ; it is chiefly composed of Hindoos of the mercantile caste, who carry on the commerce of Sinda with the neighbouring countries. They do not differ from their brethren in India.

The only tribe which calls for further comment is that of Jokeea ; these people are the descendants of the Sama Rajpoots, who governed Sinda in former years. They became converts to the faith when the Hindoo dynasty was subverted, and still retain the Hindoo name of their tribe, and claim consanguinity with the Jhareja Rajpoots of Cutch. They are mountaineers from the west bank of the Indus, not very numerous, and little favoured by the government. They can bring two thousand men into the field.

The fisheries in the river, and out from its different mouths, are extensive ; they are carried on by hook chiefly, and some of the fish caught are of enormous dimensions. One species, called Kujjoonee, is killed for its sounds, which, with the fins of small sharks that abound near the Indus, form an article of export to China. The river fish are likewise abundant ; of these the most remarkable is the " pulla," which in flavour fully equals the salmon. It is only found during the four months that precede the swell of the river.

I am not aware that there are any animals peculiar to the Delta of the Indus. Camels are numerous and superior ; buffaloes are reared in great numbers ; horned cattle and sheep abound ; the dog, too, is here elevated to his proper situation, and is an humble attendant on man,—they watch the flocks, and are of a ferocious description, swimming the rivers with great vigour and dexterity.

The staple production of the Delta of the Indus is rice ; it is to be had of many different kinds, but its value seems to depend on its preparation for the market. Bajra, and all other Indian

grains are raised. From extensive plantations of cane, goor, a coarse kind of sugar, is produced ; this plant, with wheat, barley, and moong, is obtained by irrigating the fields by cuts from the river, some months before the periodical swell ; and forms what may be called a second crop. Saltpetre is found in the Delta, but it is not now exported, though formerly an object of commerce to the East India Company.

The climate of this part of Sinde is sultry and disagreeable, the thermometer ranging as high as 90° in March ; and the soil is a rich alluvium, yet the dust blows incessantly. The dews, too, are very heavy and dangerous. It is in every respect a trying country to the human constitution, and this was observable in the premature old age of the inhabitants ; but I could not hear of their being subject to any marsh fever or other evil effects from the inundation, their complaints being confined to the inconvenience and annoyance they suffered from insects and musquitoes generated by the mud.

The Indus from Tatta to Hyderabad.—From the city of Tatta, which stands at a distance of three miles from the river, we cease to have the Indus separated into many channels. On the right bank it is confined by low rocky hillocks ; and on the left there is but one narrow branch, the Pinyaree, which is accessible to boats from the town of Mughribee, when the superfluous water of the floods follows its course to the sea. Yet the greatest width of channel to be found in this part of the Indus is less than half a mile. At Hyderabad it is but eight hundred and thirty yards ; at Tatta, it is seven hundred ; and below the village of Hilaya, fifteen miles from that town, it does not exceed six. The greatest depth of water is found opposite the capital, and is five fathoms ; the least at Tatta, where it is but fifteen feet : generally, there is a depth of twenty feet.

The channels of the Indus within the Delta are free from sand-banks ; but from Tatta to Hyderabad these are met everywhere, and as the banks of that section of the river are more frequently shelving than steep, it is difficult to discover the deep channel, and the navigation is thus perplexed. Many of the sand-banks are but knee deep in the water, and they are constantly shifting their position ; but the current being less rapid than near the sea, they are rarely swept away. In several places they have become islands of sand, and divide the stream into two channels, one of which is always found navigable. The subdivision of the river has occasioned many of these branches being given as separate rivers in our maps, but, as I have before stated, none such exist excepting the Pinyaree. In the floods there is a narrow channel above Triccul, which communicates with the Fullalee branch which insulates Hyderabad at that season.

The distance by land from Tatta to Hyderabad is less than fifty miles, nor do the windings of the stream increase it even by water to sixty-five; its course is southwest and by south, and rather direct, with one decided turning below Jurruk, where it throws off the river leading to Mughribee. We made the voyage against the stream in two days.

Not above a dozen places exist between Tatta and the capital; the only one of note being Jurruk, situated near some low rocky hillocks, which does not boast a population of fifteen hundred souls. None of them are fortified.

The country, which might be one of the richest and most productive in the world, is devoted to sterility. Hunting preserves, or as they are called "shikargahs," follow one another in such succession, as to leave no land for tillage; and the fences which confine the game, approach within a few yards of the Indus. The interior of these preserves forms a dense thicket, composed of tamarisk, saline shrubs, and other underwood, with stunted trees of bauble, which are never allowed to be pruned or cut, so that the banks of the Indus, were they in the hands of a formidable enemy, afford cover, from which an expedition, conducted by water, might be constantly and grievously harassed. The roads through this tract are equally close and strong. Supplies are, however, abundant. Grain is cheap and plentiful everywhere; and Tatta and Hyderabad are the ancient and modern capitals of the country.

Of Hyderabad, I can add little to the accounts already on record. It does not contain above twenty thousand souls, who live in houses scattered about a rock. The fort, which is built on this rocky hillock, is a mere shell, with a single wall about twenty-five feet high, partly surrounded by a dry ditch, ten feet wide and eight deep, over which is thrown a wooden bridge. It is of brick, and a place of no strength, fast going to ruin; there is a massy tower in the centre of it, which overlooks the surrounding country, but is not connected with the works; in it lies deposited the wealth of Sinda. The houses in the interior are constructed of mud, and those of the ameers even are mere hovels. The place could easily be captured by escalade. Hyderabad stands at a distance of three miles from the Indus; the Fullalee river, which passes eastward of it, was quite dry, when we visited Hyderabad; but it is a considerable stream when the swell sets in. The very island on which the capital stands is left uncultivated, and there are several rocky ridges on it which would materially impede agricultural operations.

The soil near Tatta is more productive, and its gardens give abundant evidence of their fertility. The vine is successfully reared in them, as also the fig and pomegranate; apple-trees are

in abundance, and though the fruit is naturally small, it increases in size with cultivation. In the fields may be seen indigo, tobacco, sugar-cane, with wheat, barley, and all the other Indian grains; but it is the singular policy of the rulers of Sinde to keep everything in a state of nature, that their territories may not excite the cupidity of surrounding states. Agriculture and commerce are alike depressed.

With regard to the trade of the country, it may be said that there is little or none anywhere but at Curachee. The Indus is as if it existed not, no advantage being taken of it to convey goods to Hyderabad. The imports are landed at Curachee, and the most valuable export, which is Malwah opium, is shipped from the same port. The merchants in prosecuting their journey to Candahar and the upper provinces of the Indus, quit the Sindian territories with all despatch. The only encouragement which the chiefs give is to the trade in opium, on which they levy the exorbitant duty of two hundred and fifty rupees on each camel load; and the revenue from this article alone amounted last year to seven lacs of rupees, a sum equal to the land revenue of the Hyderabad Ameer. Nor does any hope exist of improving or increasing commercial intercourse by this river, until the rulers of it have more just notions of policy, and some one of them, more enlightened than his predecessors, discovers that the riches and capabilities of a country can only be developed by encouraging the people in industry and art. At present there is no wealth in Sinde but what is possessed by its rulers, and had the people the inclination, they have not the means of purchasing the manufactures of Europe. The case was otherwise in the beginning of this century, when the East India Company traded at Tatta by a factory, and the rulers, intimidated by their lord paramount in Cabool, did not object to the transit of goods to that and other countries. Sinde, however, must follow the fate of that portion of Asia; and if any of the Douranee family be yet able to seize the lost crown of Cabool, we may expect a change for the better in their dependent province at the mouths of the Indus.

At present there are not vessels sufficient for any considerable trade; between the capital and Tatta, they do not exceed fifty—many of them small and used for fishing—others old and worn out, which cross the stream in certain places as ferry-boats. Encouragement would soon remove this, which may be considered a defect in a military as well as a commercial point of view.

From Hyderabad to Sehwan.—The town of Sehwan stands at a distance of two miles from the west bank of the Indus, and is exactly one degree of latitude north of Hyderabad, being crossed by the parallel of $26^{\circ} 22'$; the voyage to it is performed in eight days, against the stream, and the distance is 105 miles.

The river in this part of its course is named "Lar," which in the Belooch language means south; it flows about S. S. E., being resisted at Sehwan by rocky mountains, which change the direction of the stream. Its banks are very low, and the country bordering on them is frequently overflowed, particularly on the eastern side; the western bank is firmer, but never exceeds eight feet in height. This expansion of the river diminishes its general depth to eighteen feet; during the swell the increase is twelve feet additional, the width being then frequently one thousand yards and upwards. About six miles above Hyderabad, however, the river divides into two channels, one of which is fordable, and the other only four hundred yards wide. At Sehwan, too, the rocky but-tress of the Lukkee mountains hems the waters into a channel of five hundred yards, but the depth is nearly forty feet, with a rapid current.

The river throws off no branches in this part of its course, excepting the Fulialee, which leaves the Indus twelve miles above Hyderabad, and passes eastward of that city; it is only a stream during the swell. It was dry at Hyderabad when we were at that city, and but one hundred yards wide, and knee-deep, where it separated from the Indus; yet it is a considerable river in the wet season, and fertilizes a vast portion of Sinde by its water, which it may be said to exhaust between Hyderabad and Cutch. The maps give most erroneous ideas of the Indus, for the numerous branches which appear in them to leave the river, are mere water-courses for the periodical swell; many of them artificial, dug for the purposes of irrigation. The river for nine months runs in one trunk.

