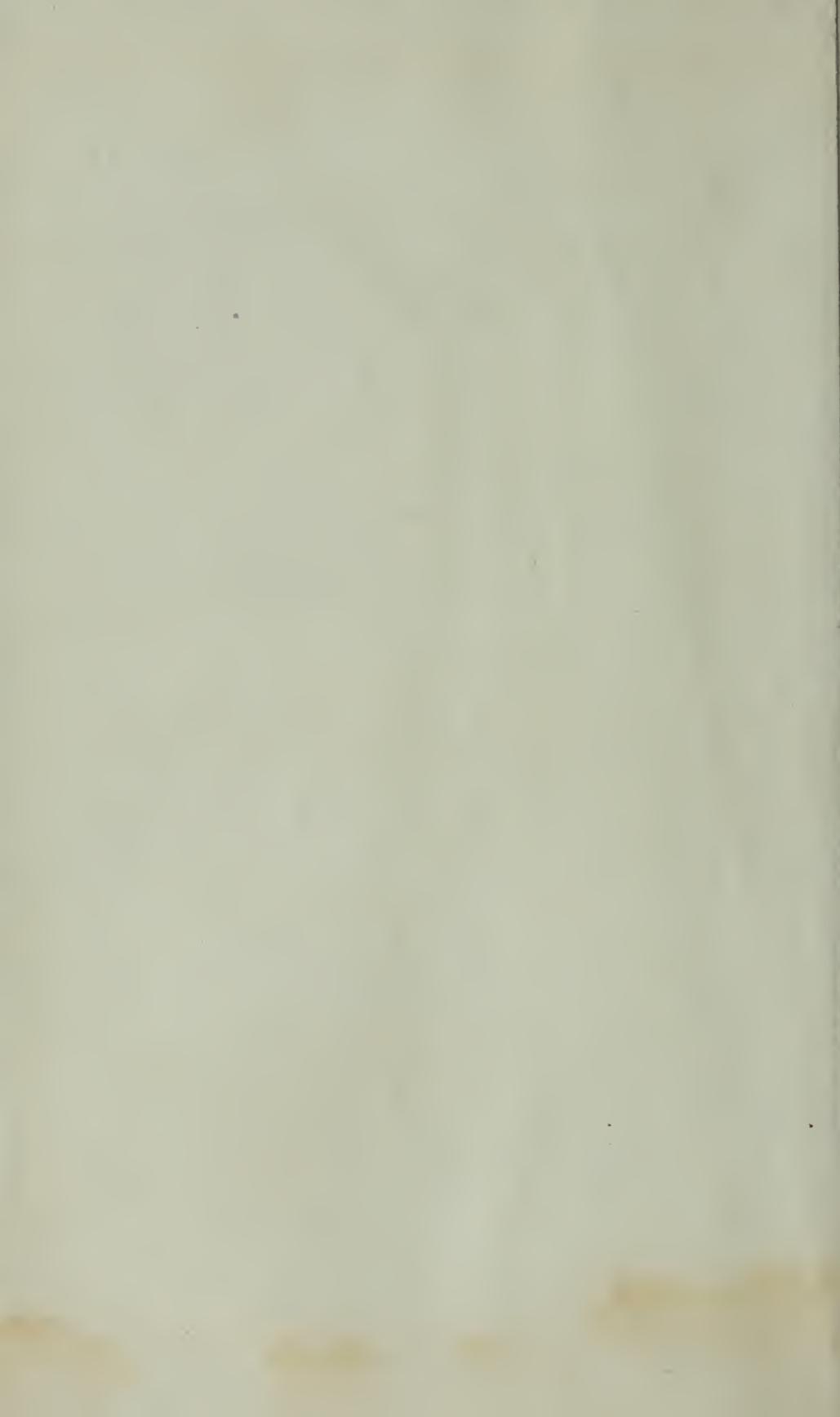


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JOURNAL
OF THE
ASIATIC SOCIETY

OF
BENGAL.

EDITED
BY THE SECRETARY.

VOL. X.
PART I. JANUARY TO JUNE, 1841.

NEW SERIES.

"It will flourish, if naturalists, chemists, antiquaries, philologers, and men of science, in different parts of *Asia* will commit their observations to writing, and send them to the Asiatic Society in Calcutta; it will languish, if such communications shall be long intermitted; and will die away, if they shall entirely cease."—SIR W. JONES.



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Abstract Journal of the Routes of Lieutenants A. BROOME and A. CUNNINGHAM, to the sources of the Punjab rivers.

The object of the journey which we performed during the rainy season of 1839, was to ascertain the sources of the Punjab rivers; and at the same time to collect every kind of information that we thought might be useful and interesting regarding the countries through which we were to pass.

The plan which we laid down for ourselves was to travel in company northwards from Simla as far as Tandee and there separating the one to make a detour to the east, and return to Simla by the Spiti river; the other to pursue a westerly course over the hills to Kashmeer.

The source of the Beas river having been visited before by three different travellers; Moorcroft, Gerard, and Henderson, all of whom crossed the Sutluj at Bulaspoor, and proceeded through the state of Mundee to Sooltanpoor, the capital of Kooloo; we determined to vary our route from theirs as much as we were able; and with this view we crossed the Sutluj at Rampore on the 19th of June, by a *jhoola*, or swinging rope, from which a loop is suspended in which the passenger sits. On the 20th we crossed the mountain spur separating the Koorpua Nullah from the Sutluj by the Gai Ghatee, or Cow's Pass, 7,093 feet in height, and descended through a rich cultivation to the bank of the Koorpua Nullah, which we crossed by a *sanga*, or spar laid across the stream on the 21st., and ascending the Chenáhee Nullah we passed a water-fall of one hundred feet, and

reached the village of Suroua, situated in a lovely little valley, where we saw wheat as fine as any in England. Above the village, the valley is a level meadow about three quarters of a mile long by half a mile in breadth, surrounded on all sides by thick woods of walnut, chesnut, apricot, peach, and cherry, with acacia, mimosa, cypress, cedar, and every variety of pine : amongst which were white and red roses, jessamine, a white flowering thorn like may, and a beautiful large iris, besides wall-flowers, forget-me-not, strawberries and poleantus, with flowers of all shades of red, brown, and yellow. There were three waterfalls at the head of the valley ; the lowest and least pouring down in one unbroken stream over the rock, which is naturally hollowed into a deep recess, forming a very pretty, cool, and musical bower.

On the 24th of June we reached the top of the Pass at the head of the Suroan Valley, called Chaol Ghaut, 10,170 feet high, where we halted for the night. Snow was lying in a sheltered ravine on the northern slope of the mountain, which is part of the lofty range forming the shed-water between the Sutluj and Beas rivers. Several of the peaks in this range are 18,000 feet in height, and are covered with perpetual snow. From this we descended over a clayey soil, made dangerously slippery by incessant rain, to the village of Bédath, at the junction of the two torrents which form the Teerthun river, along whose banks we proceeded for three days to Larjee, where it joins the Syneja river, and where about 100 yards lower down the united streams fall into the Beas river, just at that point where the Beas after running for a long course southward turns abruptly to the west through a narrow gorge, the channel of the three united streams not being so broad as that of any one of them. We were much surprised to find that this remarkable junction of three large streams was not esteemed holy. We rested in a large cave excavated in the variegated marble rock by Munnee Ram, a former Wuzeer of Kooloo ; who, we were told used frequently to come to this place for many days together to escape from the cares of state ; but more likely he came to bathe at the junction of the three rivers, for a more sterile and inhospitable place could not be conceived.

We then ascended the course of the Beas river, which widened
Beas river.
 after a few miles into a beautiful large valley ;
 generally about half a mile across, and wooded
 down to the water's edge, with a broad winding stream variegated

with many islands. We crossed the Gomuttee river, a considerable tributary on the left bank of the Beas, by a ricketty wooden bridge, and passed over the Beas itself upon inflated buffalo skins to the fort of Bajowra, where the road from Mundee, by which Moorcroft, Gerard, and Henderson had travelled joins the road from Rampoor. On the evening of the 29th of June we reached Sooltanpoor, the capital of Kooloo, and found lodgings ready for us in the house of the former Wuzeer of Kooloo. On the following day we paid the Rajah a visit of ceremony. He was the same Ajeet Singh whom Moorcroft had seen; but when we saw him he was completely at the mercy of the Sikhs, who lorded it over him, even in his own Durbar.

The capital of Kooloo, Sooltanpoor, or as it is sometimes called Rughoo Náthpoor, from the chief temple being dedicated to Rughoo-nath, could never have been extensive, and it was then daily becoming less. It is situated at the confluence of the Serbullee, a small stream, with the Beas river. It has but two streets, but they are paved with boulder stones, as are likewise all the lanes. The houses are built of stone and wood, but we saw none of any particular neatness. Goitre was prevalent, diseases of the eye common, and extreme dirtiness universal. The annual revenue was said to be 1,20,000 Rupees, of which the Sikh Government seized 70,000.

We left Sooltanpoor on the 3rd of July; but instead of crossing the river to the left bank, as Moorcroft did, by the two bridges immediately above the town, we proceeded along the right bank. The valley opened as we advanced, and the scenery became bold and beautiful. The islands were numerous and well wooded; and the banks were alternately gentle slopes covered with grass to the water's edge, and steep alluvial spurs overhanging the river, and covered with apricots, peaches, apples, pears, figs, and grasses all growing wild; further on, were the pine-clad slopes of the mountains on each bank, the nearest green, the more distant blue; and beyond all, appeared the lofty snowy peaks at the head of the river.

On the evening of the 4th of July we halted on a low bank, close to a hot well, called Seeta Koond. The well was surrounded by a square enclosure with a few stone figures of deities placed in the corners. The temperature of the water was 104°. of Faht. the spring has probably some connection with the hot wells at Biseshta-moonh, on the opposite

bank of the river, which were visited by Moorcroft, who however does not mention their temperature. In the morning we continued our journey, and after passing through a forest of noble cedars we reached the village of Booruwa. There the scenery was very picturesque. On the left and to the front were snowy peaks; but to the right there were steep cliffs of gneiss, resembling "castellated parapets," as Moorcroft described them twenty years ago. At two miles beyond this we passed Kothee, the last village in the vale of the Beas river, and proceeded to a very pretty level spot of ground called Ralha, surrounded by high cliffs, and steep green slopes, and where the Beas was so narrow that one might have jumped across it. In the morning we made a laborious ascent of two miles by an irregular flight of steps, built about 25 or 30 years ago by a Brahmin, who had charge of the custom house opposite the village of Koshee. The road was then tolerably level for about a mile; after which it continued ascending for two miles, crossing all the ravines on hard snow beds, which even then, 7th of July, had not melted, until we reached the head of the Pass, where from beneath an enormous block of mica slate, the infant Beas had its birth at a height of 12,941 feet. On the top of this block we built a pile of stones, and in the midst erected a slab on which we inscribed our initials. The crest of the Rotungjoth, or pass, is a little higher than the mica slate block, or just 13,000 feet, from which it slopes gradually to the north for about a mile over a hard bed of snow. The heat and glare reflected from the snow were intolerable, and our faces were completely blistered. From this the view of the snowy peaks of Tartary, the land of undissolving snow, was extensive and beautiful. Three thousand feet beneath us rolled the Chundra river, which even there was a deep stream, 100 feet wide; and on all sides was dazzling snow, from the midst of which towered the gigantic mountains,

———— Whose lofty peaks to distant realms in sight,
Present a Siva's smile, a lotus white.

One of the peaks, about twenty miles higher up the river, appeared like a mighty natural obelisk against the cloudless blue sky. It is called *Indr-sar-deo-ka-thán*, or "the abode of the supreme deity, Indra."

The descent was steep and rugged for about three miles to the bank of the Chundra river, which we crossed by a suspension bridge made of

birchen twig rope, having a span of 106 feet, and a height of forty feet above the stream. We halted at Koksūr, the first village in Lahul, and the highest on the bank of the Chundra, at an elevation of 10,053 feet. There was not even a bush to be seen as far as the eye could reach, although the vegetation around the village was rich and luxuriant, the whole ground being covered with strawberries, dwarf irises, hyacinths, and pinks; there was also one primrose in blossom on the 8th of July.

From Koksūr we proceeded along the right bank of the Chundra for five miles to the village of Tehling, where we saw on both sides of the river a few poor withered looking yews; snow was lying in all the gorges and ravines; and even in the bed of the main stream there were large masses forty and fifty feet thick on each side, which had only recently been cut through by the current and undermined. In two days we reached the village of Gooroo Guntall, twenty miles below Koksūr, at the junction of the Chundra and Bhaga rivers, whose united streams form the Chundra-Bhaga, or Chenab river, the Sandabal of Ptolemy the geographer. There we halted as the birchen bridge over the Bhaga river had been swept away; and on the following morning we ascended the left bank of the Bhaga for about four miles, and passing through the large villages of Gwajun and Kardung, we reached a wooden bridge, forty feet span and forty feet in height, by which we crossed the stream, and then descended it for four miles to Tandee, the chief village of Lahul, which is exactly opposite to Gooroo Guntall, the village from which we had started in the morning. The only trees about Tandee are yews and pollard willows. On the banks of the Bhága however there were pines; and we found plenty of wild gooseberries of which we made very good puddings: some of these gooseberries that we bottled with snow water remained perfectly good after a journey to Simla, where they were cooked and eaten. We saw some yellow roses too on the banks of the Bhaga, and some columbine near Tandee. The crops consist of buck-wheat, common wheat, and barley; of which buck-wheat is by far the most common. The crops frequently fail either through the backwardness of the warm season, or through the early setting in of the long winter; indeed for three years before our arrival at Tandee there had been no good crops of wheat or barley. The natives however attributed this failure to the displeasure of Provi-

dence on account of the conquest of the country by the Sikhs, and the expulsion of the Raja of Ludákh.

At Tandee we heard of the death of Runjeet Singh; and it was currently reported that we had been sent to take possession of the country: this indeed we might easily have done, for our party mustered about one hundred people; and the natives of Lahul are so cowardly that Moorcroft relates they on one occasion, when invaded by a small party, buried their swords and fled to the more inaccessible parts of the mountains. Here we parted company on the morning of the 15th of July; the one to ascend the Bhaga river and to return to Simla by the Spiti river; and the other to follow the Chundrabhaga and to proceed through Burmawur on the Boodhil river to Chumba, and from thence to Kashmeer.

On Lightning Conductors to Powder Magazines. By W. B. O'SHAUGHNESSY, M. D. Assistant Surgeon, Bengal Medical Service.

The paper now published by Prof. O'Shaughnessy is in continuation of his paper on Lightning Conductors, which appeared in No. 99 of this Journal. The positions contained in that former essay having been arraigned in a contemporary publication,* the Professor put forth a rejoinder to the exceptions taken against his views and statements by the writers above alluded to, and then placed his rejoinder in my hands for publication in this Journal, as a necessary sequel to his original essay. The circumstances under which the paper now published was written, give it of necessity a certain controversial tone, which I have felt myself bound to account for, while laying before my readers a paper, without which the essay on Lightning Conductors, already in their hands, would be incomplete.



To the Editor of the Calcutta Journal of Natural History, &c.

Illness and absence from Calcutta have prevented my sending an earlier notice of the article which has appeared in your last number relative to the attachment of lightning rods to Powder Magazines.

The only point in the article in question, which I feel myself called upon to notice in your pages, is the attempt of your correspondent to shew that I had falsely described the spear-head of the Britannia on

* Dr. M'Clelland's Quarterly "Journal of Natural History."

Government House, as having been partially fused by lightning, on the occasion of the building being struck on the 29th of March 1838. Your anonymous correspondent accuses me of such shameful falsehood, on grounds which I shall take up in the order he gives them.

1st. That he examined the identical piece of iron, which he states now forms the point of the spear on the Britannia, and that he could observe no evidence of fusion.

As the marks of fusion I saw and described, were not larger than the size of a grain of duck shot or a small pea, and as the iron (supposing the piece to be identical, which I shall presently shew strong reason for doubting) must have been exposed to the weather for two years and ten months, an impartial writer should rather have concluded that the marks had been effaced by the exposure, than that I had stated what was untrue.

Accordingly your correspondent asserts, *secondly*, that he obtained testimony of the individual by whom the repairs were executed; who gave negative evidence to any alteration having been made in the point.

In justice to myself, I am bound to protest against such evidence being for one moment attended to—"Anonymous" No. 1, charges me with falsehood, and adduces the testimony of "Anonymous" No. 2, to corroborate his case—and this in a simple matter of fact. *Opinions* or arguments are as strong in every respect, though expressed anonymously as when authenticated by the writer's name. But on questions of *facts*, personal testimony must ever preponderate. Why does not your correspondent come forward in his own name? His papers are highly creditable to his abilities, and his testimony would then be of value as to any fact he asserts.

But receiving the case on internal evidence alone, it might be that no alteration was made in the point during the repairs; it might be that the spear-head is the same as that struck, and nevertheless it is but the natural consequence of the corrosion of an iron point by the influence of climate, that the appearances I *saw* may have been entirely obliterated.

Thirdly. He accuses me of error in speaking of the spear-*head*, when I should have called it the spear-point. This is not worth rejoinder. Nothing but the mere spirit of hyper-criticism could condescend to such trifling.

Fourthly. He asserts that the lower portion of the wooden spear shews no evidence of the lightning having passed through it. Neither should it, as it never was touched.

The lightning first fell on the point, the concussion shivered the spear, and the arm of the statue; from the point it struck the copper of the dome, and thence by three divisions it entered the house, as described in the accompanying report.

Fifthly. The writer states, "there is no evidence of a direct or lateral discharge on the spikes with which the head of the figure is covered." These may or may not have been affected, there was no examination made of the spikes at the time, as I had no fancy to climbing the scaffolding for the purpose, and as far as their having been struck or not affects the question of the point, those who know the freaks and antics which lightning displays in its course, will readily admit that one metallic point may be struck close to another, without this being interfered with in the least degree.

Lastly. He dwells emphatically on the circumstance that neither Captain Fitzgerald nor his Assistant Mr. Barnes, the overseer, have in any way publicly confirmed my statement, although they are both in Calcutta, and could have been appealed to.

On this I have to observe, that the writer is (perhaps better than any other person) aware of circumstances which rendered it difficult for me to appeal to Capt. Fitzgerald or Mr. Barnes on this subject—nor did I then, nor do I now, feel the necessity of such an appeal. I described what I saw. My character for veracity must stand or fall by the correctness of my statement; had the gentleman alluded to, or his assistant publicly contradicted me, it would still be a question with every impartial man, which statement was to be believed implicitly; and most observers would probably conclude, that it was more likely that the marks of fusion I described had escaped the attention of these individuals, than that I had wilfully and falsely described that which had no existence.

I contend, too, that it can never be admitted that a writer's statements are invalidated in the least degree by the silence of any persons he refers to. The writer cannot force these persons forward in his defence, and many reasons may exist, too deep for the world to penetrate, and too powerful to allow the parties to act with perfect candour,

towards one with whom they may have been placed in disagreeable relations. I speak of course generally, and solely with reference to the hardship of being expected to force forward the testimony referred to.

Throughout his remarks, the writer attaches much more importance to the question of the spear-point being struck or fused, than it in reality deserves; but as he admits, (p. 492, last paragraph) that had it been so struck, the fact would have been "fatal to his pre-conceived opinion as to the course of the lightning on that occasion," I am warranted in adducing some further evidence in support of my statement.

On the morning after the accident, I was invited by Captain Fitzgerald to visit Government House, and offer him suggestions as to the repairs required, and the re-arrangement of the conductors. I went there in the evening and met Mr. Barnes, who shewed me the broken articles, and the course of the explosion. Captain Fitzgerald I now recollect was not present on that occasion. I wrote to Captain Fitzgerald next day, and among other suggestions I especially dwelt on the necessity of replacing the wooden spear by one of metal, connecting this with the copper of the dome, and this lastly by metallic straps, with four additional conductors to be erected adjacent to the dome. Captain Fitzgerald's report, hereunto annexed, shews that my suggestions were carried into effect. On this I have here one remark to make. If this report be correct, if my suggestions have been followed, if the metal spear has been erected, what becomes of your correspondent's assertions that the identical point has been replaced, and that he has re-examined the lower part of the original spear. If, on the other hand, the wooden spear has been replaced as it originally stood, then every impartial electrician will admit,* that the Government House of Calcutta will in all probability be again, and at no distant period, the scene of a similar casualty to that of the 29th of March, 1838. In this case it is in truth provided with a snare for every thunder-cloud that passes.

With reference to my plans, before the writer censures these he should in fairness clearly and fully state what they are. This he does not do, and for such a statement I refer to the Journal of the Asiatic Society for 1839, in which my papers are published. If the Editor

* As Captain Fitzgerald does indirectly in his report.—W. B. O'S.

of the "Calcutta Journal of Natural History," desires to be impartial, I claim from him the circulation of these papers to his subscribers, with additional notes with which I will supply him with pleasure, as *extra limites* to his Journal. All expenses of printing, postage, &c. I will cheerfully defray. His subscribers will then see that I have never opposed the attachment of conductors to Powder Magazines—that I freely admitted their value, but contended that under such peculiar circumstances, they should be erected in a greater number than Mr. Daniell recommended, and at a certain distance from the Magazine.

In conclusion, I have to acknowledge the kind exhortation of your correspondent that I should conduct this discussion with moderation, and that I should refrain from indulging in a spirit of injustice to Mr. M'Clelland and himself. All this is very amiable in gentlemen who are endeavouring to fix upon me an imputation of falsehood, and who would hide from the world, that in consequence of the Griffith and Wallich controversy, and of another public occurrence of some celebrity, I have not for some time had the happiness of being numbered among the friends of my commentators on this occasion. The remembrances of past collisions has never yet mingled honey with a critic's ink, the strongest impulse of nature would, on the contrary, urge him to dip his pen by preference in gall or acid. How far this feeling has operated on the present occasion, those who know the relative positions of the parties can readily conclude; to others I shall commit my arguments and facts, (if Dr. M'Clelland will allow me to do so) in the confidence that they will be dispassionately considered, and in the feeling that if I fail, there is no disgrace in being worsted in a controversy with an antagonist of Mr. Daniell's deserved reputation.

I am Sir, with much respect,

CALCUTTA,
1st March, 1841.

Your obedient servant,
W. B. O'SHAUGHNESSY, M. D.
Assistant Surgeon.

Report by Captain FITZGERALD on the accident by Lightning to Government House, Calcutta.

TO CAPTAIN SANDERS,

No. 563.

Secretary, Military Board.

SIR,

I have the honor to report for the information of the Military Board, that the Government House was struck by lightning during the storm which occurred early this morning. The lightning seems to have been attracted to the building by the iron at the point of the spear attached to the figure of Britannia on the top of the dome; after demolishing the spear, it pursued its course down the external copper of the dome, without apparently doing any injury, and forced its way into the ball room in three separate places. It has left its traces on the ceiling and wall of the southern division of the room, where it has injured one of the pier-glasses, and then passed out at the adjoining window. Again, on the eastern side of the central division it has pursued a similar course, injuring a pier-glass, and again passing out of the adjoining windows. On the western side of the central division it has done the most injury, for after passing through the ceiling it has broken one of the pier-glasses at its corner, then running down into the marble hall, has escaped out of one of the windows, breaking in its exit, as the others also did, several panes of glass.

2nd. I requested Dr. O'Shaughnessy to inspect the effects of the lightning, and he has expressed his surprize that so little comparative injury has been caused by it. The sharp point of iron at the end of the spear, and the studding of the shoulders of the statue with iron nails (intended to prevent birds from sitting on it) has served in the first instance to attract the lightning, and that it has never been struck before, he attributes to the protecting power of the four conductors, which, however, he considers to be twice as far from each other as they ought to be.

3rd. In repairing the statue, he recommends that the spear should be made of metal, and that it should be connected with one or more of the corner conductors by means of a continuous metallic rod. It would perhaps also be advisable, under the circumstances above men-

tioned, to affix four more conductors to the house, to render it more secure from a similar visitation.

4th. With the Board's permission, I will, in rectifying the damage, carry the improvements above suggested into effect.

I have, &c.

(Signed) W. R. FITZGERALD,

FORT WILLIAM,
30th March, 1838.

Civil Architect.

Memorandum on the Trade between the Towns of Shikarpore and Candahar.—By Lieut. J. POSTANS, Assistant Political Agent, Shikarpore, Sindh.

As it is of importance in connection with the prospects of trade with the countries bordering on, or accessible by means of the river Indus, to ascertain what return commodities may be looked for from these quarters, their value and quality as suitable to the European market, I have availed myself of the arrival of the annual Kuffillahs at Shikarpore from Candahar, to obtain the following information on the various articles composing the investments from the latter place, shewing the return trade for English piece goods, metals, groceries, &c. transmitted from the former.

I have ascertained, from good authority, that the market at Candahar for European fabrics of the usual manufactures suitable to the habits and tastes of the people of these countries, is at present unusually brisk, and the demand far greater than the supply; moreover, that there is every reason to believe from the increase of security to the merchant, decrease of transit dues, impulse lately given to Candahar as a mart for the N. W., and the influx of population, that this demand will not be likely materially to decline. To the fabrics in demand, profits derived, and other particulars, I will refer hereafter.

The insecure state of the Bolan Pass, has this year retarded the arrival of the Caravans, and decreased their number. I shall quote the following list of articles received by one:—

No. 1.—*Turquoise Earth*—mds. 14—price from four rupees to twelve rupees per lb. This article is an important one in the trade to

Shikarpore from Candahar, but it is doubtful if it would be adapted to the European market. The mines are situated at Nishapúr near Meshid, and the Persian Government has of late years placed agents to prevent any large or valuable stones from being exported to Herat, whence they find their way to Shikarpore viâ Candahar; there is therefore a great scarcity of the large Turquoises, which are so much prized, the smaller are sufficiently plentiful to be worn by all classes.

The stone is polished from its rough state by means of a vertical wheel of baked clay, set in motion by the hand and moistened, the value of the stone being entirely determined by the depth of its colour, and absence of white flaws.

- 2.—*Raw Silk* (kokanee)— $\frac{1}{2}$ md. price rupees 9-9-0 per lb.

See memorandum already furnished on this article.

- 3.—*Churus* from Bokhara—5 mds.—price 3 annas per lb.

An intoxicating drug prepared from hemp seed (Bang), and used in these countries for the same purposes as opium elsewhere.

- 4.—*Gum* from Candahar—46 mds.—3 lbs. per rupee.

This gum appears of the same description as that which is known as “Gum Arabic,” and is in most extensive use for dyeing, &c.

- 5.—*Silk*—Manufactured fabrics from Herat of various kinds—pieces 1854: prices not fixed.

None of these would be adapted for the European Market, being entirely manufactured to suit Asiatic tastes, and principally used in the wealthier Sindee harems.

- 6.—*Dried Fruits* of various kinds, kismis—prunes, dried black grapes, walnuts, dried apricots, almonds, and dates, in great quantities:—prices not quoted, as not probably adapted for trade.

- 7.—*Tinsel Thread for embroidery*.—2 mds.—price 1 anna per tolah.

- 8.—*Khund Seah*, preparation from the sugar cane of Jellalabad— $1\frac{1}{2}$ mds.—price $1\frac{1}{2}$ lbs. per rupee.

- 9.—*Broken Copper and brass vessels*— $4\frac{1}{2}$ mds.—copper 1 rupee 8 annas per lb.—brass 1 rupee 7 annas per lb. These are returned to Shikarpore to be re-manufactured, for which they do not apparently possess the means at Candahar.

- 10.—*Rodung*. Madder dye—40 mds.—price 8 rupees per md. This is an important article in this trade, and brought down in con-

- siderable quantities. There are two descriptions called "*Rodung kukree*," and "*Rodung phurreeah*." The latter is cultivated at Candahar, is of a larger size, and valued at 16 rupees per md., or double that of the other.
- 11.—Saffron *Bakooee*— $\frac{1}{2}$ md.—per lb. 15 rupees. "*Bakooee*" so called from its being produced at Bakwa, to the west of Candahar.
 - 12.—*Safflower* from Herat (quantity not known) price 37 rupees per lb. about 10 boxes annually, of from 6 to 10 lbs. per box.
 - 13.—*Gum Salop* from Herat (quantity not known)—5 Rs. per lb. Small quantities only of this article are brought down, but it is in great request at Shikarpore.
 - 14.—*Sir Khisht*, a species of manna, price 5 Rs. per lb; from Herat, used medicinally, and about 10 mds. imported annually.
 - 15.—*Musagh*, dye from the walnut tree; Cabool—8 mds— $1\frac{1}{4}$ lb. per rupee.
 - 16.—Antimony from Beila in Lus—mds. $15\frac{1}{2}$ —price $1\frac{3}{4}$ lb. per rupee. An article in great demand, from the constant use made of it by the natives of these countries. If adapted to the European Market, it should find its way to Bombay via Soumeany and Karrachee.
 - 17.—Old paper $6\frac{1}{2}$ mds.—price 2 lbs. per rupee. Sent to Shikarpore to be re-manufactured.
 - 18.—*Punvieer* (not known)—20 mds.—9 lbs. per rupee. Used medicinally, and produced from some wild shrub in the hills.
 - 19.—*Podeneh*—dried mint—6 mds.—5 rupees per maund.
 - 20.—*Hingozeh*—Assafetida—60 mds.— $1\frac{1}{4}$ rupee per lb. This is an important article of this trade, being produced abundantly in Khorassan and the billy country of Beloochistan.
 - 21.—Caraway seeds from Khorassan (quantity not known)—2 lbs. per rupee—about 70 or 80 mds. imported annually.
 - 22.—*Airmah*, a very fine description of cotton from Herat, about 80 mds. imported annually—price $1\frac{3}{4}$ rupee per lb.; used in embroidery, and highly prized.
 - 23.—*Cochineal* from Khorassan (quantity not known)—price 9 rupees per lb. The amount of annual import may be about 8 or 10 mds., and its price is occasionally from 18 to 20

rupees per lb. ; it is used in dyeing silks, and also brought to Shikarpore from Bombay.

24.—*Bhojgund* (name not known) from Khorassan—price 14 to 15 rupees per md. ; annually about 70 maunds ; in great request, and used as a dye to silks.

25.—*Gooljileel* (name not known) from Khorassan—price 15 rupees per md. ; annually about 80 mds. ; used as a green dye to silks.

The following, though appertaining to Cutchee, are inserted here, as they are products of that *country*, and imported into the Shikarpore market :

26.—*Alum* from the hilly country of Cutchee, annually about 200 mds.—price 8 rupees per md.

27.—*Khunzul*, Colocynth, bitter apple, grows as a perfect weed all over the plains of Cutchee, and to be purchased at Shikarpore 7 or 8 per one pice.

28.—*Saltpetre* can be manufactured in Cutchee and other parts of the country in any quantity required ; value at Shikarpore 6 rupees per md.

29.—*Sulphur* produced in the Murree and Boogtie hills, where are mines which deserve attention ; about 10 or 12 mds., are brought annually to Shikarpore, where it is valued at 4 rupees per md.

30.—*Khar*, a kind of potash, produced by the incineration of the Lye, or tamarisk, and other salt shrubs ; it is in great use in scouring, dyeing, &c. and worth 1 rupee per $1\frac{1}{2}$ md. at Shikarpore, 10 or 12,000 mds. are brought in yearly.

The prices of the above articles include all duties, and few of them are exported beyond Khyrpore, or the Sindh territories. About four Caravans arrive annually, and the profit on this branch of the trade is about 10 per cent.

The trade from Shikarpore to Candahar in British manufactures consists principally of the articles hereafter enumerated, and the present profits, all expences paid, are at least 50 per cent. between the two places, notwithstanding the double rate of Camel hire, (52 rupees) consequent upon the demands of our troops. As the present state of the Candahar market, however, may not be considered a fair criterion, or average of the profits of the trade, I may mention, that these

are never less than from 15 to 20 per cent., the rate of Camel hire being 20 rupees a Camel, carrying from 6 to 7 mds.

I learn that complaints have been lately made of the great inferiority of the articles, particularly the want of stability in the colours of the chintzes (printed cottons of all kinds come under this denomination) always in great demand.

In the following list of the fabrics above alluded to, I have also given the names by which they are known in these countries, with samples of such as are not recognized :—

- 1.—“*Uwan Makhootie*,” red dyed Cotton Cloth.
- 2.—Cotton White.
- 3.————— “*Kessie*,” partly coloured.
- 4.—“*Chuhulwel*,” long cloth (of apparently very inferior descriptions).
- 5.—“*Chintz pukhtet*,” (glazed Chintz.)
- 6.—“———— *Budul*,” (printed cottons.)
- 7.—“*Madrapat*,” bleached.
- 8.————— unbleached.
- 9.—“*Abrah*,” (zebra) red and white.
- 10.—————, yellow.
- 11.—————, Chenay.
- 12.—“*Jamadanee*.”
- 13.—“*Mulmul*.”
- 14.—“*Juggernat Muslin*.”
- 15.—“*Mukhmul*,” (black velvet.)
- 16.—“*Patun*,” bleached, species of sheeting cloth.
- 17.—————, unbleached.
- 18.—“*Mahoot*” coloured (coarse broad cloth.)
- 19.—“*Khinkaubs*.”

*Memorandum on the city of Shikarpoor, in Upper Sindh. By Lieut.
J. POSTANS, Assistant Political Agent, Upper Sindh.*

Shikarpore may be considered the most important town in the Shikarpore—its country of Sindh in point of trade, population, and position. influence. It is situated in Upper Sindh, or above Sindh proper, at a distance of twenty-four miles NW. from the Indus at Sukhur, about forty miles from the edge of the desert at Rojhan, which separates Upper Sindh from Cutchee.

Shikarpore dates its origin to the year of the Hijira 1026, (A.D. 1617) Origin. is an ill built dirty town, its walls in a state of dilapidation and decay, the consequence of the total neglect and apathy of the chiefs of the country to the improvement of their possessions, further shewn in the neglect of the Sindh. A canal flows within a mile of the city towards Larkhana, providing means of irrigation to a large tract of country, and a temporary, but important water communication from the Indus, during a few months of the year.

The houses in Shikarpore are built of unburnt brick, upper roomed, Description of and some of those belonging to the wealthiest the city. Sonears are of respectable size, and convenient. The streets are narrow, confined, and dirty in the extreme; the great Bazar, which is the centre of all trade and banking transactions, for which Shikarpore is celebrated, extends for a distance of 800 yards, running immediately through the centre of the city. It is, in common with the Bazars of all towns in Sindh, protected from the oppressive heat by mats stretched from the houses on either side; this although it imparts an appearance of coolness, occasions by the stagnation of air an insufferable, close, and evidently unwholesome atmosphere, evinced in the sickly appearance of those who pass nearly the whole of their time in the shops and counting houses. This Bazar is generally thronged with people, and though there is little display of merchandize, the place has the air of bustle and importance which it merits. The walls of Shikarpore—also of unburnt brick—have been allowed to remain so totally without repairs that they no longer deserve the name of a protection to the city; they enclose a space of 3831 yards in circumference.

There are eight gates. The suburbs of Shikarpore are very extensive, and a great portion of the population calculated as belonging to the city reside outside, particularly the Mahomedans and labouring classes. With the exception of one tolerable Musjied on the southern side, Shikarpore possesses no building of importance.

By a census taken with considerable care during the preceding month, the following is a return of the inhabitants of this city, including the suburbs:—

HINDOOS.

Males, 9,494 } 18,913 souls. Houses 3,686.
Females, 9,419 }

MAHOMEDANS.

Males, 4,556, } 8,647 souls. Houses 1,806
Females, 4,091 }

In detail thus:—Hindoos divided according to professions—

Hindoos.	Grain sellers,	...	...	...	...	64
	Confectioners,	...	...	...	...	56
	Cotton sellers,	...	...	...	...	12
	Soucars,	...	..	...	...	35
	Shroffs,	...	...	...	...	66
	Cloth merchants,	...	...	...	...	65
	Goldsmiths,	...	...	...	...	94
	Dealers in Drugs,	...	...	...	...	32
	————— Metal,	...	...	...	...	17
	————— Silk,	..	...	...	...	37
	————— Enamel,	...	...	...	...	19
	————— Perfumes,	...	...	.	...	11
	Vegetable and Milk sellers,	...	...	...	...	46
	Dealers in dry fruit,	...	...	...	...	67
	Do. salt and sundries,	...	...	...	...	249
	Ivory turners,	...	...	..	...	3
	Total Hindoo Shops,					923*

* The remainder of the Hindoos are composed of Brahmins, and those who are not shopkeepers.

The Mahomedans divided according to trades, &c.—

Mahomedans. Weavers of coarse cloths,	1554
Dyers and washermen,	1248
Oil pressers,	50
Weavers of mats,	30
Tailors,	300
Barbers,	244
Shoemakers and workers in leather,	305
Ironmongers,	290
Embroiderers,	95
Lapidaries,	164
Potters,	103
Cotton cleaners,	121
Butchers,	89
Carpenters,	246
Preparers of woollen mamids,	33
Labourers,	467
Musicians and singers,	267
Cossids,	83
Syuds and Moolahs,	433
Cultivators,	2389
Gardeners,	47
<hr/>	
Total,	8,647

Independent of the above, there are altogether 1001 Affghans and Pattans in the city of Shikarpore, employed as cultivators, or for Police duties by the Government; they are of the following tribes.—Populzyge—2. Pishengee (Syuds); 3. Bamkzye; 4. Moorzye; 5. Eesakzye; 6. Mogal; 7. Lukoozye; 8. Dooranee; 9. Baber; 10. Oosteranee; 11. Monim; 12. Kakut; 13. Ghilzee; 14. Bureeh; 15. Burdarama; 16. ———; 17. Babeer; 18. Dureanee; 19. Owan; 20. Prumeer.

It will be seen from the above that the population of Shikarpore may be calculated at 29,700, say 30,000 souls, of whom 9,647, say 10,000, or one-third, are Mahomedans. In the above are also included many Hindoos, who are employed in distant countries as agents from the Soucars.

The Hindoos carry on all the trade, while the cultivation and artizanship of almost every denomination is in the hands of the Mahomedans.

The dress of the Hindoos of Shikarpore varies little from that of the same class in other parts of India, except in those who are servants of the native Governments, as deputies or collectors of revenue, and these invariably adopt the beard of Mahomed and costume of Sindh. On their habits of life and religious observances, the Hindoos of this city, as indeed throughout the whole of the Mahomedan countries westward of the Indus, indulge in a degree of laxity, totally at variance with the strict rules by which they generally profess to be regulated; they possess however an unusual degree of influence at Shikarpore, and are too valuable to the financial resources of the country not to be permitted to maintain it.

With the exception of the Moolahs and Syudhs, few of the Mahomedans of this city are either wealthy or influential.

The Affghan Zamindars who under that rule held important possessions in the vicinity, and were men of note and consideration, have been gradually stripped of their rights by the Talpur chiefs, although in many cases the same were guaranteed to them under promise held to be sacred; in consequence of this their number has considerably decreased, and those who remain are poor, and from the connections they have formed in the country have become naturalized, and are no longer entitled to be called foreigners.

The country in the immediate vicinity of Shikarpore is low, and admits freely of irrigation from the inundations of the river Indus by means of smaller Nullahs, or water courses leading from the Sindh Canal. Cultivation is extensively carried on, and the gardens of Shikarpore are rich in all the fruits peculiar to the country, though mangoes, neim, acacia, pipul, and mulberry trees attain great size. The soil is a rich alluvial, and its capabilities for production are no where better displayed than in the Mogullee district (that in which Shikarpore is situated), owing to the advantages in this respect (possessed by nearly the whole of upper Sindh) being turned to due account, still comparatively speaking only a limited portion of the land is brought under cultivation. Rice and

Juwarree form the great "Kurreef" or autumnal, and wheat the
 Crops. "Rubbee" or spring crop; the former are entirely
 dependent on the inundations, which commence to be available for pur-
 poses of cultivation about the middle of April, and continue until the
 middle of September. The "Rubbee" crops are raised by means of
 wells and bunds formed from the inundation.

The soil is so rich that no manure of any kind is used; the inunda-
 Soil. tions bringing with them a certain slimy matter,
 which appears highly conducive to fertility, the ground is allowed to
 remain fallow from the reaping of one crop in October, to the sowing
 of another in April or May, and the same with the Rubbee lands; this
 rule appears to obtain all over the country.

Water is found at an average of about twenty feet from the surface,
 and to a depth of sixty feet the finest description of sand is alone ob-
 servable; with the alluvial soil is a superstrata; a stone or rocky founda-
 tion of any description is not to be seen.

All the approaches to Shikarpore are bad, from the country being so
 Roads. constantly intersected with water courses, and no
 measures being taken to provide bridges, or repair the roads, which are
 cut up by carts, and the constant traffic of camels, bullocks, &c.
 A comparatively trifling outlay would obviate this, as also improve the
 Sindh canal. Sindh canal, which, from having been allowed to
 choak up at its mouth, and get generally into disrepair, is only navi-
 gable from the end of April to the beginning of October, whereas it is
 capable of affording an important means of water communication from
 the Indus to Shikarpore, for at least nine months of the year.

Shikarpore being in the immediate route for the transmission of
 Trade and influ- merchandize to Khorassan and countries to the NW.
 ence of money tran- by the Pass of the Bolan, has with Dera Ghaze
 sactions. Khan obtained the title of one of the gates of
 Khorassan. Its influence is more immediately felt however in the bank-
 ing transactions which by means of agents it carries on in every in-
 termediate place beyond the Bolan Pass, from Quettah and Kelat to
 Bokhara and Herat; as also in all places of mercantile importance in
 Duties and im- India. Vexatious transit and other duties on goods
 ports on trade. pursuing the Shikarpore route to Khorassan have
 tended to turn much of its former trade, especially in European goods

received from its port of Karachee, into the channel of communication to the NW. by the way of Soomeanee, Beila, and Kelat, the more direct, and at present by far the less expensive route. A revisal of imposts,* together with a settlement of Cutchee, and the suppression of the marauding system in that province and in the Bolan Pass, would revive the trade of Shikarpore, and induce its merchants, who do not want for energy, to purchase largely of such investments as might be cheaply transmitted by means of the river Indus; with the absence of tolls on merchandize in transit, whether by water or land, they would be sure of making a favourable market, coupled also with the protection afforded them through the deserts of Cutchee, which they could only formerly procure at an exorbitant amount of black mail to every leader of a predatory band.

Shikarpore received from Karachee Bunder, Marwar, Mooltan, Bhawulpore, Khyrpore, and Loodhiana, European Imports. piece goods, raw silk, ivory, cochineal, spices of all kinds, coarse cotton cloths, raw silk (China), kinkaubs, silks manufactured, sugar-candy, cocoanut, metals, kiramee (or groceries), drugs of sorts, indigo, opium, saffron, and dyes of sorts. From Cutchee, Khorassan, and the NW. raw silk (Toorkestan,) fruits of sorts, madder, turquoises, antimony, medicinal herbs, sulphur, alum, saffron, assafoetida, medicinal herbs and gums, cochineal, and horses.

The exports from Shikarpore are confined to the transmission of goods Exports. to Khorassan through the Bolan, and a tolerable trade with Cutchee, Bagh, Gundava, Katria, and Dadur.

They consist of indigo (the most important,) henna, metals of all kinds, country, coarse, and fine cloths, European piece goods (chintzes &c.) Mooltanee coarse cloths, silks manufactured, groceries, and spices, raw cotton, coarse sugar, opium, hemp seed, shields, embroidered horse cloths, and dry grains. The various productions of these countries and their prices in the Shikarpore market† have attracted the attention of that energetic body, the Chamber of Commerce of Bombay, and in the article of indigo alone there can be little doubt but that the

* See a list of export, import, and transit duties, based on articles of trade at Shikarpore (by the author) published in the Bombay Government Gazettee of the 28th July.

† A monthly price current of articles in the Shikarpore market is now published by authority.

produce of the Khyrpore, Bhawulpore, and the Punjab countries will form a staple return commodity for merchandize to be transmitted from the other Presidency; silk (raw), drugs, and dyes may also be enumerated as well worthy of attention. The influence of the British Government, and the protection it has already afforded to trade in these countries have had their effect at Shikarpore, evinced in the increasing revenue* and settlement there of influential traders from Loodhiana, Amritsir, Bhawulpore, and other places.

The revenue of Shikarpore derivable from trade amounted last year

Revenue from trade	to Rs.	54,736	0	0
	and lands.									

Other tax and revenue for lands belonging to the

town,	16,645	0	0
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Making a total of	71,381	0	0
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divided between the Khyrpore and Hyderabad chiefs, in the proportion of $\frac{3}{7}$ ths to the former, and $\frac{4}{7}$ ths to the latter. The lands and villages forming the Shikarpore Pergunnah, amount to about six talookehs, and about sixty villages, of which four talookehs and twenty-three villages only belong to the Hyderabad government; the revenue of the whole, deducting jahgirs, may be about two lacs annually.

The government of the town is vested in two agents, or governors, Government of the town. furnished by the Hyderabad and Khyrpore Ameers, who have also the duty of the Police of the district, and collection of the revenue.

The climate of Shikarpore is sultry, and the heat excessive from the middle of March until the end of August. There are no periodical rains, though storms are generally looked for at the end of June, or middle of July. If rain falls at that time, it continues for a space of two or three days, but severe falls occur at the vernal equinoxes. The air is remarkably dry and clear. The low situation of the town, coupled with its being surrounded by stagnant pools close to the walls, and a large space of the adjacent country for a considerable period

* The soucars report that the trade has increased nearly one-third during the current year.

being completely under water, would warrant a supposition that this place was exceedingly unhealthy; yet it is not so except for a short period from the middle to the end of September, during which the inundations are drying up, and ague in a mild form is prevalent. Exposure to the sun of Sindh, whether Upper or Lower, during the hot months is invariably attended with dangerous effects, and for a certain period of the year the natives themselves avoid it as much as possible. The hot winds of Shikarpore lose much of their intensity, prevailing generally from the southward, and passing over a considerable expanse of water; they continue however during the months of April, May, and June, to blow till midnight. In the deserts N. and W. of Shikarpore, the deadly simoom is often encountered.

The winds vary generally between W. and S. the former the prevailing. The Easterly winds obtain for a short period during the autumnal, and the Westerly during the vernal equinox. The former often precedes rain. Shikarpore is exempted from a great source of annoyance experienced at Sukkur, Hyderabad, and all other places on the banks of the river, from the Delta upwards, viz. sand storms. The cold months may be said to commence in September, and last until the middle of March. Frost and ice are not unusual, and vegetation assumes all the appearance of winter in a northern climate. After a fair experience of a year's residence at Shikarpore, (the season of 1839 being considered an unhealthy one,) I conceive that with the precautions considered necessary elsewhere, of good houses and due attention to draining, troops might be cantoned at this place without any greater disadvantages than are to be met with in most of our stations in the interior of India. When it is considered that the officers and men of a force stationed here during the most trying months of last year were for nearly the whole period under canvas, or in mud huts, that afforded even less shelter than a tent, and that the inundations were allowed to reach in all directions within 200 yards of the camp, it is only surprising that the disease and mortality were so inconsiderable. I believe that out of a force of nearly 2000 men, the latter amounted to under twelve cases. The mornings at Shikarpore are invariably cold.

Routes from Shikarpore to various places with which it carries on

Routes. trade, with the estimated distances.

From Shikarpore to the North and East

To Mooltan, by way of Dehi Ahmil, on the river across the river to

- Azrezpore.
- „ Mierpore.
- „ Subzulkote.
- „ Khanepore.
- „ Ooch.
- „ Gullen Garrat, opening of the Ghaut or
Sutledge.
- „ Sooyabad.
- „ Mooltan.

Estimated distances 215 koss; 23 stages for laden camels; occupies from 23 to 26 days.

From Mooltan to Lahore, by way of Chichawntnee, across the Bende Sheikh Morsa.

- „ Seyud Walloo.
- „ Jambia.
- „ Munjee Baba Narmac Shah.
- „ Surakpore.
- „ Lahore.

Estimated distance from Mooltan to Lahore 140 koss; 15 stages, and occupies with laden camels about 18 days.

To Amristse from Lahore 25 koss; or 2 stages.

From Amristse to Loodihana 40 koss; or 4 stages.

From Shikarpore to Dera-Ghazee-Khan the route is by way of Rogan Mittenkote and Dajil, estimated distance 170 koss; 20 stages, occupies 20 to 23 days.

Shikarpore to Jaysulmere by way of Sukkur and Roree.

- Oodenkote (Oodun ka kila.)
- Dandioluk.
- Gottaroo.
- Chomdred.
- Jaysulmere.

* If these distances are compared with those laid down in the late maps of these countries, it would appear that the koss was calculated at about one and half mile; but the idea of distances by the natives is generally very vague, and they calculate more on the time occupied in a journey.

Estimated distance 100 koss ; 15 stages, and occupies from 15 to 18 days. From Jaysulmere to Palee by way of Porwin and Jodhpore 120 koss ; 16 stages, and occupies 16 to 19 days.

Shikarpore to the NW. to Dadur.

Janeedera.

Royhan (edge of the desert.)

Brushoree (across the desert.)

Kassimka Joke.

Bagh.

Meyassir.

Dadur.

90 koss ; 14 stages, occupying from 7 to 10 days.

The routes above the Bolan Pass to Kelat, Kandahar, Cabool, &c.

Above the Bolan. are now too well known to require repetition.

From Shikarpore to the south to Karachee by way of Sehewan,

Shikarpore to Karachee. Karachee, Lorkhana, distance 150 koss ; 29 stages, occupying from 29 to 33 days ; this road is impracticable from April or May to September as far as Sehewan, and the river is the means of conveying merchandize.

Classical terminology of Natural History. By B. H. HODGSON, Esq.,
Resident at the Court of Nepal.

(To the Editor of the Bengal Asiatic Journal.)

SIR,

Although I think the prevalent humour of the day, which cannot tolerate any other than Greek and Roman names of genera in Zoology, is, in good part, absurd and pedantic, yet as I am told that continued non-compliance therewith on my part will be considered by most persons as a sort of excuse for past and future appropriations of my discoveries in this branch of science, as described in your Journal, I have now the pleasure to transmit to you a series of classical substitutes for my previous local designations. Many other new forms having originally received from me classical appellations (for I am no exclusionist) need not be here noticed : of those that were priorily described by local names the following enumeration supplies, on the left hand, the new

classical substitute, and, on the right, opposite thereto, the old vernacular term. A few explanations as well as dates are incorporated with the enumeration.

NEPAL,
February, 1841.

I am, Sir,
Yours faithfully,
B. H. HODGSON.

1. *Muscicapidæ Eurglaiminæ*,

Simus (σιμος) *Raya*

May 1836. *Psarisoma*, Sw. *Crossodera*, Gould, in May and August 1837 respectively.

2. *Meliphagidæ*.

Alcopus (αλκη et πους) *Sibia*

See Jour. As. Society, January 1839.

3. *Falconinæ*,

Hyptiopus (υπτιος et πους) *Baza*

Journal December 1836, et May 1837.

4. *Buccoinæ*,

Comeris (κομη et ρις) *Sasia*

General structure of *Picumnus*, but three-toed, Analogue of *Apternus* et *Chrysonotus* in *Picianæ*.

5. *Sturnidæ Jeterinæ* ? *Ampelidæ Leiotrichanæ* ?

Heterornis (ετερος et ορνις) *Cutia*

Nearly allied to *Aplonis*, a subsequent genus of Gould ; Journal December 1836, and February 1837.

6. *Charadriadæ*.

Pseudops (πσευδος et ωψ) *Carvanaca*

Has the Plover head (and structure generally) with a cultirostral bill.

Journal, December 1836.

7. *Mustelinæ ad finem*.

Mesobema (μεσος et βημα) *Urvæ*

Closely allied to *Helictis*, which however has Molars $\frac{5}{6}$, and is, in fact, a *Gulo*.

8-10. *Strigidae*, Aberrant group,*Etoglaux* (αετος et γλαυξ) *Huhúa*.

————Subtypical group.

Mesomorpha (μεσος et μορφη) *Urrua**Meseidus* (μεσος et ειδος) *Bulaca*

Both from their strictly mediate structure between the most typical and most untypical forms. Transac. 1836, Journal, May 1837.

11. *Coccothraustinae*,*Dermophrys* (δερμα et οφρυσ) *Munia*.12-13. *Columbidae Vinaginae*,*Rinopus* (ρις et πονς) — *Ducula*.

Diagnosis being derived from combination of bill and feet belonging to *different* types.

Ditto, Ditto,

Romeris (ρομη et ρις) *Toria*.14. *Sylviadae?* *Certhiadae?* *Melighagidae?**Polyodon* (πολυς et οδων) *Yuhina*

A strange form. *Andropadus* its analogue among *Brachypods*, whilst it types the Honey-suckers among its own Sylvians.

Crateropodinae.*Decurus* (δεκα et ουρη) *Suya*.15. *Saxicolinae*.*Polypeira* (πολυς et πειρα) *Dahila*.

Trans. As. Soc. 1836. This form since styled *Grillioora* by Sw., and *Macrourus* by Gould.

16. *Merulidae Crateropodinae*.*Anura* (αλφα primitiva et ουρη) *Tesia*

Since called *Micrura* by Gould. Journal Asiatic Society, February 1837.

17. *Ampelinae*,*Prosorinia* (προσω et ρις) *Cochoa*.

A typical ampeline form, though crested and not American, stands between *Ampelis* and *Casmarhynchus*.

18. *Meropidæ*,*Narophila* (ναπος et φυλος) *Bucia*

This, or a very like form, since called *Nyctiornis* by Swainson; mine the prior appellation. Journal, June 1836. My bird is, in no way or degree, a night brid.

19-20. *Saxicolinæ* ?*Chaitaris* (χαιτη et ρις) *Miltava**Dimorpha* (δι et μορφη) *Siphia*

India Review, March 1837.

21. *Parianæ*,*Temnoris* (τενωω seco et ρις) *Suthora*

The tiny stout bill is trincated and square at tip.

22-25. *Leiotrichanæ* ?*Proparus* (quasi *Parus*) *Minla*.*Philacalyx* (φιεις et καλνξ) *Mesia*.*Calipyga* (καλος et πυγη) *Bahila*.

Nearly allied to *Leiathrix* proper.

Hemiparus ($\frac{1}{2}$ Tit) *Siva*.

Indian Review, April and May 1837.

26. *Edolianæ*.*Creurgus* (κρεουργος) *Tenthaca*.

Nearly allied to *Tephrodornis* and *Nyctaus*, the last of which genera is of more recent date than ours.

27-29. *Cometes* (κομητης) *Chibia*.*Melisseus* (Bee-taker) *Bhringa*.*Dicrurus* (Auct) *Bhuchanga*.

Indian Review November 1836, and January 1837.

30. *Buccoidæ potius Yunxinæ*,*Piculus* (diminutive of *Picus*) *Vivia*

Journal, February 1837, nearly allied to *Asthenurus*.

Supplementary Note to the Memoir on the Hodésun, vol. ix. pp. 694 and 783. By Lieutenant TICKELL, Political Assistant, Singbhoom.

Through the kindness of Major Wilkinson, Resident at Burra Nagpoor, I am enabled to correct a mis-statement I made in my Memoir on the Ho Dèsum, in which speaking of the "Surrawuks" I described them as Bengallee Brahmins. They are, it appears, not Brahmins, but Jains, or worshippers of *Purusna'h*; and are still scattered over several parts of India. In former times there were many of them at a place called Aring in Chutteesgurh, and some of their temples are there extant to this day.

Major Wilkinson describes the existence in Burra Nagpoor of the remains of a large city in the midst of the jungles on the banks of the Mahanuddee, the name of which was Seirpoor.* It flourished in the time of a race of Rajahs of the "Ho Ho Bunsee" tribe. These were Rajpoots, but the similarity of their name to that of the Koles of the present day ("Ho") is curious.

At Aring, Rajoo, and Dhunteree, Major Wilkinson fell in with several inscriptions on stone, in a character unknown to any persons in that quarter; and I trust he will be enabled to fulfil his present intention of sending some of these inscriptions to the Museum of the Asiatic Society; where there is a probability of their being decyphered, if facsimiles of them be published in this Journal.

NOTE.—I hope to be favoured with the note of a tour recently made by Major Ouseley through his Agency, in which mention is made of the extensive ruins above alluded to, and an interesting statistical account given of a region very little known.



* If I read it aright in his letter.

*Proceedings of the Asiatic Society.**(Wednesday Evening, 7th April, 1841.)*

The Hon'ble H. T. PRINSEP, Esq., in the Chair.

The following gentlemen proposed at the Meeting of the 5th March last, were balloted for, and duly elected : viz.—

F. BEAUFORT, Esq. C. S.

W. B. JACKSON, Esq. C. S.

W. MASTERS, Esq, Head Teacher, La Martiniere.

The necessary communication of their election, and rules of the Society for guidance, were ordered to be forwarded to the parties.

Library and Museum.

Cautley's Report on the Central Doab Canal, Allahabad Mission Press, 1840 (2 copies), .. .. .	..	..	..	..	..	..	..	..	2
Lardner's Cabinet Cyclopædia—Biography : Lives of the British Admirals, vol. 5th .. .. .	..	..	..	..	..	..	..	..	1
History of the Mohammedan dynasties in Spain, by P. de Gayangos, London, 1840, vol. 1st .. .. .	..	..	..	..	..	..	..	..	1
Sleeman's Report on the Depredations committed by the Thug Gangs of Upper and Central India, from 1836 to 1841, Calcutta, 1840, .. .. .	..	..	..	..	..	..	..	..	1
Madras Journal of Literature and Science, No. 28, July—September, 1840, ..	..	..	..	..	..	..	..	..	1
Edinburgh New Philosophical Journal, by Professor Jameson, No. 58, October 1840, .. .. .	..	..	..	..	..	..	..	..	1
London and Edinburgh Philosophical Magazine and Journal of Science, 3rd series, No. 3, November 1840, .. .. .	..	..	..	..	..	..	..	..	1
Yarrell's History of British Birds, pt. 21st, London 1840, .. .. .	..	..	..	..	..	..	..	..	1
Calcutta Monthly Journal and Repository of Intelligence for February 1841, ..	..	..	..	..	..	..	..	..	1
Annals and Magazine of Natural History, No. 36, November 1840, .. .. .	..	..	..	..	..	..	..	..	1
Oriental Christian Spectator, February 1841, vol. ii. No. 2, Bombay, ..	..	..	..	..	..	..	..	..	1
Lectures on the Religious Practices and Opinions of the Hindus, by H. H. Wilson, Oxford 1840, .. .. .	..	..	..	..	..	..	..	..	1
Proceedings of the Geological Society of London, vol. iii. Nos. 69, 70, 71, for 1840, .. .. .	..	..	..	..	..	..	..	..	1
Bulletin de la Société de Géographie, 2nd Série, Tome 13th, Paris 1840, ..	..	..	..	..	..	..	..	..	1
Géographie D'Aboulfeda, Texte Arabe, 2nd Liv. Paris 1840, .. .. .	..	..	..	..	..	..	..	..	2
Nieurve Proeve omal de Arabische, Letters en verdere schrijfteeke door Het Gewoon Europeesche Karakter onderscheidenlijk uit te drukken, Voor- gesteld door, H. E. Weijers Ze Leyden 1840, .. .. .	..	..	..	..	..	..	..	..	1

The following report was submitted by the Officiating Curator for the month of March last :—

III. Tinores, Flags, Smelting &c.	{	A. English	T.	1 to
		B. Indian and Asiatic	I. T.	
		C. Foreign European	E. T.	
		D. American	A. T.	

and so on, of as many classes as may be required, the marks and numbers being always, where possible, *painted* on the specimens, and the Catalogues printed or lithographed. H. P.

Mr. JAMES DODD, Assay Master of the Agra Bullion Department, having accepted the offer of Rs. 600 for his collection of Minerals, the following correspondence with Mr. Secretary BUSHBY took place:—

‘ To G. A. BUSHBY, Esq.

‘ *Secretary to Government, General Department.*

‘ SIR—With reference to my letters of dates quoted in the margin, I have the honor, by direction of the Asiatic Society, to state, that Mr. DODD, Assay Master of the Agra Bullion Department, has a valuable collection of minerals, which it is considered highly deserving of purchase, to be placed in the Society’s Rooms for general reference. The collection in question can be had for Rs. 600, and I am requested to submit the solicitation of the Asiatic Society to be authorized to make the purchase, the means being placed at the disposal of the Society, by a grant to that extent by the Government.

ASIATIC SOCIETY’S ROOMS,

‘ I have &c.

‘ 15th March 1841.

‘ H. TORRENS, *Sec. Asiatic Soc.*

‘ To H. TORRENS, Esq.,

‘ *Secretary to the Asiatic Society.*

‘ *Genl. Dept.*

‘ SIR—I am directed to acknowledge the receipt of your letter dated the 15th instant, and in reply to inform you, that before the Right Honorable the Governor General in Council can decide upon sanctioning the purchase of Mr. DODD’s collection of minerals, it would be satisfactory to His Lordship in Council to receive some general description of the collection in question.

‘ COUNCIL CHAMBER,

‘ I am, Sir,

‘ 24th March, 1841.

‘ Your obedient servant,

‘ G. A. BUSHBY,

‘ *Secretary to the Government of India.*’

Ordered—That the Officiating Curator be requested to furnish the general description required, for submission to Government.

Read a letter from Mr. Secretary BUSHBY, of 10th February last, communicating that the Government consider the authority under which the payment of Rs. 300

per mensem is made to the Society for a Curator and the preparation of Specimens, as a sanction and modification of the allowance previously made to it, and not as an independent or additional assignment.

The Secretary brought to notice, for the opinion of the Meeting, the proposal made to him for the support of the Asiatic Society of Bengal for enabling Mons. CALLERY of Macao, to print a Chinese Dictionary, French and English, now compiling by him.

The meeting were of opinion, that as three Dictionaries in the Chinese language were already in the Library of the Society's Museum, it was not expedient to encourage the patronage solicited, but that a few copies of the work after completion might be purchased for the Library and presentation to the learned Societies in Europe, and that a recommendation at the same time should be submitted to the Government for the purchase by them of, say 25 or 30 copies for transmission to the Honorable the Court of Directors for their Library. It was accordingly Resolved—That a communication to the foregoing effect be made to Mons. CALLERY, through Mr. HURRY.

The Secretary also submitted a proposal for printing WILFORD's Manuscript on the Ancient Geography of India to complete the 2d vol. of the Transactions of the Society, which proposal was negatived, on the consideration that though the paper contained much matter to be of interest to the general reader, yet in the opinion of the Society, the time had gone by for its publication ; productions of recent date from other authors on the same subject, containing more correct and valuable information, having superceded the object for which WILFORD wrote, but that the Secretary was at liberty to use the Manuscript as Editor of the Asiatic Journal, by printing extracts of such portions of it as he considered desirable and useful for his object.

Read letter from Mr. Secretary BUSHBY, of 30th December 1840, and enclosures.

' To H. TORRENS, Esq.

' No. 995.

' *Secretary to the Asiatic Society.*

' *General Department.*

' SIR—I am directed by the Right Honorable the Governor General in Council to transmit to you the accompanying copy of letter, No. 17 of 1840, from the Honorable the Court of Directors in the Public Department, dated the 16th September, and to request that the Society will enable the Government to carry into effect the wishes of the Honorable Court in respect to all Zoological and Entomological collections deposited in their Museum on the part of Government, or by persons conducting Missions on the part of the Government, and will assist the Government in giving effect to the commands of the Honorable Court in respect to future supplies to their Museum, as also in regard to the immediate dispatch of Dr. HELFER's and Captain PEMBERTON's Collections in Tenasserim and Bootan.

' I am also directed to transmit a copy of the list of the present contents of the Honorable Court's Museum as far as regards the Mammalia and Birds, that the Society may see the descriptions most desiderated.

‘ I am at the same time directed to request that the Asiatic Society will furnish this Department with a copy of Dr. HELPER’s original list of his Ornithological collections, forwarded to the Secretary to the Society from the Political Department, with Mr. Secretary PRINSEP’s letter, dated the 24th October 1838.

‘ I am, Sir,

‘ COUNCIL CHAMBER,
‘ 30th December 1840.

‘ Your obedient servant,
‘ G. A. BUSHEY,
‘ Secretary to Government of India.

‘ No. 17 of 1840.

‘ OUR GOVERNOR GENERAL OF INDIA IN COUNCIL.

Public Dept.

‘ 1st. The first of these letters refers to an application made by MAJOR HAY, through the Asiatic Society of Bengal to you, to purchase a large collection of subjects of Natural History, formed chiefly in southern Africa, and of which you have justly remarked that it would be better adapted to the Museum of Europe than of India, we accordingly approve of your having declined the purchase.

Reply to Paras. 48 and 49 of letter from the Government of India, dated 21st August 1839, No. 26 and To letter from the Secretary to the Government of India, dated 19th January 1839, No. 2.

2nd. In your letter of the 19th January 1839, you inform us that the collections made by Dr. HELPER in the Tenasserim Provinces have been shipped on the “Madagascar;” a reference to the correspondence accompanying shews that this is not exactly correct. The collections of Dr. HELPER and of Mr. Assistant Surgeon GRIFFITHS, which have been received by the “Madagascar,” are exclusively Botanical, and the other collections were deposited with the Asiatic Society.

‘ 3rd. We take this opportunity of expressing to you more fully our wishes on the subject of collections of Natural History made in India, on account of, or under the patronage, of the Government.

‘ 4th. In our letter of the 18th September 1839, No. 17, Paras. 81 to 87, we replied to the applications which you made in August 1837, and in September 1838, on behalf of the Asiatic Society of Bengal; and we signified our consent to the monthly payment of 200 or 250 rupees to a qualified person to superintend the Museum, with an allowance of 50 rupees a month for the cost of preparing and preserving specimens besides the former allowance for the publication of Oriental works.

‘ 5th. We now call your attention to several points respecting the relation in which the Asiatic Society is placed towards the Company’s Museum in England in consideration of this grant. It appears from the public correspondence, as well as from the Journal of the Asiatic Society of Bengal, that the collections made by several Deputations and Missions on behalf of Government, which previous to the date of our despatch above mentioned (18th September 1839) were provisionally confided to the care of the Asiatic Society, have been detained in its custody nearly two years, during which period no Zoological collections have been received in our Museum from Bengal.

'6th. We refer here especially to the public letter of Dr. J. W. HELFER to Mr. Secretary PRINSEP, dated Calcutta 16th October 1838, and to a letter from Mr. Secretary PRINSEP, dated Fort William, 24th October 1838, to the Secretary of the Asiatic Society, and to the proceedings of the Asiatic Society of the 5th September, 10th October, and 14th November 1838, published in the Journal of the said Society, also respecting collections made during Captain PEMBERTON'S Mission to Bootan, &c. Proceedings of the Asiatic Society of 7th February 1838, Journal p. 90 to 168, 5th September 1838, p. 749.

'7th. It is quite apparent that the detention of subjects of Natural History, in the state in which they are usually brought from Missions or Deputations, the movements of which are necessarily expeditious, must in the climate of India be highly injurious to them, and may in many cases occasion their entire destruction; we notice this particularly with reference to the collections made by Dr. HELFER in Tenasserim, and by Captain PEMBERTON during his Mission to Bootan, since both these are new localities from which no specimens are as yet contained in our Museum.

'8th. In order therefore to guard in future against similar detentions, and to secure an early dispatch of any collections made on behalf of Government to our Museum, we should wish you to require every naturalist or officer who may accompany any Mission or Deputation on behalf of Government, to make at least a provisional report on the nature and extent of his collections immediately on the return of the Mission, to be forwarded to us without delay; further, that whenever practicable, the same officer who accompanied a Mission be instructed on the arrival of his collections to select from his labors the most full and complete series for despatch to England for the Company's Museum by the earliest opportunity, and also to superintend in person the packing and despatch, in order to secure as far as possible the safety of the same during the voyage. In cases in which the collections may have been forwarded to the Presidency before the return of the naturalist by whom they have been made, and when any length of time may be expected to intervene before he can make a selection himself, we are of opinion that it may be expected of the Asiatic Society to make such a selection as is above intimated, and to prepare the same for despatch to England.

'9th. While these instructions apply chiefly to such collections as may be made in future on account of Government, we are likewise desirous that the necessary steps may be taken towards the immediate dispatch to our Museum of a series of the Mammalia and Birds collected by Dr. HELFER in Tenasserim, as far as his collections may have been preserved from the destructive effects of the climate, and of such subjects as may be new to science we desire the supply of several individuals; at the same time we direct that the entire of Dr. HELFER'S Entomological collection may be forwarded to us, since from the locality which he visited, many valuable and interesting subjects may be expected in this department particularly; and since no copy of Dr. HELFER'S list of his Ornithological collections, which according to a letter from Mr. Secretary PRINSEP, dated Fort William 24th October 1838, was forwarded to the Secretary of the Asiatic Society, has been found in our records, we direct that this list be transmitted to us with all possible expedition. The directions which we have now given respecting Dr. HELFER'S collections in Tenasserim, apply also to such collections in Zoology as may have been made during Captain PEMBERTON'S Mission on account of Government to Bootan.

‘ 10. In connexion with these specific instructions, we deem it expedient to add a few general explanatory remarks, the object of which is to secure to our Museum in England, with every proper degree of economy respecting freight and packing expenses, the most valuable and interesting results of scientific Deputations and Missions on behalf of Government; we therefore repeat the recommendation, that on the return of any Mission to Calcutta the naturalist who may have made any collection, or a proper person to be appointed by you, be employed to prepare a single specimen, well preserved, of the more common Mammalia and Birds, such as are well known and described; of those that are rare, and especially of the newly discovered ones, several individuals. To afford the naturalist some assistance in this selection, we will supply a simple list of the present contents of our Museum as far as regards the Mammalia and Birds. By the plan thus recommended we shall become acquainted with the zoological productions of regions newly visited, and thus obtain materials for “Local Faunas,” of which several instructive series already exist in our Museum. Of all Entomological collections we require that the entire result of any Deputation on behalf of Government be forwarded to our Museum, since these cannot be preserved in India under the disadvantages of imperfect cabinets, moisture, and general destructive effects of the climate; and being comprised in smaller space, their transmission is not expensive. These instructions will apply to all public collections made previous to the Mission of Dr. HELPER to Tenasserim, should any such be still detained in the hands of individuals, or remain deposited in the Botanic Garden of Calcutta, or in charge of the Asiatic Society.

‘ We are, &c.

‘ LONDON.	(Signed)	W. B. BAYLEY,
‘ 16th September, 1840.	”	GEORGE LYALL,
	”	W. ASTELL,
	”	H. LINDSAY,
	”	J. L. LUSHINGTON,
	”	JOHN MASTERMAN,
	”	J. W. HOGG,
	”	J. THORNHILL,
	”	N. B. EDMONSTONE,
	”	R. CAMPBELL,
	”	W. WIGRAM,
	”	JOHN SHEPHERD,
	”	F. WARDEN.

(True Copy,)

G. A. BUSBY,

‘ Secretary to Government of India.’

List of Mammalia contained in the Museum of the East India Company.

Good Specimens of all QUADRUMANA are Desiderata in the Museum.

ORDO I.—PRIMATES.

TRIBUS QUADRUMANA.

Genus Hylobates,	<i>Illiger.</i>
1 Hylobates syndactylus,	<i>Raffles, Sumatra.</i>
2 ——— Hoolook,	<i>Harl. Assam.</i>
Genus Semnopithecus,	<i>Fr. Cuv.</i>
1 Semnopithecus melalophus,	<i>Sumatra.</i>
2 ——— cristatus,	<i>Raff. id.</i>
3 ——— femoralis,	<i>id.</i>
4 ——— Pyrrhus,	<i>id.</i>
5 ——— maurus,	<i>id.</i>
6 ——— Entellus,	<i>Madras.</i>

GENUS PRESBYTES.

1 Presbytes mitrata. Eschsch,	<i>Voy. Kotzebue.</i>
Semn. ? fascicularis,	<i>Raff. Sumatra.</i>
Semn. comatus,	<i>Desm. Mamm.</i>

GENUS CERCOPITHECUS.

1 Cercopithecus Johnii,	<i>Madras.</i>
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GENUS MACACUS. LACEP.

1 Macacus Sinicus,	<i>Java.</i>
2 ——— cynomolgus,	<i>Linn. Siam.</i>
3 ——— Silenus,	
4 ——— nemestrinus,	<i>Sumatra.</i>
5 ——— Assamensis,	<i>M^cClelland.</i>

LEMURIDÆ.

* Genus Tarsius,	<i>Storr.</i>
1 Tarsius Bancanus,	<i>Banca.</i>
Genus Nycticebus,	<i>Geoff.</i>
1 Nycticebus Javanicus,	<i>Java.</i>
2 ——— tardigradus,	<i>Siam.</i>

GENUS LEMUR.

1 Lemur ruber,	
* * Galeopithecidæ,	
Genus Galeopithecus,	
1 Galeopithecus variegatus,	<i>Java, &c.</i>

TRIBUS CHEIROPTERA.

Specimens of all CHEIROPTERA are desired, both skins, and especially entire subjects, in Spirits.

Genus Megaderma,	..	..	..	..	..	<i>Geoff.</i>
1 Megaderma Lyra,	..	..	..	..	..	<i>Java.</i>
Genus Rhinolophus,	..	..	..	..	..	<i>Geoff.</i>
1 Rhinolophus affinis,	..	..	..	..	..	<i>Java.</i>
2 ————— minor,	..	..	..	..	..	<i>id.</i>
3 ————— nobilis,	..	..	..	..	..	<i>id.</i>
4 ————— larvatus,	..	..	..	..	..	<i>id.</i>
5 ————— vulgaris,	..	..	..	..	..	<i>id.</i>
6 ————— deformis,	..	..	..	..	..	<i>id.</i>
7 ————— insignis,	..	..	..	..	..	<i>id.</i>
8 ————— Dukhunensis,	..	..	..	..	..	<i>Dukhun.</i>
Genus Nycteris,	..	..	..	..	..	<i>Geoff.</i>
1 Nycteris Javanica,	..	..	..	..	..	<i>Geoff. Java.</i>
Genus Nycticejus,	..	..	..	..	..	<i>Rafflesque.</i>
1 Nycticejus Temmenckii,	..	..	..	..	..	<i>Horsf. Java.</i>

GENUS VESPERTILIO.

1 Vespertilio adversus,	..	..	..	..	..	<i>Horsf. Java.</i>
2 ————— Hardwickii,	..	..	..	..	..	„ <i>id.</i>
3 ————— tralatitius,	..	..	..	..	..	„ <i>id.</i>
4 ————— imbricatus,	..	..	..	..	..	„ <i>id.</i>
5 ————— pictus,	..	..	..	..	..	<i>Linn. id.</i>
Genus Molossus,	..	..	..	..	..	<i>Geoff.</i>
1 Molossus tenuis,	..	..	..	..	..	<i>Java.</i>
———— dilatatus,	..	..	..	..	..	<i>id.</i>
*Genus Cheiromeles,	..	..	..	..	..	<i>Horsf.</i>
1 Cheiromeles torquatus,	..	..	..	..	..	<i>id. Java.</i>

Particularly desirable.

Genus Macroglossus,	..	..	..	..	..	<i>Fr. Cuv.</i>
1 Macroglossus rostratus,	..	..	..	..	..	<i>Java.</i>
2 ————— nanus,	..	..	..	..	..	<i>Siam.</i>

GENUS PTEROPUS.

1 Pteropus edulis.	..	..	..	..	..	<i>Java, &c.</i>
2 ————— Edwardsii, (Medius auctor),	..	..	..	..	..	<i>Dukhun.</i>
3 ————— Assamensis,	..	..	..	..	..	<i>Assam.</i>
4 ————— poliocephalus,	..	..	..	..	..	<i>Siam.</i>
5 ————— marginatus,	..	..	..	..	..	<i>Siam.</i>
1 Pteropus (Pachysoma titthecheilum,	..	..	..	..	..	<i>Java.</i>

ORDO II.—FERÆ.

* Felidæ.

Species of Hyæna : besides the vulgaris, are desirable.	{	Genus Hyæna,	Briss, &c.
		1 Hyæna vulgaris,	Dukhun.

GENUS FELIS.

The smaller species of Felis: several rare species from the Up- per Provinces.	{	1 Felis Tigris,	Linn. Dukhun.
		2 — Leopardus,	Dukhun.
		3 — Pardus,	Java, &c.
		4 — Chaus,	Guldenst, Dukhun.
		5 — Torquata,	Fr. Cuv. id.
		6 — Javanensis,	Java.
		7 — Sumatrana,	Sumatra.
		8 — Bengalensis,	Bengal.
		Genus Prionodon,	Horsf. Linsany, Tem.

Prionodon. 1 Prionodon gracile, Horsf. Java.

? Indian species. Genus Lutra, Lin.

Lutra. { 1 Lutra Leptonyx, Horsf. Java.
2 — Nair, Fr. Cuv. Dukhun.

Genus Mustela, Linn.

Desideratum. 1 Mustela flavigula, Hardwickii, Bengal.

Genus Mangusta, Olivier.

Several new species are found near the Himalayas.	{	1 Mangusta Javanica,	Horsf. Java.
		2 — grisea, Herp. gr. Desm.	Dukhun.
		3 — Pharaonis,	Madras.
		4 — Auropunetata,	Hodgs. Assam.

GENUS VIVERRA.

Viverra: Zibetha, Ci- vetta, any new species?	{	1 Viverra Zibetha,	Linn. Sumatra.
		2 — Rasse,	Horsf. Java, &c.
		3 — Indica,	Geoff. Dukhun.
		4 — Civetta,	Siam.

Genus Paradoxurus. F. Cuv.

Paradoxurus, several Indian species. { 1 Paradoxurus typus, Java, &c.

Genus Arctictis. Actides Valencienna. Temm.

1 Arctictis Binturong, Sumatra.

GENUS CANIS.

The smaller species of Canis.	{	1 Canis familiaris, var.	Dukhun.
		2 — pallipes,	Sykes, id.
		3 — aureus,	Linn. id.
		4 — Kokree,	Sykes, id.
		5 — rutilans,	Temm. Java.

** URSIDÆ.

	Genus Ailurus,	F. Cuv.
<i>Desideratum.</i>	1 Ailurus fulgens,	F. C. Nepaul.
	Genus Prochilus,	Illig.
<i>Prochilus one good specimen.</i>	1 Prochilus ursinus,	Illig. Dukhun.
	Genus Helaretos Ursus aurt.	Horsf.
	1 Helaretos Malayanus,	Horsf. Sumatra.
	Genus Gulo,	Storr.
<i>Gulo.</i>	1 Gulo orientalis,	Horsf. Java.
	Genus Mydaus,	F. Cuv.
<i>Arctonyx.</i>	1 Mydaus collaris,	Bengal.
	Arctonyx collaris,	F. Cuv.
	2 ——— meliceps,	id. Java.

** TALPIDÆ.

	Genus Sorex,	Linn.
<i>Sorex.</i>	1 Sorex Indicus,	Geoff.
	2 ——— Sonerattii,	Geoff.
	**** Genus Tupaia,	Raff.
<i>Tupaia.</i>	1 Tupaia Javanica,	Horsf. Java.
	2 ——— ferruginea,	Raff. Sumatra.

ORDO III. UNGULATA.

	Genus Antilope,	Pallas.
<i>Antelope. The new discovered species from the Himalayas.</i>	1 Antilope picta,	Dukhun.
	2 ——— Bennettii,	Sykes.
	3 ——— Cervicapra,	id.
	4 ——— Hodgsonii,	Bengal.
	5 ——— Thar,	Hodgs. id.
	Genus Moschus,	Linn.
<i>M. moschiferus, Des.</i>	1 Moschus moschiferus,	Nepal.
<i>Common.</i>	2 ——— Javanicus,	Java.
	3 ——— Memima,	Bengal.
	Genus Cervus,	Linn.
<i>Desiderat.</i>	1 Cervus equinus,	Rusa Sumatra.
	2 ——— Duvancelii,	Cuv. Horns. India.
	3 ——— Muntjak,	Java, Dukhun.
	4 ——— porcinus,	Assam.
	Genus Tapirus.	
	1 Tapirus Malayanus.	
	Genus Manis,	Linn.
<i>M. Crassicaudata.</i>	1 Manis Javanica,	Derm. Java.
	2 ——— crassicaudata,	Griff. Dukhun.

ORDO IV. GLIRES.

		Genus Sciurus,	Linn.		
All the species of Sciurus are desirable.	}	1 Sciurus maximus,	Schr. Madras.		
		2 ——— Elphinstonii	Sykes, Dukhun.		
		3 ——— Leschenaultii,	Derm. Sumatra.		
		4 ——— bicolor,	Sparr. Java.		
		5 ——— giganteus,	M ^c Clellanā, Assam.		
		6 ——— nigrovittatus,	Horsf. Java.		
		7 ——— Finlaysonii,	Horsf. Siam.		
		8 ——— affinis,	Raff. Sumatra.		
		9 ——— tenuis,	Horsf. Siam.		
		10 ——— Plantani,	Lyung, Java.		
		11 ——— Palmarum,	Briss. Dukhun.		
		Desiderat.	}	12 ——— bivittatus,	F. Cuv. Sumatra.
				13 ——— insignis,	F. Cuv. Java.
				14 ——— hippurus,	Geoff. Assam.
				15 ——— Lokriah,	Hodg. id.
				16 ——— Lokrioides,	Hodg. id.
				17 ——— M ^c Clellandii,	Horsf. id.
Desiderat.	}	Genus Pteromys,	Geoff.		
		1 Pteromys Petaurista,	Desm. Bengal.		
		2 ——— nitidus,	Siam.		
		3 ——— Diardii,	Java.		
		4 ——— genibarbis,	id.		
5 ——— lepidus	id.				
Common.	}	Genus Lepus,	Linn.		
		1 Lepus nigricollis,	F. Cuv. Dukhun.		
Desiderat.	}	Genus Hystrix,	Linn.		
		1 Hystrix leucurus,	Sykes.		
Very desirable.	}	Genus Mus,	Linn.		
		1 Mus giganteus,	Bengal.		
		2 ——— setifer,	Horsf. Java.		
		3 ——— decumanooides,	Temm. Bengal.		
4 ——— indicus,	Siam.				

ORDO V.

FAM. HALICORIDÆ.

GENUS HALICORE.

1 Halicore Dugong,	..	Raff. Sumatra.
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AVES.

ORDO I. RAPTORES. ILL.

FAM. II. VULTURIDÆ.

SUBFAM XXX.

Good Specimens of all the Raptores are desiderata, excepting a few of the most common species.

GENUS VULTUR.

1	Vultur Indicus,	..	..	<i>Lath, Dukkun.</i>
2	———— Ponticerianus,	..	..	<i>Lath, id.</i>
3	———— Bengalensis, ..	..	..	<i>Gmel. id.</i>
4	———— leuconotus,	<i>Bengal.</i>

Subfam. XXXXX.

GENUS NEOPHRON, SAV.

1	Neophron Perenopterus,	<i>Dukkun.</i>
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FAM. III. FALCONIDÆ.

Subfam. X. Aquilina.

GENUS PANDION, SAV.

1	Pandion Ichthyætus,	<i>Java.</i>
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GENUS HALIÆTUS, SAV.

Common.

1	Haliætus Ponticerianus,	<i>Java, Sumatra, &c.</i>
2	———— dimidiatus,	<i>Sumatra.</i>
3	———— albicilla,	<i>Raff. Sumatra.</i>
4	———— Macei,	<i>Assam.</i>

GENUS LIMNÆTUS, VIGORS.

1	Limnætus Horsfieldii,	<i>Java.</i>
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GENUS AQUILA.

1	Aquila bifasciata,	<i>Dukkun.</i>
2	———— Vindhiana?			
3	———— pennata,	<i>F. pennata, Briss.</i>

GENUS SPIZÆTUS, VIEILLOT.

1	Spizætus rufitinctus, ..	..	..	<i>M^cClelland, Assam.</i>
2	———— cristatellus? ..	..	..	<i>Madras.</i>

GENUS HÆMATORNIS, VIG.

1	Hæmatornis Bacha, ..	..	..	<i>Java, Sumatra.</i>
2	———— undulatus, ..	..	..	<i>Vig. Nipal.</i>

xx. Subfam Accipitrina,

GENUS ACCIPITER.

- | | | | | |
|---|------------------------|----|----|-----------------------|
| 1 | Accipiter Dukhunensis, | .. | .. | <i>Sykes, Dukhun.</i> |
| 2 | ——— fringillarius, | .. | .. | <i>Sumatra.</i> |
| 3 | ——— Soloensis, | .. | .. | <i>Horsf. Java.</i> |

GENUS ASTUR AUCT.

- | | | | | |
|---|--------------|----|----|-----------------------|
| 1 | Astur Hyder, | .. | .. | <i>Sykes, Dukhun.</i> |
|---|--------------|----|----|-----------------------|

xxx Subfam Falconina.

GENUS HIERAX, VIGORS.

- | | | | | |
|---|---------------------|----|----|--------------|
| 1 | Hierax cærulescens, | .. | .. | <i>Java.</i> |
|---|---------------------|----|----|--------------|

GENUS FALCO.

- | | | | | |
|---|--------------------|----|-------------------------------|-----------------------|
| 1 | Falco peregrinus, | .. | .. | <i>Bengal.</i> |
| 2 | ——— Tinnunculus, | .. | .. | <i>Java.</i> |
| 3 | ——— interstinctus, | .. | <i>M^cClelland,</i> | <i>Assam, Madras.</i> |
| 4 | ——— severus, | .. | .. | <i>Horsf. Java.</i> |
| 5 | ——— Chiquera, | .. | .. | <i>Lath, Dukhun.</i> |

Good Specimens generally are desiderata.

xxxx. Subfam Buteonina.

GENUS CIRCUS.

- | | | | | |
|---|-------------------|----|----|-----------------------|
| 1 | Circus pallidus, | .. | .. | <i>Sykes, Dukhun.</i> |
| 2 | ——— variegatus, | .. | .. | <i>Sykes, Dukhun.</i> |
| 3 | ——— melanoleucus, | .. | .. | <i>Assam.</i> |

xxxxx. Subfam Milvina.

GENUS MILVUS.

- | | | | | |
|---|-----------------|----|----|-----------------------|
| 1 | Milvus Govindo, | .. | .. | <i>Sykes, Dukhun.</i> |
|---|-----------------|----|----|-----------------------|

GENUS ELANUS, SAV.

- | | | | | |
|---|----------------------|----|----|----------------------------|
| 1 | Elanus melanopterus, | .. | .. | <i>Java, Siam, &c.</i> |
|---|----------------------|----|----|----------------------------|

FAM: IV. STRIGIDÆ.

x Subfam Nocturnina.

GENUS NOCTUA, SAV.

- | | | | | |
|---|----------------|----|----|-----------------|
| 1 | Noctua Indica, | .. | .. | <i>Dukhun.</i> |
| 2 | ——— hirsuta, | .. | .. | <i>Sumatra.</i> |

xx. Subfam Bubonina.

GENUS KETUPA, LESSON.

- | | | | | |
|---|-----------------------|----|----|--------------|
| 1 | Ketupa Leschenaultii, | .. | .. | <i>Siam.</i> |
| 2 | ——— Ceylonensis, | .. | .. | <i>Java.</i> |

xxx. Subfam Assionina.

GENUS OTUS, CUV.

1	Otus Bengalensis,	..	..	<i>Frauhl. Dukhun.</i>
2	— Orientalis,	..	..	<i>Horsf. Java.</i>
3	— Lempige,	..	..	<i>Horsf. id.</i>
4	— rufescens,	..	..	<i>Horsf. id.</i>

xxxx.—Subfam Strigidæ.

GENUS STRIX.

1	Strix Javanica,	..	..	<i>Horsf. Java.</i>
2	— badia,	..	..	<i>Horsf. id.</i>
3	— Selo puto,	..	..	<i>Horsf. id.</i>
	Pagodarum,			<i>Temm.</i>
4	— castanoptera,	..	..	<i>Horsf. id.</i>

ORDO II.—INSESSORES.

Tribus, I.—*Fissirostres.*

Fam. I.—*Meropidæ.*

GENUS MEROPS, LINN.

<i>Merops—all the Indian species.</i>	}	1	Merops Javanicus,	..	..	<i>Horsf. Java.</i>
			Savignii,			<i>Temm.</i>
		2	— Adansonii,	..	..	<i>Sumatra.</i>
		3	— urica,	..	..	<i>Horsf. Java.</i>
		4	— viridis,			<i>Linn.</i>

GENUS NYCTIOMIS, SWAINSON.

<i>Particularly.</i>	1	Nyctiomis Athertonii,	<i>Assam.</i>
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Fam: II. Hirunidæ.

GENUS CYPSELUS.

<i>Desiderat.</i>	{	1	Cypselus comatus,	<i>Siam.</i>
		2	— affinis,			<i>Hard and Gray, Dukhun.</i>
		3	— Klecho,	..	..	<i>Horsf. Java.</i>
		4	— longipennis,			<i>Temm.</i>
		4	— — — — —	..	..	<i>Sumatra.</i>

GENUS HIRUNDO.

<i>Desiderat.</i>	{	1	Hirundo esculenta,	..	..	<i>Java.</i>
		2	— fuciphaga,	..	..	<i>id.</i>
		3	— filifera,	..	..	<i>Dukhun.</i>
		4	— Sewan,	..	..	<i>Sykes, id.</i>
		5	— concolor,	..	..	<i>Sykes, id.</i>
		6	— erythroptigia,	..	..	<i>Sykes, id.</i>
		7	— berevirostris,	..	..	<i>M'Clelland, Assam.</i>
		8	— brevicaudata,	..	..	<i>M'Clelland, id.</i>

Fam: III. Caprimulgidæ.

GENUS CAPRIMULGUS.

<i>Desiderat.</i>	....	{	1 Caprimulgus affinis,	<i>Horsf. Java.</i>
			2 ————— macrourus,	<i>Horsf. id.</i>
			3 ————— asiaticus,	<i>Madras.</i>
			4 ————— monticulus,	<i>Frank, Dukhun.</i>
			5 Caprimulgus Mahrattensis,	<i>Sykes, Dukhun.</i>

GENUS PODARGUS.

<i>Podargus,</i>	Conti-	}	1 <i>Podargus</i> Javensis,	<i>Horsf. Java.</i>
<i>mental species.</i>					

Fam. IV. Todidæ.

GENUS EURYLAIMUS, HORSF.

<i>Desiderat.</i>	{	1 Eurylaimus Horsfieldii	<i>Temm, Java.</i>
		2 ————— ochromalus,	<i>Raff. Sumatra.</i>
		3 ————— lunatus,	<i>Gould, Assam.</i>

GENUS EURYSTOMUS VIEILL (Coloris Cuv.)

<i>Common.</i>	1 Euryetomus Orientalis.	<i>Java.</i>
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Fam. V. Halcyonidæ.

GENUS DACELO, LEACH.

<i>Indian species.</i>	1 <i>Dácelo</i> pulchella,	<i>Horsf. Java.</i>
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GENUS HALCYON, SWAINS.

<i>Most of these are common. New species desirable.</i>	{	1 Halcyon leucocephalus,	<i>Java.</i>
		2 ————— coromandelicus,	<i>id.</i>
		3 ————— chlorocephalus,	<i>id.</i>
		4 ————— Sacer,	<i>id.</i>
		5 ————— onmicolor,	<i>id.</i>
		6 ————— albicapillus,	<i>Sumatra.</i>
		7 Smyrnensis,	<i>Dukhun.</i>

GENUS ALCEO.

<i>Alcedo all the Continental species.</i>	Con-	{	1 Alcedorudis,	<i>Linn. Dukhun.</i>
			2 ————— Bengalensis,	<i>Geml. id.</i>
			3 ————— Meninting,	<i>Horsf. Java.</i>
			4 ————— Biru,	<i>Horsf. id.</i>
			5 ————— Guttata,	<i>Gould, Siam, Bengal.</i>

GENUS CEYX.

1 Ceyx tridactyla	<i>Java.</i>
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Tribus II. Dentirotres,

Fam. I. Muscipidæ.

GENUS MUSCIPETA.

<i>Common.</i>	{	1 Muscipeta Indica,	<i>Stephens, Dukhun.</i>
			2 ————— Paradisii,	<i>id.</i>

GENUS PHÆNICORNIS, SWAINS.

Desiderata.	.....	{	1 Phænicornis flammea, ..	Java, Assam.
			2 ————— peregrina, ..	id.
			3 ————— princeps,	Gould, Assam.
			4 ————— elegans,	M'Clelland, id.
			5 ————— curvirostris, ..	Assam.
			6 ————— affinis, ..	Dukhun.

GENUS MUSCICAPA.

Muscicapa generally desirable.	{	1 Muscicapa Indigo,	Horsf. Java.
		2 ————— Bangumas,	Horsf. id.
		3 ————— obscura,	} Horsf. id.
		hirundina,	
		4 ————— melanops,	Gould, Dukhun.
		5 ————— Poonensis,	Sykes, id.
		6 ————— cœruleocephala, ..	id.
		7 ————— picata,	Sykes, id.
		8 ————— capitalis,	M'Clelland, Assam.
9 ————— cœrulea,	Sumatra.		

GENUS RHIPIDURA, VIGORS.

Desiderata.	.....	{	1 Rhipidura Javanica, ..	Java.
			2 ————— fuscoventris, ..	Dukhun.
			3 ————— albipunctata,	

GENUS CRYPTOLOPHA, SWAINSON.

Cryptolopha—particularly.	}	1 Cryptolopha poiocephala.
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FAM. II. LANIADÆ.

xx. Subfam: Dicrurinæ, Swains.

Common.	Genus Artamus, ..	Vieillot. <i>Ocypterus</i> , Cuv.	
	1 Artamus leucorhynchus, ..	Java.	
	Genus Diernus,	Vieillot.	
Common.	{	1 Dicrurus forficatus, ..	Java.
		2 ————— cinereus, ..	Horsf. id.
		3 ————— Malabaricus, ..	id.
		4 ————— Balicassius, ..	Dukhun.
		5 ————— grandis, ..	Gould, Assam.
		6 ————— Rangoonensis, ..	Gould, id.
		7 ————— æneus, ..	Viell. id.

Additional common species!

GENUS TRICOPHORUS. TEMM.

<i>Desiderat.</i>	....	{	1 <i>Tricophorus barbatus</i> ,	..	<i>Java.</i>
			2 ————— <i>flaveolus</i> ,	..	<i>Gould, Assam.</i>

xxx. Subfam. Lanianæ. Swains.

GENUS HYPSSIPETES, VIGORS.

<i>Desiderat.</i>	....	{	1 <i>Hypsipetes Ganesa</i> ,	..	<i>Sykes, Dikhun.</i>
			2 ————— <i>psaroides</i> ,	..	<i>Gould.</i>
<i>Particularly.</i>	....	{	3 —————		<i>M^cClellandii, Assam.</i>
			4 ————— <i>gracilis</i> ,	..	<i>id.</i>

GENUS COLLURIO, VIGORS.

<i>Other Continental species desirable.....</i>	{	1 <i>Collurio Bentet</i> ,	..	<i>Horsf. Java.</i>
		2 ————— <i>Hardwickii</i> ,	..	<i>Vig. Dikhun.</i>
		3 ————— <i>erythronotus</i> ,	..	<i>id.</i>
		4 ————— <i>Schach</i> ,	..	<i>id.</i>
		5 ————— <i>Lathora</i> ,	..	<i>id.</i>

GENUS LANIUS, AUCT.

<i>Desiderat.</i>	{	1 <i>Lanius rufus</i> ,	..	<i>Sumatra.</i>
		2 ————— <i>virgatus</i> ,	..	<i>Temm. id.</i>
		3 ————— <i>muscipoides</i> ,	..	<i>Dikhun.</i>
		4 ————— <i>undularis?</i>	..	<i>Dikhun.</i>

xxxx. Subfam Thamnophilina.

GENUS VANGA.

1 <i>Vanga coronata</i> ,	..	<i>Vigors, Sumatra.</i>
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xxxxx. Subfam Cebilepyrinæ, Swains.

GENUS GRAUCALUS, CUV.

<i>Common Desiderat.</i>	{	<i>Graucalus Papuensis</i> ,	..	<i>Java, Dikhun.</i>
		————— <i>maculosus</i> ,		<i>M^cClelland, Assam.</i>

GENUS CEBLEPYRIS, CUV. CAMPEPHAGA, VIEILL.

<i>Cebilepyris fimbriatus</i> ,	..	<i>Temm. Java, Dikhun.</i>
————— <i>canus</i> ,	..	<i>Dikhun.</i>
————— <i>striga</i> ,	..	<i>Horsf. Java.</i>

FAM III. MERULIDÆ.

x. Subfam Myiotherina, Swains.

GENUS PITTA, TEMM.

All the species of <i>Pitta</i> are Desiderata.	{	1 <i>Pitta cyanura</i> ,	..	<i>Java.</i>
		2 — <i>gigas</i>,	.. ..	<i>Temm. Sumatra.</i>
		3 — <i>thoracina</i>,	.. ..	<i>Temm. Sumatra.</i>
		4 — <i>brachyuara</i> ,	..	<i>Madras.</i>
		5 —	..	<i>Sumatra.</i>

GENUS CINCLUS, BECHST.

<i>Desiderat.</i>	1 <i>Cinclus Asiaticus</i> ,	..	<i>Swains.</i>
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xx. Subfam Merulinæ.

GENUS MYOPHONUS, TEMM.

1 <i>Myophonus glaucinus</i> ,	..	<i>Temm. Java.</i>
2 ————— <i>metallicus</i> ,	..	<i>Java.</i>
3 ————— <i>Temminckii</i> ,	..	<i>Gould, Bengal.</i>

GENUS CINCLOSOMA, VIG.

<i>Desiderat.</i>	1 <i>Cinclosoma strigatum</i> .
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GENUS TURDUS.

All these species are rare and Desiderata.	{	<i>Common.</i>	1 <i>Turdus Sularis</i> ,	..	<i>Dukhun.</i>
				2 — <i>amænus</i> ,	..	<i>Java.</i>
				3 — <i>macrurus</i> ,	..	<i>Java.</i>
				4 — <i>vividis</i> ,	..	<i>Horsf. Java.</i>
				5 — <i>concolor</i> ,	..	<i>Horsf. id.</i>
				6 — <i>vacuis</i> ,	..	<i>Horsf. id.</i>
				7 — <i>ophiocephalus</i> ,	..	<i>id.</i>
				8 — <i>perspicellatus</i> ,	..	<i>Sumatra.</i>
				9 — <i>albicollis</i> ,	..	<i>Royle, Bengal.</i>
				10 — <i>pæcilopterus</i> ,	..	<i>id.</i>
				11 — <i>melanocephalus</i> ,	..	<i>Sumatra.</i>
				12 — <i>cyanotus</i> ,	..	<i>Jard. and Selby, Bengal?</i>
				13 — <i>erythrogaster</i> ,	..	<i>Gould, id.</i>

GENUS IXOS, TEMM.

<i>Desiderat.</i>	....	{	1 <i>Ixos cucullatus</i> ,	..	<i>Hooded Th. Lath, Bengal.</i>
			2 — <i>melanocephalus</i> ,	..	<i>Bengal.</i>
			3 — <i>chrysorrhæus</i> ,	..	<i>Java.</i>
<i>Common.</i>	....	{	4 — <i>Cafer</i> , <i>Boolbool</i> ,	..	<i>Dukhun.</i>
			5 — <i>Psidii</i> ,	..	<i>Java.</i>
			6 — <i>Finlanysonii</i> ,	..	<i>Sumatra.</i>
			7 — <i>Jocosus</i> ,	..	<i>Dukhun.</i>

8	<i>Ixos fulvicatus</i> ,	..	<i>Dukhun.</i>
9	— <i>bimaculatus</i> ,	..	<i>Java.</i>
10	— <i>dispar</i> ,	..	<i>Java.</i>

GENUS GARRULAX, LESS. IANTHOCIN GLD.

Species of <i>Garrulax</i> , Lesson, or <i>Ianthocini</i> . Gould, are very desirable.	1	<i>Garrulax gularis</i> ,	..	<i>M^cClelland, Assam.</i>
	2	— <i>pectoralis</i> ,	..	<i>Gould, id.</i>
	3	— <i>lunaris</i>	..	<i>M^cClelland, Assam.</i>
	4	— <i>albugularis</i> ,	..	<i>Gould, Bengal.</i>
	5	— <i>leucolophus</i> ,	..	<i>id.</i>

GENUS GEOCICHLA.

1	<i>Geocichla rubecola</i> ,	..	<i>Bengal.</i>
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GENUS ZOOTHERA, VIGORS.

Rare and very desirable.	1	<i>Zoothera monticula</i> ,	..	<i>Bengal.</i>
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xxx. Subfam Oriolina.

GENUS ORIOIUS, AUCT.

Particularly.	1	<i>Oriolus Chinensis</i> ,	..	<i>Linn. Java.</i>
	2	— <i>Xanthotus</i> ,	..	<i>Horsf. Java.</i>
	3	— <i>melanocephalus</i> ,	..	<i>Siam, &c.</i>
	4	— <i>Galbula</i> ,	..	<i>Linn. Dukhun.</i>
	5	— <i>Kundii</i> ,	..	<i>Sykes, Dukhun.</i>
	6	— <i>Traillii</i> ,	..	<i>Gould, Cent., Assam</i>

GENUS IRENA, HORSF.

1	<i>Irena Puella</i> ,	<i>F. Cuv. Puella Lath, Java, Siam.</i>
---	-----------------------	---

xxxx. Subfam Cossyphina.

GENUS TIMALIA, HORSF.

Species of <i>Timalia</i> generally desirable.	1	<i>Timalia pileata</i> ,	..	<i>Horsf. Java, &c.</i>
	2	— ? <i>gularis</i> ,	..	<i>Horsf. Java.</i>
	3	— <i>Malcolmi</i> ,	..	<i>Sykes, Dukhun.</i>
	4	— <i>Somervillii</i> ,	..	<i>Sykes, id.</i>
	5	— <i>Chatarea</i> ,	..	<i>Frankl. id.</i>
	6	— <i>hypoleuca</i> ,	..	<i>Frankl. Madras.</i>

xxxx.

GENUS PETROCINELA, VIGORS.

Desiderata.	1	<i>Petrocinela Pandu</i> ,	..	<i>Sykes, Dukhun.</i>
	2	— <i>Malab</i> ,	..	<i>Sykes, id.</i>
	3	— <i>cinchlorhyncha</i> ,	..	<i>id.</i>

Fam IV. Sylviadæ.

Subfam x.

GENUS IÖRA, HORSF.

Additional species?	1	<i>Iöra scapularis</i> ,	..	<i>Java, Siam.</i>
	2	— <i>Typhia</i> ,		
	3	— <i>meliceps</i> ,	..	<i>Dukhun.</i>

Subfam xx.

GENUS BRACHYPTERYÆ, HORSE.

- | | | | | |
|--|---|-----------------------|----|--------------|
| | 1 | Brachypteryæ montana, | .. | Horsf. Java. |
| | 2 | ———— ? sepiaria, | .. | id. |

Subfam xxx. Sylviana.

GENUS SYLVIA.

- | | | | | |
|------------|---|------------------|----|----------------|
| | 1 | Sylvia Javanica, | .. | Prinia, Java. |
| | 2 | ———— montana, | .. | Prinia, Java. |
| Desiderat. | 3 | Sylvia Rama, | .. | Sykes, Dukhun. |
| | 4 | ———— Sylviella, | .. | Sykes, id. |

GENUS PRINIA.

- | | | | | |
|------------------------------|---|--------------------|----|----------------|
| All the Continental species. | 1 | Prinia familiaris, | .. | Horsf. Java. |
| | 2 | ———— socialis, | .. | Sykes, Dukhun. |
| | 3 | ———— inornata, | .. | Sykes, id. |

Gen. Zosterops, Vig. and Horsf. see below.

GENUS ORTHOTOMUS, HORSE.

- | | | | | |
|-------------|---|--------------------|----|----------------|
| Desiderata. | 1 | Orthotomus sepium, | .. | Horsf. Java. |
| | 2 | ———— Benetti, | .. | Sykes, Dukhun. |
| | 3 | ———— Lingoo, | .. | Sykes, id. |

xxxx. Subfam Motacillina.

GENUS MOTACILLA, AUCT.

- | | | | | |
|--|---|----------------------|----|-------------------|
| | 1 | Motacilla variegata, | .. | Stephens, Dukhun. |
| | 2 | ———— Dukhunensis, | .. | Sykes, id. |

GENUS BUDYTES, CUV.

- | | | | | |
|--|---|----------------------------|----|----------------|
| | 1 | Budytes flava (Mat flava,) | .. | Java, Sumatra. |
| | 2 | ———— citreola (Mat. cit.) | .. | Dukhun. |
| | 3 | ———— melanocephala, | .. | Sykes, id. |
| | 4 | ———— Beema, | .. | Sykes, id. |

GENUS ENICURUS, TEMM.

- | | | | | |
|-----------------------------------|---|---------------------|----|----------------|
| Species of Enicurus desired. | 1 | Enicurus coronatus, | .. | Temm. Java. |
| | 2 | ———— velatus, | .. | Temm. id. |
| | 3 | ———— maculatus, | .. | Gould, Bengal. |

GENUS ANTHUS, BECHSTEIN.

- | | | | | |
|--|---|----------------|----|----------------|
| | 1 | Anthus agilis, | .. | Sykes, Dukhun. |
| | 2 | ———— ? | .. | Sumatra. |

GENUS MEGALURUS, HORSE.

- | | | | | |
|-----------------------|---|----------------------|----|----------------|
| Continental species ? | 1 | Megalurus palustris, | .. | Horsf. Java. |
| | 2 | ———— ? ruficeps, | .. | Sykes, Dukhun. |

xxxxx Subfam Saxicolina.

GENUS SAXICOLA, BECHSTEIN.

- | | | | | |
|-------------|---|--------------------|----|---------------------------------|
| Desiderata. | 1 | Saxicola caprata. | .. | Java, &c. |
| | 2 | ———— Rubicola, | .. | Temm. Dukhun. |
| | 3 | ———— Rubicoloides, | .. | Sykes, id. |
| | 4 | ———— bicolor, | .. | Sykes, id. |
| | 5 | ———— erythropygia, | .. | Sykes, id. |
| | 6 | ———— olivea, | .. | M ^c Clelland, Assam. |

GENUS PHENICURA, JARD AND SELBY.

<i>Desiderata.</i>	.. {	1 Phœnicura atrata,	Jard. and Selby, <i>Dukhun.</i>
		2 ——— frontalis,	Gould. Cent. <i>Bengal.</i>
		3 ——— cœruleocephala,	.. Gould. Cent. <i>id.</i>
		4 ——— leucocephala,	.. Gould. Cent. <i>id.</i>
		5 ——— Reevesii,	.. Gray, <i>Assam.</i>

GENUS ZOSTEROPS, VIGORS AND HORSF.

<i>Additional Continental species ?</i> }	Zosterops Maderaspatanus,	..	<i>Java.</i>
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FAM V. PIPRIDÆ.

GENUS PARUS, LINN.

<i>Several other Indian species are indicated.</i>	}	1 Parus atriceps,	..	<i>Horsf. Java.</i>
		2 — xanthogenus,	<i>Vig. Gld. Cent. Dukhun.</i>	
		3 — erythrocephalus,	<i>Gld. Cent. Bengal.</i>	
		4 — monticolus,	..	<i>Gld. Cent. id.</i>
		5 — — — — —	..	<i>id.</i>

Genus Melanochlora.

GENUS MELANOCHLORA, LESS. PARUS. LAF. MCCLELLAND.

<i>Particularly.</i>	.. {	1 Melanochlora flavocristata,	..	<i>Assam.</i>
		Parus flavocristatus,		<i>Lafr.</i>

GENUS CALYPTOMENA, RAFF.

<i>Particularly.</i>	1 Calyptomen, viridis.	..	<i>Raffl. Sumatra.</i>
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GENUS LIOIOTHRIX, SWAINSON.

<i>Leiothrix is a very interesting Genus and all Indian species are Desiderata.</i>	}	1 Liothrix lepida,	..	<i>M'Clelland, Assam.</i>
		2 ——— signata,	..	<i>M'Clelland, id.</i>
		3 ——— ornata,	..	<i>M'Clelland, id.</i>
		Tribus III. Conirostres, <i>Cuv.</i>		

I. FAM. FRINGILLIDÆ.

XX. Subfam Alaudina.

GENUS EMBERIZA, LINN.

<i>Desiderata.</i>	.... {	1 Emberiza cristata,	..	<i>Vigors, Dukhun.</i>
		2 ——— subcristata,	..	<i>Sykes, id.</i>
		3 ——— malanocephala,	..	<i>Sykes, id.</i>
		4 ——— Cia, .. ..	..	<i>Bengal.</i>

GENUS ALAUDA, LINN.

1 Alauda Gulgula,	..	<i>Frankl. Dukhun.</i>
2 ——— Deva,	..	<i>Sykes, id.</i>

GENUS LINARIA.

<i>Common.</i>	1 Linaria Amandava,	..	<i>Java.</i>
----------------	------	---------------------	----	--------------

GENUS MIRAFA, HORSF.

<i>Species of Mirafra desired.</i>	.... {	1 Mirafra Javanica,	..	<i>Horsf. Java.</i>
		2 ——— phœnicura,	..	<i>Frankl. Dukhun.</i>
		3 ——— Assamica,	..	<i>M'Clelland, Assam.</i>
		4 ——— flavellicollis,		<i>M'Clelland, id.</i>

xxx. Subfam Carduelina.

GENUS CARDUELIS, BRISS.

- | | | | |
|---|---------------------|----|----------------------|
| 1 | Carduelis caniceps, | .. | Gould, Cent. Bengal. |
| 2 | ———— spinoides, | .. | id. id. |

GENUS PLOCEOUS, CUV.

- | | | | |
|---|-----------------------|----|------------|
| 1 | Ploceus Philippensis, | .. | Java. |
| 3 | ———— Mangar, | .. | Horsf. id. |

xxxx. Subfam Passernia.

GENUS FRINGILLA.

- | | | | |
|---|------------------------|------|--------------------|
| 1 | Fringilla punctularia, | .. | Lcep. Linn. Java. |
| 2 | ———— striata, | .. | Ls. Linn. id. |
| 3 | ———— oryzivora, | .. | id. |
| 4 | ———— Maja, .... | .... | id. |
| 5 | ———— crucigera, | .. | Temm. Dukhun. |
| 6 | ———— Rhodopepla, | .... | Gld. Cent. Bengal. |
| 7 | ———— montana? | .... | Sumatra. |

Desiderat.

.... {

GENUS PASSER, AUCT.

- | | | | |
|---|--------------------|----|----------------|
| 1 | Passer domesticus, | .. | Briss. Dukhun. |
|---|--------------------|----|----------------|

GENUS LONCHURA, SYKES.

- | | | | |
|---|---------------------|----|--------------------|
| 1 | Lonchura misoria, | .. | Dukhun. |
| 2 | ———— Cheet, | .. | Sykes, id. |
| 3 | ———— leuconota, | .. | Sykes, id. |
| 4 | ———— sphura, | .. | Java. |
| 5 | ———— melanocephala, | .. | McClelland, Assam. |

Desiderat.

.... {

II. FAM STURNIDÆ.

xx. Subfam Sturnina.

GENUS STURNUS, LINN.

- | | | | |
|---|-------------------|----|--------|
| 1 | Sturnus vulgaris, | .. | China. |
|---|-------------------|----|--------|

GENUS LAMPROTORNIS.

- | | | | |
|---|-------------------|----|-------------------|
| 1 | Lamprotnis, | .. | Cantor, Java. |
| 2 | ———— spilopterus, | .. | Gld. Cent. Assam. |
| 3 | | | |

Desideratum.

.... {

GENUS PASTOR, TEMM.

- | | | | |
|---|---------------------|----|-----------------------|
| 1 | Pastor griseus, | .. | Horsf. Java. |
| 2 | ———— Mahrattensis, | .. | Sykes, Dukhun. |
| 3 | ———— capensis, | .. | P. Jalla Horsf. Java. |
| 4 | ———— tricolor, | .. | Horsf. id. |
| 5 | ———— tristis, | .. | Gracula Linn. Dukhun. |
| 6 | ———— roseus, | .. | Temm. Dukhun, &c. |
| 7 | ———— Pagodarusu, | .. | Temm. id. |
| 8 | ———— cristatellus, | | |
| 9 | ———— leucocephalus, | | |

Several other species of Pastor are indicated and a complete series is very much wanted.

{

III. FAM CORVIDÆ.

xx. Subfam Corvina.

GENUS PICA, BRISS.

- | | | | |
|----------------|---|--------------------------------|------------------------------------|
| <i>Magpie.</i> | { | 1 <i>Pica erythrorhyncha</i> , | <i>Gml. Linn. China.</i> |
| | | * 2 — caudata, .. | <i>Briss Ray, &c. Sumatra.</i> |

GENUS DENDROCITTA, GOULD.

- | | | | |
|--------------------|---|---------------------------------|------------------------|
| <i>Desiderata.</i> | { | 1 <i>Dendrocitta Sinensis</i> , | |
| | | 2 ————— <i>yagabunda</i> , | .. <i>Assam.</i> |
| | | 3 ————— <i>leucogastra</i> , | .. <i>Gld. Madras.</i> |
| | | 4 ————— <i>frontalis</i> , | .. <i>M'Cl. Assam.</i> |

GENUS KITTA, KUHLE.

- 1
- Kitta venatorius*
- .

GENUS CORVUS, AUCT.

- | | | | |
|----------------------------|---|-----------------------------|------------------------|
| <i>Additional species.</i> | { | 1 <i>Corvus Corone</i> , | .. <i>Sumatra.</i> |
| | | 2 ————— <i>splendens</i> , | .. <i>Dukhun.</i> |
| | | 3 ————— <i>culminatus</i> , | .. <i>id.</i> |
| | | 4 ————— <i>Enca</i> , | .. <i>Horsf. Java.</i> |

xxx. Subfam Coracina.

GENUS CORACIAS, LINN.

- | | | | |
|----------------|---|----------------------------|---------------------------|
| <i>Common.</i> | { | 1 <i>Coracias indica</i> , | .. <i>Linn. Sumatra.</i> |
| | | 2 ————— <i>affinis</i> , | .. <i>McClell. Assam.</i> |

GENUS GRACULA, AUCT. EULABES CUV.

- 1
- Gracula religiosa*
- , ..
- Auct, Java, &c.*

GENUS CRYPHIRINA, VIEILL.

- 1
- Crypsirina*
- , ..
- Java.*

GENUS GARRULUS, BRISS.

- | | |
|---------------------------------|------------------------|
| 1 <i>Garrulus lanceolatus</i> , | .. <i>Gld. China.</i> |
| 2 ————— <i>bispeularis</i> , | .. <i>Gld. Bengal.</i> |

GENUS FREGILUS, CORACIA BRISS, GRAY, GM. CUV.

- 1
- Fregilus graculus*
- , ..
- Sumatra.*

IV. FAM BUCERIDÆ.

GENUS BUCEROS.

- | | | | |
|--|---|-------------------------------|----------------------------------|
| <i>Several recently discovered Indian species desired.</i> | { | 1 <i>Buceros Rhinoceros</i> , | <i>Linn. Sumatra.</i> |
| | | 2 ————— <i>undulatus</i> , | <i>Shaw, Java.</i> |
| | | 3 ————— <i>Malabaricus</i> , | <i>Lath, id.</i> |
| | | 4 ————— <i>cavetus</i> ? | <i>Homrai, Hodgson, Sumatra.</i> |
| | | 5 ————— <i>gingeanus</i> , | <i>Madras, &c.</i> |

V. FAM LOXIADÆ, IGORS.

GENUS PARADOXORNIS, GOULD, PROCEED. ZOOL. SOC.

- 1
- Paradoxornis flavirostris*
- , ..
- Gould, Assam.*

Particularly.

TRIBUS IV.

II. FAM PSITTACIDÆ.

x. Subfam Psittacina.

GENUS PSITTACUS.

All the species of this Genus.	{	1 Psittacus sulphureus, ..	Sumatra.
		2 ——— ornatus, ..	Sumatra.

xxxx. Subfam. Palæorninia.

GENUS PALÆORNIS, VIGORS.

Species of Palæor- nis generally desired.	{	1 Palæornis Pondicerianus, ..	Java, &c.
		2 ——— torquatus,	Sumatra.
		3 ——— flavitorquis, ..	Shaw.
		4 ——— Malaccensis, ..	Java.
		5 ——— melanorhynchus, ..	Sykes, Dukhun.
		6 ——— schisticeps, ..	Bengal.
		7 ——— erythiocephalus, ..	China.

xxxxx. Subfam Psittaculina, Vigors.

GENUS PSITTACULA, KUHL.

Additional species.	1 Psittaculina Galguila, ..	Java.
---------------------	-----------------------------	-------

III. FAM PICIDÆ.

GENUS BUCCO.

Additional species desirable?	{	1 Bucco Javensis, ..	Horsf. Java.
		2 ——— roseicollis, ..	id.
		3 ——— Philippensis, ..	
		4 ——— australis, ..	Horsf.
		5 ——— versicolor, ..	Raff. Sumatra.
		6 ——— de Mainas, ..	Temm. Sumatra.
		7 ——— Lathamii, ..	id.
		8 ——— caniceps, ..	Dukhun.
		9 ——— corvinus, ..	id.
		10 ——— grandis, ..	Sumatra.
		11 ——— cyanops, ..	Cuv. Assam.

GENUS PICUS.

A complete series of the Continental species of Picus desirable.	{	1 Picus leucogaster, ..	Temm. Java.
		2 ——— pulverulentus, ..	Temm. id.
		3 ——— dimideatus, ..	Temm. id.
		4 ——— Goensis, ..	Lath. id.
		5 ——— miniatus, ..	Gmel. id.
		6 ——— puniceus, ..	Horsf. id.
		7 ——— analis, ..	Temm. id.
		8 ——— poicilolophus, ..	Temm. id.
		9 ——— badius, ..	Raff. Sumatra.
		10 ——— Mahrattensis, ..	Lath. Dukhun.
		11 ——— nuchalis, ..	Wagler, Bengal.
		12 ——— squamatus, ..	Gould, Bengal.
		13 ——— hyperythrus, ..	Gould, Bengal.
		14 ——— brunifrons, ..	Gould, Bengal.
		15 ——— Himalayanus, ..	Jardin, Bengal.
		16 ——— strenuus, ..	Gould, Assam.
		17 ——— occipitalis, ..	Gould, Cent. id.
		18 ——— Nepalensis, ..	Gray and Hard. id.
		19 ——— Macei, ..	id.

Pedibus Tridactylis.

GENUS CHRYSONOTUS, SWAINS.

- | | | | |
|----------------------------|---|-------------------------|----------------------|
| <i>Additional species?</i> | } | 1 Picus Chrysonotus, .. | <i>Grant, Assam.</i> |
| | | 2 ——— tiga, .. | <i>Horsf. Java.</i> |

GENUS YUNX, LINN.

- | | |
|----------------------|-----------------------------|
| 1 Yunx torquilla, .. | <i>Linn. Assam, &c.</i> |
|----------------------|-----------------------------|

IV. FAM CERTHIADÆ.

GENUS UPUPA, AUCT.

- | | |
|-----------------|----------------------|
| Upupa minor, .. | <i>Shaw, Dukhun.</i> |
|-----------------|----------------------|

GENUS TICHODROMA.

- | | |
|-------------------------------|---------------|
| 1 Tichodroma erythroptera, .. | <i>China.</i> |
|-------------------------------|---------------|

GENUS SITTA, LINN.

- | | | | |
|---|---|-----------------------|---------------------|
| <i>Other species of Sitta
are recorded.</i> | } | 1 Sitta frontalis, .. | <i>Horsf. Java.</i> |
|---|---|-----------------------|---------------------|

V. FAM. CUCULIDÆ.

GENUS COCCYZUS, VIEILL.

- | | | | |
|---------------------|------|------------------------------|--------------|
| <i>Desideratum.</i> | | 1 Coccyzus chryso-gaster, .. | <i>Java.</i> |
|---------------------|------|------------------------------|--------------|

GENUS LEPTOSOMUS.

- | | |
|-----------------------|----------------|
| 1 Leptosomus Afer, .. | <i>Dukhun.</i> |
|-----------------------|----------------|

GENUS ENDYNAMIS, VIG. AND HORSF.

- | | |
|----------------------------|----------------------|
| 1 Endynamis orientalis, .. | <i>Java, &c.</i> |
|----------------------------|----------------------|

GENUS CUCULUS, AUCT.

- | | | | |
|--------------------------------|---|--------------------------|-----------------------------|
| <i>All the Indian species.</i> | } | 1 Cuculus fugax, .. | <i>Horsf. Java, &c.</i> |
| | | 2 ——— flavus, .. | <i>Gmel. id.</i> |
| | | 3 ——— canorus, .. | <i>id.</i> |
| | | 4 ——— Pravata, .. | <i>Linn. id.</i> |
| | | 5 ——— lugubris, .. | <i>Horsf. id.</i> |
| | | 6 ——— xanthorhynchus, .. | <i>Horsf. id.</i> |
| | | 7 ——— basalis, .. | <i>Horsf. id.</i> |
| | | 8 ——— Nepalensis, .. | <i>Gould, Bengal.</i> |
| | | 9 ——— Indicus, .. | <i>id.</i> |

GENUS CENTROPUS, ILLIG.

- | | | | |
|--|---|-------------------------|----------------------------|
| <i>Centropus and Phæ-
nicophaus.</i> | } | 1 Centropus lepidus, .. | <i>Horsf. Java, Assam.</i> |
| | | 2 ——— Philippensis, .. | <i>Cuv. id. id.</i> |

GENUS PHÆNICOPHAUS. VIEILL.

- | | |
|------------------------------|-----------------------|
| 1 Phænicophaus Rouverdin, .. | <i>Java.</i> |
| 2 ——— lucidus, .. | <i>Vig. Sumatra.</i> |
| 3 ——— tristis, .. | <i>Lesson, Assam.</i> |

GENUS TROGON, LINN.

- | | | | | |
|---------------------|----|---|-------------------------|-----------------------|
| <i>Desideratum.</i> | .. | { | 1 Trogon Duvancelii, .. | <i>Temm. Sumatra.</i> |
| | | | 2 ——— Hodgsonii, .. | <i>Gould, Assam.</i> |

Tribus Tenuirostres, CUV. Fam. Cinyridæ.

GENUS CINNYRIS, CUV. NECTARRINA ILLIG.

Indian species generally.	{	1 Cinyris lepida, ..	Java, &c.
		2 ——— pectoralis, ..	Horsf. Java.
		3 ——— eximia, ..	Horsf. id.
		4 ——— currucaria, ..	Linn. Dukhun.
		5 ——— Vigorsii, ..	Sykes, id.
		6 ——— minima, ..	Sykes, id.
		7 ——— Mahrattensis, ..	Shaw, id.
		8 ——— concolor, ..	Sykes, id.
		9 ——— Peronii, ..	Siam.
		10 ——— Assamensis, ..	M'Clelland, Assam.
		11 ——— Labecula, ..	M'Clelland, id.

GENUS ARACHNOTHERA, TEMM.

Desiderata.	....	{	1 Arachnotera inornata, ..	Temm. Java.
			2 ——— longirostria, ..	id.

GENUS DICEUS, CUV.

Desiderata.	....	{	1 Diceum cruentatum, ..	Java.
			2 ——— erythronotum, ..	Assam.

FAM. MELIPHUGIDÆ.

GENUS CHLOROPSIS.

Desiderata.	....	{	2 Chloropsis Cochinchinensis, ..	Java, &c.
			2 ——— chrysogaster, ..	M'Clelland, Assam.

GENUS POMATORHINUS, HORSF.

Desiderata.	....	{	1 Pomatorhinus montanus, ..	Horsf. Java, Assam.
			2 ——— Horsfieldii, ..	Sykes, Dukhun.
			3 ——— erythrogynus, ..	Gould, Bengal.

ORDO III.—RASORES, ILLIGER.

1 Fam Columbidae.

GENUS VINAGO, CUV.

Additional species of Arachnoteri Diceum Chloropsis and Pomatorhinus particularly desirable.	{	1 Vinago veruans, ..	Java, &c.
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GENUS PTILINOPUS, SWAINS.

Additional species of Arachnoteri Diceum Chloropsis and Pomatorhinus particularly desirable.	{	1 Ptilinopus Elphinstonii, ..	Sykes, Dukhun.
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GENUS COLUMBA, LINN.

Species of Vinago, Ptilinopus and Columba are Desirable.	{	1 Columba alba, ..	Linn. } Temm. Java.
		Columba titorulis, ..	} ..
		2 ——— melanocephala, ..	Gm. id.
		3 ——— tigrina, ..	Temm. id.
		4 ——— risoria, ..	Linn. id.
		5 ——— Bantamensis, ..	Sparm. id.
		6 ——— bitorquata, ..	Temm. id.
		7 ——— Javanica, ..	Temm. id.
		8 ——— Amboinensis, ..	Linn. id.
		9 ——— aenea, ..	Linn. id.
		10 ——— Jamboo, ..	Gmel. Sumatra.
		11 Aleena, ..	Sykes, Dukhun.
		12 humiles, ..	id.
		13 aenas, ..	id.
14 cambaginus, ..	id.		

II. FAM PHASIANIDÆ.

GENUS PAVO, LINN.

- 1 Pavo cristatus, .. *Linn. Dukhun.*
 2 ——— muticus, .. *Temm. Java.*

GENUS POLYPLECTRON, TEMM.

- Desideratum.* 1 Polyplectron bicalcaratus, .. *Sumatra.*

GENUS LOPHOPHORUS, TEMM.

- 1 Lophophorus Impeyanus, .. *Bengal.*

GENUS GALLUS, BRISS.

- Other Indian species?* {
 1 Gallus furcatus, .. *Temm. Java.*
 2 ——— Bankiva, .. *Temm. id.*
 3 ——— Soneratii, .. *Dukhun.*
 4 ——— giganteus, .. *id.*
 5 ——— domesticus, .. *id.*

GENUS EUPLOCOMUS.

- Desiderat.* {
 1 Euplocomus erythrophthalmus, .. *Sumatra.*
 2 ——— ignitus, .. *Temm. Sumatra.*

GENUS PHASIANUS.

- All the continental species.* {
 1 Phasianus albocristatus, .. *China.*
 2 ——— leucomelanos, .. *Assam.*
 3 ——— Pucrasia, .. *China.*

GENUS ARGUS, TEMM.

- 1 Argus giganteus, .. *Temm. Sumatra.*

GENUS TRAGOPAN, CUV.

- Additional species.* .. 1 Tragopan cornutus, .. *Bengal.*

GENUS NUMIDA.

- 1 Numida Meleagris, .. *Domestic in Dukhun.*

III. FAM TETRAONIDÆ.

GENUS CRYPTONYX.

- 1 Cryptonyx cristatus, .. *Sumatra.*
 2 ——— ocellatus, .. *id.*

GENUS COTURNIX, CUV.

- A complete series of the Genera of this family desirable,* {
 1 Coturnix sinensis, .. *Java.*
 2 ——— dactylisonans, .. *Dukhun.*
 3 ——— textilis, .. *id.*
 4 ——— Argoondah, .. *Sykes, Dukhun.*
 5 ——— Pentah, .. *Sykes, id.*
 6 ——— erythrorhyncha, .. *Sykes, id.*

GENUS PERDIX, BRISS.

- 1 Perdix Javanica, .. *Horsf. Java.*
 2 ——— personata, .. *Horsf. id.*
 3 ——— curvirostris, .. *Sumatra.*
 4 ——— picta, .. *Jard and Selby, Dukhun.*
 5 ——— oculoa, ..
 6 ——— Chukur, .. *Bengal.*

GENUS FRANCOLINUS.

- | | | | |
|---|------------------------|----|---------|
| 1 | Francolinus spadiceus, | .. | Dukhun. |
| 2 | ———— Pontecerianus, | .. | id. |
| 3 | ———— cruentus, | .. | Bengal. |
| 4 | | | |

GENUS PTEROCLES.

- | | | | |
|---|--------------------------|----|---------------|
| 1 | Pterocles quadricinctus, | .. | Temm. Dukhun. |
| 2 | ———— exustus, | .. | Temm. Dukhun. |

GENUS HEMIPODIUS, TEMM.

- | | | | |
|---|-------------------------|----|------------|
| 1 | Hemipodius Luzoniensis, | .. | Java. |
| 2 | ———— pugnax, | .. | Dukhun. |
| 3 | ———— Dussumier, | .. | Temm. id. |
| 4 | ———— Taigoor, | .. | Sykes, id. |

IV. FAM STRUTHIOMDÆ.

GENUS OTIS, LINN.

- | | | | | |
|---------------------|---|-----------------|----|----------------|
| Desideratum. { | 1 | Otis nigriceps, | .. | Gould, Dukhun. |
| | 2 | ---- fulva, | .. | Sykes, id. |

ORDO IV. GRALLATORES.

I. Fam Gruidæ.

GENUS GRUS, PALLAS.

- | | | | | |
|---|---------------|----|----|---------|
| 1 | Grus cinerea, | .. | .. | Bengal. |
|---|---------------|----|----|---------|

II. FAM ARDEIDCÆ.

GENUS ARDEA.

Good specimens of
the Genera Grus, Ardea
and Ciconia desired.

- | | | | | |
|---|----|-------------------|----|---------------------|
| } | 1 | Ardea cinerea, | .. | Linn. var. Java. |
| | 2 | ---- purpurea, | .. | Linn. id. |
| | 3 | ---- Egretta, | .. | Gmel. Java, Dukhun. |
| | 4 | ---- Garzetta, | .. | Linn. id. id. |
| | 5 | ---- russata, | .. | Temm. Java. |
| | 6 | ---- Malaccensis, | .. | Gmel. id. |
| | 7 | ---- speciosa, | .. | Horsf. id. |
| | 8 | ---- Sinensis, | .. | id. |
| | 9 | ---- flavicollis, | .. | Lath. id. |
| | 10 | ---- Javanica, | .. | id. |
| | 11 | ---- cinnamomea, | .. | Gmel. id. |
| | 12 | ---- Caboga, | .. | Penn. Dukhun. |
| | 13 | ---- Grayii, | .. | Sykes, id. |
| | 14 | ---- gularis, | .. | Siam. |

GENUS BOTAURUS, BRISS.

- | | | | |
|---|---------------------|----|---------|
| 1 | Botaurus stellaris, | .. | Bengal. |
|---|---------------------|----|---------|

GENUS NYCTICORAX, STEPHENS.

- | | | | |
|---|----------------------|----|---------------|
| 1 | Nycticorax Europæus, | .. | Java, Dukhun. |
|---|----------------------|----|---------------|

GENUS CICONIA.

- | | | | | |
|----------------------------|---|--------------------|----|-------------|
| Ciconia Argala (Adjutant,) | 1 | Ciconia capillata, | .. | Temm. Java. |
| a good specimen desired! | 2 | ———— lencocephala, | .. | Java. |

GENUS PHÆNICOPTERUS.

1 Phænicopterus ruber, .. *Linn. Siam.*

GENUS MYCTERIA, LINN.

1 Mycteria australis, .. *Bengal.*

GENUS PLATALEA, LINN.

1 Platalea leucorodia, .. *Linn. Dukhun.*

GENUS ANASTORNUS, ILLIGER.

1 Anastornus typus, .. *Linn. Dukhun.*

GENUS TANTALUS, LINN.

1 Tantalus leucocephalus, .. *Lath. Dukhun.*

GENUS IBIS, LACEP.

1 Ibis religiosa, .. *Cuv. Dukhun.*2 — ignea, .. *id.*3 — papillosa, .. *Temm. id.*4 — falcinella, .. *Temm. id.*

III. FAM SCOLOPACIDÆ.

GENUS NUMENIUS, BRISS.

Desiderata. 1 Numenius Phœœpus, .. *Java.*

GENUS TOTANUS, BECHSTEIN.

A series of this Genus. {

1 Totanus affinis, .. *Horsf. Java.*

2 — hypoleucos, .. *Temm. id.*

3 — acuminatus, .. *Horsf. id.*

4 — tenurostris, .. *Horsf. id.*

5 — Damacensis, .. *Horsf. id.*

6 — Glottis, .. *Bechst. id.*

7 — ochropus, .. *Temm. Dukhun.*

8 — Glareola, .. *Temm. id.*

GENUS LIMOSA, BRISS.

Desiderata. {

1 Limosa melanura, .. *Java.*

2 — Terek, .. *Temm. id.*

3 — Horsfieldii, .. *Sykes, Dukhun.*

4 — Glottoides, } *Sykes, id.*

 Totanus Glottoides, } *Gould.*

GENUS SCOLOPAX, LINN.

1 Scolopax saturata, .. *Horsf. Java.*

GENUS GALLINAGO, RAY.

Other Indian species of Scolopax and Gallinago. {

1 Gallinago media, .. *Java, Dukhun.*

2 — minima, .. *Dukhun.*

GENUS RHYNCHÆA, CUV.

Desideratum. {

1 Rhynchæa orientalis, .. *Horsf. Java.*

2 — pieta, .. *Gray, Dukhun.*

GENUS PELIDNA, CUV.

Desideratum. 1 Pelidna Temminckii, .. *Stephens, Dukhun.*

GENUS TRINGA, LINN.

Desideratum. 1 Tringa subarquata, .. *Temm. Java.*

GENUS SREPSILAS, ILLIGER.

Desideratum. 1 *Strepsila collaris*, .. *Temm. Sumatra.*

IV. FAM RALLIDÆ.

GENUS PARRA, LINN.

1 *Parra superciliosa*, .. *Horsf. Java.*

2 ——— *Sinensis*, .. *Gmel. Dukhun.*

GENUS GLAREOLA, BRISS.

Other Continental species. } 1 *Glareola orientalis*, .. *Leach, Java.*

GENUS RALLUS, LINN.

Desideratum. { 1 *Rallus gularis*, .. *Horsf. Java.*

2 ——— *fuceus*, .. *Linn. id.*

3 ——— *A kool*, .. *Sykes, Dukhun.*

GENUS GALLINULA, BRISS.

Continental species. { 1 *Gallinula lugubris*, .. *Horsf. Java.*

2 ——— *chloropus*, .. *id.*

3 ——— *Javanica*, .. *Horsf. Java, Dukhun.*

4 ——— *superciliosa*, .. *Temm. Java.*

GENUS PORPHYRIO, BRISS.

1 *Porphyrio smaragdinus*, .. *Java, Dukhun.*

GENUS FULICA.

1 *Fulica atra*, .. *Linn. Java, Dukhun.*

V. FAM CHARADRIADÆ.

GENUS VANENLUS, BRISS.

Desiderata. { 1 *Vanellus melanogaster*, .. *Java.*

2 ——— *tricolor*, .. *Horsf. id.*

3 ——— *Goënsis*, .. *Steph. Dukhun.*

4 ——— *bilobus*, .. *id.*

GENUS CHARADRIUS.

Indian species generally. { 1 *Charadrius cantarius*, .. *Lath. Java.*

2 ——— *pluvialis*, .. *Linn. id.*

3 ——— *Asiaticus*, .. *Gmel. id.*

4 ——— *pusillus*, .. *Horsf. id.*

5 ——— *Phillippensis*, .. *Lath. Dukhun.*

GENUS CURSORIUS, LATH.

1 *Cursorius Asiaticus*, .. *Lath. Dukhun.*

GENUS HIMANTOPUS, RAY.

1 *Himantopus melanopterus*, .. *Java, &c.*

GENUS ÆDICNEMUS, CUV.

1 *Ædicnemus crepitans*, .. *Dukhun.*

ORDO V. NATATORES.

I Fam Anatidæ, Leach.

GENUS PLECTROPTERUS, LEACH.

A series of Indian Natatores generally desirable. 1 *Plectropterus melanotos*, .. *Dukhun.*

GENUS ANSER, BRISS.

1 *Anser Girra*, .. *Dukhun.*

GENUS TADORNA, LEACH.

- 1 Tadorna rutila, .. *Steph. Dukhun.*

GENUS ANAS, AUCT.

- 1 Anas strepera, .. *Linn. Dukhun.*

GENUS RHYNCHAPSIS.

- 1 Rhyrchapsis viresceus, .. *Dukhun.*

GENUS MARECA.

- 1 Mareca pæcilorhyncha, .. *Steph. Dukhun.*

- 2 ——— fistularis, .. *id.*

- 3 ——— Ardsuro, .. *Sykes, id.*

- 4 ——— Arcuata, .. *Cuv. Java.*

GENUS QUERQUEDULA.

- 1 Querquedula Circia, .. *Dukhun.*

GENUS MERGUS, LINN.

- 1 Mergus Merganser, .. *Bengal*

II. FAM. COLYMBIDÆ.

GENUS PODICEPS, LATH.

- 1 Podiceps minor, .. *Java.*

- 2 ——— Philippensis, .. *Dukhun.*

III. FAM. ALCADÆ.

GENUS APTENODYTES, FORST.

- 1 Aptenodytes, .. *Southern Ocean.*

IV. FAM. PELECANIDÆ—LEACH.

GENUS PELECANUS.

- 1 Pelecanus onocrotalus, .. *Java.*

- 2 ——— Javanicus, .. *Horsf. id.*

GENUS PHALACROCORAX, BRISS.

- 1 Phalacrocorax Javanicus, .. *Java.*

GENUS SULA, BRISS.

- 1 Sula communis. .. *Siam.*

GENUS TACHYPETES, VIEILL.

- 1 Tachypetes Aquilus, .. *Siam.*

GENUS PHAETON, LINN.

- 1 Phaëton æthereus,

GENUS PLOTUS, LINN.

- 1 Plotus melanogaster, *Gml. Java, Dukhun.*

V. LARIDÆ—LEACH.

GENUS STERNA, LINN.

- 1 Sterna minuta, .. *Linn. Java.*

- 2 ——— Javanica, .. *Horsf. id.*

3	<i>Sterna media</i> ,	..	<i>Horsf. id.</i>
4	—— <i>grisea</i> ,	..	<i>Horsf. id.</i>
5	—— <i>affinis</i> ,	..	<i>Horsf. id.</i>
6	—— <i>acuticauda</i> ,	..	<i>Gray, Dukhun.</i>
7	—— <i>similis</i> ,	..	<i>Gray, Dukhun.</i>
8	—— <i>Seena ?</i>	..	<i>Sykes, Dukhun.</i>

GENUS DIOMEDEA, LINN.

- 1 *Diomedea exulans*.
2 ——— *fuliginosa*.

GENUS PROCELLARIA, AUCT.

- 1 *Procellaria Capensis*,
1 ——— *æquinoctialis*.

Remarks.

In the preceding list, subjects of which specimens are particularly desirable have been indicated in the margin: of these several specimens will be useful. The more common species have also been indicated, and of these a single specimen, in good condition, especially in an extensive series or to complete a *local Fanna*, will be sufficient. The Court's wishes respecting collections for the Company's Museum have been generally expressed in the public letter; a few explanatory remarks are now added. The list exhibits a general view of the present contents of the Company's Museum in Mammalia and Birds, and its chief object is to direct Naturalists in India to the discovery of new species, and to the supply of such as are still wanting in the Museum. Respecting Mammalia generally, it may be observed that specimens of all the smaller species in good condition will be desirable; but the Court particularly recommend a very close and persevering search respecting the family of *Chiroptera* or *Bats*. The list contains only a small number of Indian Bats, and the Court are most anxious to obtain a large addition of subjects of this family to complete that series. Very few of the Bats of Continental India have as yet been collected, and a general, careful, zealous search is strongly requested and recommended.

Of the family of *Quadrumana*, a general supply of good specimens will also be desirable, especially of the Genera *Hylobates*, *Semnopithecus*, *Macacus*; also of the allied Genera *Lemur*, *Tarsius*, and *Galeopithecus*. Among the *Feræ* the smaller species of *Felis*, *Mustela*, *Mangusta*, *Viverra*, *Arictitis* (or *Ictides*), *Canis*, *Ailurus*, *Arctonyx*, &c. are requested; and of the larger species good specimens only of rare or newly discovered subjects. These remarks also apply to the order of the *Ungulata*, and among these, especially to the Genera *Antilope*, *Moschus*, *Cervus*, &c. Of the order of *Glires* or *Rodentia*, which are generally small, the Court will be glad to receive series as complete as possible of the species of all the genera, namely, *Sciurus*, *Pteromys*, *Lepus*, *Mus*, &c. &c.

Respecting Birds, the Court would direct particular attention to those Genera which are marked in this list. Several of these have only recently been discovered, and they are of great value and interest in science: additional specimens will be very welcome, and also new species of these, or of previously known Genera.

The Officiating Curator having been requested to furnish his Report on the foregoing papers, submitted the following :—

H. W. TORRENS, Esq.

Secretary, Asiatic Society.

SIR,

In obedience to the desire of the Committee of Papers, confirmed by the Society at its meeting of the 5th instant, I have the honour to submit my report on the matters relative to the Museum, forming the subject of the letter of the Honorable the Court of Directors, No. 17 of 1840, under date 16th September, 1840, and that of the Society to the Government of India, General Department, transmitting the former to you, date 31st December 1840. For more distinct explanation, it may be convenient to state what these matters are :—

I.—The relation in which the Society now stands towards the Honorable the Court.

II.—Inquiry for various collections assumed to have been detained at the Society's rooms : especially those of Dr. HELPER and Capt. PEMBERTON.

III.—The assistance which may be afforded by the Society to facilitate the early dispatch of collections made by Government Officers.

IV.—Assistance which may be afforded by the Society towards the completion of the Honorable Court's Museum.

The feeling of the Society, and my own views on this head, are, I submit,

<p>I. The relation in which the Society now stands towards the Honorable the Court.</p>	}	<p>fully expressed by the Resolution which I had the honor to propose, and which was unanimously carried at the January meeting of 1841, (see Journal No. 105, p. 943,) and which for ready reference, I copy here.</p>
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“The Officiating Curator reported, that a considerable number of duplicate specimens, principally of birds, &c. were available for transmission to Europe ; and he moved,—that as many specimens of great interest to Naturalists might be collected, prepared and sent to England at a small expence, it was worthy the attention of the Society, whether such might not be prepared and sent to the Honorable the Court of Directors, as due to them from the Society.”

The Society therein adopting this resolution, has fully testified its earnest desire to acknowledge, in every possible way which can tend to the general advancement of science, the liberal assistance which the Honorable the Court has been pleased to extend to it. I may also here, perhaps, refer to my report for the past month, (approved by the Society), in which, after proposing a second dispatch of duplicates to the Honorable the Court, I have ventured further to suggest to their Curator, how we can mutually assist each other, as follows :—

“I may suggest here, that we point out to the Curator of the Museum of the Honorable the Court of Directors the great facility with which, if approved of by the Court, he might procure in exchange for such specimens as he already possesses, some of the many which we require for the Museum of Economic Geology. It is scarcely possible to send home a skin of a bird, a skeleton, or a skull from India, for which some duplicate may not be obtained in exchange, which would be of utility to us here.”

II.—Inquiry for various collections supposed to have been detained at the Society's Rooms, especially those of Dr. HELFER and Capt. PEMBERTON.

My report on Dr. HELFER's collection will I trust have satisfactorily shewn that, with respect to them, the Society is exonerated from all blame. I omitted in it to refer to the Entomological part. On careful inquiry, I find that no collection of insects was, at any time, deposited at the Society's Rooms by Dr. HELFER. Specimens of the moth cocoon, &c. of the Assam silk worms, were only presented by him to illustrate his paper on that subject.

With reference to Capt. PEMBERTON's collection, you will not fail to remark, that the collections referred to in those passages of the proceedings quoted in the Honourable the Court's letter, are collections placed "*in deposit*" only, and consequently, I shall infer, held by the Society at the disposition of the depositor, who evidently by his letter, at p. 749 of the Journal, is there disposing of them; since he says, that "under instructions from Government he presents to the Society 145 specimens of birds, a selection from the Bootan collection, &c."

Further: The collections deposited by Captain PEMBERTON were packed at the Museum, and in February 1840 sent to the Marine Board, for shipment to England, in four cases. Upon reference to Mr. GREENLAW, who has kindly referred to the agents of the *Shepherdess*, the vessel on which the cases were shipped, I learn that she did not arrive in England till the month of December; the Honourable Court's letter, it will be observed, bears date the 16th September 1840.

This is what I have been able to ascertain from the assistants and taxidermists at the Museum, and from Capt. PEMBERTON's official letter; in addition to which I may state, that from the description of the assistants, the four cases were about equal to half or three-quarters of a ton of measurement. Mr. GREENLAW has no knowledge of their size, as freight was to be paid at home.

I have referred to Dr. McCLELLAND, who has furnished me with Mr. GREENLAW's receipt, but he has not replied to my official letter, of which copy is hereto annexed. He however informs me in a private note as follows:—

"The duplicates only, as far as I recollect of the Bootan collection, were sent to the Court of Directors. A complete series was kept with the Society, particularly of the insects; the rest I forwarded myself through the Government on the part of the Bootan deputation."

There is some discrepancy here, which I cannot reconcile with Capt. PEMBERTON's letter quoted above; but as my knowledge stops at this point, I must leave it for your consideration.

Of the insects, there are none in the Society's collection noted as from the Bootan deputation. The assistants state, that they have no recollection of any collection having been received at the Museum for the Society as from Capt. PEMBERTON, or from the Bootan deputation; nor can I find any in their book, which however, is not very carefully kept. The insects referred to by Dr. McCLELLAND, may possibly be those which have no donor's names annexed to them in our cases. On my assuming charge of the Museum, I found a tin box of insects in the taxidermists' room, of which they were taking great care, and their account of it was, that Capt. PEMBERTON had brought *two* such boxes to the Museum; one of which they packed, and *he* himself sent it away, for the Court

of Directors; leaving the other under their care as his private property. This box has recently (February) been sent, under your directions, to Mrs. PEMBERTON.

My report of February also mentions, that in that month I had received from Col. MACLEOD two boxes, being Geological Specimens collected by Capt. PEMBERTON on his Bootan Mission; but without any catalogue. On these you will doubtless take the orders of Government. Dr. McCLELLAND in his note mentions the collections of the Assam Deputation. On reference to Dr. WALLICH, he informs me that he has reported on this subject to Government.

My report of February last also states, what had been found to be the sad condition of the three cases forwarded from Umballa by Mr. CLARK, and just received at the Museum, where I had recognised the collection as being that made by Sir ALEXANDER BURNES during his mission to Scinde. You will doubtless take the orders of Government on this collection also. The Society is thus, I trust completely acquitted of any negligence or detention of any collection which has come into its hands of late years.

III.—The assistance which may be afforded by the Society to facilitate the early despatch of collections made by Government Officers.

It appears from the foregoing statements, that the Society, in the case of Dr. HELFER's and Capt. PEMBERTON's collections have, really in every respect forestalled the wishes of the Honourable Court, by assisting as far as possible in the early dispatch of them. It is unnecessary here to refer again to its resolution, as already quoted at par. 2, when speaking of the relations in which it stands towards the Honourable the Court.

IV.—The assistance which may be afforded by the Society towards the completion of the Court's Museum.

In reference to this matter, the Society has also done itself the honour to forestall in some respect the views of the Right Honourable the Governor General in Council, by its resolution and by our first dispatch of duplicates of birds and snakes, and of Lieut. HURTON's valuable Geological series from the Himalaya and Spiti Valley. If desired, it might employ a few taxidermists at the expence of Government, who could be sent at a small expence with gentlemen desirous of contributing to the knowledge of Indian Natural History, and under zealous amateurs, many of whom are now deterred by their want of knowledge, or want of time, or the expence, much might doubtless be done.

I may be excused in remarking in conclusion that it is clear that, in relation to the Natural Sciences, as in every thing else, if India had all that she requires from Europe, and Europe all that she wants from India, both must be immeasurably benefited. In nothing then, surely, can a scientific body like the Asiatic Society, be more honourably employed than in promoting even the smallest fraction of such an exchange; and in nothing could it, in its sphere, more effectually confer lasting benefit on India.

I have the honour to be,

Sir,

Your's obediently,

H. PIDDINGTON,

Acting Curator, As. Soc. Museum.

CALCUTTA,
Asiatic Society's Rooms,
18th March, 1841.

Copy of a Letter to Dr. McCLELLAND referred to in the foregoing Report.

DEAR SIR,

A dispatch having been received by the Government of India from the Honourable the Court of Directors, in which, referring to Proceedings of the Asiatic Society for February, September, October, and November, 1838, they state, that it would appear that collections of Natural History have been detained at the Society's Rooms since those epochs, I have been desired to furnish a report thereon.

2. They refer more particularly to Dr. HELFER's and Captain PEMBERTON's collections. Of the first of these, (Dr. HELFER's,) I have been able to render a full account, quite exonerating the Society or its officers from any blame.

3. Of the second: we have in the Proceedings reference to three collections, mostly birds, *deposited* by Capt. PEMBERTON, and at p. 749, (Journal 1838,) that 145 birds were *presented* by him "under instructions from Government." It appears, moreover, by the books, that on the 29th February 1840, four cases which the Messrs. BOUCHEZ state to have been packed and marked here for the Honourable the Court, were sent to the Marine Board for shipment, but they have no receipt for them.

4. I am therefore desired to request from you, on the part of the Society, the best information you can afford us as to these, or any other Government collections of Natural History, which may have been received or sent out while you were in charge of the Society's Museum; with any documents or receipts which may enable us to explain to the full satisfaction of Government, what has become of them.

I am Sir, &c.

CALCUTTA,

H. PIDDINGTON,

As. Socy. Rooms, 12th March, 1841.

Actg. Curator, As. Socy. Museum.

No. 806.

TO DR. J. McCLELLAND,

Curator, Asiatic Society's Museum.

SIR,

With reference to your letter dated 29th ultimo, I am directed by the Marine Board to inform you of the shipment on the *Shepherdess*, Capt. BIGGAR, of the 4 boxes containing Natural Curiosities for England, to the address of the Honourable the Court of Directors, at the rate of £ 5-5 per ton of 50 cubic feet; freight payable in England on due delivery of the boxes.

I have the honor to be,

Sir,

Fort William,
MARINE BOARD OFFICE,

Your most obedient Servant,

The 5th March, 1840.

C. B. GREENLAW,
Secretary.

Resolved—That Mr. PIDDINGTON's report be forwarded to the Government, and that attention be particularly directed to the three points suggested in paragraphs 10, 11, and 13, by the Officiating Curator for the consideration of Government, and more particularly for the employment of taxidermists at its expence to accompany gentlemen desirous of contributing to the knowledge of Indian Natural History, but now deterred from doing so, for want of knowledge, or want of time, or the expence.

Read the following letter of 24th March last from Mr. Secretary BUSHBY :—

No. 433.

‘ To H. TORRENS, ESQ.

‘ Secretary to the Asiatic Society.

‘ General Department.

‘ Sir,

‘ I am directed to acknowledge the receipt of your letter and its enclosure of the 8th instant, and to acquaint you for the information of the Asiatic Society, that the Report of the Officiating Curator of the Society’s Museum on the Specimens brought out by Capt. TREMENHEERE, and deposited with the Society for the basis of a Museum of Economic Geology, will be transmitted to the Hon’ble the Court of Directors by the next Overland Mail.

‘ 2d. I am desired to take this opportunity for forwarding to the Asiatic Society the accompanying three specimens of rock from the head of the Pass at the Gurrah Ghât, near Mhow, on the Bombay and Agra road, together with a copy of the letter from Captain J. H. SMYTH, Officiating Superintendent of the Road, transmitting the specimens to the Military Board.

‘ 3d. In respect to the Society’s Museum of Economic Geology, the contributions will be obtained gradually by such aids as the Hon’ble the Court of Directors may be enabled to procure, or be pleased to sanction, and by the assistance of private individuals interested in this department of practical science, and by donation or interchanges with other Societies.

‘ 4th. The influence and correspondence of the Asiatic Society will progressively accomplish these objects.

‘ 5th. The Military Board will be instructed to direct the attention of the executive Officers of public works and roads, to the purposes of the institution of a Museum of Economic Geology, and to cause collections to be made of specimens, and descriptive lists to be sent to them, from which in communication with the Curator of the Society, the valuable and useful parts will be selected for transmission to the Museum at the least possible expence, and in most cases it is hoped, by a proper arrangement, without any charge in excess of the ordinary carriage that would be employed for other public uses.

‘ FORT WILLIAM,
‘ 24th March, 1841.

‘ I have the honor to be,

‘ Sir,

‘ Your most obedient Servant,

‘ G. A. BUSHBY,

‘ Secretary to the Government of Bengal.

‘ No. 143.

‘ To MAJOR DE BUDE,

‘ Secretary to the Military Board, Fort William.

‘ SIR,

‘ You will receive by Dak banghy, three specimens of the soil at the head of the Pass at Ghurra Ghat, forwarded to me by Captain KELLNER, superintending the road from

Dewass to Ackberpore. No. 1 abounds in detached masses eight feet below the surface; No. 2 in blocks four to six feet in diameter at the surface, and bedded two to three feet in No. 3, which latter is the prevailing stone at the pass, as far as the excavation has as yet been carried.

‘I have &c.

(Signed) ‘J. W. SMYTH, *Captain,*
Offg. Supt. of the Agra and Bombay Road.
(True Copy,)

‘SEEPREE
‘16th February, 1841. }’

(Signed) ‘M. MACLEOD, *Captain,*
Assist. Offg. Secy. Military Board.
(True Copy.)

(Signed) ‘G. A. BUSHBY,
Secretary to the Government of Bengal.’

With reference to the three specimens of rock received with the foregoing letter, read the following report from the Officiating Curator of 5th April, 1841, a copy of which was communicated to the Government through Mr. Secretary BUSHBY:—

‘H. W. TORRENS, Esq.

Secretary, Asiatic Society.

‘Sir,

‘I have to acknowledge receipt of the three specimens of Stone forwarded by Capt. KELLNER, through the Military Board, from the Pass at Ghurra Ghaut, and to say that they are

‘* No. 1. Hornblende Slate (or Basaltic Hornblende.)

‘No. 2. Argillaceous Sandstone, with veins of mica, having a metallic appearance.

‘No. 3. Felspar Prophyry.

‘I beg to suggest, that if a good series of specimens through the whole line of road, with a plan and elevation, and as many barometrical elevations of the heights of passes, &c. as possible, could be procured, it would be a great addition to our geological knowledge; as we have but very few sections crossing from the NNE. to the SSW. from the valley of the Ganges towards that of the Nurbudda.

‘I further suggest, that a copy of Capt. TREMENHEERE’s Memoir be sent to Capt. KELLNER, and indeed to all officers in charge of road-making duties. The specimens are for the present placed in the Museum of Economic Geology.

‘MUSEUM,

‘5th April, 1841.

‘I am, Sir,

‘Your obedient servant,

‘H. PIDDINGTON,

‘*Offg. Curator, As. Soc. Museum.*

With reference to the 3rd paragraph of Mr. BUSHBY’s letter, a question having been suggested as to the proprietorship of the Museum of Economic Geology, the Meeting were of opinion, that as it was not likely that the Government would ever recall it, that the Asiatic Society be considered virtually the proprietor.

* Specimen too small to determine to which variety belonging.

Read the following letter, No. 822, from Mr. Secretary MADDOCK :—

To H. TORRENS, Esq.

No. 822.

Secretary to the Asiatic Society.

Political Department.

SIR,

I am directed by the Governor General in Council to forward to you the accompanying copy of a calculation by Lieut. BIGGE, of the heights of the principal villages visited by him in the Naga Hills, for such notice as the Society may deem it to merit.

I have the honor to be,

FORT WILLIAM,
29th March, 1841.

Sir,
Your most obedient servant,
T. H. MADDOCK,
Secy. to the Govt. of India.

No. 11.

To Captain JENKINS,

Agent to the Gov. Gen. N. E. Frontier.

SIR,

Having by the Dāk of yesterday received the Tables necessary to enable me to calculate the approximate height of the various points, which have been taken by Thermometrical observations, I have the honor to forward the same, and am happy to find that they prove nearly correct, when compared with those of yourself and Captain PEMBERTON.

1st. Observation, camp Semoor river below the Prephamah, 2nd February, 1841.

Thermo. in the shade, 48°.

Water boils, 208, approx. height 2,116 feet.

2nd February.

2nd. Observ. at wells on S. E. of village of Prephamah.

Thermo. in shade, 56°.

Water boils, 206, approx. height 3,235 feet.

2nd February.

3rd. Observ. at village of Geroophamah.

Thermo. in shade, 56½°.

Water boils, 204, approx. height 4,340 feet.

3rd February.

1st. Observation at village of Sassamah.

Thermo. in shade, 59°.

Water boils, 204, approx. height 4,362 feet.

4th February, 1841.

1st. Observation camp opposite Ronomah in valley.

Thermo. in shade,..... $48\frac{1}{2}^{\circ}$.

Water boils, 205, approx. height 3,729 feet.

5th February, 1841.

1st. Observation top of the pass to the Jolah river.

Thermo. in shade below the } $46\frac{1}{2}^{\circ}$.
pass on W. side,..... }

Ditto, Ditto, at top, $58\frac{1}{2}^{\circ}$.

Water boils, 201, approx. height 5,959 feet.

6th February.

2nd. Observation camp on Jalla river.

Thermo. in shade,..... 46° .

Water boils, 203, approx. height 4,729 feet.

6th February.

1st. Observation at pass of Ronomah or Paplongurge.

Thermo. in shade, 56° .

Water boils, $201\frac{1}{2}$, approx. height 5,733 feet.

2nd. Observation camp below village.

Thermo. in shade,..... 50° .

Water boils, 204, approx. height 4,283 feet.

7th February.

1st. Observation summit of pass over great range.

Thermo. in shade,..... $47\frac{1}{2}^{\circ}$.

Water boils, $201\frac{1}{2}$, approx. height 5,615 feet.

2nd. Observation camp below the pass, N. side.

Thermo. in shade,..... 56° .

Water boils, $205\frac{1}{2}$, approx. height 3,513 feet.

3rd. Observation village of Jyramah.

Thermo. in shade,..... $68\frac{1}{2}^{\circ}$.

Water boils, 209, approx. height 1,650 feet.

8th February.

1st. Observation below cane bridge over Kooki river.

Thermo. in shade,..... $58\frac{1}{2}^{\circ}$.

Water boils, 211, approx. height 536 feet.

2nd. Observation summit of Sumigooding.

Thermo. at bottom in shade, $58\frac{1}{2}^{\circ}$.

Ditto to top, .. ditto, $70\frac{1}{2}^{\circ}$.

Water boils, $207\frac{1}{2}$, approx. height 1,911 feet.

From the last observation it will be seen, as I have not the report of Captain PEMBERTON at hand to refer to the others from, that by my calculations the top of

the village of Sumigooding, stated by that officer from Barometrical observation, to be 196 feet above the level of the sea, is made 49 feet less, a very trifling difference, and one on that account highly satisfactory to me, for the correctness of the others as well as of the instrument, and I hope the same may prove equally so to yourself and Government.

	I have, &c. &c.	
CAMP SUMEEOODING,	(Signed)	T. BIGGE,
13th February, 1841.		Asst. Agent Gov. Gen.
	(True copy,	
	(Signed)	F. JENKINS,
		Gov. Gen. Agent.
	(True copy)	
	(Signed)	T. H. MADDOCK,
		Secy. to Govt. of India.

The Secretary submitted to the inspection of the Meeting several drawings of fishes of the Indus, of the late Dr. LORD'S collection.

The Secretary submitted a Sindo Vocabulary by Lieut. EASTWICK. Ordered to be referred to the Committee of Papers.

Dr. H. H. SPRY submitted in the name and on behalf of Capt. JENKINS, Commissioner in Assam, a series of Geological and Mineralogical specimens illustrative of the Grognostic features of the county of Cornwall, with the following note to the Secretary:—

“ This collection, extensive as it is, is only a part of what Capt. JENKINS designs for the Museum; and it has occurred to him, as well as to myself, that the contribution now made will not be an unacceptable accession to the Museum of Economic Geology, so lately formed through the exertions of Capt. TREMENHEERE.”

Read a letter from Lieut. A. CUNNINGHAM, of Engineers, of 25th March 1841, offering for purchase to add to the cabinet of coins of the Asiatic Society of Bengal sixty-five Roman coins and fifteen Greek coins, sent from the Mediterranean, for Rupees 50.

Lieut. CUNNINGHAM writes, “ amongst the Greek coins are two of Melite, the other being Carthaginian and Greek-Egyptian coins of the Ptolemies. The Roman coins, are of all ages; several of them being coins of princes of whom the Society's cabinet possesses no specimens, such as Decentius, Lucilla, Faustina, Constantine, with the wolf suckling Romulus and Remus, &c. &c.” Lieut. CUNNINGHAM also offered a series of the Kashmeer coins, twelve coins of twelve Rajahs for 12 rupees, and to collect some few other series of coins which would be interesting and useful.

It was resolved to purchase the coins from Lieut. CUNNINGHAM, and to avail of his services for the collection of other series, the thanks of the Society at the same time being voted to that Officer.

Read a letter from Capt. A. TROYER of Paris, of 15th October 1840, from which the following are extracts :—

“ Whatever the future result of operations in Syria may be, they have prevented the Asiatic Society of Paris to dispatch to Calcutta a box full of Books, among which is the Sanscrit text, and my French translation of the first 6 books of the Rajatarangini.

“ We have not yet received the number of your Journal which contains the account of the most interesting discovery you have made on a gem from the Frontier of Seistan, at the ancient Boonaka. It tends greatly to prove the great antiquity of Buddhism, which antiquity seems to gain from day to day.

“ I am now about to complete the English translation of the whole DABISTAN, which the late Capt. SHEE had begun, but left unfinished. I intend to have the work printed in Paris for the Translation Fund Committee of London, and hope to have the pleasure of sending you a copy in about a year.

Read Dr. SPRY's note on his tour to the Eastward.

Read letter from Capt. R. SHORTREDE of 22nd March 1841, with a perpetual Time Table constructed by him, by “ the help of which,” says the author, “ may be found in less than half a minute the week, or day of any date for thousands of years, past or future.”

Read a letter from Lieut. POSTANS, dated 21st March 1841 ; containing his report on a certain branch of the Trade of Shikarpore.

Read a letter from Capt. HART of 15th March 1841, containing an account by him of the Brahooes.

It was communicated to the meeting by the Secretary, that the foregoing four papers would be published in early numbers of the Journal by him.

Read a letter from Mr. KINNEY of Bonn, who has been selected by Professor LASSEN to act as Agent for the Society, containing among other matter, the offer of his services in the disposal of the Society's Oriental Publications.

Dr. HEBERLIN was of opinion, that before dispatching the books for sale to Bonn their prices should be reduced, as without such reduction, he was of opinion that it would be useless to send the works, as the Oriental Scholars of Germany would not purchase at prices which he considered to be exorbitant. On this proposal Dr. HEBERLIN was requested to submit a list of the Publications he would suggest to be sent to Bonn for sale, with a scale of reduction in their prices he would recommend, for the consideration of the Committee of Papers.

On the motion also of Dr. HEBERLIN, in consequence of the death of Professor FRANK, who was an Honorary Member of the Asiatic Society of Bengal, that that compliment be paid to Professor EWALD, of Hanover, one of the best Orientalists in Germany. It was resolved—That the Doctor submit, formally, a proposition to this effect, likewise for the consideration of the Committee of Papers.

The Secretary submitted a Doguereotype, presented by Dr. ROUTH, for which, as well as for all other presentations and contributions in Books, Natural subjects, &c. the thanks of the Society were accorded.

On the Mines and Mineral Resources of Northern Afghanistan. By Capt. DRUMMOND, 3rd Light Cavalry, communicated from the Political Department, Government of India.

[Copper Mining district in the Ghilzie territory, South East of Cabool.]

From the valley of Dobundee, which communicates with the plain of Lagur in the direction of Koorrum, to the district of Moosge, about 14 miles south east of Cabool, and again from Moosge to Derbund and Rojan in the direction of Fezeen, is an elevated and rugged mountain tract highly metalliferous.

Geology of the District.—The formations of this mineral district are composed principally of Hornblende rock, and Hornblende Gneiss, Primary Limestone, and Mica Slate. The hornblende rocks are generally speaking of a fissile character, the limestones again are hard, compact, occasionally slaty, and from their feeble effervescence when tried with nitric acid, seem to contain a portion of magnesia, and may accordingly be referred to the dolomite species. The strike or direction of the strata, as may be observed from the sequel, is nearly N. East and S. West, dipping at a considerable inclination to the N. West.

Conforming with the hornblende rocks of Dobundee is a calcareous sandstone formation with subordinate beds of slate clay enclosing their seams of coal. This sandstone is soft and friable, and must be distinguished again from another sandstone also calcareous, and of a still softer character. The latter formation is of very recent origin, and has taken place subsequent to the upheavement of the primary and metalliferous rocks, as may be well observed in the vicinity of Koh i Aeenuk, where it occurs in the form of sand-hill—the sandstone strata are horizontal, the primary again are all highly inclined, and sometimes even vertical.

What the upheaving rocks may be I am yet ignorant, but believe they will be found to be granitic, and if so, they must be of a much more modern geological era than similar rocks in England, from the position of the sandstone of Dobundee, which is evidently a tertiary deposit containing lignite coal. A section from the passes in the mountains of the Hindoo Kosh to the Indus would be extremely interesting in a scientific point of view, and convey no doubt an accurate idea of the structure of the country, but this however would form a separate branch of inquiry of itself, and is not of immediate importance to the present research, which has reference only to mining and metallurgy.

When I lately had occasion to bring the mineral resources of the Himalaya mountains before practical men and capitalists in London, the voluminous Geological Report of the able and intelligent officer, the late Captain Herbert, was never read by them. All that they cared about was that portion of it which related to the metalliferous minerals and means of working them; and what chiefly attracted their attention was, his account of the seven localities where copper was produced in the Provinces of Gurhwal and Kumaon.

In an economical point of view, therefore, the first thing to attend to in a district where metals are known to exist, is its probable productiveness; and for this purpose a very close and minute examination of every rock, ravine, and valley is necessary to discover if metallic veins, or indications of veins abound. I have found these appearances in all the following localities:—

Views and indications of Copper, old Excavations, &c.—At Moosye in the pass of Shadkhanee in the limestone range, on the right bank of the Sagur river, and to the west of the village of Kuttasung, I found purple copper ore in very small quantity cropping out to the surface.

In the pass of Silawat to the east of Kuttasung, I found copper pyrites in greater quantity cropping out there. On the crest of the same pass, or rather a short distance from it to the eastward, indications of the metal appear in that quarter also, and seem to point either to grey copper, or to the vitreous sulphuret. The strike of the strata is about N. E. by E., and S. W. by W., dipping at an angle of 65° to the N. W. by N. Beyond this also, and still further to the Eastward, specimens containing purple copper ore in small quantity have been brought me lately from Kohi Chaghgye.

Again near the base of the same range, and within a short distance of the village of Kuttasung, are three old excavations, blocked up with stones and rubbish. Two of these I have been attempting to

clear out lately with the intention of reporting on them hereafter. The ore is the purple variety, and I also found indications of the vitreous strike of the strata N. N. E. and S. S. W. dip 65° W. N. W.

On entering the Pass of Silawat, there is a ravine to the Westward, where a spring with a few trees may be discerned. About a couple of hundred yards above this spring is another old excavation, blocked up like the former, the declivity of the mountain is here very great; strike of the strata N. E. and S. W. dipping about 62° to the N. W. are copper pyrites, in a hard quartzose matrix, wall of the vein soft and slaty, and covered with the blue and green stains of copper. Here the limestone assumes a slaty structure and then verges into a micaceous rock, from which I conjecture that the ore at a greater depth will make (as the term in Cornwall is) to mica slate. The decayed and withered splinters of this slaty limestone, at first sight have much the appearance of clay slate—East of this again I found another excavation in a micaceous rock, evidently a continuation of the last mentioned, the direction of the strata the same, and dipping in the same quarter at a high angle, ore copper pyrites. In the same line I have traced this deposit to another locality a short distance off.

On the Eastern, or left hand side of the road going up the Silawat Pass, is another old excavation blocked up like the rest. Strike of the strata W. S. W. and dipping about 65° N. N. W.

I saw stains of copper here, but observed no further trace of the metal at the time I visited the spot; a specimen of vitreous ore has however been brought to me since, which is reported to be from that quarter. Higher up the hill, and on the same side of the road, is another excavation, where I found indications of vitreous ore. Strike of the strata about N. E. by E. and S. W. by W. dipping about 65° to the N. W. by N.

About a quarter of a mile to the Eastward of the last mentioned, there is a singular deposit. A vein or bed of iron ore, upwards of 30 feet in breadth, containing another vein of a mixture of iron and grey copper in a space about two feet wide. This mixture of copper and iron has been worked to the extent of a few feet, but the difficulty of separating the copper from so large a proportion of iron, was no doubt too difficult an operation for the ancient miners to be attended with profit, and must have been abandoned accordingly. Strike of the strata here N. E. and S. W. dip 75° N. W. From the direction of the strata, and the external character of this iron ore, it must I think be connected underneath with a great bed of iron ore nearly 40 feet in width, which I discovered in the Silawat Pass. The ore is massive, and is of a steel grey colour; sometimes it gives a blackish streak, and then it affects the magnet considerably, showing the presence of the protoxide. The great mass however gives a red streak, and below the surface will no doubt be found a well-defined bed of specular iron ore.

To the west of the crest of the Silawat Pass, and near the summit of the range, which I suppose must be about 1200 feet above the level of the plain of Moosye, are some extensive excavations. The general strike of the stratification here is about N. N. E. and S. S. W.—in some places it is nearly perpendicular, or dipping at a great angle to the W. N. W.; one of these excavations at first appeared to me like an open working, having the form of a perpendicular chasm in the mountain, the depth of which I measured upwards of 40 feet, and varying from 3½ to 8½ feet wide, at the deepest part the measurement was 7 feet and three quarters.

From further observation, however, I am inclined to suspect that this excavation, but especially others of a far deeper and more extensive character at Koh i Aenuk and Seestungee, occupied originally the spaces of galleries, or levels, and that these have fallen in since, either from having been shaken by an earthquake, as the wreck and ruin presented by some of them would seem to indicate, or what appears probable, the action of water from the melting of snow at the surface, percolating by the walls or sides of the veins, has in process of time gradually loosened that portion of the ground which was left as a protection for the levels, and these levels having been driven along veins that preserve their course with the direction of the strata, which are nearly perpendicular, will account for the chasm-like appearance they now exhibit.

The system of mining which has been pursued here, differs materially from our improved modern methods. Instead of taking up a more convenient position for commencing operations lower down the brow of the mountain, and driving a gallery for a considerable distance, perhaps through barren ground, so as to reach the vein at a proper depth, and which opening is made at the same time to act as a drain, the plan adopted by the ancient miners seems to have been the making of a small entrance, about 3 feet wide, and 4 feet high upon the vein itself, and having gone down upon it at once in a sloping direction, until a certain depth was attained, they pursued a horizontal course, and stripped the roof of ore in their progress. This inattention to drainage has answered so long as the ore could be followed without the occurrence of water, but I suspect even then in some places, they must have felt inconvenience from the water caused by the melting of the snow in spring. I do not believe from the appearance of the galleries which are still remaining, that timber was much used, if employed at all for supporting them. The structure of the rocks in most places being of a compact character, and the great dryness that prevailed, may have enabled the miners to work to a considerable extent without that aid. In excavating the ore and opening ground, these people seem to have used a sharp-pointed well-tempered instrument, as may be observed by the marks of their work on the walls of the galleries, particularly at the mine of Seestungee.

As the most important point to ascertain is the appearance of the deposits of ore at a considerable depth, the width of the veins, &c. I have been particularly desirous of penetrating so far under ground as to arrive at the different spots where the ancient miners left off working. In some instances I got so far, that I believed I should soon accomplish that object, but I have invariably had my progress arrested by large masses of rock, stones, and rubbish which have fallen in. A native of Moosye lately brought me intelligence of some deep excavations which have been discovered on the eastern side of the Silawat Pass. Upon asking him why he had not taken a light to examine the interior, and see if they were more perfect than those I had already discovered, he gave me to understand, that like the rest of his countrymen, he had superstitious misgivings in regard to the exploring of those old and abandoned excavations, and was further deterred by observing the skin of a snake at the entrance of one of the galleries. The dread of meeting reptiles of this kind in these deserted mines, is one of the reasons why the people are so ignorant about them. The same individual told me, that often as he had hunted over those mountains from his earliest youth, he had not the least idea that the excavations were so numerous, only a few had been observed, or were known to the neighbourhood until I commenced my researches.

On crossing from the Moosye range to the mountains of Baghye, I obtained some rich specimens of vitreous and purple copper ore in different places, and also copper pyrites, but did not observe any regular vein, except one of copper pyrites in hornblende gneiss, which is about 10 inches wide; this is very poor at the surface, but may however at some depth turn out rich. At Kotil i Dushtuk, I picked up a good number of stones containing copper pyrites in a hornblende gneiss formation, running N. E. and S. W. and dipping about 55° N. W.

This rock is very dark in some places from the prevalence of the hornblende, in others it has a yellow weathered appearance, and so much disintegrated, that I had not an opportunity of examining the locality well; there are quantities of rock, green-stained from copper. In one place where it was more compact, I obtained specimens from some strings or small veins of copper pyrites, in a quartz matrix, evidently connected with a larger vein, and from the abundant indications at the surface, I suspect that a considerable deposit must exist underneath. From Dundhane in the direction of Jowhar to the south of Rotil i Dushtuk, specimens of green-stained rock have been brought me lately, and said to be in still greater abundance.

To the south of the Baghye range is the great mine of Koh i Aenuk, which I have already mentioned, all in a state of ruin and dilapidation. Purple copper ore crops out to the surface; and the excavations, as well as a quantity of slag and vestiges of ancient houses that remain, show what a productive mine this must have been in former days. The dreary and desolate aspect of the spot, with a solitary hut and a few squalid inmates, afford a melancholy contrast to the throng of industry which must have been witnessed here in better and more prosperous times. About a mile West of

Aenuk is the mine of Seestungee, which I have also mentioned, and which is in a similar condition with the former. In this mine there is a chamber, one side of which is covered with sulphate of copper; the chamber is about 18 feet in length, 12 in breadth, and 10 in height,—and the end of it is blocked up with stones and rubbish. Some of the excavations here are so large, that they have more the appearance of caverns than mining galleries. A short distance from this, on the road to Koh i Aenuk, I observed near the summit of a limestone rock several veins of spar carrying copper ore, principally copper pyrites; one of these is about 11 inches wide; between this again and Aenuk, there is another spot where the green-stained indications of copper appear abundantly, showing, that the metal exists there likewise.

East of Aenuk, in the mountains of Acoorookhail, I found a vein of solid copper pyrites about an inch thick in hornblende gneiss; at Essurtungee on each side of the torrent, I observed copper ore in many places, though I was not fortunate enough in finding a regular vein, whole cliffs of the rocks however are covered with the indications of copper. The richest specimens of red oxide of copper and native copper in my possession, were brought to me by a native, and said to be from the hills of Georgee Mydan, not far from Acoorookhail. Of the locality, however, from whence they were procured I am doubtful, as the native alluded to was indebted to another for the specimens. I opened the ground in one place to the extent of several feet, and though a few indications of the metal appeared, many circumstances rendered it evident, that they had not been procured from that exact spot, and that a further search was necessary.

At Derbund, in Tungee Khooshk, in a gneiss and mica slate formation, I observed abundant green stains of copper. At Kila Ataye, there are several veins of quartzose spar carrying purple ore, one of which I measured about a foot in breadth, the rock is mica slate, and contiguous to limestone. In Cornwall the richest deposits I was told generally occur at the junction of the clay slate with the granite; and in this mineral tract, I believe the most productive will be found at the point of contact of the limestones with other rocks.

At Tezeen, I discovered small veins or strings of rich ore ramifying in different directions, and forming a kind of net-work in a limestone rock. I saw no decided course of ore of any bulk, but what there is of it, is very rich, being composed of the vitreous and red oxide varieties, and native copper. The chief of Tezeen, I am told, found a mass of the latter close by his house on one occasion, and so large, that a copper vessel was manufactured from it. This must have been brought down by the mountain stream, and most probably from the quarter I have mentioned.

In a ravine at Khoondurra, between Seestungee and Dobundee, I obtained some specimens of copper ore in small quantity, but did not discover any vein, though a closer search may yet succeed from the indications of the metal in that quarter.

At Dobundee, on entering the valley, I found at Shinky, on the right bank of the rivulet, specimens of red oxide and grey copper, but discovered no regular vein at the time. In a ravine named Lahazour, about half a mile from Shinky, I observed in a hornblende formation an outcrop of grey, vitreous, and red oxide of copper accompanying a vein of spar principally calcareous. Beyond this in another ravine named Zerazour, there is a thin vein of rich copper ore similar to the preceding—formation still hornblende; the strike of the stratification in this direction, is nearly N. E. and S. W. dipping about 65° to the N. W.

In the ravine of Chinarkhail, I found a vein* of copper pyrites cropping out in small quantity, and higher up at Chenar, less than a quarter of a mile from thence, I found a vein of grey copper, about 7 inches wide, with a considerable proportion of iron; this vein bends a good deal in consequence of the twisting of the strata, the general direction of which is about N. E. and S. W. dipping upwards of 60° to the N. W. The formations here are all hornblende.

* When I use the term of *vein* it is to convey my meaning in more familiar language, at the same time the Cornish phrase *lode*, which signifies a course of ore, would, properly speaking, be more correct. All the lodes in this country are what would technically be termed beds of ore conforming with the strata, and not veins, which are rents or fissures traversing the strata, and filled up with mineral substances.

In the ravine of Jerobae there is a ferruginous looking vein, containing vitreous ore, and also grey copper, the latter has a large proportion of iron, and is found about 5 or 6 yards apart from the former. On the opposite side of the ravine I found indications of the metal also, and beyond this in the same line, I found similar indications in a small ravine adjoining, and believe these to be all one and the same deposit connected underneath. The strike of the strata here is N. E. and S. W., all highly inclined. About 300 yards to the N. W. of these localities is another out-crop of copper ore, with a good deal of the same ferruginous appearance; this seems to bend towards the others, running nearly East and West, but is a distinct deposit in my opinion, and unconnected with them; these veins are all found in hornblende.

During my survey of Dobundee, I observed several rolled masses of a dark coloured iron ore brought down by the river. This ore yielded a blackish streak, and affected the magnet, but did not attract iron filings. What I observed was evidently derived from the surface of a bed of iron ore. In the Chenar ravine, about a couple of hundred yards from the vein of grey copper, which I have described, I obtained a few fragments of magnetic iron ore which powerfully attracted the filings, but saw no trace of a regular deposit in that quarter. These facts, however, render it not improbable that a bed of magnetic iron ore may exist in the neighbourhood; having not yet completed my examination of that part of the district, I regret I cannot speak decidedly on this subject.

Extent of the District, &c.—With regard to the extent of this mineral tract, Tezeen is the furthest point to the Eastward, where I have found copper ore, and specimens of copper pyrites have been brought me from Wurduk to the Westward. Specimens of purple ore have been sent me from Spegā to the South, and I have traced the metal as far North as the hills about Cabool.

The most promising veins I have discovered are those of Derbund and Dobundee,—of the old mines, Koh i Aenuk holds out the best prospects. I have reason to believe that more veins equally, if not more favorable, may yet be found, when every rock is sufficiently investigated. A perfect examination of this kind, is of great importance, for the two-fold object of showing the external signs of the productiveness of the strata, and guiding the miner at once to the most desirable points for experimental operations. From the number of natives I have been employing to search for me throughout the district, and who well understand now what is wanted, I feel confident that if this plan were continued for a short time longer, not a spot would remain unexplored. Specimens have been lately brought me from new veins in Derbund, as well as from Rojan, and Sungdurra on the southern side of Koh i Kubeer, the most elevated of the mountains in that quarter of the country.

In my former Report, I mentioned that I had discovered the richer varieties of copper ore, namely the purple and vitreous sulphurets, the former containing 60 per cent of metal, and the latter about 80—I have now the satisfaction of adding to these the red oxide containing 90 per cent, and native copper. As far as the character of the ore is concerned then, it is of the first quality. Of course what I allude to is the pure mineral unadulterated by the matrix. What the ore in mass will produce should the mines be opened, can only be determined when that takes place; but it will I think, yield about the same as the Chilian, namely, between 20 and 30 per cent. The average of the ore of Cornwall is between 8 and 9 per cent, and, as I stated in the Report alluded to, it is this difference in the quality of the ore, that enables the Copiapo Mining Company to dispose of their ore in England at a profit, notwithstanding the vast distance of transport. The ore is brought down on the backs of mules from the heights of the Cordilleras to the seaport for £3 per ton, shipped from thence to Swansea in Wales for £5 per ton, when it is finally smelted, and the produce exported abundantly (no doubt to India) as English copper.

Mineral Prospects of the District.—In respect to the capabilities of this mineral district no one can take upon himself to form an estimate of what is underneath the surface, until practical trials are made, but, if we base our calculations on the most reasonable probabilities, there is every expectation that these trials will prove eminently successful.

By the foregoing details it is apparent, in the first place, from the number of veins and indications of them which have been discovered, that the whole of the strata are highly metalliferous.

Secondly, the quality of the ore is excellent, and the richest varieties are to be found.

Thirdly, it is evident, from the extent of the excavations of Koh i Aeenuk, Seestungee, and Moosye, as well as the quantity of slag still remaining at the former place, that the people who worked these mines, must, in following the ore to a considerable depth, have found it increasing, or at any rate not diminishing in quantity.

Lastly, we may reasonably infer, that these people, by confining their operations to so few localities, found the work sufficiently plentiful and lucrative to give them employment, without being under the necessity of opening new ground, and this will account for so much being left untouched. The mines also must have been abandoned in consequence of some political convulsion or foreign invasion.

Facilities for working the Mines.

Of the means of drainage, I may say, that in general there is no want of declivity of ground for obtaining adits—the term *adit* is a technical one in mining, used to denote a gallery or passage which acts at the same time as a drain. In an economical point of view, this is of great importance, as the system of working by a succession of galleries above the adit-level in some mines, or having to go but a short distance under it in others, is attended with much less outlay than when the reverse is the case, and mechanical power must be had recourse to, for raising the water from a considerable depth to the drain. In the Gwennap mines in Cornwall, for instance, where the deepest shaft is about 1700 feet below the surface, there are no less than seventeen steam engines, some of which are of enormous size, and these, with a water wheel 42 feet in diameter, are employed night and day in pumping the water, and raising ore and rubbish from the mines. In the Moosye ridge, the principal mines are situated about the summit of the mountain; at Koh i Aeenuk again, which is but a small hill in comparison, there appears to be abundance of room for bringing in an adit under all the old workings, but at Seestungee, this would not be managed so easily. The whole of this metalliferous tract, however, is so much more elevated and mountainous than the mineral ground of Cornwall, that the unwatering of the mines could be effected with greater facility, and at much less expence.

Small streams for washing, cleaning the ore, &c. are often wanting in these mountains, but this defect may be remedied wherever springs may be observable, by piercing the slopes with *karezes*, and obtaining the necessary quantity of water. At Derbund, there is a small stream which passes close by the veins of purple ore I have described. The river of Sogur pursues its course along the base of the range at Moosye, where the mines are situated; the rivulets of Dobundee, Tezeen, Chuckeree, &c. at all seasons of the year have a sufficient supply for moving machinery, whilst mountain torrents, such as those of Esourtungee and Jerobae, possess I think sufficient water, considering the greatness of their fall, for turning stamping mills, and crushing apparatus of that description.

The pine forests which stretch from the Sufued Koh to the Southward, will afford a permanent supply of wood for timbering the mines, and charcoal for the smelting furnaces. The same carriage which would convey the ore to the fuel, would bring back timber for the mines. The furnaces best adapted for this country, are not the reverberatory ones of Swansea, where coal is the fuel, but

the blast furnaces of Sweden, where charcoal is employed. It will be a matter for future consideration, whether the most desirable site for these would be in the direction of Spega and Hazardurukht, or of Tezeen. The former will have the advantage of being better situated for labourers, whilst the latter, by being near the Cabool river, will have the convenience of raft carriage to the Indus.

Mining operations may be commenced in this country without incurring much expence in road-making at the outset. At present the roads are State of roads and means of transport. only tracks, but they answer camels, and the mountains afford pasture for the maintenance of these useful animals. Mules, ponies, &c. are also used for carriage, and the neighbouring district of Koorrum is famous for its breed of the former. Roads for wheeled carriage may in process of time be made, as improvement advances, and this will create a great saving in transport throughout the country generally. An excellent one might be cut from Cabool to Dobundee, by the plain of Sogur, and no doubt the same could be continued to the banks of the Indus by the valley of Koorrum; guns at any rate have already been taken by that route. As soon as this road is surveyed and repaired, and political obstacles are removed, the circuitous route by the Khyber Pass will be forsaken for this shorter and safer line of communication with Hindoostan; meanwhile as far as the mines are concerned, the most economical method would be to purchase a certain number of camels, the transport management could then be conducted at a moderate expence, and occasion very little trouble.

The occupations of these mountain tribes are partly agricultural, but chiefly Habits and character of the people. pastoral and commercial. Those who have flocks of sheep migrate from place to place according to the season of the year, whilst those who have camels, engage in trading speculations, and in hiring out their camels for transporting wood, charcoal, &c. to Cabool, salt from Kalabagh and Malgeen, iron from Bajour and Foormool, and merchandise to and from Peshawur, and various other quarters.

I regret to add, there is another class that I call the predatory, which the poverty of the people, the distracted state of the country, insecurity of property, &c. appear to have brought into existence, and gangs of these banditti have been infesting the country to the no small detriment of the industrious merchant. The different tribes which contain this class within them, are the following:—

Adrumzyes	Rob by night.
Muminozyes	Ditto ditto.
Ahmedzyes of Spega	Highwaymen by day.
Kurrookhails	Ditto by day and night.
Khivazuks	Rob by night principally.
Ooreakhails	Ditto ditto.
Ootkhails	Thieves by day principally.

These molest the country between Ghuznee and Jelallabad—some rob chiefly by night, break into houses, annoy an encampment, &c. others steal in broad daylight, in the bazar of Cabool even, and are famous for their dexterity in pilfering; whilst others again come down from the mountains in force, attack a cafila, and return immediately with the property they have captured.

It need not be supposed, however, that because a portion of the people have hitherto been leading this lawless life, that the hope of establishing useful works, even in the secret haunts of these robbers, is by any means impracticable. It must be remembered, likewise, that a revolution has taken place in the country, and that during the last year, the constant political excitement which was kept up, of itself produced much of this evil. Formidable as the state of affairs may seem, the difficulty of uprooting the evil is much more in appearance than in reality. There is indeed a regular system of robbery carried on, which must be systematically dealt with, to be effectually put down. This I believe may be accomplished without levelling a single fort, ravaging an acre of ground, or spilling one drop of blood. The Ghilzyes of that district, are about the finest race of people I have seen in Afghanistan, and the predatory portion, though wild, are far from being intractable. But they have been long living without the pale of the laws, in a country distracted and torn with feuds and dissensions, without any security of property; the strong ever oppressing the weak, and have in a great measure been brought by circumstances into this lawless mode of life. Give them, however, but constant employment, with good wages and regular payment; encourage a spirit of industry, both by precept and example; let strict justice be dealt out to them without respect of persons; and we shall shortly see their swords changed into ploughshares, industry take place of licentiousness, and these people be converted into peaceable and useful subjects. A firm, but just and liberal hand, in my opinion, might mould them into any thing.

During the late disturbances, it was often remarked to me, what a detestable race these Afghans were; that a man could not stir a few yards from his house or his tent, without the risk of assassination; and that three times the amount of military force was scarcely sufficient to keep this unruly country in order; and yet, I have gone with but a few followers into the midst of them, have wandered amongst the wildest and most desperate characters, often without a sword at my side or a pistol in my belt; and even during the very crisis alluded to, when I returned to Cabool, I did so entirely in opposition to my own views and inclination, and only in accordance with an express order to that effect.

Since I commenced this research, I have made a point of living with the people, and I am of opinion, that in any attempt to develop the resources of a country, an acquaintance with the character of the inhabitants is a matter of serious consideration. The result of my observations are these: that if we take advantage of the keen commercial spirit of this nation, and direct its energies into the many useful channels which may be opened to them; if the conciliatory policy be steadily persisted in, all gloomy suspicions as to our future intentions removed, and the Afghans become persuaded that we are really their friends;—there is no quarter of the east where British influence will more rapidly take root, and British power be more readily consolidated—whether the nature of the climate, the wide field for European improvement, or the freedom from prejudice on the part of the people be considered.

It is not easy to say exactly, what the rate of payment for labour would be in those mountains, when order is completely restored, and a new state of things brought about; but there can be no doubt of this, that it will be moderate.*

* Osman Khan, who is a considerable landed proprietor himself, and experienced, is of opinion that only one-third of the available land of Afghanistan is under cultivation.

Osman Khan informs me, that during Dost Mahomed's time, he used to hire able-bodied labourers for cutting canals, and reclaiming waste land at Balabagh, at the rate of two annas per day; but that now he hires them for about three annas. The rate which at present exists in Cabool is a forced one, the result of a combination of circumstances, which can only last for a limited period until things find their proper level.

The Jajee tribe, and other industrious mountaineers, are all robust and stout-looking people, and during the winter travel as far as Peshawur for employment, which they would not be induced to do if work were afforded them at home. There are few points in the country more favorably situated for a command of good workmen than the mining district under discussion.

As the price of labour, however, is directly affected by the price of food, it will be a matter of great importance for the successful working of the mines, that the arable land in their vicinity be properly attended to. If the mountains bear witness to an extent of industry unknown to their present ill-fated occupants, the state of agricultural affairs in the adjoining fertile plain of Mogur, bears equal evidence of a former state of great prosperity, and points, in a significant manner, to the withering effects of Afghan misrule. The remains of ancient canals and water courses, the quantity of available land now lying waste, or in a low state of cultivation, the wretched condition of the people, and their inability to procure the necessary means of cultivating the soil, all show how much might be done by the application of capital, as well to the labours of the field, as to the dormant mineral resources of the country.

In conclusion, the following facts I would submit, may be considered as fully established, viz. :

Decided indications of abundance of copper, and of the richest varieties of ore. Wood in abundance, for timbering the mines, and for charcoal.

Water as a moving power for impelling machinery, thus obviating the expence of steam, camels, mules, &c. for carriage.

A hardy and able-bodied population on the spot, anxious to be employed as workmen.

Here therefore are the means for the production of this metal, and apparently to any required extent. It now only remains, that the inquiries I have had the honour of commencing, should be followed up; arrangements made for the suppression of the preparatory system; the providing an adequate capital for working the mines on scientific principles; and adopting such measures as will facilitate the transit of metallic produce to water carriage on the one hand, and the different marts in the interior on the other.

Iron of Northern Afghanistan.

As no mining operations can be carried on without a command of well-fabricated iron, the state of the manufacture of this indispensable metal becomes a primary consideration, in any attempt to render the mineral resources of an uncivilized country available; and certainly if any thing be required to show the abject state of the arts in this quarter of the globe, the iron trade and manufacture may be quoted as an instance.

The iron of Bajour, which is produced from magnetic iron sand, is not only in use throughout the northern districts of Afghanistan; but from its superior quality, is

likewise in great demand in the Punjaub. It sells in Cashmeer, for three times the price of the common iron of that country, and it is used in Candahar for the fabrication of matchlocks.

Were an improvement in the manufacture to take place, iron might no doubt be obtained equal to the Swedish—the best description in Europe. It was my intention to visit the district of Bajour at this time; but having been prevented from accomplishing my object, I am dependent on what information I have picked up hastily from merchants and others, who have been in the habit of visiting it, for the purpose of purchasing iron. The supply of iron, however, which the mountains in that direction afford, must be perfectly inexhaustible, from the intelligence I have derived, as to the immense quantity of this iron sand, which is annually washed down from their deposits.*

A sample of the sand was brought to me sometime ago, and taken from the bed of the stream at once, without being sifted and prepared for smelting. On applying the magnet, the ore was immediately taken up, and the quartzose and other strong particles remained. I then placed a small quantity of iron filings in contact with the ore, and the mutual attraction of the filings with the crystals of ore, was easily recognized with the assistance of the magnifier. It is described as occurring in great abundance in the mountain streams of Deer, Belour, and Mydan, which fall into the river of Punjcora, that ultimately joins the Cabool river below Peshawur.

The methods of reduction in this country, appear to be the same with those employed in different parts of India; and the manufacture in the Himalaya mountains, already described by Capt. HERBERT, is equally applicable to that of Bajour. It is evident, that whatever quantity of the ore is submitted for reduction, a small proportional part of the iron contained in the ore is brought to the state of useful iron. In the first process, a very crude mass of iron and scoria is produced; this crude mass is then submitted to the fire by a blacksmith, and after an incredible sacrifice of labour, a piece of malleable iron, fit for ordinary purposes, is at last produced, which, as may well be supposed, is any thing but the purest.

A more rude and inefficient system of smelting could not be devised, nor must it be understood from the simplicity of the management, that the processes are economical—they are the most expensive which could possibly be employed. It would be absurd to suppose that a refractory metal like iron, can ever be properly or economically fabricated by means of a great expenditure of manual labour, to the neglect of a mechanical power, such as a plentiful stream of water can afford, and which is to be obtained abundantly in the district that yields the sand I have described. So long as the miserable air bags, and a common blacksmith's sledge hammer are used for that purpose, iron inferior in quality, very deficient in quantity, and at an extravagant price, must be the necessary consequence.

But Afghan inexperience and mismanagement does not stop here. The crude iron is not converted into malleable on the spot, where charcoal abounds and labour is exceedingly cheap; but is transported slag and all, to Cabool, for instance, where both charcoal and labour are exceedingly dear. Again, in working up this

* Should there be a proportion of titanium combined with this ore, I imagine it will be trifling. When I submit a supplementary Report, with the chemical analysis of different ores, this will be explained. The colour of the iron sand is dark black.

crude iron into malleable, one-third is lost, so that the unfortunate purchaser has not only to pay for an expensive and ill-manufactured article in the first place, and for the difference in the price of labour and charcoal, pointed out in the second, but for the carriage of a large proportion of dross.*

The cost of the transport of a *khurwar* of iron, (13 Hindoostanee maunds,) in Dost Mahomed's time, was about Rs. 15 from the Punjcor ariver to Kooner, and from thence to Cabool Rs. 10, making in all Rs. 25. At present, the hire will I am told, be about Rs. 35; but for the sake of example, let Rs. 30 be looked upon as the expence of conveying a *khurwar* of iron from the Punjcora river to Cabool. A hundred *khurwars* of this iron are said to be about the quantity annually consumed in Cabool, in the time of Dost Mahomed; lately the demand has greatly increased. Taking this quantity only, however, as the estimate, we have at the rate of Rs. 30 per *khurwar*, an expence of Rs. 3000 for carriage; but to render the iron fit for use, one-third is lost, so that an expence of Rs. 1,000 is every year incurred in Cabool, for the conveyance of slag. The information I have been able to gather respecting the probable quantity annually produced in Bajour is so vague and contradictory, that I do not feel justified in carrying out this calculation farther. At a guess, I believe it must be about a thousand *khurwars*; but be this as it may, there is no doubt that the saving, effected by a well manufactured article in the mere transport alone, would in a short time cover the expence of erecting an iron work upon the Swedish principle.

As a set-off to the practical difficulties inseparable from establishing works of this kind in a new and uncivilized country, the advantages which the manufacture of Bajour would possess over that of Sweden, would be these:—

First. The difference in the price of labour, the wages of a workman being about 2 annas per day, according to the present rate; whilst labour in Sweden, though moderate, varies from 6*d.* to 1*s.* per day. Allowing, however, that the price of labour should rise in Bajour, and that able-bodied workmen received from 2 to 4 annas per day, still the rate would be considerably less than the Swedish.

Secondly. The circumstance of mining being commuted for the easy process of collecting and washing the sand, would occasion a great saving of expence; women and children are employed in this operation.†

Thirdly. The forests are described as being of great extent, and close by the localities where the iron sand is collected, and the charcoal used, is made from oak (*quercus beloot*,) which is the best adapted for that purpose. This will give the manufacture of Bajour a decided superiority over that of Sweden, where the light charcoal of the pine only is used, oak and hard wood being scarce in that country—the charcoal moreover is transported in sledges during the winter, a distance frequently of 30 miles to the furnaces.