The current never exceeds three miles an hour in this part of the Indus, unless where confined, when its rapidity undermines the banks, and carries whole villages along with it. The town of Majinda and Amree, on the right bank, have both been swept away, the former no less than eight or ten times within the last twelve years; but the people retire a few hundred yards, and again erect their habitations. Hala, on the eastern side, has shared a like fate: but the channel of the river lies to the westward, where the banks are more steep; and the left bank of the river, though consisting of a flat field of sand, is only inundated in the swell. At that period, for eight miles eastward of the Indus, it is not possible to travel, from the number of shoots cast off. The Indus itself is here pretty constant in its course; and though the country eastward would, as I have observed, favour the escape of the water in that direction, it clings for some time to the Lukkee mountains.

Of the country and towns which intervene between Sehwan and the capital, a few words will suffice. There are none of any size

but Sehwn itself: Muttaree, sixteen miles from Hyderabad, contains about four thousand people; and Halla Bagan, Majuida, and Leu, about two thousand each. The other places are few, and thinly peopled,—three or four of them have frequently one name. The country is consequently neglected, and the banks of the river are in most places covered with tamarisk; but towards the hills it is open. Cotton, indigo, wheat, barley, sugar, tobacco, &c., are produced by irrigation in the dry season; but the limited extent of the cultivation may be discovered by there being but one hundred and ninety-four wells or cuts from the river on one side of the Indus, between Hyderabad and Sehwn, a distance of one hundred miles, where the greater part of the soil is rich and cultivable. In a few places the land is salt and sterile. Rice is produced during the swell; and yet provisions are dearer here than in the neighbouring and less favoured country of Marwar. The people chiefly live on fish and milk.

The town of Sehwn alone bears the marks of opulence in this portion of Sinde, and it is indebted for its prosperity to the shrine of a holy saint from Khorassan, by name Lal Sah Baz, whose tomb, a handsome building inside the town, is a place of pilgrimage both to Hindoo and Mussulman: it does not, however, contain a population of ten thousand souls. It is sometimes called Lewistan, or Sehwn, but rarely. It is a place of great antiquity; and is commanded on the north side by a most remarkable castle, now in ruins. The town itself stands on a rising ground, and there are innumerable mosques and tombs in the neighbourhood, which prove its former wealth. It has a well-furnished bazaar; but the place has gradually gone to decay since it ceased to be the residence of a governor. A branch of the Indus, called Arrul, runs immediately past the town in its course from Larkhanu; but this will be described afterwards. Four years since, the Indus itself passed close under Sehwn, but it has retired eastward, leaving a swamp on all sides of the town.

Around Sehwn the country is rich and productive. Looking north, the eye rests on a green plain, highly cultivated. Mulberries, apples, melons, and cucumbers, were brought to us; and, for the first time, we saw grain. The melons are tasteless,—I presume, from the richness of the soil. Cucumbers grow nowhere in the country except at Sehwn. The climate is considered sultry and disagreeable, and we certainly found it so, for the thermometer rose to 112° in April, and continued as high as 100° till nine at night. The hot winds were also very oppressive.

The castle of Sehwn is a most singular building; it consists of a mound of earth, sixty feet high, which is surrounded from the very ground by a wall of burnt brick. It is of an oval shape, twelve hundred feet long by seven hundred and fifty in diameter.

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The interior is a heap of ruins ; and without the remains of a building two feet high : the whole surface is strewn with broken vessels and bricks. The gateway lies on the town side, and has been arched ; it is in a better state of preservation than any other part of the works : from the section through the hills which it lays open, the whole castle is clearly an artificial mound of earth. The river Arrul passes close under the base of the ruin.

The natives could give me no satisfactory account of this ruin ; they attributed it to the age of the fairy Budurool Jumal, whose agency is referred to in everything ancient or inexplicable in this land. Ferishta, however, mentions that Sehwan was besieged by Humeron in 1541, and that emperor, being unable to take it, fled, on his disastrous rout, by the desert to Omerkote-Akliers. General Mirza Khan likewise attacked it in 1591 ; but Jani the rebellious governor of Sind, held out for seven months against the emperor's army, so strong was the fort of Sehwan in those days : since then, its walls being dismantled, it has been allowed to go to wreck. The natives brought many coins of the reign of Akber, both silver and copper, but among thirty I could find no traces of the Greek alphabet.

It must be confessed that a ruin of such magnitude, standing, as it undoubtedly does, on the track of Alexander, would fully authorize our fixing on it as one of that conqueror's captures. In appearance it very much resembles Mujilibe, or (overthrown) tower, described in Mr. Rich's Memoir of Babylon, for it presents a most chaotic sight. Quintus Curtius mentions, that in the territories of Sabus Rajah, Alexander took the strongest city by a tunnel formed by his miners. Now this ruin stands on the very verge of a navigable branch of the Indus, and if by a tunnel we are to infer that he dug in from the river, this is probably the very city, where " the barbarians, untaught in engineering, were confounded when their enemies appeared almost in the middle of the city, rising from a subterraneous passage, of which no trace was previously seen." The position of Sehwan coincides with that of the territories of Sabus Rajah, and it is not to be supposed that the rulers of the country would, in after times, neglect a place of such strength as Sehwan, which doubtless led to its being kept up as a fortification under the Mogul Emperor. The saint Lal Sah Baz was interred at Sehwan, thirty-five generations back, or about six hundred years ago ; and the people universally point to a period much beyond that for the age of their castle.

In addition to the remains of Sehwan, there is a mound eighteen miles lower down, and on the same side of the river, near the village of Amree. The natives believe it is the site of an old city, and to have been the favourite abode of one of the rulers of the land ; at which a king, once halting with his army, ordered the

horse-dung of his cavalry to be collected in a heap, and hence arose the mound of Amree. It is certainly an artificial heap of earth of the same kind as Sehwan, but it is not forty feet high, and too confined to be the remains of a city. Portions of the village of Amree have been swept away by the river, which may have diminished its size, or it may be a tumulus only. There are some tombs at this village, but they are not of a later date than Madad Khan's invasion in the end of last century. Amree was formerly a large town.

The Lukkee mountains, which lie west of the Indus, run south from Sehwan to near Curachee, gradually diverging from the river; they come in sight at a distance of twenty miles from Hyderabad. They appear to be of porphyry, are very bare of vegetation, and much furrowed by water-courses, all of which present the concave side towards the river. They have an elevation of about one thousand feet in the highest parts, which are flat and not conical. On this range, about fifteen miles from Majindu, on the Indus, stands the fortified hill of Runna, a place of strength in former times, but till lately neglected. It is said to be eight miles in circumference, and to be well supplied with water when there is none in the neighbourhood. The Amrees have lately repaired it at considerable expense; but, from what I can understand, its strength chiefly consists in the absence of water from the bleak mountains which surround it. There is a hot spring at the base of the mountains, near the village of Lukkee, adjoining one of the most cold description; and a spring of the same kind exists at the other extremity, near Curachee, so that they are probably to be met in the intervening part. The spring at Lukkee is a place of pilgrimage to the Hindoo, and its waters are considered a specific in cutaneous disorders.

The Indus from Sehwan to Bukkur.—The insulated fortress of Bukkur is situated on a rock in the Indus, between the towns of Roree and Sukur. It is a degree and twenty minutes north of Sehwan, being in lat. $27^{\circ} 42'$, and in longitude it is fifty-six miles eastward of that town. The distance by the river amounts to one hundred and sixty miles, and was traversed by us in nine days.

Throughout the whole distance the Indus flows in a zigzag course, nearly S.W., till it is impeded by the Lukkee mountains below Sehwan. The intervening country is richly watered by its meanderings, and from the lowness of the banks, is disputed by the river and its ramifications, and formed into numerous islands of the richest pasture. On the least approach of the swell both banks are inundated and irrigated.

About twenty-five miles below Bukkur, the Indus sends forth to the westward a branch called Nara, which washes the base of

the Hala, or mountains of Beloochistan, and after pursuing a parallel course of many miles, rejoins the river at Sehwan. Its waters are courted and distributed by canals, which add to the blessings bestowed by nature on this flat and fertile land. The eastern bank, though less favoured than the opposite one, is highly cultivated, and most of the towns and villages stand on the verge of canals, which bounteously distribute the waters of the periodical swell, and attest the industry and assiduity of the inhabitants.

The river here but rarely flows in one undivided stream, and with a width of three-quarters of a mile in some places, preserves a depth of fifteen feet in its shallowest bed. There is nothing approaching to a ford in any part of its course. The declivity on which the Indus runs to the ocean must be gentle, for it glides sluggishly along at less than two and a half miles in the hour. From Sehwan upwards, the Indus is called "Sira," which means north, in distinction from the southern portion, which is called "Lur." Mehraun is a foreign term, with which the natives are not acquainted.

The immediate vicinity of the Indus in this part is alike destitute of beauty and inhabitants. It is overgrown with tamarisk shrubs, and the villages are purposely built at the distance of two or three miles, showing the frequent occurrence of inundations; yet there were a hundred wheels at work on the verge of the river. The eastern bank from Sehwan to Bukkur is by far the best-peopled portion of Sinde; and the inhabited places which occur are numerous and thriving, and though not large and wealthy, many of them have five hundred houses. This territory is subject to the chief of Khyrpoor, and is enriched by a canal forty feet broad, called "Meerwah," which conducts, by a southerly course, the waters of the Indus, from the neighbourhood of Bukkur, to a distance of ninety miles, where they are lost in sands or deposited in the fields. There are also various other canals besides this one, and while their banks are fringed with villages and agriculture, they likewise afford the means of transporting by boats the produce of the soil. In the fair season, when dry, they become the beaten foot-paths of the people, and are excellent cart-roads, preferred at all times to the common pathway, which, from the exuberance of vegetation in this rich country, is generally impeded by bushes.