I shall here offer a few observations on the subject of the iron in Northern India, for the purpose of showing, that if an improvement be called for there, the argument applies with still greater force to the remoter regions in this quarter.

* The iron is sold in the shape of bricks of different sizes. In making a trial the other day of one of these, which weighed one seer of Cabool, (equal to six seers of Hindoostan,) I obtained out of 16 parts, 10 of iron fit for use.

† The iron sand is brought down annually by the melting of the snow in spring, and in such vast quantity, that for one iron work at any rate, the supply is ample without having recourse to mining.

It is commonly imagined in India, that because English iron is brought out as ballast, and landed on the coast for little more than the price it costs in England, that an improvement in the native manufacture would therefore be attended with difficulty. But however much this may apply to the coast, the case is altered when English iron is transported into the interior. It then becomes enhanced in price, and from this cause, as well as the inferior materials of which it is composed, the demand is limited, whilst the native manufacture continues active under all the disadvantages of the most wretched system of smelting, and which, as I have already remarked, is in fact, the most expensive that could be employed.*

All the iron of England, (with the exception of what is produced at Ulverstone in Lancashire,) is made from clay iron stone, which yields about 30 per cent. of metal, and the fuel used being coal, the sulphur combined with the latter deteriorates the iron, and soft or malleable iron cannot be produced equal to the article that is afforded by richer ores, and charcoal smelting. In the Northern Provinces of Hindoostan we have the richest iron-ores, namely, the magnetic, and also the different varieties of the red oxide, such as the specular, red hematite, &c. and these will yield from 50 to 65, or perhaps 70 per cent. of metal, which is all in favour of the saving of fuel and general economy.†

At Ulverstone in Lancashire, iron is manufactured from red hematite ore, yielding sometimes 50, and sometimes 60 per cent. of metal; the fuel is oak charcoal, and a superior iron is produced, which is of great tenacity, and much used for drawing into wire; steel also is made from it for secondary purposes.

During my inspection of these works some years ago, I was closely questioned by one of the iron masters as to the prospects of establishing an iron work in the Himalaya mountains: for example, I was asked about the nature of the ore, and if a sufficient supply of charcoal was to be had, if water as a moving power was abundant, labour cheap, and if water carriage was procurable, &c. &c. To which I replied, that amongst different varieties of rich ore, the red hematite, the same he had at his works, existed also in that quarter; that charcoal was to be had on the spot, for the price only of cutting the wood and preparing it, as the forests were interminable; that labour was about 3*d.* or 4*d.* a day; streams capable of turning any machinery abounded, and water carriage was within a tangible distance of the base of the mountains; that the disadvantages at present, were owing to the want of proper commercial roads from the mines to the plains, which nevertheless might be made by following the course of the principal rivers, as indeed had been done partially in one case, for the sake of pilgrims. I then rallied him about the anxiety he seemed to evince in the matter, and asked him if he was afraid of my running in opposition to him so far off as India, and moreover 1,000 miles in the interior; to which he replied, "Why to tell you the truth, we send out a quantity of iron to India."

Now whether the iron of Ulverstone be used in Calcutta for the manufacture of suspension bridges, I am not at this moment aware; but when I left Kumaon two years

* According to Mr. McCulloch, three-tenths of British iron are used as cast iron, and principally consumed in the United Kingdom, the other seven-tenths are converted into wrought iron.

† Some of these iron mines are situated near the plains, some are higher up, and the copper mines higher up still. The principal iron mine is at Khetsari, in the broad and fertile valley of the Ramgunga.

ago, thirteen of these bridges* had been erected, in a province abounding with iron mines, and inexhaustible forests, and with reference to which, a celebrated mining engineer, in corresponding with me upon the subject, makes the following remark: "It strikes me, that if an iron work is begun in the Himalayas, iron can be afforded to India at a rate lower than the present to a great degree, and at the same time afford a large profit per ton."

In the district of Bajour, an iron work upon the small scale, and similar to the Swedish, might be erected with every reasonable prospect of advantage. When water power can be procured, and a steady supply certain, the saving will be great, † as compared with the application of steam power; a substantial wheel can be erected at a small expence, for working blowing apparatus capable of giving blast to two furnaces; commencing in the first place with one, in order to learn by experiment the suitable charges of iron ore, charcoal, and limestone; and to find that very little iron is mixed with the scoria, which comes off constantly from the iron at the bottom of the furnace.

Should an improvement of this kind take place in the Bajour manufacture, iron of a much better quality, in much greater quantity, and at a reduced expence, might be afforded to the whole of those countries situated between Ghuznee and Lahore; from the excellence of the materials, no foreign iron can ever compete with it, and superior steel may also be obtained from it. No iron manufactured with coal can ever be converted into steel, owing to the presence of sulphur in the coal. It is in consequence of this, that the great mass of steel in England is made from Swedish iron, and the cast steel for the superior cutlery of Sheffield, is from the iron of the mines of Dannemora, the ore of which, (massive magnetic,) differs from all the others in Sweden, on account of its purity; and the iron sells on that account for about double the price of common Swedish iron. The other ores of that country are, I understand, principally magnetic; but more or less contaminated with sulphur, and had they not the advantage of charcoal smelting, the iron they produced would not sell at the high price which is obtained for it.

The prices of crude iron in Cabool in time of Dost Mahomed Khan, and since then, have been the following:—

	In Dost Mahomed's time.					Latterly.
	Cabool Rupees.					Cabool Rupees.
Bajour iron per md..‡	8	..	..	..	..	12
Foormool ditto ditto,	6	..	..	..	..	9

* The transport of the last of these bridges, which was put up at Jula Ghaut on the Kali Gogra river, amounted to Rs. 80 per ton. This reminds me of a story that is told in the neighbourhood of Loch Earn, in Perthshire. In a small glen on the Northern side of the lake, a building was erected about a century ago, when there were no good carriage roads in that part of the world, as is the case at present. The lime used on the occasion, was brought on the backs of horses from a considerable distance in Fifeshire, and it was left for the succeeding generation to discover that an excellent bed of limestone existed in the same glen; but this was not all, for the house itself was built of limestone.

† Perhaps the finest example that could be quoted of the effect of water power in saving manual labour, is at Turton near Bolton, where there is an iron wheel at a cotton mill, upon the spider arm construction, overshot, sixty feet in diameter, and ten feet broad in the awes or buckets. From this wheel, the power is taken for moving all the spinning machinery within the mill, which is reckoned equal to 50,000 cotton spindles, or the work of 50,000 people.

‡ The maund of Cabool is equal to 8 seers of Cabool. The seer of Cabool, is equal to 6 seers of Hindoostan.

The iron of Foormool is from the country of the Wuzereas, in the direction of Kaneegcorrum. It was my intention to have visited this district after surveying Bajour, for though the iron is much inferior to that of Bajour, it is very abundant, and extensively used for implements of husbandry, horse-shoes, cannon balls, &c. The specimens of ore which have been brought to me, and reported to be from that quarter, are clay iron stone, and I believe this to be ore, from the fact of coal existing in that vicinity.

Should a foundry for cast iron be eventually required in Afghanistan, the iron in the Wuzeree country will be well adapted for the casting of shot, shells, engine cylinders, pumps, &c.; whilst for bars, rods, fire-arms, &c. the superior iron of Bajour will always be preferred.*

I have mentioned the existence of iron ore in the copper district which has been described. The Moosye iron is not conveniently situated for fuel to render it of immediate importance. A specimen, however, of iron ore has been brought to me from Huryoob in the Jajee country, which borders on that district. The ore is of an iron-grey colour, and gives a red streak, but does not affect the magnet. It is reported to be in great quantity, and the country is described as being covered with jungle. Should the copper mines in the course of time be worked on a great scale, and the consumption of iron proportionate, mines of the latter metal will also be worked there, for the sake of the demand in that neighbourhood, and of Cabool.

In concluding these imperfect notices on the subject of the copper and iron deposits of this country, I would beg to observe, that in directing attention to the former metal, I do so, not only on account of the demand of it for coinage, and the ready market it meets with from its extensive use for domestic purposes throughout the countries to the west of the Indus, but from the known demand for it to the east of that river likewise.

Should gold or silver mines be discovered in these regions, and there is nothing unlikely in the idea that they may, the probability is, that they will always, as far as intrinsic value is concerned, occupy a very inferior scale of importance to the copper repositories.

If it be a common saying in South America, (the richest country in the world for the precious metals,) that "a copper mine is a fortune, a silver mine scarcely pays itself, but a gold mine is ruin," we may readily conclude, that in this quarter of Asia, where there is such an extensive consumption of the former, the observation is still more likely to become applicable.

But valuable as these repositories of copper may prove, they again need not be expected to equal the results which may be anticipated eventually from working the great stores of iron to be met with in Afghanistan.

By rendering the copper available, however, for which there is such a great market, a fresh demand is provided for the iron, and an improvement in the manufacture

* There is another iron produced in another locality in the Wuzeree country, from which steel is made. The ore I have not yet seen, but it must be from a different formation to the one which contains the clay iron stone. I shall advert to this in my supplementary report.

of the latter will not only directly aid the working of all metallic veins which may be found, but become the basis of various superstructures, and when its more general use is induced by a deduction in price, civilization and improvement will rapidly extend.

It is commonly supposed in this, as in other barbarous countries, that Russia must be rich, since gold mines are reported to be there. But the gold, the platina, and other metallic produce of the Urals, are well known to be far inferior in financial importance to the iron, and if in the Uralian chain, the activity and enterprise of the Muscovite can fabricate annually the large quantity of 7,400,000 pood, (132,000 tons) of iron, what may not British energy and industry effect, when they come to be applied to the vast deposits of iron, and the deep and endless forests of the Indian Caucasus and Himalaya.*

Remarks on other Mineral Productions of Northern Afghanistan.

I proceed now to offer a few observations on the other mineral productions of this country, and I may here mention, that the plan I have been pursuing hitherto, has been to employ the natives themselves to search in all directions, and bring me every kind of mineral which has the appearance of an ore. The exciting a spirit of inquiry in this way, although it has been expensive to myself, is by far the most expeditious method of enabling one to arrive ultimately at a general knowledge of what the country may possess. During the previous year, the political ferment that existed thwarted my success very much; but now that these troubles have ceased, and the attention of the people is withdrawn from them, the fruits of this plan, if followed up, will become much more apparent. Nothing can exceed the avidity with which the Afghans enter upon what to them is so novel a pursuit; and the laborious, and ardent manner in which they traverse the most rugged rocks, and most unfrequented places, when stimulated by an appeal to their interests. It is my rule to pay them well, when I have any thing like proof that they have worked hard, even though they have been unsuccessful; and, on the other hand, if successful, they are sure of a handsome reward.

Of the valuable mineral coal, there are three directions in which lignite coal is
Coal. found in the northern districts of Afghanistan.

The first formation is along the line of the Indus, the most promising locality of which appears to be near Kaneegoorum in the Wuzeeree territory.

Parallel to this, is a second outcrop of coal in the Ghilzye territory, which I discovered lately at Dobundee, and whilst I have been writing this paper, specimens have been brought me from Hissaruk.

The third formation is in the Huzarah country; specimens of this have been brought me from the vicinity of Syghan.

* According to a pamphlet published in 1825, by Mr. H. J. PRESCOTT, for the removal of the high duty on foreign iron, it is stated: "The quantity of iron exported from Stockholm in the year 1822 and also in 1824 was 36,000 tons. Sweden in general exports perhaps 100, or 102,000 tons."

All of these deposits of coal are of the lignite species ; the mineral is of a velvet black colour, and approaching to jet or pitch coal. The Kaneegoorum coal burns freely ; and with much flame and smoke ; the Hissaruk is rich-looking, crumbles into angular fragments, and particles of it, as well as that of Dobundee, which I have tried in the flame of a candle, burned well, considering that they were obtained from the surface. What I have as yet discovered at Dobundee is in very thin seams, pulverulent, and resembling coal-dust more than anything else. The Syghan coal ignites with great difficulty, and the flame, which is very slight, has a greenish tinge. Underneath the surface, this character may be expected to alter considerably for the better.

Although this coal is of a subsequent geological date to the mineral we are accustomed to use in England, which belongs to what is technically termed the "independent coal formation," it by no means follows, that profitable beds of it may not be discovered, and in time create a great change in the comfort and commercial prosperity of many parts of this kingdom, where wood is extremely scarce. Coal of this description is extensively used in many parts of Europe, and is frequently of excellent quality.* It is mined in the island of Veglia for the use of the Trieste steamers. Twenty-eight beds of it are wrought about Toulon and Marseilles. At Colognet here is a bed of it 30 feet thick ; the mines of Styria, and of Buda in Hungary, are famous for their immense supplies of this fuel ; great beds of it are worked in Switzerland, in the valleys of the Po, the Danube, and other quarters of the continent.

It will readily be acknowledged, therefore, that although the coal deposits of this country belong to a more recent geological period than that of the independent coal formation, it would be an unphilosophical conclusion to suppose on that account, that they may not exercise the happiest influence on the welfare of its inhabitants. To the Huzareh, the possession of this substance, if found in sufficient quantities, would prove most invaluable. It would enable him to work with every advantage his abundant mines of iron, copper, and lead ; and in a country with so rigorous a climate, and so destitute of fuel, it would be to him the most useful production. Should profitable beds of the mineral be discovered in the direction of Dobundee, there is a level road from it to Cabool, by the plain of Sagur ; and how far the formation may be traced along the Ghilzye tract is yet unknown.

Lastly, the coal of the Wuzereeh territory may turn out of importance, as well for the working of the extensive iron mines in that quarter, as for steam navigation on the Indus.

Amidst the numerous samples of ores which have come under my observation, the gold which is brought down by the streams from the mountains Gold, &c. above Lughman and Kooner, is all that I have as yet seen, which I can pronounce upon as pertaining to the precious metals. It is stated to be found likewise in streams from the Kohi Baba range, in the country of the Huzarehs, and

* At a single establishment in Wales, there are 13 large blast iron furnaces at work, and it is estimated that their consumption of fuel is 400,000 tons of coal per annum. Works like these convey an idea of the stupendous industry of England.

also in some of the streams of Kohistan ; but I have not yet received specimens from these districts ; the report however, is not at all improbable, and I believe myself it will be found all along the line of greatest elevation of the Hindoo Kosh and Indian Caucasus.

Whether this gold occurs originally in a disseminated state throughout the strata from which it is detached, or whether there exist distinct repositories of the metal, and in connection with some of the beds of iron, which from the iron sand that accompanies the gold must be intersected by the streams, is a subject for future inquiry. To the best of my recollection, all the gold brought to London by the Brazilian Mining Company is found accompanying iron, whether in the alluvial deposits from which it is washed, or the mines where it is worked.

Specimens without number have been brought to me from various parts of the country, supposed by the golden hue of the one, and the silvery whiteness of the other, to belong to the precious metals. In none, however, have I been able to recognise any thing beyond the sulphuret of iron under different forms, and a compound perhaps of sulphur, arsenic, and iron. There are some specimens, however, respecting which I am not quite certain, and these I shall transmit for chemical examination. Having nothing but my blowpipe apparatus to depend upon, when any doubt exists as to the constitutions of a mineral, it is desirable that they should be subjected to the test of analysis. On one occasion I tried a specimen from a deposit in Dobundee, (the ore externally has the appearance of an ore of silver,) and I saw a small head which appeared not unlike impure silver, but since then I have repeated the trial frequently without coming to any satisfactory result. The fragment of a mineral, however, which is submitted to the action of the blowpipe is so very minute, being no larger than a grain of pepper, that I should not wish these attempts to be considered final. Argentiferous arsenical iron is worked in Germany as an ore of silver, and should that metal be discovered in this country, it will probably be found in combination with some of these ores, or what is still more likely, with some of the numerous veins of lead which are to be met with.

Amongst all the specimens of iron pyrites, which have been brought to me, I have seen nothing that could be termed curiferous. Latterly, I have heard several reports of the existence of silver, but the Afghans are so addicted to the marvellous, and so easily imposed upon by designing alchemists, that I would never attach the smallest credit to them, unless a specimen of the mineral be produced. By all accounts, the Huzareh country must be the richest in minerals of any other in Afghanistan, from the number of old mines said to be there, and the remains of ancient cities in their neighbourhood, which would seem to indicate, that its mineral wealth in former times had been the cause of attraction. Whether silver may exist amongst these mines, is a point to be ascertained.

A story was told me lately by Aga Hoossain, a merchant of Herat, that at Mough in the Eimough or Eimouk country, there is an inscription in the Hebrew character, on a large black slab, to the effect, that in the days of king Jumshed, (1274 years ago,) the following mines were discovered :—

3 of Silver,	1 of Copper,
1 of Lapis Lazuli,	2 of Lead,
3 of Iron,	1 of Sulphur.

I doubt the genuineness of the whole story, but there is I believe no doubt of the fact, that old mines do exist there, and what they are, is yet to be ascertained. My informant says that he saw a number of old grinding stones in a stream close by the mines, which are believed to have been used by the ancients for crushing ore. It is reported also among some of the Huzarehs, that a number of golden vessels were discovered once in some of the old mines of their country, and there is a tradition of gold mines having been worked, but that the vein or veins are now lost. To tales like these I attach no importance, further than as a stimulus to, and a necessity for, investigation. I believe, moreover, from the specimens of iron, lead, copper, sulphur, and coal, which have been brought to me from thence, that the whole of that country is a rich mineral tract, and if the precious metals do exist there, as they are generally found in small quantity, it must be remembered, that their discovery is not likely to take place all at once, but to be the work probably of time and patient inquiry. A speck of gold in a piece of quartz may point to a deposit of that metal; or an accidental circumstance, (such as a Populzye chief related to me the other day,) may lead to the discovery of silver: namely, that many years ago small particles of it had been observed in a stone on which a fire had been lighted.

A specimen of cinnabar, (sulphuret of mercury,) was brought to me once by a villager, who said he had found it in the neighbourhood of Sultanpore near Jelallabad; but as I did not find any traces of it in the rocks in that vicinity, the probability is, it may have been dropped there by accident. Cinnabar is a rich ore of quicksilver, it is a production of Thibet, and if it be ever found in this country, it will more likely be discovered in the direction of the Kohi Baba range than elsewhere. I lately heard also of a very heavy red coloured stone, which is used by the natives in that quarter as a pigment, and sent for a specimen of it, but the individual I commissioned has not yet arrived. A person who was returning from that country the other day with a collection of specimens, was unfortunately robbed of every thing he had. Were the Huzarehs any other people, I should conclude from the description of the mineral that was given, and their manner of using it, that it was cinnabar, but they are such a perfectly rude and ignorant race, that I fear it will be found to be simply the red oxide of iron. Should gold dust be ever collected on the great scale, or veins of the precious metals be discovered and worked in this country, a mine of quicksilver would be of great importance for the necessary amalgamation works; but this is at present a very vague speculation.

I have mentioned the existence of copper in the Ghilzye and Huzareh territories, Copper. specimens also from Bagour have come under my notice.*

Lead seems to abound in the Huzareh districts, in Ghorabund of Kohistan, and in Lead. Wurduk. The lead of the former two is of an excellent quality, the latter is inferior, and of a harsher character. The ore is the sul-

* The price of lead in Cabool in time of Dost Mahomed Khan was Rs. 1½ per Cabool seer, at present it sells for Rs. 3.

phuret of lead, and that which I have seen from the Huzareh country, occurs in the form of the carbonate likewise. Lead is also stated to be found in Bungesh, and a specimen of it from the Sufued Koh has been brought me lately.

With regard to antimony, I find that what is sold in the bazar of Cabool as such Antimony. is a sulphuret of lead. Occasionally, perhaps, a proportion of antimony may be combined with it, forming what is called the sulphuret of lead and antimony.

I could not convince a vender of antimony, upon one occasion, that what he brought me as pure specimen of that mineral, was not so in reality, until I submitted a fragment of it to the action of the blowpipe, and on disengaging the sulphur, showed him what excellent lead was produced. Having at the time a small piece of massive sulphuret of antimony in my possession, and which, to the eye of the antimony dealer presented very much the same external character as his own, I then placed a fragment of it in the flame of the blowpipe, and the antimony immediately melted, and was absorbed by the charcoal, giving off the white fumes peculiar to it, and no trace of lead was observed.

That antimony, however, exists in this country, is beyond a doubt. It is mentioned in the report of the late Dr. LORD on Ghorabund as occurring in that district, and I myself saw in the possession of an officer, a mass of pure antimony, which was found in the neighbourhood of Quetta.

Graphite, or plumbago, is a production of this country. I have a specimen of it, Plumbago. reported to be from the vicinity of Kohi Daemun.

Specimens of sulphur have been brought me from the Huzareh country, and it is Sulphur, &c. reported as occurring there in vast quantity. Saltpetre is produced abundantly from the soil. Rock salt I observed in the hills near Jelalabad by the Soorkhdao river, but in too small quantity to be worth working; a sample of it from Altamoor also has been sent me, but I do not suppose it is in sufficient abundance there, to be of any consequence. Marble occurs at Mydan, and probably in many other places, but this and gypsum, and minerals of that sort, it will be time enough to direct attention to, when the country has made sufficient progress in the arts, to render them objects of value for economical purposes.

The most important minerals of Northern Afghanistan, are the following:—

Iron. This mineral is found in many parts of the country, particularly in the Huzareh, the Ghilzye, the Bajour, and the Wuzereeh territories.*

Lead is found in the Huzareh districts, in Wurduk, and in Kohistan.

Copper is found in the Huzareh, the Ghilzye, and Bajour territories.

* In Captain HERBERT'S report on the minerals of the Himalaya, published in the 18th volume of the Asiatic Researches, he makes the following observation in his account of the lead mines:—"A singular fact is, that the ore and reduced metal sell by weight for the same price at Kalsi, the nearest town. I could not learn the reason of this, but suppose that the produce of sulphur pays the expense of reducing the ore." When I read this, I suspected there might be a portion of the ore, known to be argentiferous; but it is evident that the purest is selected at Kalsi as at Cabool, and sold under the general term of *soorma*, or antimony.

Gold is found in several streams north of the Cabool river.

Coal is found in the Huzareh, the Ghilzye, and the Wuzereeh districts.

Sulphur is found in the Huzareh districts.

Here then are materials for commencing the work of civilization in this rude and barbarous region, giving a stimulus to its commerce, increasing its revenues, and affording employment to its indigent, but hardy and industriously inclined population.

A remark has been made, that "the mountains in this world no doubt abound in mines, but that the people must be enlightened before they can be worked." And in what way might I ask, is this period of enlightenment to be brought about? Are these great mineral repositories intended to lie idle in the meantime, to form merely the subject of a scientific theme, and furnish a few specimens for the cabinets of the curious—or, are they designed by an unerring Hand for the great moral end, not only of administering to the immediate wants of the people, but in their very extraction to be the means of exercising their energies, mental as well as physical, improving their habits, and thereby contributing effectually to raise them from the brutal condition into which they have fallen?*

Let this nation be taught the practical manual arts, so as to enable them to turn the productions of their country to account,—let the hand of the Afghan, under the eye of the European, unlock that wealth which is intended for his use,—then may we expect to see the rays of civilization break in upon the moral and intellectual gloom which pervades this darkened land.

* In a casual conversation I had lately with the intelligent Barukzye chief I have alluded to (Oosmen Khan) he observed :—" If the feeling of the English people towards this country be as you describe it, and its various resources receive that attention which it is out of the power of my own countrymen, from their poverty and ignorance to bestow on them, then not only will Cabool become happy and contented, but surrounding nations, on seeing the prosperity of Cabool, will desire of themselves to come under the protection of the English."

Opening of the Topes at the Caves of Kanari, near Bombay, and the relics found in them. By DR. JAMES BIRD.

The Caves of Kanari, situated on the island of Salsette, and two miles beyond the village of Tulsi, are distant twenty miles from the fort of Bombay, and six from Tannah. The made road from Bombay conducts the visitor as far as the village of Vihar, four miles north of which is the mountain where the caves are excavated. They have been described by several travellers, and are noticed, in A. D. 399, by the Buddhist priest and pilgrim "Ea-Hian," who visited the seats of his religion in India, and whose travels have been translated by M. Remusat. The cavern temple is described by him to consist of five stories, each story containing numerous chambers or cells, cut out of the solid rock, and tenanted by Arhats; a description which answers very closely to the circumstances of the Kanari excavations, which rise from the base to the summit of the mountain in six stories, and are connected to each other by steps cut in the solid rock. The kingdom in which they are situated is said to be distant from Kia-shi or Varanasi, two hundred *yojans* to the south, and is called Ta-thsen Dach-chin.

Immediately in front of the large arched cave, and on a ledge of the mountain, some thirty or forty feet below, there are several small *Thopas*, or monumental receptacles for the bones of a Buddha, or Rahat, built of cut stone at the base. These were once of a pyramidal shape, but are now much dilapidated, and appear like a heap of stones. Several years ago I thought of opening some of them, in expectation of obtaining coins or other relics; but found no favorable opportunity until lately, when several lengthened visits, in company with Doctor Heddle, gave me the desired means of doing so. The success of General Ventura, M. Court, and others, in their search after relics from the *topes* of the Punjab and Kabul, gave me additional hope that I should find something worthy of the labour, and I am glad to report, that these expectations have not been disappointed.

The largest of the *topes* selected for examination, appeared to have been one time between twelve or sixteen feet in height. It was much di-

lapidated, and was penetrated from above to the base, which was built of cut stone. After digging to the level of the ground and clearing away the materials, the workmen came to a circular stone, hollow in the centre, and covered at the top by a piece of gypsum. This contained two small copper urns, in one of which were some ashes mixed with a ruby, a pearl, small pieces of gold, and a small gold box, containing a piece of cloth; in the other a silver box and some ashes were found. Two copper-plates containing legible inscriptions, in the *Lath*, or Cave character; accompanied the urns, and these, as far as I have yet been able to decypher them, inform us, that the persons buried here were of the Buddhist faith. The smaller of the copper-plates bears an inscription in two lines, the last part of which contains the Buddhist creed inscribed on the base of the Buddha image from Tirhut, and on the stone extracted from the *Tope* of *Sarnath*, near Benares; an excellent commentary on which will be found in Mr. Prinsep's Journal for March and April 1835. The last part of the Kanari inscription, and the copper-plate of which I have now the honor of laying before the members of your Society, corresponds very closely with the text of the inscription from Tirhut. The original in the *Lath* character stands thus :

Yé dhaurmá hetu prabhavá, tésham hétu Tathagatá suvacha Tésáncha
yo nirodha évam Vádi Máhá Suwanna :
which transferred to Devanagrí

येधर्महेतुप्रभवास्तेषांहेतुस्तथागतः । सूवाचतेषां निरोध एवं
वादी महासूवर्णः ॥

may be translated :—“ Whatever meritorious acts proceed from cause, of these the source *Tathágata* (Buddha) has declared; the opposing principle of these the great One of exalted birth, has also demonstrated.’

The only difference between the text of the present inscription and the one from *Tirhut*, is the last word *Suwanna*, the *Pali* for *Suvarna* instead of *Sramana*; and which means the *golden one*, or *one of an exalted birth or tribe*, and is here evidently an appellative of *Bhuddha*. In the appendix to Mr. B. H. Hodgson's quotations in proof of his sketch of

Buddhism, one of the principal attributes of Adi Buddha is **सुवर्णवर्णता** *Suvarna-warnata*. The above sentence, as Mr. Hodgson remarks, contains the *confessio fidei* of the Buddhaist, and is in the mouth of every one at Kathmandu. The discovery of it at Kanari confirms an opinion long prevalent, that the cave temples of Western India are exclusively *Bauddha*, and seems to strengthen the theory regarding the origin of the *Déhgopes* of Kanari, *Manikyala*, and Afghanistan, that they are *Bauddha* Mausolea, built over the remains of persons of this faith, either of a royal or priestly character. Little doubt can exist of the ashes found in the two copper urns being those of the persons buried, one of whom, according to the larger copper inscription, was the chief of the great *Vihar*, or large arched temple at Kanari. The object of these monuments was, as Mr. Prinsep says, twofold: a memorial of the dead, and in honour of the deity, of which the enshrined saint was only a portion, and as legitimately entitled to be worshipped as the source from which he had emanated, and to which, according to their creed, he could after a life of virtuous penance and abstraction return. The monuments in the *Punjab* and *Cabul* appear to be consecrated tombs of a race of princes, who were of the Buddhaist faith; whose coins are inscribed on one side with Greek letters, and the other with those of Bactrian *Pali*, and whose tribe is called *Khoranon*. They were a Græco-Indo-Scythic race, mentioned by Marco Polo, and called by him *Karahunas*, a tribe of robbers who scoured the country, and plundered every thing within their reach.*

I abstain now from offering any remarks on the general prevalence of the Buddhaist faith on this side of India, or its connexion with the worship of the sun, as my only object is to bring to notice the relics found at Kanari, and their similarity to those discovered in the Punjab.

* Travels of Marco Polo by Marsden, page 86.

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ॐ नमो भगवते वासुदेवाय ॥ ॐ नमो भगवते वासुदेवाय ॥ ॐ नमो भगवते वासुदेवाय ॥

नमस्तर्जनाय ॥ ॐ कुद कामां पुव द्यमान राज्य संवत्सर शत प्रायपंच चत्वारिंशदुत्तरे पंचाशीतिमहाविहारे

ॐ नमो भगवते वासुदेवाय ॥ ॐ नमो भगवते वासुदेवाय ॥ ॐ नमो भगवते वासुदेवाय ॥

सिक्तं विजयानततरो मिकान्तार वासुदेवस्य प्रमायाः बुद्धयश्चिमा उष्यवर्मणो शवलिवलि

वेत्तगवतर्षाक्यमुनेः सम्बुक् सन्वदधम्भतदधर्म उधकार्यमक्ताचरण पाठे चरण कुशल उदध रुविरि

नो भगवतर्षाक्यमुनेः सम्बुक् सन्वदधम्भतदधर्म उधकार्यमक्ताचरण पाठे चरण कुशल उदध रुविरि

ॐ नमो भगवते वासुदेवाय ॥ ॐ नमो भगवते वासुदेवाय ॥ ॐ नमो भगवते वासुदेवाय ॥

दंतस्यैव चरममुने रव्यदसुत कार्यस्य शारदधती उत्रस्यै चेत्यायतदा वाटा य काभि रोच

ॐ नमो भगवते वासुदेवाय ॥ ॐ नमो भगवते वासुदेवाय ॥ ॐ नमो भगवते वासुदेवाय ॥

नाकीर्णावस्थितिसमकालीन प्रतिष्ठापित वासुदेवस्य देवाय षसिद्धविद्याभरभनमाशित दृष्ट

ॐ नमो भगवते वासुदेवाय ॥ ॐ नमो भगवते वासुदेवाय ॥ ॐ नमो भगवते वासुदेवाय ॥

प्राणतडदवि कार्य वज्रदानिवडुकोनादयः स्वतिदियं चपिव यावद्वीचिः त पाठ प्र चलित मकर

ॐ नमो भगवते वासुदेवाय ॥ ॐ नमो भगवते वासुदेवाय ॥ ॐ नमो भगवते वासुदेवाय ॥

प्राणतावर्जतोयाहीरोदः हीरतोयो वृ हड रुकल द्यौताम्रकान्तर मेरुः यावद्वया न्निनद्य

ॐ नमो भगवते वासुदेवाय ॥ ॐ नमो भगवते वासुदेवाय ॥ ॐ नमो भगवते वासुदेवाय ॥

सुविमल सलिलैर्दुर्भर तोय वन्यः तावत्कीर्तिः स्थिरेयं भजनहितकरी सन्नतं पुष्यनासः

Literal Translation.

Salutation to *Sarvagna*, (a *Jine* or *Boud'dha*, or deified sage peculiar to those sects.)

This was founded in the year of the reign of the *Trukudaka* line about 100 years at *Bardhamanu*,* 54 on the north, and 85 at *Maha Behar*, by *Pushya Burma*, whose habitation was in the northern forest of the conquered *Taromi*, and who, by his personal beauty, was possessed of a *Buddhistical* appearance as a *Chaitya*,† in honor of the most powerful, very wise, and superior *Bhagavata Sakya, Muni*, whose acts were wonderful, and who was the son of *Sárad'dhati*, for the purpose of his studying and practising with firm devotion the famous *Boud'dha* religion, the duty of a learned man.

So long as the revolving waves wherein the *Makara*‡ are swimming at night, the milky water of the *Kshíra Samudra*, (sea of milk,) the *Meru* with its abundant gold and the forest of mangoe—the deep rivers continuing to flow with their clean streams will endure, so long this deed of *Pushya*, which contributes to the advancement of devotion, is durable.

NOTE.—I have most unwillingly kept back Dr. Bird's paper for many weeks, intending to publish it together with a notice of the late Lt. Pigou's Discoveries at Buhurabad near Jullalabad, on the frontier of Afghanistan. I thought the almost simultaneous examination of a *set of topes* situated close to a *set of caves*, giving similar results nearly at places so distant as Buhurabad and Kanari, worthy of being placed in juxta-position, as of interest to the investigator of Boodhist antiquities. I am extremely sorry that great delay in the preparation of a simple lithograph to accompany the Buhurabad paper should have caused the suppression of this interesting paper for so long a time. Having heard a few days ago from Dr. Bird, with the promise of a translation of the inscription on the two copper plates dug from the *Dehgop* at Kanari, copy of which accompanied his paper, I determined on publishing the reading of one of them (subject to correction by Dr. Bird) as given by Pundit Kamalakanta Vidyalkanka, and the literal translation of that reading, which I owe to a native gentleman of much learning and intelligence, Baboo Neelratna Holdar of Calcutta. The inscription is numbered xxviii. (and so copied erroneously into the lithograph,) in a work shortly, I am happy to say, about to appear on the Excavations in Western India, originated by Mr. Wathen, well known as a Sanscrit scholar, and carried on by Dr. Bird.



* This country is also mentioned in the 25th *sloka* of the *Pratápa Rudra* inscription, vide Asiatic Journal, No 82, 1838, page 906.

† Place of religious worship. This, if the word *druma* be added to it, means a sacred tree.

‡ A horned fish, or a fabulous animal.

Note on a Copper Land Grant, by JAYA CHANDRA.

The copper plate whence the accompanying reading in modern Sanscrit character and translation are taken, was found near Fyzabad in the Oude, and a facsimile of it was forwarded to me by Lieut. Col. Caulfield, then Resident at Lucknow. The land grants of the donor, Raja Jaya Chandra, are not uncommon. In the first volume of the Transactions of the Asiatic Society there is a notice by the late Mr. Colebrooke, (p. 441,) of a grant by this Raja, which is however described at second-hand: "Without having seen the original," says Mr. Colebrooke, "no opinion can be offered as to the probable genuineness of this monument; (date s. 1220, A. D. 1164) the inscription is however consistent with chronology; for Jaya Chandra, who is described in the *Ayeen Acberi* as supreme monarch of India, having the seat of his empire at Canouj, is there mentioned as the ally of Shehabuddin in the war with Prithair Raja, or Pithora, about the year of the *Hejira* 588, or A. D. 1192; twenty-eight years after the date of this grant."

The date of the grant now published is s. 1243, or A. D. 1187, twenty-three years subsequent to that of the same monarch noted by Mr. Colebrooke, and only six years prior to the death of the ill-fated donor, which occurred A. D. 1193. With him expired the dynasty of the Rahtore princes of Canouj.

The genealogy, as given in the grant now before us, differs only in the name of the first ancestor mentioned from that found in Mr. Colebrooke's grant. The name is there *Sripala*, here *Yasovigra*, but the identity of the monarch, known under these different appellations, has been already ascertained, and admitted by the highest authorities, (As. Soc. Jour. vol. iii. p. 339).

The phraseology of this grant is not different from those of Jaya Chandra, which have been already discovered: the anathema against the resumers of land granted in free tenure is remarkable for its peculiar bitterness. The plate, judging from the facsimile, must be in high preservation, and the date it gives is valuable, as bearing corroborative testimony to the accuracy of chronological data.

卐

श्री

स्वस्ति ॥ अकुण्ठोत्कण्ठ वैकुण्ठ कण्ठपीठलुठत्करः । संरम्भः
सुरतारम्भे स श्रियः श्रेयसेस्तु वः ॥ आसीदसीतद्युतिवंशजातच्मा
पालमालासु दिवंगतासु । साक्षाद्विवस्वानिव भूरिधाम्ना नाम्ना
यशोवियह इत्युदारः ॥ तत्सुतोभून्महीचंद्रशुद्धधामनिभं निजं । ये
नापारमकूपारपारे व्यापारितं यशः ॥ तस्याभूत्तनयो नयैकरसि
कः क्रान्तद्विषन्मण्डलो विध्वस्तोद्धतवीरयोधतिमिरः श्रीचंद्रदेवो
नृपः । येनोदारतरप्रतापशमिताशेषप्रजोपद्रवं । श्रीमत् गाधि
पुराधिराज्यमसमंदोर्विक्रमेणार्जितं ॥ तीर्थानि काशिकुशिकोत्सर
कोशलेंद्रस्थानीयकानि परिपालयताधिगम्य । हेमात्मतुल्यमनिशं
ददताद्विजेभ्यो पानांकिता वसुमतीशतशस्तुलाभिः ॥ तस्यात्मजो

मदनपाल इति क्षितींद्रचूडामणिविजयते निजगोत्रचंद्रः । यस्या
 भिषेककलशोद्धसितैः पयोभिः प्रक्षालितं कलिरजः पटलं धरि
 च्याः ॥ यस्यासीद्विजयप्रमाणसमये तुङ्गैर्वलैर्विश्रुन् माद्यत् कुग्भि
 पदक्रमासमभरद्रश्यन्महीमंडलेचूडारत्नविभन्नतालुगलितस्थानासृ
 गुङ्गासितः शेषः स्पर्शशादिव क्षणमसौ क्रोडे निलीनाननः ॥
 तस्मादजायत निजो यतवाङ्गवस्त्रिवन्धावनड्वनवराज्यगजो नरे
 न्द्रः । सांद्रामृतद्रवमुचां प्रभवो गवां यो गोविंदचंद्र इति चंद्रइवांवु
 राशेः ॥ नकथमप्यलभंतरणक्षमांस्त्रिसृषु दिक्षु गजानथ वज्रिणः ।
 ककुभिवभ्रमुरभ्रमुवल्लभ प्रति भटा इव यस्य धरागजाः ॥ अजनि
 विजयचन्द्रोनाम तस्मान्नरेन्द्रः सुरपतिरिवभूभृत्पक्षविच्छेददक्षः ।
 भुवनदलनहेलाहर्महम्बीरनारी नयनजलजधाराधौतभूलोकता
 पः ॥ लोकत्रयाक्रमणकेलिविसृखलानि प्रख्यातकीर्त्ति कविवर्णित
 वैभवानि । यस्य त्रिविक्रमपदक्रमभाजयति प्रद्योतयंतिकालि राज
 भयं यशांसि ॥ यस्मिंश्चलत्युदधिनेमिमहीजयार्थमाद्यत्करीन्द्र
 गुहभारनिपीडितेव । याति प्रजापतिपदं शरणार्थिनी भूस्तद्गुर्तुरंग
 निवहोत्थरजच्छलेन ॥ तस्मादद्भुतविक्रमाद्यजयच्चन्द्राभिधानः पति
 भूपानामवतीर्ण एष भुवनोद्वारायनारायणः । द्वैधीभावमपास्य विग्रह
 रुचिं धिक्कृत्य शान्ताश्रयाः । सेवन्तेयमुदयवंधनभयध्वंशार्थिनः
 पार्थिवाः ॥

गच्छेन्मूर्त्वाभतुच्छां न यदि कवलयेत् कूर्मपृष्ठाभिघातः प्रत्यावृत्त
 श्रमार्त्ता नमदखिलफणशवासवात्यासहस्रं । उद्योगो यस्य धावद्भर
 णिधरधुनीनिर्भरस्फारधारभ्रस्यद्दानद्विपालीवहनभरगलद्वैर्द्य
 मुद्रः फणोन्द्रः ॥ सोयं समस्तराजचक्र संसेवितचरणः सच परम
 भट्टारक महाधिराजपरमेश्वरपरममाहेश्वरनिजभुजोपाज्जित
 श्रीकाण्ठकुव्रजाधिपत्यश्रीचन्द्रदेवपादानुध्यातपरमभट्टारक महा
 राजाधिराजपरमेश्वरपरममाहेश्वरश्रीमदनपालदेवपादानुध्यात
 परमभट्टारकमहाराजाधिराज परमेश्वर परममाहेश्वरा ३५
 पति गजपति नरपति राज त्रयाधिपति विविधविद्याविचार
 वाचस्पति श्रीगोविन्द चन्द्र देव पादानुध्यात परम भट्टारक महा
 राजाधिराज परमेश्वर परममाहेश्वराश्वपति गजपति नरपति
 राजत्रयाधिपति विविधविद्याविचारवाचस्पति श्रीविजयचन्द्र

देवपादानुध्यात परम भट्टारक महाराजाधिराज परमेश्वर पर
ममाहेश्वराश्वपति गजपति नरपति राजत्रयाधिपति विविधवि
द्याविचार वाचस्पति श्रीमज्जयचन्द्र देवो विजयी ॥ असुरेश
पत्तनायां केमलीयामनिवासिनो निखिल जनपदानुपगतानपि
राजराजी युवराज मन्त्रिपुरोहित प्रतीहार सभापति सांग्रामि
काख्यपटनिक भिषङ्गनैमित्तिकान्तः पुकि द्रुत करितुरगपत्तना
करस्थान गोकुलाधिकारिपुरुषानाज्ञापयति बोधयत्यादिशति
च विदित मस्तु भवतां । यश्चोपरि लिखितयामः सजल स्थल स
लौहलवणाकरः समत्स्यकरः सगतेषिर सगिरिगह्वन निधानः
समधूकाम्बवाटिकाविटपतृणापतिगोचरपर्यन्तः सोर्द्धाश्वतु रा
घाटविशुद्धः श्वसीमापर्यन्तः त्रिचत्वारिंशदधिकद्वादशशत स
म्बत्सरे आषाढे मासि शुक्लपक्षे सप्तम्यान्तिथौ रविदिने अंकतो
यपि सम्बत् १२ ४३ आषाढसुदी ७ खौ अद्येह श्रीमहाराणास्यां
गंगायां स्नात्वा विधिवन्मन्त्रदेवमुनि मनुजयुत पितृगणांस्तर्पयि
त्वा तिमिरपटलपाटलपट्टमह समुध्म रोचिष मुपस्थायौषधि
पति सकलशेखरं समभ्यर्च्य त्रिभुवनत्रातुर्भगवतो वासुवस्य पूजां
विधाय प्रचुरपायसेन हविषा हविर्भुजं ज्ञत्वा मातापित्रो रात्मन
श्च पुण्ययज्ञोभिवृद्धये ॥

अम्भोभिराचम्य कुशलातापूतकरतलोदकश्चर्चकभारद्वाजगोत्राय
भारद्वाजाङ्गीरसवाहस्पत्येतित्रिप्रवराय राजतश्रीअटलपौत्राय
राजतश्रीइन्द्रपुत्राय औडराजतश्रीअनङ्गाय चन्द्रार्कयावच्छास
नीकृत्य प्रदत्तो मया यथादीयमानकरकरपूरनिकप्रभृतिनियतानि
यतसमस्तआज्ञाविधेयीभूयदास्यन्तीतिभवन्ति चात्रश्लोकाः ॥

भूमिं यः प्रतिगृह्णाति यश्च भूमिं प्रयच्छति ॥ उभौ तौ पुण्यक
र्माणौ नियतं स्वर्गगामिनौ ॥ शंखं भद्रासनं च्छत्रं वराशवा वरवार
णा ॥ भूमिदानस्य चिह्नानि फलमेतत् पुरन्दर ॥ षष्टिवर्षसहस्रा
णि स्वर्गं वसति भूमिदः ॥ आच्छेत्ता चानुमन्ता च तान्येव नरके
वसेत् ॥ वज्रभिर्वसुधा भुक्ता राजभिः सगरादिभिः । यस्य यस्य यदा
भूमिस्तस्य तस्य तदा फलम् । स्वदत्तां परदत्ताम्वा यो हरेत वसु
न्धरां । स विष्टायां क्रिमिर्भूत्वापितृभिः सह मज्जति । तडागानां
सहस्रेण वाजपेयशतेन च । गवां कोटिप्रदानेन भूमिहर्ता न मुञ्चति ।

वारिहीनेष्वरणेषु शुष्ककोटरवासिनः । वृष्णाहयाश्च जायन्ते
 देवब्रह्मस्वहारिणः । न विषं विषमित्याज्जब्रह्मस्वं विषमुच्यते । विष
 मेकाकिनं हन्ति ब्रह्मस्वं पुत्रपौत्रिकं ॥ वाताभ्रविभ्रममिदं वसुधा
 धिपत्यमापातमात्रमधुराविषयोपभोगाः । प्राणास्तृणायजलविंदुसमा
 नराणां ॥ धर्मः सखा परमहोपरलोकयाने । यानीह दत्तानि पुरा
 नरेन्द्रैर्दानानि धर्मार्थयश्स्कराणि । निर्मात्यवान्तप्रतिमानितानि
 को नाम साधुः पुनराददीत ॥

Literal Translation, by Pundit SARODAHA PRASADH.

1. May the embrace of Lakshmi, (* * * * * and Vaikuntha,) contribute to your prosperity!

2. The Rajas who were descended from the *lunar* line having departed for heaven, one, named *Yasóvigraha*, by his natural spirits was as the sun himself.

3. His son was *Mahi Chandra*, who extended his fame as beams of the moon across the sea.

4. His son was *Chandra Deva*, who was exceedingly given to justice, who invaded the whole circle of his enemies, and dispelled the darkness of the gallant warriors. He, by the power of his arms, gained the kingdom of *Gádhipoora*, where all sorts of insurrections have been quelled by his power.

5. He, (*Chandra Deva*,) who protected the sacred places of *Kashi*, (Benarus,) *Kushikotsava Kóshalá*, (Oude,) and *Indrasthána*, possessing them, who constantly gave gold equal to the weight of his body to the *Brahmanas*; made the *Vasumatí*, (earth,) renowned by the hundreds and hundreds of *túlás*.*

6. His son *Madanapála*, who was like the moon in his line, and the crest-jewel of all the Rajas, was glorious! By the water of his anointment, all the filth of the *Kaliyuga* has been washed away.

* A religious ceremony, i. e. giving gold or silver to the *Brahmanas*, equal to the weight of the donor's body; the ceremony is in these days often practised by weightments against grains, or precious merchandise. It is supposed to be efficacious in awarding evil, and was constantly had recourse to by Maharaja Runjeet Sing, (Lahore,) in his last illness.

7. At the time of his expedition for conquests, when the earth was as it were crumbling under the over-passing of his furious elephants, as well as his mighty army, the mouth of *Sesha*,* smeared with blood gushing from the palate pierced by the pressure with his head jewel, was for sometime bent down even to his breast.

8. From him was born *Gobinda Chundra*, like the moon rising from the sea, who by his arms, long and like the creeping plant, kept the newly, acquired kingdom—stubborn as the elephant in confinement; nay, who granted a great many cows yielding sweet milk.

9. His elephants, rivals to that of *Indra*, having sought in vain in the three quarters of the world for elephants, capable of bearing their burdens, came at last in the quarter of *Indra*, (east,) and wandered there-along.†

10. From him was born *Raja Vijaya Chandra*, who like *Surapati*, (*Indra*,) cut off the *Pukshus* of all the *Bhubhrit*‡. He at his easy conquest of the world, has extinguished the heat of the earth by the abundant tears of * * * * *

11. His renown challenging the three regions of creation described by eminent poets, and which reached as far as the *Vishnu loka*, (region of *Vishnu*,) has been ever the terror of *Vali Rajá*.§

12. The earth, at the expedition of *Vijaya Chandra* to conquer the whole world crushed by his furious elephants, ascended, as it were, in the dust caused by his numerous army, to solicit refuge from *Prajapati*, (*Brahmá*.)

13. From him who was possessed of wondrous power, sprung one named *Jaya Chandra*, the lord of all *Rajas*, who was as the *Naráyana* himself, born only for the deliverance of the world; and whom the *Rajas* humbling themselves ceased from contemplating hostilities with, and putting a stop to their designs, submitted to.

14. At the preparation of his warlike affairs, the *Phanindra* (the chief of serpents,) wearied with falling down and again rising from the hard shell of the *Kúrma*,|| under the pressure of his elephants the ichor from whose temples dropped into the streams, running from the

* The chief of serpents, supporting the earth on his head.

† With the view of finding there the rival elephants of *Indra*.

‡ The word *paksha* means when relating to *Indra* the “peaks of mountains;” and “allies” when referring to the *Raja*. The word *Bhubhrit* has also a double meaning, “the mountain” and “the (other) *Rajas*.”

§ *Vali Raja*, v. the *Srimat Bhágavata*.

|| The tortoise supposed to reside underneath the earth.

shaking hills, and panting from his thousand hoods with impatience, would without sustenance have fainted, and died.

He, the glorious *Jaya Chandra*, whose feet were adored by the circle of Rajas, and who was like *Vachaspata** in discussing on various *Vidyás*, (sciences,) the lord of the three Rajas: viz., *Aswapati*, *Goyapati*, and *Narapati*, very rich, king of kings, learned and superior to all, and who was devoted to the feet of (his father) *Vijaya Chandra*, who also was like *Vachaspati* in discussing, &c. and devoted to (the feet of his father) *Govinda Chandra*, who also was, &c. and devoted to the feet of (his father) *Madanapála*, who also was, &c. and devoted to the feet of (his father) *Chandra Deva*, who was also very learned, king of kings, &c. &c. and who gained the kingdom of Kanyakubja by the power of his arms. That proclaims and orders to all the inhabitants of *Kemali*, the village situated at *Ashúreshapattaná*, to all the rajas, princes, ministers, priests, attendants, chiefs of assemblies, warriors, (*akshapálikas*) physicians, and servants, who were occasionally to attend to the female apartments, superintendents of elephants, horses, mines, cows, &c.

Be it known to all of you, that this day, the seventh day of the moon, in the month of *Ashádha* of *Samvatsara* 1243, we, for promoting the virtue and fame of our parents and ourselves, having performed ablution in the Ganga at Benares,—satisfied as usual, the *Gods*, *Munis*, men, together with deceased ancestors, with offerings of water, adored him whose fervid beams dispel darkness, worshipped him who wears the crescent on his forehead (*Shiva*), and *Vásudeva* (Vishnú), offered oblations to *Hútáshana* (Fire) with *Páyasha*† and performed *Achamana* with water, then granted with water in hand to *Alonga Ouda Ráyuta*, who belonged to the *Bháraddája* line, and was possessed of three Provaras, viz. *Bharaddája*, *Angirasa*, and *Várhaspatya*, and who was the son of *Indra Ráyuta*, and grandson of *Atala Ráyuta* with a *Sáshna*, (grant) village above-mentioned (*Kemali*) which was enriched with water and earth, with mines of iron and salts, with ponds full of fishes, with caves and fertile farms, mountains and forests, with gardens of modhu and mango trees, and which extends as far as *Trinayuthi*, and the four boundaries of which were undisputable. It is ever to be enjoyed so long as the sun and moon will endure. Its revenues, as settled, or are to be settled, are duly to be discharged by the tenants.

* The Guru of the Gods.

† Rice boiled with milk and sugar.

Slokas.—He who grants lands, and he who accepts, both of those virtuous reside in heaven.

O, *Purandara*, (Indra.) *Sankha* (shell) houses, ensign of ranks, (chattah) fine horses and elephants, are gained by granting lands.

He who grants lands lives 60,000 years in heaven; but he who confiscates, or resumes, or allows others to do so, is doomed to hell for a like period.

The earth has been enjoyed by many kings, as *Ságara* Raja, and others, and he who rules it in his turn is the sole enjoyer of its fruits.

He who resumes lands granted by himself or others, is to become a dung fly and to live therein with his ancestors.

The resumer of lands can never be free from sins, though he grants a thousand tanks, a crore of cows, and performs a hundred *vajapeya* (a sacrifice.)

Those who resume lands granted by others, will become black serpents in the desert of the forest of the *Vindhya* mountain. No poison is of itself utter poison; but to deprive a Brahman of his property is indeed poison, because the former can kill one alone, but the latter the whole of a man's descendants.

Sovereignty is unstable like the wind; worldly pleasures are in the first instance desirable. The life of man is as a dew-drop on the grape, but, alas! virtue is the only friend who accompanies him into the next world.

But what generous man will resume the grants made by Rajas, who have gone before him, and whose gifts are like wreaths of flowers spreading the fragrance of a good name and of a reputation for wealth and virtue?

Lineage of Jayachandra.

Yashovigraha.

|

Mahichandra.

|

Chandra Deva.

|

Madanapála.

|

Gobindachandra.

|

Vijayachandra.

|

Jayachandra,
the donor.

JOURNAL

OF THE

ASIATIC SOCIETY.

Abstract Journal of the Route of Lieutenant A. Cunningham, Bengal Engineers, to the Sources of the Punjab Rivers.

From Tandee on the Chundra Bhaga river, where I parted with Lieutenant Broome, I continued my way along the right bank of the river, with the proud consciousness that I was the first European who had ever visited that part of the Chundra Bhaga. On the 16th of July, 1839, at sixteen miles below Tandee, I crossed the river by a wooden bridge called *Rocha*, or the 'Great' Bridge, 85 feet long and 43 feet above the stream, to the left bank, where I once more came upon fir trees which I had not seen for a week: After a walk of two miles over a dusty bad pathway, I had to climb a steep hill on which the celebrated temple of Triloknath is situated. On the road I passed a Hindoo Pilgrim, a Gosain, who had come from Sunam in the protected Sikh States, having visited Jwala Mookhee near Kangra, and the various hot wells at the head of the Parbuttee river.

The temple, which is situated at one end of the village of Goonda, is square, and is surmounted by the *trisoal* or trident of Siva, who is Triloknath, or, The Lord of the three worlds, Heaven, Earth, and Hell. There was an open Court to the front with a two-storied verandah of wood; the pillars, architectraves, and rails being all richly carved. In the middle of the Court there was a block of stone about 6 feet square by 5 feet high, on the top of which was growing the sacred plant *Toolsee*, or Basil. The figure of Triloknath was of white marble, about two feet

high, with six arms ; on its head there was placed a small squatted Buddhistical looking figure which the attendant Brahmin declared to be of Anna Pooroos, probably meaning Anna Purna, the beneficent form of Parvati, the wife of Siva. In the Court there were many tall poles surmounted by cow's tails and pieces of cloth, placed there as offerings, by Tibetan Buddhists as well as by Brahminical Hindoos.

The village of Toonda in which the Temple of Triloknath is situated, had been overwhelmed in snow in the preceding year, 1838, when all the houses which had not been bonded with wood, had fallen down, and killed the inhabitants. The Rana or Chief of Toonda Triloknath is under the authority of the Rajah of Chumba, to which state the lower portion of Lahul belongs.

The province of Lahul embraces the whole breadth of the Chundra and Bhaga rivers, and extends down their united streams called the Chundra Bhaga in a W. N. W. direction to about ten miles below Triloknath. It is divided into two unequal parts ; the larger belonging to the state of Kooloo, and the smaller to Chumba. In the former there were 108 villages, containing 740 houses, and 3,764 inhabitants.

The revenue of the province is derived from two different sources ; a house tax, and a duty on the carriage of merchandize. Under the Rajah's administration each house was taxed at 10 and 12 rupees, but the Sikh Government increased the tax to twenty rupees per house, by which they raised the collections from 5,000 to 10,000 rupees per annum, the houses of the priests and poorer labourers being exempted from taxation. The rates of toll were at the same time adjusted by Zurawur Singh, the governor of Ladakh, the duty upon each carriage sheep being raised from half an anna (or three farthings) to four annas, (or six pence.) This was considered very oppressive by the people, but as a sheep can carry 8 and 10 seers, or one fourth of a man's load, the fair and natural rate of duty would be to charge one fourth of the duty levied upon each man ; and Zurawur Singh did no more, for a man is charged one rupee. On a pony which carries from 60 to 70 seers, or double the load of a man, the duty levied is likewise double or two rupees per pony.

The grain raised in Lahul is all consumed in the country ; and as there are no natural productions, the house tax is paid by the inhabitants from the joint Stock, obtained by hiring themselves as porters between the states in the lower hills of the Punjab and Ladakh ; the porters who bring goods from Kooloo, Munde and Chumba being changed at Tandee for natives of the province itself, who receive 6 rupees cash, for the journey to Ladakh. The hire of a pony to Ladakh is 12 rupees.

The articles taken to Ladakh are :—wheat and rice from Chumba ; Iron and Opium from Mundee ; coarse white cottons, and Benares brocades of the worst quality from Kooloo ; with goats skins dyed red, chiefly manufactured at Bissowlee and Noorpoor in the Punjab—in exchange for which the following articles are brought to Tandee to be sold to the merchants of the neighbouring states. Shawl Wool ; Bang, or Hemp prepared for smoking ; silver in wedges, each wedge called Yamoo, weighing 180 rupees or $4\frac{1}{2}$ lbs. avoirdupois ; Borax, native of Ladakh ; Salt, manufactured at some Salt lakes beyond Ladakh ; and Tea, brought from Yarkund.

For the two previous years, however, but little trade has passed through Lahul, on account of the seizure of Ladakh by the Jummo family, who have established a high road through their own territory of Jummo, which throws all the duties upon the traffic into their power. The route runs from Jummo, through Chinénee and Bhudurivar, both in Forster's route to Kishtwar, and thence to Chutogurh and Ladakh. The whole of these places, and consequently the entire route, are in the possession either of Gulab Singh or of his brother, Dheean Singh.

The consequence of this change in the direction of the commerce had been so prejudicial to Lahul, that about 500 people had emigrated to other countries ; and many more would have followed them had they not been stopped at the Custom houses established on all the passes leading from Lahul. Another consequence of this interruption of the traffic had been that very little or no Salt had come to Lahul, for the two preceding years ; and of this the people complained bitterly, as well as of the loss of their hire as porters between the lower hills of the Punjab and Ladakh. Many of them were literally starving, having nothing to eat, except grass, willow leaves, and strawberries. Even the attendant Brahmin of the holy temple of Triloknath was glad to get the remains of my Mahomedan Munshi's dinner.

There are four passes leading from Lahul into Chumba, all of which were described as equally bad. Of these the Dogee Pass leads from the village of Ruppoo, about 8 miles below Tandee, over the snow, and down the course of the Boodhil river to Burmáwar. The other passes lead from Triloknath. The upper one is called the Bugga Pass and leads direct to Burmáwar ; the lower is the Humguree Pass, and is very little used, and the middle is the Kalee Joth, or Pass of Kalee Débee, which I chose.

On the 18th of July, I quitted Triloknath, and on the following evening reached the foot of the Kalee Débee Pass, so named from a

black conical peak to the South, dedicated to Kálee Débee. The place was called Hoolyas, in Sanskrit Hoolyasaca, and was merely a resting place at the foot of the pass; there I shot some snow pheasants and Alpine Hares. On the following morning I began the ascent of the pass up steep banks of loose angular masses of rock, and over sloping snow beds, down which fragments of rock came bounding and dashing along with a crash like the rattling of continued and numerous file-firing. The porter who carried my iron tentpegs was struck on the knee by one of these stones, and hurled before my eyes down the sloping indurated snow. Luckily the snow bed terminated in a fork between two mounds of broken fragments of rock, and there the man's further progress was stopped, and his life saved. He was lame however for three weeks afterwards. The crest of the pass was a narrow ridge not more than ten and twelve feet wide, covered with soft and newly fallen snow. There I spread my cloak and found by my thermometer that the height was 15,700 feet. In the middle of the ridge there were two small slabs erect and smeared with vermilion, near which were numerous sticks covered with rags. For a few minutes I had a splendid view of the green hills of Chumba smiling in the distance. A thick haze then descended and obscured even the terrific gulph below, and I commenced the descent without seeing where I was to halt for the night. A goat was sacrificed by my servants to the Goddess Kálee, and to that they attributed my safety as well as their own. The descent was 5,000 feet to the spot where I halted, at the head of the Nye river, one of the principal tributaries of the Ravee.

On the 21st of July, I continued my journey, following the course of the Nye river for seven miles to the village of Loondee, below which I crossed the river and halted at the Dhurmsala, or traveller's house. The next day I reached Burgaon, a large village on the left bank of the Nye, and was much cheered with the sight of a mulberry tree; and there I got some good wheat flour, some excellent milk, and fine honey. On the 24th I passed through Footahun, below which the Nye and Boodhil rivers join the Ravee, to Poolnee; and ascending the Boodhil river for five miles I crossed it by a very respectable wooden bridge, 68 feet in length and 98 feet above the river, with a railing, knee high, on each side. There I saw wild grapes and mulberries just beginning to ripen—and continuing my journey for an ascent of 1,500 feet, I reached Burmawar, or Vermmawura, the ancient Capital of the Verma family of Chumba, 7,015 feet above the sea. The spot was a beautiful one; but the severity of the winter had no doubt led to its being abandoned as a capital for

several centuries. The tall spires of the stone temples, and the profusely carved wooden temples were completely shaded by cedar and walnut trees. One Cedar was 20 feet in circumference. There were numerous stone pillars, tradition said 84, dedicated to Siva; and a large brazen bull, the size of life, under a wooden shed, besides several travellers' houses. The figures in the temples were of brass and exceedingly well executed, all bespeaking a very ancient origin. I copied three Sanscrit inscriptions from the brazen figures, recording the names and families of the donors.

On the 29th of July, I left Burmawur, and at four miles reached the village of Khunn, opposite Tootahun, where the Nye and Boodhil rivers join the Ravee. From thence the road descended for 1,500 feet to the Ravee, which was rushing between steep cliffs of black clay slate; I crossed it by a birchen rope bridge 116½ feet span and 60 feet above the water: the points of suspension were at different heights, and the fall of the curve in the middle was 20 feet, which made the ascent and descent extremely difficult and dangerous. From the bridge, I had to scramble amongst loose stones, and up steep banks for an ascent of 2,000 feet in a distance of two miles, when I reached Woolas, on the left bank of the Ravee, opposite Khunn and Tootahun, at the junction of the three rivers, which I was surprised to find was not considered holy. The three streams were about equal in size; but the Boodhil is the one held in most esteem, as one of its sources is in the holy lake of Munnee Muleés—its other principal source is from the Dogee Pass, on the road from Tandee to Burmawur. The Nye River has its principal source in the Kalee Débee Pass; but a considerable feeder called the Raim River, joins it from the Bugga Pass. The Ravee itself rises in Kooloo from the Bungall Mountain, and runs in a N. W. direction to Woolas, where it is joined by the Nye and Boodhil.

From Woolas, I followed what is called the royal road, or that used by the Rajahs of Chumba when they make their pilgrimages to Munna Muhe's. It was one day's journey out of the way, but as it ascended the higher spires of the mountains, I chose it for the sake of the more extensive view, which I should obtain, and for the sake of the survey, which I was making. In three days, I reached Chaitrree, where was a temple to Sugget Débee. The figure was of brass with four arms; and on the pedestal was an inscription, recording the donor's name, which I copied. On the next day, I reached Bussoo, and on the following day Mahila; and on the 4th of August, I crossed the Ranee by a birchen rope bridge of 169 feet long, stretching from an isolated rock on the bank to the Cliff

opposite, and reached Chumba, the Capital of the state of the same name.

Chumba, or Chumpapoorā, the Capital of Chumba is situated on a level piece of ground on the right bank of the Ravee, at an elevation of 3,015 feet. There is a tradition that the river formerly covered the Chaugaun or plain of Chumba; which is certainly correct, for the plain is formed of large boulders of slate and granite, mingled with rich earth above, and with coarse sand below. There are nine good temples in Chumba; none of them, however of such beautiful workmanship as those at Burmawar. The Rajah's Palace is an extensive building, but it cannot boast of any beauty. The houses are not different from those usually seen in the hills; and I was altogether much disappointed with Chumba.

Of seventeen purgunnahs, through which I passed I have a detailed account of all the different villages, amounting to 258, containing 1,672 houses, and 8,849 inhabitants. These seventeen Purgunnahs form about one-eighth of the whole country; which must, therefore contain, with the addition of 800 houses, and 7,000 inhabitants in Chumba town, 14,176 houses, and 77,792 inhabitants. The villages on the lower course of the Ravee are however much larger than those upon the higher streams, and I am therefore inclined to rate the population at nearly 100,000; of whom perhaps 10,000 may be exempt from paying the house tax—the remainder, 90,000, living in 12,500 houses, will give a revenue of 2,50,000 rupees, if taxed as usual at 20 rupees per house.

The trade through Chumba, formerly considerable, is now very little, owing to the opening of the new route, through Jummao; Customs are, however, collected at Bhudewar, which forms the North Western boundary of Chumba, and through which merchants occasionally pass, and merchants who come to Chumba, sometimes carry goods by the Sajh Pass and Chutegurh to Ladakh; but the traffic is comparatively trifling; and I do not therefore value the amount of Customs collected at more than 50,000 Rs. yearly, making a total revenue of 3 lakhs of rupees, or £30,000.

There are no natural productions exported from Chumba, save rice and wheat to Ladakh; and the manufactures are considerable: the principal are thick woollens called Burmawur, manufactured in pieces eleven yards long, and fifteen inches wide, in all the colder parts of Chumba. Some are carried to Kooloo for sale, and I have seen a few pieces at Simla. Coarse Alwans, or Shawl Cloths, are made in the town of Chumba from Ladakh Wool, but they are all used in the country.

The men wear a long sleeved white woollen cloak, fastened round the waist with a black woollen rope; and on the head a peculiar peaked cap

of thick white woollen; the women wear the same cloak, only black, with a white rope round the waist; and a small scull cap on the head—the men's dress is a very picturesque one.

From the Rajah's Pundit I obtained a long list of the Rajahs of Chumba, beginning with Brahma of course, and descending through the Surajvansa to Sumitra, after whom the list appears to be less apocryphal. The earlier Rajahs are said to have resided in Burmawar.

On the 11th of August I quitted Chumba, crossing the Ravee immediately above the town by a birchen rope suspension bridge, of 187 feet span; and with much difficulty made my way to the village of Kurédh. One of my porters in crossing the small stream, now swollen by rain, lost his footing and was drowned. On the 13th I reached the summit of the pass of Chuarhoo, 8,041 feet high, from which I saw the plains of the Punjab indistinctly through the clouds. In the evening I reached the large Village of Chuarhee, where I halted. On the following day I made a fatiguing march of $4\frac{1}{2}$ miles to Jajeree, on the bank of the Chukkee River, over several high ridges of stiff gravelly conglomerate, alternating in strata with sandstone. The next day I crossed the Chukkee River with some difficulty, by swimming. It was 200 feet across and about 5 feet deep in the middle, and the rounded boulders at the bottom afforded no footing whatever; after a little ascent and descent I came upon a large open plain, which I crossed to Noorpoor.

Noorpoor is a fine flourishing city, 1,924 feet in height, built upon a narrow ridge of a sandstone rock, curving to the North; the houses are chiefly of squared stone; and the main street runs over the solid rock. The city was founded upwards of two hundred years ago by the celebrated Noor Jehan, the beautiful empress, who established a number of Kashmerians in it. In 1839 there were said to be 7,000 Kashmerians in Noorpoor, who were chiefly employed in the manufacture of Shawls. I saw many of the Shawls, which were decidedly inferior to the real Kashmerian Shawls, this was attributed to the difficulty of getting the finest wool. The Noorpoor shawls are however of very fair workmanship, and they are brought in great numbers to Simla, Delhi, Lucknow, Benares, and Calcutta.

On the 18th of August I left Noorpoor, and crossing the Chukkee River, I reached Puthankot in the plains of the Punjab at an elevation of 1,205 feet above the sea. From thence I passed through Shujanpoor, a good sized straggling town, and crossing the Umritsir and Lahore Canal near its head, I reached the bank of the Ravee, which was nearly a mile in width. The passage was made in about an hour by boat, and I halted

at a large straggling town called Ruttoo, from that passing through Heeranugur, Chungee Marhee, Mudwar Harmunder, Rarha, and Pullee, I reached the bank of the Tohi, the Jummoo River which was rushing along deep and red, having been swollen by heavy rain in the lower hills. There I was detained until the evening, as no boatman even with a bribe would venture his boat in the rapid current. At Jummoo I occupied an upper room in a gateway prepared for reception by Golab Singh's eldest son, Oodhum Singh, who was lately killed at Lahore.

The town of Jummoo is about the same size as Noorpoor, but it contains fewer inhabitants, as there are no two storied houses in it. A few Shawls are manufactured at Jummoo, but they are made to order and not for general sale. Rajah Oodhum Singh treated me kindly enough; but my servants were watched, and I was unable to procure any information of value, I therefore quitted Jummoo as quickly as possible, and crossed the Chenab river 10 miles below Aknoor, near where Taimoor had crossed it. The main stream was 920 yards wide, rolling swiftly on with a strong current. There were besides six other channels, some of them breast deep, and all having a rapid stream; and beyond these was the river Tohi, which, rising in the Rutun Punjall mountains, flows by Rajaoree, and joins the Chenab above Wazeerabad. It must have been between this river and the Chenab that Alexander had pitched his camp about the same season of the year; for Arrian says, 'The flat country is also often overflowed by rains in summer, insomuch that the River Acesines, having at that season laid all the adjacent plains under water, Alexander's army was forced to decamp from its banks, and pitch their tents at a great distance.'

The Tohi, frequently also called Toh, is, I have no doubt, the Tutapus of Arrian, a great river, which falls into the Acesines, for the Tohi of Rajavree runs in a direct line upwards of 80 miles, and where I crossed it near Mumaivur, at the same season in which Alexander had seen it, it was a great river running deep and red. It was full of quicksands, and the passage was dangerous as well as tedious. On the 3rd of September I reached Bheembur, at the foot of the mountains on the Royal Mogul road to Kashmere.

On the 5th I proceeded to scale, what Bermier called that 'frightful wall of the world,' the 'Adi Duk' or first range of mountains. On the top of the pass I saw a gibbet with two cages containing the skull of Thums and his nephew, the chiefs of Poonch, who had for a long time resisted the encroachments of the Jummoo family. A price was set upon their heads by Goolab Singh, but from their known bravery no one dared

attack them openly ; and they were at last killed, while asleep, and their heads carried to Goolab Singh, who ordered them to be suspended on the crest of the Bheemur pass. The next day I crossed the 'Kumaon Gosha' mountains, or 'sharp ridged bow,' the range being narrow at the top and bent at each end like a bow. Thence passing through the Serais of Noshehra, Inayutpoora, Chungez, and Muradpoor, I reached Rajaoree on the 8th of September. The Rajah was very attentive and communicative, and I received much interesting information from him. I also procured a history of the country, and some orders by Aurungzebe, and Nadir Shah ; besides a copy of a grant of the Rajaoree territory, by Bahadoor Shah ; since then the territory has been seized bit by bit by the Jummo family, until only a small circle of 20 miles diameter now remains to the present Rajah.

In the grant given by Bahadoor Shah, the revenue of Rajasore is stated to be 77,77,960 dáms, equivalent to 27,799 Rupees, which with the Customs collected, must have been increased to 50,000 rupees. The territory now is about one fourth of what it was at that time, A. D. 1708, and the Customs have nearly ceased, as the Sikhs give free passes for all their own merchandize ; the present revenue cannot therefore be more than 10,000 rupees, which was the sum stated to me by many respectable natives.

The chief crops in Rajaoree were rice and maize ; the maize invariably occupies the higher grounds, and the rice fields the level alluvial formations along the river ; these were kept constantly flooded by streams conducted along the hill sides from the neighbouring torrents. Height of the city, 2,800 feet.

The hills between Bheemur and Rutun Punjall are all of a coarse greyish sandstone, alternating with loose gravelly conglomerates near Bheemur, and gradually changing into a siliceous state in the Rutun Punjall range,—at the foot of which there are large blocks of conglomerate in compact masses cemented firmly together.

I left Rajaoree on the 10th of September, and after an easy march of eight miles over a stony road, I reached Thunna ;—from whence to the crest of the Rutun Punjall the road was good, but steep. The crest of the pass, I found to be 7,350 feet in height ; from whence there was a noble and extensive view, over the low hills of Rajaoree, of the distant plains of the Punjab. From thence the descent was through a thickly wooded forest of walnut, elm, horse chesnut, and pine trees to the bank of the Bahramgulla river, which I crossed by a bridge, and proceeding up one of its tributaries, I halted at Chundee-murg. Rain had fallen heavily for some days previously, and the small stream had swept away

all its bridges, so that I had some difficulty in making the numerous crossings, which the road took. One of my goats was swept away by the rapidity of the current. The ascent of the Peer Panjall was extremely steep, but the road was good and wide, having been repaired by order of the Sikh Government. My thermometer gave 11,224 feet as the height of the crest of Peer Panjall Pass. From thence the road was a gradual descent for $2\frac{1}{2}$ miles to the Serai Aliabad, built by Ali Murdan Khan; height 9,812 feet. A little below Aliabad the road was narrow, but quite safe, a parapet wall having been built on its outer edge overhanging the torrent below. The place is called Lala Ghulam, after a slave who superintended the work, and whom Ali Murdan is said to have afterwards sacrificed and buried there. Beyond that, the road was good and broad, occasionally ascending and descending to an open piece of ground, called Doojan, below which I crossed the torrent and proceeded along a level pathway to the Serai of Heerpoor. The next day I passed through Shooppyen, and crossed the Shooppyen river, reached Ramoo ke Serai, where I halted; and the next day, 15th of September, I entered Kashmere city, having been three months and two days from Simla.

The city of Kashmere is situated on both sides of the river Behut, at an elevation of 5,046 feet above the sea. I am aware that Baron Hugel made the height 6,300 feet, but Jacquemont calls it 5,246, and Moorcroft says, that the *general* level of the valley is about 5,000 feet. It is of an irregular shape, the greater part being on the right bank of the river; about one fourth of the houses are deserted; but the city must still contain about 80,000 inhabitants.

The information which I have collected regarding Kashmere is not yet completely arranged, so that I cannot give any general results. I may state, however, that I have a list of all the villages in the valley; a minute account of all the passes, including those which are used only for contraband trade; the history of the Shawl Wool from its first starting from Radakh and Khantan (or Changtang) to its arrival in Kashmere, where it is spun into thread, dyed, and woven into Shawls. I have besides ten or twelve specimens of Kashmerian songs translated into English verse; and a very good collection of the coins of the Hindoo Rajahs of Kashmere preceding the Mussulman conquest.

Additions made to the Geography.

I will conclude with stating the additions, which the joint travels of Lieutenant Broome and myself have made to the Geography of the Alpine Punjab.

Of the Sutluj.

1. The whole course of the Spiti river, one of the principal branches of the Sutluj, has been surveyed by Lieut. Broome.

Of the Beas.

2. The whole course of the Teerthun river, one of the principal feeders of the Beas, has been jointly surveyed as well as the Beas river itself, from its source to its junction of the Teerthun river, in addition to which, the mountain course of the Chukkee river has been laid down by Lieut. Cunningham.

Of the Ravee.

3. The whole course of the Nye river, with a portion of the Boodhil river, and also of the upper Ravee, with the further course of the Ravee, after the junction of the Nye and Boodhil rivers as far as Chumba, have been surveyed by Lieutenant Cunningham.

Of the Chenab.

4. The whole course of the Bhaga river, has been surveyed by Lieutenant Broome; the source of the Chundra by the same officer, and the greater part of its course jointly by Lieutenants Broome and Cunningham; and the course of the joint stream of the Chundra Bhaga, as far as Triloknath, by Lieutenant Cunningham. The greater part of the course of the Tohi river, a principal feeder of the Chenab, has likewise been surveyed by the same officer.

Of the Theum.

The Shoopyen river, which rises in the Peer Punjall, has been surveyed by Lieutenant Cunningham.

Of the Indus.

The source of the Yunam Choo, or Yunam river, a large tributary of the Indus, has been laid down by Lieutenant Broome.

(Signed) ALEXANDER CUNNINGHAM.

1st Lieutenant of Engineers.

Lucknow, 8th February, 1841.

Extracts from Demi-Official Reports.—By Capt. ARTHUR CONOLLY on a Mission into Khorasan, (communicated to the Editor from the Political Secretariat.)

The Huzarah and Eimauk Country which we traversed between Bameean and Meimunna, consists of high unwooded mountains, covered with grass and various shrubs and herbs which serve for spring and summer pasture, and winter fodder, and vallies at different elevations, in the highest of which is grown only the naked Thibetan barley, and in the lowest barley, wheat, and millet.

The Huzarah portion is the coldest and poorest, and the natives with difficulty eke out a living from its natural resources; living in small villages of low huts where they herd during the long winter season under one roof with their cows and sheep, and using as fuel small dry shrubs and the dung of their cattle. An idea of their privations may be formed from the fact that the most of the people do not use *salt*. There is none in their own country, and as they cannot afford the price which would remunerate importers of this heavy article from Tartary and Afghanistan, they have learned to do without it. Their best bread is consequently very tasteless to a stranger.

But the Huzarahs are not allowed to enjoy even their limited means of existence in peace, for the Oosbegs make occasional inroads upon their dwelling places, and sweep away whole villages into slavery, leaving fertile spots desolate. Their neighbours, but religious enemies, the Eimauks, also carry off as many of them as they can, from time to time, conquer or kidnap, and the chiefs of their own race, steal each other's subjects in their petty wars, exporting all they can thus obtain, through Toorkish merchants with whom they have understanding.

We found the Huzarah people unblushing beggars and thieves, but they are mild mannered and industrious, and sigh for the protection of a settled government. Were this given to them, their condition would soon improve in every way. Their chiefs are 'barbarians of the rudest stamp, without any of the barbarous virtues.' They reside in small mud forts, exact as much as they can from all who come within their reach, and form occasional combinations for the defence or attack of each other. The Eimauks differ chiefly from the Huzarahs in being of a more nomade habit, the chiefs consult their dignity and safety, by dwelling in mud forts, but the people reside nearly the whole year in the dry stick and felt tents which are used by the Toorkmans. The chiefs, like

the Huzarah meers, have their feuds, which continually break them up into parties against each other. The people are bolder than the long oppressed Huzarabs, and will get together to attack travellers whom they would rather only attempt to rob privately.

The Soldiers of both tribes are cavalry, mounted chiefly on small active horses of native breed, though some ride horses imported from Toorkistan. Their arms are swords, and matchlocks, the last weapon furnished with a prong for a rest. There are clans of military repute among both people. Their strength lies in the poorness and natural difficulty of their country, but the last defence is I imagine greatly overrated. Parts of the interior are described as much more steep than that which we traversed, but this portion, which is the most important, as being on the high road to Herat, is by no means so inaccessible as it has been represented.

Neither among Huzarabs or Eimauks is money current, and sheep form the prime standard of barter with the traders who come among them from Afghanistan, and Tartary. These Merchants establish a friendly understanding with chiefs of different districts, to whose forts they repair and open shop, giving their hosts $2\frac{1}{2}$ yards of Kerbus, or coarse narrow cotton cloth, for the value of each sheep received in barter; and being furnished till their bargains are concluded, with straw for their beasts, and generally bread for themselves and their people. Traders from Herat, Candahar and Cabul bring their checked turbans, coarse cotton cloths and chintzes, tobacco, felt, and carpet dyes, iron spades, and plough ends, molasses and a few raisins. Toorkish Merchants bring similar articles from their own country, with a little rice, cotton, and salt, occasionally horses, which they prefer to exchange for slaves.

The articles which the Huzarabs and Eimauks bring to market, are men and women, small black oxen, cows, and sheep, clarified butter, some woven wollens for clothing, grain sacks and carpet bags, felts for horse clothing, and patterned carpets, all made from the produce of their flocks, for they export no raw wool. They also furnish lead and sulphur, and the Eimauks especially speak of copper and silver mines as existing in their mountains, but they do not work them.

Agha Hoossein, a Native of Herat, who had long traded among the the Huzarah, and Eimauk clans, occupying our route between Bameean and the border of Meimunna, negotiated our passage with a safe guard the whole way for 1,200 Rupees, and we marched with him from Bameean on the 23rd September 1840, escorted by 80 Huzarabs under a son of Meer Sadik Beg, a leading chief in the district of Deb Nangre. Our road

took us in 3 marches over spurs from the main ridge of Hindoo Koosh (Koh-I-Baba) to the fertile and well inhabited valley of Yaikobung, which has the breadth of from $\frac{1}{4}$ to $\frac{1}{3}$ a mile, in a length of 15 miles, and is well watered by a clean trout stream from the famed 'Bendimir,' which flows on to Bulkh.

We slept the first night in the cold damp valley of Shebbertoo, which, according to the boiling point of a Thermometer, is about 10,500 feet above the level of the sea. The mercury at sunset stood at 37° ; in the course of the next $\frac{3}{4}$ of an hour it fell to freezing point, in fact before sun rise next morning it was down at 10° . The residents say that they have 5 months winter, which commences late, but is every rigorous, and the deep snow which falls, is not all off the ground two months after the vernal equinox. The rest of the march brought us to the valley of Fuor Behar, about 2,100 feet lower than Shebbertoo, where the barley crop was not all ripe, and the Thermometer showed about 11 degrees difference of temperature. The third took us 8 miles down the valley of Yaikobung, 1,100 feet still lower, where the people had just got in their crops of fine wheat.

The present chief of Yaikobung is Meer Mohib, a vulgar and coarse man. He put Shah Shoojah's letter to his head, and came to pay his respects to us as the bearers of it, when we gave him a suitable present. Having taken leave, he sent to beg for my furred cloak, and on my giving his messenger a note which would procure him one from Bameean, he sent to say that he must have my girdle shawl and 1,000 rupees, and he would permit us to depart. We were too many to be thus bullied here, therefore replying that the Meer seemed to 'misunderstand our condition, we marched away at once without his daring to interrupt us.

West of Yaikobung, the main ridge of Hindoo Koosh sweeps round to the northward, after which turning westward again, it forms the northern boundary of the hills which slope down to the right side of the Heriroad valley. Our fourth march took us by a very steep defile across this ridge, from the base of which we descended through a deep valley, about 5 miles westward, to the fountain head of the Heriroad a clear pool of gently bubbling springs, where the boiling point shewed an elevation of 9,500 feet, 1,100 higher than the bed of the stream flowing northward from Yaikobung.

We followed the course of the Herat river, in its clear, quick wanderings through different breaks of the limestone valley, which forms its bed, for four marches, the first taking us to the head quarters of Meer Sadik Beg in Dab Yungee. This chief, who is a vulgar but well

disposed man, treated us very hospitably, neither he or his sons read the Shah's letter, but having heard it perused, he stuck it in the top of his turban, and declared that he was His Majesty's servant to do any thing that lay within his limited ability. We remarked that the chief service His Majesty required from the Huzarah Meer was to keep their people loyally quiet, to which Sadik Beg replied, that he should be truly glad to be quiet, both on the king's and his own account, if some of his Huzarah neighbours and Eimaux, would only let him.

We expected to have found awaiting us near this post the Eimauk escort which our guide had engaged from Mahomed Areem Beg, the Atalik of the Feroozkohee clan; but we found that in the interim the Atalik had been persuaded to march with an Eimauk Army against Hussun Sirdar, a powerful chief of the Dah Koondie Huzarahs, and that we must in prudence await instructions from him, or an end of the war. This Sadik Beg said would not last long, as the Eimaux had gone in such numbers, that they would not keep the field for the want of provisions, and the danger he most feared for us, was, our meeting some of these returning troops ere we got the Ataliks safeguard. Our guide therefore went off to the head quarters of the latter chief and finding there one of his sons, persuaded him to come to our camp. The young Eimauk chief arrived at night, and nothing would induce him to go beyond my Meerzas tent.

The Huzarahs, he said, were his sworn enemies, and were capable of any atrocity, why should he put himself within their reach in the dark. Next morning he went up to the fact on Sadik Beg sending him a solemn oath of friendship, and they presently came in a cordial manner together to consult with us about the onward march. The son of the Atalik said that he would give an answer in his father's name to any Eimaux who might come across our road, and as he appeared to be an unvapouring person, he resolved to proceed with him at once. Sadik Beg accompanied us one march with a large body of horse, as he had heard that a party of Huzarahs, from another near Chiefship, had marched to intercept us, turning back at the end of his district, between which and the Eimauk border a few miles of the valley are left waste. Our reported enemy, the Chief of Sal, met us here with 100 horse, and said that he had ridden to our assistance, on the intelligence that Hussan Khan of the Tymunnee Eimaux had occupied the road ahead, with the intention of plundering us. We understood this to be a demand for a present, so adding to our thanks a Cashmere

shawl, we marched on, receiving from our way side acquaintance a parting caution to put no trust in any Eimauk.

We safely concluded this day's march of 12 miles, which brought us among a quite different people. In point of personal appearance the advantage was certainly on the side of the Eimaux, who though living closely after the nomade fashion of Toorkmans and Oosbeks, have the features rather of Darrians than Tartars. The Feroorcokehs indeed claim descent from a Colony, which was exported from Feroorkoh, in the Persian province of Mazenderan. We encamped upon the right bank of the Henrood, among people of this clan, half a mile off on the other side of the river was the fort of Dowlut Yar, surrounded by villages of Tymunnee tents, to which we learned that Hussan Khan had returned the day before, apparently without having entertained any idea of barring our road.

The war, we learned, was ended. It had its origin in an act of violence committed 9 years before upon the very Agha Hossein attending us as guide, then travelling with a stock of goods from Herat to Cabool, who was plundered by the former chief of Dowlut Yar, for preferring the quarters of our host the Ferozkohee Atalik. The latter Chief not being able with his domestic means to force a restitution of the goods taken from his protégé, allowed Agha Hossein to call upon his Huzarah friends for succour, and the leading chief of Deh Koondee, Hussan Sirdar, glad to indulge a national dislike while defending a commercial privilege which it concerned every Chief, whether Eimauk or Huzarah, to uphold, came with such a large force that he took the lead in the operations against Dowlut Yar, having captured and utterly rased the fort; after killing its Chief and his eldest son, he gave the old man's, wife to his own brother, and took his daughter to himself, returning home only, when he had captured another fort nearer the border, and placed a party of his own men therein. Agha Hossein got all his goods that could be recovered, and so retired. But now the Atalik regretted the loss of Eimauk reputation to which he had been accessory, so he countenanced a stratagem by which the border fort was recaptured, and having helped to rebuild that of Dowlut Yar, brought back the old chief's second son, the present Hussan Khan, to inherit it. The latter had just before our coming persuaded most of the Eimauk Chiefs, including his father's first adversary the Atalik, to make an attack upon Hussan Sirdar of Deh Koondee, for the cleansing of their national reputation. The quarrel was accommodated in a way to make the Eimaux appear superior, by the

Deh Koondee Sirdar's restoring the arms which he had taken from Hussan Khan's father and engaging to give 2 or 3 daughters to the heir and his relatives, to close the blood account.

Agha Hossein our guide, who thought it well to remove all ill blood from Hussan Khan's heart for the excusable share that he had in the past disasters, went to Dowlut Yar, with a koran, on which he declared before witnesses that he absolved the chief from all obligations to repair his former losses, and called upon him to say in the same solemn way that by-gones should be by-gones. The Chief consented, and accepted a present which we sent with a letter to his address from Shah Shoojah, but his manner on both occasions was so sullen that our guide resolved to give him the least possible opportunity of doing us an injury.

The Atalik arrived in our camp next morning, and speaking with confidence about our road forward, sent us on with a small escort under his brother and son, while he went to get back from Hussan Khan a horse stolen from our pickets which had been traced to Dowlut Yar. When we had got 2 miles down the valley we were met by 60 horsemen, who called out to us to stop and pay zucat. The Atalik's brother riding a head, and explaining that we were envoys on the King's affairs, and not traders, our waylayer replied that we had paid our way to others, and why not to him. 'They are guests of the Atalik' exclaimed his brother, 'and by God and the Prophet they shall not give a needle or a Chillum of tobacco.' 'Then by God and the Prophet we will take it', rejoined the robber; whereupon he ranged some of his men in line to face us and caused others to dismount upon a rock behind and to set their guns in rest. We lost no time in getting ready for defence, but the Atalik's brother riding out between our fronts, called a parley, and drew a line which neither party was to pass till peace or war had been decided on. Three quarters of an hour was consumed in debate, which was thrice broken by demonstration of attack and by the end of this time 30 or 40 men of the same tribe had collected on foot from a rear encampment, with the evident intention of making a rush at our baggage in the event of our becoming engaged in front. We had despatched several messengers to bring up our host, and just at the affair had assumed its worst look, a cry was raised that he was coming. Looking back, we could see horsemen pouring out like bees, from the tents surrounding Dowlut Yar, and all hastening in our direction, but while our Eimauk escort exclaimed that the Atalik was coming in force to the rescue, our opponents cried out in scorn that Hussan Khan was coming to help them to plunder us, and each party,

raised a shout for the supposed reinforcement. After about 10 minutes of the most intense anxiety during which we and our opponents, as if by mutual agreement, waited to see whose conjecture was right, we were relieved by the arrival of the Atalik, who galloping up ahead to us at the utmost speed, exclaimed that he had brought Hussan Khan to our defence. The announced ally was not long in following with 300 men, and our enemies were made to understand that they must abandon all idea of attacking us. Hussan Khan declaring that we were envoy's recommended to him by the Shah whose slave he was, and that he would allow no one to molest us. It seemed pretty clear that the Atalik had wrought this loyal zeal in Hussan Khan's mind, and probably, from the delay which had occurred, that he had not found the task easy; but 'twas not a time to scrutinize very particularly the motives which had brought us a defender, so we gave Hussan Khan the politest credit for his professions, and at evening sent him a handsome shawl from the Atalik's fort, with a promise that we would not fail to represent his conduct to the Shah.

We arrived that evening without further adventure, at Badgah in Cheghehezan, a fort in the Herirood valley which is the family seat of the Feroozkohee Atalik, and we shewed our appreciation of the service which this chief had rendered us by giving a very handsome present to him, besides gifts according to their degrees to his brother and other relations.

We were detained 4 days at Badgah, first in consequence of the Atalik's indisposition, and then in order to get rid of a neighbouring chief connected with him, Kurar Beg of Surusghar, who threatened to attack us in our very camp near the Atalik's fort unless we paid him black mail, his right to demand this, he said, lying simply in his power to enforce its payment. After causing us several alarms, Kurar Beg listened to the remonstrances of the Atalik, the aid of our host being necessary to protect him from another more powerful chief whose son he had murdered in his own house, and he came to pay us a visit, attended by 200 followers.

We now left the Herirood valley, ascending 3 miles through the hills on its northern side to a ridge running parallel with it, and proceeding 8 miles further to the northward over an undulating down to the summit of the main ridge of Hindoo Koosh, which we crossed by the easy pass of Shategh i Ghilmee. It is not higher to the eye than the ridge first noted, and there are higher looking masses to the northward, but our guides said that it rose again both east and westward, and their defini-

tion need not be disputed, for the springs on one side of this trunk flow to the Herirood, and on the other towards Tartary. We descended from it to a deep and rapid brook called the Tungan; which led us 4 miles down with the cultivated valley of Ghilmee to the mouth of a deep and close pass called the Derah i Khurgoosh, or the Hare's defile, where the boiling point shewed an elevation of 5,200 feet, about 400 feet lower than our last station in the valley of the Herirood.

Friday 9th October. Quitting camp at 9, 15, we followed the brook Tungan into the Hare's defile, commanding the road at the second of 3 angles. In the first 500 yards, was a brick wall with holes built up like a screen upon a not easily attainable portion of the rock, which we were told was anciently erected to help the collection of transit duty. We next went $13\frac{1}{4}$ miles between bare perpendicular mountains of limestone, the defile running in acute zigzags which for the most part were not more than 50 or 60 yards long, and having but breadth enough for a path, and for the brook which we were continually obliged to cross. Burnes, I see, states that after crossing the Dundan Shikan, he travelled on northward to Khoollum between frequently precipitous rocks which rose on either side to the height of 300 feet and obscured all stars at night, except those of the zenith. I am afraid of exaggerating the height of the cliffs between which our road here lay by guessing at their height in feet, so will only say that their precipitous elevation made our horsemen look like pigmies as they filed along their bases in the bed. After this very narrow portion, the defile widened to the breadth of 50 yards, but it presently contracted again to that of thirty, which may be stated as the average width of its onward windings for nearly 5 miles, where the Tungan discharged itself into the river Moorghaub, which came from the east, in a bed of good width, through a similar deep pass. After creeping along the bottom of the defile for the first $2\frac{1}{2}$ hours of our march, we ascended some way up the side of the left mountain, and followed the bends for the next hour and a quarter by a narrow path worn upon its slightly sloping edge, a tangled thicket now occupying all the spare bed of the stream, to which we descended again $\frac{1}{4}$ mile before its junction with the Moorghaub. The Tungan is a deep brook before its entrance into the Hare's defile. In spring, what with the increase of its waters from melted snow, and and their compression between the sharp turnings of the narrow defile, there is no passage from side to side, except such as is afforded for a footman by means of a spear laid across its rocky banks. The distances noted afford a very imperfect description of the quantity of ground that must

be traversed by a traveller through this defile. An idea of its windings may be formed from the facts, that our baggage ponies were nearly 4 hours creeping along a distance for which my observations afford a direct line of $6\frac{1}{2}$ miles, and that the portion of our road which lay in the bed, crossed the stream 34 times.

What is called the Derah i Khurgoosh ends at the junction of the Tungan with the Moorghaub, but the narrowness and difficulty of the pass continues for a mile farther down the left bank of the latter stream, which we forded where the water was up to our ponies' shoulders, running at the rate of, I should imagine, $3\frac{1}{2}$ miles per hour. A steep road, which laden ponies take, ascended a little above the entrance of Derah i Khurgoosh, which comes down again just below the junction of the two streams.

Afterward the pass opens out into a warm little valley of 250 yards width, called Taitak, or under the mountain, at the end of which we halted near some Eimauk tents. Hence we turned off northerly from the Moorghaub, and ascending by a moderate steep pass to the top of the hills enclosing its right side, proceeded on a gentle rise over an undulating surface that gained to a small grassy vale lying at the foot of a higher pass. Here we had an unpleasant scene with the greedy relatives of the Atalik accompanying us, who announcing their intention to take leave, demanded presents extravagantly above any claims that they could prefer for reward, and by their united clamour hindered all endeavours to moderate their claims made by our host, to whom alone were we strictly bound to give any thing. After I had gone out of the way to satisfy these beggars, they went off as if they were the party robbed, and I have no doubt that they incited the attack which was made upon us the next day.

October 11th. Quitting camp at 10, we ascended $\frac{1}{4}$ mile up a rocky pass to the spring head of Misree, which waters a small grassy level in the enclosure of the pass where we found an Eimauk encampment. The pass upward from this little platform was steepish, though on an equal ascent, and the path was tiring, lying over small loose fragments of slaty limestone which had fallen from the shelving bases of the decomposed cliffs on each side. The defile above the spring gradually narrowed in an ascent of about $13\text{-}\frac{1}{4}$ miles, which our laden ponies were 40 minutes accomplishing, to a point at which the steep rocks, enclosing it almost met, leaving a short passage through which 3 horsemen could ride abreast. Our foremost riders had nearly reached this point when a number of armed men rising with shouts from their ambuscade above it and on either side

of us, began with one accord to pelt stones at us and to fire their guns, those who were on our flanks also loosening pieces of rock which came bounding down the shingle bank with force enough to bear away any thing occupying the path. Fortunately the cafila was far enough behind to avoid the first of the attack, and we retreated to an open part of the pass, where, making ourselves masters of the shelving bank on each side, we entered into negotiation with our assailants ahead. After much time had been lost in parley, our aggressors agreed to take a few pieces of chintz and 40 rupees (as we had no more goods) and invited us to advance, but we had scarcely reached the old point, when our envoy sent with the cloths and cash agreed to, came running down to us stripped and beaten; and the attack upon us was renewed. Our skirmishers having kept the shelving flanks, we had not to retreat far, and having briefly consulted on turning again, we decided that there was nothing for it but to force our way, so advancing with our best musquet men on foot, while those left with the cafila followed in close order, firing over our heads at the cliffs above, we in less than 10 minutes made ourselves masters of the narrow passage, from which our enemies retreated over the hills. Some of our men and horses were severely bruised by the stones which were raised upon us during this push, but 20 boxes were broken, and the only gun shot wound that could be found was in the cloak of one of my Hindoostanee servants. I am happy to believe that none of our cowardly enemies were killed or seriously wounded, for we found no dead men on the rocks taken, and they retreated too fast to carry off any who were much disabled.

We were 40 minutes more ascending to the summit of the pass, but the defile was comparatively open above the narrow passage, the rocks on each side being low and rounded. We here took leave of the Atalik who had come after us on hearing that we were attacked. I believe him to be about the best man in his country.

We rested at evening in the small valley of Hushtumee, where we found officers collecting the tax of one sheep in forty for the Walee of Meimunna. Our next two marches were over the mountains of the Hindoo Koosh, from which we made a steep descent, leaving the mouth of the defile by which they are entered nearly 6 miles S. E. of Meimunna, to which we proceeded through a fertile valley bounded by low and round earthy hills, the stream which we had followed from the foot of the mountains irrigating countless vineyards and gardens, the walls and trees of which concealed the town till we were inside it.

Somes miles before reaching Meimunna we observed a sign that we were approaching a slave mart, for an old man who rode out from a small encampment to offer his horse to us for sale, said that he would take a young male slave and a pony for it. We told him that we were not men sellers, and asked him if he was not ashamed to deal in the Khulk'Oollah. (God's Creatures.) He replied that he could only do as every body round him did, but that he did not require the actual slave, only the value of one, shewing that men are here a standard of barter as sheep are among the Huzarahs. Herattees, this old broker said, were comparatively speaking a drug in the market, owing to the quantity that the vuzeer of that city had exported. Huzarahs were so so, and the only captives that would now fetch a good price, were the young men and girls of Roum and (*illeg. in MS.*) or other real Kuzzilbashees.

Mirrab Khan was out upon his annual battu when we arrived, but his brother gave us excellent lodging, where our people and horses were daily provided with every thing that could be desired. The Walee returned on the 4th day of our detention, and courteously visited us the next morning, when after presenting to him Shah Shoojah's letter and a dress of honor, I quite won his heart by giving him a double barrelled percussion gun, he being passionately addicted to field sports. We went the next day to return his visit, and the following is my note of the interview.

Mirrab Khan bade us frankly welcome, and ordered in breakfast of bread, fruit and salted cream tea, of which we partook together, our servants carrying off parcels of fine green tea imported from Yarkund, and large loaves of Russian refined sugar, which were set before us upon large platters of dried fruits, as the host's offering.

I could not obtain certain accounts of Mirrab Khan's revenue, for he keeps no regular dufter. My Meerza witnessed this irregularity for years, and used to remonstrate with Mirrab Khan about it, when the chief would reply that it was not the Oosbeg way to take particular account of what came and went, a saying confirmed by report of the laxity, which prevails in the financial department of Khiva, and even in that of the more formally organized government of Bokhara. Mirrab Khan expected to be furnished with means for all his expenses by his Dewan Beggee, who was able to do this without murmuring, after getting in half of the Walee's due from the inferior officers, through whose hands it came. I have roughly calculated the Walee's annual expenses at 10,000 tillas, or 80,000 Caubul rupees, which supposing my preceding conjecture right, would give him a fair revenue of a lakh, and a half of

rupees, but this might be increased very greatly, if any thing like system were introduced into his government. It is said at Meimunna that Ahmud Shah imposed a tax of one toman upon each of 360 ploughs, belonging to as many villages in this district, then registered under *Aumilders*, for the support of Hajee Khan's *Mehman Khanah*. Those ploughs were understood to be used for the cultivation of lands watered by natural streams, (there are no *kuhreezes* in this country), and something more than 3 times their produce was said to be raised from *Daimee* land or soil watered by the heavens. If we allow 15 *khurwars* for the crop of one plough, we have 5,400 *khurwars* for the stream lands; 3 times this for the rain crops would be 17,200 *khurwars* and the total 22,600 *Ditto*. The country is certainly now better populated and cultivated than it was at the beginning of the *Dooranee* monarchy, so a guess may be made at the least amount of its agricultural produce, but I cannot pretend to determine this. Much again is exported from this province to the *Eimauks* and *Huzarahs*, and, latterly, to *Herat*. In cheap times a *khurwar*, or 100 *muns*, of wheat is sold for a *ducat*; we only get a third of this quantity for the same money.

We made 5 marches to the southward of west, *viâ Alma*, *Keisu* and *Charshumbel* from Meimunna to the rise of the *Moorghaub* encamping on its bank at the fort of *Karoul Khaneh's* a few miles below the fort of *Bala Moorghaub* which we did not see. In view upon our left during these 5 marches was the northermost ridge of the *Hindoo Koosh* mountains from which we descended behind Meimunna. Our road lay upon easy rises and falls through hills of a light clayey soil, enclosing many well watered vallies and glens, in which is cultivated wheat, barley, millet, sesame, flax and cotton; vineyards and gardens flourish about the villages at the chief of which brisk little fairs are held twice a week for the convenience of the country round. It is a fruitful country which only requires more inhabitants, and I learn that the districts on towards *Herat*, as well as those under the mountains eastward of Meimunna, are of similar character.

We found our road to *Karoul Khazeh* safe, but vigilantly watched by patrolling parties detached by the *Walee* of Meimunna, the *Jemsheiddee* tribe, and the *Soonnee Huzarahs* of *Killah*. Several *cofilas* passed us, going to *Bokhara* with merchandize, or to Meimunna for grain, and we met single *Toorkmauns* riding horses to Meimunna which they designed to exchange there for slaves. On the 4th March, when we had passed the ruined fort of *Kaornach*, anciently the *Jemsheeddee* border mark, we were met by a young chief of the latter tribe, who thinking that our influence might avail him at *Herat*, complained that he had been driven

from his home by Mahommud Zeman Khan, his more powerful rival of the same clan, who on sending a party of those who had followed him, to cultivate land near Nerochok had fairly seized their crops, driven off their cattle and sold 25 persons to the Toorkmauns. This confirmed the statement which we had heard at Meimunna, and which we soon ceased to doubt that the Soonnee religion is no longer a safeguard against captivity. Every defenceless person who can be used for labor is carried off to the insatiable markets of Tartary. We were followed by a small cafila of slaves from Meimunna consisting of Sheah Huzarabs and Soonnee Eimauks, of all ages from 5 to 30.

We forded the Moorghaub at Karoul Khaneh, and our onward march lay along or near its left bank for 8 marches to Merve. The first took us past the rather imposing, but desolate mud fort and citadel of Merochak. Many mud pillars, which were formerly used by watchers of crops, yet stand among the weedy bushes that have overrun the chief portion of this now deserted valley, and the land retains many traces of the industry with which it used to be irrigated. In parts high weeds have sprung up thickly where flood water from the Moorghaub has been allowed to settle, and its stagnation in those marshes is doubtless the chief cause of the malaria which makes this district uninhabitable during the heat of summer. The next wide break of the Moorghaub valley below a broad belt of low dry hills which bound Merochak, forms the head of the division called Punjdeh extending 20 miles down to a point where the stream of Kooshk joins the Moorghaub, which although it contains weedy vegetation in standing water on one side, is well inhabited by Toorkmauns, who are evidently in a flourishing condition. They breed many horses which they profitably export; and they find pasture for large flocks of sheep, and herds of camels in their range of the valley parts of which they cultivate with jewaree wheat and barley.

These Toorkmauns are a colony of the Ersaurree tribe from the banks of the Oxus, divided into 4 clans, called Oolle Zuppeh, Kureh Shughsee, and Chunghee which they estimate in round numbers at 500 tents each.

At Punjdeh we laid in 5 days' dry provisions for ourselves and horses, there being no encampments upon our road or along the Moorghaub to Yellatoon. The right of the valley, which the river favors, is for nearly all through bounded by a well defined line of low hills. The left, near which our road lay, was sided by hillocks and undulations than positive hills. On the 2d March we first observed sand lying upon the hill as if drifted by northerly winds from the desert, and a third of our onward way lay, over loose beds of sand that covered portions of the hard white clay soil,

which forms the proper surface of the country as far as Merve. The bank of the Moorghaub upon which we halted each night, was thickly fringed with Tamarisk bushes. The water of the river was very muddy, flowing ly with eddies at the rate of one and a quarter mile per hour, and having many dangerous quicksands. We very nearly lost a man who rode his horses a little way in to drink. Though we met no tents we saw vast flocks of sheep which are sent thus far from Merve to pasture with a few shepherds and dogs. We carried chopped straw upon our horses, being accustomed to it, but there was no want of grass on the way for the native horses of our fellow travellers who had not gone to this expense. The road is by no means difficult abounding as it does in grass, wood and water, and it was evidently well travelled formerly.

Our third march brought us to a very fine caravansary of burned bricks, containing accommodation for many men and beasts, which is attributed to Abdoolah Khan of Bokhara a philanthropist who has the credit of all good works in these countries, as Alle Merdun Khan does in Affghanistan. Close to it is a mausoleum sacred to the memory of some Imaum forgotten.

Despatch from Lieut. H. Bigge, Assistant Agent, detached to the Naga Hills, to Capt. Jenkins, Agent Governor General, N.E. Frontier, communicated from the Political Secretariat of India to the Secretary to the Asiatic Society.

I have the honor to report my arrival at this Post, (Demalpore) where I am happy to state large supplies of grain, &c. &c., are now daily arriving for the use of the troops about to accompany me to the Naga hills.

Having been prevented, from the total want of population on the road between Rangalao Ghur and Kasirangah, of Mehal Morung, from passing up that line of country, I crossed to the north bank of the Burrampooter at Bishnath, and passing through the villages of Baghmaree, Rangsalli, Goopore, and Kolah Barri in the Luckimpore district, crossed the Maguli Island to Dehingehgong, and so through Deergong to Cacharri Hath, where I fell in with the detachment of the Assam Lt. Inf. which Captain Hannay had sent off, to await my orders at Nogorah.

From Cacharri Hath I passed to the Dhunseri river at Golah ghaut, where I was glad to find that the greatest portion of the supplies of rice, &c. dispatched by me from Nogong, had all arrived safely, and

that a large portion had been sent forward; the remainder was speedily transferred to smaller boats, and is now close at hand, having been brought by water to a small river called Daopani, one march on this side Hir Pathor, (Bor Phalong of Captain Pemberton's maps) and from whence a path through the forests had been previously cleared to the nearest point to this.

From a demi-official letter, received at Golah ghaut from Captain Han- nay, I was led to believe that large supplies had been collected for the use of his detachment at Nagorah, but in this there must have been some mistake, as the Jemadar in command informs me, that, but very little rice has been collected, and not much more may be expected at present.

Never having previously relied on any other arrangements than those I made when at Nogong, but little, if any delay will result from this circumstance; and the detachment was ordered to leave Nagorah on the 1st instant at latest, and will, probably, should the heavy rains we have had not detain them, arrive here on the 5th or 6th instant.

I remained 3 or 4 days at Golah ghaut, superintending my arrangements, and was present at a sort of fair, held there, on the arrival of a fleet of boats, laden with cotton from the Lotah Nagah Hills on the Dogong river, which falls into the Dhunsini a short way above; about 70 of the Nagas came down, with two of their sykeats, many of them understanding the Assamese language, and were engaged the whole day in bartering their cotton, for salt, dried fish, dogs, fowls, and ducks, with a few brass rings, of which they seem very fond, suspending them one below the other from holes bored in the ear.

The general average of prices was about

1 Seer of Salt	4 to 5 of Cotton.
1 Dog	3 (they eat this animal.)
1 Fowl or Duck.....	1½ to 2.

On visiting their camp a little above the ghaut, I found several of them lying on the ground, intoxicated from the effects of a most disgusting sort of spirituous liquor they make from rice, and which they drink hot; they are a very sullen race, and it was with some difficulty I could get any replies to the few questions I asked them.

Regarding the madder, with which the hair on their spears was dyed, I tried a long time to gain some correct information, but in vain, the Sykeah told me, they had none in their own hills, but what they used was brought to them by the *Abor Nagas*, a tribe I have not yet heard of, but believe it will be found to mean the Amgamees, of whom they seemed to stand much in dread, and from whom they said they received

a large portion of the cotton, they brought down for sale, acting, it would appear from this, more as merchants than the actual growers.

The country of these Abors, they described as being due south from their hills, but they said distant 2 months' journey, an obvious error, as such a distance would take them far to the south of Munnipore. As the name of this tribe was also made use of by the Rengmah Nagas (inhabiting the hill between those of the makers of Nagong and the Dhunsiri) I may hereafter be able perhaps to make myself better acquainted with their position, though this tribe also seem to fear them fully as much as the Lotahs.

In appearance, the Lotah Nagas are of a short, though stout build, and some of them by no means ill-looking; they wear no more clothing than their brethren of other parts, and are alike filthy in their persons and habits, and have a pompous mode of addressing one, which might in some cases be interpreted as insolent. I shewed them some clasp knives, I took down with me for the purpose, at which they laughed, and sneeringly remarked, 'of what use were they? Naga requires only a *dhan*, and his spears; such things are of no use or value to us:' before quitting this race, I may as well observe that they carry away about 12 or 1,300 maunds of salt annually, in exchange for cotton, so that their trade may be deemed equal to near 10,000 mds. of cotton in all.

There are several merchants, chiefly Kyahs, from Marwar, established at Golah ghaut, besides Musselmans from Goalpara, but so little trade is there for any thing besides cotton, that I was unable to procure a brass pot of any sort; woollens and every other descriptions of cloth are alike unsought for, their stock in trade being composed entirely of salt.

A large quantity of iron being found and manufactured in the neighborhood of Golah ghaut, the Nagas obtain their *dhan*s chiefly from hence, the price of which appeared to me very high, being 4 as. each, and the iron fetching as much as 8 Rs. per maund, unwrought; the quantity annually manufactured, I was unable to ascertain.

Leaving Golah ghaut in company with Mr. Herring who had joined me from Bishnath, by appointment, we passed through a long belt of dense forest to the Nambur Nuddie, about 10 miles, for the purpose of visiting together the salt springs, and lime stone rocks, which are found on its banks. The camp was formed for the night on a small sand bank, round which the river ran, and in the centre of which was the salt spring, or, called by the natives, on account of the heat, the *Jucung poong* or hot springs.

The water from this spring is beautifully clear, and of a temperature of $110\frac{1}{2}^{\circ}$ in the well, to $11\frac{1}{2}^{\circ}$ in the sand, as determined by most accurate observation, from a first rate thermometer obtained from London, for such purposes:—this was at 3h. 33m. P. M., the temperature of the air being $59\frac{1}{3}^{\circ}$ at the time, repeating the observations the next morning at 7. A. M. when the atmosphere was at 43° . I found no difference in the temperature of the water.

The water when drank appeared to me to contain but very little salt, and flavored rather of sulphur than any thing else; the spring is a very abundant one, and would nearly suffice to turn a water wheel, but is so little elevated above the level rain, that a rise of only two feet would be sufficient to swamp it, while from the water marks on the trees, it was obvious that the whole was submerged in the rains from 7 to 8 feet.

The neighbourhood of the spring was every where trodden down by elephants, buffaloes, deer, &c. which animals resort there in great numbers to drink the waters, through my own elephant, ponies, &c. refused to taste it; in the centre of the spring there is a depth of about 1 foot of water, below which the feet or hand might easily be passed through a thin bed of sand, composed entirely of quartz to a bed of large pebbles of a similar nature, and it was resting the thermometer on the latter bed that the greatest heat $113\frac{1}{3}^{\circ}$ was obtained.

This spring is situated about $1\frac{1}{2}$ or $3\frac{2}{3}$ of a mile from the Dhunsiri, but in spite of this, I fear the returns would not be worth any persons while establishing a manufactory of salt, as he must leave the place in May, and could not expect to return till November, which would be the earliest date at which these forests could become habitable after the rains.

I boiled a large quantity of water, about 2 gallons, till it was reduced to $\frac{3}{4}$ of a quart, which was afterwards evaporated at Bor Pathor, but not more than a tea-spoon full of salt was obtained, a very poor return, I should suppose, though the salt was to the taste extremely good.

The morning after I reached this spring, as the distance to Bor Pathor, was but short, Mr. Herring and myself proceeded through the forest, along the banks of the Nambur Nuddie, to visit the other springs, and also the limestone beds, distant by the watch $1\frac{1}{3}$ hours, in a S. W. direction. A short way below the springs, in a small stream, running from them, on which the water was pleasantly warm. Mr. Herring's discovered some trees, which struck us both as being tea, though I am uncertain as to the fact, but have sent specimens of the leaves, flowers, and fruits, through Capt. Vetch, to be examined by Dr. Arnott and Mr.

Watkins, as in the event of their proving genuine, would greatly enhance the value of the springs and quarries.

The salt springs which are 3 in number are situated 250 yards to the north of the Nambur Nuddie, in a small circular space, surrounded by forest, but are neither so hot or apparently so strong of brine as that we first saw. The temperature being as follows.

In the shade,	64° air.
Large spring,	95° water.
Smaller one,	98°

The difference between the larger and smaller springs being doubtless caused by a small stream of water flowing into it.

In the time of the Assam Rajahs, it appears, these salt springs were regularly worked, and the water dammed up for the purpose, as the remains of the parts which formed the dams are visible in the stream, which falls into the well, as also in that which carries off the water.

The limestone, of which I send specimens, is found in the bed of the Nambur Nuddie, close to the salt spring, where it appears at the clay; as also in the small stream above mentioned, which runs through the larger spring about 200 yards further up, and beyond which, about $1\frac{1}{2}$ a mile, is found pipe-clay, some detached pieces of which I saw, but had not time, on a second visit to these wells, to reach the beds.

It is a curious fact perhaps, that a large quantity of small fish, inhabit the larger of these wells, and it was a subject of much regret, that I was unable to procure any, as specimens, as it could not but have been satisfactory to ascertain, what description of fish these were, which delighted in such a temperature and in such water.

The only drawback to the effectually working these spring, and lime-beds, for a certain number of months during the year, appears to be the want of conveyance to the Dhunsiri river, and I think it might be worth the experiment of making an outlay, on the part of Government, of 2 or 300 rupees to effect the same, either by cutting a road through the forest, or by erecting *Batahs* (or dams) in the river, so as to allow of its becoming navigable for small boats, which might easily be dragged over the slight falls when empty, and as easily taken down when laden, a practice much in use on the Dying river of Cachar, as you have had opportunity of observing.

Should such a proposition meet with the approbation of Government, I believe Mr. Herring would be happy to devote a considerable degree of attention and minor expense, so as to render these wells far more valuable than they otherwise can become, by sinking shafts at a little

distance from the present springs, with a view of procuring a purer supply of salt water, for the purposes of manufacture, and would also work the lime stone in conjunction with the salt, but without this aid, situated as these productions are, in the midst of an uninhabited forest, and not within 8 miles of any population, I fear there is not inducement, sufficient to render it worth his while attempting it, or incurring the expense which must necessarily attend such an undertaking.

I may here observe that these forests abound with the finest *Nahor Trees* I have ever seen, a wood, which, though from its weight and extreme hardness, is perhaps not adapted for all purposes, is most admirably so for beams, posts, &c. where great strength and durability is required, and might be very advantageously used in all Government buildings where obtainable.

I left Bar Pathor after seeing all my supplies well off in boats on the 28th ultimo, reaching the mouth of the Duopani Nuddi on that day, the Hurrioghan Mookh on the 29th, the Debopani Mookh on the 30th, and arriving here on the afternoon of the 31st, the road running along the line of the Dhunsiri, though straightened in many of the turnings for 38 miles through the densest forests, the last 10 miles being up the bed of the Dhunsiri itself.

Through all the desolate jungles that I have hitherto travelled, and they are not a few, I never met with one so completely abandoned by life as this; no animal of any kind was seen, nor was a bird heard from morning till night, the death-like silence being only broken by the heavy fall of the *Otengah* fruit, these trees composing the entire forest or nearly so. The marks of the river left on the trees was every where visible from 1 to 9 feet in height, forbidding all idea of making this line, that of communication with this post, save during the cold season, and that too at a late period from the number of impassable swamps, which everywhere intervene, and render all attempts at rendering the present path any shorter, or much more practicable than it is, alike unavailing.

Fodder for cattle, especially elephants, is remarkably scarce, my men finding the greatest difficulty in obtaining the smallest supply, and that too of a very poor description.

The vast number of trees, which are sunk in the river and on the sands, render the navigation for boats almost impossible, beyond the Daopani, unless perhaps during the rains, and even then, it is not without the greatest care, that boats can proceed, either up, or still more so, down the river; a very large one last year was swamped close to Bor Pathor, while passing down empty, being entangled in a large tree, one of

the men being drowned, and the rest with difficulty saved, the boat being lost.

Such being the state of the country on the North side, it will be necessary to open a better communication, than at present exists towards Mohong Dezoah, and for that purpose, I intend engaging a large number of coolies, if possible, from Tuli Ram Senaputti's country, to construct a regular road from Mohong Dezoah to this part, unless a better site can be shortly discovered, clearing away the jungle, and if he will agree to it, locating 10 or 15 families of Meekirs, at this place who shall be kept up for the purpose of clearing the roads, &c. for the future.

Should he agree, I shall further propose, that the revenue of these persons shall be for the present defrayed by government, either by a direct payment to the ryotts themselves, of the amount demandable from them by the Senaputti, or in case of their objecting, a trifle more, or by crediting him that amount from the annual tribute paid by him to government in ivory.

Should I be able during my present expedition to reduce the Nagah chiefs to any state of order, it would be desirable further, to try and settle a few of these men in the neighbourhood, on the East bank of the Dhunsiri, allowing them to occupy any lands they choose, exempt entirely from all rent or taxation, until such time as matters shall be so changed, as to seem to call for fresh arrangements; as however this is mere speculation, I shall pursue it no further at present.

While at Bar Pathor I was visited, on invitation, by the Phokun or chief of the Rengmah tribe of Nagas before mentioned, who complained of the loss he had sustained, together with his tribe, by the abolition of the former establishment of *Kutkees*, or, I might call them, supercargoes, who were formerly the medium of communication between this race and the merchants, in all their dealings, through whom all orders, and communications to the Nagas passed, begging their restoration, together with the small quantity of lands, &c. which these persons enjoyed as a remuneration for their services.

From the short conversation I had with the Phokun, he was anxious not to stay, on account of some religious festival which commenced 2 days afterwards; he stated that the lands and pykes were bestowed on his grandfather and father, for services done in the time of the insurrection of the Muttacks or Moamarriah tribe, in preserving the property, &c. of the then Bor Gohain of Assam; that he had applied to Mr. Scott, on the subject, at Gowhattee in person, and had received assurance that his claims should be considered as good, but that now the whole lands have been

taxed, the *kutkees* abolished, and that his authority and rank have fallen so low, that scarcely his own tribe acknowledge him.

I regret that I am not acquainted with the reasons, on which the arrangements now in force were adopted, sufficiently, to enable me to enter into a full detail of the case, but you may be able from what I have stated, to refer to the documents, I have now with me, and form an opinion, whether on payment of a small tribute in ivory, which they are, I was informed ready, and willing to pay, the remission to the extent required might not safely be effected.

The Phokun further expressed a desire to be taken under protection from the attacks of the Lotah tribe of Nagas, with whom there has been an enmity existing for a long time, and he asserts, though I fear without any direct proof (he promised to produce witnesses before me at this place to depose to the fact), of the village called Beloo, not far from Mohong Dezo-oah, having been attacked by a party of Lotahs from the village of Tagdie, last year, and one man and a child murdered. On this subject I shall again address you when the evidence shall have been adduced, but may observe that the trade of the Lotah Nagas being completely in the power of the Principal Assistant Commissioner of Seelpore, some injunctions might be conveyed to the Naga Hazarri of that tribe holding him responsible for any repetition of such acts.

Looking at the map of this country, you may observe that the inclination of the lime formation of the Nambur Nuddie will exactly, or within a trifle, correct the points at which it has also been found at the Falls of the Jumoonah, near Mohong Dezo-oah at Langolar, spelt 'Lowrung' in Captain Pemberton's Map on the Kopili, and so on towards Sylhet, not improbably forming one long line of similar formation throughout.

Note on the Brahooees.—By CAPT. HART, Bombay Army.

These tribes are the descendants of 'Braho,' a Bulooche, who emigrated, about the second century of the Hejira from Aleppo to Mukran: some years after his countrymen had settled there, he fixed his abode at Koliva, a few days journey to the westward of Kelot which city was then inhabited by the Tajuks, over whom ruled a Hakim from Herat, the seat of sovereignty. These Tajuks were a turbulent and overbearing race, noted for their hatred to the yoke of Herat. Several of their Hakims had been slain in popular commotions, and at length the part was considered of such danger, that a newly appointed governor

exacted an oath from the heads of the tribe, that they would not destroy him by the sword or poison, before he ventured to enter the city. On the strength of his fancied security, he harassed the people by his exactions, and his death was in consequence decided on. To adhere to the letter of their bond while the spirit was evaded, five hundred of the Tajuks baked cakes of bread, in which they mixed up stones and cotton with the dough. These they concealed under their garments, and attended the Hakim's Durbar. A dispute soon arose between him and one of the landholders, and the passions of the assembly being excited, they stood up of one accord, and slew him by blows with the cakes. They then determined on choosing a Governor for themselves, and 'Braho,' whose countless flocks and herds entitled him to consideration in the country, was solicited to take up his residence in Kelat as their Lord and Master, he declined complying with their request, on the plea of preferring a life in the wilds to the confinement of a city, but offered his youngest son 'Kumbur' to their notice, as one for whom he had not made any provision, and who was therefore free from those ties which bound his brethren to their homes. After much urging, 'Kumbur' consented to become their Chief, the Tajuks stipulating to furnish him with eighty horse as a body guard, to build a house, and supply him with every necessary of life. After a few years, 'Kumbur' forced the several tribes of Moguls and Baloochees in the neighbourhood of Kelat to acknowledge his supremacy, and in process of time the whole of Mukran and Northern Kunchee was ruled over by his descendants.

'Braho' had seven sons :

1 Meerun,	from whom are descended the Meeranees.
2 Simael	„ „ Simalanees.
3 Roden	„ „ Rodenees.
4 Peerak	„ „ Peerkanees.
5 Yug	„ „ Yugur Menguls.
6 Khadr	„ „ Khidranees.
7 Kumbur	„ „ Kumburanees.

These are the real Brahoee tribes, but many others subject to them, are now included in that appellation.

They are,

Tribe.	Subdivision.	Begin.	Place of abode.	Estimated No. of families.	Present Chief.	Remarks.
Saraban ...	Reisancee ...	Mogul ...	Kuhnuk ..	300	Asud Khan.	The Sarabans, or those of 'the right hand' held Inams and Jagheers from the Kelat Khans on whose authority they considered themselves dependant.
	Shahwaneer ..	Bulooche ..	Moostoong.	1,000	{ Mahomed Khan.	
	Surpurra ...	Mogul ...	Kurdugan ..	12,000	Synd Khan.	
	Bungoolzye	Syuds.....	Tepulinjee ..	2,000	SherMahamed	
	Mahomed } Shahee .. }	Mogul ...	Moostoong ..	1,000	Deenar.	
	Koord.....	Ditto ...	{ Dusht-i- } be Dowlut }	400	Loll Buksh.	
	Lahree ... {	Rind Bu- } looche .. }	Nagao.....			
	Rind	Bulooche ..	Makron ...	12,000	{ Loll Buksh. Bulooche Khan. Meer Say Mahomed. Meer Baker.	
Jhalaban ..	Zahree	Mogul ...	Gatt.....	3,000	PraheemKhan	The Jhalabans, or those of 'the left hand' were Zumeendars who yielded by slight obedience to their ruler, their lands being hereditary.
	Mengul	Bind	Nall.....	2,000		They respectively occupied seats on the <i>right</i> and <i>left</i> in the Durbar.
	Mahomed } Hoosainee }	Mogul ...	Kohpoosht.	30,000		
	Beegunjaw ..	Prind	Wud	500	Kuhrer.	
	Zugur Men- } gul	Brahooe ..	Nooshky ..	1,000	Ahmud Khan.	
	Mughee	Bulooche {	{ Jull and in } Mukran. }	12,000	Ahmud Khan.	

A three weeks sail in search of Health—Province of Arracan—Kyok Phyoo.
—*Its Harbour, Productions, Capabilities, Geological features, Visit to an active volcano.* By HENRY HARPUR SPRY, M.D., F.G.S., &c., Secretary to the Agricultural and Horticultural Society of India.

Circumstances rendering it necessary that I should have recourse to a little relaxation, in consequence of a severe attack of illness, I determined to take advantage of the sailing of the H.C.S. Amherst, to the coast of Arracan, on the 19th of last month (Feb. 1841) to secure a passage in her and visit the port of Kyok Phyoo, at Ramree. The ship left Calcutta, in tow of the Ganges, Government Steamer, and reached the Sand Heads at the close of the third day. Thence we proceeded under sail, and at the expiration of four days, dropt anchor in the picturesque, and most spacious harbour of Kyok Phyoo. We were there in exactly a week from Calcutta. The cruize from the Sand Heads across to the coast of Arracan, was a most delightful one. The wind was gentle, and the sea so smooth, that out of a party of 400 sepoys and camp followers who were on board, only two that I am aware of, underwent the miseries usually attendant on a sea voyage when undertaken for the first time.

On the morning early, of the day preceding the one on which we arrived, land was visible, and the entire day was spent in coasting along the

mountainous, rugged, but thickly wooded islands, called the Bolongas or broken islands. As night closed in, the anchor was dropt about a league outside the harbour of Kyok Phyoo.

There are two or three 'dangers' in the passage way, and it becomes therefore desirable, that day-light should exist while steering through the harbour. On one occasion, however, the Captain of the *Amherst* stood in on a bright moon-light night and took up his right position with out the occurrence of any accident. With the exception of the rocks here alluded to, the entrance of the harbour is deep and spacious.

I confess, as we sailed in, early the next morning, the general appearance of the harbour and scenery surrounding it, created a most favorable impression. The first object which attracted my attention was the Saddle Island. It stands on the south side of the entrance of the outer harbour, (there are, as it were, two harbours) is about three quarters of a mile, or a mile in circumference, and has a peak of about 120 or 150 feet in height. On it, a neat bungalow has been built by the present Marine Assistant, Captain Brown. Here it has become the fashion of late, for parties of pleasure to resort, to pass the day in the agreeable occupation of shell picking, coral gathering, bathing, ship sighting, or if it suits them better, drawing, reading, or geologizing, while the health inspiring breeze of the sea is blowing on their frames.

As the ship sails along, new and striking peculiarities claim the observer's attention, and some of the earliest of these, are, the cantonment bungalows of the officers which stud the beach at irregular intervals, for a distance of three miles as far as 'Sandy Point;' this forms the northern promontory of the inner harbour, and on it stands a two 12-pound battery, with an appropriate flag staff, under the designation of 'Fort Dalhousie.' On the land a little elevated above the sea shore, and about a hundred yards from the pebbly and sandy beach, with nothing to impede the current of the refreshing sea breeze as it comes off the ocean, are seen those cottages on piles, known as bungalows, overhung and shaded by the lofty *Dipterocarpi*; the bank on which they stand is of yellow sand, and along the beach at sunset, or in the morning, the valetudinarian may gallop without intermission on the active sure footed pony of the province for three good miles, and court the healthful breeze. A small thatched bathing house stands conspicuous. It is the resort, every morning, of the lovers of bathing, who delight to wrestle with the waves and luxuriate in the sea.

Kyok Phyoo has not reached that pitch of celebrity yet, as to call for the erection of bathing machines, but no beach in the world is

better adapted for them, if the taste of the public should ever turn that way.

The groups of large islands, covered with deep rich foliage, which form the harbour of Kyok Phyoo, rise abruptly from the sea, and afford water beside them so deep that ships can sail in safety. The hills are clothed to the top in dense and luxuriant vegetation, while the peaks of some run up to heights that are computed to extend to 7 or 800 feet.

The harbour of Kyok Phyoo, as I have before remarked, is extremely picturesque, and in its conformation and capabilities, reminds me forcibly of the one at Trincomalee—Like the latter, it is divided into what may be termed an outer and an inner harbour. The outer one being more of a roadsted than the inner, which is sheltered by the point of land on which the flag staff stands, and is safe for ships in all weathers. The harbour and roadsted, with the contiguous extensive deep bay, known as Fletcher Hayes' Straits, which stretches away amidst a series of many beautifully grouped islands between the eastern side of Ramree and the main, constitute an anchorage that I am assured would afford safe shelter for the shipping of the whole world.

With all these new and engaging features before me, it was with no ordinary feelings of delight that I stepped on shore to investigate and examine for myself. I found that a great and most beneficial change had been wrought of late in the physical condition and aspect of the station of Kyok Phyoo. The dense *low* jungle which formerly choked the cantonment grounds, had, through the active exertions of the local authorities, been effectually removed, as had the brush-wood and most of the timber trees which grew on a contiguous low belt of sandstone hillocks, which formed the south western boundary of the station. Drains for the outlet of accumulated water had also been cut, and temporary bridges erected. The last it may be expected will shortly be superseded by more becoming brick ones, as the materials, I was informed, had long been lying accumulated on the ground.

The salubrity of the place has by these measures been much improved, and the first intimation almost which I received on landing, was the gratifying assurance, that during the whole period of service (two years) that the regiment then on the island on duty had passed, not one death had occurred among the officers, or, (I believe I am correct in this) any one of them been obliged to leave it from sickness. One great and powerful complaint still exists against Kyok Phyoo as a regimental station. The Hindoostanee soldiers suffer dreadfully from

sickness. I was curious to learn, if possible, the cause of this, and the explanations which were offered me, in a great measure satisfactorily account, I think, for so unfortunate and much to be regretted an occurrence. The Arracanese or Mugs, as they are usually called, *invariably* (there is no exception to the practice that I could learn) build their dwellings on piles, so that the floor of the room is not only elevated a distance of two or more feet above the surface of the ground, but a *current of air* passes freely underneath it. At the jail, which is a series of spacious well continued erections, the system of the country has been followed, and the prisoners are housed in a number of large dwellings within a strong stockade. It is left for regimental sepoy to be experimented on, to test the value of Mug wisdom, by doing without piles and hutting the unfortunates in the manner now in use. To the men instead of being hutted as the people of the province are, and indeed *as the transported felons are*, (for Arracan is a penal settlement and Kyok Phyoo has a party of above three hundred convicts stationed at it,) are compelled to live in low or unraised huts, which are built in a series of lines forming streets, and in such a damp locality, that I (although it was then far advanced in the month of February) sprung a couple of snipe out of the grass, within a yard of these abodes.

After strong, and I believe repeated representation, not only on the part of the duly constituted medical authorities, whose business it is to watch over such duties, but by the chief Military authority also, I am told that the Military Board sanctioned the formation of raised boardings or *matchauns within the huts*, so as to enable the sepoy to sleep off the ground. But this is not enough. Whatever dampness or exhalation is emitted from the soil (and that *something* noxious does transude the practice of building, which the genius of the people has suggested, proves) is still pent up by the mat walls which reach the ground and exclude the free circulation of air underneath, an observance which, as I have just remarked, is deemed essential to the preservation of health. Common humanity dictates the measure, and a State characterized for its considerate attention to its army, ought without hesitation to hasten to remove a grievance so fully calculated to produce the suffering and disastrous consequences which are now experienced.

There is another and I think not sufficiently regarded cause operative of the suffering which the sepoy undergo from sickness, a portion of the men, in the Volunteer regiments are Mahomedans. They are proverbial for their careless extravagance. 'A Mahomedan (said Ameer-ul-omrah the second son, and for some time minister of Mahommed Ali the

former Nabab of the Carnatic) was like a seive—much of what was poured in went through; while a Hindoo was like a sponge which retained all, but on pressure gave back, as required, what it had absorbed.' And so at Kyok Phyoo. The Mahomedan sepoy to gratify their habits of debauchery, borrow from their more thrifty Hindoo brethren who *stint themselves of the common necessaries of life* to gratify their saving propensities, and rather than purchase good sound, but expensive food pinch themselves with half meals of the worst description. The Hindoo sepoy of the 65th regiment brought away with them, I was assured by the officers, on their return to Calcutta upwards of 40,000 rupees which they had saved during their two years and half tour in the Province.

Leaving this painful subject for others of a more pleasing kind, I hasten to complete my observations regarding the site of the Cantonment of Kyok Phyoo. The soil is almost entirely sand, but yet much vegetation till recently abounded and even now the many lofty Dipterocarpi speak plainly of the adaptability of the ground to produce rich and luxuriant growths. These Dipterocarpi early attracted my attention. They are the trees, whence that (to the London market at least) novel article of commerce, known as the Gurjun or wood oil, is obtained. On examining into the process by which this most valuable product is obtained, I found that the practice was to cut a large notch something of the form of a rude arch into one side of the tree near its root, a depth of three or four inches, with the base sunk from the external edge inwardly to make it cup-like, so as to hold the oil. A fire is then kindled in the aperture for a few minutes, by which means, it appears, the sap vessels are stimulated, and the oil once set an oozing flows gradually down, drop by drop, till the cup-like hollow at the bottom of the notch becomes filled, when it is dished up, and set aside for use; successive supplies are for a long time in this manner obtained.

An abundance of these trees are to be seen in every direction about Kyok Phyoo, and I am told are equally plentiful on the island of Cheduba and elsewhere throughout the line of coast. While on the subject of these trees I cannot omit mentioning a circumstance connected with the produce from them, which although of somewhat a private nature, is yet of sufficient peculiarity to merit recital. More than two years ago, when in correspondence with Dr. Royle, I procured eight large casks full of the wood oil and shipped it for London to be sold in the London market and its value fairly tested. I knew that the Portuguese in the days of their early career in India had all dealt largely in the article, for Bolt in his 'Considerations of India,' particularly alludes

to it. I knew moreover that for time out of mind the people of the Province of Arracan and of Burmah in general, had used it for all sorts of work; that moreover Roxburgh alludes to it, and that in fact it was an article well known in India. What was my surprise at finding from Dr. Royle that so ignorant were, and still are, the authorities at the London Custom House of the nature of this substance, that they positively deny that it is a raw material, and will consequently only admit it as a '*Manufactured article*', which entails the payment of a duty that the oil itself would never sell for. In his recently published work on the productive resources of India, Dr. Royle has pointedly alluded to this lamentable ignorance on the part of the London Custom House authorities of some of the products of India.

To return to remarks on the station. The bazar is clean and well arranged. Beside the various roads young timber trees have been planted. These are not in the most flourishing condition. It may surprise some to be told that after so recently denuding the soil of the jungle, that trees should again be planted, but arborescent avenues would be a great ornament, serve to keep down temperature, and not to promote sickness. Many of those now planted are dead and it will be many years before any will assume a commanding appearance.

The people are decidedly superior in physical conformation to the Bengallees. They are an athletic and intelligent race. Their agricultural and mechanical appliances show it, and in their dealings with the Europeans they evince an independence of character that surprises a person accustomed to the manners of the obsequious Asiatic.

The harbour abounds with fish, and I was particularly struck at the ease and facility with which a daily supply was obtained for breakfast. Half an hour before the usual time for eating the meal the word was passed for '*Mutchee mar*.' At which command the boatmen took the net and proceeding to the beech threw in the lines, and in ten minutes three or four fine mullet were presented to the cook.

Besides these mullet, the pomfret are noted for their high flavour, and the oysters are of an excellent kind. At certain seasons, at the close of the rainy months, innumerable boats go off to Combermere Bay, an extensive but somewhat shallow roadsted, contiguous to Kyok Phyoo harbour, and here fish for the polynemous, the sounds of which they cure in large quantities, and sell to the China junks which annually pay a visit to the coast for the purpose of trading for these and other articles. It is the opinion of a gentleman, who has had opportunities of making abundant enquiries, that the fishing for isinglass might be conducted to a great extent.

Only the day before I arrived, a Chinaman, (the only one indeed who lives at Kyok Phyoo) who acts as agent for his countrymen who trade on the coast, bought up five maunds (400 lbs) of these fish sounds for about 25 rupees a maund.

A small rock, known as the Pagoda Rock, at the mouth of the harbour, furnishes the edible birds' nests in small quantities, and the government derives an income from it as well as from wood oil, wax and honey. In the year 1835-36, the collections of revenue on account of the edible birds' nest found at the island of Ramaee stood at 106 rupees and that for the whole Province at 4160 rupees in the Government books, while the collections on account of form of wood oil was 17 rupees—eath oil 162 rupees—bees wax and honey 660 rupees. The nests the China junks carry off. Such are the chief productions of the harbour. Many other fish of course abound, but the pomfret, the mullet, the beektee, and the oyster stand foremost.

I must now allude to another subject, and that is one of considerable importance. I allude to the manufacture of salt. The water of the harbour at Kyok Phyoo contains a much larger quantity of saline matter than that in the Sunderbunds. On comparison it will be seen, I believe, that the one holds near 20 per cent more saline matter in solution than the other. The government has already taken advantage of this circumstance, and has caused Golahs to be erected, whereat they store salt, which the people of the Province are but too happy to supply at 4 annas a maund. The manufacture is solely by solar evaporation, and the preparation is of the finest quality. Such opportunities must demand greater attention, and a few years more will probably see this superior article, superseding, almost to utter extinction, the dirty earthy article which is now obtained from the Sunderbunds.*

One of my earliest enquiries, after landing at the picturesque station of Kyok Phyoo, was, to enquire into the progress made in the recent coal discovery.† I found that the principal locality here alluded to, was not on the island of Ramree itself, but on a rock off the island about a mile, know by the name of 'the Cap Island,' but that minute traces of it had been found at a point of the main island which is nearest in contiguity

* My friend and correspondent alludes to the *Salt as sold in the bazaar*: it is perfectly white, and pure when first made, but the process of removal, and weighing dirties it in some degree and the adulteration by the retail dealer brings on the earthy look he alludes to: 7, not 4, As. is the price given.—H. T.

† I beg here to state that what is here stated regarding the coal localities at Kyok Phyoo was reported by me to the Secretary of the coal Committee and has since appeared in Dr. McClelland's Journal.

to this rock. The specimens, which I brought away will afford good average pieces of coal and its immediate connected formations. I took an early opportunity of availing myself of the kind offer of Mr. Brown, the Marine Assistant to the Commissioner of the province, and Col. Hervey, to whose exertions this interesting discovery I believe belongs, to visit the Cap Island and examine the formation. I found it partaking, as might be expected, when the general character of the line of coast is taken into consideration, of all the characters which denote active volcanic agency.—The rock itself is in great part made up of sand-stone, but so distorted are the strata by the upheaving force, that in places they appear at an acute angle, and even vertical, while they are so appositely placed as to convey the idea, that at this point some confined force had here found an outlet, and split the incumbent bed. The rock runs up to a peak.

On one face of the rock a thick deposit of marly earth is seen, and on it an abundance of vegetation thrives. At the seaward point of the rock, and barely above high water mark, the coal is found. The sand-stone strata here, though not so highly distorted as in the more central part, is still at an acute angle. It is intersected by a bed of fatty marl of about a foot in thickness, and amidst its substance, and sometimes in a shaly deposit, the lumps of coal are found. I say lumps for as yet no continuous seam of coal has been discovered, but all is yet in its infancy, for, besides scratching the surface soil for a few inches, nothing has been done to test the extent of the formation.

I confess, when I look at the position of the place, I see no immediate prospect of a supply of coals; and taking the difficulties of keeping out the water into consideration, (even supposing that a continuous seam was found) with the great dip of the strata, nothing but an outlay for machinery could fairly test it.

Leaving the Cap island, the next locality that I visited, was the point of land on the island of Ramree, most contiguous to the Cap island. From the direction of the outcropping coal strata at the Cap island, it was inferred that similar indications might be found at the point of land now adverted to, and a close search being made, a formation identical with that at the Cap island was found with thin traces of coal. The dip here is equally great with that at the Cap island, and would require a shaft to be sunk, through the intervening sandstone stratum, to enable the searcher to ascertain if a bed of coal of any consistence did exist. When I came away Captain Lumsden, the Principal Assistant, was sinking two pits at a part of the island, some little way, perhaps half a

mile, from the spot where the indications of coal were observed, and the laborers had got perhaps ten feet;* but no effectual effort is likely to be made, nor indeed, is it possible under existing circumstances, for it appears that no expense is permitted to be incurred, while of machinery—not even a whim for raising the rubbish or water is erected.

Every disposition exists on the part of those in authority at Kyok Phyoo, to carry out the investigation, but they say, and say justly, that they have no funds placed at their disposal for doing so, and, out of their own pocket, it is too much to expect that they should defray the charges. The consequence is, the poor laborers are left to go unpaid, and great dissatisfaction is felt accordingly.

To leave this subject. After visiting the localities now mentioned, a proposal was made to sail across the harbour to the eastern point of the island, and proceed to the summit of a lofty hill which stood about three mile inland, and on which is the cone of an active volcano. The suggestion was immediately acceded to, and at four o'clock in the afternoon our party began to ascend the rugged path which conducted to this interesting object. I had heard that two or three other Europeans had already visited the crater, and that at the close of last year it was emitting smoke and ashes. Our companions were several boatmen, and each man, more from habit than singularity, carried, the never failing accompaniment of a mug a *dhow*, which is a large powerful knife in shape about the size of a regulation sword broken of in the middle.

After various humorous adventures, in the midst of the dense jungle, and traversing the crater of a small dried up volcano, we succeeded in reaching the anxiously sought hill, and when we reached the top, most amply rewarded we were. Never did I behold a more delightful piece of scenery. The view commanded the whole of the northern portion of the island, and that extensively sheltered anchoring ground, before alluded to, under the name of Fletcher Hayes' Straits.

But to the immediate objects of our visit. The cone was beautifully formed of the erupted mud, and covered to the very brink of the centre with thick verdant grass. Out of it grew luxuriant Casuarina trees. And here I cannot avoid mentioning a very remarkable circumstance connected with the appearance of these trees. Nowhere, as far as I could learn, do they appear, except on the cones of the volcanos, of which there are several, to be found on the island of Ramree. More than once when hid

* I have since heard from Captain Lumsden that the work has been abandoned as hopeless.

amidst the dense foliage of the forest, and at a loss in what direction to turn, we sought an open space and searched for the *Casuarina* trees, and in this manner were attracted to the desired spot. On the edge of the crater and about the sides of the cone amidst the grass, I picked up shells, (helix ?) pieces of indurated clay, quartz, and clay intersected with spar. They all go to show the character of the disrupted material. The edge of the crater was most uniform, and its diameter was about twelve feet. Its interior was filled with warm liquid mud, and on plunging down a rod, it passed on for about eight feet, and then struck in a thick plastic substance. After examining it in all directions, and satisfying our curiosity to the utmost, we hastened to return, and at length succeeded in reaching the boats, highly gratified and delighted at the success of our adventure, and the interesting novelty which it had unfolded to us.

I left Kyok Phyoo much pleased with the peculiar and many various features which it presents, and returned to Calcutta after an absence of three weeks, much improved in health by the excursion.

Description of some Ancient Gems and Seals from Bactria, the Punjab and India.

1. GRECIAN.

Whether it is, that the collection and study of ancient gems and seals, is less interesting in itself than the study of coins, or that it leads to less immediate and satisfactory results, I am unable to say; but perhaps both of these reasons may have combined to render the one less attractive than the other. But whether from one or from both of these causes the effect has been the almost total neglect of this study in India; although the specimens scattered amongst the numerous individual collections must now be valuable, as well as easily accessible. Some of these I have collected together in the accompanying plate, in the hope that others may be induced to make public what they may have stored up in their cabinets.

The earliest notice of an ancient gem procured in India, of which I am aware, is in Vincent's *Ancient Commerce*, vol. 2, p. 760, where he makes mention of 'an emerald belonging to the Archbishop of York, engraved with a Medusa's head, of Grecian sculpture, and brought from Benares.' And in the *Trans. of the Royal Asiatic Society* vol. 3, page 139, there is an engraving of 'an ancient Hindu intaglio,' with a long rambling description, by Colonel Tod. The gem itself is a beautiful one, representing Hercules

naked, his head diademed, leaning his left hand on his club, and holding out in his right hand a little figure of victory, which is extending a wreath towards the hero; to the right are two Sanscrit letters, one above the other, in the same position, and apparently of the same age, as those we see on the coins of the Guptas, forming the word *Aja*; which is probably only a monogrammatic contraction for *Ajaya*, the invincible, a very appropriate epithet for the ever victorious Hercules.

I have no doubt that many other notices of ancient gems procured in India may be found with a little search; but I have neither the time to look for them, nor the ability to elucidate them, should my search be successful; and I therefore trust that the brief remarks, which I am about to make, may be received with indulgence.

No. 1. Brown translucent agate, procured at Benares. Bare and bearded head of Hercules to the left, his hair short and curling; his great strength shown by his short brawny neck; and his club placed behind his head. This seal is of beautiful workmanship, and in exceedingly bold relief and the engraved parts are highly polished.

No. 2. In Colonel Stacy's collection, purchased, I believe, at Delhi. It represents Omphale standing, inclined to the left, and bearing the club and lion's skin belonging to Hercules; she having given him her distaff and bright colored robe in exchange for them. The engraving of this gem is well-done, but it is not in my opinion at all equal to the other—and yet her air of fancied strength assumed with the spoils of the Nemean lion, and the hero's club, is capital; and the making her grasp the club with both hands, displays at once both the woman's weakness, and the nice observation of the artist.

As these gems represent mythological persons of ancient Greece, they must have been brought into India from the North West, and as many gems are yearly discovered in ancient Bactria, I have little doubt that these, and indeed all gems purchased in India which bear Grecian subjects, must have come originally from ancient Bactria, the seat of the nearest Grecian colony, and where we know, from the beauty of the earlier Bactrian coins, that the arts must have flourished in the greatest perfection.

If these gems then owe their origin to Bactria, it is not improbable that the two just described may have been engraved during the long and prosperous reign of Euthedymus, all of whose gold and silver coins, yet discovered, bear the figure of Hercules; for it is but natural to suppose, that a Prince, who for so long a time exhibited this deified hero upon his coins, would likewise have had the head, the figure, and even the history of the

GEMS and SEALS

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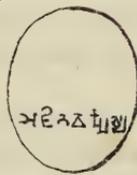
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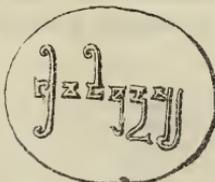
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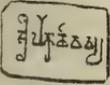
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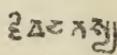
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same personage engraved upon his seals.* Such at least is my opinion, which is greatly strengthened by the beauty and depth of the engraving, and by the peculiar mode of representing the short curly hair, which is the very same style that we see upon the tetradrachms of Euthydemus.

No. 3. A red cornelian, much worn and slightly fractured below, having a bare youthful head to the left, with a scarcely perceptible beard and long curling hair, with the chlamys fastened upon his shoulder. The execution of this seal is very beautiful; and the relief is bold, deep and highly polished. It was procured at Lucknow, but I am not sure that it may not owe its origin to modern Europe; the antique chlamys, however, gives it a delightful claim to be considered ancient, which the beauty of its workmanship makes me unwilling to dispute.

No. 4. A small red cornelian, purchased at Amritsir. Its execution is very inferior, and shows that it must belong to a declining period of the arts in Bactria. It represents Mercury half turned to the left, with his chlamys or short cloak over his shoulders, his caduceus in his left hand, and an undecided object in his right hand.

No. 5. A Súlimáni, or light brown translucent agate, having a middle layer of milkwhite chalcedony, from Benares. It is of excellent make, but is very much worn, only a few strokes of a long inscription being now visible. On it are represented two standing figures, male and female. The female to the left is clothed to the feet, her head is surmounted by a basket, and encircled by a halo—she holds in her left hand a cornucopia, and in her right a torch, under which is an undecided object, resembling a bird. To the right the male figure is clothed to the knees,—his head dress is surmounted by a pair of wings, and his head encircled by a halo: he holds a trident in his left hand, and his right hand is raised towards the cornucopia held by the female figure. Between the two figures is a pitcher, and over them an indistinct object.

The two figures on this gem are, I believe, from their peculiar emblems and attributes, Osiris and Isis, or the Sun and Moon, as deified by the Egyptians. Though the worship of these divinities was popular enough in later Rome, yet I think it was never so amongst the Greeks, and more especially not amongst the distant Greeks of Bactria; wherefore I am

* Since writing the above, I have received from Capt. Hay, impressions of two copper coins of Demetrius, both of which have the head of Hercules bare and bearded as on this seal, and with the club behind the head. I am therefore inclined to believe that the bare and bearded head on the copper coins of Euthydemus is that of Hercules. The discovery of these coins of Demetrius bearing precisely the same type as the seal, in my opinion almost confirms the correctness of what I have advanced as to the period when this may have been executed.

led to suppose that this stone may have been engraved in Egypt during the fostering and happy government of the earlier Ptolemies.

No. 6. A red cornelian, of barbarous execution: Two standing figures, male and female, with a cross between them, the male figure holding up a wreath in his left hand. Though this is probably the work of modern days imitated from an antique, yet many seals of equally barbarous workmanship are yearly found in ancient Bactria, all of which most probably belong to the latest period of the Grecian dominion in that country.

No. 7. A white cornelian of milky hue, very thick and round, having a hole pierced from the top to the bottom. It represents a male figure standing to the front, his face turned to the right, he is clad in the Indian *dhoti*, and wears the sacred thread across his breast; flames spring from the top of his head, which is encircled by a halo. In his right hand he holds a trident, and in his left hand, which is placed on his hip, he carries a *lota*, or drinking vessel; and a loose robe, or *chadr* hangs over his left arm. Legend to the left in Bactrian Pali characters 𑀧𑀺𑀢𑀺 which is probably some compound of *jas* (Sanskrit यज्ञस्) fame; such as *Jasvatisa* (for यज्ञस्वन्ती) 'of the renowned.'

This beautiful gem came from Cabool: the execution is good, and the design graceful; the position of the body is easy and unrestrained; the limbs are free, and the outline of the figure and the folds of the drapery are naturally and simply expressed. The figure is the same as that we find on the coins of the Indo-Scythian Kadphises, excepting that the face is turned in a contrary direction. The Indian *dhoti*, and the sacred *poita* of the superior castes are so distinct on this gem, that I cannot hesitate in ascribing its origin to India, and in assigning it to the period when the Indo-Scythian Kadphises reigned over the Punjab and Cabool. In execution this seal is decidedly equal, if not superior, to the finest gold coins of Kadphises, and I cannot therefore be far wrong in attributing its age to the reign of that Prince, who must have flourished before Kanerka; for the money of the latter became the type of several series of the Indian coins down to so late a period as the Mahomedan invasion: while the coins of Kadphises were not imitated except by his immediate successors, who may have issued the barbarous gold coins with a man and bull on the reverse, (see Figs. 45, pl. 33, vol. 4, J. A. S. of Bengal.)

On a few gold specimens, and on all the copper coins of Kadphises, the figure which we see on this gem, is represented standing before a bull, and not alone, as on the commoner gold coins of that Prince; and this is also the way in which the Deity is placed on the gold and copper coins of the

unknown prince, noticed above as being one of the successors of Kadphises. On those coins we invariably find the legend OCPO. which is no doubt the name of the figure; and consequently we may pretty safely take this word OCPO to be the equivalent of the Bactrian Pali legend of the gem. Now Professor Lassen has happily explained *Okro*, by *Ugra*, a name of Siva, of whom indeed the trident and the sacred bull *Nundi*, are peculiar and unmistakeable attributes: and hence it follows that the figure on the seal must be that of the God Siva.

No. 8. A Cameo, in the collection of Sir Alex. Burnes, of most admirable workmanship, in bold and beautiful relief. It represents a half length of Silenus to the right; his head bald and bearded, and bound with a wreath of vine leaves; with a flat nose, sparkling eye, and laughing, all betokening the merry companion of Bacchus. He is holding up his left hand before his face with the fore-finger, and little finger raised, and in his right hand he is carrying his drinking can in a sloping direction. A thyrsus is placed behind him, and his robe is thrown over his right arm.

In this exquisite little gem Silenus appears, cup in hand, telling some humorous story, replete with the wine-inspired wit, broad fun, and shrewd pithy remarks for which he was celebrated: the sly expression of his face is excellent; and his jolly corpulent figure reminds us at once of 'laughter holding both his sides;' while the sloping way in which he holds his cup shows either that it is empty, or that he is so tipsy, and so taken up with his story, which he is impressing with the action of his left hand more earnestly upon his hearers, as not to know that he is losing his wine; or we may suppose that, having drained the cup, he is exclaiming 'Papaiapœx!—what a sweet taste it has!'

The exceeding beauty of this exquisite little Cameo of the Grecian Falstaff, proves that it must have been engraved at a time when the arts in Bactria were in the very highest perfection; and consequently during the earliest period of the Bactrian power: and I think it highly probable that this gem may have been executed during the reign of Agathocles, whose coins usually exhibit devices belonging to the worship of Bacchus; and no doubt upon his seals and gems there were represented stories and figures emblematic of the same worship.

The coins of Agathocles, are, in my opinion, the most beautiful of the Bactrian series as works of art, and therefore I am inclined to place him before Euthydemus and Demetrius in the list of Bactrian Princes; and to assign him the country of the Parapamisades as his kingdom, Nysa or Dionysopolis for his capital, in which 'City of Dionysus' I suppose

that this beautiful Cameo of Silenus was engraved, at the same time that the Bacchic coins of Agathocles were united; that is about 240 B.C.

No. 9. A red cornelian, in the collection of Sir Alex. Burnes. It is of coarse execution, although its design is good; and is probably only a copy of a better gem.

No. 10. Likewise in the collection of Sir Alex. Burnes; this seal is of very inferior execution; the subject is similar to that of the coins of the Grecian colony of Falisci in Italy.

2. SASSANIAN.

No. 11. A red cornelian, from Amritsir, very thick, and with a hole near the top for suspension; the two streamers to the right are just the same as those that we see upon the Sassanian coins.

Nos. 12 and 13. These were sent to Mr. Prinsep by a gentleman residing in Persia; on No. 13 there is a Pehlvi inscription, but I am not able to offer any thing myself regarding its interpretation.

No. 14. In the possession of Colonel Stacy.

3. HINDU.

In the Journal of the Bengal Asiatic Society for 1837, at page 968 Mr. Prinsep says—'General Ventura has also brought down with him some beautiful specimens of seals of the same age, which I shall take an early opportunity of engraving and describing.' Unfortunately this opportunity was lost by Mr. Prinsep's sudden illness. He had however sent me an impression of the principal seal referred to, (No. 15) which I will now describe.

No. 15. A plain thin cornelian, bearing a beautiful female head to the right, the hair plaited in two braids over the fore part of the head, and gathered into a large bow at the back, where it is tied by a ribbon, the ends of which float behind. Her shoulder is covered by a robe, from the midst of which her right hand appears, holding a lotus flower before her face. Inscription below in ancient Sanscrit, *Késava-Dásasya*, (Seal) of *Kesava-Das*, the servant of Vishnu.

At what period this lovely gem was engraved can only be ascertained approximately by an examination of the forms of the Sanskrit characters; of which the letters *k* and *d*, and the inflected vowels are similar to those found in the inscription recording the repairs of the bridge near Iúragurb, which we know must be subsequent to Asoka, or after B.C. 200; while the *s* and *sy* are of a later period, and similar to those found in the inscriptions of the Gupta family, which, in my opinion, cannot be later than A.D. 400. The peculiar formation of the *sy*, I consider to be one of the

best tests for ascertaining the age of a Sanskrit inscription, and therefore I feel inclined to believe that this seal is of the age of the Guptas. If the name may be considered as a title declaratory of the religion of the owner of the seal, we shall have a direct proof that *Késava Dás* (the servant of Vishnu) was of the Braminical faith; which, coupled with the probable age which I have already assigned to this seal, would fix the period of its execution to the reign of one of the earlier Vaishnava Guptas, and before the date of the Saiva Skanda Gupta. In the same way, taking the name as a declaration of the faith of *Késava Dás*, we have a clue to the owner of the beautiful face engraved upon this seal, who can be no other than *Sai* or *Lakshmi*, the consort of Vishnu, and the goddess of wealth, beauty, and prosperity, who is usually represented with a lotus in her hand. It is even possible that this seal may have belonged to Chandra Gupta himself; for the small copper coins of that Prince (vide vol. 5. pl. 38. Fig. 13 and 14. J.A.S. of Bengal) bear a similar bust with the hand raised before the face, and holding a lotus blossom; beneath which is the Prince's name. This remarkable coincidence of subject between the seal and the coins, coupled with the similarity of the characters of the inscription to those of the age of the Guptas, still further strengthens the opinion which I have expressed above, that this seal was engraved during the reign of one of the earlier Vaishnava Guptas, towards the end of the fourth century after Christ.

The lithographer has completely failed in copying my sketch of this beautiful seal: for, instead of a frowning elderly lady, the original represents a young and lovely girl with a gentle smile upon her face. In beauty and excellence of workmanship this gem rivals the finest coins of the Bactrian Mint; the face is exquisitely delineated, and the position of the hand peeping out from the loose robe or Hindu *chadr*, is graceful and easy. Unfortunately on the gold coins of the Guptas there are no busts with which we may compare the delicate engraving of this seal; in my opinion, however, it is far superior to many of the Gupta coins, and is perhaps even superior to the best of them; with the small copper coins no just comparison can be made, for they are few in number, and are all deficient in preservation.

No. 16. A brooch set round with turquoises, presented to Mr. James Prinsep by General Ventura. The engraving is from a rough pen-and-ink sketch by Mr. Prinsep—Below the head is an inscription in ancient Sanskrit, *Sri Kodbharasya* '(Seal) of Sri Kodbhara, the upholder or supporter of the fortress'. The initial *Sri* of this seal, which is of a later form than we find in the Gupta inscriptions, proves that

it must have been engraved subsequent to A. D. 450, the latest period which I can assign to any of the Gupta family.

No. 17. Likewise in the collection of General Ventura, there is a head upon this seal, but not so beautifully executed as that upon No. 15. The inscription, in ancient Sanskrit, is *Ajita Vermmasya*, (seal) of Ajita Vermma. From the forms of the characters I should say that this seal was of the age of the Guptas.

No. 18. A red cornelian, in the possession of Mr. B. Elliott of Patna. This seal is very neatly engraved, and is no doubt as old as the most flourishing period of the Guptas, and perhaps even older. The legend of this seal will be found engraved as No. 15, pl. 56, vol. 6. J. A. S. of Bengal, where Mr. Prinsep reads it as *Sri Lokanāvasya*, (seal) of Sri Lokanava, or, the boatman of the world: but on the sealing-wax impression, which I have now before me, the legend is clearly *Sri Loka-chhāvasya*, (seal) of Sri Loka-chhava, or the ornament of the world; from ह्रवि beauty or splendor.

No. 19. A chalcedonic agate, or *Sulimāni*, from Ujain, in the cabinet of the late Mr. James Prinsep. It is published in the J. A. S. of Bengal, vol 6. pl. 36, Fig. 23, where Mr. Prinsep reads the inscription as *Sri Vati-khuddasya*. '(Seal) of Sri Vati-khudd.*'

No. 20. A small agate, having the letters cut through an upper layer of milk white chalcedony. It was originally in Colonel Stacy's collection, and is evidently only a fragment, for on the left side marks of the cutting tools are still quite plain, while the other sides are polished. The left side is likewise perpendicular while the other sides are sloping towards the face of the seal. The remaining letters in ancient Sanskrit are.....*ttasya*. '(Seal) of.....(Da) tta.

No. 21. In the possession of General Court. It is an oblong seal, with a recumbent animal above the inscriptions, which is in ancient Sanskrit, and reads *Tiva-datasya*. '(Seal) of Tiva Datta,' or, the giver of wisdom.

No. 22. A copper seal, originally in the collection of Colonel Stacy, having a Bull butting to the left, with an ancient Sanskrit inscription on two sides, which is probably *Amogha-bhutasa*. '(Seal) of Amogha-bhuta', or the mortal without vanity, that is, the humble individual. Now this the very title which Rajah Kunanda takes on his silver and cop-

* Of the same age as this seal is another small oval one from Pesháwur, (brought to my notice by Dr. Chapman) bearing the legend *Sri Kshatrapasya* '(seal) of Sri Kshatrapa' or the fortunate satrap.

per coins (see Nos. 2, 3, 4 and 7, vol. 7. pl. 32, J. A. S. of Bengal) the whole inscription being *Amogha-bhutasa-maharajasa-rajnya-Kunandasa*, (coin) of the humble individual, the great king of kings, Kunanda. In the same way we find that the title of Aprati-ratha, or the invincible-in-his-chariot, which is applied in the Allahabad inscription to Samudra Gupta, is repeated upon his coins:—and I have no doubt therefore that the epithet of Amogha-bhuta on this seal refers to Kunanda, and that the seal is of the same age as the coins. But on the coins the legends are in two different characters, of one common language; the legend of the obverse being in Indian Pali; thus proving that these two characters were in contemporaneous use, and likewise from the occurrence of the *Indian* Pali on the *obverse*, or principal side of the coin, showing clearly that Kunanda was a native of India proper, and not of India beyond the Indus where the Bactrian Pali characters prevailed. The same fact indeed may be gathered from the use of *Indian* Pali *only* on the seal. But that he possessed territory upon the banks of the Indus is undeniably attested by the use of the *Bactrian* Pali upon his coins, and by the localities in which they have been discovered, some of which are to the westward of the Indus, even as far as Kabul. Such being the extent of his territory, it now only remains to ascertain at *what period* a prince named Kunanda reigned over Northern India and the Punjab. In the first place then we know by the shape of the letter *m* that this seal must be anterior to the period of the Guptas, and the same may be said for the coins, on which also we have the additional evidence from the forms of the *h* and *n*, that Kunanda cannot be later than Asoka. The occurrence of Bactrian Pali on his coins is likewise in favor of this early date, for that character appears to have fallen into disuse towards the close of the second century after Christ, or perhaps a quarter of a century later, when the followers of the Brahminical faith, with the assistance of the Agniculas (whom I believe to have been the fire worshipping Sussanians) had gained the ascendancy in India over the votaries of Buddha. The use of the Pali termination *Sa*, for the Sanskrit *Sya*, proves that Kunanda was a Buddhist, and this is still further confirmed by his title, which whether it be read as *Amogha-bhuta*, the humble mortal, or as *Amāya-bhuta*, the guileless mortal, which is perhaps the preferable reading, is in strict accordance with the professed meekness and lowliness of a zealous Buddhist, and is at the same time utterly at variance with the grandiloquent titles assumed by the arrogant Brahmanists. We have thus deduced that Kunanda, who ruled over Northern India even beyond the river Indus, was a Buddhist Prince, and that he flourished certainly not later

than the reign of Asoka. Now it is almost certain that the successors of Asoka were driven out of the country upon the Kabul river by the Bactrian Greeks under Demetrius the son of Euthydemus, and it is quite certain that from the period of the war between Eucratides and Demetrius 'King of the Indians,' until the decay of the Indo-Scythian power about A. D. 220, no Hindu Prince ruled over the territory on the banks of the Indus. We have thus two distinct proofs that Kunanda cannot have flourished later than the era of Asoka, and since we cannot identify him with that prince whose other name was Piya-dasi, we must look earlier in the list for some king whose recorded history will agree with the deductions made from our examination of his seal and coins. The name given in the Grecian authors to Asoka's father is Amitrochates, which can only be the corruption of some title assumed by Bindusara, but notwithstanding the near coincidence of sound which Amitro-chates bears to Amaya-bhuta or Amogha-bhuta, it is quite impossible to identify them, as the first was a Brahmanist, while Kunanda, as we have shown, was a Buddhist. It is equally impossible to identify him with the Brahminical Chandra Gupta Maurya; but amongst his immediate predecessors, the *nine Nandas*, the only difficulty seems to be with which of them he is to be identified. This is however a matter of little consequence, as the elder Nanda Mâhâpadma, and his eight sons reigned conjointly for one hundred years previous to the accession of Chandra Gupta, in about B.C. 312. The nine Nandas were therefore contemporaries of Alexander the Great.

Of the first Nanda Mâhâpadma it is said in the Vishnu and Bhâgavut Purânas 'he will bring the whole earth under one umbrella, his rule being irresistible.' He was therefore a powerful monarch. That he was a Buddhist however, I cannot affirm; although the following passage from Wilson's translation of the Mudra Râkshasa, would seem to countenance the opinion that the Prince and even his councillors were of that faith. See Hindu Theatre, vol. 2 pp. 159 60, where Chânakya the Brahman says,

There is a fellow of my studies, deep
In planetary influence and policy,
The Brahman Induserma; him I sent,
When first I vowed the death of Nanda, hither;
And here repairing as a *Bauddha mendicant*,
He *speedily* contrived to form acquaintance
And *friendship with the royal* councillors.
Above them all does Râkshasa repose
In him implicit confidence.

It is hardly possible that King Nanda and his councillors would have admitted a *Bauddha mendicant* to their *friendship*, had they been Brah-

manists; for there can scarcely have been less pollution to a Hindu in the friendship than in the contact of a Buddhist. The Bhāganat Purāna also says that Nanda and his successors were ‘Sudras, void of piety.’ The Vishna Purāna adds that he was avaricious; and they both agree in stating that a Brahman was the chief agent in destroying the nine Nandas. Avarice and want of piety are the usual sins attributed to any Prince who neither respects nor entertains the Brahmans; and such sins would of course be committed by every Buddhist King; who like Asoka would have turned out all the Brahmans supported at the royal expense and have entertained Buddhist priests in their place. I cannot therefore help suspecting that as a Brahman was the chief conspirator against the Nandas it is more probable that the rebellion was only a religious struggle for political ascendancy, in which the Brahman Kautilya succeeded in establishing the authority of his own caste and religion under the new King Chandra Gupta; than that it was a justifiable uprising of the people, occasioned by the avarice and tyranny of Nanda.

Nanda himself was called Mahapadma; his wife was called Sumanda; and his eight sons, according to the Vishnu and Bhāganat Purānas, were ‘Sumalya and others.’ To one of these nameless princes then I would attribute this seal, if not to the elder Nanda Mahapadma himself, to whom the coins almost certainly belong:—for it appears from the Rajah Taringini that the younger or junior Rajas were not allowed the privilege of coining in their own names; and therefore the eight sons of Nanda, who reigned conjointly with their father can scarcely have struck any coins:—but whether the seal belongs to the father or to one of his sons, its age is not affected by the uncertainty; and we may therefore consider it as old at least as the time of Alexander the Great.

No. 23. Copper.—This seal cannot I think be more than three hundred years old, and perhaps not even so much. The inscription in modern Devanagari is *Srī Hara Deva-ji sahāya parāmanda*. The fortunate Hara Dēva, the companion of happiness.

ALEXANDER CUNNINGHAM.

Note.—A gem identical with No. 2 of the plate supplied me by Lt. Cunningham is noted by Bayer (the first investigator of Bactrian history) as No. 37 in the splendid collection of gems belonging to Martin Von Ebermayer, a wealthy merchant of Nuremberg, which he illustrated in a very erudite work under the following title:—‘Gemmarum Affabre Sculptarum Thesaurus, quem suis sumptibus haud exiguis, nec parvo studio collegit Io. Mart. ab Ebermayer.’ The engravings of the collection which accompany the letter press are exceedingly well executed: a copy of the work (Fol. ed. prin.) is in my possession and now lies before me. The design, from Bayer’s note upon it, would appear to have been a favorite one; he speaks of two other gems (Thes. antiq. Græc.) not dissimilar, which Angustin held to represent not *Omphale* but *Iole*, but he afterwards abandoned that opinion, and declared the figure (as did also Begero

Mode of taking facsimiles of coins.—BY VINCENT TREGGAR, Esq.

The coin is placed between two dices of lead, and the whole compressed, either by a lever or screw, till the coin is well indented into the lead, from which latter impressions, the wax ones are made, and, being in relief, are of course far better than if taken from the coin itself.

To form the dice, a piece of plank, about one-third of an inch thick, is bored though with a centre bit somewhat smaller than the coin to be copied, it is then cut into halves, to facilitate the removal of the lead which is cast into it, the mould being placed in a piece of smooth wood, or still better, on a piece of dry brick rubbed very smooth. The bottom of the dice may not be smooth at first but will be so after a few castings have heated the brick, or it may be heated on the fire while the lead is melting. The best mould is a brass ring, the hole being bored or turned slightly conical then by merely raising it the lead falls out; it should be laid on a piece of brass nicely polished, which will give the lead a bright smooth face. A screw press is the best, but a simple lever will answer every purpose; care being taken to keep all level that the coin may sink equally into the lead, and the pressure must be removed when the edges of the lead meet or nearly so, according to the thickness of the coin. There is very little danger of injuring the coin, the lead being the softer metal, but if from any cause, the relief, for instance, on one side falling opposite a hollow or plain surface on the other, there should be a chance of deforming it, the best plan is to take each side separately, the opposite one being imbedded in sealing wax.

To obtain a perfect impression from the leaden dice they should be heated, which is most conveniently done by melting a small quantity of sealing wax* and leaving the dice on it while the wax for the impression

Thes. Palat') to be none but *Omphale*, 'accuratore carminis *Ovidiani* consideratione inductus, 'as Bayer informs us. He himself is cautious as to giving a decisive opinion, saying in his description of the gem, 'IOLE, nisi potius OMPHALE, amasia HERCULIS, cujus ea clavam, et leoninum integumentum jocose oblatum gestat.' The identity of the design could not be more satisfactorily proved than by the 'jocose oblatum' of Bayer, compared with Lt. Cunningham's similar expression. This instance of the discovery in the East of the duplicates of gems of Grecian origin extant in the West is not the only one which I shall shortly have it in my power to cite, presenting more remarkable features than those of mere identity.

A gem (No. 4, Tab. VI.) of the Ebermayer collection is also nearly identical with No. 9, of the plate before us. It represents with better execution, a crow seated on, instead of *beside* (as in No. 9), a low shrub, in exactly the same attitude as in our gem. This may represent the crow, Bayer suggests, sacred to Apollo, 'nisi rectius censuit (l. c. 19) Gronovius, quod sit *cornix ab ilice predicens* decantata Virgilio.' The attitude and expression of the bird fully favour the ingenious suggestion, but it is singular to find a passage in the *Bucolics* Ed. IX. illustrated on a gem from Afghanistan.

* This wax can be used to heat several seals with.

is preparing, for the latter an argued lamp is the best as it does not discolour wax, a quantity must be dropped on a card sufficient to form the seal, and then the whole re-heated and the warm lead pressed down while the wax is very hot, but not so long as any air bubbles continue to rise, and it would be better to mix the wax with a thin bit of stick, drawing it somewhat towards the centre; the lead should not be removed until the wax is quite hard, and then, if the operation has been carefully performed the impression will be found as perfect as the coin itself. I have found the common hard yellow wax of the bazaar to take the most legible impression and would recommend the use of it in preference to any other colour.

I beg to suggest that the Society make a collection of such impressions, which would be valuable as a means of reference, particularly in the case of such coins as are taken from the country. They should not be shut up in a cabinet, but placed in frames, formed of a thick plank bored with holes of a fit size and covered with a glass front fitting close to the surface of the wood—the metal of the coin might be indicated, as in engravings, by its initial letter placed between the impressions; and the legend written above it, the whole classed and arranged in chronological order as far as possible. For the sake of uniformity the Society might decide on a particular coloured wax to be used in all impressions made for their collection, and the cards used should be left uncut, to be subsequently fitted to the holes in the frames which, of course, would be all of one size.

The Society would thus have the benefit of a large collection without any expense, and I have no doubt that every one who has a collection would gladly take the little trouble required to furnish copies of his coins. I must repeat there is no danger of harming most coins, as my friend Capt. Cunningham and myself have subjected our own to the ordeal without injury.

Report on the Soda Soils of the Barramahal. BY CAPTAIN CAMPBELL, ASSISTANT SURVEYOR GENERAL.

Soda soils are very common in the principal plain of the Baramahal in the Salem District, which is bounded on the North by the Hills of Congoondy, on the East by the Jawaudy Hills, on the South by the abrupt break in the levels at the Topoor Ghaut, and on the west by the hills of Roycottah.

In extent they are generally not more than about $\frac{1}{2}$ a mile square; the

soil is sandy and incapable of supporting vegetation, no herb growing on them, but a scanty scrubby grass. In general they lay upon a bed of Kunkur, which is sometimes, as near Paulcode, of considerable depth.

These beds of soda soil are well known to the natives, who call them in Tamul, Chour Munno—and extract the soda for the purpose of fluxing powdered white quartz to make bangles with. The Dhobees also collect the earth, and by lixivating it make a solution of soda which they use in washing clothes by adding quick lime, to make the solution caustic. But so ignorant are they in general of the principle of the mode of use, that they often convey the earth sometimes fifty miles, not being aware that the labour of carriage might be decreased by extracting the salt.

The Bangle makers extract the impure soda by mixing the earth with water in a pit, and allowing it to settle, the solution is then drawn off, and evaporated by sprinkling it on cowdung spread upon the surface of a granite rock. When the cake has become about half an inch in thickness, it is taken off and is broken into pieces, in which state it is called Chour Billah and is stored in houses for use, sometimes to the amount of 400 maunds.

The Chour Billah is sold at the rate of $17\frac{1}{2}$ Rupees per ton, and contains 23 per cent. of insoluble matter, the soluble part being in greatest part all carbonate of soda with a little vegetable and extractive matter, and some muriate and sulphate of soda in small quantity. A solution of it will not crystallize in consequence of the extractive matter, and the natives are quite ignorant of the mode of crystallizing it, and do not even know that it contains a salt.

In Bengal soda soils are also found, but according to Dr. O'Shaughnessy, (*Manual of Chemistry*, page 227) it contains 15 per cent. of sulphate of soda, which salt being more soluble in hot than cold water cannot be separated by crystallization from the carbonate, and the product of these soils in Bengal cannot therefore be applied to any useful purpose unless the very expensive process of decomposing the sulphate by fusion in a furnace is resorted to.

Being engaged in an extensive chemical examination of the minerals of this district in which pure carbonate of soda is required in considerable quantity as a flux, and as the price of the salt as vended in retail at Madras is very great, it has occurred to me to endeavour to supply the want from the mineral resources of the country.

I have found by experiment that a very pure carbonate of soda may be separated from the crude soda, which the soils of Barramahal yield by simply charring the Chour Billah, or the residue, after evaporating to dry-

ness in a gentle heat, by which the extractive and vegetable matters are converted into charcoal, and can then be simply extracted by filtering, and the solution will then crystallize on evaporating to a *pellicle*. The first crystallization gives a tolerably pure soda, coloured a little by the impurities, but after crystallizing 3 or 4 times the crystals are beautifully white and transparent, and after six crystallizations, the salt is so pure as hardly to give any precipitate with nitrate of silver or nitrate of barytes after supersaturation with nitric acid, denoting thereby the nearly total absence of any muriate or sulphate.

In England great quantities of carbonate of soda are required in glass making, soap making and dyeing. This was formerly prepared from the Spanish Barilla, which contains, according to Dr. Ure, muriate and sulphate of soda, lime and abumina, and only at most 24 per cent. of soda. A large quantity was also made from kelp prepared in the Scottish Isles, but this is no longer manufactured, as it has been found that in consequence of the cheap price of sulphuric acid, soda can be manufactured by decomposing the muriate of soda (common salt) at a price which remunerates the manufacturer.

In this operation the muriate is first decomposed by heating it in leaden vessels with sulphuric acid, by which the muriatic gas is driven off and which is condensed and allowed to run to waste as of no value, the demand in the arts for muriatic acid being very small. The resulting sulphate of soda is then mixed with charcoal and some lime, and is roasted by a powerful heat in a reverberatory furnace by which it is partly decomposed and formed into sulphurate of soda, which by further heat and stirring is again decomposed and the sulphur volatilized and an impure mixture of carbonate of soda ashes, and charcoal results, which is called in trade 'black balls,' and is an article of commerce.

This impure product is then further purified by solution in water, filtering, and evaporation to dryness without crystallizing, in which state it is called 'Soda Ash' and is used by the glass blowers.

The salt is still very impure, being mixed with sulphate and muriate of Soda, and does not contain its full equivalent of carbonic acid, being in fact a mixture of caustic and carbonate of soda.

For the makers of plate glass who require a very pure carbonate of soda as a flux, to prevent the chance of the glass being discoloured, the soda ash is mixed with sawdust, and is again fused in a powerful furnace, by which it is fully carbonized and rendered capable of crystallizing. It is then dissolved in water, and is crystallized once for the use of the plate glass makers, and six or seven times for the use of apothecaries. In the

latter state it is sold for 10 pence per pound retail or 52 per cent wholesale. In this state I have found by experiment that the article is exactly the same as the product before described, and the two are therefore equally valuable.

For the plate glass makers the necessity of having the flux pure is so great, that the expensive process of decomposing common salt by pearlsh (carbonate of potash) is sometimes resorted to and the resulting muriate of potash being a little crystallizable, the carbonate of soda is separated by evaporation and crystallization.

The cost of manufacture from the Indian mineral soda cannot be ascertained but by extensive experiment, but as it will be seen that the process I have described, is very much the same as that in making saltpetre, the inference, that the expense will be nearly the same in both manufactures, may be allowed, and as saltpetre is made for 2 Rupees per maund, therefore it would seem that nearly pure carbonate of soda can be manufactured in South India for less than 5 Rupees per cent.

As the soils which yield this product, are now quite unproductive, and the time required for the manufacture is during the dry weather when the ryots are unemployed, the agricultural produce cannot be affected while the revenue will be certainly increased.

While the cotton trade of South India is so rapidly increasing, an article for export which will serve the purpose of dead weight for ballasting the ships will be much required, and as carbonate of soda is not affected by exposure to air or damp, it may be packed in bags and will be useful for the purpose.

As these soils are of limited extent, and as the manufacture cannot be carried on during the whole year, therefore the produce must always be limited, and the introduction of the article into the markets of England, cannot affect the present market price, because the quantity yielded in India can only take the place of a certain quantity now produced by the manufacturers of England, and the price will always therefore be regulated by that at which the English manufacturers can afford to sell.

On the introduction of the Indian Soda to the market of England the manufacturers will doubtlessly endeavour to prevent its sale by endeavouring to undersell it, even going so far as to sell their own manufacture at a loss, but as it has been shewn that the Indian Soda can be made for little more than 10 shillings per cent., it would seem impossible that the endeavour to exclude it from the English markets could be successful.

I have been unable to procure certain information regarding the price at which the inferior kinds of impure Soda are sold in England, but when the expensive and laborious process as above described, is considered, it seems almost impossible that any product can be made at so cheap a rate, as that procured by the simple manipulation required for the mineral salt.

I have endeavoured by sending to England samples through a commercial gentleman to make this report more complete, by being able to state the value of the article on certain grounds, but have been unsuccessful, the point appearing to depend in great measure on the import duty which will be charged in England. By the present regulations, natural alkali imported from places within the limits of the Honorable Company's charter pays a duty of 2 shillings per cent. but to ascertain the point it appears to be necessary to ship a few tons, and then try by experiment at what rate of duty the article will be admitted.

I am aware that some years ago attempts had been made to introduce Indian Soda into the English market, but which failed in consequence of the opposition of the English manufacturers, but I submit, that the soils now pointed out, yielding by single crystallization a pure Soda, were not before known, and in consequence, in the former experiments to which I refer, it became necessary to fuse the salt for the purpose of purifying it, which expensive process of course prevented a successful competition with the manufacturers of England.

Report on the Kaolin Earth of Mysore.—BY CAPT. J. CAMPBELL,
Assistant Surveyor General.

A great portion of the level surface of the table land of Mysore, is formed of a red ferruginous arenaceous earth, resembling much some of the softer varieties of the upper red sandstones of England.

This formation, which may be called for convenience 'Red Marle,' is superposed upon a continuous bed of hornblendic granite, and is connected with it by a graduation, both in structure and composition, through an interposed layer of white kaolin earth which is found between the two.

The kaolin is in some places several feet in thickness, and is generally of a pure white colour, and soft greasy feel, and is sometimes mixed with a fine quartze sand in small quantity.

This kaolin is mentioned by Dr. Heyne, who mistook it for pipeclay.

The extent of this bed of kaolin I have not had an opportunity of ascertaining, but I know that it is found from Bangalore as far north as Nundydroog.

That this kaolin is fitted for the manufacture of the finer kinds of pottery and porcelain I have been able to ascertain by direct experiment, in consequence of the laborious process, and, to an individual, expensive apparatus required to grind it down to an impalpable powder, by stones of hornstone under water: but from its mineralogical characters I believe there can be little doubt of its being of finer quality than many kinds in England.

My attention was called to the mineral in consequence of being engaged in researches on the fusibility of the rocks and minerals of the Salem district, generally called igneous, in which it was necessary to expose them to a very high degree of heat, in a wind furnace sufficiently powerful to fuse cast steel, and for which I could procure no crucibles at a sufficiently cheap rate, and I have found this kaolin, when mixed with an equal quantity of finely pounded quartz, to fully answer the purpose of affording crucibles and covers, upon which the most intense heat has hardly any effect, the outside being only slightly glazed by the alkali of the fuel, and the crucible being very slightly softened. They are also much superior to those called Hessian, in not cracking, unless by very extreme changes of temperature.

In Calcutta, there are probably many manufactories carried on in the fusion of metals, &c. where this earth would be of great value, and it might even be useful in the manufacture of fire bricks, for lining furnaces, &c., if the carriage by land for 200 miles would not render them too expensive.

At Madras, at the mint for making mufles and crucibles, at the Gun Carriage manufactory, and in several other manufacturing depots, this kaolin might be useful; and a manufacture of the articles might be either established at Bangalore, or the earth itself might be transported.

Coarse Chinaware is an article of import from China, and plates of this ware are purchased in considerable quantities by some of the Natives at 4 annas each, while it is reasonable to suppose that these articles might be manufactured in Mysore at a cheap rate, without the necessity of any very expensive machinery being required.

Proceedings of the Asiatic Society, Wednesday Evening, 5th May, 1841.

THE HONORABLE SIR E. RYAN IN THE CHAIR.

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 Annals and Magazine of Natural History, Dec. 1840, No. 37, P.
 Ochterlony's Mineralogical Report upon a portion of the Districts of Nellore, Cuddapah and Guntoor. Madras, 1841, P.
 Samlede Afghandler, of R. K. Rask. Kobenhaon, 1838, Tredie Del. Svo. 1

At the meeting of the 7th of April last it was resolved to refer to the committee of papers (with reference to the offer of Mr. H. B. Koing, Bookseller at Bonn, to be entrusted with the sale of the Society's Oriental works) to consider the prices of those works and to reduce them to a scale suitable to the means of the scholars and students of Germany. Dr. Hæberlin submitted the following list exhibiting the rates at which he suggested the books should be priced, viz.

Mahá Bharatá, with contents	Rs. 40
Large paper, ditto ditto	„ 50
Harriwansa	„ 5
Rajah Taranginí	„ 5
Large paper	„ 8
Naishada	„ 6
Fátáwe Aleurgíri	„ 8
Ináyá	„ 8
Kházánat ul Ilim	„ 8
Jawáme ul Riazi	„ 4
Anis ul Musharrahín	„ 5
Sharaya ool Islam	„ 8
Tibetan Grammar	„ 8
Tibetan Dictionary	„ 10
Researches	„ 10

Ordered that the reduced rates be adopted and the list printed in the Journal of the Asiatic Society for guidance, that Mr. Koing's services be accepted and a selection of the Oriental Books be made and forwarded to him by the first favorable opportunity, with suitable instructions, as well as regards the disposal of the books as of the funds which may from

time to time accrue in his hands as sales are effected.

Read the following Report submitted by the Officiating Curator for the month of April last.

H. TORRENS, Esq., *Secretary Asiatic Society.*

SIR.—My report on the Museum, for the month of April, is as follows :

Geological, Mineralogical and Palæontological Department.—We continue to arrange and catalogue here at all spare times. Amongst the collections lately arranged are Capt. Hutton's valuable geological series, the fruits of his journey to the Spiti valley, to the expenses of which the Society I think contributed very liberally. The duplicates of this collection have been sent home to the Court of Directors, but we are sadly in want of the catalogue to it, were it only that of the localities. You have I believe addressed Capt. H. on this subject.

We have, at last, obtained the first of our printed catalogues from the press, and as completed copies will be placed in the cases, a part of the Palæontological collections are labelled, and of these also we shall soon have printed catalogues. Our Index, which is wanted at every turn, has not yet appeared.

Osteological Department.—We have here at length been able to place all our small skeletons in two neat glass cases. The large, skeletons have been supported by side bars to the upright supports as suggested by the Hon'ble the President, and all the skeletons have labels. We have added here the skeleton of Mr. Ewbank's Leopard, as reported in my last.

Museum of Economic Geology.—The Catalogue and arrangement of the copper series is completed.

Mammological Department.—*Reptiles, Fishes.*—Nothing new to report.

Ornithological Department.—We have here added nine new specimens, mounted, eight of which are part of Lieut. Tickell's collection, and one Faleo is from Mr. White of Midnapore.

Presentations this month have been the Gud Faleo, stuffed and mounted, from C. P. White, Esq., Midnapore.

I am, Sir, your's, very obediently,

H. PIDDINGTON,

Officiating Curator, Asiatic Society's Museum.

Museum, 30th April, 1841.

With reference to the want of a Catalogue of Captain Hutton's valuable Geological Collections of the Spiti Valley, noticed by Mr. Piddington in his

Report, it was resolved that a communication be made to that Officer for furnishing one.

The Secretary reports the receipt of a letter dated the 20th April last, from Lieut. W. I. E. Boys of the 6th Light Cavalry, offering a large collection of objects of Natural History, 'which in making had occupied almost his sole attention for the last seven years.'

'The Collection,' writes Lieut. Boys, 'has been made and the objects prepared only by myself, and I believe myself warranted in saying that nothing superior has ever been made in that line, as no expense has been spared. It consists of upwards of 350 species of Birds, the whole collected within 50 miles of Mhow Malwa, and of upwards of 200 white glass bottles containing every variety of Snakes, Scorpions, Centipedes and other reptiles, together with the fishes of different parts of India, in spirits, a quantity of Alligators and Gavialis, Boas, &c, several species of the River Turtle and Tortoises, and a superb collection of Insects.'

The whole Lieut. Boys' offers for Rs. 6,000, a sum much below their real value.

It was resolved that before coming to any final decision on Lieut. Boys' offer, that that Officer be requested to furnish a descriptive Catalogue of the collections referred to.

Read a Letter from Lt. A. Cunningham of Engineers, dated 29th April last, advising the dispatch of coins purchased from him by the Secretary for presentation to the Cabinet of the Asiatic Society. Lt. Cunningham adds, 'I have decided upon publishing as complete a work upon our Indian coins as can be made. It will take some months to complete the plates, but I have already done three of them. The 1st Vol. will contain the coins of the Bactro-Grecian, Indo-Grecian, Indo-Parthian, and Indo-Scythian Princes of Bactriana, Ariana and the Punjab. It will contain 20 Plates and about 150 pages of letter press, or perhaps 200 pages, and will I hope be ready by the 1st January next. The title of the work will be 'Coins of Alexander's successors in the East.'

In another letter that Officer also writes:—

'I have just read the only one of all my Kashmeerian coins which had hitherto baffled me. Sri Foramâ (na). Now Toramâna was the Zuvarâja (or Cæsar) in A.D. 450, and was imprisoned by his elder brother (the Augustus) for coining money in his own name; and here we have the identical coins that caused Toramâna's imprisonment and also a decided proof of the truth of the Kashmeerian history. I have the coins of 14 Rajahs, and of six Moosulman Kings, making a series of 20 Kings, the most numerous of any Indian sovereignty that has yet been discovered.'

The Secretary informed the meeting of Lt. Cunningham's having declared himself a convert to the identification of the supposed *Mayas*, held by several authorities to have been one of the early Bactrian Monarchs, with Demetrius, a position originally suggested, and maintained at some length, by the Secretary, in No. of the Journal of the Asiatic Society.

Read the following Letters, viz. From the Secretary, Political Department, Government of India, No. 1077, dated the 26th April 1841, transmitting a Report by Mr. Asst. Surg. Walker, on the Geology and Manufactures of the Hunum Koondah district of the Nizam's Dominions, for such notice as the subject may merit.

N.B.—Specimen of produce, as Indigo, &c. &c. from the province in question, have been since received, and will be submitted to the Society at their next meeting, with the Curator's report upon the objects to be submitted.

From Mr. C. P. White of Midnapore, of 19th April 1841, sending a specimen in Ornithology for the Society's Museum.

From Mr. R. Clarke, Hony. Secy. Royal Asiatic Society, London, dated 7th November 1840, acknowledging the receipt of the Journal for November and December 1839, and the Mahabharata, Vol. IV.

Read a letter from Major Thoresby, Jyepore, 5th April 1841, apprizing the dispatch of the stone at the gorge of the Teoree Ghat near Buerath, bearing the Palee Inscription in ancient characters, a copy of which was taken and forwarded to the Asiatic Society by Capt. Burt. Also some specimens of ores of the mines in the Khetree hills.

The Secretary submitted to the meeting, presented by Robert Torrens Esq., the Magistrate of the 24-Pergunnahs, a quantity of coins of the Mussulman Kings of Bengal, found by a Gang of convicts employed on the Roads at Howrah. The coins, as read by the Hon. H. T. Prinsep, Esq., are as follows :

N.B.—O. and R. stand for obverse and reverse of the coins.

No. 1. O. Alwasik bu tueed ul Rhuman abooul Moojahid Secunder Shah ibn Ulyas Shah ussooltan.

R. Yumeen ul Khuleefut Illahi Nasir ameer ul moomuneen, Oun ul islam oo ul moosulimeen; Khuladu Moolkuhoo.
(Circular legend not legible.)

No. 2. O. Ulsooltan ul adil, Ghums ood dunya oo ood deen, Aboo ul Moozuffur, Ilyas Shah ussooltan.

R. Sekunder oosanee Yumeen ul Khuleefut, Ameer ul Moomuneen.

- No. 3. O. (*broken*) Ussooltan ul adil, Aboo Moozufur Secunder Shah, Ibn Ulyas, Shah ussooltan.
R. Yumeen Khuleefut Illahi, Nasir, Ameer ulmoomuneen, Oun il Islam oo ul mooslumeen.
- No. 4. O. Aboo ul moojabid Secunder Shah, Ibn Ilyas Shah ul Bengallee.
R. Nasir, Ameer ul moomuneer, Oun ul Islam oo ul mooslumeen.
- No. 5. O. Julal oodunya oo uddeen, aboo ulmoozufur Mahomed Shah.
R. Nasir, Ameer ul moomuneen Oun ul islam oo ul moosulmeen
- No. 6. Ditto to No. 5.
- No. 7. Ditto to No. 2.
- No. 8. O. Mahomed Shah. (*Togra*).
R. The Kulma or profession of faith.
- No. 9. (*Ditto*) Mahomed Shah.
- No. 10. O. Syfooddunya oo ooddeen, aboo ul moojanid Khoosro Shah, Ibn Azim Shah, Ibn Secunder Shah, Ibn Ulyas Shah, ussooltan.
R. Nasir, &c. &c. &c.
- No. 11. O. Shah ul Azim aboo ul Moojahid Secunder Shah, Ibn Ulyas.
R. Ullah Nasir, Ameer ul moomuneen, Oun ul Islam.
- No. 12. O. Julal ooddunya oo ooldeen, Aboo ul Moozufur Mahomed Shah ussooltan.
R. Nasir oo Islam oo ul moosulmeen, Khulada Moolkaoo !
- No. 13. (*Too much defaced and chiseled to be legible.*)
- No. 14. O. Ulyas oodunya oo oodeen uboo ul moozufur Azim Shah, Ibn Secunder Shah, Ibn Ulyas Shah ussooltan.
R. Nasir, &c. (as before.)
- No. 15. O. Sooltan ul adil Julal oldunya oo ooddeen aboo ul mujahid Mahomed shah ! khuladu moolkuhoo !
R. Nasir ameer ul moomuneen, Oun ul Islam oo ulmooslimeen.
- No. 16. (*Togra like No. 8 : nearly illegible.*)
- No. 17. (*Ditto to No. 14.*)
- No. 18. O. Ghyas ooddunya, oo oodeen, ul mulik Azim, Shah oosoltan.
R. Nasir, ameer ul moomuneen, Oun ul islam oo ul moosulmeen.
- No. 19. Ghyas ooddunya oo oolden, aboo ul moozufur Azim Shah, Ibn Secunder Shah, ibn shums ooddeen.

- No. 20. (*Ditto to No. 14.*)
- No. 21. O. Ul mowukul bu taced ul Ruhman, Ghums ooddunya, oo ooddeen, Malik Yoozbuk ussooltan.
R. Nasir, &c. &c.
- No. 22. O. Ul mooyud bu deen ul Ruhman Ghums oodunya oo ooddeen, Aboo ul moozufur Mahomed Shah Ulyas.
R. Nasir Ameer, &c. &c.
- No. 23. (*Ditto to No. 14.*)
- No. 24. (*Ditto to No. 14.*)
- No. 25. O. Syfood dunya oo ooddeen, Aboo ul moozufur Khoosroo Shah, Ibn Aeezim Shah, Ibn Secunder Shah, Ulyas shah ulsooltan.
R. Nasir, &c. &c.
- No. 26. (*Ditto to No. 5.*)
- No. 27. O. (*Ditto to No. 2.*)
R. (*defaced by chiseling.*)
- No. 28. O. Ul Mooyud bu taced ul Ruhman.
R. Nasir ooddeen aboo ul moojahid Mahomed Shah ussooltan
- No. 29. O. Aboo ul Moojahid Sekunder Shah, Ibn ulyas Shah, ussooltan.
R. Ulla nasir Khuleefut Ameer ul Moosulmeen oon ool Islam, oo ul Moosulmeen, Khuluda Moolkuhoo.
- No. 30. (*Ditto to No. 5.*)
- No. 31. O. Ula ooddunya oooddeen Aboo ul Moozufur Mahomed Shah.
R. The *Kulma*.

(The *Toghra* of this coin is more legible than usual.)

Of the above numbers 8, 9, 16, 23 and 31 appear to be of Mahomed Shah afterwards King of Hindostan, who reigned A. H. 627 to 634 (A. D. 1229 to 1236.)

Numbers 2, 7, 22 and 27 are of Ulyas or Ilias Shah, who reigned from A. H. 744 to 760 (A. D. 1343 to 1358)

Numbers 1, 3, 4, 11 and 29 are coins of Secunder Shah son of Ulyas Shah, who reigned from A. H. 760 to 769 (A. D. 1358 to 1367.)

Numbers 14, 17, 18, 19, 20, 23 and 24 are of Azim Shah, son of Secunder Shah, who reigned from A. H. 769 to 775 (A. D. 1367 to 1373.)

Numbers 10 and 25 are of Syfood deen (Khoosroo Shah) son of Azim Shah, who reigned from 775 to 785 (A. D. 1373 to 1383.)

Numbers 5, 6, 12, 15, 26 and 30 are of Mahomed Shah, who reigned from A. H. 794 to 812 (A. D. 1392 to 1409.)

The coin No. 21, bearing the title of Ghyas ood-deen Malik Yoozbuk would appear to belong to the king, who in the list of Pathan Monarchs of Bengal (Prinsep's Useful Tables) is noted as Ikhtiar ood-deen *Malik Yoozbuk*. the only king who bears this remarkable name. The thanks of the Society were offered to Mr. Torrens for his valuable contribution, which will be deposited in the cabinet of numismatology.

Also an old coin forwarded by Capt. Hannington, picked up in the district of Manbhoom; doubts were entertained as to the real nature of the so called coin. It is of pewter; the marks, or characters unintelligible. Further enquiry will be made on the subject, as, if it be indeed a coin, the discovery is singular, and may be ultimately highly valuable.

Read Mr. Secretary Bushby's Letter, No. 883, dated the 14th April 1841, in reply to the communication of the 12th idem, with the officiating Curator's report on the two specimens of rock, of which the following is a copy:

TO H. TORRENS, ESQ., *Secy. to the Asiatic Society.*

Sir,—In reply to your letter and its enclosure of the 12th instant, I am directed to acquaint you that the Military Board will be requested to instruct the Superintendent of the Agra and Bombay road, to endeavour to procure the specimens and information suggested by the Officiating Curator of the Asiatic Society's Museum.