The western bank of the Indus, which is intersected by the Nara, is called Chandkoh, from a Belooch tribe of that name, and yields the greater portion of the land revenue of the Hyderabad Ameers. This branch, which leaves the Indus below Bukkur, in the latitude of Larkhanu, in its passage to the main stream, forms a small lake called Munchar, which abounds in fish. Far-

ther down, it changes the name of Nara into Arrul, before falling into the Indus. It is a narrow river, about a hundred yards broad, and only navigable during the inundation. Numerous cuts, the chief of which is the Larkhanu canal, extend the cultivation beyond its banks; and in addition to the swell of the Indus, this pergunna is watered by rills from the lofty mountains to the westward. The lake of Munchar is environed by fields of wheat in the dry season, when its waters partially subside and leave a rich mould exposed to the sun.

The fortress of Bukkur is constructed of brick on a low rock of flint, at a distance of four hundred yards from the left bank of the Indus, and about three hundred and fifty from its western side. Its walls are loop-holed, flanked with towers, and slope to the water's edge; they do not exceed twenty feet in height. There is a gateway on each side of the fortification, facing Roree and Sukur, and likewise two wickets. The interior of the works is crowded with houses and mosques, many of which, as well as parts of the rock itself, appear above the wall. In shape, it approaches to an oval, and is about eight hundred yards long, and three hundred in diameter. At some places the rock has been pared and scarfed, but Bukkur has no strength in its works, and is formidable only from its position. The garrison consists of one hundred men of the Khyrpoor Ameer, and there are fifteen pieces of artillery, few of which are serviceable. Four fathoms are found on both sides of the island, but the eastern channel becomes shallower in the dry season, and is said to have been once forded. The navigation of the Indus at Bukkur, is dangerous from eddies formed under the fortress itself, and several other rocky islets below it; but the watermen are considered the most experienced in Sinde, and as a boat never attempts to pass up or down without a pilot, but few accidents happen.

The town of Roree, which faces Bukkur, stands close on the bank of the Indus, on a flinty precipice, forty feet in height, over which the houses tower. The inhabitants of some of these can even draw up water from their windows; but a road cut in the rock down to the edge of the river, at a place where it does not approach the precipice, supplies the citizens of Roree with this necessary of life, without risking their lives. This is the point of embarkation for those passing to Bukkur, but a landing would be difficult and dangerous when the river is high. The town of Roree has about eight thousand inhabitants, chiefly Hindoos. To the eastward of it several detached hillocks of flint present a most bleak and barren appearance, but add to the strength of the country; beyond their limits a grove of date trees extends for three or four miles to the southward of the town, shading numerous orchards and gardens. Sukur, which stands opposite Roree,

is about half the size of that town; both have been considerable places in former years, and the ruins of minarets and mosques remain. The bank of the river at Sukur, is not precipitous, and the town runs in from it, instead of extending, like Roree, along its banks. These two towns, doubtless, owe their position to Bukkur, which in troubled times added to the courage and hopes of the inhabitants.

Roree, Bukkur, and Sukur, rose on the ruins of Alore, which are yet to be discovered on a rocky ridge, four miles distant, to the S.S.E. That town was the capital of Sinda, and ruled by the Dilora race, named Dhur bin Chuch, when Mahomed Cassim invaded India, in the seventy-third year of the Hejira, (A.D. 692) in search of ornaments for the seraglio of the caliph. The ruler of Alore was slain by the invader, and his kingdom, which is said to have extended from Cashmere to the ocean, fell before the Mahomedan arms. The Chagtye emperors supported for a time the fortress of Alore, from its reputed strength, but it is now reduced to a humble hamlet with some ruined tombs. A low bridge with three arches, named the "bund of Alore," constructed of brick and stone, alone remains of all its greatness. It is thrown across a valley, which in bygone years formed the bed of a branch of the Indus, from which its waters fertilized the deserts, and reached the sea by Omercote and Lucput. In any great inundation, the water still finds egress by this channel, which is named Nora by the inhabitants.

The only modern towns of note which require remark, are Khyrpore and Larkhanu, nearly under the same parallel of latitude, both distant from it about fourteen miles, and watered by canals from the Indus. Khyrpoor is a modern town, built by the Talpoor chief Sohrab, who seized on the northern part of Sinda, after the subversion of the Coloras. It contains a population of about fifteen thousand souls, but is merely a collection of mud hovels heaped together in narrow lanes. It is destitute of fort or defence, unless a mud wall about a foot thick, which surrounds the houses of the Ameer and his family, can be so considered. The country near it is flat and bushy, and a low dyke has been drawn round the town to keep the inundations of the river at a distance. Larkhanu, which stands on the western bank, is the capital of the pergunna of Chandkoh; it has about ten thousand people, and is the head-quarters and rallying point of the Sinda Ameers, on their N.W. frontier. It has a small mud fort; and an insufficient train of artillery, about twenty in number, frightens the refractory in the neighbouring mountains, and maintains the peace of Sinda. It is governed by a Nuwab, the individual next in rank to the rulers of the land.

The productions of Sinda are very similar in different parts of

the country, and the same kinds of grain are produced here as at Sehwan. A shrub very like wall-flower, called "syar," grows in this tract, the juice of which is considered a valuable medicine for the diseases of children. The wheat fields are invariably surrounded by a low dyke, like rice-ground—tobacco grows very luxuriantly near Roree. The greatest want in Sinde is grass, which is choked by the tamarisk; the people often set fire to these shrubs, and derive by such means an abundant crop. There are but few trees in Sinde. The baboul even does not attain any considerable size; the neem and firs, so abundant in India, are rarely seen, and the banian tree is a stranger. The shrubs thurr, the kehra, khair, bair, akra, (swallow-wort) and tamarisk, grow everywhere. I have alluded to the date-grove of Roree, and it is a tradition of the people, that this tree was brought into the country by Mahomed Cassim, who carried dates from Arabia as provision for his army, from the seeds of which have arisen the date trees so abundant in this part of Sinde. By the introduction of such a nutritive article of food, the Mahomedan compensated in some degree for the evils and scourge of his inroad.

The Indus from Bukkur till joined by the Punjab rivers.—The waters of the Punjab, united in one stream, fall into the Indus at Mittun, in the latitude of $29^{\circ} 55'$ N. From this point to Bukkur, the river pursues a southwesterly course, and is pretty direct in its channel, but frequently divided by sand-banks. Various narrow crooked branches here diverge from the parent stream, and retaining a depth of eight to fifteen feet of water, are navigated by boats ascending the Indus, in preference to the great river itself. They extend nearly throughout the whole intervening space now under review.

The Indus is widely spread in many parts of its course above Bukkur. It often exceeds a thousand yards in breadth, and at Mittun was found to be even double that width. The depth was not proportionably diminished, and in some places exceeded six fathoms, while four were to be found everywhere, though at a season when the waters are lowest. There was no greater acceleration of current than in the places already described; and the serpentine course just mentioned, proves the great flatness of this district of the country.

From Bukkur the Indus is navigated by a different description of boats from the "doondee" already noticed. They are called "zohruy," and are of an oblong square shape, rounded fore and aft, built of the talee tree, and clamped with pieces of iron, instead of nails, an operation which is performed with great neatness. The "zohruy" is also flat-bottomed, and has only one mast; some of them exceed eighty feet in length and twenty in breadth. They pass through the water quicker than the doondee, and are admir-

ably adapted to the transport of troops, both horse and foot, being as roomy forward as aft. They are not numerous, but we met ninety-five of them in our voyage to Mittun. I cannot understand by the description of boats which Alexander used for transporting his cavalry, any other than these zohruys; for Arrian describes them as of a round form, and says they received no injury when the long vessels were wrecked at the junction of the Hydaspes and Acesines. Their peculiar build is doubtless owing to the rapids which they have to traverse. We made the passage in these boats from Bukkur to Mittun, in nine days, a distance of one hundred and seventy miles by the river.

The country which this portion of the Indus traverses, is of the richest nature, particularly on the eastern bank, where it is flooded by innumerable canals, generally cut in those parts of the river running east and west, that the water may be thrown south into the interior. On the right bank, about twenty-six miles above Bukkur, a large navigable canal called the "Sinde," the work of the emperor, conducts a great body of water to Shikarpoor and Noushera, and joins that of Larkhanu. On that side of the river, the cultivation beyond is limited, as the districts of Boordgah Ken, and Moorzarka, which succeed each other, are peopled by wandering and unsettled Belooch tribes, who lead a pastoral and plundering life. The territory on both sides chiefly belongs to Sinde, for the boundary line stretches on the right bank to within fifteen miles of Mittun, and adjoins the dominions of the Seik; and on the left it terminates lower down in the latitude of $28^{\circ} 33'$, twenty-five miles above Subzul. There is a strip of land, however, on the left bank, which forms a portion of the territories of the Daoodpootra chief Bhawul Khan; and the district immediately below that chief's territory in Sinde, is named Oobaro, and is inhabited by Duhrs and Muhrs, who are the aborigines of the country, and known by the name of Sindees.