2d. The Right Honorable the Governor approves of Mr. Piddington's proposition to supply all officers engaged in the Survey and Construction of roads with a copy of Capt. Tremenheere's Memoir.

I am, Sir, your obedient servant,

G. W. BUSHBY,

Secretary to the Govt. of Bengal.

Fort William, 14th April, 1841.

The officiating Curator submits the following report of 17th April 1841, on the collection of minerals tendered for purchase to the Asiatic Society by Mr. Dodd.

TO H. TORRENS, ESQ., *Secretary Asiatic Society.*

Sir,—With reference to the letter of Mr. Secretary Bushby on the subject of the collection of minerals tendered for purchase to the Asiatic Society by Mr. Dodd, I have the honor to report that in consequence of that gentleman's having failed as yet to transmit me his catalogue I have been obliged to make a rough one of the collection which has occasioned delay in furnishing the report.

The collection consists of about 890 specimens in all; of which about 180 may be general and the remainder species and duplicates. The ac-

knowledged genera of minerals being about 360 in number; Mr. Dodd's collection comprises thus about one half of the whole and generally of the most useful for reference.

With this collection and those in the Society's cabinet, we should be able to form a nearly perfect series, which is in this country a great scientific desideratum, for but few have the time, or the knowledge required to enter upon a chemical examination of a mineral, and comparison with the specimens of a well arranged cabinet will in very many cases obviate the necessity of this. The duplicates also will not be useless if (as suggested I think in one of my previous reports) they be used in the formation of 'Cabinets of Instruction' for the Hindoo, Medical and other Colleges and public establishments, whenever it may be thought proper to furnish them with such.

As far as I am acquainted with the prices of such things at home—though in this respect my knowledge is very limited, I should judge that the price asked is not excessive, and we may possibly obtain it at a cheaper rate.

I have the honor to remain,
Sir, your obedient servant,

H. PIDDINGTON.

Assistant Curator Asiatic Society.

Museum, 17th April, 1841.

Resolved that a copy of Mr. Piddington's report be submitted for the information of Government, in reply to Mr. Bushby's Letter No. 270 of the 24th March 1841.

Read a letter from Captain F. Jenkins, of 1st April 1841, requesting to be supplied with extra Copies of Lt. Tickell's papers on the 'Ho' language for comparison with the numerous languages current within the valley of Gowhatti, and to trace the dialects connected with the Tibetan stock, and the Shan branch. Captain Jenkins writes, 'that the most distinct language in all this Frontier seems to be the Garrow, as its compound and polysyllabic character appears to separate it entirely from the Eastern languages, and yet it does not appear to have the least connection with the Hindu family of languages. The Garrows are isolated from all their neighbours in regard to languages, their country is but a small one; whence they come and how they remain in so small a space, are very interesting questions; and with them as with any others on this Frontier, the languages are likely to be entirely lost before any philologists arise to determine whence they spring. Captain Jenkins concludes his communication with some account of the Rajahs of Cachar.

Read a Letter from D. F. McLeod, Esq. of Jubbulpore, of 31st March 1841, also requesting to be supplied with Lt. Tickell's papers on the 'Ho' language. 'Not,' writes Mr. Macleod, 'from mere curiosity, but because being closely connected with Hill Tribes and greatly interested in them, I would anxiously seize upon any means of instituting a comparison between the language of our Gonds and the Hill people of other parts, and facilitating to myself or others, an insight into the rudiments of their still unknown tongue. And being not without hope of hereafter seeing one day a mission established amongst these people, I should wish much to have by me for distribution one or more copies of a brochure so admirably calculated to elicit a further enquiry.'

'With reference to his (Lt. Tickell's) most admirable paper on Ho-dês, I would mention as it may be of use, that Kôls still abound in Rewah, in our Lohâgpur mahals, and are even found at Jubbulpore and Seoni. Hence I should be disposed to presume that the term 'Kôl' was introduced by the invaders from Ruhitas, which, as far as I can call to mind, not having his paper with me, was not Tickell's impression on the subject.'

With reference to the two foregoing Letters, it was moved by Dr. Hœberlin, that they contained matters worthy of interesting enquiry and that some one of the Members composing the Committee of Papers should be requested to prosecute the enquiry to elicit information on the points alluded to by Capt. Jenkins and Mr. Macleod.

Resolved that Dr. Hœberlin's services be requested in aid of undertaking the task of prosecuting such enquiry in conjunction with Baboo Prosonocoomar Tagore.

Read a Letter from Major Burlton of the 14th April, 1841, with a collection of Bactrian Coins as a loan for the Society's museum. Major Burlton further offered the duplicates of this collection to the Society, for which courtesy as well as for his kindness in allowing the collection to be laid before the meeting, the Secretary was directed to address that officer with the expression of the thanks of the Society. The coins consisted of some silver Menanders (drach.) in excellent preservation, one of the rude silver coins usually believed to be of Euthydemus *struck at a provincial mint*, and the rest copper coins chiefly Azes and Kadphises. The barbarous provincial type of silver coin is ascertained to be of the time of Euthydemus, (authority—Lieutenant Cunningham) and is found in, or at any rate comes from, the Bokhara country.

Read a Letter and enclosure from Dr. H. H. Stry of the 5th May, 1841, of which the following is a copy.

MY DEAR TORRENS,—I have been honored by Dr. Wm. Edwards, whose celebrity as the author of more than one important Physiological work must be well known to you, with a communication relative to the establishment of a '*Société Ethnologique*' at Paris, of which I feel proud in having an opportunity of submitting an outline to the notice of the Asiatic Society of Bengal.

My distinguished friend desires to call my attention to a subject which he says he has close at his heart. He has reminded me of the fact, that he has established at Paris an Ethnological Society. It is composed of distinguished and able members, and is going on remarkably well. He then goes on to say, that his wish is to have some of the most eminent scientific men an Calcutta named as members of the Society. He desires that the names may be limited to four or five.

Directions for travellers have been drawn up and published comprising every point in Ethnology. A few copies have been forwarded and I now do myself the pleasure of placing a couple at the disposal of the Society.

Dr. Edwards alludes to three things that he is solicitous about. The possession of drawings, principally outlines, with very little shade, of the best characterized heads of the Indian races; men and women. If by any possibility casts could be taken, another great benefit would be conferred, and lastly, skulls, which Dr. Edwards hopes may without great difficulty be collected. If cases die in hospital, and opportunities occur for possessing the skull, he wishes much that a drawing of the Indian front, of the natural size, should be made in order to arrive at an accurate knowledge of the relation which existed between the skull and the features.

Dr. Edwards asks as a favor if he could be put in possession of any drawings of Indian races;—for them, he says, the Ethnological Society of Paris would feel deeply grateful.

I send you these outlines, with the hope, that by giving publicity to the objects and intentions of the Ethnological Society at Paris, through so scientific a body as the Asiatic Society, assistance may be rendered the physiologists of Paris in the pursuit in which they are engaged

You will see the particulars more in detail in the two accompanying brochures of general Instructions, which perhaps you will oblige me by laying before the Meeting of the Society to-night.

Société Ethnologique.

INSTRUCTION GÉNÉRALE ADRESSÉE AUX VOYAGEURS, ETC.

§ I.

DES CARACTÈRES PHYSIQUES.

Le point le plus important de l'éthnologie, c'est la connaissance du *type* : on ne saurait en avoir une idée suffisante sans le dessin.

1° Il faut donc dessiner les portraits de ceux que l'on veut faire connaître ; et avoir soin, pour en donner une idée complète, de représenter la tête de deux manières : de face et de profil.

2° Il convient aussi de faire une esquisse de tout le corps, et d'en bien étudier les proportions, pour savoir si elles ne présentent pas quelques particularités. Il faut surtout faire attention à la longueur du buste relativement aux membres supérieurs et inférieurs ; au creux des reins et à la saillie de la partie sous-jacente, comme dans le Nègre, le Hottentot, etc.

3° Il serait bon de prendre la mesure de la hauteur du corps, et d'évaluer sa force au dynamomètre d'une manière approximative, si l'on n'a pas cet instrument.

Il est extrêmement important d'avoir le portrait de l'homme et de la femme, car leurs types tendent à différer d'autant plus qu'on s'élève d'avantage dans l'échelle des races.

4° Toutes les fois qu'on pourra se procurer les crânes des naturels du pays, on n'en laissera pas échapper l'occasion, et on cherchera de même à obtenir des naturels qu'ils se laissent mouler leur buste.

Il y a toujours chez une nation plusieurs races ; il faut donc chercher à distinguer les types purs du produit des mélanges.

§ II.

DE LA LINGUISTIQUE.

Le point le plus important après, les caractères physiques, c'est la langue. Il est évident que si l'idiôme est cultivé, il y aura des grammaires et des dictionnaires, qu'il sera indispensable de se procurer, s'ils sont rares en Europe. Si ces ouvrages n'existent pas, il faudra y suppléer en formant deux vocabulaires ; l'un bref, l'autre plus étendu, selon le temps dont on pourra disposer. L'un contiendra les noms des objets sensibles, des idées abstraites mais usuelles ; l'autre les différentes parties du discours.

En second lieu, il conviendrait de faire une ébauche de grammaire ; de

s'occuper d'abord du verbe, en prenant les trois temps fondamentaux, le présent, le passé et le futur, avec les modifications des personnes et du nombre ; puis du substantif, avec les variations du cas et du nombre ; de faire connaître l'accord de l'adjectif avec le substantif ; les pronoms, les propositions avec un ou plusieurs régimes, et les adverbes joints à un verbe. Si l'on pouvait indiquer les rapports de la langue avec d'autres idiômes qui lui sont affiliés, ce serait un renseignement fort utile. Quel est le mode de numération en usage ?

§ III.

DE LA VIE INDIVIDUELLE ET DE FAMILLE.

Pour donner une idée des mœurs relatives à l'individu et à la famille, il convient de prendre l'homme à sa naissance et de le suivre jusqu'à la mort, en faisant connaître les actes solennels qui s'y rapportent. Ainsi, quant à la naissance, il y a peu de nations qui n'en marquent l'époque par quelque cérémonie ; il faudrait la faire connaître ; indiquer le lieu où l'on dépose l'enfant ; décrire la manière de le porter, de le vêtir, de le nourrir, de lui apprendre à marcher et à parler. Si l'on exerçait quelque compression sur la tête ou quelque autre partie du corps, il serait bon d'en faire mention,

Quand l'enfant sait marcher ou parler, quelle est son éducation domestique ; car il n'y a pas de peuple qui n'apprenne aux enfans ce qu'ils doivent savoir dans la suite.

Lorsque l'individu de l'un ou de l'autre sexe est arrivé à la puberté, y a-t-il quelque cérémonie qui le constate, et quelles sont ses occupations jusqu'à ce qu'il se marie ? Informez-vous avec soin de ce qui vous avec soin de ce qui concerne le choix d'une femme ; à quelles conditions on l'accorde, et décrivez les cérémonies du mariage. Si dans cette union il y a pluralité de femmes ou d'hommes, comment vivent-ils entre eux ? Quelles sont leurs intrigues pour favoriser leurs fils ou leurs filles, et quelle en est la conséquence pour le sort de ces derniers ? Quelle est l'autorité du père ou de la mère ? Quel est le degré de respect filial des enfans et quels sont en général les sentimens de famille ?

Faites connaître le régime alimentaire des différens membres de la société, suivant leur sexe et leur âge en indiquant : 1^o les alimens ; 2^o la manière de les préparer ; 3^o les personnes qui les apprennent.

Quels sont les vêtemens du peuple, suivant la fortune, le rang, le sexe et l'âge de chaque individu ?

Etudiez les maladies auxquelles les deux sexes sont sujets aux diverses époques de la vie ; et les différences qui ont lieu à cet égard entre les natu-

rels du pays et les étrangers ; les rapports de ces maladies avec le climat et la manière de vivre ; les soins que les parens, les amis et les médecins donnent aux malades.

Quel est le genre d'occupation de l'homme et de la femme ? Quel est leur âge moyen, et le terme extrême auquel ils arrivent ?

Quelles sont les cérémonies qui accompagnent ou qui suivent la mort, telles l'enterrement, le deuil, ect.

Ces cérémonies diffèrent-elles pour le mari et la femme ? Quel est le sort du survivant et des enfans ?

§ IV.

DE LA VIE SOCIALE

Comme les arts ne se développent guère que par des causes sociales, nous devons les examiner ici.

1^o *Habitations, édifices, voies publiques, etc.*

Le moyen le plus sûr et le plus court de donner une idée exacte d'une habitation, c'est d'en faire le dessin ; en marquant par écrit les matériaux dont on sert. Il en est de même de tout édifice, ainsi que des meubles ou des ornemens.

Il convient de faire connaître les différentes manières d'orienter les maisons et les édifices, de les grouper pour former les villages, les bourgs, les villes, ainsi que la manière de les fortifier et de les distribuer dans le pays. Dites si les rues sont pavées ou non et comment on fait les chemins.

Faites connaître tous les autres genres de constructions, tels que les vaisseaux et les bateaux, les ports et les chantiers, les arsenaux, etc. Donnez une idée convenable des canaux, des jardins publics, ect.

2^o *Agriculture.*

Enumérez les plantes qui servent à l'alimentation, telles que les légumes, les grains et fruits ; puis à la médecine, à l'habillement, à la teinture et aux autres arts. Décrivez la manière de les cultiver, en faisant une attention particulière aux amendemens (ou substances minérales qu'on ajoute au sol), aux engrais (ou substances organiques qu'on y mêle) aux moyens de travailler la terre avec les instrumens aratoires, aux procédés d'irrigation. Dessinez les diverses races d'animaux domestiques, donnez leurs caractères distinctifs et l'usage qu'on en fait.

3^o *Tissage, fabrication de vêtemens, etc.*

Faites connaître la manière de préparer les différens tissus écrus ou les pelletteries servant à l'ère de fore, habillement et aux autres usages domestiques.

4° *Teinture.*

Donnez une idée suffisante de la manière de préparer les couleurs et de les appliquer.

5° *Art de travailler le bois et les métaux.*

Marquez le degré auquel les naturels sont arrivés dans ces arts. Indiquez les autres métiers exercés dans le pays.

6° *Professions. Arts libéraux.*

Distinguez les diverses classes de marchands et de négocians, les hommes de loi et les médecins, ainsi que leur genre d'études et leur manière d'epercer leur profession.

Y a-t-il des peintres, des sculpteurs, des architectes, des ingénieurs, des peêtes, des orateurs et des savans ?

Notez le point auquel sont parvenus les arts et les sciences. Rapportez, autant que possible, quelques productions qui puissent nous donner une idée de la manière dont ils sont cultivés.

7° *Education publique.*

Il serait très utile d'énumérer les diverses espèces d'écoles publiques, le nombre de ceux qui les fréquentent comparé à celui de la population en âge de les suivre ; décrire le genre de leurs études, et de faire connaître les facilités ou les obstacles que rencontrent les obstacles que rencontrent les élèves lorsqu'ils arrivent à l'exercice de leur profession.

8° *Etablissemens de bienfaisance.*

Décrivez tous les établissemens de ce genre : hôpitaux, hospices, maisons de prêts, institutions pour les aveugles, sourds-muets, etc.

Indiquez les bibliques et le genre d'ouvrages qui publics'y trouvent, tels que manuscrits, livres, gravures, cartes, etc.

9° *Droit public et privé.*

Un objet d'une haute importance serait d'étudier la constitution de l'état, la hiérarchie des pouvoirs, les droits respectifs des gouvernans et des gouvernés ; de faire ressortir les divers rangs de la société ; et de nous apprendre s'il y a des propriétés communes ou particulières, leur degré de sécurité, et leur mode de transmission par héritage, par vente, par donation, etc.

Comment règle-t-on les discussions qui s'élèvent à leur égard ?

Punit-on les attentats contre les personnes et contre les propriétés ?

Quels sont les crimes et les délits dont on s'occupe, les tribunaux qui en prennent connaissance, et dans quelle proportion se trouvent les criminels et les délinquans par rapport à la population.

Comment asseoit-on et lève-t-on les contributions ? Quel est le rapport entre l'impôt et la perception ?

10° *Relations sociales.*

Les rapports de la société méritent une attention particulière. Il serait bon de connaître les relations qui subsistent entre les naturels du pays et de constater s'il y a de la douceur ou de la dureté, de la probité ou de la mauvaise foi, de la sécurité ou du danger dans les liaisons.

Les sociétés des hommes et des femmes sont-elles séparées ou mêlées ?

Les sociétés des hommes et des femmes sont-elles séparées ou mêlées ?

De quelle manière reçoit-on les visites ; et qu'offret-on en pareil cas ?

Donne-t-on souvent des repas ; et qui les compose ?

Quels sont les amusemens publics, les différentes espèces de chasse et de pêche ? Comment les naturels voyagent-ils dans leurs pays, et se déplacent-ils souvent ?

Il sera bon de constater la facilité ou la difficulté que l'on rencontre à gagner sa vie, le nombre ou la proportion des indigens ; la population respective des deux sexes, etc. ; le rapport de la mortalité aux naissances. S'il n'y a pas de documens statistiques directs, il faudrait donner les meilleures preuves de l'augmentation, de la diminution ou de l'état stationnaire de la population ; le nombre des mariés, des célibataires, des enfans légitimes et naturels, etc.

§ V.

DES RAPPORTS DES NATURELS AVEC LES PEUPLES ETRANGERS.

1° *Institutions militaires.*

Dessinez les armes, si elles ont quelque chose de particulier.

Faites connaître la manière dont on lève les armées ; et dites si elles sont permanentes ou non.

Quels en sont les grades, les exercices, la discipline ?

Quelles sont en général les causes de guerre ?

Faites savoir s'il y a quelque cérémonie par laquelle on la déclare, ou si on la fait à l'improviste ?

Quel est le genre de stratégie et de tactique suivi ?

Quels sont les rapports entre la cavalerie et l'infanterie, ou enfin entre les différentes armes ? Il faudrait dire encore s'il y a un droit des gens relatif à la guerre et au maintien de la paix ; comment on règle les alliances offensives et défensives ; comment on traite les ennemis pris à la guerre ; si on les massacre, ou s'ils sont prisonniers ou esclaves ; et dans ces deux cas, quel est leur sort pendant qu'on les conduit aumarché et quelle est leur destinée dans la suite.

2^o *Commerce.*

Donnez un tableau aussi complet que possible des denrées que le pays fournit aux indigènes et aux peuples étrangers, et de celles qu'il en reçoit. Faites connaître les moyens de transport et les échanges soit en monnaie, soit en nature. Quels sont les établissemens qui peuvent faciliter le commerce, tels que bourse, banque, etc. Dites le nombre d'étrangers qui pénètrent dans le pays, et la manière dont ils y sont traités et comment ils en peuvent sortir ?

Quels sont les pays étrangers que les naturels visitent et les moyens de communication ?

§ VI.

DE LA RELIGION.

Quelle est l'idée que les habitans du pays se forment de Dieu et des êtres qu'ils regardent comme supérieurs à l'humanité ?

Dites ce qu'ils pensent d'une vie future, de la distribution des peines et des récompenses.

Cherchez à connaître les autres dogmes religieux.

Quelles sont les formes du culte, les différentes pratiques et cérémonies religieuses ?

Jusqu'à quel point le peuple croit-il aux dogmes ; et comment pratiquent-ils les devoirs prescrits ?

Entrez dans quelques détails sur la hiérarchie, les droits et l'influence du clergé ou de ceux qui représentent les prêtres ; et faites connaître l'action morale de la religion sur le peuple.

Décrivez les superstitions et la manière dont elles agissent sur les sociétés.

§ VII.

DES RAPPORTS DU PEUPLE AVEC LES CONDITIONS EXTERIEURES.

1^o *Sol.*

La terre est-elle plane ou montueuse ? Quelles sont les rivières, les lacs, les marais, les marécages ; et quelle est la nature géologique du terrain ? L'eau est-elle contenue dans le lit des fleuves, ou déborde-t-elle ? Y a-t-il de l'eau et des terres salées ? Dans quelle étendue se trouve la partie boisée ?

Indiquez-nous le degré de fertilité de la terre ; et dans quelle proportion se trouvent les parties productives avec les parties stériles. Donnez une indication des objets utiles, nuisibles ou curieux qui peuvent exister dans les règnes organique ou inorganique.

2° Climat.

Faites connaître :

1°	$\left\{ \begin{array}{l} \text{1° La température,} \\ \text{2° La pression barométrique} \\ \text{3° La quantité de pluie,} \end{array} \right\}$	$\left. \begin{array}{l} \text{moyenne} \\ \text{et extrême} \end{array} \right\}$	1° du jour.
			2° du mois.
			3° du trimestre.
			4° de l'année.
2°	$\left\{ \begin{array}{l} \text{Les jours} \\ \text{de pluie} \\ \text{d'orage} \end{array} \right\}$	$\left. \begin{array}{l} \text{par} \\ \text{mois.} \\ \text{trimestre.} \\ \text{année.} \end{array} \right\}$	

3° L'intensité de lumière solaire comparée à la lumière diffuse (à l'ombre) ; succession et variation des saisons.

§ VIII.

DES TRADITIONS HISTORIQUES, REVOLUTIONS POLITIQUES ET ANTIQUITES.

Il faudra rechercher d'abord quels sont chez un peuple les souvenirs qu'il a conservés de son origine et de ses affinités avec d'autres peuples ; quelles sont les révolutions qu'il a éprouvées dans sa langue ou dans ses mœurs, dans les arts et dans les sciences, dans sa richesse, sa puissance ou son gouvernement, par des causes internes ou des invasions étrangères.

Quelles sont les sources où l'on peut puiser les instructions demandées ?

Sont-ce des documens historiques ou des monumens de l'arts ? Dans le premier cas, ces documens sont-ils consignés dans des poèmes ou dans des ouvrages purement historiques ? Il serait fort heureux de pouvoir en donner une idée.

Dans le second cas, il sera nécessaire de donner un dessin et une description pour les parties qui l'exigent, des édifices monnaies dont on peut tirer quelque fruit pour la solution des questions proposées.

Cherchez dans les traditions mythologiques tout ce qui se rapporte à l'histoire du pays.

Quelles sont les opinions des naturels sur la cosmogonie ; quel est leur système de chronologie ; et jusqu'à quelle époque remonte-t-elle ?

N.B.—The Secretary begs to recommend the above 'Instructions' to the attention of members of the Society, whose position throws them into communications with any of the tribes and races in Central India, or on the frontiers whose distinctive characteristics are so strongly pronounced, as is generally the case with those semi-barbarous people. The consideration of these sects with reference to the several attributes as noted by Dr. Edwards, would form a highly interesting and useful study. The Secretary has been fortunate enough to recover among some papers, recently sent to the Society's rooms, an essay on the principles of Ethnology by Dr. Woods, a corresponding member of the Parisian Ethnological

Society. This is placed at the disposal of the Editor of the Journal of the Asiatic Society, for early publication.

With reference to the request of Dr. Edwards of Paris, 'for Heads of the Indian races' to serve as aid to his studies in Ethnology, the Secretary suggested a collection of Grant's 'Heads,' should be forwarded, but Dr. Spry had already anticipated him, and it was resolved to refer the Letter to Professor O'Shaughnessy to ascertain if 'Casts' were not available from the native modeller in his employ.

The Secretary informed the meeting that a 'Circular,' by desire of the Governor General, has been issued by Dr. Pearson, for contributions of subjects of Natural History for enriching the Barrackpore Menagerie, the Zoological Society and the East India Company's Museum.

The Secretary noticed that a Sanscrit work was laid by Baboo Sooruj Narain Roy before the Society. It was resolved that it be referred to Dr. Hæberlin for examination, and report of the merits of the publication in question.

For the presentations and contributions, the thanks of the Society were accorded.

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ASIATIC SOCIETY.

Of the early History of Sindh, from the "Chuch Namuh" and other authorities. By LIEUT. POSTANS, Assist. Pol. Agent, Shikarpore.

[My able correspondent, Lieut. Postans, has been for some time perseveringly employed in tracing out whatever material is available in *Sindh*, for the purpose of throwing light upon its early history. A book called the "*Chuch Namuh*," is the principal authority to which he has had recourse in preparing the historical sketch, which he has enabled me to have the satisfaction of publishing. Both he and Capt. Hart (2d Grenadiers, Bombay army) who has been turning his attention to similar pursuits, despair of discovering any more authentic work bearing upon the early history of *Sindh*, and agree in describing the modern *Sindhees* as so illiterate and apathetic, as neither to have the will, nor the power to further their researches. I still, however, do not despair of the recovery of other authorities, as the country becomes better known to us.

In the mean time, Lieut. Postans has ably and successfully availed himself of all the material at his disposal, which, dating from the Mussulman inroads, may be fairly considered as authentic. The short notice of the history of *Sindh* before that period, to be found in the works of Mussulman authors, must be necessarily in many respects of a traditional character, and we indeed find, that the *Chuch Namuh* does not attempt to do more than describe the revolution which destroyed the ancient Sindian dynasty in the century immediately preceding the Islamite invasion. The use of the modern Persian name *Bruhmanabad*, as applied to a city in the days of *Chuch*, gives sufficient proof of the loose manner in which the Mussulman historian collected his material; he was perhaps, in the spirit of a genuine Moslem, careless of all respecting the infidel inhabitants of the land, which was not in some way immediately connected with the advent of his own people.

We are not the less bound to acknowledge our obligations to Lieut. Postans, for having undertaken the task of laying, compendiously, before an English reader, the first historical notice of *Sindh*, which has I believe appeared unconnected with the history of other lands and peoples.] 卍

CHAPTER I.

Sindh—its situation—climate—name whence derived—early history—capital *Alor*—extent of territory—rule of the *Rahees*—appearance of the first Brahmin *Chuch*—his reign and death—his son *Dahir*—account of his rule until the Mahomedan invasion.

Sindh is one of the sixty-one climates of the world; it is situated in the five first climates, belonging chiefly to the second, and is in the same region as the holy cities of *Mecca* and *Medina*. The river of *Sindh* rises in the mountains of *Cashmeer*; another joins it from the mountains of *Cabool* in *Mooltan*; it is met by the river *Sehoon*, and thus proceeds to the sea. Its water is clear, bright, and cool during the hot season; in the language of the country, it is called *Mehran*. All the rivers of *Sindh* flow towards the south, where they empty themselves into the sea, (such as the waters of *Peelab*, *Chenab*, *Lahore*, *Sultanpoor*, and *Bajuwarrah*.) The climate

Climate. of *Sindh* is delightful; its mornings and evenings cool, the country to the north hot, whilst that to the south is cold. Its inhabitants intelligent, and of large stature. *Sindh* is so called from Name whence derived. *Sindh*, the brother of *Hind*, the son of *Noah*, whose descendants from one generation to another ruled in that country; from them also sprang numerous tribes, such as the *Nubeteh*, the men of *Tak*, and the tribe of *Moomeed*, who governed Early History. and possessed it by turns; no record remains of these, and its history commences with the last of the dynasty of the *Rahees*, or *Rajahs*, whose capital city and seat of government was *Alor*.

Capital *Alor*. *Alor* is described as a large, flourishing, and populous city, situated on the banks of the river *Mehran*, possessing large edifices; its gardens highly cultivated, producing every kind of tree and fruit, where travellers had all their wants supplied.

Extent of Territory. This territory extended to the east as far as *Cashmeer* and *Kunooj*; west to *Mukran* and the sea; south to the territories of the ports of *Surat* and *Deo*; and to the north to

Kandahar, Seestan, and the mountains of Soolleemany, Girwān, and Rynakan. The first *Rahee* mentioned, is *Rahee Dewahey*; he was a powerful prince, possessing absolute authority over the territory of *Sindh*, as above-mentioned, and formed alliances with many of the rulers in *Hind*; at his death, he was succeeded by his son *Rahee Siheersin*; he by his son *Rahee Sahursee*; and he by his son *Rahee Siheersin* the 2nd. During this reign, the king of Persia, *Ueem Roz*, sent a force by the road of *Kirman* to *Mukran* and *Reech*, which countries they laid waste, and *Rahee Siheersin*, in trying to repel this invasion, was defeated, and he himself killed by an arrow through the neck; his troops fled to *Alor*, and his son *Rahee Sahee* was seated upon the throne. During the *Rahee Sahee's* reign, the Brahmin *Chuch*, (who afterwards possessed the country, and bequeathed it to his son,) made his appearance. It is related, that *Rahee Sahee's* minister *Ram Rao*, was a man of such capability, and so well directed the affairs of state, that the *Rahee* himself seldom interfered with them, but passed the greatest part of his time in the sensual enjoyments of his harem. Accident brought *Ram Rao* and the Brahmin *Chuch* together; the latter is described as having been a very talented and eloquent man, well versed in all the learning of the Hindoos. *Ram Rao* appreciating his abilities made him his deputy, and on one occasion sent him on some affairs, which required the *Rahee's* attention, to the door of the harem: the sanctity of *Chuch's* priestly office admitted of his being allowed to enter the private apartments without the formality of a curtain between him and its inmates, and so great was his personal beauty, that the *Ranee* became enamoured of him at first sight; she afterwards made *Chuch* acquainted with her passion, but he declined her overtures, on the score of his being a Brahmin, and as such, incapable of treachery to the *Rahee*, whose confidence he had gained. But an opportunity soon presented itself to the *Ranee* for the accomplishment of her designs. The talents of *Chuch* had given him almost universal sway over the affairs of government, and the minister *Ram Rao* was no longer thought of; in the mean time the *Rahee* became dangerously ill, and the *Ranee* formed a plot, by which, in the event of the *Rahee's* death, *Chuch* should succeed to the throne of *Sindh*. She caused a proclama-

tion to be issued in the name of the *Rahee*, for a general assembly of all ranks and classes, and placed the throne in the public hall of audience. When the people were assembled, they were informed that the *Rahee's* health prevented his then being present, or any longer attending to the affairs of his country, but that he had given his signet, and delegated absolute authority to the Brahmin *Chuch*, whom they were to obey as his deputy. *Chuch* was thus vested with power, and his ability secured him the obedience of the subjects; the *Rahee* afterwards died, leaving no children; *Chuch* married the *Ranee*, and by universal consent was placed upon the throne. The government of five preceding *Rahees* occupied 137 years. *Chuch* was the first Brahmin who ruled. Many of the relations of the deceased *Rahee*, who possessed claims to the government of the country, were inveigled by the *Ranee* into the palace, and murdered. *Chuch* opened the doors of his treasury, and by his bounty secured the good offices of the soldiers, and of his subjects generally. He had scarcely however imagined himself secure on the throne, when *Rana Mihrut Chittoore*, heading the remainder of the relations of *Rahee Sahee*, came with an army from Joudpoor and Chittoor to assert their claims to the throne. The *Ranee* urged *Chuch* to prepare to defend his possessions; he again propitiated the troops by large presents in money, and prepared to meet *Rana Mihrut*. The forces drew up for battle, in the vicinity of *Alor*, but *Rana Mihrut* advancing in front of his host, challenged *Chuch* to single combat, as the most merciful way of settling a dispute, in which the two chiefs only were immediately concerned. The result of the combat was decided to be final as to all claims of territory; and whoever fell, his country was to pass to the possession of the victor. *Chuch* consented to this; the two chiefs advanced in front of their armies; *Chuch* directing his servant to bring his horse slowly after him, mounted quickly, and treacherously slew *Rana Mihrut* with one blow of his sword. The troops of the latter witnessing the fall of their leader, fled in dismay; *Chuch* pursued and killed many of the fugitives; he then returned with great pomp to *Alor*, the houses and bazars of which city were ornamented upon the occasion. His authority was now established, and he became a powerful king. After a reign of 40 years he died, leaving two sons; the eldest *Dahir*, and the younger *Dahir*; he had also one daughter. His eldest

Reign of *Chuch*,
until his death.

son *Dahir* succeeded to the throne, and his brother *Dahir* was appointed governor of *Burhamanabad*. He made a tour of his dominions, and after a treaty of peace with the governor of *Kirman*, returned to *Alor*. When he had for some time occupied himself in adjusting and arranging the affairs of his country, he consulted the astrologers as to his future fate, and that of his dominions; they told him that neither in his own, nor in his brother's horoscopes could they discover any evil sign, but that in his sister's it was written, that whomsoever she married, should possess the country of *Sindh*; this sorely perplexed *Dahir*, who finding the thought of his losing power and empire too intolerable to bear, determined to confound the fates, and avert the evil threatened, by marrying his own sister; his subjects and those about him tried in vain to dissuade him from so unnatural a proceeding, but his superstition was insurmountable, and with all the forms of his religion he married her.*

When his brother *Dahir* heard this, he was sorely incensed, and wrote a letter full of bitter reproaches to *Dahir*, for the disgrace which he had brought upon his family, adjuring him to make all the reparation in his power, by breaking off so unholy an alliance.

Dahir's infatuation would not admit of this, and he excused himself by assuring his brother, that beyond the mere ceremonies of marriage he had committed no sin.† *Dahir* determined to punish his brother, and with this intent collected a large force at *Burhamanabad*, with which he marched upon *Alor*, and encamped under the walls of the city; through the intervention of the mother, peace was concluded between the brothers, and *Dahir* died shortly afterwards of small pox, in the city of *Alor*. *Dahir* proceeded to *Burhamanabad*, and having appointed another deputy to govern it returned to *Alor*, where he busied himself in completing the fortifications, which his father *Chuch* had begun. His

* Capt. Hart in a letter to me quoted, in No. 108 (p. 1216 of vol. ix. Asiatic Society's Jour.) mentions the remains of an ancient city in *Upper Sindh*, called by the country people "Dumb-i-Dilora-Shah," traditionally said to have been destroyed on account of the king having married his sister. He referred me then to the "*Chuch Namuh*." The tradition refers doubtless to the "*Alor*," of the history, making it however the name of the king instead of the city, and to the story of *Dahir*. H

† It is but just to add, that in all the manuscripts from which this sketch is compiled, *Dahir* is particularly represented as not having added the crime of incest to his other follies.

dominions were prosperous, and his sovereignty firmly established; he made a tour to the East as far as *Cashmeer*, upon the boundaries of which country he planted two trees as memorials of his journey. The flourishing state of the country, and the growing power of *Dahir*, excited the envy of the *Rajahs* of *Hind*, and they instigated and supported *Runmul*, governor of *Kunooj*, in collecting a large force to descend upon *Sindh*. *Runmul* marched to the neighbourhood of *Alor*; *Dahir* called in the assistance of Arab mercenaries, and sought advice as to the best method of repelling the invasion, from *Mahamed Ullafee*, who directed him to dig a ditch in front of his army, one furlong in length, and to cover it over with grass, &c. *Mahomed Ullafee* at the head of about 5000 men, Arabs and Sindians, made a night attack upon the enemy's camp, then feigning a retreat, led them to the ditch, into which they fell, and were for the greatest part slaughtered; he took many prisoners, (80,000 men and 50 elephants.) After this victory the power of *Dahir* was more than ever firmly established; he ruled with pride and prosperity for twenty-five years, when his kingdom began to decline.

CHAPTER II.

Reason of sending the army of the Faithful to *Sindh*—*Buzeel* killed—*Bin Cassim* appointed to command the army—arrives at *Deebul*—takes that place as well as *Nierunkote*—the governor of *Moostan* surrenders—*Hijjaj Bin Sookufie* urges *Bin Cassim* to attack *Alor*—the tribe of *Chunch* proffers their allegiance—the fort of *Rawur* taken.

The king of Ceylon, *Serundeeep*, sent some servants to the *Khalif* of Bagdad, (*Abdool Mulk*,) with presents of female slaves, and other merchandize; the boat which conveyed them, was driven into the port of *Deebul*, (now called *Tattah* and *Lahuny*,) where they were attacked and robbed by a predatory tribe, (the *Nukamrehs*,) some were killed, the rest imprisoned. When the news of this outrage reached *Hijjaj Bin Yusuf Sookufie*, minister of *Abdool Mulk*, he instigated that prince to send an army to *Sindh*, to retaliate upon the infidels, and to release the faithful; at the same time he wrote a letter to the *Rajah Dahir*, for some explanation of the circumstances. *Dahir* disclaimed any participation in the affair,

or any authority over the robbers who had committed it. *Hijaj* gained the *Khalif's* permission to send an officer named *Buzeel* to *Mukran*, where he was instructed to levy troops, and attack *Sindh*. *Dahir* killed. sent his son *Jaiseh*, who defeated *Buzeel's* forces, killed him, and took many prisoners. In the mean time the *Khalif*

H. 92 A. D. 710. died, and was succeeded by his son *Wulleed*, (*Bin Abdoul Mulk*); *Hijaj* urged him to renew the war, and to send a force under *Mahomed Bin Cassim*, (a cousin of *Hijaj*), to release the faithful, and punish the unbelievers, as his father, the former *Khalif*, had intended to have done. The *Khalif* *Wulleed* gave the necessary orders to *Hijaj* for the preparation and equipment of a force from the public treasury. In one month he collected an army of 15,000 men, 6,000 of whom were horse, 6000 mounted on camels, and 3,000 foot, with 30,000 dinars for expenses; five catapults for levelling forts were dispatched in boats. *Bin Cassim*

Arrives at *Deebul*. marched, and arrived at the fort of *Deehul*, to conquer *Sindh*, in the year 92 H. (A. D. 710.) *Jaiseh*, the son of *Dahir*, was at that time governor of the fort of *Nierunkote*,* and sent intelligence of the arrival of the Mahomedan army to his father at *Alor*; *Dahir* asked advice of the *Ullafees*, (a tribe which he had sheltered after an outrage which they had committed on some of the deputies of *Hijaj*); they counselled him to avoid meeting the powerful army of *Bin Cassim*, and to entrench himself in the fort of *Alor*. *Bin*

Cassim took the fort of *Deebul*, in which was a large Hindoo temple, so sacred,† that it was supposed to act as a talisman, and to prevent the capture of the fort. *Bin Cassim* threw it down with a catapulta, destroyed the temples of the idolaters, building *musjeeds* on their sites, released the prisoners of the Faithful who were confined there, and putting his material on board boats, proceeded to *Nierunkote*. After a difficult journey of seven days, the roads being blockaded by the *Sindians*, and the troops of *Bin Cassim's* army suffering much from drought, owing to the river not swelling,‡ the army of the Faithful arrived before the fort of *Nierunkote*, the governor of which was *Sumnee*, who had succeeded the son of *Dahir* (*Jaiseh*), in consequence of the

* Near the modern city of *Hyderabad*, see Capt. *McMurdo's* paper on *Sindh*.

† Hence its name from the Hindoo, for a temple, *Deebul* or *Deewul*.

‡ The Mahomedan army joined in prayer for relief from this calamity; their supplications were answered by a plentiful fall of rain and a swell of the river.

latter being sent to the more important command of *Burhamanabad*. The Mahomedans began to suffer much from want of supplies, but after a short siege, the governor *Sunnee* surrendered the keys of the fort on condition of quarter to the garrison. *Bin Cassim* entered the fort, destroyed the temples, built *musjeeds* and *minarets* in their stead, and appointed keepers and *mouzzins* to the same; he left magistrates to preserve his authority at *Neirunkote*, and taking the governor *Sunnee* with him, proceeded onwards. This last wrote to the governor of the fort of *Moostan*, *Bucherim Chunder*, advising him to submit to the invaders, as they were too powerful to oppose. *Bucherim's* fidelity however was unshaken, but after a week's siege, he was obliged to abandon the fort, and flee to *Seem*, of which place *Boodeh* was governor. *Bin Cassim* took possession of the fort of *Moostan*, and having made arrangements for its government, proceeded to *Seem*, where he found *Bucherim Chunder* and *Boodeh* prepared to oppose him. The infidels failed in a night attack upon the camp of the Faithful; and *Kakeh*, *Boodeh's* father, foreseeing that the time was arrived when the country of *Sindh* must submit to the Mahomedan arms, came to *Bin Cassim* to intreat for quarter for his son, and the whole garrison of *Seem*—it was granted. *Bin Cassim* took possession of *Seem*, and leaving *Abdool Mulk* to settle the affairs of that place, pursued his march, daily adding fresh conquests to the arms of the Faithful; he took the forts of *Buhultoore*, *Kundabuh*, (? *Gundava*,) and *Mussalaj*, from all of which he exacted tribute, leaving troops to retain the new possessions thus acquired. At this time a letter reached *Bin Cassim* from *Hijaj*, ordering him to *Neirunkote*, to cross the river, and prepare to expel the *Rajah Dahir* from the capital of the country *Alor*. The large and powerful tribe of *Chuch* proffered obedience to *Bin Cassim*; it is also related that they embraced *Islamism*, and were the first inhabitants of *Sindh* who did so. In obedience to the instructions of *Hijaj*, *Bin Cassim* proceeded to the fort of *Rawur*, which he summoned to surrender; the governor *Mokeh Bin Bussayeh* made a feint to resist, being afraid of the wrath of *Dahir*, but ultimately surrendered the fort, and with the garrison promised obedience to *Bin Cassim*.

Hijaj urges *Bin Cassim* to attack *Alor*.

CHAPTER III.

Dahir alarmed at the successes which attend *Bin Cassim*, exerts himself to prevent his crossing the *Meheran*—the Mahomedans suffer from famine—*Dahir* offers terms—not accepted—*Hijaj* sends horses and supplies to *Bin Cassim*, who passes the river—*Dahir's* consternation—comes out from *Alor* with a large army—account of his death, and the defeat of his forces—the Mahomedans enter the capital *Alor*.

The successes which attended the army of *Bin Cassim*, began to

Dahir alarmed at the successes of *Bin Cassim*. terrify the *Rajah Dahir* for the safety of his capital and dominions, and he foresaw that if the Mahomedans effected the passage of the river, the fate of his sovereignty was sealed. He collected an army of the *Koordans*,

Opposes the passage of the *Mehran*. and arriving at the opposite bank, employed himself in obstructing the passage of *Bin Cassim* ;

this duty he afterwards delegated to *Jah Humeen*, and he himself returned to *Alor*. *Jah Humeen* performed his part so well, aided by the *Rajah's* son, *Jaisch*, (who cut off the supplies of the Mahomedans,) that these latter began to suffer all the misery and horrors of a famine ; they were driven to slay their own horses for food ; coupled with this, *Chund Ram*

Haleh, the former governor of *Secoostan*, heading some insurgents, seized that fort from a small party of horse, who were left to govern its garrison. *Bin Cassim*, however, immediately dispatched *Muzhub Bin Abdul* with 1000 horse and 2000 infantry, who regained the fort, and took *Chund Ram* prisoner. *Dahir* thinking these misfortunes would soon dispirit the Moslems, wrote to *Bin Cassim*, assuring him, that if he wished

to withdraw his forces, he might do so in security ; the latter answered, that he had no intention of retiring, until he had taken the capital *Alor*, and subjected *Sindh* and its dependencies to the Mahomedan rule. The intelligence of the difficulties encountered by *Bin Cassim*, and the loss of the passes, reaching *Hijaj*,

Hijaj finds supplies and horses. he dispatched 1,000 others, with fresh supplies to

Bin Cassim, urging him to lose no time in crossing the river, as the overthrow of *Dahir* was the first and most important step ; on receiving this, *Bin Cassim* proceeded to *Juhum*, where with

the assistance of *Mokeh Bin Bussayeh*, he collected some boats, and filling them with sand and stones, commenced a bridge for the passage of his army; it was under many difficulties and obstructions at length completed; the first detachment of the Faithful passed the river under a shower of arrows from the infidels, who were collected in strength on the opposite bank; but these being driven back, the whole of the army of *Bin Cassim* passed without further molestation. It is reported that *Dahir's* consternation, rage on receiving the intelligence was so great, that he killed the messenger who was the bearer of it.

Bin Cassim now exhorted his soldiers to firmness: "the river was in their rear, and the enemy in front, still if any were faint-hearted amongst them, then was the time to quit the army, and return to their own country." There were only three of the whole host who did so. *Bin Cassim* having thus secured the co-operation of his troops, proceeded onwards to *Jeyoor*, near which place he first caught a glimpse of *Dahir's* forces; he detached *Muhuzzin Bin Sabit Kiessee* with 2,000 men, and *Mahomed Zyad ul Huddee* with 1,000, to oppose them. In the mean time, *Dahir* called *Mahomed Haris Ullafee* to him, and said: "I have protected and promoted you; now is the time to requite my kindness, and to shew yourself worthy of my confidence." *Mahomed Haris* excused himself by saying, that he could not oppose the Moslems without being a renegade to the faith he professed. *Dahir* therefore deputed his son *Jaisch* to lead his army against *Bin Cassim*; he did so, but was defeated with great slaughter, and *Bin Cassim* advanced upon *Alor*, which he besieged.

On the 10th of the month *Ramzan*, in the year ninety-three *Hejira*, *Dahir* comes out from *Rajah Dahir* determined to make one bold stroke *Alor* with a large army. for his crown and kingdom; came out from the city of *Alor* with an immense army; they say he had 30,000 infantry in advance of his cavalry and elephants; he himself seated on an elephant, the *howdah* of which was richly ornamented, passed to the right and left, animating the soldiers, and disposing his battalions in order of battle; seated in the same *howdah* were two beautiful female slaves, one administered wine, the other *pān* and *beetle-nut* to him. The battle which ensued is described as

terrific, lasting from morn till night. *Bin Cassim* himself fought as a common soldier with his troops, performing deeds of valour; but the day was decided in favour of the faithful. In consequence of the latter throwing fireworks amongst the Rajah's elephants the *howdahs* took fire, and the infuriated beasts rushed madly through their own troops, trampling down all before them until they arrived at the river, into the muddy banks of which they plunged. *Dahir's* elephant was amongst them, and the Mahomedans profiting by the confusion, threw

Dahir's death and the defeat of his army.

showers of arrows, one of which struck *Dahir* in the neck, and killed him; his elephant sunk into the mud; and the Brahmins who were behind the *howdah*, took the body of the Rajah and buried it there. The infidels fled in all directions, and the carnage which ensued was dreadful; all the approaches to the citadel of *Alor* were most carefully blocked up, and the Brahmins and two female slaves fell into the hands of an officer of *Bin Cassim's* army, named *Keiss*, to whom they detailed the particulars of *Dahir's* death, and begged for quarter. *Keiss* took them to *Bin Cassim*; the body of *Dahir* was found in the mud of the river, and the head was severed from the body, and stuck upon a spear. That night the Moslems occupied themselves in prayers and thanksgivings for the victory they had gained. The next morning *Bin Cassim* caused the head of *Dahir*, together with the two slaves, to be placed over one of the gates of the city. *Dahir's* wife, *Ladee*, seeing this, threw herself from the walls, and the garrison being no longer able to offer any opposition, opened the gates of the fort. The army of the Mahomedans enter *Alor* 93 H. (A. D. 711.) faithful entered and took possession of *Alor* on Friday, the 11th of Ramzan, in the 93rd year of the *Hejira*. *Dahir* ruled 33 years, and the rule of the Brahmins embraces a period of 92 years.

CHAPTER IV.

The tribe of *Soommah* and others pay homage to *Bin Cassim*—the rebellion of the sons of *Dahir*—governors appointed to the principal cities and provinces of *Sindh*—*Bin Cassim* extends his conquest as far east as *Cashmeer*—the story of his death—deputies of the Kings of *Ghuznein*, *Ghoor*, and *Delhi*, govern in some of the provinces of *Sindh*—origin and rule of the tribe of *Soomrah*—*Nasir-ud-deen Kibajeh*—his rule and death.

The whole of the rich booty of *Alor*, including the treasury and crown jewels of *Dahir*, were collected and placed in charge of *Keiss*, to convey to the *Khalif* at *Sham*. The *Khalif* honoured and promoted *Keiss*, and wrote letters of approbation to *Bin Cassim* urging him at the same time to extend his conquest still further, until the whole of the countries which were dependencies of *Sindh*, should be subjugated and form part of the *Khalif's* territories.

After the defeat and death of *Dahir*, the men of *Soommah* came with music and dancing to pay homage to *Bin Cassim*; he asked the reason of this, and they told him that it was their custom thus to greet a victorious chief. The *Lohanas*, *Battis*, men of *Suhateh*, *Koosejeh*, *Haleh*, &c. led on by *Ally Mahomed Bin Abdool Ruhmun Sulleetee*, with head and feet bare, also proffered their allegiance. Men of *Soommah* and others pay homage to *Bin Cassim*. Rebellion of the sons of *Dahir*.

In the meantime the sons of *Dahir* entrenched themselves in the fort of *Sikunder*, where they determined to offer opposition to *Bin Cassim*. *Burhamanabad* having previously been taken, and its tax and tribute settled, *Bin Cassim* marched to besiege the fort of *Sikunder*, and to quell the rebellion of the sons of *Dahir*, (*Jaisch*, *Toofic*, and *Wukeeah*); he reduced this place, and although the sons of *Dahir* were sometime before they would believe the death of their father, (even abusing their mother, who was sent to assure them of it, by calling her a *hár*, traitress, and one in league with the "slayers of cows,") a sorceress assured them that he was dead, whereupon they surrendered.

The capital city *Alor*, with all the principal provinces and cities of the country of *Sindh* having thus fallen to the Mahomedan arms, governors were appointed to the following places: Governors appointed.

Uhnuf Bin Keiss to *Alor*, with *Moossie Bin Yakoob* as Cazy; to *Burhamanabad*, *Widah Bin Ameen*; and to

Rawur, Tobeh Dārus. *Bin Cassim* then proceeded towards *Mooltan*, and on the road, at the fort of *Baheeah*, *Kulsur Bin Chunder* made obedience to him; after that, the fort of *Sukkeeh* was taken, and *Uibeh Bin Tumhee* left there as governor. *Mooltan*, with all its strongholds and dependencies fell to *Bin Cassim*, who appointed *Khuzzaneh Bin Abdool Mulk* to the fort of *Mehpoor*, *Dawood Bin Nusserpoor* to *Mooltan*, and proceeded to *Debalpoor*; at this time he is reported to have had 50,000 horse and foot under his banners, independent of the regular army with which he invaded the country. Having taken possession

of the countries to the east as far as *Cashmeer* and *Kunnooj*; he returned, having placed trustworthy governors and servants in all those places. At the time

Bin Cassim conquers as far as the country of *Cashmeer*.

that *Keiss* was deputed to convey the treasure and booty captured at *Alor*, with the prisoners to the *Khalif* of *Sham*, amongst the

Story of his death. latter were two daughters of *Dahir*.* The *Khalif* consigned them to his

harem until they should recover from the fatigues of travel, and be prepared

for his service; their beauty was very great, and the *Khalif* was about

to consign one to his bed, when she informed him that *Bin Cassim*,

flushed with victory, had robbed them both of their virginity, and had

kept them in his *harem* for three days; the *Khalif's* wrath at this

knew no bounds, and he wrote an order with his own hand, informing

his servants to seize *Bin Cassim*, to sow him up in a raw cow's hide,

and send him to *Bagdad*. This order reached the chief at *Hadapoor*,

and he desired the servants to obey the order of their tyrannical

master; they did so, and in three days the brave *Bin Cassim* sunk

under the torture. His body was conveyed to the *Khalif*, who ex-

ultingly shewed it to the two women, as a proof of his absolute power;

and of the full measure of revenge which he had taken upon the

innocent *Bin Cassim*. They confessed that the accusation was totally

false; that they were solely actuated by revenge for the murder of

their father, and the destruction of his kingdom. The wretched *Khalif*

too late saw the injustice he had committed, and suffered the most

poignant remorse; he caused the two women to be tied to horses, and

dragged to death through the streets of *Bagdad*. *Bin Cassim* was

buried at *Damascus*. At the time of *Bin Cassim's* death, *Bin Keiss*

* Gispul Deo and Soeing Deo.

was governor of *Alor*, the other places being governed, as before-mentioned; five other governors, deputies of the *Khalif Khalifs of Beni Oomhae* of *Beni Oomhae*, governed *Sindh* successively, with little or no alteration in the state of affairs, until in the year 133 H. the power over that country passed to the *Khalifs* of the dynasty of *Beni Abbas*. The period of the rule of the deputies of the *Khalifs* of *Beni Oomhae* in *Sindh*, embraces a period of 40 years from its conquest in 93 to 133 H. (A. D. 750.)

Sindh continued to be a dependency of the *Khalifs* of the tribe of *Beni Abbas*, who sent many deputies to govern the country. The only circumstance noted as worthy of observation throughout their rule, is, that one of the governors named *Tumun*, who arrived from *Bagdad*, brought with him many Arabs, residents of *Samrah*, who remained in *Sindh*, and in the course of time, produced the powerful tribe called the *Soomrahs*. In the year H. 416 (A. D. 1025,) *Sooltan Mahmood Ghuzney* sent deputies to the country of *Sindh*, thus terminating the sovereignty of the tribe of *Beni Abbas*, after a period of 283 years. The men of *Soomrah* had for a period of nearly 100 years been powerful *zumindars*; but as they continued to pay tax and tribute, they will be hereafter treated of as rulers.

The deputies of the kings of *Ghuzneiny*, *Ghoor*, and *Delhi*, possessed many of the provinces of *Sindh*, and sent governors to them from the time of *Sooltan Mahmood Ghuzneiny*, until a man named *Soomrah*, of that tribe, during the reign of *Sooltan Abool Rusheed Ghuznein*, was by the *Soomrahs* placed upon the throne, about 446 H. (1054 A. D.) and ruled independently. According to some writers, this tribe were originally Arabs, from a place called *Samrah*; they became *zumindars* in *Sindh*, of some power, and after the departure of the tribe of *Beni Abbas*, their numbers increased; whilst the deputies of the kings of *Guzneiny*, *Ghoor*, and *Delhi* possessed portions of the country, the *Soomrahs* ruled independently.

According to the author of the *Muntukhib-ul-Tuwareek*, *Sooltan Abool Rusheed* being of weak intellect, neglected his dominions, and the men of *Sindh* threw off his allegiance; and in the year 445 H. (1053 A. D.) placed a man of the tribe of *Soomrah*, named *Soomrah*, on the throne. He married the daughter of *Sad*, a *zumindar*, by whom he had *Bahoon-*

kur, who succeeded his father, and died in the year 461 H. (A. D. 1068;) he left a son, *Deodah*, who ruled for 24 years, and died in the year 485 H. (1092 A. D.) After him *Sunkahar* reigned 15 years; *Huneef* 36 years; *Onmur* 46; *Deodah* II. 14 years; *Pustoo* 33; *Kezreh* 16; *Mahomeed Toor* 15; *Kuhereh* (unknown,) *Deodah* III. 14; *Tahee* 24; *Juneesur* 18; *Bahoonkur* II. 15; *Huffeef* 18; *Deodah* IV. 25; *Oomur Soomrah* 35; *Bahoonkur* III. 10; *Humeel* succeeded him; and being a tyrant and oppressor, was the cause of the downfall of the *Soomrah* dynasty. But according to others, this tribe was in *Sindh* altogether 550 years, as *zumindars* and rulers, and their overthrow by the men of *Soomah* was occasioned by the tyrannies of the governor *Humeel*, in the year of the *Hejira* 752 (A. D.

Nasir-ud-deen Kubajeh, his rule and death.

1351,) when their dynasty ceased.* Previous to this

period, *Nasir-ud-deen Kubajeh* who was deputed at the time of *Shums-ud-deen Ooltumsh* of *Delhi*, governor of *Sindh*, about the year 610 H. (A. D. 1213,) declared himself independent. A force under *Jhingiz Khan* invaded the country. *Nasir-ud-deen* not being prepared to oppose them, entrenched himself in the fort of *Mooltan*, where he was besieged for forty days; but the besiegers were obliged to return unsuccessful. Many of the great men of *Khorassan*, *Ghoor*, and *Ghuznein* fleeing from the oppression of *Jinghiz Khan*, came to *Nasir-ud-deen* at *Mooltan*.

In the year 611 H. (1214 A. D.) *Mulck Khan Khuljee* made an incursion upon *Seeostan*. *Nasir-ud-deen* marched to oppose him; the army of *Mulck Khuljee* was defeated, and he himself killed.

In the year 622 H. (1225 A. D.) *Shums-ud-deen* took an army to *Oochch*, to overthrow *Nasir-ud-deen*, who had entrenched himself at *Bukkur*; to this place *Shums-ud-deen* detached *Nizam-ul-Moolk*; but

His death. *Nasir-ud-deen* in attempting to escape from *Bukkur*, took boat, which foundering in a storm, he was drowned.

* The rule of the tribe of *Soomrah* in *Sindh* is far from being clearly made; but in the manuscripts consulted in this sketch, the authors confess their want of authentic record, and *Meer Massoom*, after a very unsatisfactory account, closes it by saying: "If any of my friends know more on this subject, let them publish it; I have said all I can upon the matter." Nor is the author of the *Soofut-al-Kiram* more explicit; (vide his contradictory statements); but it is generally received, that from the date of sending *Nasir-ud-deen* to *Sindh*, until the rule of the *Soomas*, (about 200 years,) *Sindh* was annexed to *Delhi*.

(To be Continued.)

*Geological Report on the Valley of the Spiti, and of the Route from
Kotghur. By Capt, HUTTON, 37th N. I.*

[The paper now published, completes a series of notes of a journey to the Spiti Valley, undertaken on account of the Asiatic Society, by Capt. Hutton, 37th Regt. N. I. It was with those which have already appeared placed at the disposal of the Editor of this Journal by the Committee of Papers. The results of the author's geological observations have induced the adoption of theories, upon which the Editor is only competent to remark in so far as the identification of the opinions of a publisher is concerned with those of any writer, to whom he is enabled to offer a medium of communicating his views to the public.

In the belief that hardly any novel theory could be broached, which would be unproductive of good results, (if not by its intrinsic merits, at any rate by the consequence of the discussion it might excite,) the Editor has great pleasure in giving publicity to this paper, for the views contained in which the author is alone answerable.]



The valley of the Sutledge is that portion of the western Himalya which, as its name implies, forms the tract of country through which the river Sutledge flows.

The term *valley* is however scarcely applicable to it, since it is strictly speaking nothing more than a deep and rugged mountain glen, of more than ordinary sternness and magnificence, often affording from the abrupt rise of its rocky sides, a mere channel for the roaring torrent which winds its irresistible and headlong course along its sheltered bed.

On either side rise high and snow-clad peaks, forming along the river's course two mighty walls, whose dark and furrowed sides proclaim the constant warfare which is waged by frost and heat alternately.

Villages are numerous along the river's course, sometimes placed near the water's level, at others raised high above it on the mountain's side, surrounded by their cultivation cut in steppes, and sheltered by the stern and frowning cliffs which raise their hoary summit far above it.

In the lower part of the valley, commencing from Rampore downwards, to below Kotgurh, vast beds of rolled and water-worn stones are seen accumulated on the river's banks, and rising high above the water's present level. Such deposits evidently owe their origin to the eddies or back waters of some far mightier stream than that exhibited by the Sutledge in the present day, even at its greatest height, and must undoubtedly have been formed by the rush of water attendant on the outburst of some enormous lake or *lakes* in the higher portions of the hills.

These deposits extend in many places along both banks of the river, and appear to have been formerly one solid mass of debris, which as the waters gradually disappeared, have become divided by the current of the stream.

These are for the most part situated at those places where the Sutledge takes a rapid turn, and have been evidently thrown up *within* the elbow by the eddies, or back waters.

On the surface of these broad and flat alluvial deposits, now flourishes an abundant cultivation, consisting of barley, wheat, rice, tobacco, poppies, &c. which being situated high above the river's level, are irrigated by the minor streams, which are furnished from the heights above them.

Higher up the river's course the valley narrows, and forming in many parts a mural cliff on either bank, gives a mere passage to the foaming stream, which rushes with a hoarse and deafening roar over the boulders which obstruct its progress, and dash its waters in muddy waves on high. Some hundred feet above the stream the hills are clothed with dense and stately woods of oaks and various sorts of pines, among which the "Ree," producing the edible seed called by the people "Neoza," is in great abundance. Above the belt of wood, are seen to rise huge rocky spires, along the rugged line of mountains, bare of all vegetation, and crowned by everlasting snows. From these snow-clad heights are furnished numerous streams, which rushing downwards in a sheet of foam, furrow the mountains sides with minor glens, and join the Sutledge as it rolls along below. Now and then the forests cease, and wide grassy tracts succeed, affording pasture to multitudes of goats and sheep; while here and there the whole hill side has slipped away, and left a mural height of precipitous and crumbling rocks, which are annually precipitated into the depths below by the expansive powers of the frost and snow.

The general features presented by the Geology of these hills, may be briefly and summarily comprised in the following observations:—

The main or central range of the Himalya or true snowy mountains, runs in a general direction from East-South-East to West-North-West, sending off branches or spurs in every direction, intersected or divided everywhere by deep and precipitous valleys, whose narrow bed or bottom almost invariably serves as the channel of some mountain torrent or rivulet, whose waters are supplied from the snowy heights above. Where the sides of these valleys are of sufficient elevation to retain the snow throughout the year, these rivulets receive a neverfailing supply of water; but, on the other hand, if the enclosing walls are of moderate or medium elevation, the vallies are often dry for several months together.

The vallies, it must be borne in mind, are not to be attributed, as some have contended, to the gradual wear and tear of the weather, and the streams which now drain through them, but have been formed by the convulsive uprise and disruption of the lofty mountains which form their sides; the glen or valley being thus a mere ravine or trough lying between them, and furnishing often just room sufficient for the passage of an insignificant stream.

The existence of the valley is not therefore to be attributed to the ablations caused by the constant action of the waters; but, on the other hand, the presence of the rivers and streams within them is entirely owing to the configuration of the mountains, which furnishing on the heights vast beds of snow, are ever sending down supplies, which naturally gather in the hollow troughs below, and gradually wind their way to form a junction with some larger stream, which in its turn seeks out the noble rivers of the plains.

It would therefore appear, that the existence of these hill streams is altogether owing to the previous formation of the vallies by the uprise of mountain ridges, the intervention of a glen or *khud* being the natural consequence of disruption in a range, or the sudden alteration of direction of the upheaving power, thus often causing ranges to intersect or to run parallel with each other. Thus the vallies are in no wise the consequence of the unceasing action of the streams, which now find a fitting channel in their depths.

In the present day, these glens usually communicate or open into some other, and the waters gradually escape, but doubtless time has been when their enclosing barriers were continuous, and numerous lakes were formed, until the weight of waters accumulated from the melting of the snows, burst through the rocky walls and so escaped. This is indeed a fact and no wild theory, for the people of different parts of the hills still hold traditions of such events. Dr. Gerard, I think it is, who mentions, that the natives informed him the valley of the Buspa was once closed at the lower extremity, and contained a lake, traces of which may still be seen along the banks of the present stream. A similar lake once occupied the glen in which the town of Soongnum now stands, and thick alluvial deposits containing rounded pebbles may still be seen in some of the higher parts of it; from the lower portion they have been swept away by the out-rush of the waters.

Of this, however, I shall speak again hereafter. The dip of the strata is, as might be expected in such a vast and often confused assemblage of mountains, excessively variable; and although previous travellers have uniformly insisted much on a N.E. dip, it will be quite as often found

to lie in an opposite direction. The prevailing inclination of the strata may therefore be said to be N. E. or S. W. It is, however, remarkable that the latter dip, although perceptible on both sides of the snowy range, is more prevalent on the northern than on the southern side. It has also been pointed out as matter of astonishment, that while one aspect of the mountains presents a gradual and shelving face, rich in soils and forest scenery, the opposite exposure is, on the contrary, found to present a bare and often mural cliff. This, however, is no just cause for astonishment, as the circumstance where it occurs is simply owing to the outcrop of the strata being on the precipitous side, while the dip of the other forms a more shelving slope. But this circumstance is by no means confined to any one direction in particular, for the outcrop of strata is no more prevalent on the northern than on the southern or any other exposure. It may, however, be taken as a general feature in all mountains, that while the dip or inclined position of the strata gives on the one face a shelving surface for the growth of plants, the other face or outcrop must necessarily be rugged and nearly barren, as furnishing by its precipitousness no resting place for soils. In this respect the Himalya does not differ from other mountain ranges. Travellers, however, having no knowledge of geology, and witnessing these facts, have sought to solve the problem by bringing to their aid supposed peculiarities of soil, of aspect, or of climate.

Viewed at a distance from the plains of India, these hills appear to form one long continuous chain or ridge, entirely clothed with everlasting snows, and this line has been designated by way of pre-eminence or distinction, by the name of the "snowy range," or "region of perpetual snows." Arrived within the mountains, and perched aloft upon the summit of some portion of this mighty range, the traveller is surprised to find that what he had been led to consider one continuous field of snow, is nothing more than a vast assemblage of scattered and far distant peaks, approximated apparently by the distance at which they were wont to be viewed into one wide-extending line, and forming component parts of the same snow-clad range.

He is surprised to find the greater portion of that line to be absolutely devoid of snow during several months of the year, except within the deep and sheltered glens, to which the rays of the summer sun can only penetrate for a few short hours during each day, and where frost resumes its sway the moment his beams are withdrawn or intercepted by some towering peak.

Far beyond the ridge which he has hitherto been accustomed to distinguish as the snowy range, he now beholds gigantic and frowning masses clothed in the winter garment, rising often in isolated peaks to

an elevation exceeding that of the main or central chain on which he stands.

Around him, far and wide, he beholds these rugged and awe-inspiring peaks rising pre-eminently grand amidst the sea of mountains by which he is surrounded, and he now first learns that the line of snow he has witnessed from the plains, is the wintery sheet which envelopes these often widely separated masses, but which to the eye of the far-off observer, have become blended by the distance into one long line of continuous snowy peaks.

The central range, and all the hills, with the exception of these loftiest peaks and some deep secluded glens, usually lose the sheet of snows during the period that the monsoon is raging in the plains. It is at this season that the snows send down the greatest supplies of water to the rivers, commencing about the end of May and continuing till September, when the frosts again arrest the dissolving snows, and the mountains once more put on the pure and dazzling robes of winter, and continue thus enveloped in one sheet of snows until the approach of summer again relieves them.

No sooner has the wintery garment disappeared, than a fine rich sward at once springs up, almost as if by magic, so rapid is the vegetation in these high tracts,—affording abundant pasture to the flocks and herds, which then range over them to the height of 15,000 feet above the sea.

This smiling and verdant state of things is, however, unhappily of short duration, appearing like the transient gleam of sunshine that often precedes the fiercest storm, yielding in the space of two short months to the drifting whirlwind and wreaths of snow, that soon enshroud the whole in cold and dreary solitude.

Journeying from Kotgurh, in the lower hills, towards the Spiti valley, the geological formations which came under my observation from that station to the frontiers of Tartary, were exclusively of the primary class.

Commencing at Kotgurh, and crossing the brow of the hill above Kaypoo, we find strata of *mica* and *hornblende schists*, jutting up through the surface, interspersed with veins and nodules of *quartz*.

These veins are often found to contain *iron* disseminated in small thin scales resembling *mica*, and in such cases the *quartz* is generally in a state of decomposition. This ore pays no duty to Government, and the mines, if indeed such they can be called, are seldom worked, being so unproductive, that out of 14 lbs. weight of the rough ore only 2 lbs. of iron, and that impure, can be procured.

Veins and masses of coarse primitive *calc spar* or *carbonate of lime* are also seen to accompany the *mica slate*. These rocks continue, with an

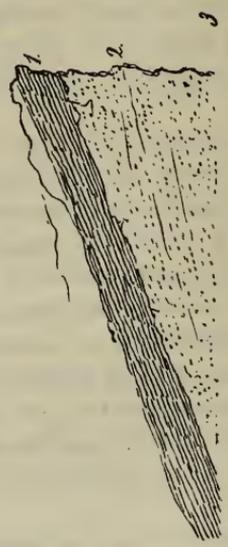
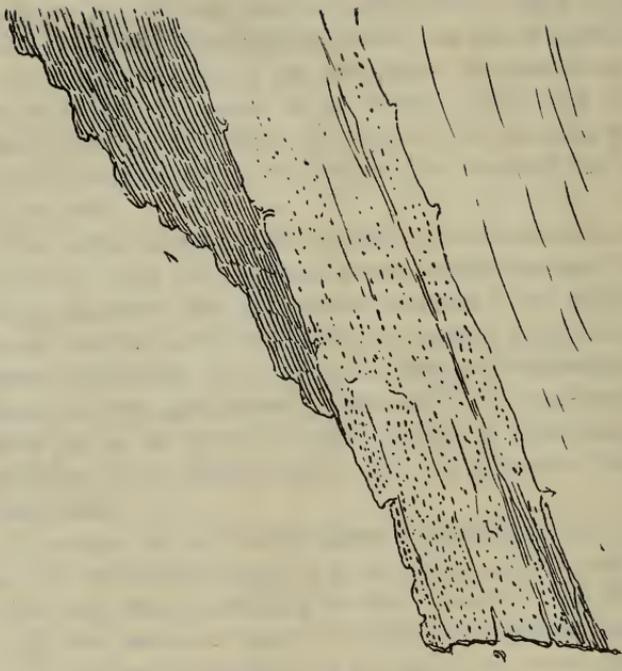


Fig. 1

occasional bed of *porphyritic gneiss*, until we reach Rampore, half a mile beyond which a fine white *granular quartz* occurs, underlying *mica slate*.

These strata dip strongly to the N. E., and are seen on either side of the river, by which they appear to have been transversely divided, the lower end dipping down on the right bank, while the upper portion forms a high mountain on the left.

I say these strata have been *apparently* divided by the Sutledge, which now flows through them, because such *in reality* has not been the case; but the bed of the river lying through them, is entirely attributable to the disruption of the strata at this point having formed a fitting channel for the waters to escape through to the plains.

(See plate)—FIG. 1.

1. 1. *Mica Slate.* 2. 2. *Granular Quartz.* 3. *Bed of Sutledge.*

The surface of this *quartz rock* takes a yellowish rusty hue when exposed to the weather, but when freshly fractured, it is of a pure white, somewhat resembling Carrara marble in appearance, but of a coarser texture.

Onwards from Rampore, the *mica schist* is seen in several varieties, sometimes appearing to be composed entirely of *mica*, at others containing a predominance of *quartz*; in these cases the strata are either soft and crumbling, from the *mica* scaling off, or very hard and flinty, from the quantity of *quartz*.

Silvery mica passing into *chlorite schist* is abundant near Goura, and from its soapy and decomposing nature, the whole rock has in many places slipt away altogether, leaving a constantly decomposing cliff, from which in wet weather large masses are constantly falling.

Further on, the *mica* is seen to contain numerous small crystals of *hornblende*, which cause it to pass gradually into *hornblende schists*. *Garnets* of small size occur occasionally imbedded in the *mica*, which also contains masses of *white quartz*, in which beautiful crystals of *cyanite* are interspersed, varying in shade from pale sea green to bright blue.

The characteristic rocks, however, from Kotgurh to Sarahun are *mica* and *hornblende slates*, frequently alternating with each other, and imbedding blocks of *porphyritic gneiss* and *white quartz*.

From Sarahun the *gneiss* begins to shew itself as the prevailing rock, and occurs both common, red, and *porphyritic*;—*mica slate* and *hornblende* are also frequent, and when they come in contact, the *mica* often becomes jet black.

A few miles from Sarahun, on the right bank of the river, an interesting appearance presents itself in the disposition of the strata. The dip which up to this point has been pretty uniformly to the N. E., now gradually rises, and preserving for a short distance a nearly horizontal position, at last lifts itself abruptly, and dips back again to the S. W. at the same angle of about 45°.

From this disposition of the strata it becomes evident, that they have been lifted or upheaved at both ends, from the horizontal position they once had, by some volcanic force. The lowest strata exposed to view at this spot are on the right bank of the river, nearly even with the water, and form a complete arch immediately under those strata which dip to the N. E. I annex a slight sketch made on the spot, which will serve to show the position of the rocks, better than a description. (*See plate*)—FIG. 2.

Beyond this, as we approach Traada, a fine white *granite* is observed, containing large scales or crystals of *mica*, and farther on still, about Nachar, *white felspar* becomes abundant, imbedding the same *mica* crystals, and forming the first division of the *granite* of some geological writers. *Quartz* also occasionally entered into its composition and formed true *granite*, with which were found *hornblende* and *mica slates*, *porphyritic* and *granitic gneiss*. In some instances where the *hornblende* and *granite* were in contact, the *mica* of the latter rock assumed a black and glossy appearance, producing a variety of *granite* of some beauty.

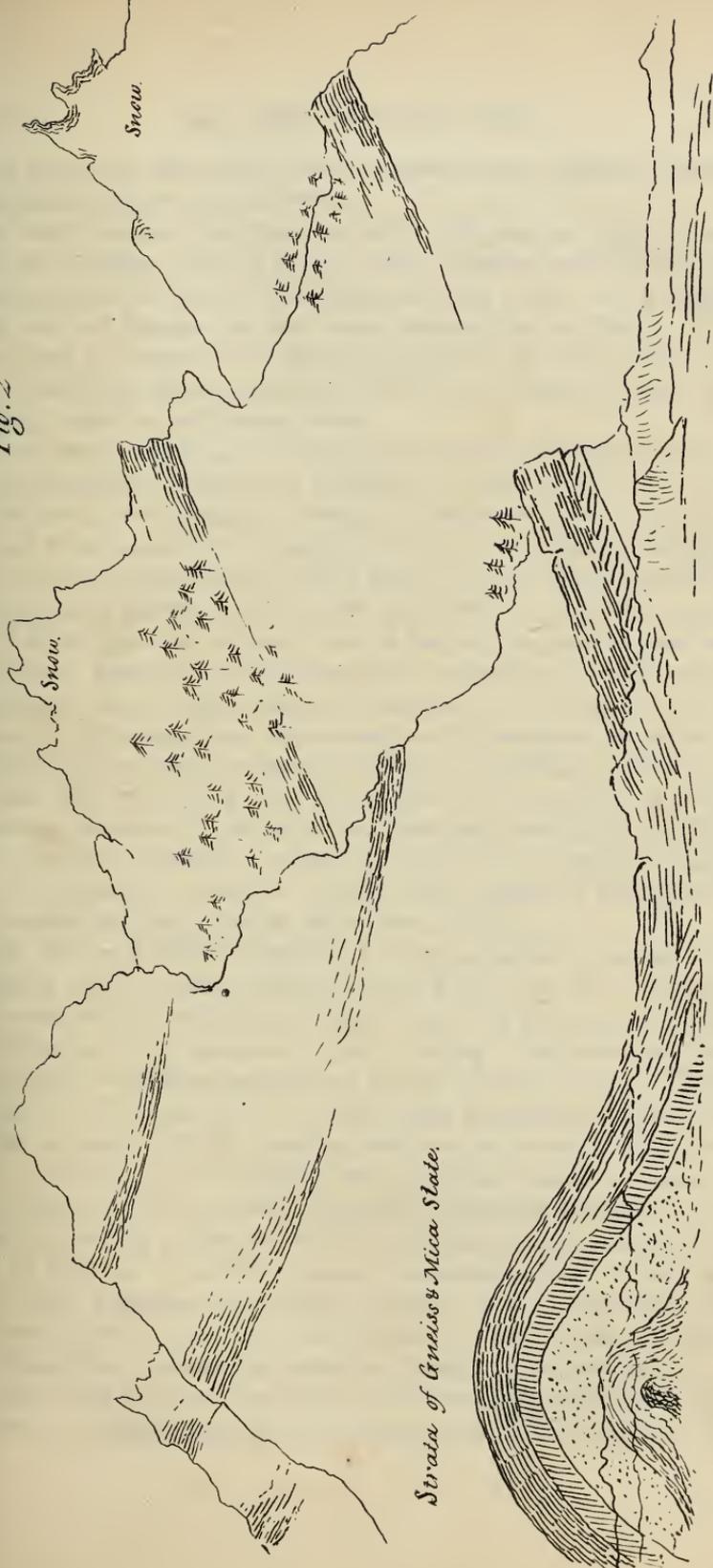
Proceeding from Nachar, the road passes over formations similar to those already mentioned, and a few miles lead down to the Sutledge, which is crossed by a good broad *Sangho*. At this point the rocks rise abruptly in huge masses on either side, confining the river to narrower limits, and affording a mere passage for its waters.

These rocks are of *gneiss*, and the stratification which previously had often been indistinctly discernible, now ceased altogether, and the beds presented a shattered and amorphous mass,—a circumstance by no means of rare occurrence among this class of rocks.

From the *sangho* to Chergong the road still continues along the bank of the river over beds of boulders and broken rocks of every size, consisting of *granite*, *gneiss*, *mica*, and *hornblende slates*. Here too *cyanite* again occurred in *quartz*, and crystals of *crysoberyl* (?) in *granite*.

From Chergong to Meeroo the strata of *gneiss* are often laid bare by the descent of streams from the snows above, and the dip is seen falling to the N. E. at about the usual angle of 45°. Beyond this place occur thick beds of *mica slate*, containing *garnets* in profusion, and often, from the decomposition of the rock, the whole road is strewed with *garnets* of various sizes. Beneath this bed occurs one of *white quartz rock*, which is seen rising from the edge of the Sutledge to about 3,000 feet in thickness.

Fig: 2



Straits of Anisot & Mica State.

Sultedue

Near Chini, the *mica slate* contains occasional small crystals of *cyanite*, and sometimes passes into *chlorite slate*.

A short distance from Chini, the whole hill side has slipped down into the Sutledge, from the action of frost and snow, and the cliff now towers up from the banks of the river, presenting a sheer and perpendicular wall of between six and seven thousand feet in height. This vast mass is composed throughout of *gneiss*, and the road, which is a mere scaffolding, passes along the face of it, at 4,000 feet above the Sutledge, which is seen foaming below.

From this to the village of Leepee, the formation is pretty nearly the same, consisting of *granite*, *gneiss*, *hornblende*, *mica*, and *quartz*.

The *granite* about Punggee, Rarung, and Junggee, contains a large proportion of *hornblende*, and at Rarung it is also seen to assume a brick red colour, often traversed with veins of *quartz*, both red, amber, and white. The red *granite* appears only in masses imbedded in a yellowish variety, which is the true rock, and which towards Leepee gives place to *gneiss* and *mica slate*. Above the last mentioned rock commences the first bed of *argillaceous slates*, which continues interstratified with *greywacke schists* to the top of Roonung Pass. The alternations of these strata are frequent, sometimes the one and sometimes the other rock prevailing in thickness.

These beds are evidently the first indication of the transition, or lowest secondary formation of geologists, and extending across or through the Roonung Pass, downwards to Soongnum, they are seen to support strata of compact *greywacke*, and beds of *quartzose* rock, apparently analogous to and holding the place of the *old red sandstone* of Europe.

The town of Soongnum stands in a valley immediately between the Roonung Pass in its front and the Hungrung Pass in its rear. In front, the range of hills which form the right side of the Rushkoolung valley are composed of an *argillaceous* series, consisting of *clay stones* and *greywacke slates*, of different textures and degrees of induration, and dipping to the S.W. The strata in the rear of the town, forming the left bank, dip, on the contrary, to the N. E. and are composed of *greywacke slates*, compact *greywacke*, *old red sandstone*, and a superior stratum of *limestone* and *greywacke*. These towards the summit of the range gradually change their dip, and rise up again to the S.W., the whole being surmounted by a bed of dark blue secondary *limestone*, containing portions of *clay* and *silex*. This formation extends along both sides of the Rushkoolung valley, even to the Manerung Pass above Manes in Spiti, a distance of about seventeen miles. About seven miles from Soongnum, copper veins occur in their strata of white *quartz* rock, and *veinous quartz*, lying occasionally between, or ramifying through, the *greywacke* and *old red sandstone*. The

last mentioned rock varies much in colour and in texture, the lowest stratum being *white*, and scarcely distinguishable from *quartz* rock, but changing gradually to a faint tinge of *pink*, becoming deeper as it passes upwards, until its colour is of a dull *purplish* hue.

These strata are sometimes separated by a very thin layer of soft whitish *marl*. The crest of the Hungrung Pass is 14,837 feet above the level of the sea, and is composed of dark blue *limestone*. The range on which this Pass is situated divides Kunawur from Hungrung,—a district inhabited by Tartars, who are subject to Bussaher.

Descending from the Pass to the village of Hungo, the road passes over numerous alternations of blue *limestone* and *greywacke slates*, resting upon white *quartz*, which lower down gradually passes into a greenish variety of the same rock.

These strata all dip to the S.W., and are probably an outcrop of those which run in a N.E. direction from behind Soongnum, and thus shew the effects of what may be termed a *double upheavement*, or lifting of the same strata at two different points. The lofty *granitic* peaks which tower up to the right of the Pass, at once shew that they have been instrumental in forming the S.W. dip, and it is more than probable that the same rock might be discovered also protruding through the strata on the opposite exposure.

The following *partly* imaginary section of Hungrung, may serve to explain my meaning:—

(See plate)—FIG. 3.

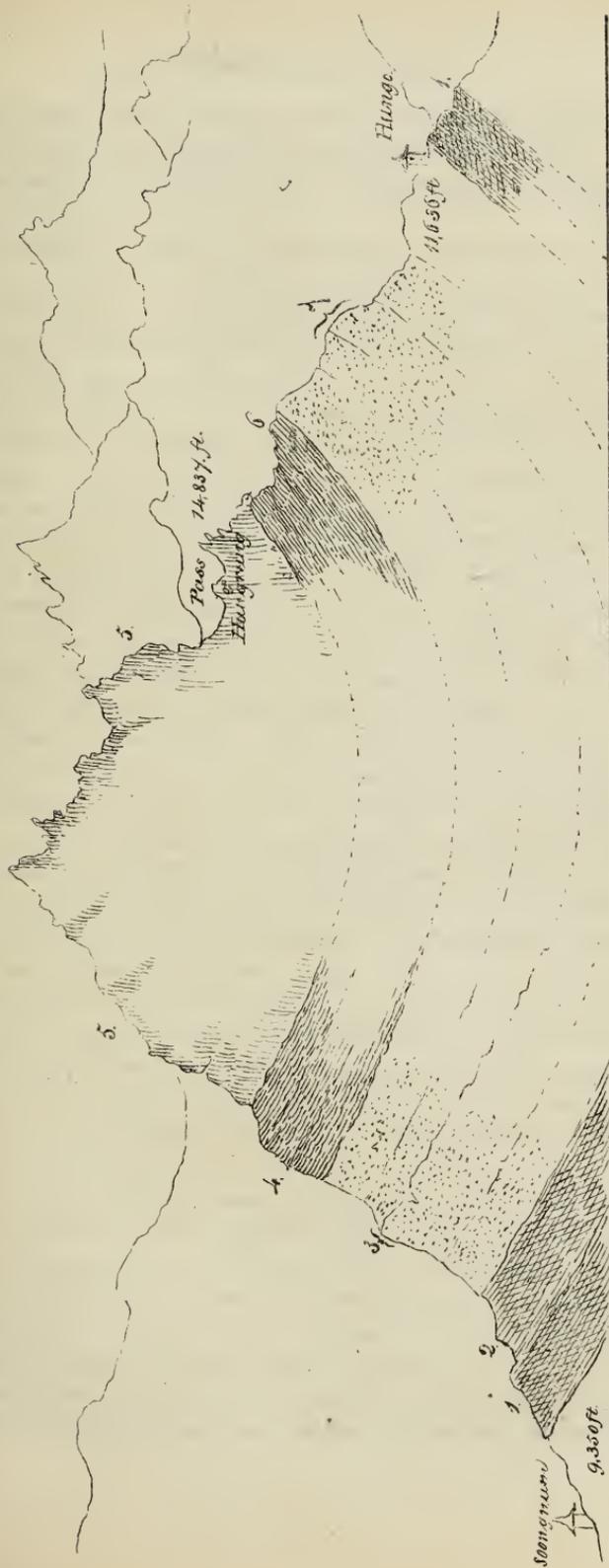
Supposed Section of Hungrung Mountain.

Strata of *greywacke slates* are met with for a few miles after leaving Hungo; but they disappear as we approach Leo, or rather, from the great descent of the road, they are left far above, while the base of the mountain is found to be a dark coloured *gneiss*, traversed and intersected in every direction by veins of white *quartz*.

Leo stands in a kind of basin, surrounded on all sides by lofty hills of *granite* and the same dark *gneiss*; but the lower parts of them are overlaid by strata of the secondary series, consisting chiefly of *greywacke* and *shales*. On the sides of the surrounding hills exist strong indications of the former presence of a lake, in the lines of water-worn stones and pebbles that now rest many hundred feet above the river Lee.

These appearances were long since pointed out by Dr. Gerard, who though knowing nothing of geology, was at once forcibly struck with

Fig. 3.



Tartary

1. Greywacke slate. 2. Conyoad Greywacke. 3. Old Red Sandstone

4. Strata of Greywacke and limestone 5. Blue limestone.

6. Strata of limestone and Greywacke. Quartz Rock. white and Green

Kunawar

the conviction, that nothing but the former presence of deep waters could account for the phenomena here so plainly exposed to view.

In his conjectures on this head, that enterprising and unwearied traveller was undoubtedly correct.

In the bed of the Lee, where it is crossed by a wooden *sangho*, a thick bed of white *quartz rock* is seen dipping to the S.W., and as we mount the hill in the direction of Chungo, beds of *boulders*, and disjointed masses of *granite*, *gneiss*, and *mica slates* hurled from above, are passed over, now in many places overlying the secondary *shales*.

At the village of Chungo, which is the last on the left bank of the Lee, under the government of Bussaher, the most decided indications of the former presence of a deep lake again occur. To the eastward of the level patch on which the village and its cultivation stands, rise three lofty and rugged mountains, whose shattered sides present sections of the same strata as those noticed at Leeo: namely, deep beds of dark *gneiss* and *mica slates* intersected by *granitic* and *quartz* veins of various thickness; these strata dip down towards the west, and as they approach the village, are lost beneath the vast accumulations of alluvial soils, which here, as at Leeo, mark the former presence of deep and tranquil waters.

To the southward these deposits consist almost entirely of thick beds of *clays*, *sands*, and *boulders* of every size, rising high above the level of the village; while to the NNE. are again presented the same alluvial deposits of a greater thickness, and accompanied in addition by a deep and extensive bed of a pure white and friable *gypsum*. This bed is perhaps a most valuable discovery in a geological point of view, as tending to show the nature of the waters from which it was precipitated. This thick *gypseous* bed is overlaid by the *sands*, *clays*, and *boulders*, which have already been noticed. At the fort of Skialkur, on the opposite or right bank of the river, about $3\frac{1}{2}$ miles from the village of Chungo, this *gypsum* is likewise seen overlying the transition series of alternating *shales* and *sandstones*.

These deposits are now at the height of 2,000 to 2,500 feet above the present level of the river's course, or at an elevation of 12,000 to 12,500 feet above the level of the sea.

The three mountain peaks of *gneiss*, which rise up to the eastward of Chungo, are divided from each other by narrow glens, through which streams flow down to join the sea, between which and the base of these mountains, the whole alluvial deposits have been swept away, and the present cultivated plain of Chungo is therefore situated far below the surrounding alluvium, which rises like walls on either side of it.

As we proceed from Chungo towards Spiti, the road lies at first over the alluvial accumulations above-mentioned, for two or three miles, when from

the abrupt nature of the primary rocks that are hence met with, they cease to exist, except far below where a wide and shelving plain lies along the river's side, and which is entirely composed of them. From the point where the road leaves them behind, for a distance of six miles, the strata are again of *mica*, *slate*, and *gneiss*, varied with the same carious veins of *granite* and *quartz* as those of Leeo and Chungo. At this point the mountains are separated by a rapid river called the Paratee, which runs down from Chinese Tartary and joins the Spiti near Skialkur. Here the primary series may be said to disappear, and the Spiti road crossing the Paratee by a natural bridge of stone, which is formed of several large masses of *gneiss* fallen from above, and wedged firmly together over the stream, brings the traveller at once upon the secondary class. The lowest strata are therefore just perceptible where the waters cut their way through, and we thus catch a glimpse of the *gneiss* of the opposite bank, above which occurs a *talcose schist*, white *quartz* rock, and *clay slate*, dipping to the S. W. Above these are alluvial deposits similar to those of Chungo, and extending for a mile or two inland from the river, forming a flattened plain, on which stands "Kewrick," the first village of Chinese Tartary. Here again a portion of the deposit has been swept away by a descending stream, exactly as at Chungo. It is worthy of remark, that all these alluvial deposits are the deepest and most extensive when the surrounding hills have the most gradual slope, and where they retire so as to form recesses; while on the contrary, as might be expected, where the dip of the strata is rapid or acute, scarcely any trace is left of the former existence of a lake, because the deposit has been swept away by the outrush of the escaping waters.

These accumulations are likewise the most extensive at the lower end of the Spiti valley, where alone the *gypsum* is to be found. To this fact I would beg to call special attention, as it will be hereafter alluded to, and prove of some importance in the explanation of these *diluvial* and *alluvial* deposits.

From Kewrick the road runs over hills, which are entirely of the secondary class, being frequent alternations of the same rocks, as *greywacke* and *claystones*, *limestones*, and *sandstones*, and in one or two instances a trap of *greenstone* is also seen, both stratified and amorphous.

From Kewrick to the village of Larree, which is the first inhabited place in Spiti, we travel first for four miles over the edges of strata of *clay slates* and accumulations of *debris*. From the decomposing state of these strata, caused the effects of weather and a portion of *alum*, which causes them to scale off in soft flakes, the whole of the hills on either side of the Spiti river have a charred and blackened aspect, which combined with their arid and barren nature, gives a sad and melancholy appearance to the country, by no means cheering to the weary traveller.

The dip of the strata is now uniformly to the S. W., and generally at an angle of 45° , though here and there they rise abruptly to a nearly vertical position, denoting an excess of the upheaving forces from below. As we approach Larree after crossing the Gew river, the bed of which is of *greywacke slate*, we come upon a thick stratum of pure white *quartz* rock, which appears to be a continuation of the same rock which was seen at Leeo on the opposite side of the range; in contact with this, and immediately resting upon it, is another bed of siliceous rock, which passes gradually into thin strata of flinty slate. Upon this rests *clay slate*, which then alternates frequently with *greywacke* and *sandstones*. Further on we perceive masses of *gypseous breccia* formed of angular fragments of *argillaceous schists*, encrusted or cemented together by *gypsum*. This rock, if it be entitled to the name, owes its origin to the same waters which deposited the *gypsum* beds of Chungo and Skialkur; it is found overlying the edges of the true strata from which it has been formed, and occurs in rude and mis-shapen masses. To this *breccia* I would also call attention, as serving to shew a change in the waters of the lake, or at all events a decrease in the proportion of their *saline* properties. Farther on still, and nearly opposite the village of Somra, a stratum of trap is seen to occur between *shales* above and *sandstone* below; it is conformable to the true strata with which it is clearly interstratified, not causing any dislocation of the series. Beyond Larree, however, the same rock occurs again, in one place interstratified with *greywacke* and dark *blue limestone*, at another running up vertically in an *amorphous* mass through the strata, which it first dislocates and then overlies. In this case, the strata on either side of the Spiti dip to the S. W., while the rocks through which the trap has more immediately passed or been injected, are thrown boldly and abruptly from the usual course to the westward. The strata on the opposite side of the river are at the same time raised from the angle of 45° nearly to a horizontal position, and after some twisting of the strata, again with apparent difficulty regain their wonted S. W. dip. Here it is evident that the trap in question has been the molten vein whose struggles to burst upwards through the superincumbent weight of strata has been the agent which has thrown them into their present inclined positions, and in its upward course has first become partially interstratified with those which possessed the least induration or means of resistance, and then finally, as it burst through all obstacles, flowed over them in a broad sheet of molten matter, which as it cooled assumed the present solid and compact texture.

Of such having been the fact, we observe proof in the vein of vertical trap acting as a support, or upright as it were, from which the strata now incline and dip downwards.

As, however, trap is known to possess, "in a general sense, the universal common character of being unstratified, and posterior to the rocks with which it is connected,"* it becomes necessary in here stating, that it is conformable to and interstratified with those of the secondary series, to offer a few theoretical remarks on the probable means by which this partial stratification has been produced.

The interstratification of this rock, where it occurs, is of very inconsiderable extent, when compared with that of those with which it is associated, possessing by no means the wide and almost universal range of the primary and secondary series, but being on the contrary, "in a great measure limited to particular spots, more or less extensive, and to be, if separately considered, partial and independent productions."†

Let us then suppose that these secondary strata were once (which in fact they really were) horizontal deposits from the waters, which it is generally supposed were instrumental to the formation of the series to which they belong.

We shall thus perceive them to have been deep *unconsolidated* masses of sands, covered by muddy layers, which we now term *shales*. The struggles of the molten matter to procure access to the surface would, from the *heat* and *pressure* engendered by its upward course, have the effect of vitrifying and indurating the sands through which it forced a passage, and of converting them into strata of *sandstone*, while the *shale* or muddy deposit next in succession being lighter and less massive than the stream of trap, would probably rise and yield a passage between itself and the *sandstone* for the molten matter to form a stratum, somewhat in the same manner as oil would give place to a stream of water if injected through a tube or aperture below it.

The muddy deposit, however, being hardened by contact with the *lava* and by the general pressure of the uprising strata, would burst as the *sandstone* had already done, and yield a passage to the trap, which flowed through and overspread them at the surface.

Should it be contended that the outburst of a stream of *lava* such as that I have described the trap to have been, would have expended itself in a shower of ashes or cinders, rather than have assumed the stratiform structure it now exhibits, I would remind the reader that the secondary rocks are supposed to have been deposited in the bosom of a tranquil water, and that that water formed either extensive lakes or portions of the sea.

* † McCulloch's Geology.

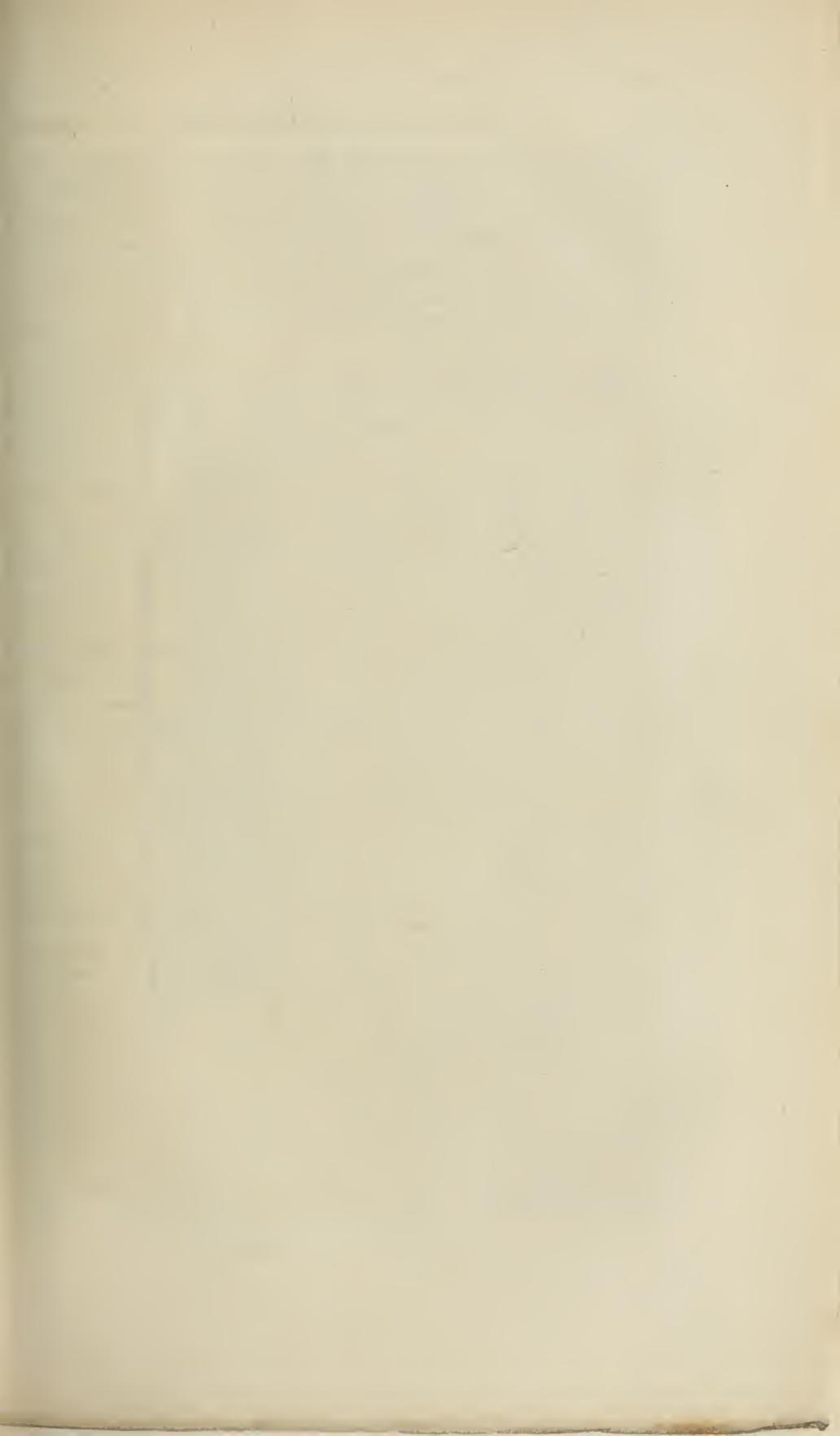
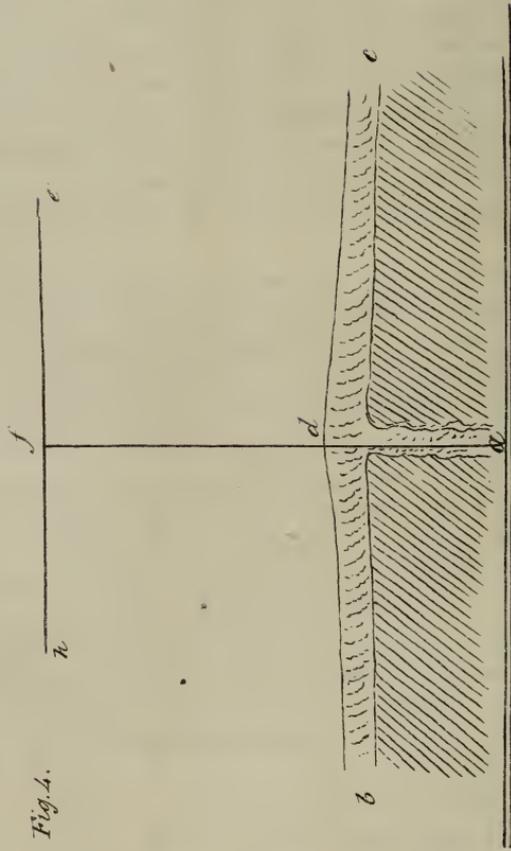


Fig. 4.



The upheaving *lava* current had therefore not only the weight of the superimposed deposits, but the pressure likewise of an enormous volume of water. It becomes more than probable, therefore, that this aqueous pressure would effectually check the tendency to produce cinders and ashes, and thus as the stream poured upwards through the deposits and came in contact with the waters, the molten matter would extend itself along the bottom of the lake, and thus overlies the secondary strata, as in the present instance.

For farther information on this subject, I would refer the reader to *De la Beche's Geological Manual*, where will be found some very just and apposite remarks on the point in question.

"It being by no means probable," he says, "that the density of sea water beneath any depth which we can reasonably assign to the ocean, would be such as to render it of greater specific gravity than liquid *lava* ejected from a volcanic rent, situated beneath the sea, it would follow that so long as the *lava* continued in a state of fusion, it would arrange itself horizontally beneath the fluid of inferior specific gravity." The question then arises, how long a body of *lava* in fusion would remain fluid beneath the waters of the sea? The particles of water in contact with the incandescent *lava* would become greatly heated, and consequently, from their decreased specific gravity, would immediately rise: their places being supplied from above by particles of greater density and less temperature. Thus a cooling process would be established on the upper surface of the *lava*, rendering it solid.

Now as the particles of fluid *lava* would be prevented from moving upwards by the solid matter above, pressed down by its own gravity and the superincumbent water, they would escape laterally, where not only the cooling process would be less rapid, from the well-known difficulty of heated water moving otherwise than perpendicularly upwards, but where also the power of the fluid *lava* to escape resistance would be greatest. (See plate)—FIG. 4. Let *a* be a volcanic rent, through which liquid *lava* is propelled upwards in the direction *d f*: the *lava* being of greater specific gravity than the water *b h e c* it would tend to arrange itself horizontally in the directions *d b d c*. The surface *b d c* having become solid, the *lava* would escape from the sides *b* and *c*, spreading in a sheet or tabular mass around; and this effect would continue so long as the propelling power at *a* was sufficient to overcome the resistance opposed to the progress of the *lava*, or until the termination of the eruption, if that should first happen."*

This clearly stated theoretic problem may now be successfully reduced to practice, and will correctly and exactly apply to the phenomenon under

* *De la Beche's Geological Manual*, p. 125.

consideration. The truth therefore of *De la Beche's* proposition will be at once established.

(*See plate*)—FIG. 5. Let us suppose these now inclined strata to be in their original horizontal position, and 2 and 3 forming beds of unconsolidated sandy and muddy deposits beneath the waters of the lake or sea *a c e h*.

Then *a a a a*, &c. is a vein of *lava* or molten *trap*, which in its endeavours to find vent, upraises and bursts through the solid primary series denoted at 1.

By the heat and pressure thus engendered, the *lava* indurates the sand at 2, and converting it into *sandstone*, breaks through it also, and is thus brought in contact with the muddy deposits represented at 3. This deposit being of a specific gravity inferior to the stream of *lava*, is naturally displaced and forced to contract and furnish room for a stratum of *trap* at *a a a*.

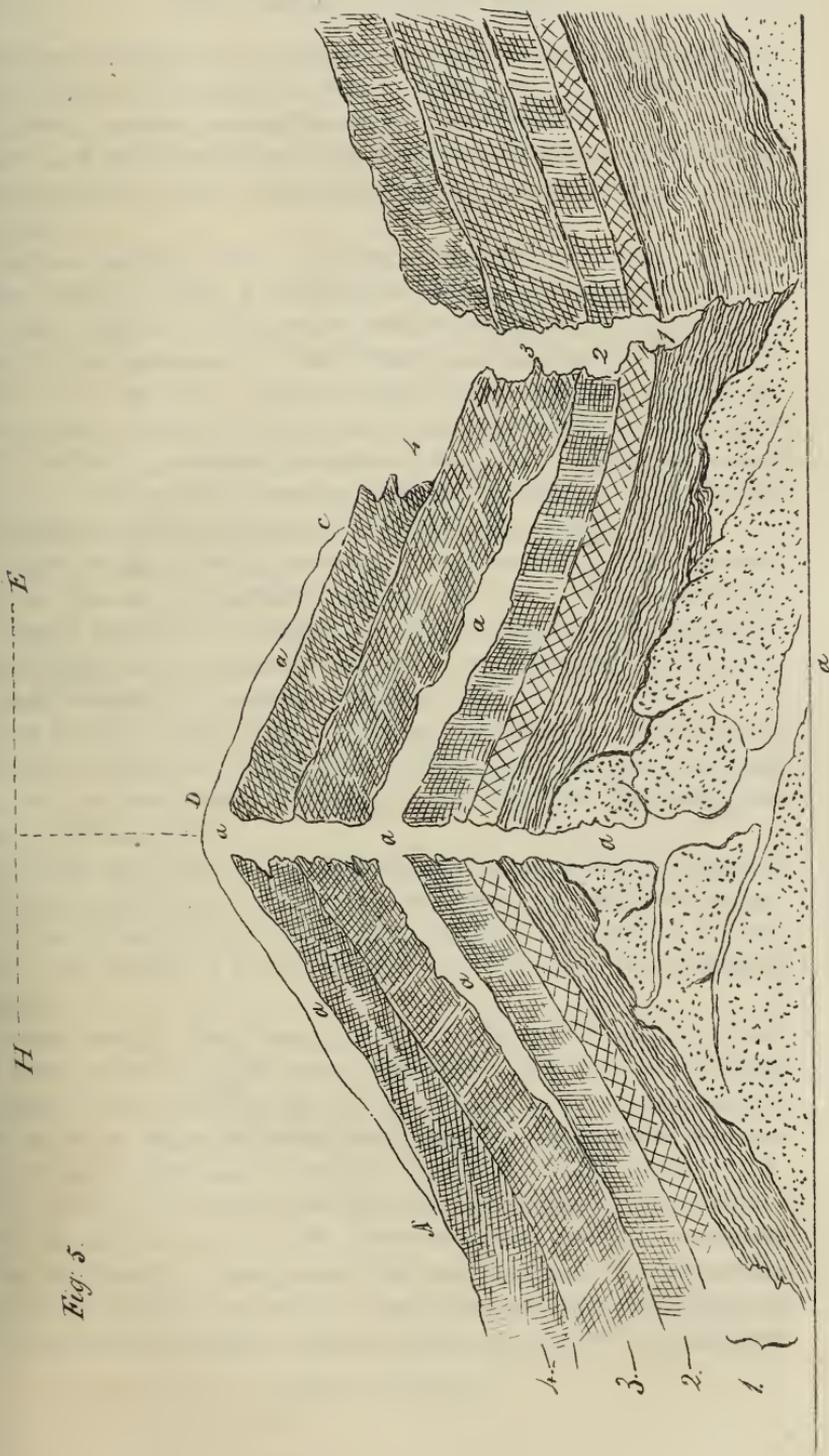
The heat and pressure, however, continuing, speedily and almost on the instant, converts the muddy deposit into *shale* or *slate clay*. And the *lava* current bursting through it and the superior stratum of *limestone*, comes at length to the surface, and in contact with the waters. Here then commences the facts detailed theoretically by *De la Beche*, as already quoted, and the stratum of *trap* spread over the surface of the now inclined and consolidated strata of deposits; while the waters of the lake or sea being displaced by the upheavement, effected an escape through the various channels afforded by the disruption of the uprising strata.

It may possibly be objected that the occurrence of a compact stratum of *limestone* above the *shale*, and in contact with the *trap*, will at once invalidate the theory here proposed, from its being a known fact, that when heat is applied to *calcareous* matter, the *carbonic acid* is driven off, and the remaining *lime* rendered infusible.

I shall endeavour therefore to obviate such an objection, by quoting and establishing a theory long since propounded by Dr. Hutton, which at the time of its proposition was looked upon as an ingenious, but perfectly untenable, doctrine.

“He had asserted that *calcareous* rocks, like every other, had been subjected to the action of heat. But it was well known that when heat was applied to this class of rocks the *carbonic acid* was driven off in the shape of *gas*, and the remaining *quicklime* become infusible. Dr. Hutton indeed had answered this by suggesting, that the pressure of the superincumbent ocean was sufficient to confine the *carbonic acid*, and to cause it to act as a flux on the *quicklime*. His theory, however ingenious, was so abundantly gratuitous, that it by no means satisfied even his own disciples. After Dr. Hutton's death, Sir James Hall ascertained by numerous experi-

Fig. 5.



ments that *carbonate of lime* might readily be fused when exposed to heat, if it were at the same time under a pressure not greater than Dr. Hutton's theory required, or about a mile and a half of sea."*

Now it is easily perceptible, that the result of these experiments is in exact accordance with the effects which the theory here proposed would give rise to.

We have supposed that the present solid strata were once soft and aqueous deposits beneath a vast depth of waters; we thus perceive a beautiful and conclusive illustration of Dr. Hutton's theory in the fact, that when the *heat* generated by the pressure and condensation from below acted on the superior *calcareous* stratum at 4, that very stratum was then actually subject to the pressure of the superincumbent waters at *A C E H*, which by preventing the escape of the *carbonic acid gas*, and causing it to act as a flux upon the *quicklime*, converted the stratum, as Dr. Hutton had suggested, into the compact state which it now exhibits.

As theoretic speculations, however just, and however much in accordance with the phenomena observable, they may prove to be, may nevertheless be deemed misplaced in a paper of this kind, I shall leave the subject for a more fitting occasion, and now pass on to a consideration of the remaining facts exhibited in the strata of the Spiti valley.

From Kewrick to the village of Leedung, the strata may be said to be of the same descriptions, namely, *talcose schist*, *quartz rock*, *greywacke slates*, *clay slates*, *sandstone shales* and *trap*, all except the last alternating frequently with each other.

A precise description of each rock belongs rather to the department of the mineralogists than to that of the geologists, and I therefore content myself with pointing out the series rather than individual species, in order that I may hasten on to the theory which the appearances presented suggest.

Passing therefore from Larree via Pokh to the fort of Dunkur, we find the strata to consist of the same alternations of rocks as those already mentioned; but at this latter spot the appearances denote a struggle for the direction of the dip, which merits some attention. The range of hills running along the right bank of the Spiti opposite to Dunkur have a N. W. by W., and S. E. and by E. direction, and at four miles below the fort the strata dip uniformly to the S. W. From that point, however, or near the village of Maness, it would seem that an upheavement had taken place through or along the centre of the range, causing the superior strata to assume a pent or roof-like appearance, throwing them on one side with

* Journal of Science, p. 4.

an acute dip to the N. E., while the opposite side preserved the S. W. direction at a less acute angle. In such cases where a section is obtained by a water course, the strata forming the "heart or interior of the range are seen twisted in every grotesque direction. These strata consist of thick beds of *argillaceous schists* and *sandstones*, and what strikes one as singular in their disposition is, that the upheavement has had the effect of throwing the outcrop of the *sandstone*, or superior stratum dipping to the S.W., higher than the portion which falls to the N.E. Thus the joining of the strata is not at the summit of the range, but the rocks of the N.E. side are seen lying against those of the opposite direction, whose upper edge, or outcrop, juts out above them. (*See plate*)—FIG. 6.

Passing on from Dunkur we come to the Lingtee river, which joins the Spiti.

Here again a double upheavement of the strata appears to have taken place, which will be better understood by a reference to the annexed sketch, and which may serve as an example in all similar cases. (*See plate*)—FIG. 7.

On the right bank of the Spiti, the strata fall acutely to the river in a N. E. direction, as already pointed out, while on the left bank, although they at first dip to the same direction, they are seen first gradually to rise to a nearly horizontal position, and then to dip backwards again to the S. W. This occurs on the left bank of the Spiti and the right bank of the Lingtee at the point where the two rivers meet.

On the left of the Lingtee the strata first dip to the N. E., and then after many extraordinary twists and contortions, yield, as it were reluctantly, to the contrary dip, which turns them back to their old and proper direction of S.W.

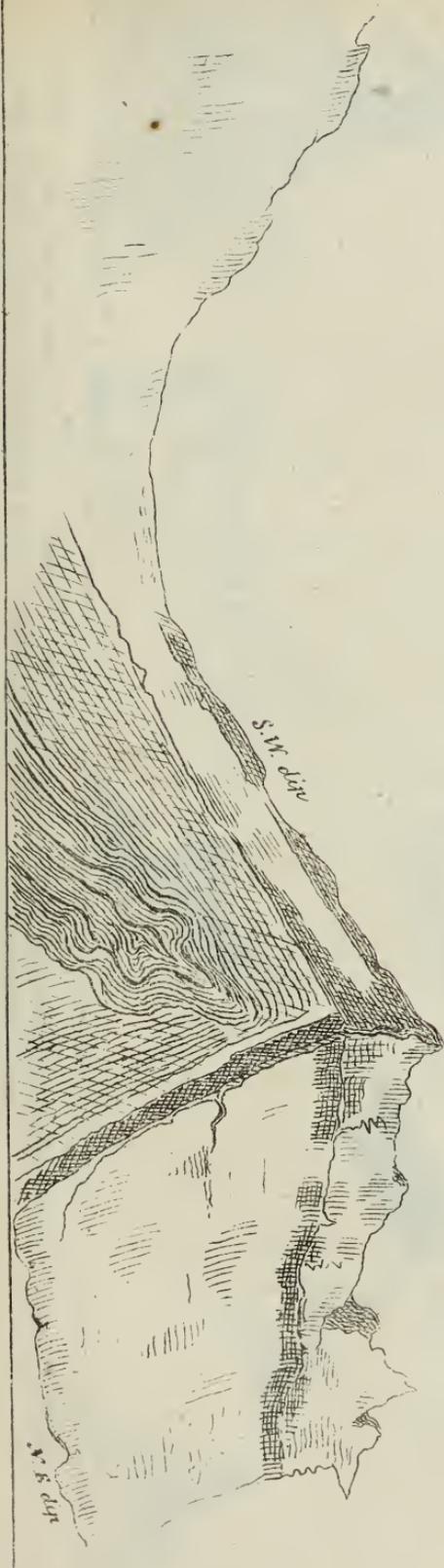
In all these cases it will be found that the rocks are rent asunder, and the disruption now forms deep *khuds* or glens, through which at present a stream or river descends.

About six miles from Dunkur stands the village of Leedung, where the strata consist, in an ascending order, of *greywacke* and *clay slates*, dark blue *limestone shales*, *limestone* and *sandstone*, repeated in many alternations.

Leedung stands at the height of 12,037 feet above the sea, and the strata just mentioned rise precipitously above it to the height of from 3,000 to 6,000 feet more, or to 15,000 and 18,000 feet above the sea. The highest stratum here appeared to be of *sandstone*, resting upon *shale*.

To the N.E. of this village rises a Pass, which has an elevation of 15,247 feet, and here along its summit, where the streams which descend

Fig. 6.



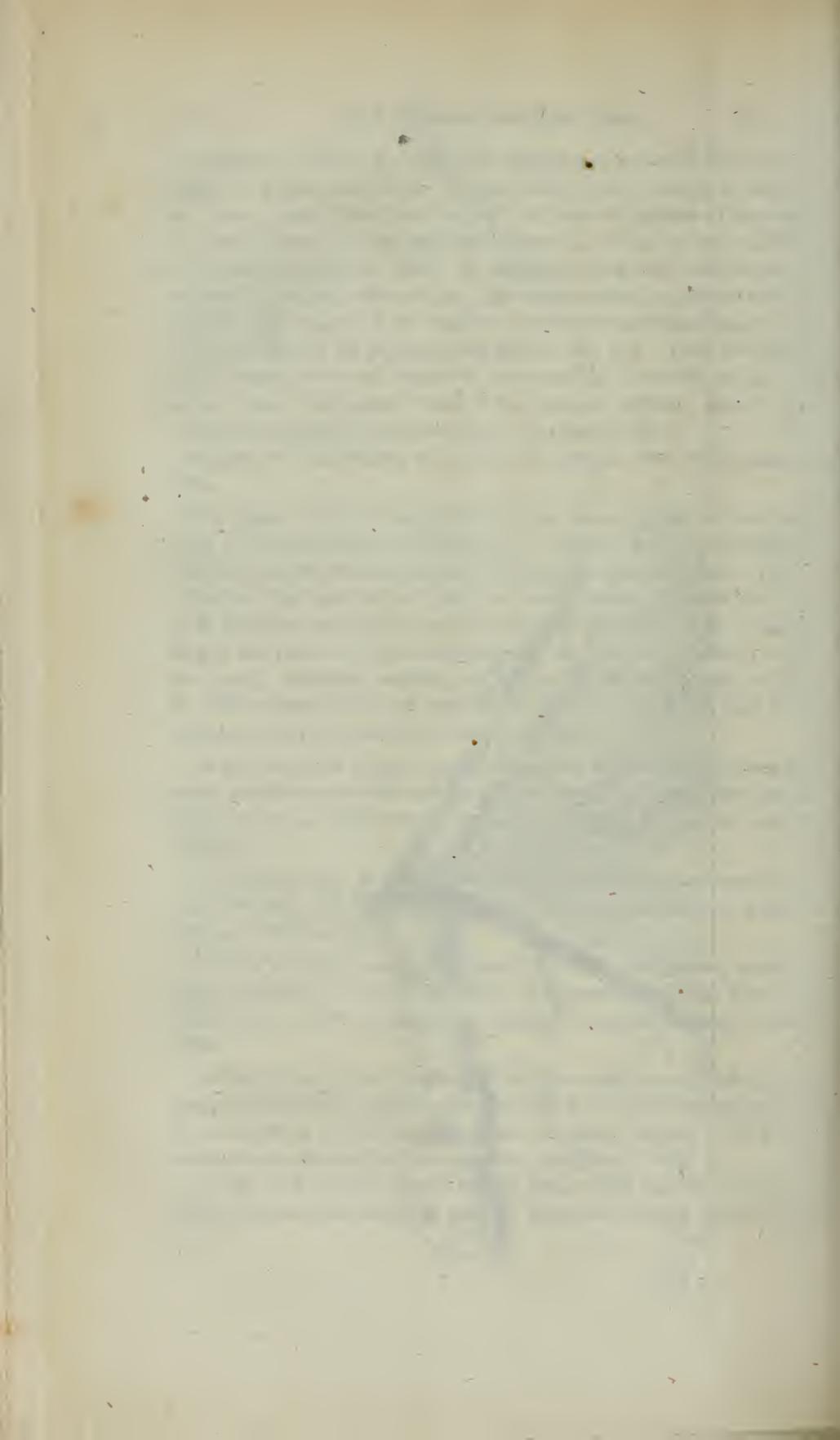
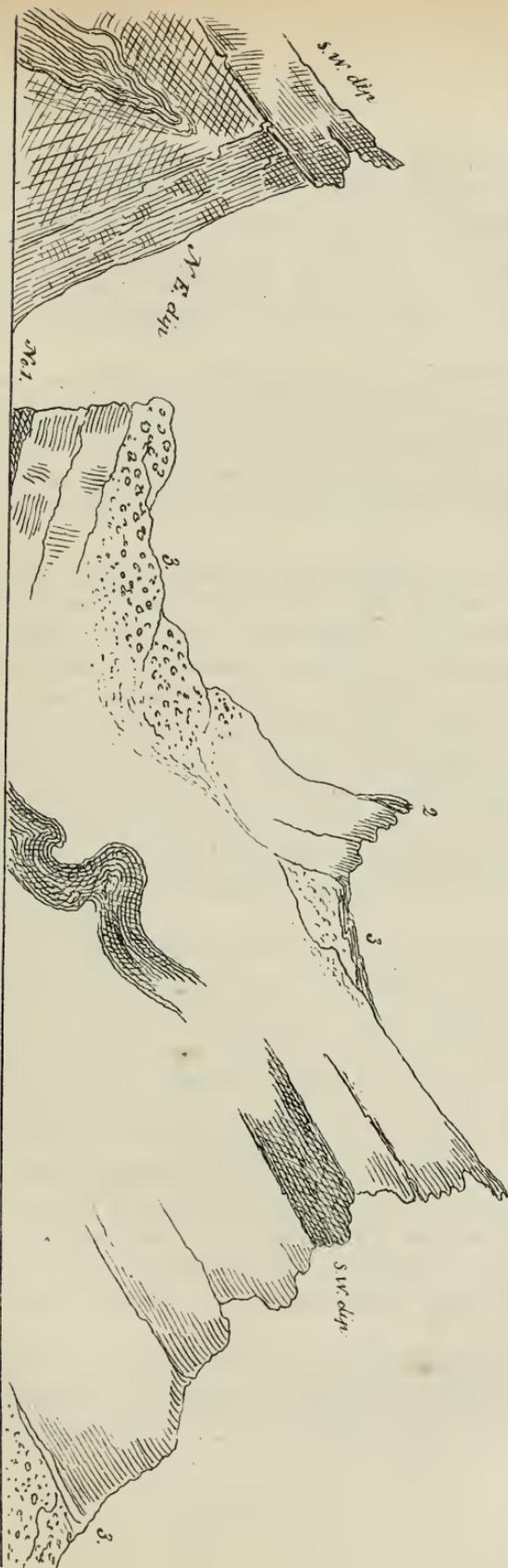


Fig. 7



N. B. The precise nature of these strata is undetermined from the impossibility of procuring access to them, but they appear to consist of *linterbed shales*, and *limonaceous* surmounted by *sandstones*.
No. 1 Bed of Spite River. 2 Vertical strata. 3. 3 Beds of debris and fragments from above.

from the snows have worn numerous channels through the loose and decomposing *shales*, occur the fossils which were long ago discovered by Dr. Gerard. These consist of various species of *ammonites*, *belemnites*, *orthoceratites arca*, and some others; but all partaking of the same decomposing nature as the *shales* in which they occur, so that it is next to impossible to procure a perfect specimen, or to prevent its falling to pieces if obtained.

The *limestones* which here alternate in the series, are sometimes wholly composed of shells, and are of a dark grey colour, while at the height of 14,712 feet occurs a bed of a whitish grey colour, and almost free from shells, but imbedding large rounded masses of various sizes, which when broken are found to be composed wholly of the dark shell *limestone* already mentioned.

Among these hills there is great confusion in the direction of the dip, the strata sometimes inclining to the S.W. or N. E., while at others they are N.N.W., and to almost every point of the compass. These masses are, however, generally limited to small extent, and appear like fragments torn from the true or main direction by the force of the upheaving agent. These strata extend along the range for many miles farther up the valley, but no fossils were apparent at any place, except on the heights above Leedung and Larra. They exist, however, in the form of shell *limestone* along the range immediately leading from the lake Chummorareel; but at this season the whole range lay so deeply buried in snow, that the route was impracticable, and I was obliged reluctantly to quit the fossil site, not half satisfied with its investigation.

From the nature of the rocks in this part of the valley, and the reports of those who have visited lake Chummorareel, I should feel strongly inclined to believe that it is situated among the *Lias clays*. Puttee Ram, the Tartar wuzeer, who has often visited the spot, assured me that the lake was surrounded by high hills composed of *earth* of various colours, red, yellow, blue, &c. and that the country around was all of similar *clays*, and not composed of rocks like the lower parts of Spiti, although sometimes above the hills of clay, large masses of stone were also found.

Such a description, all rough though it be, would lead one to expect the *Lias* beds resting on the red *marle*, and surmounted by the *sandstone* series above the *oolite*. The subject, I am sorry to think, must thus far remain obscure, until some more fortunate traveller shall venture upon those interesting scenes.

From this slight sketch it will be seen that the geological series from Kotgurh to the neighbourhood of Soongnum, in Kunawur, is that of the primary class; while thence, to the head of the Spiti valley, we find,

with slight interruption, the transition or lowest secondary series containing fossil exuviae of marine *Mollusca*.

From the point of junction of the Spiti and Sutledge to the head of the Spiti valley, we find every thing indicating the former presence of an extensive lake. These indications consist in beds of friable or earthy *gypsum*, *clays*, *sand*, and rolled *pebbles* now left high in horizontal strata above the course of the river at the present day.

These accumulations are also seen to be the thickest and most extensive at the lower end of the valley, where the mountains form recesses, and where the slope is the most gradual. We find the *gypseous* beds alone at the lower end, and we also find them growing thinner and dying out as they approach the higher and narrower part of the valley, until at last their presence is only to be traced in the incrustations of other rocks.

The *clays* and *sands* which have been deposited upon these beds are, on the other hand, universal throughout the valley wherever they could find a resting place, and they pass on after the *gypsum* has ceased up to the higher portion of Spiti, where at length they yield to *pebbles* and *boulders*.

I have called attention to these facts, because I shall presently show by what means such an arrangement has taken place.

It will, however, first be necessary to state the theory which these appearances suggest, and then to show how the phenomena presented to our view, are in accordance with that theory.

Theory of the Spiti Valley.

We have already seen that the valley bears every appearance of having been at some remote period the bed of an extensive lake, which at length, by the accumulations of its waters, and its enormous pressure upon the rocky barriers which confined it at the lower extremity of the valley, burst forth with irresistible power and devastating effects down into the district of Kunawur. I shall endeavour to trace in detail the circumstances which may have led to this outburst of the Spiti waters.

The first formation of such a lake may have occurred from one of three distinct causes, namely :—

First. If we allow the existence of these vast mountains previous to the flood, the lake may have accumulated in the bosom of the valley from the melting of antediluvian snows, and thus, (supposing the Mosaic narrative to be correct,) it will be seen, that although originally composed of fresh waters, it must have changed its nature and become salt at the period of its submersion by the deluge; and again in after years, when that deluge

had subsided, it would have gradually regained its freshness, and parted with its saline properties by the constant accession of streams from the beds of snow surrounding it.

Secondly. If these mountain ranges were formed at no remoter period than that assigned to the *subsidence* of the Mosaic deluge, the lake may have been formed simply by the accumulation of the snow streams from the heights above, *since* that last grand catastrophe.

And, *Thirdly.* If suppose these mountains to have been upheaved by *submarine volcanic* agency during the convulsions attendant on the subsidence of the deluge, we may assign the origin of the lake to the enclosing or retaining of the oceanic waters, as the ranges rose upwards from beneath the waves.

I shall presently speak of the most probable of these three causes, and in the mean time taking for granted the former existence of the lake, proceed to show by what means it has disappeared.

The walls of the valley, then, we must suppose to have been at one period continuous, without an outlet; thus forming an extensive basin containing a lake of water, which from its vast expanse and magnitude, might have been almost termed an inland sea.

The surrounding barriers of this lake rearing their heads aloft to an elevation of from 16,000 to 20,000 feet and upwards above the level of the present sea, were then, as they still continue to be, the never-failing receptacles of eternal snows, which furnished streams of ever-running waters, all emptying themselves into the broad lake beneath.

This constant increase would of course in a little time cause the waters to rise, and overflow that portion of their bounds which attained the least elevation, and accordingly we find it actually to have been so at the confluence of the present stream with the river Sutledge.

This overflowing would at first proceed quietly, and with a gently exerted force; but as the action of the never-ceasing stream gradually carved a deeper channel over the rock, a greater body of water would flow down, bursting through and tearing away blocks of increasing magnitude, until its weight and constant action having loosened and undermined the bank, the massive barrier which had hitherto sustained this enormous weight, now weakened by the repeated loss of its various supports and out-posts as it were, would at length give way before the overpowering pressure of the waters, and yield them a passage to the vales below.

Bursting with headlong fury through this, its long sought aperture, what devastation must have attended the downward passage of such a body of water! Huge fragments of rocks, together with the soils and productions of whole districts through which the torrent rushed, must have been swept off before it, and have been deposited at various distances from

their original sites, where combining with other soils, they would form strata peculiar to those situations.

It is probable that these sudden overwhelmings of the district now called Kunawur, may have happened more than once, both from this and from other lakes; for although the Spiti lake had burst through its rocky barriers and found an outlet for the superabundant waters, it would merely have expended itself to a level with the opening it had made, at which point it would again remain until the accumulating supplies from the snow-clad peaks above, and the never-ceasing flow and action of the waters upon the already ruptured rocks, should again have brought about a similar outpouring of its waves, and thus would the lake gradually sink by the same never-failing means, from level to level, until its whole body of waters was expended, and so leave those trickling and apparently insignificant snow streams which had ultimately caused its expulsion from the valley, not only to usurp its former bed, but to form by their united waters the present river Spiti.

From these facts a question naturally arises, as to the probable source from whence the vast beds of marine exuviae found in the higher portions of this valley have been derived, and the answer to it must entirely depend upon the origin we assign to the lake itself. That is, if these mountains and the lake were in existence before the Mosaic deluge took place, it will follow, that the quality of the waters must have undergone a change from fresh to salt by the influx of the ocean, and it might on this account be contended by some that the marine shells rising with the waters, were here left living when that ocean again subsided to its proper bed; that as from that period the waters of the lake would gradually part with their saline properties, as the snows around continued to pour down their limpid streams, causing the lake again to resume its pristine freshness, it becomes evident that those marine animals, exclusively formed and adapted for an existence in salt waters, could only have survived there for a short time, and would then have been deposited in one vast accumulation. But had this been the case, the exuviae must have belonged to species *still existing* in the seas, *whereas* we find them all to be the spoils of *extinct animals*; and again, had such been the case, they would have been imbedded in strata of the *tertiary formation*, whereas, we find them in those of the *secondary deposits*, which are referrible to a period *long antecedent* to the *Mosaic flood*.

Thus, we must at once abandon this first position.

Secondly. If we suppose that the lake was formed *at* and *by* the deluge, and afterwards by the constant accession of snow water became fresh,—the effect, as regards the marine deposits, will still be the same; and consequently this second supposition must be abandoned likewise.

As it is therefore evident that the presence of the fossils can be attributed to neither of these sources, we are at once led to the conclusion, that the vast ranges of the Himalyan mountains were *not in existence previous to the Mosaic deluge*, but that the rocks and strata which they now exhibit were at that time horizontal, and forming part of the bed of the antediluvian ocean. Of this I shall adduce positive geological proof in the sequel.

The fossils therefore which are found imbedded in these higher tracts, did not become extinct at the deluge, but at a period long previous to that great event, when the secondary formations in which they occur were deposited, and which period though hitherto passed by unnoticed by writers on geology, is nevertheless clearly pointed out by the sacred historian.

In order more satisfactorily to ascertain the causes by which animals once living in the depths of ocean have been left imbedded in rocks now towering to a height of more than 16,000 feet above its present level, and at a distance of many hundred miles from it, it will be necessary to skim lightly over the events which have occurred on the surface of our globe from the time of its creation, "until that last catastrophe to which these mountains owe their existence. "Geologists," says Cuvier, "have hitherto assigned but two revolutions to account for the phenomena which the strata of the earth now exhibit, namely, the creation, and the deluge, which he *rightly* thinks are insufficient, although he *erroneously* pronounces them to have been numerous." Nor is it surprising that he should have deemed them inadequate to account for such phenomena, since the first of these periods was no revolution at all, but occurred *before* the vegetable and animal races, whose remains constitute the chief phenomena of our strata, *were created*, and therefore it could have been in no wise instrumental either to their destruction or deposition. It is, moreover evident, that this first revolution of geologists could in reality be *no revolution*, but a *creation!* A revolution must imply the overthrow or upsetting of an *already established* order of things; while here in this first period we know that there was *no overthrow*, but a *setting in order* of things which had *not as yet existed*; therefore it was a *creation*, or calling into being an order of things which subsequently in after years *was to be overthrown* through the disobedience of created beings.

The separation therefore of land and sea, by which our earth was first called into existence, can be looked upon as only a creation, and such indeed it is termed by the sacred historian, for he tells us that in the *beginning* the materials from which our land was to be formed were called into being, and that on the third day, the interim being occupied in perfecting other arrangements all tending towards its welfare, the earth was separated from the waters, and its existence commenced. True, the record *mentions two and only two* distinct revolutions, but the Mosaic, equally with the

mineral geologist, has disregarded and passed over the first of them which occurred, *not during* but *subsequent* to the Creation, when man first transgressed the commandment of his Maker, and drew down, in consequence, the *curse* of an offended God upon the *earth* and its *productions*. Thus it would appear, that geologists are right in referring the fossil exuvæ of the secondary strata to a revolution long prior to that of the *deluge*, and they have only erred in not assigning to it the actual period pointed out by the record.

The second revolution, or *deluge*, is too clearly marked, and its consequences too obvious to escape the notice of any one; but the historian enters into no details of the means by which the first was effected, although he clearly points out the effect of it. This difference in the seeming importance of the two revolutions may have arisen from the fact that the first did not, like the second, involve the loss of life to the human race, and therefore the record is content to point it out merely by its *effects*, leaving us at liberty to *infer* the causes.

Asserting therefore, with the inspired historian, that our planet, together with all its goodly furnishing of vegetable and animal life was created and finished in the space of six days, each of the same duration as these of our present computation, and that on the sixth and last day the progenitors of the human race were also created, and were consequently contemporaneous with the whole animal kingdom, as constituted before *the fall*, I shall endeavour to point out the period when, in my opinion, the marine animals, whose exuvæ are imbedded in the secondary strata of the Spiti valley, ceased to exist.

Within the limits, however, which it is found necessary to assign to the present paper, it cannot be expected that I should much enlarge upon the time at which, or the causes by which this first great change in the temperature of our earth occurred, and I shall therefore pass it over with a slight allusion only, and with the less regret, since I hope at no distance of time to lay before the Society a theory of the changes which have taken place on the surface of the earth, from creation to the present time.

If in succeeding ages a writer were to state that the various countries of our present earth had suddenly undergone a great change for the worse in the prolificness and character of their vegetation, would not our posterity justly look upon it as an indication of a well marked revolution and change of temperature?

And would they not naturally seek for a corresponding change and loss in the genera and species of the animate classes?

Assuredly they might reasonably do so; then why do not we, who have a parallel case presented to us in the pages of Holy Writ, seek for traces of

that loss of animal life which must ever be a consequence of any great change or loss in the temperature and vegetation of the earth ?

Such a revolution, although no details are given of its operations, is clearly implied in the effects which are recorded in this simple language of Scripture :—

“ And unto Adam, he said, Because thou hast hearkened unto the voice of thy wife, and hast eaten of the tree of which I commanded thee, saying thou shalt not eat of it:—*Cursed is the ground for thy sake ;—in sorrow shalt thou eat of it all the days of thy life ;—thorns also and thistles shall it bring forth to thee ;* and thou shalt eat the herb of the field. *In the sweat of thy face* shalt thou eat bread,* until thou return unto the ground ; for out of it wast thou taken ; for dust thou art, and unto dust shalt thou return.”

That earth which had hitherto profusely yielded, *freely and gratuitously*, its choicest productions, now shrinking beneath the frown of Him, before whose wrath all nature trembles, refused to supply even the common necessities of life, unless wooed into compliance by the sweat of man's brow, and the toil and labour of his hands.

Can a more convincing proof be required of a change of temperature, and of the first great revolution on the earth ?

Or, can it be thought necessary to assign to the fossils of the secondary strata a more remote period than this, in all probability, the first few months of man's existence upon the globe?†

Should such proof be required, it may at once be derived from the character of the fossil flora of the earth's strata, which although now abundantly found in northern latitudes, is wholly of a *tropical form*, and consequently the temperature of those countries must undoubtedly have been much higher formerly than at present.

It is unnecessary to enlarge here upon the several means which were instrumental to this change, and enough has been said to show, that to this epoch I would refer the extinction, and imbedding in the secondary deposits of the exuvixæ now under consideration, and it therefore only remains to state, that these marine formations as they are termed, remained in the bosom of the deep until the period of the second revolution or Mosaic deluge, when the mountains in which they now occur were up-raised, for the purpose of throwing back the waters from the surface of the earth into their proper beds ; to serve as agents, from their accumulations

* That is—“ by labour.”

† I am well aware, that many will object to this, that man did not exist upon the earth until long after the period here spoken of ; but I shall be able hereafter to give proof that such doctrine is not only unfounded, but actually opposed to facts.

of snow, in reducing still more the temperature of the earth, and in furnishing those supplies to the rivers and streams, which are so essential to the welfare of organised creation; and, lastly, perhaps it may be added, to stand forth with their imbedded fossils as eternal and convincing monuments of man's fall and punishment, and of the truths so simply stated in the Scriptures.

My own opinions lead me to conclude, that when the waters of the ocean had risen over, and, as in the beginning again enclosed the earth in its cold embrace, and had effected the punitory offices for which it was permitted to transgress its bound, the lofty mountain ranges which now adorn the surface of our earth were successively upheaved through the agency of *submarine* volcanic powers, forming in the depths of ocean vast indentations or depressions, corresponding in magnitude to the masses which were upheaved upon the *opposite surface*, and into which *depressions* or *vacuities*, by the laws of nature still in force, the waters would have rushed or risen, forced down as they were by the pressure of the superincumbent atmosphere, and thus as each successive upheavement took place, the waters being *drawn downwards* would have again retired from the surface of the earth, into the place appointed to receive them; the same as on that third creative day when, as recorded in the Scriptures, they were commanded "to gather themselves together, that the dry land might appear."

Nor does this theory of submarine upheavements appear to be unsupported by the opinions of able geologists, for we find in the words of Dr. Buckland, "that *trachyte* and *lava* being ejected through apertures in *granite*, prove that the source of volcanic fires is wholly unconnected with the pseudo-volcanic results of the combustion of *coal*, *bitumen*, or *sulphur*, in stratified formations, and is SEATED DEEP BENEATH THE PRIMARY ROCKS."*

Among the vast mountain ranges which were then upheaved, the Himalya stands pre-eminent, and as it rose towering upwards from beneath the waters of the *deluge*, the lake in question, and doubtless many more, may have been borne on high enclosed among its loftiest ridges. If such were the case, its waters which at first were salt, would afterwards have become fresh, from the cause already stated. Or if no such lake were borne aloft, then must it have accumulated in after times from the snows above, until bursting through the barriers of *gneiss*, which had hitherto confined it, the valley would have been left nearly as we find it in the present day.

The solution of the problem must therefore be sought for in the strata and appearances which the valley now exhibits.

* For an illustration of this, see Fig. 5.

Those phenomena and appearances have already been stated, and it therefore now only remains to show, that they are precisely in accordance with the theory proposed, and prove it to be correct.

When the vast ranges of the Himalya burst upward through the watery shroud which had hitherto enclosed the earth, the lofty ridges which surrounded the lake became at once the eternal reservoirs of everlasting snows, from which numerous streams descended, as in the present day.

The waters of the lake itself were *salt*, being taken from the ocean, and they gradually yielded to the streams which descended from the heights, until they became first *brackish*, and finally *fresh*.

The largest body of water which was supplied from the snows was that of the Spiti river, and to its current are partly attributable the appearances of the present valley.

Let us then look well to the mode of operation.

The *lake* was *salt* or marine; its waters after the agitation caused by the upheavement had ceased became tranquil, and as their nature began immediately to undergo a change from the influx of the snow streams, a deposit from its waters commenced. That deposit I hold to be the bed of friable or earthy *gypsum*.

The reason why it occurs at the lower end of the lake is this:—The downward rush of the Spiti waters from the heights of the *Paralassa* range, caused a strong current to advance far onwards into the valley, where it became less and less rapid, till it died away, or was checked by the body of water below.

Thus we may at once perceive, that while the fresh waters usurped the upper portion of the valley, the middle and lower parts were occupied by *brackish* and *salt* waters respectively—a circumstance that may be fully understood by observing the confluence of a large river with a gulf or any part of the sea. The river is fresh, the junction *brackish*, and the ocean *salt*.

The *gypsum* or *sulphate of lime* would therefore naturally be precipitated in the greatest quantities at the lower end of the valley, where the waters were the saltiest, and the bed would gradually become thinner as it advanced into the intermediate part where the lake was brackish, and it would be wanting altogether in the upper part where the waters were fresh. This is precisely the fact, for the upper end or head of the Spiti valley is free from the *gypseous* deposit, while towards the middle we find the rocks often incrustated with it, or forming with fragments of *shale* and other rocks a *gypseous breccia*, which becomes less *crystalline* as it advances to the lower end of the district, where it yields to the thick beds or deposit of friable *gypsum*.

While this deposit was precipitating from the changing waters of the lake, the streams from the snows were bringing in large quantities of fine alluvial particles, such as *sands* and *clays*, and water-worn *stones* of various size.

These were deposited above the *gypsum* of the lower end of the valley, and passing on after that had ceased, reached to the upper end of Spiti. This too, is seen to be the fact, for the beds of *clay* are found not only covering the *gypsum* to a great depth, but also occupying its place at the upper extremity of the district.

At the same time, the waters carried onwards an uniform solution of *clays*, which they precipitated throughout the valley, the heavier *stones* and *boulders* were forming beds at the points where the streams fell into the lake. A reference to the annexed section will show the order and disposition of the various deposits which this valley contains, and serve to illustrate the foregoing remarks:—

(See plate) FIG. 8.

Section of the Spiti Valley.

Let 3. 3. represent the fall or present line of descent of the river Spiti from Leedung 12,037 feet, to Chungo 9897 feet above the sea.

It will be at once apparent that the waters of the lake must have had an increasing depth towards the lower end of the district, and that they were fresh about A;—brackish about B;—and salt at C. The *gypsum* was therefore deposited at the lower end, and is represented as lying within the triangle 2. 2. 3.

At the same time, above this *marine formation* a thick stratum of alluvial deposits took place, forming a *fresh water formation* throughout the valley, as represented within 1.1. 2. 2.

The height at 1. on the left hand is 12,037 feet at the village of Leedung, and the corresponding elevation at 1. on the right hand is the height of the aqueous deposit about Chungreezing above Chungo, which is also 12,037 feet, thus beautifully exhibiting the line of the former surface of the alluvium.

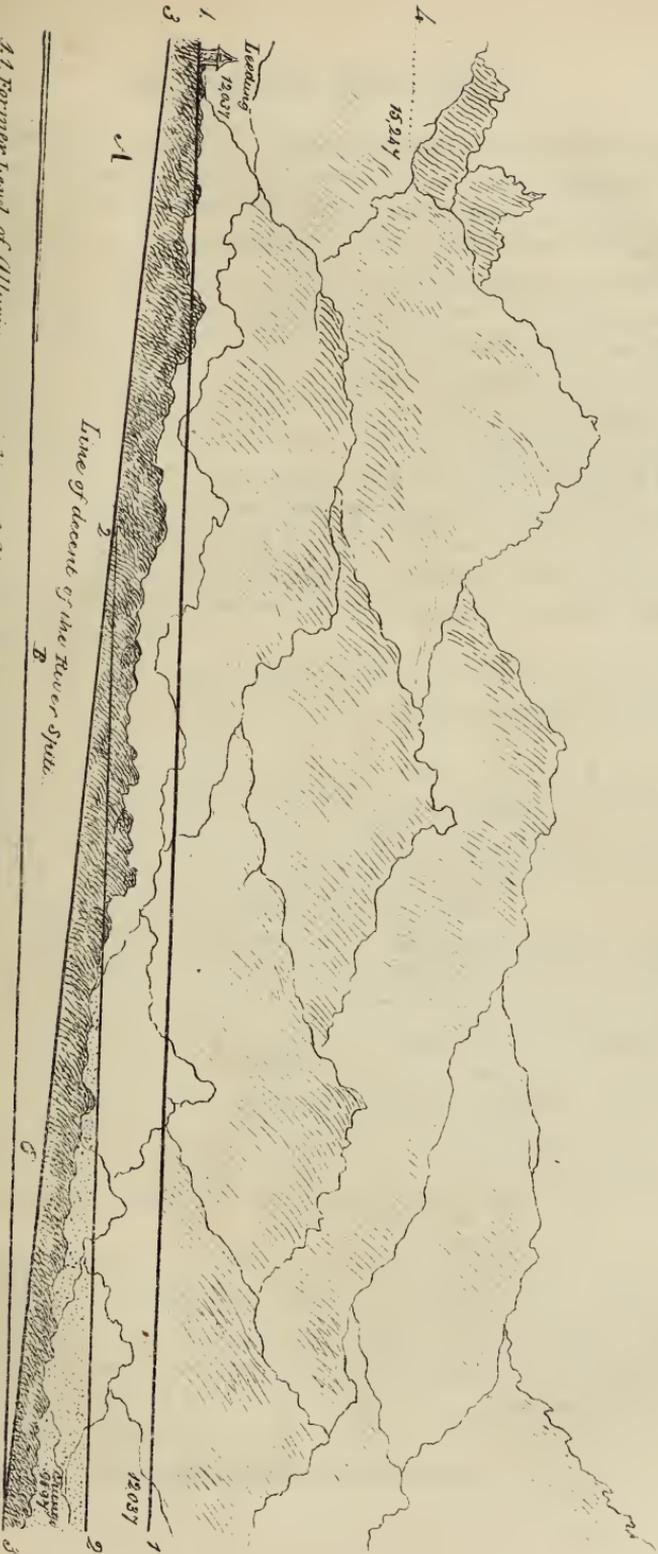
Above this the waters rose and filled the valley, till they procured egress at the lower end, beyond Leeo.

Thus from the appearance of the district we gather, that it has once been the bed of an extensive marine lake, whose waters having at length burst through their barriers, have escaped by the channel of the Sutledge.

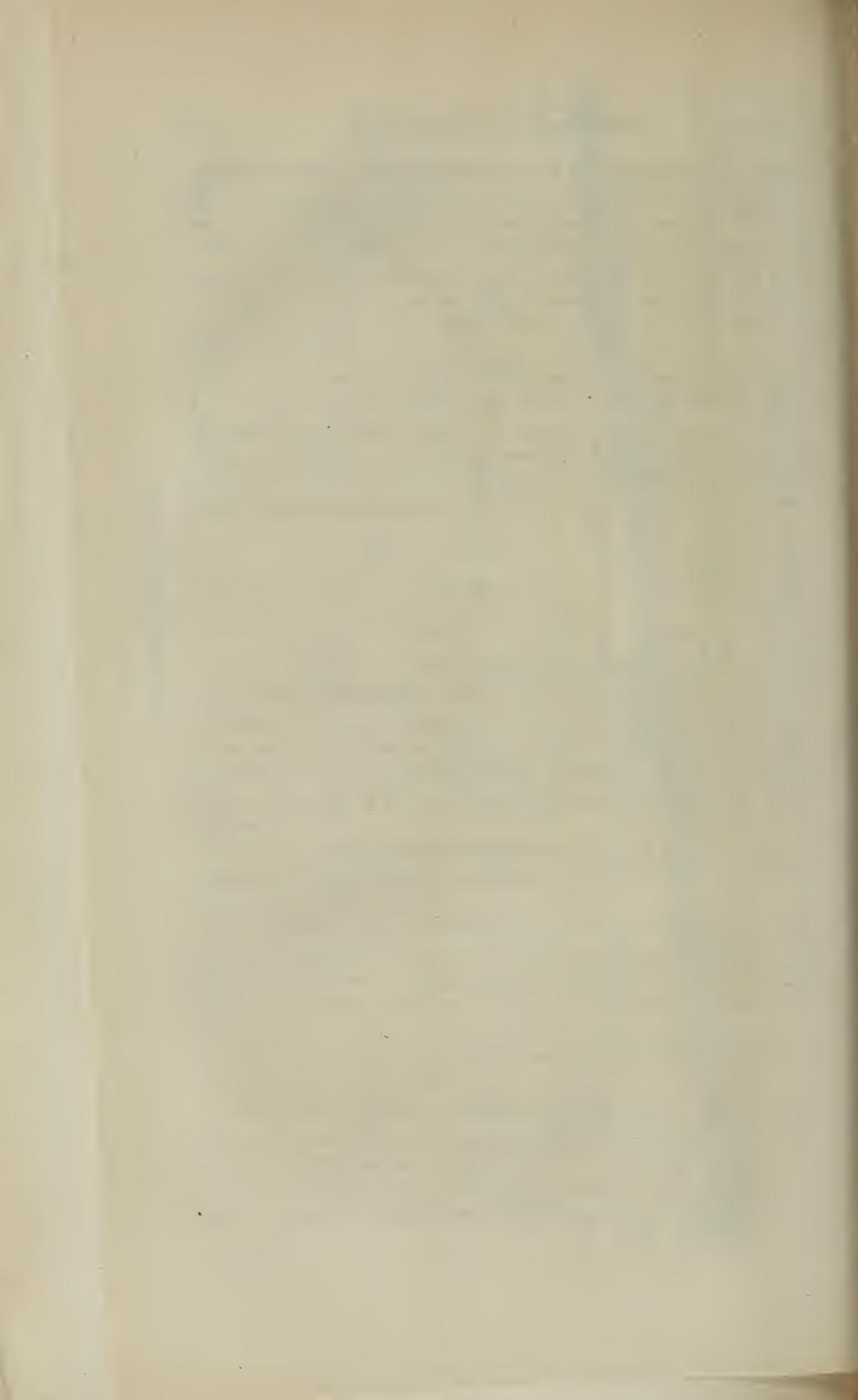
This fact I consider to be indisputable, and it leads at once to a satisfactory explanation of the origin of the deep alluvial deposits of *clays*,

Section of the Spitz Valley

Fig. 8.



1. Former Level of Alluvium consisting of Clays, Sands and Pebbles.
2. Former Level of Detritum or Marine Formations consisting of friable Lignaceous.
3. Present Fall or line of level of the Spitz River from Leeding 12,037 feet - to Chungo 9,897 feet.
4. Leeding Pass 15,217 feet above the Sea and site of Marine excava.



sands, and *pebbles* now seen in the lower parts of the valley of the Sutledge, to which allusion has been made in the commencement of this paper.

Having now, I trust, satisfactorily showed how the theory proposed, and the facts observable, are in accordance, it only remains, before bringing the subject to a close, to take a brief and rapid glance at the geological formations of the lower hills from Kotgurh to the foot of the mountains.

Taking that station, therefore, again as a starting point, and proceeding towards Simla, we find the formation to consist principally of *mica* and *clay slates*, the one constantly fading into the other, and occurring in frequent alternations.—*Quartz* veins are numerous interspersed in the beds of *mica*, which is sometimes of a soft and scaly nature, containing but little *quartz*,—at others hard and compact, exhibiting little trace of the *mica*.

The mountain of Huttoo, which rises near Nagkunda to the height of 10,656 feet of elevation above the sea, is composed of *mica slate* and *gneiss*, while its summit exhibits some rugged peaks of *granite* jutting upwards through the strata.

The soils which occur from Kotgurh to Simla, are formed chiefly from the decomposition of the *clay* and *mica slates*, with the addition often of a rich vegetable mould.

Descending from Simla towards Subathoo, the primitive formations again yield to the secondary series, exhibiting dark blue *limestones* and many alternations of *slate clay* of different colours; dull-greenish, yellowish, and purple. The latter is also seen as the poste or matrix of a *quartz-ose breccia* composed of angular fragments of *white quartz*.

Around Subathoo the change becomes the most decided, and the strata are there seen in perfection, consisting of the usual thick beds of *clays* and *marles*, varied with veins of *gypsum*, and resting on a red *marle*, apparently analogous to the red *marle* of England. The strata are here often upheaved nearly to a verticle position, and thick beds of shell *limestone** are found alternating with thinner strata of compact *limestones*, containing castes of bivalve shells, similar to the "*Venus angularis*" of the European strata. Large specimens of *Ostræ* also occur, as well as compact strata, almost entirely composed of small species of the fresh-water genera, *Melania* and *Poludina*.

The presence of these last prove again, beyond a doubt, that fresh water must have occupied eventually the basins in which the marine strata of the secondary series were deposited, and leads to the supposition, that nearly the same causes were instrumental to the formation of that series, as we have just shown to have been conducive to the deposition of the *diluvium* and *alluvium* of the Spiti valley.

* Strata composed almost entirely of shells.

Above these various alternations we find the *oolite*, with its strata of *sandstones*.

Captain P. Gerard of the Invalids, informed me that his brother, the late Dr. Gerard, had once discovered some *Ammonites* in the valley below Subathoo, but although I procured and fractured several of the dark rounded balls in which they often occur, I was not fortunate enough to meet with a specimen of the shell.

About eight miles from Subathoo, in an easterly direction, are rocks of a greyish *limestone*, rising above the *lias* and *oolitic* formation. Immediately underlying this are several strata separated by layers of flints of various forms, and imposed upon these, the *limestone* is first of all stratified and dipping in the same direction, namely, to the S. W.; but the superior portion of the beds rises in shattered and *amorphous* masses, giving a picturesque and beautiful appearance to the range. This *limestone* is quarried and used for economical purposes; it is of two kinds, one being of a pale dirty white or greyish colour, and is the stone from which the *lime* is procured, the other being darker and harder, emitting a strong sulphurous fœtid smell when fractured. This latter is little used, and appears to hold the lighter coloured variety imbedded in it in large masses.

The geological position of this *limestone*, coupled with the remarkable occurrence of layers of rounded and kidney-shaped flints, leads to the supposition, that it may be analogous to the chalk formation of Europe, and if so, it will follow, that the vast ranges of the Himalya, so long supposed to exhibit strata of *gneiss* and *mica schists* alone, will be found to present formations entirely analogous to those of other mountainous countries, even from the *granite* upwards to the *alluvium*, at present in course of deposition and accumulation.

The range on which Subathoo stands, exhibits another example of the effects of what I have termed a *double upheavement*.

Seen from the dāk bungalow of Chamier, the outcrop of the *sandstone* strata is seen dipping towards the N. Eastward, while the same rocks from which they have been torn, dip on the Chamier side of the Glen, towards the S. Westward.

But the N. Easterly dip is not the true direction, for we see again on the opposite side of the same range, that the strata dip likewise to the S. W.

Therefore, the deep valley or glen between the Subathoo and Chamier ranges is the line of disruption of the strata, causing them, as it were, to dip outward on either hand.

From Subathoo downwards to the foot of the hills, the strata belong to the *lias* formation, and gradually fade away until they yield at

length to the *sandstones* of the tertiary series, in which, at various places from Nahn to Buddee, the fossil *exuvia* of extinct quadrupeds are found.

This, although but a faint and meagre outline of the geology of the noble ranges of the western Himalaya, is nevertheless sufficient to point out the *formations* which occur from the base of the mountains to Spiti and Ludāk, and is as much as could be done in a hasty tour over so extensive a field. I shall now, therefore, draw this somewhat lengthy paper to a close, by alluding to the means by which the imbedded *exuvia* of these formations have been brought to light in these latter days.

I have already stated, that the fall of man is the true period to which the loss of the fossil marine *Mollusca* of the Spiti and Subathoo fields is to be referred.

At the time of their extinction, the secondary strata in which they are imbedded were under course of deposition in horizontal beds, beneath the bosom of a tranquil water, and thus they remained for a period of many years after.

The increasing depravity of the human race, once more called down the vengeance of an offended God, and brought about the second and last grand revolution which the earth has experienced, namely, the Mosaic *deluge*.

That catastrophe was the means by which the destruction of the large terrestrial *mammalia* of the tertiary strata was effected.

When, therefore, the waters had performed the punitive offices for which they were allowed to transgress their bounds, the mountains of the Himalya were caused, among others, to rise upwards by some vast volcanic or upheaving agent, in order to throw back the ocean from the earth, and gather it again into the place appointed to receive it.

By that upheavement the primary series of the Snowy Range was thrust aloft in torn and ragged spires, while the secondary strata of Spiti and Subathoo then first rose upwards from their horizontal plane to the inclined position which they now possess. Consequent on the uprise of this secondary series was also that of the tertiary beds, and thus we find one single geological revolution to be the sole agent in upheaving the strata of three widely distinct and separate formations.

The Snowy Range or true Himalya, is composed entirely of rocks belonging to the primary series, while to the north and south of it are found resting on its sides, strata of the secondary formations disposed at high angles from the horizon, and usually rich in the *exuvia* of marine and lacustrine *Mollusca*; while on the southern exposure, forming the base of the hills, and resting on the secondary rocks, occur the tertiary or diluvian beds, which the successful researches of Messrs. Falconer, Durand, and others, in

the present day, have proved to be so rich in the exuvia of the now extinct forms which once inhabited these countries. Whether this last series occurs also on the northern side, is a point for future investigation; but as fossil bones are sometimes brought down by native travellers from the Tartar hills beyond Almorah, it would seem that similar phenomena are to be expected there.

The inclined position both of the secondary and tertiary series, is clearly attributable to the outbreak of the primary rocks from beneath or through them and furnishes to the inquiring mind, a sure and beautiful guide by which the period when these vast mountain ranges first rose upwards to adorn our earth, may be satisfactorily and positively determined. The conclusion, therefore, to be drawn from the facts observable in these strata, are all strictly in accordance with the rules of geological reasoning, and I shall therefore now bring the subject to a close, by endeavouring to show the reasoning and existing facts to be in unison, and thus fix the period to which must be referred the stupendous and never-fading monuments of Almighty power, exhibited in the vast upheavements of the Himalyan range.

It is a fact accepted and admitted by geology as indisputable, that where one series of rocks having a horizontal position is found to rest upon another whose strata are inclined, it amounts to positive certainty, that the *deposition* of the former took place *subsequent* to the upheaving of the latter; and vice versâ, where both series are found, the one resting on the other at high angles with the horizon, that the deposition of the superior strata took place *previous* to the upheavement of those by which they are supported.

Resting on the *primary* rocks of the Snowy Range, we find on either side the strata of the *secondary* series thrown into an inclined position by the upheavement of the *granite* and its usual accompaniments of *gneiss* and *mica slates*, proving by their inclined position, according to the above reasoning, that they were deposited *previous* to the outburst of the former through them.

Again we perceive, that resting on the secondary rocks the tertiary or diluvial strata of the Siwalik range have also an inclined position, consequent on the upheavement of the *primary* and *secondary* series, and therefore, that they too, by a parity of reasoning, were deposited *previous* to the upheavement of the two former.

Now the *tertiary* or *diluvial strata* containing the fossil exuvia of extinct terrestrial *Mammalia* are clearly attributable to the effects of the *last great revolution* which our earth has undergone, and consequently, we derive from the phenomena, presented to our notice in the various formations of the Himalyan mountains, sure and decided data for determining the period of

Fig. 9.



Imaginary Section of the Himalayas, showing how the upheavement of the Primary Strata at 1. 1. 1. would cause the inclined positions of the Secondary Strata at 2. 2. and the Tertiary deposits at 3. - 4. Alluvium of the Plains.

their first upheavement, which period the facts adduced enable us to assign to the first subsidence of the waters of the *Moasic deluge*.—(See plate) FIG. 9.)

We may suppose, therefore, that when the ocean had been permitted to transgress its bounds, and had again enveloped the earth as in the time before the third creative day, or separation of land and water ; and had by its devastating effects fulfilled to the utmost the dreadful doom assigned to all organised creation, the vast and imposing ranges of the Himalya and other mountains were caused to burst upwards by volcanic agents from below, as a means of throwing back the waters from the earth into those bounds appointed to receive them, and also to furnish, by their subsequent accumulations of everlasting snows, a never-failing reservoir from which the rivers of the plains were to be supplied with waters to fertilize the soil ; which plains, had the mountains been of inferior elevation, would for ever have remained barren and desolate, except during the prevalence of the periodical monsoon ; for it is apparent, that in the hot climates of the eastern world, no snows could have rested upon mountains of a lesser altitude sufficiently long to afford a never-failing supply of waters for irrigation.

Thus, even in the ordering of a mountain range, and the furnishing of wintery snows, is the wisdom and unvarying goodness of the Great First Cause, made manifest to the minds of his inquiring creatures.

To enter at length into the means by which these revolutions took place, and the reasons *why* they were allowed, belongs more properly to a system or theory of geology than to a paper professing to be merely an outline of the geological formations of a limited district.

I shall, therefore, for the present, leave the question in this imperfect form with less regret, since I purpose ere long, (should circumstances befriend me,) to lay before the Society and the Public a theory, which I would fain believe worthy of their most serious and attentive consideration.

CANDAHAR,

19th July, 1840.

On the two wild species of Sheep inhabiting the Himalayan region, with some brief remarks on the craniological character of Ovis, and its allies.—By B. H. HODGSON, Esq. Resident at the Court of Nepal.

The great paucity of unquestionably wild species of the genus *Ovis* now found throughout the habitable globe, is a fact that has been employed to cast a speculative doubt upon my announcement (Catalogue of 1832 and 1838,) of two species in the single region of the Himalaya; and the circumstance of my not having been able therefore to give as full and satisfactory an account of the second species as I long ago gave of the first, (see Journal for September, 1835,) from living specimens, has tended to confirm the above mentioned doubt. I am still unpossessed of similar valuable materials for the illustration of this second species, having never been able to procure the animal alive, nor even to obtain a perfect suite of the spoils of a grown male. I have horns, however, of the mature ram, and skulls and skins of others, varying from one to two years in age; and from these, not inadequate materials, I purpose now to furnish a specific character of the Ammon-like, as well as (for the sake of comparison,) of the Musmon-like animal, together with craniological sketches and details relative to both; such as will suffice, I hope, to place beyond further question, the existence of two entirely distinct, new, and peculiar breeds of Sheep in a state of nature in the Himalaya; where indeed, from the unparalleled elevation and extent of the mountains, it need be no rational matter of surprise that they exist.

Ovis Ammonoïdes, Nob.—Large wild sheep, with massive strictly trigonal sub-compressed horns, deeper than broad at the base, presenting a flat surface vertically to the front, and cultrated edge beneath, inserted not in contact on the crest of the frontals, remote from the orbits, directed backwards and outwards with a bold circular sweep: the flattened points being again subrecurved outwards and the whole surface covered with numerous heavy complete wrinkles: the forehead flat and broad: the nose scarcely arched, and much attenuated to a fine small muzzle: the ears short, pointed, and striated: the tail short and deer-like, and the limbs fine and elevated: the vesture composed of close, thick, more or less porrect, brittle piles of medial uniform length, concealing a scanty fleece: no beard nor mane: general colour dull slaty

blue, paled on the surface, and more or less tinted with rufous : dorsal ridge dark and embrowned : lips, chin, belly, and insides of limbs near it, dull hoary : limbs externally, below the central flexures, rufescent hoary : snout to base of tail seventy to seventy-two inches : mean height forty-two : head straight to crest of frontals, fourteen : tail with the hair, eight : ears, six : horns, along the curve, forty.

Females smaller, with much smaller, compressed (?) nearly straight horns. Young, with the colours deeper and more sordid. Vulgo, *Banbhéra* and *Bhaāřāl*.

Ovis Nāhořr, *Nob.* Medial sized wild Sheep, with moderate, subtrigonal, uncompressed horns, presenting a rounded surface obliquely to the front, and a cultrated edge to the rear, inserted nearly in contact on the crest of the frontals, less remote from the orbits, and directed upwards and outwards with a semicircular sweep ; the rounded points being again recurved backwards and inwards, and the general surface vaguely marked with infrequent rugæ : forehead broad and flat : chaffron arched : muzzle less attenuated : ears erect, short, and striated, and tail short and deer-like, as in the last : vesture or fur also similar, without beard or mane : general colour dull slaty blue, paled on the surface, and more or less tinted there with brownish or fawn : head below, and belly and insides of the limbs near it, yellowish white : face, or nose rather, fronts of the intire limbs, a connecting band along the flanks, whole chest and tip of the tail, black : no disk on the buttocks : their mere margin and that of the tail, paled. Snout to rump sixty inches : mean height thirty-six : head, as before, eleven : tail with the hair seven and three quarters : ears five and three quarters : horns along the curve, twenty-four. Females smaller, with small straightish, suberect, depressed horns, directed upwards chiefly, and with the dark marks on the limbs and chest less extended than in the male ; frequently the chest is wholly unmarked. Young, with the colours deeper and more sordid ; the marks still less extended, and wanting wholly on the chest and flanks. Vulgo *Nāhořr* of the Nepalese.

N. B. Since the Prince of Musignano has published his account of the Musmon, it has become quite evident that our *Nāhořr* cannot be identified with that species ; and though the vaguer accounts of the Asiatic Argali render a like confident judgment in regard to the independence thereon of Ammonoides difficult of attainment, yet all

the now generally recognised diagnostics of the groups of the *Bovidae*, (Taurus, Bubalus, &c.) or who are ignorant of the shadowy nature of the existing marks of discrimination between Antelope, Ovis, and Capra, will, I apprehend, refuse to adopt the now suggested more enlarged application of Cuvier's principles. Either those principles are false, or this larger application of them is as legitimate as it is requisite. On these principles, (as on others,) *Cervus* and *Ovis* represent the extremes, and *Antelopa* and *Capra* the means: but there is a regular graduation from *Cervus* to *Antelopa*, from it to *Capra*, and from it again to *Ovis*; in such wise, however, that the two former fall naturally into one great group, and the two latter into another, *Cervus* and *Ovis* being the typical forms. And I may add as a proof how useful the new diagnosis now proposed is, and how harmonious in practice with other and admitted criteria, that, measured by this standard, our Hemitragus (the *Jharal*) is as clearly a caprine form as Ogilvy's Kemas (the *Ghoral*) is an antelopine one. Thus too the affinity of the Musks and Muntjacs to *Cervus*, however apparently anomalous they seem to be, is rendered palpably evident, and the soundness of our diagnosis consequently further corroborated.

With regard to *Ovis* and *Capra*, inter-se, Cuvier's 'forehead concave' for the latter, and 'forehead convex' for the former genus, are clearly erroneous marks; but those sometime since suggested by me, of 'males odorous,' and 'males not odorous,' as respectively characteristic of *Capra* and *Ovis*, I find confirmed by every day's experience: nor is this discriminative sign dependent, as supposed, on season in any degree, nor even on age after the animal has reached about four months, so soon is the odour developed in *Capra*.

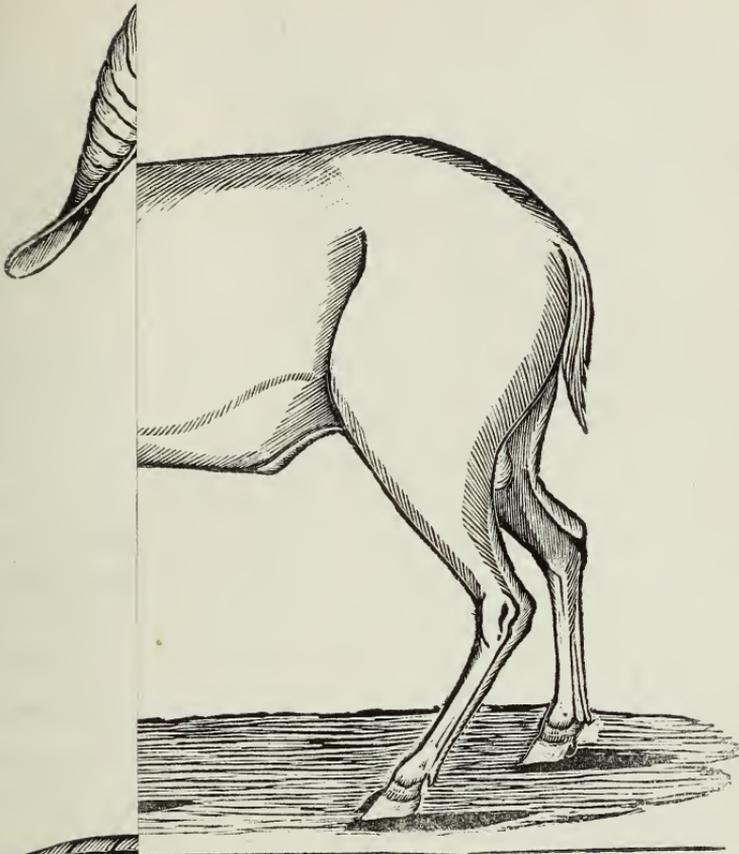
Nipal, March, 1841.

H. B. HODGSON.

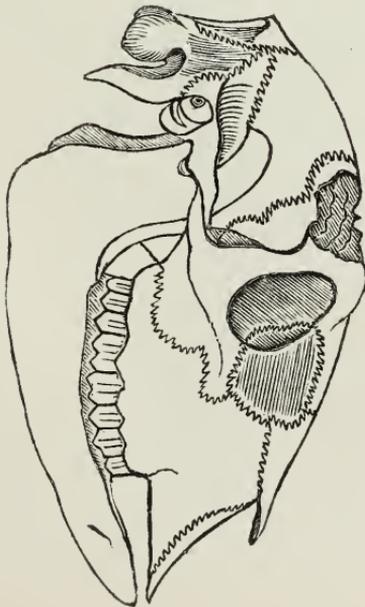
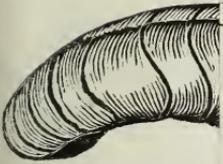
Explanation of the Illustrations.

- I.—1. 2. Front view of the horns and skulls of our two species of Sheep, to prove their distinctness.
- II.—Sketch of *Ovis Nahoor*.
- III.—Lateral outline view of two skulls, designed to exhibit the characteristic form in *Cervus* and *Antelope* (1) on the one hand, and in *Ovis* and *Capra* (2) on the other: and I may add, that the animals having been females, and not specially selected, the distinction contended for is thus shown to be peculiarly valid.

te II.



III.



I

Plate I.

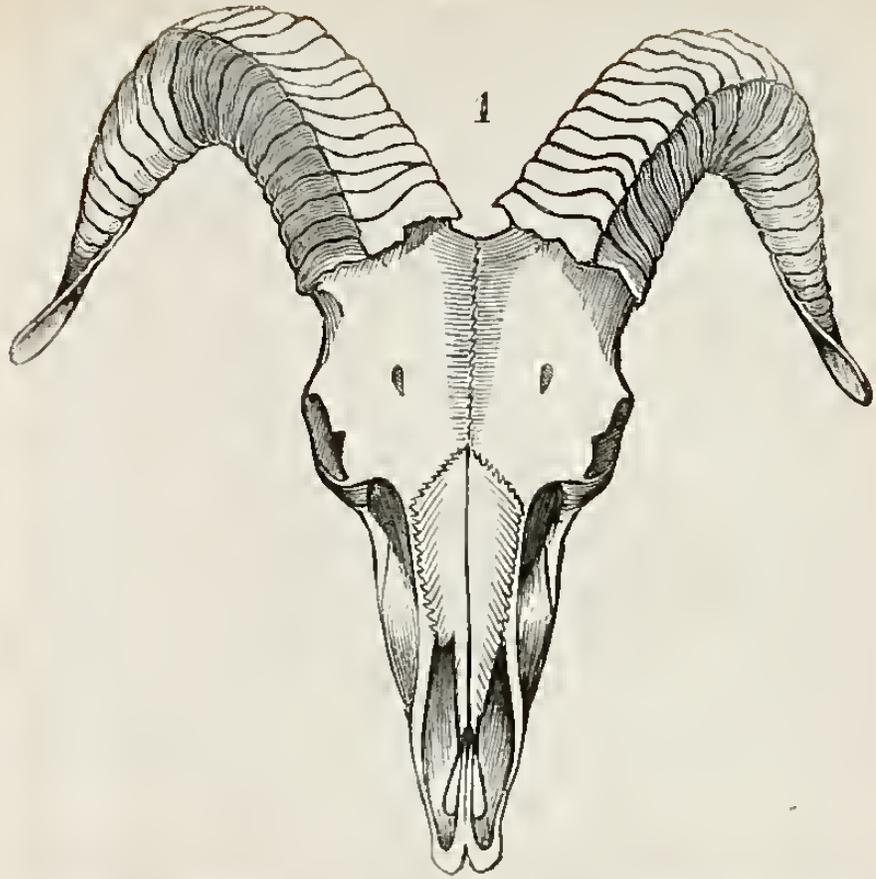
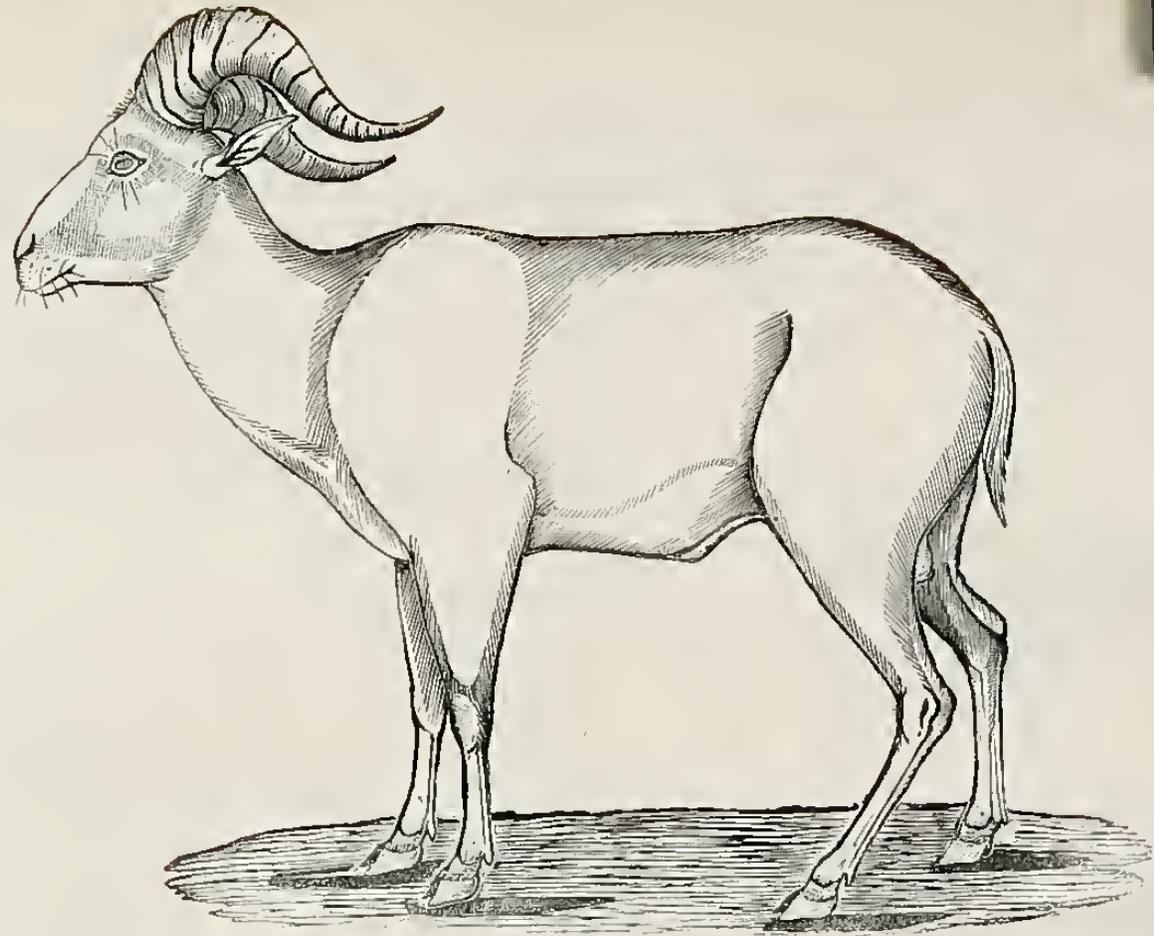


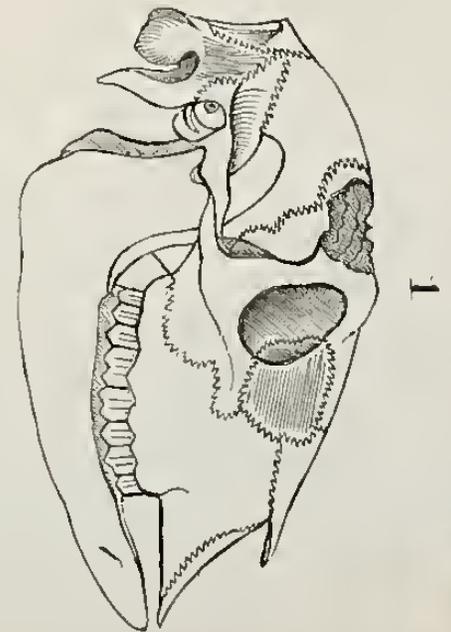
Plate II.



2



Plate III.



On the Laws and Law-books of the Armenians. By JOHANNES
AVDALL, ESQ., M. A. S. &c.

[This paper, Mr. Avdall informs me, was drawn up at the instance of Mr. J. C. C. Sutherland, who having referred to the author for information on the recognized sources of Armenian law, was answered by the production of this erudite paper. It contains a very clear exposition of a subject wholly unknown to general students, and mooted points of historical as well as legal interest.]



An account of the first enactment of laws, instituted in Armenia, by the Armenian king Valarsaces, a descendant of the Arsacidæ, is recorded in the historical work of Moses Chorenensis, a Latin translation of which, with the Armenian text, was published at London, in the year 1735, by the two brothers, William and George Whiston. This Armenian historian, of venerable antiquity, enumerates in a successive and proper order, the rules and regulations enacted by Valarsaces, both for the guidance of the inmates of the royal palace, and of the citizens in general. “Եւ օրէնս իմն հաստատէ ՚ի տան թագաւորութեան իւրոյ, և ժամն որոշէ ելլմտից և խորհրդոց և խրախճանութեանց և զբօսանաց . . . Հրաման տայ քաղաքացեաց մարդկան արգոյ և պատիւ լինել քան զգեղջկաց, և գեղջկաց պատուել զքաղաքացիս որպէս զիշխանս, և քաղաքացեացն մի՛ կարի առ գեղջկօքն պերճանալ, այլ եղբայրաբար վարիլ վասն բարեկարգութեան և սննախանձոտ կենաց, որ է շինութեան և խաղաղութեան և կենաց պատճառք, և որ ինչ նման այսոցիկ: Եւ 7. “Legesque quasdam de aulâ suâ posuit, quibus exeundi et intrandi, consiliorum, et epularum atque oblectamentarum tempora distribuit. Ampliorem dignitatem atque honorem civibus, quàm rusticis haberi jubet; Rusticis, ut cives, tanquam principes, colant, imperat; Civibus, ne se erga rusticos superbè gerant, sed fraternam inter se vitam degant, honestè institutam, et ab invidiâ remotam, unde tranquillitas vitæ et securitas, aliâque ejusdem generis sint oritura.” *Lib. II. Cap. VII.*—From the foregoing facts it is evident that Valarsaces had

given a code of laws for the guidance of the Armenians. To have orally delivered these laws, without committing them to writing, was certainly unbecoming the enlightened and civilised reign of Valarsaces. But, of all the laws enacted by this king, one is repeatedly quoted by Moses of Chorene, which shall be mentioned below.

Laws enacted during the reign of the Arsacidæ, first by Valarsaces the Parthian, and afterwards by others.

In the foregoing chapter Moses Chorenensis writes thus about Valarsaces:—“**Եւ քանզի բազում ունէր ուստերս, պատշաճ վարկաւ ոչ ամենեցուն առ իւր կալ ՚ի Մըծբին (ուր բնակէր յայնժամ ինքն Վաղարշակ.) վասն որոյ առաքէ զնոսա բնակել ՚ի կողմանս Հաշտենից, և ՚ի ձորն Նորին սահմանեալ, որ է արտաքոյ Տարօնոյ. ՚ի նոսա թողլով զշէնս ամենայն հանգերձ յաւելլուածով մտից առանձինն, և ոռձկաց կարգելոց յարքունուստ, և միայն զառաջին որդին՝ որ կոչէր Արշակ, պահէ առ իւր ՚ի համար թագաւորութեան: Եւ եղև այս յայնմ հետէ և առ յապայ օրէնք ՚ի մէջ Արշակունեաց, միոյ որդւոյ բնակել ընդ արքայի, փոխանորդ լինել թագաւորութեանն. և այլ ուստերաց և դստերաց գնալ ՚ի կողմանս Հաշտենից՝ յազգին ժառանգութիւն:”**

“Caeterùm quum multos filios haberet, parum utile esse ratus, ut cuncti ad Nisibim manerent, in provinciam eos Hastensem dimisit, et ad Zoram, quae fines ejus contingit, trans Taronem sitam; illisque universa ea oppida attribuit et stipendia insuper de gazâ regiâ singulis statuit; at ex filiis suis, natu solùm maximum, Arsaces ei nomen erat, imperio destinatum. Deinceps inde consuetudo Arsacidarum fuit, ut unus de filiis cum rege habitaret, regni successor futurus, cæterique filii ac filiae in regionem Hastensem ad possessiones suas abirent.” Artavazd the First, moreover, conferred on the Armenian princes, possession of the provinces of Aliovit and Arberany.

“ Սա Ժառանգեցուցանէ զեղբարս իւր և զքորս ՚ի գաւառս Աղիովտի և Առբերանոյ, [Թողլով ՚ի նոսա զմասն արքունի՝ որ ՚ի շէնս այնմ գաւառաց, հանդերձ առանձին մտից և ոռոճկաց, ըստ օրինակի ազգականացն՝ որ ՚ի կողմանս Հաշտենից, որպէս զի լինել նոցա պատուականագոյն և առաւել Թագաւորազնն քան զայնս Արշակունիս, միայն օրինադրէ՝ ոչ կեալ յԱյրարատ ՚ի բնակութիւն արքայի :” Թ .

21. “ Is fratribus suis ac sororibus possessiones in provinciis Aluhotensi et Arberanensi dedit, regeúmque eis vectigal attribuit, quod ex provinciae ejus oppidis redibat, propriumque ipsis stipendium insuper statuit, de more cognatorum, qui in regione Hastensi habitabant, ut honoratiores essent, atque adeò ad regeam dignitatem propiùs accederent quam Arsacidæ caeteri ; lege tantùm sanxit, ne Araratam, quae erat regia habitatio, incolerent.”—*Lib. II. Cap. XXI.*—Sánátrúk also sent the daughters of Abgarus to that part of the country, about which Moses of Chorene says :—“ Զամենայն զաւակ տանն

Աբգարու մուշեաց սրով բաց յաղջկանց, զորս եհան ՚ի քաղաքէն (Եդեսիոյ) բնակել ՚ի կողմանս Հաշտենից :” Թ .

32. “ Sed omnem Abgari stirpem, praeter puellas, ferro sustulit, quas, ex oppido eductas, in provinciâ Hasteniâ collocavit.”

Lib. II. Cap. XXXII.—Following this example, Artavazd the Second, sent the other princes to those provinces. “ Հալածէ յԱյրարատոյ զամենայն եղբարս իւր ՚ի գաւառս Աղիովտայ և Առբերանոյ, զի մի՛ բնակեցեն յԱյրարատ ՚ի կալուածս արքայի, բայց միայն զՏիրան (զեղբայր իւր) պահէ փոխանորդ իւր . զի որդի ոչ գոյր նք : Թ .

58. “ Artavazdes omnes fratres suos ab Araratâ in Aluotam et Arberaniam provincias pepulit, ut ne Araratam ac possessiones regias incolerent. Tiranum modò secum retinuit, regni successorem, cum sibi non esset filius.” *Lib. II. Cap. LVIII.*—The royal descendants having permanently settled in these parts of the country, began to

increase and multiply, and after the lapse of several years, the number of their offspring became very considerable, so much so, that an appeal was made by them to Tiran the First, touching the insufficiency of the provinces allotted for their habitation, to contain such an increased and increasing number of inhabitants. Moses of Chorene says: “**Եւ եկեալ առ նա կանխագոյն իւրոյ ազգին Արշակունեաց որ էին ՚ի կողմանս Հաշտենից, ասեն ընդարձակեալ մեզ զժառանգութիւնս զի նեղ է, քանզի բազմացաք. և նա հրամայէ ոմանց ՚ի նոցանէ երթալ ՚ի գաւառն Աղիովտի և Առբերանոյ, իսկ սոցա առաւել ևս բողոք կալեալ առ արքայի, [Թէ առաւելագոյն նեղ է մեզ, ոչինչ ունկնդիր լինի Տիրան, այլ հաստատեալ վճիռ՝ ոչ այլ ժառանգութի տալ նոցա, բայց զոր ունին հաւասար տրոհել յինքեանս, զոր բաժանեալ ըստ մարդաթուի՝ գտաւ պակաս ժառանգութիւն բնակողացն Հաշտենից, վասն որոյ բազումք ՚ի նոցանէ եկեալ ՚ի գաւառն Աղիովտի և Առբերանոյ:”** Թ. 59. “Caeterùm brevi tempore interjecto ad eum gens sua Arsacidarum venit, quae Hastenios tractus habitavit, dicens, “profer nobis haereditatis fines, quae arctae sunt, cùm simus admodum multiplicati.” Ille verò eorum nonnullos in Aluotam et Arberaniam provincias migrare jussit; cùmque ii ad regem acriùs clamarent, regionem eam ipsos nimis coarctare, Tiranus, nihil annuens, Edicto sanxit daturum se eis haereditatem aliam nullam; quam tenebant, aequaliter inter se dividerent. Quam cum pro hominum numero partiti essent, incolis minimè sufficere Hastenia reperta est, ac propterea multi eorum in provincias Aluotam et Arberaniam commigrârunt.” *Lib. II. Cap. LIX.*—Immediately after the death of Khosrow the Great, when Ardashir, king of Persia, made an aggression on Armenia and conquered the country, he extended his royal munificence and support to these descendants of the Armenian kings. For the said venerated historian says: “**Իսկ Արտաշրի գեղեցկապէս յարդարեալ զաշխարհս**

Հայոց՝ ՚ի կարգ առաջին հաստատէր, նա և զԱր-
շակունիսն (զարքայորդիսն) զմեկուսացեալսն ՚ի Թա-
գէն և յԱրարատն բնակելոյ՝ կարգէ ՚ի նոյն տեղիս
մտիւք և ուճկօք որպէս էինն :” Թ. 74. Tum Artasires
Armeniae terram egregiè ornavit, atque in antiquum statum restituit.
Arsacidas ab regno et domicilio Araratensi pulsos, in eundem locum
reduxit, et eadem eis, quae priùs habuerant, stipendia statuit.” *Lib.*
II. Cap. LXXIV.

Of the Satraps of Armenia.

History also tells us, that there were specific laws extant for the guidance of the Satraps of Armenia. Faustus of Byzantium, who wrote an Armenian history in the fourth century, alludes to the existence of certain laws, which seem to have obtained in Armenia only during the reign of Khosrow the Little. “Posterior to this,” says Faustus, “the Persians were incessant in waging wars with the king Khosrow. Laws were, in consequence, enacted by the king for the guidance of the Armenian satraps, grandees, chiefs, and lords, whose number was very considerable, and on whom it was made obligatory to remain near to their royal master, and none of them were permitted to accompany the expedition against the king of Persia. This measure was adopted by Khosrow, from a want of confidence in the sincerity of the attachment of the nobles of his court. The terror of the disloyalty of Databi had seized upon his mind, and he apprehended the occurrence of a similar event in his own country.” *Faustus. Lib. III. Cap. VIII.*

Laws enacted during the reign of the Bagratide.

Of the laws enacted during the days of the Bagratian kings, no record has been preserved in the annals of the Armenian historians. But, from ancient Armenian manuscripts, found at Lemberg or Leopoldis, a city in Poland, it is ascertained that the Armenians, who emigrated in the eleventh century from the thickly populated city of Ani,* and other provinces of Armenia to that part of Europe, had carried with them the code of laws by which they were guided in their own

* Ani was a most magnificent and populous city in Armenia towards the close of the tenth century, and contained one thousand and one churches ! See my History of Armenia, vol. II. p. 92. It is nothing now, but a heap of ruins.

country. This code of laws was translated into Latin in the year 1548, by order of Sigismund the First, king of Poland. It is greatly to be regretted that not a single copy of this Latin translation of the Armenian code of laws has made its way to British India. It is, however, consolatory to learn, that this translation is to this day preserved in the library of the Armenian College at Venice. Sigismund writes thus in the preface to that code of laws: "Although we have to this day sheltered and protected the Polish Armenians, our subjects, under their own Armenian privileges and laws, by which our predecessors had acknowledged and governed them, but on the occurrence of dissensions and disputes between them and the citizens, it was thought necessary to have that law-book of theirs, which was written in the Armenian language, and which was only understood by themselves, translated by them into Latin, and presented to us in that form, so that every cause of suspicion and collusion should be removed, and that we should, by the help of the members of our council, make judicious inquiries into its contents, and, by a slight alteration, confirm the same." After writing thus far, he mentions the name of Johannes, the Bagratian king, and cites his mandate in the following manner: "Johannes, by the grace of God, king of Armenia, during the days of his auspicious reign enjoined, not to open courts of judicature on Sundays—not to borrow money—not to prefer claims against debtors; and made other similar enactments for the observance of Sundays." After this he adds: "It is enjoined by the Armenian king Theodosius, (perhaps Ashot,) of happy and blessed memory, and other orthodox Armenian kings and princes, to render justice and equity to all—to cities, towns, villages," *et hoc genus omne*. These quotations are corroborative of the existence of laws and law-books in Armenia, during the reign of the Bagratidæ.

Of the succession of Kings.

Although after the subversion of the kingdom of the Bagratidæ, we meet with a specimen of the law of succession in the commencement of the code of Mechithar Ghosh,* yet it is evident that this law was in

* Mechithar Ghosh flourished in Armenia towards the close of the twelfth, and the beginning of the thirteenth century. Besides his code of laws, he is known to be the author of several other valuable works in the Armenian language. *Ghosh* is the cor-

force in Armenia during the reign of the Bagratian kings, with some slight variations. In the days of the Arsacidæ the crown devolved from son to son in a lineal succession; but the law of the Bagratidæ confers the right of succession upon brothers. There are also some other laws, of which I shall furnish the reader with an extract: "Although," says this legislator, "the crown by right devolves upon the first-born, yet the most eminent for his wisdom is to succeed to the throne. So long as the king's brothers survive him, his sons are debarred from a succession to the throne. But, on the extinction or demise of the brothers, then the crown devolves upon the king's sons. Should the king leave a daughter surviving him, she is to be invested with the title of nobility, and is, together with her husband, entitled to one-half of a share of a brother. And, on the demise of kings, if there be a son from the son, and a son from the daughter, the son's son is to succeed to the throne, but not the daughter's. And so long as there may be descendants of the son, the daughter's children are debarred from succession, at which any attempt made by the latter is unlawful and unjust. For, it was in this manner that our king Abgarus enacted laws for the succession to the throne of Persia. And the patriarch Noah apportioned to the sons and the daughter, the regions of the southward, as women also rule over those parts."—Then the legislator describes the manner in which the succession is to descend when there be only a daughter, but no son surviving the king. Or, if there be no heir to the king, then the right of succession devolves on his kinsmen, one of whom only is to reside at the royal palace near the king, and the rest are to be domiciled at a distance, according to the custom prevalent among the former kings of Armenia. All this is written by Mechithar Ghosh, in the commencement of the second chapter of his code of laws. By the last quotation, the legislator means to allude to that usage of the kings of the Arsacidæ, of which mention was made above. The law of succession was not, however, kept inviolate during the reign of the Bagratidæ, among whom there were

ruption of the Persian word *کوسا* corresponding with *քարձ* or *քարց* or vulgò *քոսալ* in Armenian. This appellative cognomen was added to the Christian name of the Armenian legislator, in consequence of his having very little or no beard. By this distinguishing appellation he is invariably mentioned throughout the works of his cotemporaneous writers, and in the page of our national history.

found some pretenders and upstarts, who created disturbances by disputing the right of succession. The collision of Atshot with his brother Johannes, is a remarkable instance of this dispute.* But, during the reign of the Arsacidæ, the whole of the royal descendants, with the exception of Sánátrúk, adhered to this law of succession.

Some other items of the Laws of the Bagratidæ.

Taxes are alluded to in the second chapter of the code of Mechithar Ghosh, who treats of the royal courts of judicature, and of those subordinate thereto: "Kings and princes," says this legislator, "ought justly to impose taxes on lands and nations, and not to exact more than what is tolerated or allowed by immemorial usages. They will have to render an account of their stewardship to the great God. They were appointed for the preservation and welfare of the country, but not to entail ruin and misery upon the people placed under their government. The imposition of taxes ought to be in the following manner: one-fifth of the produce of cultivated lands is to be given to the state. Lands, gardens, and orchards, purchased by the people, are not to be subjected to this tribute. Watermills and houses are in like manner to enjoy this exemption. The inhabitants are to be taxed for the trade in which they are respectively engaged, and the commodities which they offer for sale. Christians are considered exempt from a poll tax, which is only to be imposed upon unbelievers. Irrigated lands are subjected to a tribute of one-fifth of their produce, and enfranchised or quit lands are subject to the payment of tithes. Because the right of kings and princes extends only to earth, but not to water, enfranchised lands, orchards, and gardens, are also exempt from taxation. In like manner, of the seven days in the week, one is to be devoted to the royal service. To demand from labourers more than this, is a great injustice. No specific tax is to be imposed upon oxen, besides that of one-fifth alluded to above. A pound of butter is only to be levied upon each cow. Pasture-grounds are exempt from the tax which is imposed upon cattle that graze therein. The sheep are to be tithed in their lambkins, which can be exchanged with the sheep *ad libitum*. Horses, mules, and asses, are not to be taxed, because by the

* Vide my History of Armenia, vol. II. p. 109.

help of these animals essential services are rendered to the government of the country."

From the same chapter of the code of Mechithar Ghosh, we shall quote what relates to the administration and law of precedence of the ancients. "It is unjust in princes to impose a tax upon believers, because the unbelievers are alone to be taxed. It is proper to exact tribute from the latter, but not from the former, as it is done by the Georgians to those placed under their subjection. When a tract of land is granted by the crown to an Armenian nobleman,—if a fort be raised on it by the latter in accordance with the royal consent, or if a village be constructed thereon, or if ruined buildings be repaired thereon,—then, and in that case, the same tract of land is to devolve on him and his heirs in perpetuity. The land so granted is by no means to be alienated from him without a very serious and heinous offence. And, after the death of the person or persons on whom that land is conferred, the gift is to devolve on his, her, or their, descendants by order of the king. In like manner, nobles are to be next to princes, according to the seniority or priority of the latter, and citizens and peasants ought to be subordinate to nobles.—Forests cleared, and ruined places repaired or rebuilt, are to be the undisputed and inalienable property of the enterprising persons at whose expense the works were performed, and are to devolve on their children in perpetuity after their death. On the construction of a city or fort, should there be a deficiency of money in the public treasury, it is incumbent on the people to render their general support towards the completion of the building. Citizens are to enjoy the honor of precedence to villagers, and inhabitants of villages should precede in rank the farmers and husbandmen. This law of precedence is, in like manner, to obtain among the denizens of forts and villages. These have been the usual and invariable practices among the ancient kings of Armenia." The concluding portion of this quotation alludes to the usages prevalent in our country during the reign of Valarsaces, as stated above.

Courts of Judicature, and Codes of Laws in Armenia.

In our national history mention is made of the institution of courts of judicature by Valarsaces, during the days of the Arsacidæ, as it appears from the testimony of Moses of Chorene, while speaking of the

public acts of this monarch. “**Իրաւարարս ՚ի տան արքունի, իրաւարարս ՚ի քաղաքս և յաւանս : Թ. 7 :** “*Judices in aulâ regiâ, judices in oppidis villisque statuit.*” *Lib. II. Cap. VII.* Where there are judges, there must of necessity be courts of judicature, in which judges and arbiters hear causes, and administer justice by the employment of officers and subordinates, without whom judicial affairs cannot be properly managed and conducted. But, that there were actually courts of judicature in existence in Armenia, we have conclusive and satisfactory evidence in the work of that ancient historian. **Գիւղից և զաւառաց, ևս և իւրաքանչիւր տանց առանձնականութեց, և հանուրց հակառակու- [Թեանց և դաշանց, այժմ առ մեզ գտանին անբաւ զըուցաց մատեանք, մանաւանդ որ ՚ի սեպհական ազատութեն (նախարարութեն) պայազատուի : Խ. 2 :** “*Quibus adhuc devicis at provinciis, atque etiam rebus sigillatim domesticis, publicisque controversiis, ac fœderibus, scripta extant apud nos innumera historiarum volumina, ac praecepue dum successio mansit libera.*” *Lib. I. Cap. II.* It is evident that such codes of laws and instruments regarding which disputes and differences might have naturally arisen, by the lapse of several years, among heirs, coheirs, and legatees, were carefully kept in courts of judicature, conformably to the order of the government of the country. This has been the common and invariable practice of civilized nations, in all ages and in all countries.

We have also incontrovertible proofs of the existence of law-books in Armenia during the reign of the Bagratidæ, in the Latin translation of the code compiled and prepared under the auspices of the Armenian king, Johannes the Bagratiar, of which mention was made above. The classification of the chapters of this code is preceded by this sentence :—“The Armenian kings lay down this model of justice for the guidance of their judges.”—Then follow, in separate chapters, laws respecting the adjustment of disputes arising from wills—laws enacted for the settlement of differences among married parties—and laws intended for the correction of offenders and the punishment of criminals.

In the face of all these evidences, one cannot but be greatly astonished in reading the introduction to the code of Mechithar Ghosh, where-

in he frequently alludes to a total absence of laws and law-books among the Armenians, and to the consequent necessity of his collecting data, and embodying them in the form of a code of laws! In the second chapter of his law-book, the heading of which is, "Why were we disposed to compile this book, or what incentives induced us to resolve on framing this code?" Mechithar Ghosh furnishes the reader with a statement of his reasons for so doing, of which the following is an extract:—"That we have often been accused not only by unbelievers, but by Christians also, of a total absence of law-books, based upon the principles of evangelical laws. That lest, from the non-existence of a written law, the Armenians should apply or appeal to unbelievers for justice. That many, on various occasions, ignorantly distort the true meaning of laws, and it is for their information and correction that we were induced to compose this code of laws. Not content with this alone, we caused this code to be placed in courts of judicature, as a record intended for occasional and necessary reference. That being destitute of written laws, our predecessors were unable to make references, but, on the removal of this want, we shall now avail ourselves of this record, and be able to afford a proof to unbelievers of the existence of written laws amongst us, by which they will be silenced, and obliged to desist from heaping on us accusations for the apparent want of a code. We were for a very considerable time subjected to the keenest reproaches of our countrymen and strangers for the absence of a law-book, and their censures proved as a spur to us in undertaking the preparation of a code of laws...I was also seized with astonishment at the apathetic indifference displayed by our ancestors in not supplying this desideratum."