The town of Shikarpoor, which stands twenty-two miles from Bukkur, on the Indus, is by far the largest town in this tract, indeed in Sinde, for it exceeds in size the capital, Hyderabad. The country around it is very productive, but in the change of masters, from the Afghans to the Sindians, its revenue has deteriorated to half a lac of rupees annually. It still, however, carries on an extensive inland trade, the greater portion of its merchants and people being Hindoos, and having agents in the surrounding countries. Shikarpoor is surrounded by a mud wall, and the governor of the place holds a most important post, and with it the title of Nuwab. The town and district fell into the hands of the Sindians about eight years ago, and it is the only unsettled portion of their country, the Afghan family, to whom it belonged, making frequent attempts to recover it. The frontier town of Subzul on

the left bank of the Indus, and twelve miles inland, is about one-fifth the size of Shikarpoor; it contains a population of five thousand souls, and is also surrounded by a mud wall. There are no other places of note. Mittun, or, as it is sometimes called, Mittun Cote, has not a population of fifteen hundred people, and its fort has been demolished. It is about a mile distant from the Indus, and must stand near the site of one of Alexander's cities, as he caused one to be built in this neighbourhood, to profit by the situation.

It will be observed both in this part of the course of the Indus and elsewhere, that there are no towns or places of any size in the immediate vicinity of the river; which is owing to the annual swell rendering it impossible to cultivate or raise a crop within its reach. This leads to the waters being conducted by canals inland; and the immediate neighbourhood of Subzul Kote has been deserted on this account, the great quantity of water forcing for itself a channel from this direction, down upon the Nulla at Alore. The Indus is very variable in its rise in different years, and for these two bygone seasons has not attained its usual height.

The people bordering on this part of the Indus live also during the swell in houses elevated eight or ten feet from the ground, to avoid the damp and insects which it occasions. Their bungalows are very small and neatly constructed of reeds; looking like little cottages, and being entered by a ladder. They are chiefly occupied by the pastoral classes, who continue on the banks of the Indus with their herds as long as the river will permit them. Herodotus mentions that the Egyptians slept in turrets during the rise of the Nile, and his description may be said to apply to the banks of the Indus.

The horned cattle to be seen in this part of the Indus are exceedingly numerous. Buffaloes are so plentiful as to be only a fourth the value of those lower down the river, and the very best may be purchased for ten reals each. Deer, hogs, and partridges abound on the banks of the river, and the water-fowl about Bukkur are numerous even in the dry season (May).

I have mentioned the districts lying westward of the Indus, and the predatory habits of the inhabitants. The Boordees occupy all the plains north of Shikarpoor, to the borders of the Brahojee country or Cutch Gundava. They are emigrants from Kej and Mukran, and are of the Belooch family of Rind. They are a fair and handsome race! of men, more like Afghans than Belooches; they do not wear the costume of Sinde, but roll a cloth in folds loosely round their brows, and allow their hair to hang suspended in long tresses, which gives them a savage appearance. They took the name of Boordee from a noted individual in the tribe according to the Belooch custom, for the various tribes are nothing

more than the descendants of persons of note. The chief place of the Boordees is Duree, but they have no large town. The whole "oolooss," or tribe, is rated at ten thousand fighting men, and till their chiefs were taken into the service of the Ameer, they were constantly marauding; petty robberies are yet committed. Their language is a corrupt Persian.

Of the other tribes, the Juttoees, Muzarees, Boogtees, and Kulphurs, with many others, do not differ from the Boordees in name. The Juttoees are to be found in Boordgah. The Moozarees, whose chief town is Rozau, extend as far as Dera Ghazee Khan, but their power is now broken, though they plundered in former times the armies of Cabool. The Kulphurs and Boogtees occupy the hills called Gendaree, which commence below the latitude of Mittun, and run parallel with the Indus.

In a country where the names of tribes are constantly undergoing such alteration, we are not likely to meet with much success in our inquiries after those left us by the Greek historians. From what Arrian says, however, of Alexander's movements below the Punjab, it appears to me that in Bukkur, or the neighbouring town of Alore, we have the rich and populous kingdom of Musicanus, for it must have been there that the Greek ordered a fort to be built, as the place was commodiously fitted for bridling the "neighbouring nations." The Ayeen Acbaree informs us, that Bukkur is the ancient Munsoora, but we are to recollect that we have not the name of the district, but of its kings, and the power and extent of its territories in the second and seventh centuries [as mentioned in the Periplus and Shah Nama] are good concurring proofs of its former wealth and influence. Mohamed bin Cassim, a thousand years after Alexander, here also subdued the Brahmins who revolted from the Macedonians. In Larkhanu, we have the country of Oxiganus, which was so extolled for its fertility; and in Sehwan we have Sindomana. I look upon Larkhanu to be well marked, for Alexander despatched the superannuated veterans of his army, through the country of the Archote and Draugi, to Carmania (Kerman); in other words, he used the pass of Bolan or Kelat, the high road to both of which branches off at Larkhanu. The mountains of Lukkee fix the territories of Sambus, governor of the Indian mountaineers. Sindomana cannot allude to lower Sinde, for it is always described as Pattala, and its chief as the Prince of the Pattalaas; and Sinde, to the present day, has reference only to the aboriginal inhabitants of this country, and distinguishes them from the Belooches and other invaders, though they have long exchanged the religion and authority of the Brahmins for the Mohammedan faith. The modern inhabitants of the banks of the Indus, from the sea to the Punjab, have no tale or tradition regarding the progress of the

Greeks ; but they are ignorant and fanatical, nor have I been able, after diligent search, to possess myself of a coin or a relic which could aid me in inquiry.

Before I finally quit the Indus, and while on subjects of antiquity, let me add the opinions of the people regarding the influence of this river over the climate. They consider that it sends off a breeze when low, which the velocity of the inundation entirely allays. Herodotus said that the Nile was the only water he knew of, which did not give out wind ; and he has been laughed at, and perhaps with reason, for the remark ; but it is singular that the natives of this country should entertain similar notions. I can certainly imagine running water to cool the banks by which it passes, and Sinde is said to be hotter as you recede from the Indus. A northerly wind is also said to accelerate the periodical swell ; and it assuredly would have that effect ; but such a wind is rare in the rainy season.

The Indus from Mittun to Attock.—While in our progress to Mooltan by the Chenab or Acesines, I made various inquiries, and sent different people to acquire precise information regarding the Indus above Mittun. The Cabool mission in 1809, came upon that river at Aodoo da Kote, about one hundred miles north of the point in question ; and I was solicitous to connect my own surveys with that place, and thus complete our knowledge of the Indus from the sea to Attock.

The river runs in this part of its course nearly north and south, and is free from danger and difficulty in navigation. It is here generally known by the name of Sinde or Attock, and traverses a country much the same as I have described near Mittun, being often widely spread from the lowness of its banks. Its breadth is afterwards considerably diminished, for at Kakuree, where Mr. Elphinstone crossed, the soundings did not exceed twelve feet, with a breadth of a thousand yards ; while the Indus after receiving the Punjab rivers, rolls past Mittun with a width and depth exactly two-fold.

On the right bank of the river, near this point, the province of Dera Ghazee Khan, occupies the country as far as the mountains. It is a fertile territory, and the capital which bears its name is one of the largest towns on the Indus. It is surrounded by gardens and date groves, and stands in a very rich country. It has been long numbered among the conquests of the Seiks, who till lately farmed it to the Khan of Bhawalpoor, at an annual rent of nine lacs of rupees ; but as the district originally produced but four, every species of extortion was practised, and this led to its resumption. The tract being remote from Runjeet Singh's dominions, he is anxious to hold it without requiring the services of his troops ; and he has thus given Dajil and some portion of the territory to the

Brahooees, its former owners, on condition of military service.

The productions of Damaun, and the countries westward of the Indus, are sometimes brought by Dera Ghazee Khan, and crossed to Ooch; but the more frequented route lies higher up, and leads to Mooltan, passing the ferry at Kaheree. The river is not used in the transport of any portion of the trade, for the hire of boats is exorbitant, and merchandise is exclusively conveyed on camels or bullocks. Madder (called munjeet) is an article of export from this part of the Indus, and used to dye the fabrics of Bhawalpoor.

It is remarkable that the various expeditions which have been conducted from the upper provinces of the Indus to the countries lower down, have taken the rivers of the Punjab as far as they went, in preference to the Indus itself; but we are not to infer therefrom that the greater river is shut against navigation. The conquests of Alexander led him beyond the neighbourhood of the Indus; and in the case of the emperors, their capital was long fixed at Lahore, and several of their fleets against lower Sindh were fitted out at Mooltan, always a city of great importance in the empire, and on a river as accessible to the boats of the country as the Indus itself.

The Indus has been crossed at Attock, and an account of it and that fortress will be found in Mr. Elphinstone's work; but the means which the Maha-rajah of Lahore has used of late years to transport his army to the right bank of the river, and which I heard from his officers, deserves mention. Runjeet Singh retains a fleet of thirty-seven boats at Attock, for the construction of a bridge across the river, which is only two hundred and sixty yards wide. The boats are anchored in the stream a short distance from one another; and the communication is completed by planks and covered with mud. Immediately below the fortress of Attock, twenty-four boats only are required; but at other places in the neighbourhood as many as thirty-seven are used. Such a bridge can only be thrown across the Indus from November to April, on account of the velocity of the stream being comparatively diminished at that season; and even then the manner of fixing the boats seems incredible. Skeleton frame-works of wood, filled with stones to the weight of two hundred and fifty maunds, and bound together strongly by ropes, are let down from each boat, to the number of four or six, though the depth exceeds thirty fathoms, and these are constantly strengthened by others to prevent accident. Such a bridge has been completed in three days, but six is the more usual period; and we are much struck with the singular coincidence between this manner of constructing a bridge, and that described by Arrian, in his 5th book, chap. 7th, when Alexander crossed the Indus

He there mentions his belief regarding Alexander's bridge at Attock, and except that the skeleton frame works are described as "huge wicker baskets," the modern and ancient manner of crossing the river is the same.

The Chenab, or Acesines, joined by the Sutlege.—The Acesines of the Greeks, or the modern Chenab, is lost in the Indus at Mittun, having previously gathered the waters of the Punjab rivers. The junction is formed without noise or violence, for the banks are depressed on both sides, and the river is expanded; an eddy is cast to the eastern side, which sinks the water below the usual level, but it does not occasion danger. The Euphrates and Tigris, when joined, pass to the ocean under the name of the 'river of the Arabs,' and the appellation of Punjnud, or 'the five rivers,' has been bestowed on this portion of the Acesines, but it is a designation unknown to the people living on its banks, and adopted, I conclude, for geographical convenience. The natives continue to it the name of Chenab, for it is the largest of the five rivers; and Arrian, who calls it the Acesines, states the same fact—'that it retains its name till it falls at last into the Indus, after it has received three other rivers.'

Under the parallel of 29° 20' north latitude, and five miles above Ooch, the Chenab receives the Garra, or joint stream of the Bees and Sutlege (or Hesdrus, Zaradrus, and Hyphasis of antiquity). This junction is also formed without violence, and the low banks of both rivers lead to constant alteration in the point of union, which but a year ago was two miles higher up. This circumstance renders it difficult to decide on the relative size of these rivers at their junction; both are about five hundred yards wide, but the Chenab is the more rapid. Immediately below the confluence the united stream exceeds eight hundred yards, but in its course to the Indus, though it expands sometimes even to a greater size, the Chenab rarely widens beyond six hundred yards. In this part of its course it is likewise subject to change. The depth is greater near its confluence with the Indus, exceeding twenty feet; but it decreases in descending the river to about fifteen. The current is swifter than that of the Indus, being about the rate of three and a half miles an hour. The Chenab is full of sand banks, but they do not interrupt its navigation by the "zohruys" or flat-bottomed boats, forty of which will be found between Ooch and Mittun, a distance of forty miles, and a two days' voyage.

The banks of the Chenab seldom rise three feet above the water's edge, and they are more open and free from the thick tamarisk than those of the Indus. Near the river there are green reeds not unlike sugar-cane, with a shrub called "wahun," with leaves like those of the beach tree; the country is also highly cul-

tivated, and intersected by various canals. The soil is slimy and most productive,—the crops are rich,—the cattle large and abundant,—the villages exceedingly numerous, and shaded by lofty trees; some of these are the temporary habitations of pastoral tribes, who remove from one place to another; but there are many of a permanent description on both banks;—their safety is in no wise affected by the inundations of the river, or those of the Indus, for the expansion of the water in this direction has been exaggerated, and rarely extends two miles from the banks of either river.

There is a peculiarity in the colour of the water of the Indus and Acesines,—the former, as I have before mentioned, is loaded with mud and of a clayey hue; the Chenab, on the other hand, is of a reddish colour, and when joined by the Sutlege, the waters of which are pale and like the great river, the contrast is most remarkable. For some distance the one river keeps the right and the other the left bank, while the line of demarcation between the two is most decided. The soil which these rivers traverse would tinge their waters, and appear to account sufficiently for their different colours,—at least I can assign no other plausible reason. The peculiarity is well known to the natives, who always speak of the “red water” of the Acesines, but none of the ancient authors have made mention of this circumstance.

The only place of note on the Chenab below its junction with the Garra is Ooch. It stands three miles westward of the river, on a fertile plain, shaded by numerous trees, and with a population of twenty thousand souls. It no doubt owes its site to the junction of two navigable rivers in the vicinity. Ooch is formed of two distinct towns situated a few hundred yards apart from each other; each has been encompassed by a wall of burnt brick now in ruins. The streets are narrow, and covered with mats as a protection from the sun; the population though numerous is miserably poor.

The country around Ooch is richly cultivated, the tobacco plant, in particular, grows most luxuriantly, and at the season of inundation the tract is one sheet of green fields and verdure. The productions of the gardens are various,—the fig, vine, apple, and mulberry, with the “falsa,” which produces a little berry, and the bedee misk. Roses, balsams, and the lily of the valley, excite a pleasing remembrance of home, and there are many plants foreign to India. A sensitive shrub, called “Shurmoo” or the modest, particularly struck me; its leaves, when touched, close and fall down upon the stalk as if broken. The mango does not attain perfection in this soil or climate, and seems to deteriorate as we advance north. Indigo is reared successfully. Wheat, and other grains are cultivated in preference to rice, which does not form

here, as in Sindh and the lower provinces of the Indus, the principal food of the people. Such grains may be had in great quantities.

On Bhawal Khan's Country.—The small territory eastward of the Indus, which intervenes between the confines of the Chief of Lahore and the Ameers of Sindh, belongs to Bhawal Khan Daoodpootra. His frontier to the north may be loosely said to be bounded by the Sutlege or Garra; but at Bhawalpooor it crosses that river, and running westward to a place called Julalpooor comprises a portion of the country between the Sutlege and Acesines and the Acesines and Indus. The Rajpoot principality of Beecaneer bounds it to the east. It has Jaysulmere to the south, and on that part where it approaches Sindh a tract of four miles in either country is left without tillage to prevent disputes on the marches.

The greater part of this country is but a barren waste of sand-hills, which encroach upon the rivers; but in their vicinity the tract is rich and fertile, and watered, like other banks of the Indus, by the periodical swell. The towns are few in number, and scantily distributed; but there are numerous hamlets on the Acesines. Bhawalpooor, which stands on the left bank of the Sutlege, has a population of about twenty thousand people, and is the mercantile capital; the walled town of Ahmedpooor, farther south, and about half the size, is the residence of the chief, as it lies close to Darawal, an ancient fort in the desert, without a town, and the only place of strength in the country. Darawal is mentioned in the histories of Sindh as a fortress worthy of Alexander; it was taken by Mirza Shah Hoosein in the year of the Hejira 931, but an account of the siege proves its position to have been more formidable than its strength. It is built of brick.

The influence of the chief of Bhawalpooor is as limited as his territory, his power having been crushed by the Seiks, and only saved from entire overthrow by a treaty which prevents Runjeet Sing from crossing the Sutlege. The revenues do not exceed ten lacks annually (excluding Dera Ghazer Khan, which properly belongs to the Seik); and three of these are demanded in tribute by the Lahore chief for his lands north of the Sutlege. Yet Bhawal Khan maintains some state, and has about two thousand regular troops (such as they are), with a train of artillery, to second the efforts of his feudatories in the field; his forces collected would also exceed twenty thousand men.

The Daoodpootras are a tribe of Mohammedans from the district of Shikarpooor, on the right bank of the Indus, which they held in the earlier part of Aurungzebe's reign. They crossed the river and achieved, by daring acts of bravery, the conquest of the lands now held by them, from the Dahis, Muhis, and other Sindh

tribes ; and have been settled in Bhawulpoor for five generations. As the name Daoodpootra implies, they are descendants of one David ; but they claim a lineage from the holy line of Abbas, the uncle of Mahomet. The chiefs of the tribe are named Peerjune, and the common people Kihranee, nor are the *canaille* allowed to assert their right to the same holy descent as their masters, which casts some shade on the lustre of their parentage. The whole tribe does not exceed fifty thousand souls. They are a fair and handsome race of people, but disfigured by long bushy tresses of hair which they allow to hang over their shoulders.

Bhawulpoor was a tributary to Cabool as long as that government lasted ; and the chief had the title of Nuwab, but was nearly independent. The three last rulers have taken the name of Bhawul Khan, from a saint of great repute in Mooltan, and the designation of Nuwab has been changed for that of Khan, by which title he is familiarly known to his subjects. The present Bhawul Khan is about thirty years old, of a very mechanical turn of mind, and much beloved by his people, giving great encouragement to trade and agriculture. He succeeded about five years ago, to the prejudice of his elder brother, who now holds an office under him ; but his power is firmly fixed, and he has a family of three sons. The form of government is despotic, and there is no chief of any great importance in the country but the Khan himself ; the style and formality of his court keeping even his own family at a humble and respectful distance.

The manufactures of Bhawulpoor consist of loongees, which are celebrated for the fineness of their texture. The weavers are Hindoos, a numerous class in this country, and who enjoy more toleration in their trade than in their religion.