These remarks were written by Mechithar Ghosh, towards the close of the twelfth century, at which period, as stated above, he flourished in Armenia in the character of an Armenian lawgiver, and erudite author. But, as the numerous Armenian families that first quitted Armenia emigrated to Poland in the middle of the eleventh century, it is very probable that these emigrants carried with them their own law-book, which it was impossible for Mechithar Ghosh to meet with in Armenia. The Armenian colonists in Poland being in possession of a law-book of their own, were guided by it in all their civil and judicial affairs, as stated above. Yet, upon all this, considering the laws al-

luded to by him, relative to the prerogatives of kings and the rights of princes, we are led to conclude that Mechithar Ghosh was at least possessed of some fragments of the laws of the kings of the ancient Bagratidæ and Arsacidæ, otherwise he would have candidly declared that the code was entirely his own production. This carries with it its own improbability. And it is not injudicious to adopt this conclusion from the perusal of the second chapter of the prefatory observations of his law-book, in which he says :—" This string of laws will perhaps be considered an object of ridicule by those in whose hands it may chance to fall ! They will assimilate us in their mind's eye to those who, in a fit of delusion, dream of kingdoms and of royal splendour and glory ; but no sooner they are awakened from their illusive and enchanting dreams, than they see nothing but the mere shadow of what their heated imagination had portrayed in glowing colours ! But, let them remember that I am not ignorant of the vanity and transitoriness of all earthly kingdoms ! Of this we have a most singular and striking proof in the rise, progress, and annihilation of our own kingdom. The past has vanished for ever—the present is a mere tantalising nonentity—the future I can scarcely hope to see ! Yet, these distressing circumstances and melancholy reflections will not be permitted to cool my ardor in prosecuting the task of framing a complete code of laws, conformable to the wants and present state of the nation, from the conviction, that the utility of my production will be generally acknowledged and duly appreciated. In attempting to publish and promulgate this work, I must crave the kind indulgence of unbiassed observers ; and, in so doing, I stand fully prepared to be visited with the censures of hasty and fastidious critics, for such errors and imperfections as may be found in this production of mine. Yet I still entertain a hope, that they will consider me worthy of credit for good intentions, though they may not be disposed to extend to me their pardon for the defects of my work." From these observations of Mechithar Ghosh it is to be inferred, that the laws contained in his book were not *bonâ fidé* his sole production, but a compilation from those framed by ancient Armenian law-givers. In preparing this article on the laws and law-books of the Armenians, I have availed myself of Inchichian's "*Antiquities of Armenia*," a work published at Venice in 1835, and replete with deep research and

most valuable information. If the Mechitharistic Society* of Venice be disposed to publish a correct edition of the code of Mechithar Ghosh, and of the book of laws prepared under the auspices of the Armenian king, Johannes the Bagratian,—authentic copies of which are preserved in the extensive library of that learned body,—they will certainly confer a very heavy obligation on their countrymen generally, but more particularly on the Armenians located within the pale of the government of British India. An approved and unexceptionable edition of these two statute-books of the Armenians, cannot but be most servicable to the judges of the Sudder Dewany Adawlut, who will be entirely guided by them as by an unerring criterion in their decisions on causes and questions arising from hereditary gifts and testamentary bequests of the Armenians residing under the jurisdiction of the Mofussil courts. But in the absence of printed Armenian law-books, questions of succession to property, in cases in which the litigants were known to be Armenians, have been invariably referred in writing by the judges of the Company's courts to such of the Armenian bishops as happened to sojourn or itinerate in this part of British India, during the period of their triennial or septennial episcopal visitation, which they performed in accordance with the written and acknowledged authority with which they were respectively invested by the pontificate of Etchmiatchin,† near Erevan, in the province of Ararat, the archbishoprick‡ of Julpha in Ispahan, and the patriarchate of Jerusalem,§

* This veteran Society was established in the year 1717, and its members have been pre-eminently successful in the revival and cultivation of the classical literature of Armenia, by the publication of numerous philosophical, philological, and scientific works of sterling merit. The members of this Society lead a strictly monastic life. The following lines are extracted from the life of its zealous and patriotic founder :—

“ Մենաստանս այս ըստ բոլորին
 Շինեալ եղև 'ի վառս Փրկչին ,
 Յաբբայու թեան Սբաստացւոյ
 Մխիթարայ վարդապետին : ”

“ Fuit hoc monasterium totum tempore Mechithar Petri ex Sebaste I. Abbatis extractum. A. D. 1740.”

† 'Ի կաթողիկոսարանէն նբոյ էջմիածնի :

‡ Յառաջնորդարանէն Զուղայու :

§ 'Ի Պատրիարգարանէն Երուսաղէմի :

to which each or any of them individually belonged. Sometimes, in the absence of Armenian bishops, the officiating Clergy attached to the Armenian church of Calcutta have also been consulted on questions of inheritance, or testamentary bequests. The exposition of the Armenian law or usage, furnished by these episcopal and clerical dignitaries of the Armenian church, in accordance with the specific queries put to them, has, almost in all instances, guided the judges of the Company's courts, either in determining similar questions pending *sub judice*, or in pronouncing their decisions in cases of the above mentioned description. The Company's courts, so far as my information extends, pursue the practice sanctioned by the precedents alluded to above.

In connection with the subject of Armenian laws and law-books, I think it necessary to add, that in June 1838, I was requested by my highly esteemed and deeply lamented friend, Mr. James Prinsep, to pass my opinion on a certain Armenian code of laws in manuscript, which accompanied his letter, for my perusal and consideration. I cheerfully undertook the task intrusted to me, and instantly put him in possession of my opinion in a letter, of which the following is a copy:—

TO JAMES PRINSEP, ESQ.

MY DEAR MR. PRINSEP,

I have received your note of yesterday's date, together with a manuscript volume in the Armenian language, and hasten to put you in possession of my candid opinion on the same.

The book in question is a code of laws, both civil and ecclesiastical, written or transcribed in the Haican era 1135, corresponding with the year of our Lord 1686, partly by a priest named Alexianus, and partly by a bishop named Jacob, native of Ghrim, and pupil of another bishop named George, of the see of Ezinka. The transcription thereof was made at the desire of another bishop named Thomas, and inscribed to Stephanus, the supreme patriarch of the Aluans. The work is based on Mosaic laws, and the materials of which it is composed are derived from the Old and New Testaments, and from other ancient records.

Mechithar Ghosh, who flourished in Armenia between the close of the twelfth and the beginning of the thirteenth century, and who is eminently distinguished in the page of our national history for his unrivalled attainments, is known to have been the author or

originator of a code of Armenian laws, which was then generally used in the courts of judicature of our country. History also tells us that another code of laws was in existence in Armenia, so far back as the year of Christ 1046, written or prepared under the auspices of the Armenian king, Johannes Bagratian. The latter has been in general use among the numerous Armenian population of Poland, where a transcript of it is preserved, with a Latin translation; but the text or original work is not to be found. As neither of these law-books has found its way to India, I am unable to say whether the volume you have sent me is a transcript of the one or the other, for the name of the author or legislator has unfortunately not been inserted therein. I am, however, inclined to think it to be a compilation from both, but cannot take it upon myself to say, whether it is one of established legal reputation in Armenia. It is greatly to be regretted that the code of Mechithar Ghosh has never been printed or published to this day. This, under existing circumstances, is certainly a very serious evil to the Armenians living under the jurisdiction of our Zillah courts.

The following is a translation of a portion of the Chapter on Inheritance:—

“ *Chapter CIV.—Of the division of Property.* ”

“ Conformably to the rule of division, property must be equally divided in the following manner: that is to say, the whole of the property to be considered as one drachma, and the drachma as six oboli. If there be a son and a daughter in the family, the property must be thus divided: that is to say, two and a half oboli to the brother, two and a half oboli to the sister, and one obolus to the mother. But, if there be two sisters, and both of them married, the two sisters are to be looked upon in the light of one brother. Two and a half oboli to be given to the brother, two and a half oboli to the two sisters, and one obolus to the mother.”

From this it will appear, that the wife or mother is entitled to one-sixth of the property bequeathed by the father or husband. This custom or usage, so far as my information extends, does to this day obtain among the Armenians residing in the various parts of Persia and Turkey. It is difficult for me to ascertain whether the Armenians living under the rule of Russia,* are equally guided or influenced by this usage.

* A code of laws, bearing the affix of the imperial *fiat*, was concocted and published in 1836, for the guidance of the Armenians living in Ararat, one of the provinces of Armenia which is now under the sway of Russia. A copy of this code of

Herewith I return you the manuscript volume, with the contents of which I have already been made acquainted, by the kindness of its former owner.* Another copy of this work, though not so elegantly written, was in the possession of one † of the Armenian priests of Calcutta; but in consequence of his death, it was, together with his other books, sent to his son at Ispahan in January last. Should you require an English translation of any other portion of the work, I shall feel most happy to furnish you with it. ‡

Believe me to be,

CALCUTTA,

Your's very truly,

26th June, 1838.

JOHANNES AVDALL.

laws in manuscript having been sent to me from Madras, I instantly put it into the press, and published a sufficient number of copies thereof for the numerous Armenians living in different parts of British India. The contents of this code are, however, inapplicable and scarcely of any use or benefit to my expatriated countrymen, scattered throughout this portion of the globe. Driven as we are from our country by Moslem despotism and unrelenting persecution—bereft as we are of our national glory and independence—wandering as we are on the surface of the globe like the scattered children of Israel, but partially domiciled here, under the fostering and paternal care of the British Government, I trust I shall not be taxed with presumption in expressing a wish, that a string of laws, well adapted and suited to the circumstances and general condition of the Armenians settled in this country, framed and concocted by the wisdom of the Legislative Council, be passed and promulgated by the Supreme Government of British India, with the view of promoting and securing the welfare of the children of their adoption. In asking this boon, I rest assured that it will be conceded to us by the illustrious and philanthropic head of our government.

* The former owner of this law-book was the late Right Rev. Hárúthéun Várdápiet **Սրբազան Զարուհիւն Վարդապետ** of the fraternity of the Armenian Convent of Julpha in Ispahan. In the year 1824, while residing at Sydabad with his brother, the late patriotic Manásácán Vardon, the Rev. gentleman was applied to in writing by Mr. G. C. Master, first judge of the Provincial Court for the division of Dacca, to state his opinion on a certain question of inheritance, arising from the will of a certain opulent Armenian inhabitant of that place. In complying with Mr. Master's request, this dignitary of the Armenian church availed himself of the contents of this very law-book. His opinion on the subject is justly and appropriately prefaced by these words—"All laws of justice, either civil or ecclesiastical, in all Christian nations, have their origin from the Holy Scriptures." The judges, I am credibly informed, were guided by his opinion in pronouncing their decisions. Hence, it is evident, that the book in question was considered by the judges as a sufficient authority. On the death of Hárúthéun Várdápiet, the book alluded to became the property of his brother, Mr. Manásácán Vardon, on whose demise it devolved on his eldest son, and is *now* in the possession of his youngest son, Mr. S. M. Vardon.

† The late Rev. Ter Marcar Ter Carapiet, **Հանգուցեալ Սրբակրօն Տէր Մարգար Տէր Կարապետեան** formerly vicar of the Armenian church of Calcutta, of happy and blessed memory.

‡ The utility of piecemeal extracts from these manuscript Armenian law-books, will be temporary and confined to a few only. As several of the Armenian residents in the Mofussil, have a large and extensive property in lands and talúks, would it not be advisable for them to adopt measures for printing at the Armenian press in Venice the code of Mechithar Ghosh, and the law-book of the Armenian king, Johannes Bagration? Let them come forward and supply the *sine quá non*, and the long-desired object will be speedily and satisfactorily consummated.

On Tabular Returns of the N. W. Frontier Trade with Afghanistan.

[Profiting by the scope and character of this Journal, and following the system of the Society after which it is named, the Editor has not hesitated in publishing the following Tables, and the remarks upon them, as containing most valuable notice of a subject interesting to all in India. The information compendiously given in the above, was the result of private perquisitions, made at the instance of the writer of this note: it may be relied on as strictly accurate. The allusion to disadvantages opposed to traders from Cabool is only made, in order to show how great must the contrary advantage be, and how strong the impulse to trade, when, (as the writer believes to be the case,) they have now been removed by recent arrangements.]



EXPORTS.
British Manufactures and Island Produce.

The statement (No. 1,) embracing the trade of the year 1840, (from January to December,) in British manufactures and Island produce cannot, it is to be regretted, be pronounced thoroughly accurate, inasmuch as it is derived from data which is presumed to be imperfect. However, the quantity of each staple therein exhibited as having been exported to Cabool across our North-west Frontier, during the period under review, is, there is every reason to believe, by no means exaggerated; on the contrary, it may be said to fall far short of what actually found its way to the Northern marts, via Delhi, which is the great *entrepôt* of the extensive commerce of our North-western Provinces and Central Asia.

The correctness of the staples of trade given in the statement can be vouched for, and it will be observed, that cloths form the chief. Of the several descriptions of linen the most prized and sought after, is long-cloth, (*Luttah*,) the unbleached being preferred to the bleached; the Cabool merchants having discovered that our method of bleaching rots the thread, and abstracts a year's wear at least from the cloth; besides it enables them the more readily to dye it blue, their favourite colour.

Of all the export staples, British linen is said to give the greatest return, yielding a nett profit of nearly 100 per cent. on the outlay,

and to meet with the most ready sale, the merchants from Khiva, Bokhara, Khorassan, Samarcand, Lodauk, &c. &c. buying it up with avidity.

Our broad cloths, too, are eagerly sought after, (*somb're* colours are preferred to gay,) and immense quantities are said to be exported from Bombay. It is only the coarser quality that is inquired after here. The same remark applies to Birmingham and Sheffield ware, cutlery, &c. which is very much admired and prized; especially when contrasted with the miserable wares of Russia, specimens of which, when contrasted with the rudest workmanship of the Delhi artificers, have shown the comparison to be greatly to the prejudice of the former.

The next article in point of importance is metal, (lead, copper &c. the former in pigs, and the latter in sheets,) and of this it need only be said, that the demand for the Northern parts is greater than the supply here, *i. e.* the surplus supply—the home consumption being enormous.

Island produce, of which the several kinds of spices compose the principal export staple, (black pepper is the chief item,) will always exercise a very important influence on the Cabool trade; for, although not strictly coming under the term “necessary,” the customs and habits of Asiatics render the consumption of Island produce, spices, beetlenuts, pigments, &c. a matter of course.

The trade, as will be seen in Island produce, has been tolerably brisk during the past year; but it would have been considerably more so, were it not for customs' restrictions.

Almost all articles of Island produce are subjected to port duties when imported seaward into Calcutta, and therefore, agreeably to the liberal principle allowed by Government, ought not again to be taxed any where within the Company's territories. This, however, is not, and cannot be done, inasmuch as most of the produce of the Islands is also liable to the payment of inland customs' duties; that is, they (*vide margin**) are borne on the tariff, which regulates the levy of duty in the inland customs' houses.

* Spices, beetlenuts, logwood, pepper, long pepper and its roots, (called piplamoor;) sandal-wood, senna, camphor, benjamin, red earth, red lead.

A Cabool merchant, (to give an example,) purchases at Calcutta 10 maunds of black pepper, which he is told is sea-imported, and therefore not liable to further interference any where within the Company's territories. He brings this pepper to the North-west frontier line of customs unaccompanied by a *rowannah*, when, as a matter of course, it is seized. The owner urges that he purchased it at Calcutta as a sea-import, and the customs' officer demands proof, which is not forthcoming. The consequence is, that the goods are detained, and the case is reported to the Sudder office, which is often distant a hundred miles from the scene of action. The merchant defending the case urges the same plea, and the native appraiser, who cannot possibly know the difference, is asked his opinion as to whether the article is sea-imported, or country produce. In nine cases out of ten he declares it to be the latter, when the custom collector desirous of discriminating between zeal to Government and justice to the trader, determines upon sending samples of the goods to the custom master at Calcutta: meanwhile, the merchant is told that his property must remain under attachment, or he must deposit a sufficient sum of money to meet a demand for single duty. This latter alternative he gladly accepts, considering any sacrifice better than further detention, which usually swells out to fifteen or twenty days.

The samples are, in due course, submitted to the English appraiser in Calcutta, who, possibly knowing nothing of country produce, or at least of the particular produce in question, pronounces the samples to be sea-imported; consequently, the inland custom collector resolves to release the pepper; but the owner is no where to be found, and his money remains in deposit for three months, when, according to the rules of the department, it reverts to Government.

Subsequently the owner on his return trip to the provinces calls to know the fate of his money, and he is told that although the pepper was proved to have been sea-imported, the duty was carried to credit, as he did not claim it within the prescribed period of three months.

The above will shew, without further comments, how materially this branch of commerce is retarded, (and without help) by the frontier customs.*

* I have reason to believe, that this inconvenience is in course of remedy.

Country Produce.

Statement No. 3, exhibits this section of the Cabool trade during the year 1840, and as it is compiled from authentic documents, there can be no doubt of its accuracy. Want of time has not allowed of a comparison with the exports of previous years, but there are the most ample grounds for asserting, that the past has more than quadrupled in quantity and value the exports of former years.

Statements No. 5 and 7, shew the exports during January and February 1841, which have also been abstracted from the custom-house registers. A marked improvement will be observed in these, especially as regards the chief staples, cloths and shoes, more than double of the former, and quintuple of the latter, having been exported during these two months than during the whole of last year. Indigo, which also occupies a prominent station, I have reserved for particular notice hereafter.

Statement No. 10, gives the exports of the past month, (March 1841); this is not included with Nos. 5 and 7, with the view of mentioning that measures were taken in February last at all the custom posts stretching along the outer frontier line, which extends from Kalsie in the Deyrah Dhoon to Goverdhun on the Eastern boundary of the Bhurtpore territory, for the registry not only of all country, but British and foreign produce exported to, and imported from, Cabool; and that, therefore, means are obtained for the faithful record of the operations of each month, and in each article.

From this statement it will be seen, that 92,401 pieces of cloth (linen, silk, and brocades,) valued at Rs. 1,82,064 were carried across the frontier in March, which was considerably more than any other period, and gives evidence of the increasing demand for the productions of British India.

Cloth being the principal staple of commerce in country produce, it may be necessary to state what descriptions of cloth are most desired. The most valuable, and consequently the least in quantity, are kimkhaubs and doputtas, (coloured,) both of which are manufactured at Benares, and yield unusually large returns on re-sale at Cabool. The largest in quantity, but least in value, are Furruckabad chintzes, and Dooab muslins, ghingams, doosooties, and garhas, also Dinapore muslins. These latter are preferred to the indigenous cloth of the

north, as possessing a finer and stronger texture, being mostly woven with English and country thread.

Country shoes, which it will be perceived are exported in large quantities, are manufactured chiefly about, and exported entirely from, Delhi. Indigo, regarding which a distinct notice was reserved, possesses the distinguishing feature of being the only article of trade contained in the statements, which is not conveyed directly by the Cabool (*Vilati*) merchants. It is in the first instance consigned by the Delhi merchants to Amritsir, from whence it finds its way to Cabool. That which is exported across our customs' frontier, is raised at Koorjah in the Alligurh district; but the quantity stated in the statements, is perhaps not one-half of what will be found in the Cabool market, as large quantities have within the last few years been grown in the protected Seikh states* which are beyond our line, and from thence imported into the Punjab, and countries contiguous to it.

There was at first room for doubting the fact, that indigo really found a market at Cabool to the extent alleged, and close inquiry was therefore instituted of the Cabool merchants; the result has proved the correctness of the original information, and the removal of all doubt on this important question may truly be deemed of paramount interest, both to the European who embarks his capital in raising indigo, and the exporter, who will be, in a great measure, rendered independent of the fluctuations of the European market, by the wide field of enterprize opened to him in the vast countries of the north; where, as I have before observed, the beautiful and permanent dye of indigo will always supersede every other, from its being the favourite colour, and applied to the commonest wearing apparel. However, this refers more to a prospective, than a present benefit.

Indigo produced by a European, whether from its superior quality, the result of superior machinery and larger outlay, or enhanced price, cannot for a time compete with the inferior and cheaper material produced by the native manufacturer, for reasons obvious to those

* Munny Majra in Sirhind, a small principality among the states, produces it most extensively, and of the best quality.

acquainted with the

The process of manufacture could not fail to produce other than the most inferior quality, especially as boiling is never used. The pieces of Indigo are seldom larger than a sparrow's egg, and yield a very dingy colour compared with that manufactured by Europeans. The average price (wholesale) per maund, is about ninety rupees.

purposes to which indigo is applied,* and the low ebb to which the monetary relations of the mass of the people of the north were reduced, immediately previous to the influx of British enterprise and British capital. When the operation of these powerful, and hitherto never-failing propellants to prosperity shall have come into full play, it may reasonably be hoped that articles, whether indigenous to Europe or Asia, of European manufacture, will be consumed in preference to those which are produced from the rude and primitive machinery of India.

The other articles of export in country produce, with the exception of *Gotah kenarre*, scarcely merit particular mention, as they are so trifling; but it may be reasonably expected, that as the productions of British India become better known, they will be appreciated, therefore more extensively consumed. Already the use of *lac* is being understood, and I am aware of several merchants having carried samples of it with them, that they might regulate the supply by the demand.

Gotah kenaree, (gold and silver tissues,) will, I am assured, in time be extensively sought after. The chief—possibly only—places of manufacture are Lucknow and Delhi; the latter especially.† It is impossible to ascertain precisely the quantity exported, as from its great value, every expedient is resorted to, and it is said successfully, to smuggle it.

As pertinent to this subject, it is worthy of remark, that in 1837, several camel loads of spurious lace were stopped, which were crossing the line, packed in bundles bearing the manufacturing mark of *Moscow*. It had been brought from Cabool, and had been sent to the

* There are yet other reasons which militate against the purchase by Afghans of indigo manufactured in the European method, the principal of which is the compact pressure given by us to the article. This renders necessary the employment of machinery to grind down the dye before the colouring matter can be properly extracted, whereas the friable, uncompact nature of the indigenously manufactured article, admits of its ready solution in water.

† Benares has also, I think, an extensive manufacture of this article.



provinces, with the view of ascertaining whether sale would be obtained for it ; since that period no attempt has since been made to force the manufactures of Russia into our markets.

IMPORTS.

Previously to the opening of the Cabool trade by the result of recent political events, exports were greatly disproportioned to imports ; the dangers of the route, and other obvious causes, rendering it most unsafe to convey foreign and valuable articles, which could tempt the cupidity of the lawless hordes, inhabiting the countries through which the route lay. The imports were, in consequence, converted into specie, and not, as now, paid for in kind : so that the advantage all lay on the side of Cabool.

In the statements of import trade, only such articles as yield a duty to the British Government are shewn. Of these, the chief is assafœtida, which always meets with ready sale in our provinces. There is perhaps no country in the world where assafœtida is more commonly used than in Hindoostan.

Saffron is in less common use ; the price placing it beyond the means of any but the rich, and a preference being given to that which is brought from Calcutta, imported from the Persian Gulph in Arab ships.

Besides the duty-paying staples, fruits, sarsaparilla, salopmisry, lapis lazuli, medicinal drugs, opium, and churrus, comprize the import trade of Cabool. In the margin* is appended a note, shew-

* Raisins,	1774	Camel loads.
Pistachio Nuts,	182	..... ditto.
Monukkas,	592	..... ditto.
Khobaunies,	90	..... ditto.
Pears,	108	..... ditto.
Pomegranates,	605	..... ditto.
Walnuts,	14	..... ditto.
Prunes,	71	..... ditto.
Almonds,	379	..... ditto.
Plumbs,	66	..... ditto.
Grapes,	105	..... ditto.
Figs,	14	..... ditto.

4,000

Fruit is only imported in the cold season.

ing the number of camel loads of fruit, amounting to 4,000, which crossed our frontier from November 1838 to April 1839. The operations of this period are shewn in preference to any other, as being the least favourable, in consequence of the military preparations in progress at that period, by which the trade was partially checked ; so that there was a falling

off of nearly one-fourth in the imports of previous years, and one-tenth of those of 1840.

Mooltan, Bahawalpore, and Soorutgurh, and Bhutneer, (in the Bekaneer states,) mark the route followed by the *Kafilas* before they enter the British possessions. From Bhutneer they come to Sirsa, in the Bhutty territory; whence travelling by Ranea, Hansie, and Rhotuck, they enter Delhi, and then diverge to the several marts of the provinces.

The reason assigned for the *Kafilas* congregating at Delhi is, that by doing so, they avoid the heavy duties imposed at every customs' *chowkey*, which they would have to pass in their progress through Bekaneer, Lohanee, Kanounie, and other foreign states.

The nature of these duties will be judged from the subjoined memorandum.

At Soorutghur, per camel load of fruit, pays a tax of ..	12 annas.
At Bhutneer, the same,	12 annas.

Total, Rs. 1 8

This amount of duty is paid by the Cabool merchants to the Bekaneer state, and it is computed that in good average years a revenue of rupees 12,000 is derived from this source; which, at 12 annas per camel load, would shew the average number of camel loads of fruit imported every season into our territories to be 16,000. This tax is levied without distinction as to the quality of the fruit, all paying alike, and when two camels are lightly laden, from their being young or weak, they pay the tax of one proper camel load.

At Naheir, in the Bhokaneer states, an additional duty is levied of, per camel load,	Rs. 1 5 0
And at Buhadera, also in the Bekaneer states, a further duty of, per camel load,	2 10 0

Making a Total of Rs. 3 15 0

which, added to the duties levied at Lohanee, Kanounie, &c. averaging 1-8 per camel load, shew an aggregate of rupees 5-7 per camel load, which the merchants would have to pay in addition to the tax paid at Soorutgurh and Bhutneer, were they to enter our territories by any other route than Sirsa and Delhi. Of course, no reference is made to the route running through the Khyber Pass, the Punjab, Ferozepore and Loodianah, as the Cabool merchants would at all risks avoid it.

It now remains to offer a few brief general observations, premising as to the character of the Cabool merchants, that they are remarkable for probity and straight-forward dealing, combined with caution and great tact in the art of buying and selling, and that it is so high in the provinces, that credit to any amount is given to them without hesitation. Indeed a striking resemblance in this respect may be traced between them and that remarkable tribe the Brinjarruhs.

After disposing of most of their import wares at Delhi, the merchants proceed to the lower provinces, furnished with bills of exchange from the Delhi merchants on their agents at Cawnpore, Allahabad, Benares, Calcutta, &c. and having laid in a stock of goods suited to the Cabool markets they return to Delhi, and forming a *Kafila*, retrace their way back to Cabool by the same route* they come. They use no other carriage but camels until they reach Allahabad, at which place they leave them, and convey any goods they may have purchased in the lower provinces on hackeries.

Mention was not made in the proper place, that besides the trade carried on *bona fide* by the Cabool merchants, which the statements appended are intended to shew, immense quantities of every kind of goods obtainable at Delhi are consigned to Cabool by the Delhi merchants, through their agents at Amritsir, and advantage is taken of convoys proceeding to Cabool to despatch large consignments.

As a proof of the growing importance of the Cabool trade, it may be mentioned, that an insurance office (Native) has been opened in Delhi, which will assure goods to any amount and value to Cabool.

The regeneration of the town of Sirsa has greatly contributed to the convenience and security of the Cabool merchants. The opening of the navigation of the Indus, and the predominance given thereby to Ferozepore, has certainly abstracted in some measure from the importance of Sirsa, as a grand emporium of traffic. Yet it will always be deemed a valuable *point d'appui* to the northern trade, especially as the superintendent of the Bhutty territory can protect the traders from exactions and vexatious delays on the part of our subordinate customs' officers.

* They usually make trips in the year one and a half.

In conclusion it may be noticed, that the Cabool merchants being totally ignorant of our laws, especially customs, are shamefully imposed upon by a set of law people, who, under the pretence of instructing them how to avoid rendering themselves amenable to our courts, prey upon them in every possible way. It would therefore be very desirable, if the authorities at Delhi were required to direct attention to the interests of the northern trade.*

I am happy to inform you, that since I last wrote, an enterprising merchant of Delhi, who was formerly an inhabitant of Peshawur and removed to Hindostan with Governor Elphinstone's mission, despatched a small consignment of goods (*vide margin*) to Yarkund via

Indigo, khimkhaubs,
doputtas and long-
cloth dyed blue,
skins and jewellery.

Subathoo and Lodauk, with the view of ascertaining whether our exports could not be thrown into China by way of Yarkund, which is I believe situated directly on the borders of it. He seems to be very sanguine of success; as he considers that the superiority of our manufactures will always secure for them the preference over those of Russia, with which alone the Yarkund market is now supplied. In a few days I will submit a statement of trade for April, in which I hope to be able to exhibit three or four new exports. Until October or November, however, the trade altogether will be very slack.

* Attention has, I believe, been directed to this point.



No. 1.

Statement of Goods exported from and via Delhi to Cabool, during the year 1840, the same being British Manufactured and Sea Imported via Calcutta.

Names of Articles.	Quantity.	Estimated value.	Remarks.
BRITISH MANUFACTURES, &c.		Rupees.	This Statement has been drawn up from information supplied by the Cabool Merchants' Agents in Delhi, and may, possibly, not be correct.
Linen cloth, white,	30,000 pieces,	3,15,000	
Chintzes,	25,000 ditto,	80,000	
Velvets,	400 ditto,	60,000	
Broad cloths,	not known,	50,000	
Birmingham & Sheffield-ware cutlery, &c.	ditto,	45,000	
Glass-ware,	ditto,	15,000	
Gun flints,	ditto,	10,000	
Lead, Pewter, &c.	ditto,	1,20,000	
Copper,	ditto,	25,000	
Alum,	ditto,	20,000	
White lead,	100 maunds,	8,000	
Total, ... ..	...	7,48,000
SEA IMPORTATIONS.			
Species, Drugs, &c.	3,300 maunds,	70,000	
Logwood,	2,000 ditto,	20,000	
Beetle nuts,	500	10,000	
Brimstone,	500 ditto,	8,000	
Quicksilver,	30 ditto,	5,000	
Red lead.	200 ditto,	15,000	
Vermillion,	50 ditto,	6,000	
Sandal wood,	200 ditto,	3,000	
Red earth,	200 ditto,	1,000	
Total, ... ..	...	1,38,000
Grand total, ... ..	...	8,86,000

No. 2.

Statement of Goods imported from Cabool across the N. W. Frontier, during the year 1840. The same being liable to the Custom Tax.

Names of Articles.	Quantity.			Value.			Amount of Duty.		
	MDS.	S.	CH.	RS.	AS.	P.	RS.	AS.	P.
Assafoetida,	1,652	38	2	1,44,971	3	9	14,496	15	5
Zeerah, Cummin, ..	1,346	16	8	10,275	5	6	770	11	3
Zaffron, Saffron, ..		33	2 $\frac{1}{2}$	995	5	0	99	8	6
Gum-mastic,	6	31	0	671	6	0	50	6	4
Sumbhoor or Furs... ..	118 $\frac{1}{2}$		pairs.	224	11	8	11	4	0
Total,				1,57,137	15	11	15,423	13	6

No. 3.

Statement of Goods exported to Cabool across the N. W. Frontier, during the year 1840. The same being Country produce, and liable to the Custom Tax.

Names of Articles.	Quantity.	Value.			Amount of Duty.		
		RS.	AS.	P.	RS.	AS.	P.
Cloth,	26,826 pieces	45,525	1	0	1,372	0	8
Cocoanut oil,	20 maunds	280	0	0	20	15	11
Kimkhabs or Brocades,	1,633 pieces	39,037	12	0	2,886	5	4
Verdigrease,	70 seers 6 chks.	36	8	3	3	10	5
Hides,	387	218	0	0	10	14	5
Gotah or lace,	595 tolahs	1,312	5	0	65	9	10
Leather Stockings, ..	100 pairs	300	0	0	15	0	0
Amber,	43 tolahs	129	0	0	9	10	9
Cocoanuts,	2,300	92	0	0	4	9	8
Embroidered Goods, ..	64 pieces	785	2	0	58	14	1
Wax Candles,	2 mds. 10 seers	180	0	0	18	0	0
Iron vessels,	6 mds.	75	0	0	7	8	0
Beetle nuts, country, ..	26 mds. 35 seers	215	0	0	16	1	11
Sugar, brown,	2 mds. 12 $\frac{1}{2}$ seers	21	8	0	1	2	6
Large Hooka snakes, ..	2	20	0	0	1	8	0
Till (Oil seeds,)	31 mds. 20 seers	63	0	0	4	11	7
Shoes,	474 pairs	1,340	13	0	78	1	6
Mirzapoor Carpets, ..	247	827	0	9	62	0	6
Old Brass,	2 mds. 10 seers	101	4	0	10	2	0
Iron,	41 mds. 30 seers	43	10	0	4	5	10
Ballchud, Spikenard, ..	1 maund	10	0	0	0	12	0
Red Lead, country, ..	30 seers	12	0	0	1	3	2
Vermillion, do.	6 seers	36	0	0	3	9	8
Nutmegs, do.	6 seers	36	0	0	3	9	8
Red Sandal-wood, ..	11 seers	1	10	0	0	1	11
Tuj, (Cassia,)	23 $\frac{1}{2}$ seers	20	9	0	0	8	3
Sulphur,	12 $\frac{1}{2}$ seers	12	8	0	1	4	0
Doosooty Cloth,	2 seers	1	2	0	0	1	5
Indigo,	1,989m. 19s. 8c.	2,18,116	9	11	10,905	13	9
Gum,	19 mds. 20 seers	136	8	0	10	3	10
Total,		3,08,985	14	11	15,578	8	7
Total Imports and Exports,		4,66,123	14	10	31,007	6	1

These two Statements are derived from the Custom House Registers, and can therefore be relied on.

No. 4.

Statement of Goods imported from Cabool across the N. W. Frontier, during the month of January 1841, the same being liable to the Custom Tax.

Names of Articles.	Quantity.	Value.			Amount of Duty.		
		Rs.	As.	Ps.	Rs.	As.	Ps.
Assafœtida, ...	700 mds. 9 seers.	39,361	2	0	3,996	0	0
Sumbhoor or Furs,	180 pairs, ...	133	10	0	16	10	11
Black zeerah, Ni- gella, ... }	70 mds. 23 seers.	2,752	14	0	217	5	7
Guns, ... }	2, ...	20	0	0	4	0	0
	Total, ...	42,267	10	0	4,234	0	6

No. 5.

Statement of Goods, exported to Cabool across the N. W. Frontier, during the month of January 1841, the same being Country produce, and liable to the Custom Tax.

Names of Articles.	Quantity.	Value.			Amount of Duty.		
		Rs.	As.	Ps.	Rs.	As.	Ps.
Cloths, ...	987 pieces, ...	1,076	8	10	26	14	8
Kimkhabs or Bro- cades, ... }	51½ ditto, ...	496	12	10	37	4	3
Lac, shell and stick,	20 seers, ...	4	0	0	0	3	2
Iron goods, ...	9 mds. 23 seers,	88	0	0	8	8	0
Brown sugar, ...	35 seers, ...	4	6	0	0	3	6
Wax candles, ...	2 mds. 10 seers,	180	0	0	18	0	0
Indigo, ...	207 m. 8sr. 6ch.	22,728	15	5	1,136	7	4
Shoes, ...	1,498 pairs, ...	858	12	0	43	8	4
	Total, ...	25,437	7	1	1,271	1	3
Total Imports and Exports, ...		67,705	1	1	5,505	1	9

These two statements are derived from the Custom House Registers, and can be therefore relied on.

No. 6.

Statement of Goods, imported from Cabool and the N. W. Frontier, during the month of February, 1841, the same being liable to the Custom Tax.

Names of Articles.	Quantity.	Value.			Amount of Duty.		
		Rs.	As.	Ps.	Rs.	As.	Ps.
Assafoetida, ...	11 mds. 20 seers.	1,150	0	0	115	0	0
	Total, ...	1,150	0	0	115	0	0

No. 7.

Statement of Goods, exported to Cabool across the N. W. Frontier, during the month of February, 1841, the same being Country produce, and liable to the Custom Tax.

Names of Articles.	Quantity.	Value.			Amount of Duty.		
		Rs.	As.	Ps.	Rs.	As.	Ps.
Cloth, ...	66,495 pieces, ...	89,052	5	10	2,226	10	3
Kimkhab or Bro- cades, ...	91 pieces, ...	2,334	0	0	175	0	11
Hides, ...	30 ...	150	0	0	7	8	0
Benares Dooputtas,	9 pieces, ...	139	3	0	10	7	0
Wax candles, ...	2 mds. 30 seers,	220	0	0	22	0	0
Iron goods, ...	3 maunds, ...	30	0	0	3	0	0
Shoes, ...	959 pairs, ...	506	4	0	25	5	0
Mirzapoor carpets,	1 md. 15 seers,	41	4	0	3	1	6
Iron wire, ...	2 seers, ...	1	12	0	0	2	10
Tobacco, ...	1 md. 20 seers,	7	8	0	0	6	0
Lac, shell and stick,	2 mds. 11 srs. 8 c.	18	4	3	1	11	4
Embroidered belts,	8 ...	36	0	0	2	11	2
Indigo, ...	424 m. 37 srs. 2 c.	46,798	5	11	2,339	14	5
	Total,	1,39,334	15	0	4,817	14	5
Total Imports and Exports.	...	1,40,484	15	0	4,932	14	5

These two Statements are derived from the Custom House Registers, and can therefore be relied on.

No. 8.

Statement of Goods, exported to Cabool across the N. W. Frontier, during the month of March, 1841, the same being British manufactured.

Names of Articles.	Quantity.	Value.	Remarks.
		Rs. As. Ps.	
Long cloth, mus- lins, &c. }	5,255 pieces,	25,859 0 0	

No. 9.

Statement of Goods imported from Cabool across the N. W. Frontier, during the month of March 1841, the same being liable to the Custom Tax.

Names of Articles.	Quantity.	Value.	Amount of duty.	Remarks.
	Mds. Seers.	Rs. As. Ps.	Rs. As. Ps.	
Assafœtida.	100 23	9,087 8 0	905 12 0	

No. 10.

Statement of Goods exported to Cabool across the N. W. Frontier, during the month of March, 1841, the same being Country produce, and liable to the Custom Tax.

Names of Articles.	Quantity.	Value.	Amount of duty.	Remarks.
		Rs. As. Ps.	Rs. As. Ps.	
Cloth pieces, silk and cotton. }	91,419 pieces	1,60,805 4 0	2,695 12 3	
Benares doputtas and brocades, &c. }	982 do.	21,259 10 3	1,593 10 8	
Indigo,	397 mds, 27½ sr.	43,838 5 4	2,191 14 7	
Gotah kenaree,	428 tolahs	1,087 9 6	54 6 1	
Shoes,	176 pairs	382 8 0	19 2 0	
Hides,	140	84 0 0	4 3 2	
Ivory,	35 seers	87 8 0	6 9 0	
Verdigrease,	25	59 6 0	5 15 0	
Cocoanuts,	1000	40 0 0	2 0 0	
Cassia,	7 mds.	245 0 0	6 2 0	
Sugar,	2 do, 20 seers	20 0 0	1 0 0	
Total,	.....	2,37,909 3 1	6,580 10 9	
Total Imports and Exports, . . . . . }	.....	2,46,996 11 1	7,486 6 9	
Ditto including British linen, }	.....	2,72,855 11 1	.....

*Note to Mr. VINCENT TREGEAR'S Process of taking casts of Coins.
vide No. 110.*

I must not omit to observe, that the above process cannot be applied to all coins indiscriminately. Copper and brass coins are sometimes so much oxidated as to be unable to bear any pressure, and therefore would be broken if put in the press; those of gold or silver are seldom endangered; but still the operator must use a little discretion. Care must also be taken not to continue the pressure further than is required for the perfect copy of the coin, as after the latter has sunk to the full depth of the relief, a lateral extension takes place, which will injure it, as I have found by experience.

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ASIATIC SOCIETY.

Of the early History of Sindh, from the "Chuch Namuh" and other authorities. By LIEUT. POSTANS, Assist. Pol. Agent, Shikarpore.

[Concluded from p. 197.]

CHAPTER V.

Origin of the tribe of *Soommah*—rule of the *Jams*—invasion of *Sindh* by *Shah Beg Urghoon*—and downfall of the *Soommah* dynasty.

The tribe of *Soommah*, they say, belonged to the tribe of *Ukrumeh*.
Origin of the tribe *Bin Issam Bin Ubbi Jahal*, and according to *Meer of Soommah*.
Massoom, embraced *Islamism*; and were obedient to *Bin Cassim* when he arrived in *Sindh*, in the year 92 H. *Ukrumeh* traced his origin, as connected with *Jamsheed*, hence it is supposed their governors styled themselves *Jams*. Others again trace the origin of this tribe to *Sam*, the son of *Noah*, from which they derive their name *Sammahs*, or *Soommahs*.

They were *zumeendars* in *Sindh* of some importance, and on the downfall of the *Soomrah* dynasty, assumed the reins of government, with the title of *Jam*. Their capital city was *Tattah*.

Reigns of the *Jams*. The first of this family mentioned is

Jam Oonur,

who was, by the consent of the tribe of *Soommah*, proclaimed governor. *Mulck Ruttun*, one of the deputies of the kings of *Turkey* threatened *Seeostan*; *Oonur* defeated him, and after a reign of three years and six months died.

Jam Joonur Bin Babeenah

succeeded his brother in the government of the country. He appointed his brother and relations to various posts in his dominions;

his rule was established in *Sindh* until *Sooltan Ullahul-deen* sent his own brothers, *Uglugh Shah* and *Tartar Khan*, to subdue him. Before the arrival of this army, *Jam Joonur* was seized with quinsy and died; he reigned thirteen or fourteen years. *Ullahul-deen's* army reached *Bukkur*, took that fort, and then proceeded to *Seeostan*.

Jam Kajee Bin Jam Joonur

succeeded his father, but was deposed by *Jam Khier-ud-deen Bin Jam Tumachee*, who with his father had been taken to *Delhi*, as a prisoner, by *Ullahul-deen*, in his descent upon *Bukkur*. He was just and good; he reigned some years and died.

Jam Babeenar.

After the death of *Jam Khier-ud-deen*, *Jam Babeenar* was, by the consent of the nobles, seated upon the throne. During his reign, *Sooltan Feeroz Shah*, who had conquered *Hindustan* and *Goojrat*, turned an ambitious eye towards *Sindh*, and marched to take possession of that country.

Jam Babeenar prepared to oppose him, and after a campaign of three months, the rainy season coming on, and the *Shah's* army beginning to suffer from the violence of the weather, and myriads of musquitoes, was obliged to fall back upon *Goojrat*.

After the rains he again attempted *Sindh*; the war was furious, but the *Shah* was at length successful. *Babeenar* was taken to *Delhi*, where he distinguished himself in the service of *Shah Feeroz*, who honoured him and restored him to the kingdom of *Sindh*. He died after a rule of fifteen years.

Jam Tumachee

succeeded his brother; he was a rich and indolent man. After a reign of thirteen years, passed in luxury and pleasure, he died of the plague.

Jam Sullahudeen.

In the beginning of this reign, the dwellers in the desert disturbed the frontiers of his dominions; he punished them, and reigned for a period of eleven years and some months; when he died.

Jam Nizam-ud-deen

succeeded his father. He was occupied in sensual enjoyments, and neglected his dominions.

The nobles conspired against him, drove him from the throne, and placed *Jam Alee Sheer* upon it in his stead. He fled towards *Goojrat*, and died upon the road.

Jam Alli Sheer Bin Tumachee

was just, bountiful, and learned; he strengthened his power in *Sindh*, and the country prospered under his rule; but at length he gave way to luxury and ease. It was his practice to take his exercise on moonlight nights, and the rebellious nobles, *Sikunder Kirun* and *Futteh Khan*, (sons of *Tumachee*), who were living in the desert, formed a plot, in which they were joined by some of the disaffected in the city of *Tattah*, to way-lay *Alli Sheer* and murder him. On the night of *Joomah*, the 13th of the month, *Jam Alli Sheer*, as usual, took boat and proceeded on the river; when he was about to return to the city, these men rushed upon him with naked swords and slew him and his attendants, placing *Jam Kirun* on the throne. *Alli Sheer* reigned seven years.

Jam Kirun Bin Jam Tumachee.

This man did not conciliate the nobles of the city, many of whom he imprisoned and punished. He was afterwards murdered at the instigation of *Futteh Khan* and *Bin Sikunder Khan*, who usurped the throne.

Jam Futteh Khan

ruled with justice, and was renowned for his bravery and magnanimity. He reigned for fifteen years and some months, when he died; he bequeathed the throne to his brother *Jam Tughluk Bin Sikunder Khan*.

Jam Tughluk, styled Jam Tughluk Shah.

He passed much of his time in hunting and traversing his dominions. The *Beloochees* in the neighbourhood of *Bukker* broke into rebellion, which *Tughluk* put down. He reigned for twenty-eight years, and died.

Jam Sikunder, son of Futteh Khan, and nephew of Tughluk Shah.

In the beginning of this reign a man named *Moobarik*, a connection of *Tughluk Shah's*, tried to usurp the sovereignty of the country, styling himself *Jam Moobarik*; but was deposed by the nobles, after a reign of three days. *Sikunder* died after a reign of eighteen months.

Jam Raeduch.

After the death of *Sikunder*, this man came with a large force to *Tattah*, disclaiming any intention of seizing the throne, but to offer protection to the Mussulmans, promising allegiance to whomsoever they should elect as *Jam*; not finding a fit person, they elected *Raeduch* himself to the sovereignty. In eighteen months he subdued the whole of *Sindh* to his authority. When he had reigned for a period of eight years and a half, *Jam Sunjin* usurped the sovereignty, and killed *Jam Raeduch* by putting poison in his wine cup.

Jam Sunjin

was a prince noted for his beauty and pleasing deportment. It was foretold him by a holy *Durwesh* that he should govern *Sindh*; and on the death of *Jam Raeduch*, he was universally elected to the throne. The country flourished under his rule, and was more prosperous than it had ever been under his predecessors. The soldiers and subjects were happy and at peace; he encouraged learned and holy men, and once a week gave alms to the poor. He reigned eight years, and died.

Jam Nizam-uddeen, better known as *Jam Nundeh*.

In the year 866 H. 1461 A. D. on the 25th of the month *Rubeh* 866 H. 1461 A. D. *Ul-uwul* ascended the throne; he was well received by all classes, and became a powerful ruler. He was on terms of great intimacy with *Sooltan Hassan Lankar*, of *Mooltan*. At the end of this reign, *Shah Beg Urghoon* sent a large army from *Kandahar*, which laid waste most of the places of *Chundookeh* and *Sundeecheh*. *Jam Nundeh* prepared and dispatched a force to oppose this invasion; the forces met at *Dureh Rowul*, (known as *Julogeer*,) where a great battle was fought, in which the brother of *Shah Beg* was killed, and his troops defeated. They fled to *Kandahar*, nor did they again molest *Sindh* during the time of *Jam Nundeh*. He passed the rest of his life in the society of *Moolahs*, and died after a reign of forty-eight years. The country was at his death torn with dissensions and rebellion.

Jam Feeroz.

After the death of *Jam Nundeh*, his son *Jam Feeroz* was a minor, and *Jam Sullahudeen*, the grandson of *Jam Sunjur*, wished to usurp

the throne, but was prevented by *Durya Khan*, a relative and prime minister of *Jam Feeroz*, aided by *Sirhung Khan*. The nobles of *Tattah*, with one consent, placed *Jam Feeroz* upon the throne of his father. *Jam Sullahudeen* fled to *Sooltan Muzuffir* of *Goojrat*, who was his kinsman, and favoured his pretensions to the government of *Sindh*. *Jam Feeroz* being young and inexperienced, neglected his affairs, and his court was composed of the gay and licentious. He passed most of his time in the *harem*, patronizing dancing girls and jesters. *Durya Khan* disgusted at his conduct, left the court, and went to his *jhageer* at *Kahan*. The affairs of the country, were speedily in a state of utter confusion, and the nobles of *Tattah* finding no longer any safety for the lives and property of themselves or families, wrote to the usurper, *Sullahudeen*, to come and seize the throne. *Sullahudeen* shewed the letter which contained this intimation to *Muzuffur Khan*, who dispatched a force with the former, with which he marched, took *Tattah*, and proclaimed himself *Jam*. *Jam Feeroz* repenting of his errors, fled with his mother to *Durya Khan* at *Kahan*, who levied troops from the tribes of *Belooch*, and other men of the desert; these joined with the armies of *Bukkur* and *Seeostan*, succeeded in expelling *Sullahudeen*, and once more placed *Feeroz* upon the throne of *Tattah*, where he remained for some years, until the country of *Sindh* was invaded by *Shah Beg Urghoon*, 926 H. 1519, A. D.

926 H. 1519 A. D. from which may be dated the termination of the
Termination of the *Soommah* dynasty. *Soommah* dynasty in the government of that country.

CHAPTER VI.

Shah Beg Urghoon—His origin—Death of his father, *Ameer Zulnoon*—becomes governor of *Kandahar*—*Baber Shah* expels him from *Kandahar*—he conquers *Tattah*, and becomes master of *Sindh*—Reinstates *Jam Feeroz* as governor of *Tattah*—*Sullahudeen* attempts to take *Tattah*, is defeated—his death—revolt of the *Dhareejas*—punishment of that tribe—drives the *Syuds* from *Bukker*—massacre of the *Beloochees*—death of *Shah Beg Urghoon*.

Shah Beg Urghoon was the son of *Zulnoon Urghoon*, *Bin Meer* *Shah Beg Urghoon* *Hassan Bussein*, a noble in the service of *Sooltan*—his origin. *Hussein Mirza*, of *Khorassan*, who gave him the government of the countries of *Ghoor* and *Zameendawur*. He had some difficulty in bringing the unruly inhabitants of the desert and the tribes of *Hizareh* to his authority; but after a war of about four years with these people, he completely subdued them; and *Sooltan Hussein Mirza* was so much pleased with his conduct, that he added the country of *Kandahar*, and the provinces of *Shal*, *Sitoonuk*, and *Urghoon*, to his rule.

His power increasing, *Sooltan Hussein Mirza* became jealous, and summoned *Ameer Zulnoon* to his presence, where he detained him under trifling excuses for some time. During his stay at that court, he formed a firm friendship with *Budeh Ul Zerman Mirza*, a noble, and relative of the king. Being at length disgusted with the delays and subterfuges used to detain him, he effected his escape to *Kandahar*, where he proclaimed himself independent. He was here joined by *Budeh Ul Zuman Mirza*, who had quarrelled with the king, (*Sooltan Hussein*.) *Ameer Zulnoon* married his daughter, thus strengthening the bonds of amity between them. After some time peace was concluded between these two chiefs and *Sooltan Hussein Mirza*. *Ameer Zulnoon* met his death in attempting to resist an invasion under *Mahomed Khan Shibanee Uzbeck*.

Death of *Ameer Zulnoon*.

He left two sons, *Shah Beg* and *Mahomed Mukim*; the former by the consent of the nobles, succeeded his father as governor of *Kandahar*; he confirmed all the appointments held under his father *Ameer Zulnoon*, was wise, brave, and generous, patronizing learned men.

Shah Beg governor of *Kandahar*.

When *Mahomed Khan Shibanee* had conquered *Khorassan* he meditated an attack upon *Kandahar*, but *Shah Beg* sent ambassadors

to him, with letters of submission and presents; he struck his image upon the coin, and begged permission himself to wait upon him. *Mahomed Khan* waived this ceremony, and being pleased with the conduct of *Shah Beg* and his brother, honoured their ambassadors, and dismissed them with dresses of honour, horses, tents, &c. for the two princes.

In the year 923 H., 1517 A.D. *Baber Shah* came from *Cabool* and *Ghuznein*, to conquer *Kandahar*; the brothers 923 H., 1517 A.D. were overpowered, and driven from their country, their father's treasury was pillaged, and a daughter of *Mahomed Mukim* (*Shah Begum*, she married *Kassim Kokeh*, who was killed in the wars of the *Uzbecks*) was taken to *Cabool*. *Baber Shah* left his brother, *Sooltan Nasir-ud-deen*, as governor of *Kandahar*. The brothers afterwards collected a large force, and retook *Kandahar*. (About this time *Mahomed Mukim* died.) *Baber Shah*, however, continued to invade *Shah Beg's* country, who was at length obliged to abandon

Baber Shah ex-
pels *Shah Beg* from
Kandahar.
the possession of it, and having for some time contemplated the conquest of *Sindh*, even as far back as the time of *Jam Munde*, he prepared an army, and in the year 926 H. 1519 A.D., on the 11th of the month *Mohurram*, crossed the river opposite *Tattah*. The army of *Jam Feeroz* under *Durya Khan* was routed, the latter taken, and *Tattah* fell to the arms of *Shah Beg*. He permitted his troops to pillage the city for nine days, the inhabitants being exposed to the licentiousness of the soldiery during that period; on the intercession of *Hafiz Mahomed Shurreef* it was stopped.

Jam Feeroz leaving his family in *Tattah* fled to *Peerar*, whence he sent messages of submission to *Shah Beg*; this latter not only treated him with the greatest kindness, but after settling the affairs of *Tattah* appointed him its governor, placing one-half of the whole province of *Sindh*, viz. from *Lukie*, (which is near *Sehwan*,) to *Tattah* under his dominion; from *Lukie* higher up, he delegated to his own servants.

When he had settled the affairs of *Tattah* he proceeded to *Siemer*, but the usurper *Sullahudeen*, (who had before driven *Sulahudeen* attempts
to take *Tattah*.

Jam Feeroz from the throne,) having collected a large force, threatened *Tattah*. *Shah Beg* sent a body of troops under his son *Mirza Shah Hussein* to reinforce *Jam Feeroz*.

Sullahudeen retreated but was pursued, and his troops overthrown ; his son, *Hybut Khan*, being killed. This affliction rendered the father desperate, and he also met his death in the same campaign, in an attack upon the *Moghuls*.

At this time *Sooltan Mahmoud Khan*, governor of *Bukkur*, wrote to *Shah Beg*, who had taken up his residence at *Baghbanan*, that the tribe of *Dhareejas* were in a state of rebellion, refusing to pay their taxes, and ill-treating the servants of *Shah Beg*, who were sent to collect them ; and that but for the fidelity of the *Syuds*, who had assisted *Mahmoud Khan* in repelling their attacks, *Bukkur* must have fallen into the power of those insurgents.

Shah Beg on hearing this, came himself to the neighbourhood of *Bukkur*, where he ordered the *Dareejas* to be punished.

Mahmoud Khan with the cruelty for which he was remarkable, cut off the heads of about 50 of these people and threw them from the walls of the fort, as a warning to the others.

The *Syuds*, who for many years possessed great power in *Bukkur*, excited the jealousy of *Shah Beg*. He removed them from the fort of *Bukkur* to a place outside the walls, called *Lohurry*. *Shah Beg* himself visited the fort, and directed a wall to be erected round it, with bricks from the ruins of *Alor*. The buildings in the vicinity of *Bukkur* belonging to the Turks and men of *Soommah* he also destroyed, employing the materials for the same purpose. At that time the fort was surrounded by water.

Having settled the affairs of *Bukkur*, *Shah Beg* turned his attention to the tribe of *Beeloochees*, who were in rebellion ; this he quelled by a general slaughter of the tribe wherever they could be found. In forty-two towns and villages these people were put to the sword.

Shah Beg after this contemplated extending his power to *Gojrat* ; but hearing that *Baber Shah* had occupied *Kooshab*, intending to conquer *Hindustan*, he became thoughtful, and assured his followers that he was convinced, *Baber Shah* would not let him retain the conquest of *Sindh*, but would drive him and his family from all their possessions. A settled melancholy took possession of *Shah Beg*, and on the 28th of the month *Shuban*, in the year 928 H. 1521 A. D. he died, after a stormy reign in *Sindh* of two

years. His remains were taken to *Bukkur*, and thence to *Mecca*, where his son, *Shah Hussein*, erected a dome over them.

CHAPTER VII.

Mirza Shah Hussein Urghoon succeeded his father *Shah Beg*—conquers *Mooltan*—gives that country to *Baber Shah*—marches to *Kutch*—defeats *Kungar*—*Humayun Padshah* comes to *Sindh*—appoints *Yad Gar Nasir* to the fort of *Bukkur*—*Shah Hussein* brings *Yad Gar* over to his interests—Peace proclaimed between *Shah Hussein* and *Humayun*—The latter leaves *Sindh*—*Yad Gar* quits *Bukkur*—*Sindh* again reverts to *Shah Hussein*—he protects *Kamran Mirza*—death of the latter, and affection of his wife—death of *Mirza Shah Hussein*—and termination of the dynasty of *Urghoon*.

Mirza Shah Hussein Urghoon succeeded his father *Shah Beg* in the government of *Sindh*. His first act was to succeeds his father. expel *Jam Feeroz*, who had rebelled, from the government of *Tattah*. This latter collected a large force, but was completely overthrown, and fled to *Goojrat*, where he died.

Shah Hussein acknowledged fealty to the power of *Delhi*, and caused the oration delivered on the installation of a prince (*khootbeh*) to be read in the name of *Baber Shah*, instead of his own. He took up his residence at *Tughlukabad*, near *Tattah*. Some rebellious amongst the tribes of the *Beloochees* at *Oobareh* and men of *Dihir* being put down by the sword, *Shah Hussein* turned his attention to the conquest of *Mooltan*. In the year 931 H. 1524 A. D. he reached the fort of *Sewrae*, which he took and destroyed. He then proceeded to the fort of *Moos*, near *Kootab*, the governor of which, *Sheikh Rohillah*, proffered submission; 500 horse, under *Mohib-i-Tukhan*, were dispatched in advance to *Mooltan*, and *Shah Hussein* followed to *Oocheh*. This fort he besieged, and although the troops of *Mahmood Lankar*, governor of *Mooltan*, made a brave resistance, the fort was taken, and a general massacre followed. At the intercession of some holy men the slaughter was stayed, but the fort was levelled to the ground, and the gates and other materials placed in boats and conveyed to *Bukkur*. When *Mahmood*

Lankar heard of the fall of *Oocheh*, he marched to attack *Shah Hussein*, but shortly after met his death by poison. He was succeeded by his son, *Hussein Lankar*, who was a minor.

Mirzah Shah Hussein closely besieged the fort of *Mooltan*; the siege lasted for a year, and is described as having been attended with all the horrors of famine; one ox's head sold in *Mooltan* for 100 *tankah*, one maund of wheat 100 *tankah*. The inhabitants principally subsisted upon the skins of oxen; dogs and cats were esteemed as great delicacies in *Mooltan*, as *hulwah* (sweetmeat). Many of the wretched inhabitants threw themselves from the walls and sought protection from *Mirza Shah Hussein*.

At length the fort was taken, a general massacre ensued of all males from the age of seven to seventy, and lasted twelve days. When the rage of *Shah Hussein* had somewhat abated, he stayed this inhuman slaughter, and spared the lives of the survivors.

Hussein Lankar, the prince of *Mooltan*, was captured, and after a stay of ten months, during which period he employed himself in stripping all the nobles and followers of *Mahmood Lankar* of their property, and imprisoning others, *Mirza Shah Hussein* returned to *Bukkur*, leaving *Khajee Shumsudeen* and *Dost Meer* at *Khor* with 200 horse, 100 infantry, and 100 artillery to garrison *Mooltan*. He had only arrived at *Bukkur* a short time, however, when he received intelligence of the revolt of the governor of *Mooltan*, who had gone over to *Baber Shah*;

but being at the same time apprised of an attack in
Gives Mooltan to Baber Shah. another quarter of his dominions, at *Tattah*, he preferred presenting the country of *Mooltan* to *Baber Shah*, as he found its government more than he could manage. The nobles of *Tattah* on the arrival of *Mirza Shah Hussein* at *Bukkur*, had informed him that *Kungar* was collecting a force to attack *Tattah*. On receiving this intelligence, he immediately proceeded to that place, and before the arrival of *Kungar*, marched
Marches to Kutch to attack him. When he arrived near the country of *Kutch*, his army suffered much for want of grain; but *Kungar's* army shortly after was overthrown, and the country pillaged by *Shah Hussein* of flocks, herds, and property of every description, and the inhabitants of every city, town, and village put to the sword.

In the year 947 H. 1540 A. D., *Humayun Padshah*, attended by *Mahmoud Kamran Mirza*, being driven out of *Hind* by *Sheer Khan*, came to *Lahore* with the intention of making an incursion upon *Sindh*, on the 13th of *Ramazan*. In the above year he halted with his force at *Paburloo*, in the neighbourhood of *Bukkur*. *Sooltan Mahmood*, governor of the fort, laid waste the surrounding country, anchored the boats under the walls of the fort, and prepared for a vigorous defence. *Humayun* summoned him to surrender, but he refused; the *Padshah's* servants, however, managed to trifle with *Mahmoud*; and he sent 500 *khirwars* of grain to *Humayun's* camp. This latter finding his army suffer much for want of supplies, wrote in friendly terms to *Mirza Shah Hussein* to come to him at *Bukkur*; but after waiting for five or six months in expectation of seeing him, he was disappointed, for *Shah Hussein* evaded the interview, and cut off all supplies from the *Padshah's* camp. This, coupled with the swells of the river, occasioned great suffering amongst his troops, and desertions became frequent. He proceeded to *Secoostan*, leaving the siege of *Bukkur* in the hands of *Yad Gar Nasir*, who took the fort. At this period, *Mirza Shah Hussein* wrote to *Yad Gar Nasir*, offering terms of friendship, promising him his daughter in marriage, and to secure him the kingdom of *Sindh* after his (*Shah Hussein's*) death; enticed by these promises *Yad Gar Nasir* threw off his allegiance to the *Padshah Humayun*.

Humayun on hearing this, immediately returned to the neighbourhood of *Bukkur*, where he summoned *Yad Gar* to his presence—he obeyed the order.

Through the intervention of *Benam Khan*, who came from *Goojrat* to the service of the *Padshah*, peace was declared between him and *Mirza Shah Hussein*.

Humayun agreed to leave *Sindh*, on condition of receiving 100,000 *miskals* in money, and all the necessaries for his army to *Kandahar*, 300 horses, 300 camels, &c. This demand was acceded to, and with great rejoicings and promises of friendship, the *Sindhians* witnessed the passage of the river by the *Padshah's* army, at a place called *Joon*, where a bridge had been erected on the 7th of the month *Rubeh ul Uwul*, in the year 951 H. 1544 A. D.

Shah Hussein after this, evaded the promise of giving his daughter *Yad Gar* in marriage to *Yad Gar Nasir*, who left the country; and the power in *Sindh* reverted solely to *Mirza Shah Hussein*, who appointed *Meer Shah Mahmoud Urghoon* governor of *Bukkur*.

Kamran Mirza being in rebellion with *Humayun Padshah*, son of *Baber Shah*, fled to *Sindh*, and sought protection from *Mirza Shah Hussein*, whose daughter, *Joirjok Begum*, he had previously married. *Shah Hussein* appointed him for a residence the place called *Shuhperlah*, on the river to the west of *Bukkur*, with the purgannah of *Butthoora* for the expences incidental to his household. But *Kamran Mirza* determined to make a pilgrimage to *Mecca*, and there end his days. *Shah Hussein* tried to prevent his daughter accompanying him; but her conjugal affection resisted all his persuasions to effect a separation. She observed to her father: "that he had given her to *Kamran Mirza* for wife when the latter was a powerful prince, and now that misfortunes had assailed him, he wished to separate them; but that while they lived she would never desert her husband." *Shah Hussein* finding threats and intreaties alike unavailing, gave them every necessary for their journey, and *Kamran Mirza* died at *Mecca* in the year 964 H. 1556 A. D. His faithful wife only survived him a few months.

Mirza Shah Hussein in the latter days of his life became very infirm, and suffered much from palsy, from which disease he sought relief in intoxication, and dissipated men began to assume an ascendancy at his court. The men of *Urghoon* and *Tirkhan* being dissatisfied, collected round *Mirza Eessan Tirkhan*, governor of *Tattah*, and in the year 962 H. 1554 A. D. broke into open insurrection. *Shah Hussein* sent *Mahmoud*, governor of *Bukkur*, to quell this rebellion; but he privately made terms with *Mirza Eessan Tirkhan*, by which after the death of *Shah Hussein*, (an event they plainly saw was fast approaching,) they should divide the government of *Sindh* between them.

Mirza Shah Hussein died on Monday on the 15th of *Rubeh-ul-Uwul* in the above year, being on his road to *Seeoostan*, (where, by the advice of his physician, he

His death 964 H.
1556 A. D.

Death of *Mirza Shah Hussein*. 962. H. 1554 A. D.

was proceeding,) at a place called *Allipootreh*. He reigned 34 years, and his remains were conveyed to *Mecca*, where they were buried near those of his father, *Shah Beg*. His death closed the dynasty of *Urghoon*.

CHAPTER VIII.

Mirza Eessan Tirkhan—dissensions between him and *Mahmoud Khan* of *Bukkur*—*Tattah* fired and pillaged by the *Portuguese*—peace concluded between *Mirza Eessan* and *Mahmoud Khan*—brief history of the former dissensions between his sons—death of *Mirza Eessan*—succeeded by his son *Mirza Mahomed Bakee*—at enmity with *Mahmoud Khan*—origin of the latter—*Mahomed Bakee*—opposed by his brother, *Khan Baber*—is murdered by *Mahomed Bakee*—*Akbar Padshah* sends *Mohib Ally Khan* to besiege *Bukkur*—*Mahomed Bakee's* a submission to the *Shah*—death of *Mahmoud Khan*—*Bukkur* becomes a *jahgeer* of the kingdom of *Delhi*—*Mirza Mahomed Bakee* destroys himself.

Mirza Eessan Tirkhan.

A year after the death of *Shah Hussein*, rivalry and dissension arose
 963 H, 1555 A. D. Dissensions with. *Sooltan Mahmood.* and *Sooltan Mahmood*, governor of *Bukkur*; the pretensions of the former being favoured by the men of *Urghoon* and *Tirkhan*. *Mirza Eessan* marched to attack *Bukkur*, in which fort *Mahmoud* entrenched himself, and was besieged for 15 days; but at this time intelligence reached the former, that the *Portuguese* mercenaries, whom he had left at *Tattah*, had set fire
Tattah fired and pillaged by the *Portuguese.* to, and pillaged that city, he immediately raised the siege, and returned to *Tattah*. *Mahmoud* pursued him as far as *Seeoostan*, the country in the vicinity of which he laid waste. On his arrival at *Tattah*, *Mirza Eessan* learnt that the *Portuguese* hearing of his approach, had decamped; he repaired the walls of the city, and built a small fort to command the creek. After other engagements between *Mirza Eessan* and *Mahmoud*, peace was concluded between them; the forces of the *Mirza* returning to
 Peace concluded between *Mirza Eessan* and *Mahmoud Khan.* *Tattah*, and those of *Mahmoud* to *Bukkur*, which places they occupied, and continued to divide the government of the country between them. *Mirza Eessan Tirkhan* is described as having been educated by *Shah Beg*, in whose service and that of his son, he attained the

rank of *ameer*, and on the death of the latter, succeeded to the government of *Tattah*. He was a good and merciful man, noted for his courage and energy. Two of his sons, *Mirza Mahmoud Bakee*, and *Mirza Mahomed Taleb* were at enmity; the latter being favoured by his father, defeated *Mahomed Bakee*, who fled to *Bukkur* and sought protection from *Mahmoud*. *Mahomed Saleh* was shortly afterwards murdered by a *Beloochee*, who had sworn not to wear his turban, until he had revenged himself for some injury committed upon his father and family.

Mahmoud interceded with *Mirza Eessan* for the forgiveness of *Mahomed Bakee* who returned to *Tattah*, and was kindly received; but *Mirza Eessan* before his death, which happened in the year 974 H. 1566, A. D. wished to settle the succession upon his youngest son, *Khan Baber*, as he considered *Mahomed Bakee* of too tyrannical a disposition to rule.

Mirza Mahomed Bakee Tirkhan

succeeded his father, *Mirza Eessan Tirkhan* as governor of *Tattah*, and like him continued alternately at peace and war with *Mahmoud Khan*, governor of *Bukkur*. A brief account of the career of this man, who for nineteen years divided the government of *Sindh*, with two of the rulers of *Tirkhan*, will not be out of place in this part of the history.

Mahmoud Khan was the son of *Meer Fazil Kukultash*, in the service of *Meer Zulnoon*; his forefathers were residents of *Ispahan*. *Meer Fazil* had five wives, by each of whom he had a son. *Mahmoud's* mother was an *Afghaun*. At the early age of fourteen he gave promise of great courage, and attracted the attention of *Shah Beg*, who took him into his service; he accompanied him in the *Sindh* campaign, where he distinguished himself above all the nobles of *Shah Beg's* army; he subsequently became a governor of *Bukkur* during the time of *Mirza Shah Hussein*, whom he faithfully served, until he leagued with *Mirza Eessan Tirkhan* to divide the government of the country between them after *Shah Hussein's* death. The history of these proceedings, and the feuds and jealousies which arose between these chiefs, have been related, till the accession of *Mirza Bakee*.

Mirza Mahomed Bakee was opposed by his youngest brother, *Khan Baber*, who aspired to the government of the country. He procured assistance from *Mahmoud Khan*, and attempted an attack upon *Tattah*, in which he failed; he was afterwards treacherously murdered by his brother, who proved himself, as his father had predicted, a great tyrant. Hearing that *Akbar Padshah* had arrived at *Lahore*, and had dispatched *Mohib Ally Khan* and *Mujahid Khan* to *Bukkur*, where they besieged *Mahmoud Khan*, and fearing for the safety of his own possessions at *Tattah*, he sent letters, acknowledging his fealty to *Akbar*, and according to some historians, even sent his daughter, for the service of the king's harem.

Mahmoud Khan endured a close and harassing siege, during which the garrison suffered from pestilence and famine. In the year 982 H. 1574 A. D., he began to suffer from dropsy, and wrote to the *Padshah* to send some one to whom he might deliver over the fort of *Bukkur*, which *Mohib Ally Khan* had not yet taken. The *Padshah Akbar* dispatched *Kessoo Khan*; but *Mahmoud* died before his arrival at *Bukkur*, on Saturday the 8th of the month *Sufur* in the above year.

From this date *Bukkur* became a *jahgeer* of the power at *Delhi*, and various rulers were sent to govern it. *Mirza Mahomed Bakee* became insane; at least the deeds of cruelty he committed were so enormous, that they can only be ascribed to madness. The loss of a favourite son, (*Shah Rookh*), increased his malady, and he destroyed himself by rushing on his own sword. He died in the year 993 H. 1583 A. D. after a rule of 19 years. His eldest son, *Pabundah Beg*, inheriting the malady of the father, was declared incapable of governing, and the power descended to the son of *Pahbunde* and grandson of *Mirza Bakee*.

Mahomed Bakee is opposed by his brother *Khan Baber*.

Akbar Padshah sends his servants to conquer *Bukkur*.

Death of *Mahmoud Khan*.

Mirza Mahomed Bakee destroys himself,

993 H. 1585 A. D.

CHAPTER IX.

Mirza Janee Beg Tirkhan—Akbar sends Khan Khanan to Sindh—siege of *Schwan*—defeat of the war boats—siege of *Bohurry*—destruction of *Tattah*—*Janee Beg* treats for peace—peace concluded—*Janee Beg* accompanies Khan Khanan to the presence—Akbar Padshah honours *Janee Beg*—death of *Janee Beg*—Sindh becomes a dependency of the throne of *Delhi*—*Mirza Ghazie Beg Tirkhan*—revolt of *Abul Cassim*—the Padshah sends for *Ghazee Beg*—he proceeds to *Agra*—additional power—repairs to *Kandahar*, where he is murdered—his generosity—rulers deputed by the *Delhi* sovereigns of the family of *Timoor* until the accession of the *Kalonas*—their rule—accession of the *Talpooras*.

Mirza Janee Beg Tirkhan.

His first act was to punish with studied cruelty, the accused murderers of the late *Mirza*. His uncle *Muzuffir Khan* disgusted at his conduct, collected a force to attack *Tattah*; but was defeated. *Bukkur*, as was before mentioned, after the death of *Mahmoud Khan*, became a dependency of the kingdom of *Delhi*, in the year 999 H. 1590 A. D. *Khan Khanan* sent to *Sindh*. 999 H. 1590 A. D. Akbar Shah gave it as a *jahgeer* to *Khan Khanan*, with orders to reduce the governor of *Tattah* (*Janee Beg*,) also to his authority.

The Shah had previously written to *Janee Beg* to come to the presence, and proffer allegiance, a performance of which order the latter evaded. *Khan Khanan* first determined to take the fort of *Sehwan*, as it commanded the passage of the river, and then march to attack *Tattah*. He had, however, scarcely commenced the siege, when intelligence reached him of the march of *Janee Beg*, with a countless army, to the relief of the fort. *Khan Khanan* raised the siege of *Sehwan*, and proceeded to meet *Janee Beg*, who at a place called *Bohurry*, (higher up than *Nussurpoor*,) had thrown up a fort, and strengthened his position. When *Khan Khanan* arrived within six *koss* of that place, he learnt that *Janee Beg* had 300 war boats with him, commanded by *Khusroo Khan* and other nobles.

Khan Khanan threw up five or six small mud forts, which he mounted with guns, on the bank of the river, commanding the passage of the boats. On a night of the month *Shuwal*, 999. H. 1590 A. D. the action commenced, the shot striking the *Sindhian* boats, threw them into confusion; eight or nine were

Ascent of the war
boats.

captured and their crews slaughtered. In the morning the boats of *Mirza Janee*, commanded by *Khusroo Khan*, finding the passage of the river in the face of the guns impracticable, retreated, but were pursued by the *Khan's* boats, and although *Khusroo Khan* behaved well, and shewed good generalship, many of his fleet were taken, and the *Portuguese* mercenaries and other soldiers slaughtered.

In short, *Janee Beg* was defeated and retreated to *Bohurry*, where he was invested by *Khan Khanan*. From this place he

Destruction of
Tattah.

wrote to his son at *Tattah* to destroy that city; it

was fired in various places, and in a month was a

complete ruin, and the country laid waste: this was done with the intention of annoying the invaders. Repeated engagements ensued, in which *Janee Beg's* forces were always worsted; he was driven from one stronghold to another, his last stand being at *Oonurpoor*. Here *Khan Khanan* came himself, and *Janee Beg* was closely besieged; finding

his soldiers suffer, and all his efforts to repel the

Janee Beg treats
for peace.

Khan's army unavailing, he at last sued for peace,

promising to surrender thirty boats and the fort

of *Sehwan*, intreating permission at the same time, to be allowed to proceed to *Tattah*, where he would see *Khan Khanan*, and settle other preliminaries. This indulgence was granted by the *Khan* contrary to the advice of his nobles, who represented that *Janee Beg*

wished only to gain time in order to collect fresh

Peace concluded.

troops; but *Khan Khanan* confident in his power

to crush *Janee Beg*, and anxious to avoid the useless waste of life, which a protraction of the war would occasion, acceded to the terms offered by the *Mirza*. The two chiefs afterwards met at a place called *Futtebagh*, where they displayed every mark of friendship and consideration towards each other. *Khan Khanan* proceeded to *Tattah*, the affairs of which place he settled, leaving *Dowlut Khan* and *Khawgeh Mukim* to preserve the *Shah's* authority. *Khan Khanan*

having expressed a desire to behold the sea, embarked with *Janee Beg*

Accompanies *Khan*
Khanan to *Agra*.

at the port of *Lahurry*; after a short excursion they

returned, and in obedience to orders, proceeded to

the presence of *Akbar Shah*, where they arrived in the month of *Jumadee-ul-Sanee*, in the year of the H. 1001, A. D. 1592.

1001 H. 1592 A. D.
Is honoured.

Akbar Padshah honoured *Janee Beg*, making him

a commander of five thousand, and styling him *Khusroo Shah*; he treated him with every demonstration of kindness. In the year 1008 H. 1599 A. D. when the king marched to the *Deccan*, and took the forts of *Ahmednuggur*, *Ookleh*, and *Asserghur*, *Mirza Janee Beg* died of phrenzy. He was buried at *Tattah*, and his son *Mirza Ghazee* succeeded him in the government of the country. From this date, the whole of the country of *Sindh* became a dependency of the kingdom of *Delhi*, and ceased to be an independent government. The rule of the tribe of *Tirkhan** embraces a period of 39 years.

Dies, and *Sindh* ceases to be an independent government.

Mirza Ghazee Beg Tirkhan

after the death of his father, by order of the *Padshah*, succeeded to the government of the country of *Sindh*. He was young, but at the beginning of his rule shewed all the vigour and ability of riper years. He replenished the treasury and resources of the country, which during his father's reign had been squandered and allowed to go to ruin. *Abool Cassim*, son of *Shah Cassim Khan Urghoon*, (who for years possessed *Nussurpore* and during the life of *Mirza Janee* also had *Neirunkote*,) rose in rebellion against *Mirza Ghazee Beg*, and having plundered some merchants who were travelling from *Tattah*, the *Mirza* wrote to him for an explanation of the outrage, to which he received an offensive reply. *Ghazee Beg* thereupon marched a force to *Nusserpore*, but by the intervention of the father, (*Shah Cassim Khan*,) peace was concluded between his son and *Ghazee Beg*. The latter being afraid of the power of *Abool Cassim*, caught him by stratagem, put out his eyes, and made him prisoner. At this time, ambassadors arrived from *Akbar Padshah*, to summon *Ghazee Beg* to his presence; but he excused himself, as the affairs of the country yet required much of his attention. In two years after his father's death things were in a prosperous state. The unfortunate *Abool Cassim*, aided by *Jaffer Khan*, attempted to escape, but was recaptured, and the latter killed. Again intelligence was received at *Tattah* that the *Padshah* being impatient, had dispatched the *Nuwab Syud Khan*,

Revolt of *Abool Cassim*.

The *Padshah* sends for *Ghazee Beg*.

* i. e. As independent governors.

with orders to bring the *Mirza* to the presence; some of the nobles expressed a desire to rebel against the *Padshah's* authority, and only regretted their want of means to assemble a force for that purpose. *Ghazee Beg's* prudence, however, silenced their ambitious projects, Proceeds to Agra and before the arrival of *Syud Khan*, he started for *Agra*, and met the latter at *Bukker*, from whence they proceeded together, and arrived at *Agra* in the year 1013 H., 1604 A. D.

Mirza Ghazee was honoured* and treated with the same consideration which marked his father's stay at the royal court. The country of *Sindh* was declared to be a *jahgeer*, and bestowed upon him. On the accession of *Shah Jahangir*, 1014 H. 1605 A. D. the government of the country of *Kandahar*, part of *Mooltan*, and the fort of *Shwan* Additional power. were added to his authority, with additional rank. The affairs of *Kandahar* requiring his attention, he proceeded to that country, appointing *Khusroo Khan*, governor of *Tattah* during his absence. This man appropriated the revenues to his private purposes, which being reported to *Ghazee Beg*, he sent *Hindoo Khan* to supersede him, and to take the management of affairs in his stead. *Mirza Ghazee* in the very height of his fame and prosperity was murdered by a slave of his own household, named *Abool Lutteef*, in the year 1021 H. 1612 A. D. He left a great name behind him for generosity and bravery, and in his praise, is the following couplet:—

“Alas! a rose has been scattered by a slave.”

It is reported of him that he gave all his money to his subjects, and although he had the revenues of *Sindh*, *Kandahar*, and part of *Mooltan*, he was always poor. His minister of finance once represented to him that his accounts, which had not been inspected for six months, were in confusion, and that he had not the means of providing for the *Mirza's* household expenses. *Ghazee Beg* tore the paper which was presented in pieces, saying: “that for himself God would provide him with food; but the public money was alone the property of the subject.”

* *Jahangir* even asked him his advice as to the measures he might pursue with his son *Khusroo*, then in rebellion; this is mentioned as a proof of the esteem in which the Emperor held him.

His remains were brought to *Tattah*, and interred near those of his father. After his death the *Delhi* kings, from the time of *Jahangir* until the accession of the *Kaloras*, sent various nobles as deputies to rule in that country.

Mirza Rustum

was deputed by *Jahangir*, after the death of *Ghazee Beg*, to proceed to *Tattah* as governor of *Sindh*; he had before been governor of *Zumeendarwar* and *Mooltan* during the time of *Akbar Padshah*. It is said that *Jahangir* sent with him 5,000 horse, and two lacs of rupees

Rulers deputed by the Delhi sovereigns of the family of *Ti-moor*, until the accession of the *Kaloras*.

to assist him in replenishing the treasury, and settling the affairs of the country; but he proved himself unfit to govern, and was dismissed. He was succeeded by *Moosty Khan*, also dismissed; he by *Meer Bayeozzeed*, 1028 H. 1618 A. D., who had been formerly *Foujdar* of 1028 H. 1618 A. D. *Bukkur*. After him *Nuwab Shurf-ul-Mulk*, in the year 1035 H. 1625 A. D. During his time, the son of *Jahangir** being in rebellion, came to *Tattah*, where he wished to reside, but *Shurf-ul-Mulk* opposed him and some conflicts ensued.

Mirza Eessan Tirkhan, son of Khan Baber, and grandson of the former governor of the same name.

He was concerned with *Abool Cassim*, in the revolt against *Mirza Ghazee Beg*, and after the capture of the former, entered the service of *Jahangir*, who honoured him; and in reward for various services performed, made him a commander of 4,000 horse, and in the year 1037 H. 1627 A. D., (the last of the reign and life of *Jahangir*,) he was appointed governor of *Tattah*, in which situation he died, during the reign of *Shah Jehan*.

Nuwab Ameer Khan.

In the beginning of his rule he had some differences with the *zumeendars*, but he settled the affairs of the country, and was a good and just man. So little of interest is recorded in the histories of the succeeding governors, that it will be sufficient to mention them in chronological order:—

* Probably *Khurram Khan*, afterwards *Shah Jehan*, who rebelled against his father in 1624 A. D.

Date of Accession.

6th. Murab Muzuffar Khan, not known.

7th. Syud Ibrahim, ... 1057 H. 1647 A. D.

{ During this
rule *Aurang-*
zebe mounted
the throne.

8th. Jafur Khan, ... 1063 H. 1652 A. D.

9th. Kabad Khan, ... 1069 H. 1658 A. D.

10th. Nuwab Lashkar Khan, ... 1071 H. 1660 A. D.

11th. Ghuzunfur Khan, .. 1075 H. 1664 A. D.

12th. Syud Izut Khan, ... 1080 H. 1669 A. D.

13th. Abool Nusrut Khan, ... 1082 H. 1671 A. D.

14th. Sahadut Khan, ... " "

15th. Syud Izut Khan, ... 1084 H. 1673 A. D.

16th. Khan Zad Khan, ... 1090 H. 1679 A. D.

17th. Sirdar Khan, ... 1095 H. 1683 A. D.

18th. Mureed Khan, ... 1099 H. 1687 A. D.

19th. Zaburdust Khan, ... 1101 H. 1689 A. D.

20th. Aboo Nusrut Khan, ... 1103 H. 1691 A. D.

21st. Ifuz Ali Khan, ... 1113 H. 1701 A. D.

22d. Saheed Khan, ... 1114 H. 1702 A. D.

23d. Ameer-ud-deen Khan, ... " "

24th. Yuzuf Khan, ... 1115 H. 1703 A. D.

25th. Ahmed Yar Khan, ... 1116 H. 1704 A. D.

{ During this
rule *Alumgeer*
died, 1118 H.
and was suc-
ceeded by *Ba-*
hadur Shah.

26th. Nuwab Saheed Khan, ... 1119 H. 1707 A. D.

27th. Nuwab Moheen Khan, ... 1121 H. 1709 A. D.

28th. Nuwab Maheen Khan ... 1123 H. 1711 A. D.

29th. Nuwab Shakir Khan, ... 1124 H. 1712 A. D.

{ *Bahadoor*
Shah died
1124 H.

30th. Khwaja Kulleel Khan, ... not known.

31st. Attar Khan, ... " "

32nd. Lootuf Ali Khan, ... " "

33rd. Shoojat Ali Khan, ... " "

- 34th. Nuwab Azim Khan, ... 1128 H. 1715 A. D.
 35th. Mohabut Khan, ... 1132 H. 1719 A. D.
 36th. Sooltan Mahomoud Khan, not known.
 37th. Serf Ullah Khan, ... „ „
 38th. Dileerdil Khan, ... 1143 H. 1730 A. D.
 39th. Himmut Dileer Khan, ... „ „

The above appear to have been *Sobadhars* who farmed the revenue, at the same time exercising all the functions of governors. The last of these mentioned as preceding the *Kaloras*, is *Sadik Alli Khan*, who abandoned his contract from inability to perform it, and it was taken up by *Noor Mahomed Ubbaseer Kalora*, son of

Noor Mahomed Kalora, 1st of the family who ruled 1149 H. 1736 A. D. *Yar Mahomed* in the year 1149 H. 1736 A. D. He was the first of the family invested with power as a ruler in *Sindh*, and although in his father's time the *Kaloras* were of some importance as *zumeendars*, their *jahgeer* was at *Futtehpoor*.

This family trace their origin to *Abbas*, the uncle of the prophet, whence it descends through various generations to *Adam Shah* of *Beelooch* extraction, a *Sheikh* of great repute, who possessed many disciples in *Sindh*, and who was the founder of the prosperity and power which afterwards attended the *Kaloras* in that country.

Noor Mahomed Kalora.

The beginning of his government was attended with constant feuds and strife with the tribes of *Burhoe* and *Dawood Pootreh*, (*Belooches*), the cause of dispute being boundary of territory. About the year 1150 H. 1737 A. D. *Nadir Shah* when he visited *Sindh*, took *Noor Mahomed* prisoner; but on his paying a crore of rupees to the emperor, he was released and restored to his possessions, with the additional title of *Kullie Khan*.

After this he became firmly settled in the government of the country.

After the assassination of *Nadir Shah*, *Sindh* became subject to *Ahmed Shah Afghan Sudoozie*, king of *Cabool*. *Noor Mahomed* was succeeded by his son *Murad Yab Khan*, who only ruled however for a short time, and was succeeded by his brother *Ghullam Shah*.

In the commencement of his reign he was employed in putting down an insurrection under his brother *Uttur Khan*; but having settled the dissensions and civil discords in *Sindh*, he made an incursion upon

Cutch, rendered remarkable for the great battle of *Jharra*, which was fought with *Rao Gore* upon the occasion. He died after a rule of 17 years. His brother *Uttur Khan* seized the reins of government, but only retained them for a short time, and was succeeded by *Surafranz Khan*, son of *Ghullam Shah*.

Shortly after coming to power, he allowed his mind to be poisoned by one *Rajah Leckie* against a chief of distinction in his service, named *Byram Khan Talpoor*. *Byram* being informed of the threatened evil, took counsel with his sons *Sobhdar* and *Bejur* and his son *Sobhdar* to avert it; but *Surafranz* put both *Byram* and his son *Sobhdar* to death; *Bejur* fled to *Mecca*.

Futteh Alli Khan, the son of *Sobhdar* raised an insurrection to revenge his father's death, and *Surafranz Khan* fled to the fort of *Hyderabad*, where he was imprisoned. His brother *Mahomed Khan* succeeded him for a short time; but was deposed by *Ghullam Nubbee*, brother of *Ghullam Shah*. *Bejur Khan Talpoor*, son of *Byram*, at this time arrived from *Mecca* at *Neirunkote*, and *Ghullam Nubbee* sought an opportunity to destroy him. *Bejur* having collected followers an engagement ensued, in which *Ghullam Nubbee* was killed, and *Bejur Khan* became master of *Sindh*, putting *Abdul Nubbee*, the brother of *Ghullam Nubbee*, in his brother's place, as governor of the country. *Abdul Nubbee's* first act was to destroy *Surafranz Khan*, *Mahomed Khan*, *Uttur Khan*, and *Meer Mahomed*, at *Hyderabad*, where they were imprisoned.* His next, to send *Ijut Khan* with a force to attack *Bejur Khan*; the former was defeated. *Abdul Nubbee* afterwards murdered *Bejur Khan*, when the *Talpoors* drove out *Abdul Nubbee*, putting the affairs of the country in the hands of *Futteh Alli Khan Talpoor*, son of *Sobhdar* and grandson of *Byram*, in which *Timoor Shah* confirmed him. He gave a share of his power

Abdul Nubbee placed in power.

* This wholesale system of putting princes out of the world, is vouched for in the "*Futteh Nameh*."

to each of his brothers, *Ghullam Ali*, *Kurm Ali*, and *Murad Ali*. *Futteh Ali Khan* and *Ghullam* died; the former in 1801 A. D. 1216 H., and the latter in 1811 A. D. 1226 H. *Futteh Ali* left a son, (*Sob-dhar*,) and *Ghullam* also (*Mahomed*,) who with their uncles, *Murad Ali* and *Kurum Ali*, share the government of *Sindh*, with the title of *Ameers*.

NOTE.—It is impossible to add to the already very luminous and interesting history given by Dr. J. Burnes in his visit to the Court of Sindh, of the rulers of the families of the Kaloras and Talpuras; as my paper would not however have been complete without some notice of their dynasties; I have compressed them into a close and small space, leaving out most of those incidents which have been so graphically described by Dr. Burnes.

T. P.

Notes on the Manners and Habits of the Torkoman Tribes, with some Geographical Notices of the Country they occupy.—By EDWARD STIRLING, ESQ. B. C. S.

The *khonat* of *Khiva* has been described by Mr. M. Mouraviev, who was sent by Russia as an envoy to the Khan, at great length, and he has given considerable interest in the deplorable tale of his sufferings. A barbarous nation, in the lowest state of civilization, can have very few objects to engage much attention; and if we except their peculiar manners and customs, and mode of warfare, they are entirely destitute of attractions to the inhabitant of a more refined atmosphere. Without antiquities, edifices, laws, learning, science, arts, and commerce, they have little to *satisfy* or *create* curiosity.

The Torkomans bear the greatest resemblance of all other nations to the Arabians; but they are not decorated with their antiquity of origin; their celebrity, as conquerors, as legislators, and as fanatics; their learning, and their reputed science. While the Arabian *Khaliffs* ruled as the *vicegerents* of Mahomed, the Torkomans were reckoned among the number of their slaves. Their manners are similar; they are equally the children of the Desert, inured to fatigue; pride themselves on their horses and mares; infest the high roads for the purpose of plunder, and enslaving their victims; war among themselves;

manufacture their own tents, clothes, and horse furniture ; tend large flocks of cattle ; move from place to place ; cultivate small portions of land ; eat horse and camel flesh ; and make distant excursions.

They differ from the Arabs yet in several points ; they are more wealthy ; they have less respect for their ancestors ; they have not that romantic sort of love for the other sex ; they do not hold the rights of hospitality to be so essentially incumbent upon them ; they are not so strongly impressed with the obligation of the law of *lex talionis* ; they frequently stain their predatory attacks with murder, which the Arabs always, if possible, avoid ; they are less subject to the vicissitudes of season, as they live in a more temperate climate ; they have a less defensible country, and have been frequently conquered ; they make captures for the purpose of selling them, and this forms their chief article of commerce with *Bokhara*. In their enterprizes they are bold, bloody, desperate, and cruel ; from their enemy they do not expect, and give no quarter, unless to make a slave of their adversary, for the purpose of disposing of him at the best market ; they murder the old men and women, and only take away with them such as may bring a good price, and reimburse them for their trouble ; they are more sordid, less hospitable and generous, and inferior in magnanimity to the Arab ; they have larger forms, fuller faces, broader and more expansive foreheads, smaller eyes, and are more ugly and cunning than the Arab ; they shew a few hairs where we expect to see beard ; large mouths, strong teeth, and moderate sized lips. Their cap distinguishes them from the Persian ; from bottom to top it is large and circular, of the same diameter, and not conical as that of the *Kassilbash* cut ; it is placed on an enormous head, seated on a short but thick neck, and this pillar is supported by a pair of broad shoulders, which gives the outline of a large and expanded body and a full chest. Their food consists of bread, soup, and pillao, diversified with cheese, milk, and fruits.

They generally eat twice a day ; their breakfast is light, composed of bread with fruit or syrup. Their dinner is more substantial, meat under some form always forming the chief portion of it.

The Turkomans are divided into a great many tribes independent of each other, who have their respective chiefs and white beards, (*suffed resh.*)

The country of the Torkomans may be considered, generally speaking, bounded on the north by the river *Ammoo*, and on the south by the river *Tedjen*; but these rivers wind very much, and perhaps it may be better to state the southern boundary of the country to be the Parapamisan range, and from thence north it extends as far as the *Ammoo* river. On the east, it approaches the confines of *Balk* and the towns of *Aukooree*, *Seripool*, *Shiberghan*, on the borders of the Desert. On the west the limit is distinct, it is the *Caspian* sea.

Khiva is the capital of a portion of this extensive country; but the more distant Torkoman tribes hold themselves, generally speaking, separate and independent of its rulers. *Orgunge* is the general appellation of this state on the north of *Khorassan*, and among the Torkomans of *Shurraks*. In ancient times this wild, desert, and inhospitable country would appear to have been inhabited by the tribes or races denominated the *Dahæ*, the *Getes*, and *Massagetes*, and the *Mimunceni*.

They have always been noted for their turbulent character and predatory habits, and for rearing that superb horse, which enables them to perform the most extraordinary journeys. The Sultans of *Kharizm* are famous in history. Malek Shah is represented as a noble, high-minded, and liberal sovereign; and the bearing and courage of Jillaladeen, the last sovereign of the Seljukian race, excited the enthusiastic praises even of Genjhis Khan, while he viewed him swimming his horse across the rapid current of the Indus, still continuing to let fly his arrows at him whilst landing on the bank of the stream, admiring his intrepidity. A king of *Kharizm* is mentioned by the historian Arrian, but he makes his residence west of the Caspian, next the country of the Amazons: this locality seems in my opinion evidently a mistake of the copyist.

The brave resistance and the frequent revolts of this people are mentioned by Arrian and Quintus Curtius.

The people of these countries, together with the Sogdians and Scythians, appear to have been the first who checked Alexander's career. The above-quoted historians allow that his detachments were often surprised and defeated; his campaign in this country would seem to have been very harassing, the labour and sufferings of his soldiers

very great. It is scarcely to be expected from posthumous historians that in relating the transactions which occurred in a distant and nearly unknown country, where a different language prevailed, that the correctness of their geographical information should be such as to enable us to trace with minuteness the various cities and petty kingdoms which they have occasion to mention at the distance of two thousand years.* It is with difficulty we can even guess at the principal places reported by these historians of Alexander the Great to have been subdued by him.

One of the most interesting places to inquire the situation of, it appears to me to be the hill fort, which seems to have been occupied by the Sogdians. This I imagine is no other than the *Killat Nadir*,† which very accurately corresponds with the description given of it by Arrian and Quintus Curtius. The names of nations and cities are very much confounded together, and this would appear to be the case with the Sogdians, Scythians, and Bactrians.‡ This rock may perhaps be thought likewise to answer to that of *Aornas*, since travellers have in vain inquired for it on the banks of the *Indus*; for Arrian says, that Alexander leaving *Herat (Aria)* went to the cities of *Aornas* and *Bactria*. *Killat Nadir* is situated on the borders of the Desert,

* With reference to the above, the following are submitted; some of them I have endeavoured to settle:—

Drapsaca? Budukshan.

Margiana. Marghina, the valley of the Moorgab river and the territory adjoining.

Nantaca? Sogdiana.

Drangæ? People inhabiting one of the mountain ranges of the Parapamisan spine. They are characterized by Quintus Curtius as “*Bellecosa Natioue.*”

Dai. The Cashgar people inhabiting the Western hills as far as Darwas. These hills are called the “*Beeloor Tay*” I believe.

Mæotis. The lake Aral.

Paratucas?

Choriensis Petra? This is perhaps the present Kellati Nadir in Khorassan.

Nicæa sacro?

Thyrceas?

Ara Sacos? This may be conceived a place of worship of the *Sacæ*, who were a tribe of Scythians.

Jenippa? Is represented a vastly rich and populous country, which attracted, by its fruitfulness, settlers from all parts. This territory was situated on the borders of Scythia and would correspond to the present Fergana.

† Vide B. Frazer. It is situated north of Meshid, on the borders of the Desert.

‡ These are described as all horsemen who exercise the profession of plunderers even in the time of peace. The Torkomans of the present day are now more barbarous in their cruelties, if possible, in quiet times, than during war.

north of *Meshid*; it is perhaps as strong as any hill fort defended by natural works can possibly be. It has all the advantages of scarped rocks, which form an invincible barrier to an enemy, and must be nearly impregnable to a force destitute of shells. It has, moreover, extensive pasturages and cultivated fields, together with water in great abundance, which probably would never fail. Of all natural defences this is the strongest situated within or near the Torkoman Desert. In this stronghold an army of many thousands might remain secure against every attack of their enemies. It has three gates, one on the north, another on the east, and the last on the south; by these alone it can be entered.

The same mode of warfare, and the same manners of these wild tribes exactly tally with those given by Arrian and Quintus Curtius. *Omnes equites, etiam in pace latrocinii assueti, tam ferocia ingenia non bellum modo sed etiam veniæ desperantes asservant.** Their perfidy, villany, and barbarity, are as conspicuous now as in the days of Alexander. The Torkomans and the Usbecks are guided by the same principles and sentiments; are the same lawless, restless, and ungovernable race as the Sogdians, the Dahæ, the Massagetes, and the Scythians. The introduction of the religion of Mahomed has wrought little change in their morals, manners, customs, and socialities. Attached to no principles of moral rectitude themselves, they cannot conceive the existence of them in others. From their infancy accustomed to wander and to change their abodes; habituated to scenes of violence and bloodshed, in the perpetration of which no justifiable reason can be assigned, and restrained by no sense of order, reason, and humanity, they aspire to independence, and shun all subjection, whether of a moral or physical nature. Self-defence and preservation are their first consideration; self-aggrandisement and self-exaltation, the next; and in pursuit of this latter object, any and every means, even unto parricide, fratricide, infanticide, and regicide; but even the magnitude of such crimes are exceeded, frequently in the extermination of whole communities of people and extirpation of nations.