The merchants of Bhawulpoor deal extensively in goods of European manufacture, which they receive from Callee in Malwah, by way of Beecaneer and the Desert, and send into the Douranee country, by the route of Mooltan and Sein, crossing the Indus at Kaheree. This outlet for the manufactures of Europe has diminished with the anarchy in Cabool ; and the supply at present, as in many other countries, often exceeds the demand. The Hindoos of Bhawulpoor, and indeed of all this country, are a most enterprising race of men ; they often travel to Bulkh and Bochara, and sometimes to Astracan, for purposes of commerce ; they take the route of Peshawer, Cabool, and Bamian, and crossing the Oxus, exchange at Bochara the productions of India for those of that quarter of Asia and Russia, which are annually brought by the merchants of that country. They spoke highly of the Uzbek king, and praised Dost Mahomed of Cabool, for the protection he afforded to trade. The manner of crossing the Oxus, as described to me by these people, is too singular to be

omitted. Horses are yoked to small boats, and are driven across the stream. The current of the Oxus is said to be less rapid at the surface than lower down. The Sutlege, or rather the joint stream of it, and the Beeah or Beas, called Garra, on which Bhawulpoor stands, is a navigable river, though not used in the transport of its merchandise; but then it does not lie on any available line of route, except to Sinde, with which country, as I have before repeated, there is no trade from the upper provinces of the Indus.

Of the name of this river (the Beeah), I may add that it is a contraction of *Bypasa*, in which we have nearly all the letters of *Hyphasis*, the designation of it found in the ancient authors.

The Hydaspes.—I have little to communicate regarding the *Hydaspes*, which I have only seen at its mouth, or when commingled with the other rivers of the Punjab. The celebrity of a stream, on the banks of which Alexander encountered Porus, led me to the point of confluence with the *Acesines*, a spot likewise famed in history, from the calamity which overtook the fleet of the Greeks, in the violence and rapidity of the stream.

The *Hydaspes* is named *Behui* or *Bedusta*, also *Jylum*, by the people on its banks, and falls into the *Acesines* or *Chenab*, in $31^{\circ} 11' 30''$ N., forty-five miles north of *Tolumba*, a small town on the *Ravee*. The historians of both Alexander and *Timoor* have mentioned the rapids at this confluence; but they only exist in the months of July and August, when the rivers are swollen, and the boat is with difficulty crossed at the *Trimo* ferry once a-day; for the banks here coincide but faintly with the description of *Arrian*, they do not confine the river in a narrow channel, nor are there rocks any where near to mark the spot where the Greeks retired with their dismantled fleet. The name of *Hydaspes* is yet discoverable in the modern appellation of *Bedusta*, and there are other circumstances corroborative of its identity. We are to infer that both the heroes visited this famous spot in these months, though *Pliny* has stated that Alexander commenced his voyage in November. The *Hydaspes* is less rapid, and altogether a smaller stream than the *Acesines*, being about five hundred yards in breadth at the point of conflux; when joined, the two rivers roll on for a short distance in a channel full a mile in breadth, and about twelve feet deep, uniting without commotion, and but very little noise.

The timber of which the boats of the Punjab are constructed, is chiefly floated down by the *Hydaspes* from the *Indian Caucasus*, which explains satisfactorily the selection of it as a naval arsenal, by Alexander, in preference to the other rivers, by either of which he might have reached the *Indus* without a retrograde movement. There are but few boats in this river; about fifty are

used in the salt trade at Pindu Dadun Khun, some of which carry five hundred maunds of salt, and exceed one hundred feet in length, being built like the "zohrui," rounded at both ends; they do not hoist a sail, and can drop down with the stream from the mines, in twelve days, to Mooltan, passing in safety the conflux above described. We are informed that the war ships of the Greeks encountered the greatest difficulties in the navigation of this river, and are led naturally to attribute the calamities of the fleet to their build, for the provision-boats, which are described as of "a round form," and I presume like the "zohrui," escaped uninjured. That Alexander built the greatest part of his own fleet is certain, for he commenced his voyage on the Hydaspes with eight hundred vessels, and when he first reached that stream he was entirely destitute of them, and had the boats by which he passed the Indus broken up, and brought by land across the *Dooab* (the tract between the two rivers). We hear likewise of triremes and biremes, which in no way correspond with the present description of boats on the Indus.

The Hydaspes and Acesines have been each forded in the cold season, but after their junction have never been passed but by boats in the memory of man. Timoor, in his expedition to Delhi, threw a bridge across the Trimo ferry; and Runjeet Singh swam the Hydaspes at Sahawal with a large body of horse, but that enterprising chief has crossed the Indus itself above Attock in the same manner. The merchants from Khorassan travel to India at all seasons, taking the route by Deru Ismael Khan, Mankera, and the Sandy Desert, and cross at Trimo, on the road to Tolumba. The country between these two places last mentioned differs from the right bank of the Hydaspes; destitute of sand hills, it is almost as barren and desert. A sheet of hard clay, with clumps of tamarisk, khair, lair, kehra, and such other shrubs as are to be found in the Thurr or Desert, extends from the Chenab to the Ravee. There is not a blade of grass but on the banks of the rivers; water is furnished from wells about thirty feet deep, but is scarce, and always fetid and noxious, though rarely salt.

The population of this tract chiefly consists of the pastoral tribe of Kattia or Jun, who are so called from their living in communities, "Jun" having that signification; but few of them are found at any distance from the rivers, except in the rainy season. They have immense herds of buffaloes and camels, from the milk of which they derive sustenance, hardly cultivating the soil, though some tolerable fields of tobacco, raised by irrigation, may be seen near their habitations. They are a tall and handsome race, which may be attributed to a rule among them prohibiting marriages before their females attain the age of twenty years; for they believe that the children of an early union, so common among every other

Indian tribe, are puny and unhealthy. These Kattia are a predatory and warlike race, few of them free from scars and wounds; they extend from the banks of the Hydaspes across the deserts to Delhi, and are the aborigines of this country, who I think may be recognised in the Cathai of Arrian, who calls them "a stout people, well skilled in military affairs." I am aware that these people have been supposed to be the Khyetrees or Rajpoots, but their country is farther to the south, and they did not occupy this part of India in the Greek invasion.

In the space which intervenes between the Hydaspes and Ravee, and about equi-distant from either river, stand the ruins of Shorkote, near a small town of that name; they occupy a considerable space, being much larger than Sehwan, and of the same description, viz., a mound of earth surrounded by a brick wall, and sufficiently high to be seen from a distance of six or eight miles. The traditions of the people state that a Hindoo Rajah, of the name of Show, ruled in this city, and was attacked by a king from "Wulayut," or the countries westward, about one thousand three hundred years ago, and overcome through supernatural means. I have various coins, both Hindoo and Mohammedan, found at Shorkote; some are as late as the reign of Shah Jehan, but one of them, which is square, has a human figure stamped on it, with Sanscrit characters. Shorkote is mentioned by Timour's historian, and its locality leads me to fix on it as the place where Alexander received his wound, for he crossed to the west bank of the Hydraotes in pursuit of the Malli, who had retired to "a fortified city not far off," the walls of which were of brick; and the story of the King of the West is, to say the least of it, a very probable tradition of Alexander of Macedon. The construction of the place throws some light on the fortresses which were captured by Alexander, and the ancient cities on the Indus appear to have been mounds of earth, surrounded by brick walls. Besides Shorkote, there is another place of some antiquity, about ten miles westward of the Hydaspes, where it falls into the Chenab. It is called Aoch, and is a fortress erected on the sand-hills of the Desert; its former name was Nurmeé Samee ka bir. It is surrounded by five successive walls of mud, and remained uninhabited till within these last fifty years. I question if it dates beyond the Mahommedan invasion, and in answer to my inquiries, I was told there was no authentic history in the world beyond the *Arabian Prophet*!

The Chenab or Acesines joined by the Ravee or Hydraotes.—The Acesines is the largest of the Punjab rivers, but its size has been exaggerated. Ptolemy informs us that it is fifteen furlongs wide in the upper part of its course; and Arrian states that it surpasses the Nile when it has received the waters of the Punjab,

falling into the Indus by a mouth of thirty stadia. Alexander warred in the rainy season, when these rivers are much swollen ; but at a period when the inundation has set in for two months, we have exposed the latter part of this amplification by confining the Chenab to a breadth of six hundred yards and a depth of twenty feet. There is no perceptible diminution in the size of this stream from the Sutlege upwards, for that river increases the depth without adding to the breadth, and the Chenab, south of the Ravee, will be found, as I have before described it, only with the shallow soundings of twelve feet ; its banks are so low that it is in some places spread as much as twelve hundred yards, and looks as large as the Indus. At Mooltan ferry, it was one thousand yards across, and below its junction with the Ravee, above three-quarters of a mile ; but these are exceptions from the general feature of the stream.

The Chenab receives the Ravee or Hydraotes below Fazilpoor, under the parallel of 30° 40' north latitude, nearly one hundred and thirty miles from Aoch by the windings of the river, and upwards of thirty-five miles from Mooltan, in the neighbourhood of which city it passes on its course to the Indus, in a direction about S.W. We performed the voyage, from one junction to the other, in six days, against the stream. The redness of its waters has been already mentioned, and those of the Ravee have even a deeper tinge ; it runs quicker than the Indus or any of the Punjab rivers ; its banks on both sides are open and copiously irrigated by large canals of running water dug with great labour, but on the right bank from Mooltan upwards, there is a desert of low sand-hills, which does not admit of cultivation, and which presses in upon the cultivated land at the short distance of two miles from the river. It is a mistake, however, to believe that this desert commences so low as Aoch, and occupies the Dooab of the Indus and Acesines ; for that part has many large villages, and is rich and fertile across from one river bank to the other. The distance between the two rivers is about twenty-five miles, nor does it become desert till it widens beyond that space below Mooltan.

At Mooltan the Acesines is navigated by the "zohruy," but the vessel differs in some degree from that used in the Daood-pootra country ; it is much smaller, with gunwales not more than two feet above water, and hoists a mat sail on an inferior mast. As there is no trade, ferry-boats only are to be had, if we except the few which bring down salt from the Hydaspes ; we embarked in a fleet of ten boats, and an equal number in addition are not to be procured in this part of the river. These vessels are built of timber from the mountains in which the Punjab rivers have their source ; the wood is called "dyar ;" and the supply which the inundation roots up and floats down is sufficient for all pur-

poses, without any one carrying on a professed trade in it. While the boats here are constructed of this wood, they are repaired with the "tallee tree," a few of which may be found near every village; and though this country is not well-wooded, an army might soon procure a supply, by cutting trees from the villages near the river, and floating them down to any place of rendezvous.

The natives of this country cross the rivers without boats, on skins or bundles of reeds, and whole families may be seen passing in this (to us) apparently insecure mode. I have observed a man with his wife and three children in the middle of the stream; the father, seated on a skin, tugged along his wife and progeny, who were squatted on reeds, and one of them an infant at the breast. Goods, clothes, and chattels, form a bundle for the head, and though alligators do certainly exist, they are not numerous, or such as to deter the people from repeating an experiment, to say the least of it, not free from danger.

The greatest part of the country, bordering on this part of the Acesines, is included in the district of Mooltan, which, besides the city of that name, contains the modern town of Shoojuabad. The government, when tributary to Cabool, has been described in the worst terms, but Runjeet Singh, has recruited its inhabitants, repaired the canals, and added to their number, raising it to a state of opulence and prosperity, to which it had been long a stranger. The soil has amply repaid the labour, for such is its strength, that a crop of wheat, before it yields its grain, is twice mowed down as fodder for cattle, and the ears still produce an abundant harvest. The indigo and sugar crops are likewise rich, and one small strip of land, five miles long, which we passed, afforded a revenue of seventy-five thousand rupees to the government. The total revenue of the Sooba amounts to ten lacs of rupees yearly, or double the sum it produced in 1809. Among the productions of Mooltan, I should mention the date trees, which grow in great abundance near the city; they furnish a fruit much inferior to that of Arabia, but it is in great demand; and the trees, though stunted, produce very bountifully, not being weakened, as in India, by the extraction of the juice or intoxicating "neera." I have mentioned, when describing Bukkur, the tradition of this country regarding the date tree; and this is certainly supported by its being principally found on the tract of Mahomed bin Cassim, who, after capturing Alore, marched on Mooltan, which is the exact line of country where the tree abounds.

The city of Mooltan is described in Mr. Elphinstone's work on Cabool, but as the mission was received with great jealousy, and not permitted to view the interior of its fort, I do not hesitate to add the following particulars. The town of Mooltan is upwards of three miles in circumference, surrounded by a dilapidated wall,

and overlooked on the north by a fortress of some strength. It contains a population of about sixty thousand souls, one-third of whom may be Hindoos; the rest of the population is Mohammedan, for though it is subject to the Seiks, their number is confined to the garrison, which does not exceed five hundred men, and the Afghans have left the country since they ceased to govern. Many of the houses evidently stand on the ruins of others, they are built of burnt brick with flat roofs, and rise to the height of six stories, their loftiness giving a gloomy appearance to the narrow streets. The inhabitants are chiefly weavers and dyers of cloth. The silk fabric of Mooltan is called "kais," and may be had of all colours, from the value of twenty to one hundred and twenty reals; they are less delicate in texture than the loongees of Bhawalpoor. Runjeet Singh has with great propriety encouraged their manufacture since he captured the city, and by giving no other cloths at his Durbar has increased their consumption, as they are worn round the waist by all the Seik Sirdars; they are also exported to Khorassan and India, and the duties are equitable and moderate. To the latter country, the route by Jaysulmur and Beecaneer is chosen in preference to that by Sinde, from the trade being on a more equitable footing. The trade of Mooltan is much the same as that of Bhawalpoor, but on a much larger scale, for it has forty shroffs (money-changers), chiefly natives of Shikarpoor. The tombs of Mooltan are celebrated; one of them, that of Bhawulhugg, who flourished upwards of five hundred years ago, and was a cotemporary of Sady, the Persian poet, is considered very holy, but in its architecture it is surpassed by that of his grandson Rooku i Allum, who reposes under a massy tomb of sixty feet in height, which was erected in the year 1323, by the Emperor Tooghluck, as his own tomb; its foundation stands on higher ground than the summit of the first wall. There is also a Hindoo temple of high antiquity, called Pyladpooree; it is mentioned by Thevenot in 1665.

The fortress of Mooltan merits a more particular description. It stands on a mound of earth, and is of an irregular figure of six sides, the longest of which (towards the N.W.) extends about four hundred yards. The wall has upwards of thirty towers, and is substantially built of burnt brick, to the height of forty feet outside; but in the interior, the space between the ground and its summit does not exceed four or five feet, and the foundations of some of the buildings overtop the wall, and can be seen from the plain below. The interior is filled with houses, and till its capture by the Seiks in 1818, was peopled, but the inhabitants are not now permitted to enter it, and a few mosques and cupolas, more substantially built than the other houses, alone remain. The fortress of Mooltan is without a ditch, which the nature of the

country will not admit of being constructed, and Runjeet Singh has expended great sums, without success, in attempting to remedy this defect. The inundation of the Acesines and its canals, together with rain, render the vicinity of Mooltan a marsh even in the hot weather; the waters of each year remaining stagnant till the succeeding swell carries them away. The walls of the fortress are protected in two places by dams of earth. The modern fort of Mooltan was built on the old site by Moorad Bukhsh, the son of Shah Jehan, about the year 1640, and it subsequently formed the Jaghire of that prince's brothers, the unfortunate Daro Shikoh, and the renowned Aurungzebe. The Afghans seized it in the time of Ahmed Shah, and the Seiks wrested it from the Afghans, after many struggles, in 1818. The conduct of its governor deserves mention; when called on to surrender the keys, and offered favourable terms, he sent for reply, that they would be found in his belly, but he would never yield to an infidel; and he perished bravely on the breach. His name, Moozoffer Khan, is now revered as that of a saint, and his tomb is placed in one of the holiest sanctuaries of Mooltan. The walls of the fort were thrown down in many places by the Seiks; but they have since been thoroughly renewed or repaired; they are about six feet thick, and could be easily breached from the mounds left in making the bricks, which are within cannon range of the walls.

Mooltan is one of the most ancient cities in India. We hear of its capture by Mahomed bin Cassim, in the first century of the Hejira, and it afterwards attracted by its wealth, the Ghiznian, Gorian and Mogul emperors of Hindoostan; but we have little reason to doubt its being the capital of the Malli of Alexander. Major Rennell has supposed that to have been higher up and nearer the banks of the Ravee, because Arrian states that the inhabitants fled across that river; and the authority is high, but Mooltan is styled "Malli than," or "Molitharum," the place of the Moli to this day; and we have no ruins near Tolumba, on which to fix as Major Rennell's supposed capital. It is expressly stated that Alexander crossed the Ravee, and after capturing two towns, led his forces to the capital city of the Malli, from which he pursued the inhabitants across the river; and as the distance is but thirty miles, and Mooltan is pointed to as a place of high antiquity, I do not see why we should forsake the modern capital, when in search of the ancient. Had we not the earliest assurances of the age of Mooltan, its appearance would alone indicate it. The houses are piled on ruins, and the town stands on a mound of clay, the materials of former habitations which have gradually crumbled; an infallible proof, as I have remarked of Tatta and Aoch, of the antiquity of the town. The late Nuwab of Mooltan,

in sinking a well in the city, found a war drum at a depth of sixty feet from the surface, and several other articles have been from time to time collected, but no coins have been hitherto seen. Mooltan may in some degree answer to the description of the Brahmin city, and its castle, which Alexander captured before attacking the capital of the Malli, but in that case we should have no site to fix on as the capital. The manufactures of Mooltan and Bhawalpoor seem to assist in fixing the country of the Malli, for Quintius Curtius informs us, that the ambassadors of the Malli and Axydracæ (Mooltan and Aoch) "wore garments of cotton, lawn, or muslin, (*lineæ vestis*) interwoven with gold, and adorned with purple;" and we may safely translate *lineæ vestis*, into the silks of Mooltan and Bhawalpoor, the "kais" and "loongee," all of which are interwoven with gold, and most frequently of a purple colour. Silk is first mentioned by Virgil, who flourished three hundred years after Alexander's voyage down the Indus, and we are assured by an eminent author (Gibbon), that it was unknown in Europe till the reign of Justinian, in the 6th century of the Christian era.

The town of Shoojuabad is the only other place of note in the now limited province of Mooltan. It is a town of about ten thousand inhabitants, standing on a plain four miles eastward of the Acesines, and surrounded by a fine wall of brick, thirty feet high. The figure of the place is an oblong square, and the wall is strengthened by octagonal towers at equal distances. The interior is entirely filled up with houses, which are built in streets at right angles to one another, and a suburb of huts surrounds the walls. Shoojuabad fort was built by the Nuwab of Mooltan, in 1808, and the public spirit of that person raised it in ten years to its present size. It is situated in a most beautiful country, and has the advantage of two spacious canals to water its fields, for many miles both above and below the town. It was captured by the Seiks after Mooltan fell, and now forms the frontier fortress of the Lahore chief, being garrisoned by about a hundred men.

The Ravee or Hydraotes, below Lahore.—The Ravee is the smallest of the five Punjab rivers, but in connexion with them and the Indus, forms a navigable channel from the sea to Lahore. It joins the Chenab in the latitude of 30° 40' N., near the small village of Fazilshah, by three different mouths, all of which have eight feet water. From Lahore downwards, the Ravee preserves a breadth of about one hundred and fifty yards, and as its banks are high and firm, there are but few places where it is more expanded. This river is so tortuous in its course, that sails cannot be hoisted in a boat; and a day's voyage often gives but a direct progress of three or four miles, where the turnings of the river have been six

fold. Lahore is only one hundred and seventy-five miles from the embouchure of the Ravee, but by the river the distance exceeds three hundred and eighty British miles.

The Ravee is fordable in many places during eight months in the year, but its general depth is about twelve feet, and I am satisfied that a vessel drawing five feet of water could navigate it at all times. The boats of the country do not draw more than two or three feet, but they are the common flat-bottomed craft already described. There is no obstruction to these vessels in any season of the year; but the Ravee is not used by the merchants, and the boats on it are entirely built for ferrying. Below Lahore there are fifty-two of them, and we ascended in these vessels, none others being procurable. The voyage occupied twenty-one days, and was exceedingly tedious. I am disposed to think that it is the extreme crookedness of the river which prevents its being navigated.

The Ravee is a foul river, much studded with sand-banks, many of which are dangerous quicksands. The zigzag course it pursues bespeaks the flat nature of the country it traverses; yet its banks are more firm and decided than those of the Indus, or any other of the Punjab rivers. Near Lahore, they rise sometimes to a perpendicular height of forty feet; in many places they attain half that elevation, and give thus to the river more the appearance of a canal than a running stream. The country bordering on the Ravee is little liable to be flooded; and it is worthy of remark, that there are no cuts from this river for the purposes of agriculture, to be found below Lahore. Its current is something less than three miles an hour. The water is of a reddish colour like the Chenab; but it is liable to change, as we remarked in our voyage up, from the fall of rain in the mountains. This river is yet called *Iraoty*, in which we recognize the *Hydraotes* of the Greeks.

The banks of the Ravee are open, and peopled from its mouth upwards, but the villages for half the distance to the capital are of a temporary description, the moveable hamlets of the pastoral tribe before-mentioned, called *Jun* or *Kattia*. From *Futihpoor* they are numerous, and the country is cultivated; but the space below that town is destitute of fields, and all symptoms of agriculture. The tract between the Ravee and *Sutlege* is of the same sterile and unproductive description, as on the northern side of the river towards the *Hydaspes*. *Saltpetre* is manufactured in considerable quantities on both sides of the Ravee.

Lahore is the only town of note on the banks of the Ravee, but the river has lately forsaken its immediate vicinity, and this ancient capital now stands on a small branch. The position of Lahore is good in a military point of view, being equidistant from

Mooltan, Peshawer, and Cashmere; and the ruler of the Punjab can thus overawe his subjects with advantage. Tolumba is a small town near the mouth of the Ravee, with a population of about fifteen hundred people; it has a weak brick fort, of a circular shape, and stands in a thick grove of date trees two miles south of the river.

The Punjab.—The territories of Maha-raja Runjeet Sing stretch from the Sutlege to the Indus, from Cashmere to Mooltan, and comprise the whole of the countries watered by the Punjab, or five tributary rivers eastward of the Indus. The power of the Maha-raja over this tract of country is consolidated; he commands both the fastnesses of the mountains and its alluvial plains. So entirely has the Seik nation altered its constitution under this chief, that within a period of twenty years it has passed from a pure republic to an absolute monarchy. The genius of one man has effected this change, though contending with powerful opposition from a religion, which inculcates, above every other tenet, democracy, and the equality of all.

This change of habits has been general, and the fortunate prince who has achieved it is not more pre-eminent among his nobles, than they are among their followers, from whom they receive a respect bordering on veneration. We have now no convocations at Amritsir, the sacred city of the Seiks, where the affairs of the state are discussed and settled; and none of the liberty which the followers of Gooroo Govind proudly claimed as the feature of distinction in their tribe. It is evident that the change will affect the energies of the Seik nation, for these sprung from a religion which was free from the worn-out dogmas of Hindooism, and the deteriorated Mohammedanism of their neighbours, the Euзоofzyes. Their bravery was coeval with that religion, and based upon it. Their political greatness sprung from their change of faith, which has been thus revolutionized; but the Seiks are yet left with peculiar tenets, and continue to all intents and purposes a distinct people.

The military resources of the Punjab are immense;—it yields more grain than is sufficient for the consumption of its inhabitants, but the scarcity of population prevents the full measure of its production; camels, mules, horses, and cattle abound,—and all of them, except the cattle, which are small, are of a superior description. The roads, from one extremity of the country to the other, admit of wheeled carriages, except among the mountains. The Indus, and all the other rivers, are navigable, though not navigated; they have ferry-boats in abundance, and their banks afford materials for their further construction; the rivers are, besides, frequently passed on skins,—but these are more in use among the mountains than in the plains.

The Punjab lies on the high road from Cabool to Hindoostan, and has been a prey to inroads and invasion, which have had their effects on the people, and unsettled their habits. The Seiks owe their rise to this state of things, and have mainly acquired their supremacy from the martial spirit generated by constant collision, aided, of course, by religious excitement. There are few Asiatics more brave,—they are individually brave, and will attack a tiger or a lion on foot with a sword. Their physical powers, also surpass much those of the natives of Hindoostan; and from early life they are trained up in every manly exercise that becomes a soldier. They use indiscriminately the bow and the matchlock, are skilful horsemen, and all of them are taught to swim. Their religion is not so strict in its observances of caste and food as that of the Hindoos; and the Seiks are provisioned like a European army, and eat in messes, like English soldiers. They undergo great fatigue, and the length of their marches is incredible.

The Punjab has, in former times, commanded Hindoostan, and is in turn held in subjection by the central position of Lahore, its capital. The house of Timour, from this base, fixed itself on the throne of Delhi; and but for the presence of the British, the same game might be again played. Lahore is well adapted for a capital. As already noticed, it is equidistant from Mooltan, Peshawer, Cashmere, and, I may almost add, Delhi. It stands in a most fertile country, and an army of eighty thousand cavalry has been supported by the resources in its neighbourhood; while the people assert that provisions have been always cheaper as the demand increased. The city now contains about eighty thousand people, and is defended by a strong brick wall and ditch, which may be flooded by the Ravee; there are twelve gates, and as many semicircular outworks. The shape of the city is oval, the elongation being from north to south; it does not exceed three miles in circumference. It could not withstand a siege, from the density of its population, but it would afford ample security against such inroads as those of Ahmed Shah and his successors. Lahore is inferior in size and strength to Amritsir, which is a mud fortification of great thickness, and now being faced with brick. It is upwards of seven miles in circumference, and has a ditch surrounding it. The population may be rated at one hundred thousand souls. There is a strong fortlet, called Govind-ghur, close to Amritsir, on the plain, in which the Maha-rajah secures his treasures. There are no other cities of note in the Seik territories but Mooltan and Cashmere.

The paucity of Seiks, in a country ruled and governed by them, is remarkable. The mother-earth of the tribe is the "dooaba," between the Ravee and Sutlege; and few of them are to be found thirty miles below Lahore. I am assured that there are no Seiks

westward of the Hydaspes ; and to the eastward of Lahore, where they are said to predominate, they do not certainly compose a third of the population. The Punjab, indeed, is a poorly-peopled country in proportion to its fertility, though it is probable that it has increased in population under the present ruler.

X.—*Recent Accounts of the Pitcairn Islanders.* Communicated by John Barrow, Esq., F.R.S. Read 10th June, 1833.

As the public have not ceased to take a great interest in the little colony of Pitcairn's Island, though no account of its proceedings has been published since that given in the Narrative of Captain Beechey's Voyage, the following extracts from official documents regarding it will probably be found interesting. The first is from a private Journal kept by the Honourable Captain Waldegrave, who visited the island in H.M.S. *Seringapatam*, in 1830, shortly before its inhabitants were induced to emigrate to *Otaheite*. The second is a despatch addressed to the Lieutenant-Governor of New South Wales, by Captain Sandilands, of H.M. sloop *Comet*, who was employed to remove them. The remainder describe them since their return.

Pitcairn's Island, March, 1830.—We arrived here in the *Seringapatam* on Monday the 15th March, 1830, about seven o'clock ; soon after eight, Edward Young, a native, came alongside in a small canoe guided by one paddle ; he wore a European waistcoat and trowsers, and breakfasted with me, saying grace before and after. About nine several others came on board in a jolly boat ; the senior native, Thursday October Fletcher Christian, was one. After breakfast many of them accompanied us to the shore ; we landed about noon. At the top of the first level, seated in a grove of cocoa-nut trees, were assembled many of the wives and mothers. "I have brought you a clergyman."—"God bless you, God bless you!" was the universal answer. "To stay with us?"—"No!" "You bad man, why not?"—"I cannot spare him, he is the clergyman of my ship. I have brought you clothes, which King George sends you." "We rather want food for our souls," &c. The welcome was most affecting ; the wives met their husbands and greeted them with joy as if they had long been absent ;—they received us most cordially, but more particularly the chaplain, Mr. Watson,—the men sprung up to the trees, throwing down cocoa-nuts, and tearing off the husks with their teeth, offered us the milk. When we had rested they took us to their cottages, where we dined and slept.

In the evening we walked to see Christian's and Adams's graves.