The *Oxus* is a river of considerable magnitude; it has a course of upwards of nine hundred miles from its source; its width and depth have not been exactly ascertained, it is however considered unford-

* Quintus Curtius, p. 231.

able, and has no bridges. The latest traveller, Mr. Moorcroft, found no difficulty in passing it; but unfortunately he omits to state in what manner his passage was effected. The main stream of the *Oxus* is formed of two branches. The right branch is called the *Ping Diria*, and the left branch, which comes from *Baduckshan*, is joined in its course from the *Hindoo Cosh* by several streams, and unites with the *Ping* river near *Hazerut Imam*.

Generally the *Ammoo* or *Oxus* is represented as a muddy, rapid, deep, dirty and sand-bearing river, and to travellers from Persia the largeness of the stream, and the quantity of water, is considered as somewhat wonderful, and they can only compare it with the *Tigris* or *Euphrates*. Mr. Moorcroft thinks it might be rendered navigable* from lake *Aral* to *Baduckshan*; in support of this supposition it is said, that Nadir Shah directed a thousand boats to be made and prepared for transporting his troops from *Baduckshan*, (or rather *Khundooz*,) to *Bokhara* and *Kharism*. According to Mr. Moorcroft, boats might be towed up by horses; that horses for draught might be easily obtained at a small expence; but before this could be put into execution, some knowledge of the banks on either side seems to be requisite. Alexander found it a difficult matter to cross: he could get no materials of which to construct a bridge, and was obliged to adopt (*then* as it is now in many parts) the practice used in the country, of making rafts by means of blown skins, the buoyancy of which had the desired effect; several rafts thus constructed were sufficient to enable his army to pass this river in the course of five or six days. The Torkomans and the Allemanees† are in the habit of swimming their horses across. The subsidiary branches are frequently crossed by individuals on cows, where the stream is very rapid. There are various contrivances for passing it in different parts of its course, to which the natives are habituated. The *Cabool* river is passed by

* The *Ammoo* has never been navigated; but as far as I can judge from personal observation, there exists not a single obstacle formidable to its navigation. In respect to barks of large burden especially, if conducted by a steam apparatus, and if objections not foreseen should apply to its agency, I can discover no more against tracking than apply to the Ganges, with a superior advantage of the command of as many horses as would possibly be required for that purpose, at a very low price.—*Mr. Moorcroft's MS. letter from Bokhara.*

† The name of the gangs that go out forays.

means of blown cow or buffaloe skins, which are fastened to a slight raft of twigs. These rafts are called *jallahs*; they are very troublesome to manage, and dangerous, and accidents often happen. While the baggage and owners are thus ferried across, the cattle following each other swim to the opposite side. The *Oxus* is frequently frozen over; when this is the case, it can be crossed upon the ice. It abounds in fish, but we do not know that fishing is an occupation much followed by those who reside on its banks. Before it reaches the *Aral* it would seem to be divided into several streams, besides those canals which have been cut for the purpose of being conducted to remote spots of cultivation: the principal towns situated on these divided streams are *Oorgunge*, *Khiva*, *Toorbat*, *Suggur*, and *Sulughan*;* but these are probably little better than large encampments, except *Khiva* and *Oorgunge*, which are walled, and have ditches; but these defences are very miserable even in the opinion of the people of *Bokhara*. The southern bank of the river, and perhaps the other likewise, is covered for a considerable distance from the river with lofty reeds, which form a kind of forest, in which the Torkomans pitch their tents and feed their cattle; and I rather suspect that wild beasts also exist in these masses of reeds. Whence the ancients called this river the *Oxus*, as it bears no resemblance to the modern names, the *Ammoo* and the *Jehoon* has not yet been ascertained. Mr. Moorcroft has offered a supposition, that that it is derived from the Turkish word *aksoo*; this appears to me a happy etymology, as it characterizes the river, the word signifying a white river.

The banks of this stream are much frequented by the Torkomans; they annually cultivate small patches to supply themselves with grain on this side of the river; the best and most approved horses are bred, especially the *karrabay*, reared by the Torkomans. It is one of the finest castes which is procurable. The government of the Torkoman resembles that of a father over his family; each head of a family exercises absolute authority over its members; these consist of his wives, his children, his slaves, and such dependents

* At *Oorgunge* my informant left the banks of the *Oxus*, situated eight coss from the main channel. From this he travelled to the N. N. W. passing the towns of *Toorbat*, *Suggar*, and *Sulughan* on to the city of *Khiva*, situated on the banks of a large river called the *Heelem*, nearly as large as the *Oxus*.—*Lieut. Macartney's Memoirs*, see *Appendix to Elphinstone's Cabool*, page 648.

who are too weak or too poor to have separate establishments, submit themselves to his authority, and live under his protection. These dependents are frequently relations, or somehow connected by near or more distant ties of blood. The orphans and relations of other chiefs, who have died without leaving any heir of sufficient years to provide for their families, are also united to them by a remembrance of the friendship which subsisted between the two chiefs before one of them died ; and so long as they are treated with consideration, they seldom think of separating from the chief who has shewn them kindness and assisted them in their difficulties. Several heads of families form an *owl*, who unite themselves, and in conjunction make their annual peregrinations for the sake of pasturing their flocks, or for the purpose of proceeding to a distant spot near some river or stream, to rear their crops to supply them with grain. These migrations generally commence about the beginning of spring, upon the breaking up of the winter, when the snow melts and the weather becomes warmer ; at this period of the year, pasturage for the cattle is plentiful every where, and water is abundant. This is a season in which the Torkoman delights, and his flocks and beasts sympathise with him. They yield him their young, and a vast quantity of milk ; they become fat and sleek, and travel with alacrity to new pastures. It is at this time that parties are made up to go on forays ; one of these gangs generally consists of from twenty to sixty horsemen, well mounted and armed with swords and spears, and not seldom with matchlocks and pistols. Before hand, the object of their expedition is settled, which is generally to way-lay a *kafila*, or body of travellers ; on some occasions very large bodies are united to make expeditions on particular points of attack—such as on the frontier of Persia. *Meshid* was an instance of this a short time before my arrival in 1828. The Torkomans on this occasion joined several bodies of *Hazerahs* and *Jumshidies*, to ensure the success of the expedition ; a quantity of booty was obtained, such as horses, mules, and slaves of different sexes. The attack having been made shortly after sunrise, when the cattle of the city had left it for the purpose of grazing, they found no opposition in driving them away, together with the captives.

The dress of the Torkomans in general consists of a pair of *pjamahs* or *shelwars*, which are fastened at the ankle ; over these they wear

a pair of high boots, which reach to the knee, commonly made of red Russian leather; for a shirt they wear next their skin a *perahan*, (tunic); over the *pijammahs* and *perahan*, they wear a *chogha* or cloak with sleeves, which is fastened by a slender *kummarbund* made of cloth or leather, to which is attached two knives in a case and a small purse. Above the under *chogha* they often put on a second, which is allowed to remain loose pending from the shoulders. On their head they have a black lamb-skin cap, with the wool of a jet colour and naturally curled.

The shape of this cap is not of a conical form as that of the Persians. Its diameter is the same at the top as at the part which immediately encircles the head.

They always wear a sword, (*shumsheer*,) which is either carried in the hand or fastened to the waist. They seldom wear a *peshkubz*. Their *choghas* are made of some blue cloth in the warm months, and of coarse woollen cloth in the cold season; the latter are either grey camel hair, coloured or black. The women are remarkable for wearing lofty turbans; they are fond of silks and splendid colours for their dresses. When young, their hair is allowed to grow long and unconfined, divided into plaits, to which are fastened behind small pieces of silver; some tribes wear their hair loose and exposed, others conceal it by turbans having loose locks hanging down. Their appearance has a certain rudeness, but not without something striking and interesting. The occupations of the men are predatory attacks; the chase; the breeding and the care, exercise, and instruction of their horses; tending their cattle; supervision of their slaves and their women, who are employed in making carpets, musnuds, (or felts,) loose furniture; overlooking their fields, and directing agricultural employments, and ploughing, sowing, and reaping; the setting up, taking down, and loading their tents. They are more accustomed to command than to obey. They exact implicit obedience from their wives, children, and dependents of all kinds. Their amusements are few. They like music, warlike anecdotes, breaking in their horses, exercising themselves in the use of the sword and the lance, and sometimes in using the matchlock. They delight in feasts and the pleasures of the table. They chase deer with an excellent breed of grey-hounds. Their women are employed in house-

hold duties, often have separate tents ; subject to them are female slaves, who act under their orders ; they prepare the ordinary food of the family, wash the linen, make up clothes for their husbands and themselves ; churn and make the coagulated milk and cheese ; bake the bread, and bring the water from the rivulet or fountain ; they assist in erecting the tents, in laying down the *nummud*, and cleaning the floor. They do not cover their faces with that scrupulosity that is practised in Persia ; they do not hide their faces except from newly-arrived strangers ; their manners are free and unconstrained ; their duties compel them to be much exposed to the climate. They are fond of singing and sometimes dance, particularly at marriages. I found them kind in supplying my wants ; both the men and the women are much given to pass their time in idleness and listlessness, and require much excitement to rouse them to action. In physical appearance the Turkomans are very muscular, large-bodied men ; they have very thick short necks, enormous heads with a broad front ; they have scanty beards which seldom exceed a few straggling hairs upon the chin. In their manners they are rude ; in their eating dirty and uncleanly ; their victuals are often imperfectly dressed by fire ; they are fond of animal food ; eat goat's flesh, and that of any animal which they can obtain.

These notes, (written in 1830,) were kindly placed at my disposal by Mr. Stirling, and are the result of that gentleman's personal observations during his travels in a part of Asia, little known in 1828. He has also obliged me with papers on Bokhara and Kothan, which will appear in their course.



Discovery of Coal in a new site. By W. DUNBAR, ESQ. Assistant Surgeon, 5th Irregular Cavalry.

Camp Burree,
22 miles from Hazareebaugh,

In marching about a week ago from *Dorunda* to *Hazareebaugh*, I halted one day at *Bullea*, a very considerable village about fourteen miles to the south of the latter station. Having heard reports that there was coal to be found in the vicinity, I requested the *Kotwal*, a very intelligent and obliging man, to show me where it was, we proceeded a mile up the banks of a considerable nullah, called the *Haharoo*. The soil appeared to be mostly alluvial, containing in some places a good deal of *kanker*. The greater part was cut into rice *khets*. On the banks of the *Suncheraie*, a small nullah running into the *Haharoo*, I first saw the coal in a bed about three feet in thickness, with a gentle dip or inclination to the west. It was splintery, very black, lying below a friable sandstone, and alluvium containing *kanker*. The bed seemed to be of great extent, and I have no doubt that any quantity of coal can be procured at this place. I brought some specimens with me to my tent, and found that those from near the surface did not burn well; in fact it was with some difficulty I could get them to ignite at all. The others burned very well indeed, without a great deal of smoke, and leaving an inconsiderable quantity of ashes. The coal bed seemed to have been never worked, and I had some trouble in clearing away the grass and bushes, to procure the specimens which I took with me. I have some of these still in my possession, and regret that I have no opportunity of forwarding them to you at present, for the opinion of better judges than myself.

At *Bullea* there are large and very extensive iron works, employing a great many persons, and yet strange to say, though most of the inhabitants are aware of the existence of this extensive coal bed, they never use it for their furnaces; but are at great expense in transporting wood and charcoal from the forest, several miles distant. I endeavored to impress upon some of the workmen how advantageous it would be, and what a saving would accrue to them, were they to use this coal; but by

their answers, they evinced their utter indifference to the subject, and their determination to adhere to the customs of their fathers. The coal bed is not above a mile distant from the works.

The village of *Bullea* is very prettily situated, and the view from it in every direction very picturesque. Towards the N. W. and at a distance of three or four miles, is a semicircular range of hills called the *Mahoodee Pahar*, very much resembling, though scarcely equalling in altitude the Salisbury Crags, at Edinburgh; that is to say, there is a steep *talus* (formed in a great measure to all appearance from debris, which have fallen from above) of 200 or 300 feet elevation, and then you come on a steep precipice, which it appears impossible to scale. The *Haharoo Nuddee* winds in beautiful meanderings along the base of this high range. Hilly ranges of considerable altitude surround the plain on which *Bullea* is situated, and I regretted much that I had no time to examine their formation, or even to visit the *Mahoodee Pahar*, which was not very far distant from my camp. In a commercial point of view, little or no importance can be attached to the discovery of coal at *Bullea*, at least in the present day. It is near no navigable river; no public works of any importance are in its vicinity, excepting the iron works above alluded to, and it will require more than persuasion I am afraid, to induce the natives to abandon the use of wood and charcoal, for a cheaper and more useful material. The roads passing over steep and rocky ghauts, are by no means in a good state, though it is to be expected, owing to the exertions of Major Ousely, Governor General's Agent, that they will soon be much improved.

[This paper was communicated immediately on its receipt to Government, but having been subsequently mislaid, has not appeared at an early date as it should have done.]



Succinct Review of the Observations of the Tides in the Indian Archipelago, made during the year 1839, by order of his Excellency the Governor General, of his Netherlandish Majesty's possessions, 20th October, 1838. No. 3.

[This interesting report was transmitted to the Asiatic Society by the Society of Arts at Batavia. It has been translated for the Journal from the original Dutch, by my friend Dr. Roer, the translator of Lassen's Points of History.]



The tides have been observed at Pulo Chinceo on the West coast of Sumatra to the southward of Padang, from the 10th February 1839 to the first of January 1840, being ten months and three quarters, by the naval lieutenants of the second class, G. J. Fabricius and J. de Hoon.

At Muntock on Bornea, from the 15th January 1839 to the first of January 1840, being eleven months and a half, by the naval lieutenant of the second class, P. C. Reuchenius.

On the Island Onrust near Batavia, from the 1st January 1839 to the 1st January 1840, being twelve months, by the naval lieutenant of the first class, Director of Onrust, J. Sigtoel.

At Fagol, on the north coast of Java, from the 1st January 1839 to the 1st January 1840, being twelve months, by the naval lieutenant of the second class, F. J. E. Van Goreum.

At Klampsis, on the north coast of Madura, from the 10th February 1839 to the 1st January 1840, being eleven months and three quarters, by the naval lieutenants of the second class, J. A. K. Van Hasfelt and J. Van Gool.

At Filatjap, on the north coast of Java, from the 1st of January 1839 to the 1st January 1840, being twelve months, by the naval lieutenant of the second class, J. A. G. Rictoeld.

To these have been added some less complete observations on Amboyna, from the 23rd March 1839 to the 1st January 1840, being nine months and a quarter, by the master, J. Kecutebol, and the naval lieutenants of the second class, J. A. Ricffer and J. A. W. High.

At Taparo, from the commencement of May 1839 to the close of December 1839, by the assistant resident of Tapora, Winkelman.

Also on the Coriman Islands, from the 18th July 1838 to April 1839, by deputy of the civil service, Michalosske.

These two latter observations were forwarded by the favour of the Batavian Society of Arts and Sciences, which had already previously made (at the request of Prof. Whewell, Trinity College, Cambridge) some communications with regard to the tides in this Archipelago, to the Asiatic Society in Calcutta ; besides these, there were some observations made at Macassar in the year 1840, by the master in the navy, E. Lagto, after they had been finished at the other stations.

These observations furnish the following results concerning the respective stations :—

At Pulo Chinco off Fjinks, West coast of Sumatra. The course of the flood tide and the rise of the water on the coast was observed to run from N. E. to S. W., closely following the direction of the coast.

The ebb tide ran in the opposite direction, and though both tides were very trifling, not exceeding a quarter of a mile, yet the force of the ebb generally exceeded that of the flood, though neither were sensibly influenced by the wind.

The tides were, however, very regular. The mean duration was about six hours and a quarter, so that as usual, there were two tides in a day.

At new and full moon the high water was generally between 5h. 30m. and 6h. 30m. viz.

At new moon.	A. M. at 6h. 24m.
	P. M. at 6 30
At full moon.	A. M. at 5 28
	P. M. at 5 35

average time about 6—00, and the time of flood tide during the other days, followed the common rule, dependant upon the moon's passing the meridian, according to which, though not always with the same regularity the tide came in every day generally about three quarters of an hour later, or rather in the course of a fortnight the variation amounted to twelve hours. If then six hours be supposed as mean number, it was almost always flood tide when the moon was in the horizon.

From the time of high water to the time when it again turns to ebb, as is here noticed, we may be allowed to fix 5h. 30m. as the mean number.

The mean rise and fall was about ebb,	...	...	0	78
The greatest ditto ditto,	...	...	1	49
The smallest ditto ditto,	...	...	0	6

The difference in the elevation of the succeeding tides is remarkable, viz. a greater rise and a smaller one were perceived to take place alternately, and in the same manner also the ebb tides.* This alternation of flow and ebb which is very regular may hereafter be shown to be in connection with the moon's decrease, though perhaps more so at this place than at the other stations of the Archipelago.

The greatest difference between high and low water, as well as the highest rise, occurred in October and November, and generally in the months when the West monsoon prevails.

—————
At Filitjap, South coast of Java.

On the south coast of Java the tides were most regular in all respects, consequently the observations made upon them are best adapted to furnish a general rule.

The course of the flood tide was to the West into the outlet, and followed the direction of its shore. The ebb tide ran in an opposite course. In the westerly passage or creek of Segara Anakon, the tides had a course quite the reverse; here the streams met consequently the rise and fall took place without stream. In general the stream appears to run, at least in the East monsoon, along the coast to the East, at the rate of half a mile in four hours. In the straits of Filitjap in the West monsoon, the ebb and flood tides ran at the rate of two and three miles, and in the East monsoon at five and five and a half miles. The tides evidently follow here, as well as at Pulo Chinco, the common rule. The mean duration of rise and fall was about six hours and a half, and this took place with much regularity, two tides in one day; but also smaller rises and falls between the usual ones have been sometimes noticed, amounting to 0-20 ebb. The duration of still water is here very regular for ten or fifteen minutes after high and low water. The ebbs and floods are about equal in force and duration. At new and full moon the mean time of the flood tide was between eight and nine hours, viz.

* NOTE.—A nautical friend has pointed out that night tides are generally the highest, thus giving an alternation.

At new moon at. 9h. 18m. P. M.
 and at 8 53 A. M.
 At full moon at 8 45 P. M.
 and at 8 19 A. M.
 Average of the time 8 48

and therefore as the time of flood tide is noticed to the moment when the water again commences to decrease, we may fix here, as mean number, 8h. 30m., considering that here also the period of the flood tide during the fortnight passed the space of 12h.

At this station was observed the same remarkable fact as at Pulo Chinco, that at new moon it was high water an hour later than at full moon.

The mean rise and fall of the water was 1. 25 ebb.
 the greatest 2. 42
 the smallest 0. 10.

The greatest difference in the rise and fall of the tide took place some days after the new and full moon, not however exceeding 2.63 ebb. The highest water mark was observed in the East monsoon.

The difference of the rise and fall of the succeeding tides is here very notable, and appears more than elsewhere to be in connection with the decrease of the moon. The morning and evening tides are different, especially at the decrease of the moon, while they were about equal at the time of the moon's passing the Equator.

At Amboyna.

Although the streams in the bay are not strong, and sometimes only run from two miles to two and a half, and the turns of the tide very irregularly take place, we may state that the stream of the flood tide in the East monsoon runs into the bay along the northern coast to the E. and runs out along the southern coast to the S. W. The opposite course takes place in the West monsoon, while in the middle of the bay little or no stream is observed.

The duration of the rise and fall of the water is here very regular, about six hours and a quarter, so that the flood occurs about twice a day, and in a fortnight loses about twelve hours.

At new moon the mean time of high water was about

A. M. 0h. 34m.

P. M. 0 46.

At full moon A. M. 0 06.

P. M. 0 38.

Average of time 0. 30. or 33m.

The month of December makes an exception to this, and might encourage the supposition of another mean number during the West monsoon, unless the observations made in that month exhibited a want of accuracy, on account of which they are not be relied on.

At new moon here also, as well as at Filitjap and Pulo Chinco, the flood tide appears to come in always later than at full moon; the mean rise and fall was about 1. 14. ebb.

The greatest ditto ditto 2. 50. ebb.

The smallest rise observed at several places was scarcely perceptible. A small rise was alternately taking place with a great one, and the same occurred with the fall. The difference of the succeeding rises and falls is here likewise deserving notice. The greatest difference between high and low water took place in April and July.

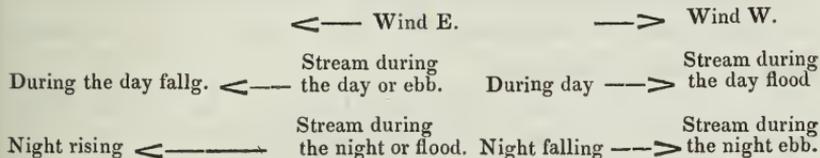
The highest water mark was in April, November, and December. These remarks are made on observations taken during the period from April to December, and especially during the East monsoon.

At Klampsis, on the Northern coast of Madura.

It appears from the observations that were made, that there was no flood or ebb stream perceptible during the East monsoon, and in the month of May the stream had always during the day a Westerly direction, with the velocity from two miles to two and a half; while at night little or no stream was observed; it sometimes likewise ran to the East. The month of July forming the only exception to this, when in the night also the stream ran to the West, with a force of about two to three miles. In this monsoon the water is generally falling during the day and the stream then strongest, while during the night the water is generally rising; the stream however has little force.

These facts suggest the inference, that if ebb and flood tide here actually exist, the ebb tide has a Westerly direction, while the flood runs

to the East; this latter, however, is almost annihilated by Easterly winds. In the West monsoons, the stream runs to the East with little force, and the water rises during the day; the flood stream should accordingly run in this season to the East; but then at night scarcely any stream is perceived, and the ebb tide which then runs, was observed to be annihilated by the Westerly winds.

*East Monsoon.**West Monsoon.*

The mean duration of the rise and fall of the water is during the whole year eleven and half to twelve and half, so that here ebb and flood occur only once in the same day; nevertheless it appears that here often little rises and falls, or those called short tides, have obtained alternately with them. It is worth noticing, that during a certain period the flood tide always took place before noon, and during the remainder of the year in the evening; namely, in May, June, and July the time of flood tide was daily in the morning about nine o'clock, and one o'clock in the afternoon, without regular yet constant retardation; this period from time to time suddenly shifting to an interval of six hours. In the first half of August, this period occurred between half-past seven and half-past eleven A. M. In the latter part of the same month, between half-past five and eleven A. M. In September between one o'clock and half-past ten A. M. In October between midnight and six o'clock A. M. In the latter days of November between nine o'clock A. M. and midnight. In February between three, half-past three, and half-past eleven o'clock P. M.; and so on, until in May this period again occurred before noon.

Thus it can be proved that in the E. monsoon, the flood tide took place always before noon, and therefore the fall of the water and also the ebb was during the day; and in the West monsoon after noon, so that the fall of the water and also the ebb were in the night, while the opposite was observed with regard to high water and the flood tide, as the mean interval from the period of the one flood tide

to that of the next was about twelve or thirteen. The succeeding tides, or the duration of that of the rise and fall generally decreased in an inverted arithmetical progression from between nine to fifteen hours; the difference between the rise and the succeeding fall of the water was most remarkable at new and full moon. There has been a single instance, in which the duration of the fall did not exceed an hour, while again a rising of three-quarters of an hour has been observed.

The sum of the two succeeding tides, or the duration of the rise of the water and the succeeding fall, always amounted to somewhat more than twenty-four hours.

This was not the case as regards the height of the tide and of the succeeding fall, which was almost constantly equal.

Here also, as elsewhere, it is notable, that a great rise and fall occurs alternately with a small one, and the difference in the rise and fall decreases till no longer perceptible, when it again increases, which phenomenon must (at least at the first glance) be accounted for as the effect of a powerful cause; as for instance, the decrease of the moon as has been already done.

The common rules are here also not sufficient to calculate the time of high water. It also deserves notice, that at new and full moon the flood tide generally, excepting some instances in October and April, came in between eight and ten o'clock, viz. the morning, when the aforesaid periods in which, according to the season of the year, the flood tide must take place, corresponded with the morning, that is in the East monsoon, and in the evening, when the converse took place, that is in the West monsoon.

The flood of eight or ten o'clock, whether in the morning or in the evening, took place in almost all periods, as above mentioned.

The period of the flood tide at new and full moon cannot, however, be averaged or used to calculate the mean time of high water for another day.

The mean rise and fall of the water was, ... 1· 12 ebb.

The greatest, 2· 13

The smallest, 0· 11

The greatest difference between high and low water occurred in May, June, and December, after new and full moon, though this by no means was always the case.

The highest water-mark was likewise observed about this period.

At Fagol, on the north coast of Java.

It appears that here also, as at Klampus, no streams of ebb and flood, strictly speaking, are to be found, the tides generally being very irregular, and the streams, which seem to be dependent on the wind, at most amounting to a quarter or half a mile.

The duration of the rise and fall has a singular course. In January it is sometimes six hours, so that there accordingly flood and ebb tides occur generally twice in a day; and only one rise and fall of much longer duration than ordinarily is perceived at new and full moon. In the succeeding months, these longer tides repeatedly occur after new and full moon, so that at this period, for several succeeding days, the flood tide comes in but once a day, and thus also the ebb, and the duration of the rise and fall of the water is respectively twelve hours. In May, about new and full moon, they continue for eight days, and likewise the whole month of June the duration of the ebb and flood tide is respectively twelve hours; so that there is but one flood and ebb tide during the day.

Then again in July, at new and full moon, there are tides of about six hours' duration, so that two tides again occur in a day.

In August and September, the number of days when short tides are perceived, is increasing. In October, the duration of all tides is about six hours, and in November and December, at new and full moon, they again come in some long rises and falls.

At the period of the change from these common or short tides (of about six hours) to the long ones (of about twelve,) a great rise and fall generally is alternate with a small one, and it is a remarkable fact, that these smaller rises and falls gradually decrease until they entirely disappear, and only one rise and fall takes place in the twenty-four hours.

The reverse was the case on the change from long tides to the common or shorter ones.

The same also appears to happen as regards the time of rise and fall, though in a less striking degree.

The time of flood and ebb tide is here likewise very uncertain. It may, however, be stated, that at new and full moon, the ebb tide comes in about three o'clock in the morning, while it is more regular with regard to

the flood tide, and it is therefore impossible to calculate with exactness, the other days re-appearance of ebb and flood tide at Fagol.

The mean rise and fall during the year was,	...	0·50 ebb.
The greatest,	... ..	0·97
The smallest,	.. ...	0·04

The greatest difference between high and low water was observed in the West monsoon, and scarcely ever at new or full moon ; so that there accordingly existed no real spring tide : it never exceeded the fall by 1·03 ebb.

The highest water-mark, on the other hand, was in the East monsoon, especially in the months of May and June.

The difference in the rise and fall of the succeeding tides is here, as well as at the other stations, deserving notice ; and though the equality of the succeeding rise and falls evidently depends upon certain rules, yet it is not to be traced, at the first glance at least, to the decrease of the moon.

The monsoons, and likewise the stand of the sun's solstice probably, exercise a more than common influence on these tides at Onrust near Batavia. No stream of ebb and flood, properly speaking, was observed any more than at Fagol or Klampsis, the stream which runs cannot be subjected to any certain rule, nor does the rise and fall of the water proceed with regularity. The stream in all directions is much influenced by the wind, and is very trifling, seldom exceeding one mile to one mile and a half.

According to the observations that have been made, the duration of the rise and fall of the water in December, January, and February, was about twelve hours ; so that there is in one day, only once high water and once low ; sometimes, however, the water is longer flowing than ebbing.

In March for some succeeding days, smaller tides were observed between them, which being of very unequal duration ordinarily, were alternating in a short rise, succeeding a long one and vice versa. The recurrence of these small tides which first appeared twice or thrice in the month, may perhaps be brought into connexion with the age of the moon ; the number of days they continued decreased about July and August, though sometimes a short tide of one or two hours occurred ; with these exceptions, there was high and low water only once in twenty-four hours.

In the latter days of August, the number of days when the short tide comes in, it increases so that almost the whole month, as well as in September, two tides took place in the same days, though of a very irregular duration; then the number of days when the short tides were observed again decreased, occurring only twice or thrice in the month; till in December long tides almost always return, so that in this month there is only one ebb tide each day.

However, supposing in January and February the short tides have been overlooked, which is not impossible, as the character of these was not known at the commencement of the observations, or we should be able to assign a reason, that in July and December long tides, and in September and February short tides take place, as well as between these months, the number of days when short tides obtain, decreases and increases; something similar to this has been observed at Fagol; but the period of long and short tides does not correspond.

There is no peculiarity concerning the difference of the succeeding tides; but we must not omit to notice, that there, as well as at Klampsis, in December, January, and February, flood tide always comes in before noon, and this period is successively retarded; the flood tide being observed during May in the night; during June in the evening; during July and August in the afternoon; in September before and after noon; in October and November in those days where only one tide in one day took place before noon. It is evident from these facts, that during the East monsoon the flood-tide comes in the afternoon, and in the evening; while during the West monsoon it was before noon, and in the morning just the reverse of what has been observed at Klampsis.

The period of the flood tide at new and full moon, however irregular it may be in the interval between them, is always about ten o'clock, (or between 9h. 30m. and 10h. 45m.) P. M. from March to December, that is in the East monsoon; and at A. M. from September to March in the West monsoon, a singular correspondence with the observations at Klampsis. It is evident that on account of the regularity of the tides, this period cannot be used as a mean number, to calculate the period of the flood tide for other days.

The mean rise and fall was,	...	...	0·67 ebb.
The greatest,	...	...	1·32
The smallest,	...	...	0·02

The greatest difference between high and low water took place in the West monsoon, and then especially at new and full moon, in the other parts of the year. The position of the moon was not observed having any reference to the water-mark. The highest water-mark was also in the W. monsoon, and especially in December.

At Muntok in the Straits of Borneo.

At this place, a decided stream of ebb and flood took place, and the observations seem therefore most fit to establish on them a general rule for the tides within the Archipelago, and the short or middle tides. The flood stream at Muntok runs six or eight hours in a day to the S. E. with a velocity of quarter, half, and sometimes of one and a half mile, while the ebb stream runs sixteen or eighteen hours every day, at the rate of one or two miles to W. by N. and W. N. W. The turn of the streams was not regular, nor to be brought into connexion with the rise and fall of the tide. In August, an ebb was even observed lasting more than thirty-eight hours, while the water in the mean time rises twice.

After the monsoons, the common duration of the rise generally is ten hours, and that of the fall 14-30; afterwards at the first and last quarters of the moon, ebbs and floods, or the so-called short tides take place in one day, which last about six hours, or rather the mean duration of two rises is about 11-30, and that of two falls 12-35.

The short tides ordinarily appear at a certain suspension of the fall or rise in the ebb and flood tide, called by the natives *passing ketjil*. Should these tides amount to two ebbs and two floods in a day, they are called by the natives, "*passing onok*;" while ebb and flood, which run for a longer time, and precede the common tides of ebb and flood of twenty-four hours duration, bear the name of "*passing ma*."

On the contrary, during the change of the monsoons, that is during April, May, October, and November, these middle tides run at new and full moon; and here also as at Onrust, flood tide occurs during the West monsoon, in the afternoon and in the evening, and at new and full moon at 8h. 30m.

During these months, when at new and full moon short tides were running, the high water generally came in about 6h. 50m. in the morning, and at about 7h. 10m. in the evening. However, these numbers cannot exhibit a mean number, nor give a direction to calculate the high water of the other days, although the time of the flood tide, however irregular, seems daily to come in later, being retarded twelve hours in a fortnight, while this time on the appearance of the short tides has a most irregular course.

The natives foretell sometimes very exactly the return of the small and the short tides.

The greatest rise and fall was,	...	...	4·26	ebb.
The smallest,	..	...	0·07	
The mean,	...	...	2·17	

The greatest difference between high and low water was at full moon in December, in June, and May, and in general when the monsoons had passed; while the difference during the months, while the monsoons changed, was less perceptible.

The greatest rises and falls often took place at new and full moon, though by no means always.

The highest water-mark was also observed when the monsoons were in their full force. Besides it deserves notice, that during the period when flood and ebb tide came in only once a day, that is during the common long tides, the rises and falls following each other successively increase and decrease; while when two tides or middle tides occur in a day, the succeeding rises are alternately great and small, and thus also the falls, while the difference in the quantum of two succeeding rises, probably depends on the decrease of the moon.

At Corimon, Java.

An ebb and flood tide is here even less perceptible than at other stations. It appears, however, from the observations that were made, that here, as at Klampsis on the North coast of Madura, the stream runs especially with the rising water to the East, and with the falling water to the West; in the East monsoon in the night, in the West monsoon in the day time.

The tides are very irregular ; there being only once in a day flood and ebb tide, and sometimes of the duration from nine to fifteen hours.

The period of the flood tide has here, as at Klampsis and Onrust, a general though irregular retardation, viz. in the East monsoon, as at Klampsis, the high water comes in before noon and in the morning ; in September early in the morning ; in October, November, and December, in the night ; during the West monsoon in the night and in the evening ; in April in the afternoon ; while this period is most irregular during the turning months.

The mean rise and fall was, 1· 25 ebb.

The greatest, 2· 03

The highest water mark is in April, and generally the 21st and 22nd of the month.

4

At Tapara.

No ebb and flood stream properly speaking, and the whole course of the tides very irregular. With the rising water, a stream was generally observed having an easterly direction ; high water only once in the same day. Here also the period of the flood tide appears to undergo a general, though indefinite annual retardation, viz. the flood tides during the month of May and June take place after noon and at noon ; the ebb-tide in the morning and about midnight.

In July, August, and September, they take place successively earlier, so that the high water comes in October about half-past five o'clock in the morning ; in December about half-past one in the morning ; and during the W. monsoon in the night and in the evening ; and consecutively the flood-tides again occur in the afternoon. The period of ebb and flood tides at new and full moon is very irregular.

The mean rise and fall is, 1· 31 ebb.

The greatest, 2· 00

The highest water-mark was observed in October.

At Macassar.

According to some observations of a later date transmitted to us, viz. during the three first months of 1840, the tides are very irregular ; having a close correspondence with the tides on the Javanese sea.

The flood-tide, though with little force, runs to the N. E. and N.N.E. the ebb-tide to the S. W. and S. S. W. either stream much dependent on the wind.

During the full strength of the monsoons, there appears long tides to prevail, being only one flood and one ebb tide in twenty-four hours, and as at Muntok and Onrust, during the change of the monsoons periodically, returning short tides took place twice in a day; and during this period they were all short tides of about six hours. At new and full moon, the flood-tide comes in at about 6h. 20m. There is no daily retardation of the flood-tide. It appears, as at Klampsis, on the north coast of Madura, that during the W. monsoon the high water takes place in the afternoon, and most likely the converse during the E. monsoon.

A mean number cannot be obtained here.

The highest rise was during the 3 first months of 1840, 1. 60 ebb.

The mean, 0. 75

If we then compare the course of the tides at the different stations, there is evidently observed a sensible difference of the tides without the Archipelago, viz. of those on the West coast of Sumatra and on the South coast of Java and of Amboyna, from those within the Javanese sea. Here we are able to fix a certain mean number, by means of which the time of high water is to be calculated, totally different from the course of the tides within the Javanese sea.

The former it appears follow the well known rules of the tides; there is twice in the day ebb and twice flood tide, and two tides take place in the space of somewhat more than twenty-four hours in the whole, depending on the moon's passing the meridian.

Here we are able to fix a certain mean number, by means of which the time of high water is to be calculated beforehand, totally different from the course of the tides within the Javanese sea, which cannot be traced to the common rules; they rather are governed by the locality, the position of the sun, and the monsoons dependent on it.

We may however state, that in the Javanese sea high water is only once a day, and that besides these, long tides, or rather rises and falls, which of more or less duration last together somewhat more than twenty-four hours. Small or short tides prevail, whose very regular return depends on several causes, especially on the monsoons

and the sun's solstice. They may perhaps be subjected to a certain rule; because the natives of this Archipelago are able often to foretell with great exactness the return of the small tides.

Although (notwithstanding the irregular return of the hour of high water) at new and full moon at the same place, the tides generally return at the same hour; yet these cannot be fixed a mean number for the different stations upon this sea.

In general annual (although irregular) retardation of the daily period of the high water, which appears also to depend on the sun's solstice like the short or middle tides, is a singular character of the Javanese sea, or perhaps of all seas situated within an Archipelago.

Besides, it must be noticed, that the streams are still more irregular than the rise and fall of the water, and much depends on the prevailing winds.

Order.

E. LUCAS,

Rear Admiral, Commander of H. M. Navy

in East India, and Inspector of the Navy.

*By order of the Rear Admiral, Commander of His
Majesty's Navy in East India, and Inspector of the Navy,*

W. DE CONSTANT REBECQUE,

Adjutant and Naval Lieutenant.

Station	EBB. tion.	Velocity.	Remarks.
Pulo	S. W. W. h.	Mile $\frac{1}{4}$ Great.	The tides regularly lose 12 hours in a fortnight, the flood along the coast runs to N. W., the ebb to S E.
Filatja	East.	$2\frac{1}{2}$ to $5\frac{1}{2}$.	The tides regularly lose 12 hours in a fortnight; the stream along the coast runs to the East during the East monsoon.
Fort Ve Am.	2. mon- N. E. mon- S. W.	Little to $2\frac{1}{4}$.	The tides regularly lose 12 hours in a fortnight; ebb and flood run in an opposite direction along the North coast of the Bay.
Muntok	16h. or N. W.	2	During the East monsoon it is always high water at 2 P. M. or in the evening; during the W. monsoon A. M. or in the morning.
Onrust.	d flood tide stream.		During the East monsoon it is always high water at P. M. or in the evening; during the West monsoon at A. M. or in the morning.
Fagal.			
Klamp	on the rise, and Westward		During the East monsoon it is flood tide always in the morning, and in the West monsoon in the evening.
Tapara	y, but it is very irregular.		During the E. monsoon the flood tide comes in the morning, and in the W. monsoon in the evening.
Crimon	and on the fall Westerly.		During the East monsoon the flood tide comes in the evening; during the West monsoon in the morning.

ne of the greatest rise and fall of every month be taken, it is somewhat less. If the ave

Orignal of the Navy in East India, and Inspector of the Navy,

W. DE CONSTANT REBECQUE,

Adjutant and Naval Lieutenant.

General Table of the Tides in the East Indian Archipelago, on Observations taken in the year 1839.

Station.	Flood tide at full and change.	Duration of the rise and fall of the water or of the ebb and flood-tide.	Greatest rise and fall of the water.	Mean rise and fall of the water.	FLOOD.		EBB.		Remarks.
					Direction.	Velocity.	Direction.	Velocity.	
Pulo Chico.	6h. 0m. 0s. Mean number, 5h. 30m. 0s.	Two tides in 24 hours, that is twice flood-tide and twice ebb, flood and ebb-tide about 6½ hours.	Ebb. 1-59	Ebb. 0-78	N.E. E.S.E	Mile. ¼ Little.	To the S.W. W.S.W. South.	Mile ¼ Great.	The tides regularly lose 12 hours in a fortnight, the flood along the coast runs to N.W., the ebb to S.E.
Filatap.	8h. 48m. 0s. Mean number, 8h. 30m. 0s.	Two tides in 24 hours, that is twice flood-tide and twice ebb; flood and ebb about 6½ hours.	2-63	1-25	W.	2½ to 4½.	To the East.	2½ to 5½.	The tides regularly lose 12 hours in a fortnight; the stream along the coast runs to the East during the East monsoon.
Ford Victoria at Amboyna.	0h. 33m. 0s. Mean number, 0h. 30m. 0s.	Two tides in 24 hours, viz. twice flood and twice ebb tide; flood and ebb tide about 6½ hours.	2-50	1-14	In the E. monsoon to the S.W. in the W. monsoon to the N.E.	Little to 2¼.	In the E. monsoon to the N.E. in the W. monsoon to the S.W.	Little to 2¼.	The tides regularly lose 12 hours in a fortnight; ebb and flood run in an opposite direction along the North coast of the Bay.
Munlob.	After the monsoons 8h. 30m., in the months when the monsoons change about 7h.	During the power of the monsoons generally one tide in 24 hours, viz. the rise of the water 14h. 30m. and the fall 10h.; two tides in 24 hours during the months when the monsoons change; between both on the return of certain periods; whether at quarter or at full moons the opposite course took place, and especially at the change from the long tides to short ones and vice versa.	1-27	2-16	During 6h. or 8h. E.S.E.	¼ to 1½.	During 16h. or 18h. W.N.W.	2	During the East monsoon it is always high water at 2 p. m. or in the evening; during the W. monsoon at a. m. or in the morning.
Onra.	In the East monsoon about 10h. p. m., or in the evening in West monsoon about 10h. a. m. or in the morning.	During the full power of the monsoons generally one tide in 24 hours; the rise and fall about 12h. two tides in 24h. in the months when the monsoons change; between both on the return of certain periods, whether at new and full or at quarter, the opposite course took place at the change, from the long tides to the short, and vice versa.	1-32	0-67	Properly speaking, there is no ebb and flood tide stream.				During the East monsoon it is always high water at p. m. or in the evening; during the West monsoon at a. m. or in the morning.
Pagal.	Very irregular.	Generally one tide in 24hs. during the E. monsoons; two tides in 24hs. during the W. monsoons; between both at certain periods; at new and full moon, the opposite course took place; especially at the change from the long tides to the short ones, and vice versa: that is in the months when the monsoons change.	1-03	0-50	IDEM.				
Klampsis.	East monsoons 9h. to 10h. a. m. or in the morning, in the West monsoons 9h. to 10h. p. m. or in the evening.	One tide in 24 hours, ebb and flood tide from 9 to 15 hours; there were no exact observations made concerning the existence of short tides.	2-13	1-12	IDEM.				During the East monsoon it is flood tide always in the morning, and in the West monsoon in the evening.
Tapara.	Very irregular.	One tide in 24 hours, from 8h. to 16 hours; short tides were not observed	2-00	1-31	IDEM.				During the E. monsoon the flood tide comes in the morning, and in the W. monsoon in the evening.
Crimon, Java.	East monsoons 8h. p. m. in the West monsoons about 8h. a. m.	One tide in 24 hours, from 9h. to 15h., short tides were not observed.	2-03	1-23	IDEM.				During the East monsoon the flood tide comes in the evening; during the West monsoon in the morning.

N. B.—The mean rise and fall are here the average of the extremes, and the greatest rise and fall must be so taken in an absolute sense. If, however, the average of the greatest rise and fall of every month be taken, it is somewhat less. If the average of the mean rise and fall of every month be taken, it becomes somewhat more.

Order.

E. LUCAS.

Rear Admiral, Commander of the Navy in East India,
and Inspector of the Navy.

By order of the Admiral of the Navy in East India, and Inspector of the Navy.

W. DE CONSTANT REBECQUE,

Adjutant and Naval Lieutenant.

Journal kept while Travelling in Seistan. By the late Capt. EDWARD CONOLLY.

I left Herat on the 11th of August 1839 in progress to Seistan. All the papers and credentials with which I had been furnished by H. M. Shah Shooja and Mr. Macnaghten having been stolen from me near Herat, Major Todd wrote out a new list of instructions for my guidance, and procured letters of introduction to the chiefs, through whose country I should pass, from H. M. Shah Kamraun and his Vuzeer Yar Mahomed Khan. He also gave me letters from himself to the several chiefs.

Leave Herat.

Papers stolen.
Appendix 1.

Letters of introduction.

The vuzeer appointed two persons of influence and respectability to accompany me into Seistan, or as far as I might judge convenient; they were to receive no fixed salary; but I promised to reward them according to their services and utility. Both were accompanied by a few horsemen.

Escort.

I had also as an escort, an Ishaukzye, named Sultan Khan, with six horsemen, who had been made over to me at Candahar by H. M. Shah Shooja.

The vuzeer sent me before I started a handsome horse, and what was more valuable, one of the five mules which were captured from the Persians during the siege. This animal was worth at even Herat 360 Rs. We reached Subzawar on the evening of the 15th; when about a mile from the town, we were met by a messenger from the governor (Syed Mahomed, a son of the vuzeer Yar Mahomed Khan,) who conducted us to a garden house, which

Subzawar.

had been prepared for our reception. On reaching this, we found seated, waiting for us, a Persian gentleman, a sort of mentor to the young lord; the Sheeghaussee, and several other well dressed persons, who repeated "You are welcome, you are very welcome," a hundred times; a *zeafut* followed of forty sheep, and attah, barley and ghee sufficient for my whole camp for six days. Till late at night, message after message came from the sirdar to inquire if I was tired, if my brains were clear.

16th.—This morning I was hardly up, before the sirdar visited me, with a long train of followers; he sat a fatiguingly long time, talking nothings. He talks so fast, that his servants even confess that they only understand half he says, and as he mingles a large proportion of *Pushtoo* with his Persian, I found some difficulty in following him: he has a pleasing appearance and manner.

I rode out in the evening; the town is a poor collection of huts, but in the fort are some twenty houses of Hindoos, who are perhaps the most contented of Shah Kamraun's subjects; not that they are better treated than the rest, but that the oppression to which they are subjected seems less, and tolerable in comparison with what they dread from *Sheah* intolerance, should the Persians gain the ascendant.

On my return home I sent my head Mirza, Mahomed Juher, to the newly-discovered Prince, with respectful messages, and an apology for not calling, on the plea of my being a traveller, having nothing fit to present, &c. The fact was, my *tosha khaneh* was not large, and it was necessary to husband my resources.

The prince at Subzawar is the youngest son of Shah Kamraun, and is named Zemaun. One of these princes is attached to every government under the rule of Shah Kamraun, to assist in the administration of justice, since no one but a Puddozye could execute a criminal without fear of retaliation. When the real governor wishes to punish an offender, he sends him to the prince, who, dressed all in black, in the robes of punishment, *poshaki gauzub*, himself superintends the execution; besides the more usual punishment of cutting off the ears and lips, slitting the nose, &c. tortures of several kinds have been common.

Syud Mahomed paid me another visit in the afternoon, as I had announced my intention of pursuing my journey to-morrow. He shewed me a letter from his father, begging that I would permit one Hubeboollah Khan to accompany me to Seistan, that he might through my influence purchase grain, which at present he said, from Shah Pusund Khan's being unfriendly to him, he could not do. He also requested, that I would

The Governor.

Description of the Town.

Shahzadeh Zemaun.

Condition of the princes.

Torture.

Letter from Yar Mahomed Khan.

make over any grain, I could buy on the public account to the same. To the first proposition I made no objection. Hubeboollah I knew to be a man of character and respectability; he is an Ishaukzye, and son of the Mir Akbar of Shah Zemaun; and as he was well acquainted with Seistan, where he had lived for more than a year as the agent of the Herat government, I thought he might prove useful.

On taking leave of the governor I presented him with a pistol of

Present to Syud
Mahomed Khan.

small value, and a shawl, apologizing for the poor-ness of the gift by repeating, what I had been re-peating, since I arrived but without much effect, that

I was travelling as a mere private individual, and uninvested with political authority. Syud Mahomed expressed himself quite satisfied with the offering, and sent me two sorry horses in return; he also pressed a few more horsemen on me, as the road between Subzawar and Turrah was not accounted safe. As I was mounting my horse, a person slipped a letter into my hand and slunk away; it was from the prince, begging me to mediate with Major Todd, that his allow-

Letter from the
Prince.

ance might be increased, and wishing me a pros-perous journey. Our road lay on the banks of the river Adrascund, which shewed traces of having been

once richly cultivated; but at present they are covered with grass and

Leave Subzawar.

weeds, on which large numbers of sheep, camels, horses, and cows were feeding. We made a detour to

visit the Killah Duchter, celebrated in the traditions of this part of the country; but were not repaid for our trouble. The Killah Duchter is a small ruined fort on the left bank of the Adrascund,

Killah Duchter.

where that river turns the hills, and on the extreme edge of these hills is built, just opposite the other

fort a wall and parapet, now in ruins, with a high tower in tolerable preservation, and which is seen for miles. This last is the Killah Pisur, and the son and daughter used to nurse each other with mutual sieges. While we were sitting on the tower of the Killah Pisur,

which commands a fine view of the plain below, we perceived a horse-man trotting towards us from the town. It appeared that a boy, the

Runaway Slave.

slave of some person about the sirdar, had ran away and had taken service with one of my followers. The

moment the horseman approached, the poor boy went without saying a

word towards him, and jumped up behind him; the man not even halting, turned his horse, and trotted back again to Subzawar with his reclaimed property; for there was no time to interfere if even I had the will to do so.

From Subzawar to Imanet, the villages are inhabited by mixed tribes of Duranees; but between Imarut and Jaigee, the population is entirely composed of Goorazye Moorzye. We met on the road a pleasing sight,—some few Kheils returning from the south to re-settle in their old lands in Subzawar. The

Jaya. Dlehikzye Kheil, with whom I was so near being obliged to fight at Ahinuk, as related in a former report, had also just returned to their ancient habitations, laded it was said with spoils, of which a part was the Company's camels. I reported this last circumstance to Major Todd, not thinking the present a prudent time for me to stir in the matter.

At Jaya two gentlemen, who were travelling towards Laush on their private affairs, requested leave to accompany my party. One was the son of the old Moorzye lord, so well described by Mr. Elphinstone, Ahmed Khan; the other was a relation, Dost Mahomed Populzye, a person well known in the modern history of Herat; they both shared in the general ruin which has fallen on all men of rank under the rule of Yar Mahomed Khan, whose policy it has always been to allow the clans subject to Herat, to be without a head; so that there should

be no one of influence in the country but himself and his immediate adherents. Though I could not but fear that the two nobles came to beg, it was difficult to refuse giving them the protection they asked for, particularly as a few miles from Jaya we had a few hours before met two different parties who had been robbed by the lawless inhabitants of the hills. Their followers did not consist of more than eight horsemen, so we bid them all welcome, and assigned them their station in the camp, they agreeing to share in the fatigue of keeping watch at night, in which every person with me, of whatever class he might be, took his part. Our watches were not indeed kept with the silent decorum of a European camp, though perhaps in a manner equally effectual. Several parties

of twos and threes sat round fires in different quarters, and kept themselves awake by singing songs,

Night watch.

verses of which were taken up by one party from the other; and by calling out to each other at the top of their voices, *hoshear*, "be watchful," every five minutes.

You leave the valley of Jaya by a narrow pass, which runs at right angles to it, and enter a barren plain called Baboor; as you approach the Bobehi Barran hills, you find the whole country covered with a beautiful grass, so that you may suppose it a meadow in England. But this grass, which is called *keertah*, has some property noxious to cattle, and is therefore useless. After this, you come upon the valley of the Purrah road, which was, and should be, one mass of cultivation; the banks of the river presented a lively appearance of green gardens, of villages, and fields.

We now crossed through miles of ruined walls, and did not meet one inhabitant till we were quite close to the town. When the Candahar sirdars retired, and the present governor, Futteh Khan, was sent to occupy the fort, a scene of desolation presented itself to him, which I cannot describe better than in his own words:—

"I went to the top of the castle, from whence there is an uninterrupted view for miles; through all the wide space below me, I could not perceive one human being or the smoke of a single fire." The few people he had with him actually lived on the grapes, which were the only things the Candaharees had not destroyed. They dried and made sugar from them, and sent them to Baudan and other places around, getting grain in exchange. We halted on the evening of the 21st on the banks of the river, about two miles from the town; the next morning Futteh

Mahomed Khan, who the evening before had been amusing himself with the *munzud bauzee* at a village some eight miles off, but who the moment he heard of my arrival left his betrothed to come and meet me, rode up with a few followers, and escorted me to a wretched mud house in the fort, which I afterwards learnt was his own residence, which he had vacated for me. After inducting me into my quarters he took his leave, and shortly afterwards sent me whole maunds of delicious grapes, a mule load of melons, and provision for four days for my party. People came in to know whether this was sufficient, that more would be sent, &c. A respectable person was left to attend on my wants, who every half hour brought in a cup of tea and a *kullion*. In the even-

Its desolate appearance.

The Governor.

Reception.

ing the governor called again, accompanied by the heads of all the Kheils around, who apologized for not having come out to meet me, as they had not expected me so soon. I disclaimed all title to such honors, but this they evidently considered as mere words of course. The room was so small that it was with difficulty all my guests could squeeze in. I had heard reports of Khyrmun Meerza having encamped outside Subzawar, and of his having sent to Shah Pussund Khan to desire him to get ready 60,000 *khurwars* of grain, as he was coming with an army. "I have written," said Futteh Khan to Shah Pussund to say, "that if he does any thing of the kind he shall repent of it." This flourish was amusing enough to me, who knew the relative situation of the parties. There was much talk of the Beloochee *chuppaoning*, Beloochee plunder- and Juma Khan, the brother of the Ex-Candahar ing. sirdar, was reported to have been stripped.

The many stories I heard of the boldness and strength of these plundering bands, and the assertion of several people, who pretended to have been well informed on the subject, that there was no grain procurable at Jorodine, determined me to leave eighty camels, (which I had brought from Herat with me for Major Todd to load with grain for the use of the mission,) at Furrâh. This measure, too, might disarm any jealousy Shah Pussund Khan might have perceived by my bringing these camels, which he might suppose were sent by his rival the vuzeer, and it would serve to counteract the prevailing notion of my being laden with gold, which caused all the beggars to collect around me from far and near. I was much annoyed with people rushing into my room with a large tray, perhaps containing one melon, or getting introduced on the plea of business, and then presenting a pair of gloves, or some such trifle, and begging for *shufkut*, which literally means Expensive presents. honor, and really money. As all the heads of Kheils had sent me presents of fruits, we had more grapes and melons than we could have consumed for several days. I asked Futteh Khan how to get rid of the nuisance, and if it was the "custom" for travellers to be thus taxed; he said it was all imposition, and mentioned as an example, that when the king of Persia rides out an order is given that no one should make an offering, I of course profited by the lesson. Beggars of this kind are sometimes very impertinent and exacting, and

will return the contra-donation, unless they think it sufficiently large. A villager brought a sheep to Shah Pussund Khan's father : ' Give the man a *choghu*,' said the chief to his Nazir. The Nazir took off his own cloak and gave it. It was old and torn. The villager looked at it, turned it over, and putting it down at the Khan's feet, said, " Here, take your old *choghu*, and give me back my sheep."

23rd.—I called on the prince Saudut-ool-Moolk, Futteh Khan having

Prince Saudut-ool Moolk. hinted to me that a present was not required. He

was seated in a small room in the citadel, and made me sit down beside him, without any attempt at formality. He was coarsely dressed, and had just the air of a *Buniah*. He is fat, short, and jolly looking, and talked much with a loud voice, smiling all the while, and this good humoured personage has lately seated himself on the road between Furrah and Girishk, and in company with his brother of Ghore amuses himself with plundering passengers. From the prince I went to the governor, whose house was more wretched than Governor's house. my own. We walked out together to visit the pits, where they were making saltpetre, with which the whole plain of Furrah is encrusted.

The process of extracting it is simple ; a platform of wood and

Saltpetre. branches is thrown across a pit, and covered with earth scraped from the surface : this is wetted, and

the saltpetre drips through into a reservoir below, from which it is ladled out into bowls, when it is boiled, and left to crystallize. The crystals are as clear and shining as amber. Any quantity may be made here ; but at present they only collect enough for their own consumption, from some foolish idea of its being dangerous to sell it to their neighbours, who are, or may be, enemies, chiefly from the general languor of commerce in this part of the country. When Shumsoodeen Khan was governor of Furrah, he is said to have exported it with much advantage to his revenues, Seistan for example affording a ready market. Nothing but common salt having as yet been found there, a little is still sent annually to that country from the pits. We ascended to the top of the citadel, and a more melancholy prospect it would be difficult to

View from the ci- imagine ; of the fort I have sent a plan to Major tadel. Todd.

The walls are of considerable thickness, except in the S. W. face ; the inside of the fort contains only some

twenty houses with domed roofs built of mud, with the exception of perhaps three rather larger places, such as the one I lived in.

In the centre is a pond of stagnant water, which the inhabitants have not energy enough to drain off, though it is the cause of much unhealthiness, and numbers of people fall victims to fever and ague when the plain is uninhabited. The rest of the fort is occupied by the mounds raised for salt-pits; some in use, others deserted. Round two or three sides of the fort were the ruins of the town, now containing no inhabitants, nearly all of them having fled to Laush. There were no Hindoos, no shops. You could not have purchased a rupee's worth of grain.

24th.—The sirdar proposed a *pic nic* to a celebrated Hindoo place of pilgrimage, called the Bebehi (a corruption perhaps of Bebe) Baran, *of the raining lady*, in the hills N. of the town, or and about twelve miles off. A spring from the heights above is discharged upon a large table rock, projecting from the side of the hill, through which the water filtrates, dropping like rain for a space of about fifty feet. The effect is very beautiful. On a small level space just above the dripping rock, a Hindoo *fakeer* had stationed himself, and supported by numerous pilgrims, who flocked to him, had lived there fourteen years. His visitors built him a very comfortable house of two rooms, and outside was a clear place for bathing, a space set apart for his cooking, and even a little garden. The Bebehi Baran is situated at the end of a gorge, which on the Persians raising the siege of Herat, the Furrahees fortified against the Candaharees, who had possession of their fort. The soldiers annoyed the hermit, or perhaps the earthen vessels for grain which are remarked round his chamber were not filled so regularly in those troubled times—he left his retreat.

I afterwards met him in Seistan; he was a young man still, not forty. He came to me, as a brother Hindoo, to beg the gift of five rupees, to take him back again to his old house, where he says he intends to pass the remainder of his days. I gave him what he wanted, and I afterwards learnt that he has once more taken possession of his house on the Bebehi Baran.

25th.—The two nobles who had accompanied me from Jaujer, sent to say, that if I would only feed them, they would follow me into Seistan; there were reasons for not

Unhealthiness of
Furrah.

Bebehi Baran.

Hindoo Fakeer.

Dismiss my two
guests.

acceding to this ; one of which I may mention, that Ahmed Khan's son had some demand to make on Shah Pussund Khan, and he thought that his being in my suite, would ensure its being granted. I therefore declined the offer, on the plea of wishing to be as private as possible, and not to incommode my generous hosts with a larger camp than was necessary. I had been sending them a few sheep and grain and fruit out of the superfluity which Futteh Khan and others had forced upon me, and through Mahomed Taher, had intimated to them, that I had only money sufficient for the expences of the road. I now sent a parting present of food for two or three days, and consigned them, in the Afghan fashion, to God.

Mahomed Seddie Khan, one of the persons sent with me by Yar Mahomed Khan, had been since our arrival at his home, a village not far from Furrah. I learnt to-day by chance, that this man had a blood feud with the chief of Toojk, a place we have to pass on our road to Laush. I immediately dispatched a letter to Mahomed Seddie, telling him that he must take his leave of me here, and requesting him to send me some servant, or to come himself, for his *khillut*. The *Cossid* brought back a reply, that Mahomed Seddie was coming in person to answer my letter. This evening we heard from a traveller of the flight of Dost Mahomed, and the occupation of Caubul.

The governor called to wish me good bye, as I was to start for Laush in the morning. I gave him some gay pieces of cloth, which I heard would be acceptable to him, for the lady he was courting ; he sent me a horse worth about fifty rupees. Before he took leave, he ordered his attendants out of the room, and begged me to intercede with Major Todd in his favour, that he may not be turned out of his government. "I have no heart now," he said, "to make any improvements ; for the moment I have made the appointment worth holding, that villian Dyn Mahomed Khan, who has the ear of the vuzeer, will be sent to supercede me." Futteh Mahomed Khan is a relation of vuzeer Yar Mahomed Khan, and is known to us as the envoy who was sent from Herat to Teheran. He is a thin, yellow complexioned, insignificant looking personage, with a very timid manner, indicative of his character, as it was the *boorj* he defended, upon which the Persian assault was made at the siege of Herat. He has since enjoyed, and makes the most of a

Mahomed Seddie
Khan dismissed.

Character of Futteh
Khan.

reputation for bravery; but it is said that on the day of the storm he was actually running away, when a young Furrahi seized him by the arm, and unconsciously making use of a famous expression, said, "The enemy are not there."

Futteh Khan is, however, a very pleasant companion; any timidity of manner soon wears off, and he has all the polish and address of a Persian. His kindness and polite attentions to myself, (not to mention the profuse hospitality, for which however the vuzeer of Herat, and not Futteh Khan, is to be thanked,) I must confess somewhat blinded me as to his real character, which I only discovered at Joroaine, when I was thrown among the exiled Furrahees. They perhaps exaggerated his demerits; but it would appear that on his assuming the government of Furrah, he persecuted the few inhabitants that still remained in the district, on the plea of their having joined the enemy, and thus contributed as much as the Candaharees themselves, to the desolation of the province.

26th.—We were hardly outside the walls of Furrah, when a letter was brought from Shah Pussund Khan to say, that on account of the danger of the road, he had sent out some twenty or thirty horse and foot to meet me at his frontier, and that he had prepared a room for me in his house. We were catching fish with *coculus indicus* in the river at Barunduk, where as the name implies, there is a water-fall, and a deep pool famous for its fish, when we were disturbed by a mounted party. This was the escort sent by Shah Pussund Khan, headed, by a person called the *Shaughoussee*, (because he had formerly served in that capacity to some prince at Turrah, Thenazis, and other respectable people.) The *Shaughoussee* apologized for the absence of the Khan's grandson and for the paucity of the horsemen; the young Khan and all the horse they could muster, having gone only a few days before to take possession of Killah Rab. As we approached Toojk, we could have counted its very inhabitants, for I suppose there was hardly a male who had not come out to see the first real *Feringee* who had ever visited them. Vilkovitch they consider, what he called himself, a Cossack. We marched into the town in a ludicrous sort of procession; numerous old women kept throwing water at me, as a symbol of welcome; and to keep off the evil eye, beggars burnt in-

Letter from Futteh Khan.

Toojk.

cense under my horse's belly ; little boys with long sticks in their hands were continually crying, " Remember the poor scholars," *talib ul-ilm* ; and a testy *fakeer* walked just before me, and made my horse jump every minute by calling out, *ya huk*. The custom of throwing water I saw in no other place but in the Laush territories ; it resembles the presenting the "*rullus*" of Rajpootanna. They have another mode of welcome peculiar to Laush. When a new governor arrives, they tie a cow to a platform, which is carried on men's shoulders a few miles on the road ; while the chief is coming a man, stands on the platform with a knife in his hand, calling out " Shall I kill, shall I kill ?" If the governor says, " Kill," they prophecy he will be a tyrant. If he spares the animal, they escort him with great joy and acclamation to his house. The governor of Toojk, Khan Ishaukzye, named Jaun Mahomed Khan, met him before we reached the town ; we sat on a carpet under a tree while the tents were pitching ; all the house tops and branches of the trees around us being crowded with people eagerly gazing at us, and bursting into laughter every now and then, at the strange dress of myself and the sergeant. Jaun Mahomed, a singularly good-humoured-looking and talking person, began the conversation by saying, that he had been a rebel for twelve years, and he evidently prided himself no little upon it. But said he, " Yar Mahomed and I are now fast friends, and he has just sent me two horses."

He was very anxious to know, how we could govern Mussulmans. " For instance," he said, " suppose you had taken Candahar for yourselves, instead of Shah Shooja." After disclaiming the possibility of such an event as our taking Candahar for ourselves, I endeavoured to explain, that in India we governed Mussulmans according to their own laws, with some limitations ; and mentioned as an example the prohibition of blood feuds, &c. " That may be all very good," he said,

Blood feuds.

" but I should like to see any law that would prevent me killing a man who had killed one of mine." Hoping to get a little quiet, we retired to our tents ; but the curiosity of the people could not be repressed ; a large crowd squatted themselves around the doors, trying to peer through the chick to see what we were doing, and every now and then some beggar would poke his head in, and whine out, *Ai berae khoda !* " Ah for God's sake." Night only relieved us from this persecution ; I became rather alarmed after what Jaun Mahomed had

said regarding blood feuds, that Mahomed Siddie, who had not yet come in or sent his man, might, trusting to my protection join me here, and some unpleasant fray might ensue, in which my name would be mixed up. Sultan Khan reassured me, "that Mahomed Siddie was much too knowing to trust himself within the reach of his enemy; that the quarrel was nearly extinct, and propositions for settling it by a marriage had been sent in; and that as it had lasted 30 years, about an equal number of lives on each side had cooled it; they would be unwilling to renew the affair by fresh blood; but of course," he added "if they meet, they will attack each other." The two Douranee chiefs who had joined me at Jarja were halting for a few days at Toojk, having come on from Furrâh a day or two before me. They were in great distress; two of their horses having been stolen, and one having died. I thought this

Give away a horse. a good opportunity of doing a civil thing at a cheap rate, I therefore sent them one of the horses which

Syud Mahomed Khan had given me. It was a worthless beast, not worth its feed; but I heard that the gift was much appreciated. We staid one night at Toojk, which has about one hundred and twenty houses. The inhabitants were of the same tribe (Tylshih) as their master,

Toojk. Hyderzye Ishaukzyes. There were also a few of other tribes, emigrants, and half a dozen chiefs, and altogether there was an air of comfort about the place remarkable after the general misery of the country we had been passing through. It has lately been made over to Shah Pussund. Jaun Mahomed Khan, who had been a most liberal host, insisted on riding out some miles with me. He was accompanied by his son, a young man of about 20, and some five or six other people, all his relations; and all well mounted on horses which Yar Mahomed had given the chief on his coming in. We took a parting pipe. I threw a *choga* over his shoulders, and we shook hands.

"That we might get into Laush in good time the next morning, we stepped on the banks of the Furrâh river, where there was water in small pools at Kurawan Keze, about eight miles from the fort. We reached our ground at midnight, and after cooking a rude dinner in the Afghan manner, on the ramrods of matchlocks, lay down to sleep. When I awoke in the morning, a man was sitting shivering by my bed. To my question, "Who are you?" he could only answer,

“They have killed him ; they have killed him.” “Killed whom?” I said, starting up in alarm. “Mahomed Siddie.” As soon as we were able to re-assure the trembling wretch sufficiently to allow of his giving a connected account of what had occurred, we learned that Mahomed Siddie, who was desirous of coming on with me, had determined to rejoin us by making a detour to avoid Toojk ; and striking into the road a few miles below, he had just reached the road, when he was met face to face by Jaun Mahomed’s party returning home ; He had but two more with him, his nephew and a servant, the man who had come to me. Jaun Mahomed’s brother, the moment he saw his enemy jumped off his horse and fired his matchlock, but missed. Jaun Mahomed called out to let the other party alone ; but just at this moment Mahomed Siddie’s nephew fired, on which Jaun Mahomed’s son galloping up, killed him before he could remount, with one blow of his sword. The other two fled, and Jaun Mahomed and the rest coming up, all dug their swords into the dead body. The last circumstance we learnt afterwards ; and such is always the custom in similar cases. Somewhat relieved at finding that Mahomed Siddie was not himself killed, (the servant’s fright alone having caused him to mention his name,) we now consulted how to secure his servant’s safety ; for he was clinging to me for protection, and declaring that he should be murdered by the Ishaukzyes. The Shaughoussee swore that no harm should happen to him while he remained with me, and then the man consented to accompany us as far as Laush, when he would get a present and *khillut* for his master. As we were riding along ; I asked the Shaughoussee, “Is the feud now quenched ; do you want any more lives ?” He answered by holding out two fingers. Some sixteen lives have been lost in this quarrel.

We were met at about 200 yards from the fort gate by the Khan, himself mounted, and his attendants on foot, for all the horsemen were either with me or at Killah Rab ; we dismounted and joined hands, and as every one with me had to place his hands between those of the Khan, I thought we should never have mounted again. The room selected for me was nearly at the top of the castle, and the same in which Vikovitch had lived. It was small, not very clean, and but poorly furnished ; but to compensate these disadvantages, it commanded a view of the plain below, of which we were never tired. The fort

of Jorroaine is about two miles from the rich valley, dotted with villages, and the river running close under the walls. From the exaggerated accounts of the Heratees, who always speak of Laush as an impregnable place, I had expected to find it at least a strong fort. It is in fact nothing but a castle, and could soon be reduced by shells, or even stormed, for it has one weak side.

The appearance of the fort could only be understood by a drawing, and unfortunately my views of this and of some other places have been, by mistake, left at Candahar. It will be sufficient to mention here, that as the name "Laush" implies, the fort is built on the edge of a high "cliff," immediately under which flows the Furrah river; on the East face it has the perpendicular cliff, over which are erected buildings to a height of perhaps 400 feet; a great part of these will, I suspect, fall down the precipice in another year, for the water in the spring cuts below, weakening of course the upper bank, and already several ominous cracks may be observed. I pointed this out to the Khan, and recommended his turning the stream by a bank from immediate contact with the base of his castle; but he will doubtless forget the advice he promised to follow, till half his family are overwhelmed by the fall of his house. The N. and W. faces are detached from the high plain beyond them by a deep ravine; but the S. side offers but little obstruction to a regular army. Laush is an ancient place, though I do not remember its name mentioned in history. The cliff on which it stands has many caves cut in it, and there are said to be subterranean passages, to which perhaps the women of the garrison could retire in case of its being attempted to shell the fort; but most of these passages have neither fallen in, nor have been stopped up. In case it should be necessary to take the place, a mine led under only a small part of the E. cliff, would I suspect on exploding, bring down half the castle. Laush and its territories belonged to the Vuzeer Shah Wallee; it was destroyed by Timoor Shah, and remained desolate till taken possession of and rebuilt by Shah Pussund Khan, on whom it was bestowed by Mahmood, when he returned from Teheran. The life of Shah Pussund Khan would occupy a volume. A sketch of it will not be in appropriate here, as his actions and character have frequently been misrepresented. There are three principal families among the Ishaukzyes,

which will be best understood by a diagram. This diagram will also serve, to explain much of the ensuing narrative :—

Ishaukzyes have four principal divisions.

HAWAZYES.

TEROZYES.

MUNDURZYES.

IDZYES.

Shudoonzyes.

Shah Pussund Khan; Ahmed Shah's General, his family in poverty at Candahar.

Zadinzyes.

Muddut Khan; Meer Afzul Khan; Dila Sar Hadgi; Dost Mahomed Khan; Wull Mahomed, present head.

Ahmedzyes.

Kohun Dil Khan; Selah Mahomed Khan, (vulgarly called Sauloo) side of Shah Pussund derived from Shah Mahomed Goolzar Khan, governor of Feraria, at Candahar.

Russool Khan, with King of Persia; Ahmed Khan, governor of Killah Rab; his mother, a daughter of Shah Pussund Kn. brother of Khan Jehan Khan of Seistan.

Abdool Hubeeb, blind at Laush.

Abdool Ma-jeet, service of Shah Shooja at Candahar.

Mahomed Siddick Khan, a child; Mahomed Hussein, a child; a daughter of Khan Jehan Khan.

Ahmed Shah, when after the fashion of the Ghilzees he portioned out the offices of his household among the Douranees, and made them hereditary in particular families, assigned four appointments to the Ishaukzyes: Mir Aspaha, master of the horse; Purawal, leader of the van; Darogha of camels; and Mir Shikar, chief huntsman. The grandfather of Shah Pussund Khan, (Rumal Khan,) was Mir Aspaha of Timoor Shah, as was Ruheem Dil Khan of Shah Mahomed. Saleh Khan followed Mahmood in his wanderings in Tartary; but alarmed at the murder of his clansman, Meer Alum, went over to Shah Shooja, as related in Conolly's Travels, vol. ii. p. 362.

Mahmood understanding, doubtless, the true motive for his desertion, wrote him a letter to the following effect:—" I have made you ; if you will not remain with me, do not at least join my enemies." Saleh Khan on receipt of this, determined to stand neuter, and went off to his fort at Laush.

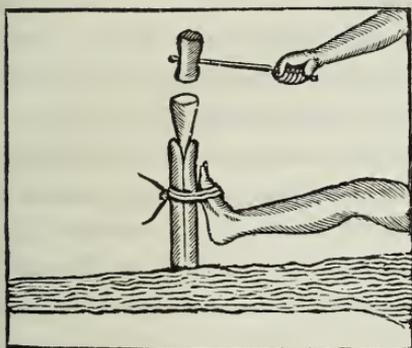
Hadgi Feroze wishing to get Jorrajine and its dependencies for himself, sent Dost Mahomed Khan Populzye with an army to take it, and Shah Pussund, who had no stores laid in to enable him to stand a siege gave up Jorrajine, on consideration of being allowed to keep Laush. Dost Mahomed soon after, desirous of returning to Herat, insisted on Saleh Khan's leaving the neighbourhood, and that Khan, who had no power to refuse, went off to Kamraun, who was now governor of Candahar. The prince received him kindly, and kept him six months ; afterwards quarrelling with his manager, (Gool Mahomed Khan Populzye,) he gave Shah Pussund his place. In this situation he continued for nine or ten years, and Laush and Jorrajine had again come into his possession, the garrison having ejected the governor left at the latter by Dost Mahomed, and given the place to the Ishaukzyes.

At the seizure of Shah Pussund Khan at Herat (Conolly, vol. ii. p. 408) he led a most eventful life, till the death of Mustapha Khan (Ibid, 413 ;) during that period he wandered from place to place perpetually and with much success plotting against Kamraun ; making friends at different times with the rulers of Khaff, Toorbuk, Meshed, &c. He even visited Teheran, and was well received by the king of Persia. He more than once gained and lost Jorrajine, Turrah, Anardurch, and Killah Rab ; but he failed to get possession of Laush.

He was now Kamraun's minister at Herat ; the prince gave him Turrah and Jorrajine ; but still with jealous care guarded Laush for himself only. At the request, often repeated, of Saleh Khan, he consented to sign a paper, purporting that that fort was the Khan's, who pretended that his reason for demanding such a document, was to save his honour in the eyes of his tribe.

A year had elapsed, Kamraun had forgotten the paper, when all of a sudden a messenger of Shah Pussund's arrived at Laush with a letter to the governor from the Khan, enclosing the document sealed and attested by the Shahzadah, and requesting the delivery of the fort, according to the tenor of the enclosure to a person of his appointing. The

governor was completely taken in ; the fort was given up, and Shah Pussund immediately fled to it ; turned *yaghee*, (rebel,) and has since successfully resisted every effort to reduce him seven or eight times ; and twice in person Kamraun has blockaded Jorraine and Laush. These repeated attacks have impoverished the rich valley ; but a few years of quiet under Shah Pussund's rule, which is very popular, will render the district more fertile and populous than it has been since the days of Nowsherwan. The lord of Hak, (for such is the proper name of the district,) is now about sixty years old ; in his person he retains none of that beauty for which he was remarkable in his younger days, and to which, if we may believe scandal, he was indebted for the title to the



king's favourite. He is very lame, which was originally occasioned by a bullet wound in the thigh in the battle of Khooskh-i-Nukhood, near Candahar ; but principally from his having been subjected to the torture of the *thanah* when he was seized at Herat. In this torture, the victim's foot is fastened to a

thick wooden pin (driven into the ground) by cords drawn as tight as possible over the ankle, a wedge is then hammered into the pin, causing by the tightening of the string extreme suffering. It is said that the ankle is broken, and that blood, (but this seems false) starts out at the toes.

The address of Shah Pussund is by no means prepossessing, and there is a considerable awkwardness and formality in his manner, which however wears off, particularly if he has become excited in argument, when he speaks with great earnestness, using much gesticulation. Though he has been so much among Persians, and speaks Persian fluently, he appeared alway to avoid talking, if possible, anything but Pushtoo. This seems a trifle ; but it is one of those trifles which has contributed not a little to his popularity among his countrymen. Another now palpable cause of this popularity is, the simplicity and plainness, which is the principal feature in his character. He despises show.

When minister at Candahar, though lame from his wound, he would never get into a *tukhtrewan*, because he said, he was no better than any other Douranee. His dress is always plain; sometimes coarse; he has never since reaching to manhood dined but in public, and the poorest persons share his dinner, which is usually composed of only mutton broth and bread, but plenty of it. My Meerzas felt much flattered the first night of our arrival by an invitation to dine with the Khan; but on seeing the fare spread for them, they could not taste it, and always afterwards avoided as much as possible the honour.

This simplicity of life, as I have before observed; these unaffected manners; but above all his hospitality, have gained Shah Pussund Khan, the heart of the Douranees. A Douranee in my presence asked another what made Futteh Khan, the vuzeer, so popular? "He was a robber, a liar, a tyrant, and addicted to abominable vices." "One thing more," replied the other, "his bread, his hospitality."

The hospitality of Shah Pussund is the theme of praise in all the countries bordering on Herat, and what renders it the more remarkable is, that he is not esteemed rich; nor can he be so, as Kamraun extorted a good deal of money from him and his country; for the constant warfare it has been exposed to, can have yielded but little. During my stay in his house—which circumstances protracted to fifteen days—I could not, though I more than once urged him, with all the arguments in my power, induce him to abandon the expensive kindness of feeding the whole of my establishment. His very mode of bestowing his bounty enhances the value of it. There is no waste, no profusion, every thing is appropriate, and ample. To me a dinner was always served up from the *anduroon*, and every day different sweetmeats were sent in with the compliments of his son. The Hindus had their grain, ghee, &c. the Mussulmans sheep,—so much apportioned to each man; even the straw for the horses, for it was a scarce article, and was served out by weight. Besides my party, there were several others, who were all entertained in the same style. There were the servants of Alladad Khan, who accompanied Vikovitch to Teheran and died there, who were conducting the *taboat* to Candahar. They had been robbed in Seistan, and had fled to Laush for assistance and redress. There was the family of Jooma Khan, brother of the

Candahar sirdar, who had been robbed while returning from Beerjund; and whose family Shah Pussund sheltered, having sent out a party to bring them in as a friend. The son of Ahmed Khan had also arrived, and an *elchee* from Meshed, and several others of less consequence, not to speak of some lady guests, who were dependent, was evidently an every day matter. It did not create the least bustle or confusion. My host used always to visit me morning and evening, sitting for about an hour, always in one position, (which like Baber's uncles* he never changes,) that called the *dayanu*. He was generally accompanied by a crowd and by a pet child, whose mother—a daughter of Khan Jehan Khan—had died a few days before I arrived. He had been much attached to her, and frequently spoke to me of his loss. I took an early opportunity of offering him, on the part of the envoy and minister, a diamond ring, and a shawl, and of presenting my credentials and letters from Major Todd. Shah Kamraun's introduction I thought might as well be in my desk, nor did I through my journey find it politic to present any of those I had received from him or from Yar Mahomed Khan. Saleh Khan at once acceded to my request of procuring grain for Major Todd, and in a few days the camels were brought from Furrah; and with some more hired ones were sent to Herat, loaded with wheat and barley, which was however procured with much difficulty, and had to be scraped together by seers at a time. In a (acknowledged) letter to Major Todd, I have detailed all the conversations I held with the Khan on political matters, and the earnestness with which he expressed his good will-towards the Shah of Cabul, and the English government, and explained the necessity which had forced him to have recourse to the alliance of Persia. I need here, therefore, say no more on this subject, and will again continue my interrupted Journal.

August 30th.—The Khan this morning brought in a small bag, and told me he had a favour to ask of me. He had been over-looking the property left by his wife above mentioned, that he might lock up any thing of value for the after-use of her son, and had discovered, he said, a bag of precious stones. “She got them, poor thing, probably after some *chuppao*: what the greater

Snake stone.

* See Baber's Memoirs, p. 20.

number are I do not know ;” added he, “but one of them is I am convinced a *puzur*, preserver from stings, or snake-stone ; now just tell me what they are all worth ?” The bag on being opened, was found to contain nothing but a parcel of agates, cut into different shapes, and what evidently once formed the stock of some itinerant seal-cutter.

He had been so long opening the strings of the bag, that my curiosity had been warmed, and on perceiving the contents, I perhaps rather too bluntly exclaimed, that they were not worth a rupee. Saleh Khan seemed much disappointed, and only half-convinced ; he carefully put the stones into the bag again one by one, only reserving one red one, the *puzur* ; “And this ?” said, he, holding it out (“for God’s sake” whispered Mahomed Tuher, “say it is something curious ;”) but I thought it wisest to speak truth, and told him, that snake-stones were now found to be mere fallacies. He replied, “That is all nonsense ; that the *puzur* cures snake bites is a well attested fact. It was found in the belly of a deer, and why should it be there if it was of no use ? Besides you can easily see if this is a *puzur* or not, for if it is the real stone it will sweat on being put into the sun.” A plate was actually sent for, and the agate placed in it, and exposed to the sun, and the Khan, though soon doubtful of this identical stone being the *puzur*, believes as firmly as ever in the real one. He now put into my hands a small box, which I found contained the watch which had been sent to him by Mr. Macnaghten three months before. “I would not open this,” he said, “though they were very curious up there” (pointing to the *Zenana*, which is on the highest part of the castle,) “to see what was in it, for fear of spoiling it, and as I knew you were coming”. He was much pleased when he had learned to open and wind it up ; the last of which he would, all I could say, do every half hour, and then send the watch to me, saying it would not wind. The ignorance displayed on this occasion by Shah Pussund Khan at first surprized me. I had expected from his intercourse with Persians, that he would have been better informed on European matters than his countrymen ; but the little of our science he has picked up in his travels, half-learnt and half-understood, has only served to confuse, and not to improve.

He thought (and it is a popular belief in Khorassan,) that all the Russian gold money was found ready coined every Christmas-day at the bottom of a well, which is previously filled with baser metal. Some-

body having tried to make him understand the extraction of sugar from beet root, he has impressed his whole neighbourhood with the notion, that Russian sugar, which they always see in loaves, grows in its primeval shape like a carrot. One of my most acceptable visitors was the blind son of my host. He is not yet thirty, and has been blind some 12 or 13 years; one eye has been entirely destroyed by the lancet of some Candahar practitioners; from the other he can see a little, and it might I think be cured by couching. I wish indeed to bring him with me to Caubul, that some of our oculists might look at his eyes; but having thought of trying to cross the Ghore mountains, I feared his helplessness in such a region, and only pressed him therefore to go at once to Herat and take the advice of the doctors there. Like the most educated blind persons, he has a mild placid address, and a very retentive memory, and it was from him that I learnt the greater part of his father's history. He asked me to dinner, and the Khan, for once in his life, consented to be of the party. The host on this occasion would not sit down with us, but stood at the door, superintending the relays of dishes till we had all finished.

I mentioned to Shah Pussund my desire of paying my respects to the governor of Jorraine; he evidently was unwilling that I should go there, but did not well know how to put me off. He sent one or two persons privately to persuade me that the visit would look odd; that Goolzar Khan was a mere cypher, and of course there was a ready answer to such arguments. I have a letter to present, and must go. He was, I believe, fearful lest old Goolzar Khan, who is not on very good terms with his nephew, and who had all the garrulity of age, might speak to his disadvantage, or perhaps let out things he might not wish me to know. At last, however, I set out. I was met as usual by a large crowd, and by an *istikbal* of three or four of the old man's sons, and Goolzar Khan himself came down from the fort on foot to receive me, though he cannot walk without difficulty. He evidently was delighted to see me his guest; he began to fear that I should pass him by, and his honour was concerned in the matter. Somebody had also told him, that I would not make myself understood in Persian; but when he found that I enjoyed his stories of the old times, he told them with all the pleasure one receives from finding a new auditor to an old tale. He is a fine old gentle-

Jorraine.

man, of about eighty, and his whole life has been a series of adventures. He was very funny and amusing: "There, bring the *Sahib* a kullion. I suppose you smoke well. In my younger days not one of us smoked, but those — Persians have infected us; very well, and how is my friend the vuzeer? May his house be blasted! Look at my feet, this is his doing." He held up his feet, of which all the toes had grown as it were into one. A very few years ago, Yar Mahomed Khan wrote to him addressing him as his father, as the whole hope of the Douranees, and sending him a Koran in pledge of his sincerity, and pressed him to come to Herat, where he should be treated with every distinction. The old Khan trusted him and went; he was seized and brought before Jorraine, where they beat the soles of his feet to a jelly with sticks, to make him write to his son to give up the fort.

I spent a very agreeable day, and returned in the afternoon to Laush. Jorraine is still a virgin fort, and could always, if well defended, keep out any Asiatic force. The walls, which may be about 200 yards in length, are very thick and high. The balls of the Heratees made hardly any impression on them. It has but one gateway, which is on the north face, and would be difficult to be forced. The base of the fort is elevated above the surrounding plain. Its weakest point is, that it is surrounded on all sides by buildings, so that it can be securely approached. The few measurements we were able to get by stealth, are mentioned in the Military Memoir. There is a dry ditch, but it is now half filled up. It was, when we were there, the most populous place I had seen since Candahar. All the Furreahees were settled round the walls in huts or black tents; their flocks were feeding in the plain; their cows had been sent off to the Humoon. There was hardly a yard of ground within the fort not covered with buildings. I do not exactly understand the relative situation of the governor of this fort and of Shah Pussund Khan. The latter is the real head; but he seems to interfere little with the affairs of the fort, and when Goolzar Khan dies, it is an understood thing that his son is to succeed to the lands immediately belonging to the fort, which yields only some 80 *khurwars*. Shah Pussund has three parts and Goolzar two.

Memoir on the Coal found at Kotah, &c. with a Note on the Anthracite of Duntimnapilly, (H. H. the Nizam's Dominions.)—By W. WALKER, ESQ. 24th April, 1841.

NOTE.—In submitting the accompanying Memoir, I have purposely abstained from giving any opinion either as to the quality of the Coal, the practicability of mining, or the likelihood of a large supply of the mineral being procurable at Kotah.

Destitute at this remote place of all means of forming any estimate on a subject on which I must in a certain degree be one-sided and prejudiced, I leave to others the decision of the intrinsic worth of the article, and both the other points. I refer to the practical engineer and miner, who alone, after survey, &c. are capable of forming a correct judgment.

Yet, I may be permitted to give it as my opinion, that the river merely touches the edge of the Coal basin, and to this I am led by the fact of no carboniferous limestone appearing on the other side, or on any of the shallows to the right: the dip too of the stratum to the N. E. would appear to be favorable to boring on the left bank. The alluvion there, as noticed in the Memoir, is about forty-five feet deep, and is a loose soil containing few pebbles. I may also observe as favorable to mining operations, that the general complaint of the inhabitants along the river is the great depth they are obliged to go before water is reached; this is particularly the case in the fort of Seronge, five miles below Kotah. On account of this difficulty of obtaining well water, the inhabitants are compelled to use that of the river, much against their inclination; as at certain seasons it is deemed by them very unwholesome.

At Madhapore, there were brought to me some minerals from the bed of the Godavery at that place, which it required little discrimination to decide were of the nature of slate coal. Upon inquiry I found, that after the monsoon at the Dassara festival, persons employed themselves in gathering these minerals to be vended as medicines; and more particularly as charms to keep off the all-dreaded Evil eye, for which purpose they were burnt, incantations being said over them while inflamed. Their Tellugoo name is *asoorpoory*, and it is believed by some of the natives, that they were the weapons with which the

gods contended ; while other maintained the opinions, that they annually grew and were thrown off the river's bed, or sprung like the Cytherean goddess from the water foam ; but all agreed that it was the Pundeetah river that supplied them. I lost no time in proceeding to the Sungum of the rivers Godavery and Pundeetah, and upon receiving, what I conceived from specimens shewn me, correct intelligence of their origin, I ascended the river to a place called Kotah, a small Goand village on its banks, about ten miles from the Sungum, and twenty miles N. E. of Chinnore ; a space of about eighty yards in length, and thirty in breadth was pointed out at the edge of the left bank of the river, the alluvial covering of which could not be much under forty-five feet, and this I was told was the original seat of the coal. Upon examination, I found that limestone, more or less argillaceous, occupied this space ; the upper strata were completely dislocated, and deranged by the force of the current ; the inferior, however, appeared more compact and hard, and as far as could be ascertained, dipped to the N. E. at a low angle. Seeing that the water must have completely denuded these limestones of any shale or coal that may ever have accompanied them, I thought of searching a little higher up in the bed of the river, and observing a small rock of the same argillaceous limestone just above the water, search was made there, when coal along with its accompanying shale and bituminous shale was broken off from the sides of the rock : this left no doubt as to the existence and position of a coal measure. The rock formation in which it is to be supposed this coal measure exists, is that where the mineral is usually found all over the world, and in India without any exception. According to the report of the Calcutta Coal Committee, the depth of the alluvium, and the circumstance of the outcrop being in the river's bed, precluded all possibility of ascertaining the relative position of the several strata ; but as sandstone is found on all sides, and towards the north at the short distance of two or three hundred yards, it is more than probable that here there is no deviation from the arrangement of rock commonly found to exist in such cases. As to the sandstone itself, I cannot give a better description than in the words of the late Dr. Voysey, who travelled over a great part of this country, and must have been perfectly familiar with the sandstone formation of the Godavery :—

“The sandstone varies considerably in composition and colour. Its variations however, occur principally in the neighbourhood of its junction with the other rocks. Its most common cement is lithomarge, which is also found in it in nests and beds of various sizes, and of colour both white and reddish white;” and he might have added, yellow.

But I am aware any description I can give of the locality and of the accompanying strata, will be deemed deficient by the geologist, without specimens illustrative of both. I therefore proceed to give a brief description of those sent.

Box No. 1.—Contains specimens of shale, more or less bituminous, which were broken off the rock along with the coal.

Box No. 2.—Contains specimens of shale found in the same situation.

Box No. 3.—Contains specimens of the argillaceous limestone, composing the dislocated and disturbed strata formerly described. Some of these blocks are from a foot to a foot and a half in thickness, with a surface twenty to thirty square feet.

Box No. 4.—Contains specimens broken off from the compact and hard limestone, that has resisted displacement by the current. One of these will be observed to be water-worn.

Box No. 5.—Contains specimens of sandstone in the vicinity of the coal measure.

Box No. 6.—Contains specimens from a neighbouring hill.

The river at Kotah is one hundred and fifty yards wide, is proportionably deep, and is always turbid. It contains, at this season at least, more water than the Godavery. The country around is jungly; Kotah itself is the first Goand village on that side of the Chinnore Sircar, and is a miserable little place. I sent a party several miles up the river to discover, if possible, any sign of another coal deposit; but they returned without a mineral of any description. About eight miles up the river, among the hills at the village of Yenkatapore, there is found brown clay iron ore among the sandstone. I did not hear of this until I had reached Chinnore, and an opportunity was thus denied me of visiting the locality. I send specimens procured from the place in box No. 7. This ore was formerly smelted; but the works have been abandoned; the natives give a good character of the iron produced. The specific gravity is above 3.

Note on the Anthracite that formed the subject of my Letter of the 28th ultimo.

An intelligent Mootsuddy, with a couple of peons, were despatched to the Jungaum purgannah, where the village of Duntimnapilly is situated, the nearest to the spot where the anthracite was said to be procured. On arriving at Chinnore, he proceeded in a north-westerly direction by Tandoor and Jungaum to Duntimnapilly, which is distant twenty miles from the last mentioned town.* The country between Jungaum and Duntimnapilly is described as particularly wild, with Goands for inhabitants. According to his account, the bed of anthracite is situated on the bank of a nullah among hills, (I regret that not having a large map I can indicate the situation no better,) that it is three feet at its greatest breadth, and that it extends upwards of two hundred feet in length. I give these numbers with some confidence in their being accurate, as he brought a piece of bamboo with him by which the stratum was measured.

Box No. 8.—Contains a carbonaceous sandstone, through which the anthracite was said to pass into the micaceous sandstone, both above and below. A specimen of the latter is in *Box No. 9.*—I send also further specimens of the coal itself. The rock above the mineral was said to be fifteen feet in thickness. It may be added, that this coal is esteemed of great value in the United States, where seven hundred and fifty thousand bushels were sent to Philadelphia alone in one year, (Ure's Dictionary.) It is there burned in peculiar grates adapted to its difficult combustion. It is used also in South Wales for smelting iron.

CHINNORE, *24th April, 1841.*

* Jungaum is 65 miles to the West of Chinnore.

Note—I have used the general term sandstone, although there can be no doubt from its position, known connexion, extent, &c. that it is the old red sandstone; for the same reason, to avoid all theoretical views, I have designated limestone by its mineralogical character. It would have been easy to have given more learned terms, but my chief object—perspicuity—might have been compromised by having done so.

Extract from Proceedings of the Numismatic Society of London, 1837-1838, on the comparative status of circulating media at different periods, under the Bactrian and Indo-Scythian Kings.

The number of coins in the different metals, quoted for each reign by Mionnet, are affixed in the corrected series, together with that of those given by Professor Wilson from the Masson Collection, in the three annexed plates. Of the former, the total number is 166, and of the latter, 35; which, aided by Professor Wilson's remarks, are enough for general conclusions regarding the circulating media of the several periods, and thus far elucidating the statistics of this portion of history.

It will be evident that, under the Greek line in Bactria and India, silver and copper formed the commercial medium by which the treasury was replenished. A single gold coin, and another of potin, are the only exceptions to this remark in a series of 105.

Then follow ninety-six coins of the barbarous successors of the Greeks; displaying a remarkable decrease of silver, and nearly as notable an increase of gold. The whole are distributed in the following proportions:

	Gold	Silver	Copper	Potin
Græco-Bactrian kings, to Eucratidas I. inclusively. B. C. 255—125. Monoling.	1	26	5	...
Græco-Indian kings, from Eucratidas II. to Hermæus. B. C. 125—0. Bilingual.	...	14	34	1
	1	40	39	1
Græco-Indian kings of the collateral line, from Heliocles to Mayes. B. C. 125—A. D. 100. Bilingual .....	...	9	15	...
	1	49	54	1
Indo-Scythian kings, who followed the line of Eucratidas II. A. D. 0—125. Bi.	7	...	35	...
Barbarous princes, who appear to have followed the collateral Greek line. A. D. 100—225. Mostly Bilingual .....	...	...	5	...
Indo-Parthian kings, who probably followed the Indo-Scythians, and gave place to the Sassanians. A. D. 125—225. Bi.	...	6	41	2
Gold	8	55	135	3
Silver	55			
Copper ...	135			
Potin	3			
	201			

By this statement it would appear, that the proportion of silver (the standard medium of Asiatic commerce in the age of Bactrian independence, as at present) materially diminished under the Græco-Indians, until a substitution of potin, probably to make up the deficiency of the former, appears in the coinage of Hermæus, the last of the Greek Soters; while the silver bears scarcely any proportion to the copper under the Indo-Scythians and Indo-Parthians, and, at first, altogether disappears; whereas, the potin (which was used in great extent in the contemporary coinage of Parthia), is continued: and this may account for the silver drachms of Menander and Apollodotus being then in circulation.

The deficiency of silver seems, however, to have been compensated by an extensive issue of gold, under the first Indo-Scythic princes; of which there are, likewise, many fine unpublished examples in the collection of the East India Company.

The conclusion seems forced on us, that the progressive decrease of silver under the Greek rulers, indicates a decrease in commercial prosperity, arising from the Scythian occupation, first of Bactria, and afterwards of Bactrian-India; while this appears to be contradicted by the gold issue of the conquerors.

But, as the latter have left no known remains of a coinage anterior to their occupation of Bactrian-India, we may infer, first, that the mintage of the line of Euthydemus continued in circulation under the Bactro-Scythians, as did that of the line of Menander under the Indo-Scythians; and, secondly, that plunder (of the temples? in connexion with the introduction of the Parthian worship, as above), rather than commerce, was the source of the sudden riches evinced by the mintage of the latter.

This view will, besides, afford an additional and weighty reason for referring the issuers of the gold coinage—the probable invaders and plunderers of the Greek provinces—to the head of the dynasty, as the immediate successors of the line of Menander; to which position they are equally referred by their imitations of the mintage of Hermæus, found with the coins of that prince, and by the usurped title of $\Sigma\omega\tau\eta\sigma$.

In agreement with the above, the Indo-Scythic issue would appear greatly to have degenerated under the latter princes of the dynasty, when their exhausted dominions probably no longer afforded materials for an issue in the precious metals.

The poor mintage of the Indo-Parthians might have either been a continuation of the latter, or of that of the later Greek princes. It presents no sudden alteration of currency, like that just alluded to; and, in either case, has the character of a peaceful revolution, or change of dynasty. But as we cannot doubt that the paramount Greek domination in India, as well as in Bactria, was annihilated by conquest, it seems to follow that the change in question has no connexion with that revolution, but was a natural one, from a Scythian to a Parthian dynasty, as inferred in a former note. Such, at least is the conclusion forced on us by the present data, which, we may hope that the continued researches of Professor Wilson, with whose invitation to inquiry the present analysis is an imperfect attempt at compliance, will either confirm or correct. That there were Parthian as well as Scythian rulers in India in the Roman age, is evident from the names preserved by contemporary writers (see Table I.) They are not those of the Indo-Parthians of the coins, and may have preceded them.

JOURNAL

OF THE

ASIATIC SOCIETY.

Report on the Island of Chedooba.—BY EDWARD P. HALSTEAD, ESQ.
Commander of her Majesty's Sloop 'Childers.'

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[For much of the information under the head of History, Police, Revenue, Manners and Customs, I have been indebted to the kindness, and long residence in the country of Captain D. Williams, Senior Assistant Commissioner at Ramree.]

DIVISION I.

General Appearance, History and Division.

The Island of Chedooba measures $15\frac{1}{2}$ miles in length, viz. from $18^{\circ} 40'$ to $18^{\circ} 55' 30''$ N. Latitude, and 17 miles in width, viz. from $93^{\circ} 30'$ to $93^{\circ} 47'$ E. Longitude, and shews on the map as a square the S. W. angle of which has been reduced. With its dependency of Flat Island on the South Coast, it covers an area of about 200 square miles. Its general appearance and character is that of a fertile well wooded Island of moderate height, and irregular outline. A band of level plain, but little raised above the sea, extends around its coasts, of far greater width on the East than on the West ; within this lies, irregular, low, undulating

hills, varying in height from 50 to 500 feet, enclosing several higher detached mounds of steep well wooded sides, the loftiest of which, near the south part of the Island, rises nearly 1,400 feet.

The view from the top of these higher summits, presents, immediately below a scattered irregular mass of hills, confined principally to the western part of the Island, covered with jungle, interspersed with grass plains of more or less extent. To the Eastward a broad flat plain intersected with patches of jungle; and surrounding all, lie the cultivated rice fields with the different villages on their verge nearest the sea, the coast of which to the Westward is every where strewed with broken and detached masses of rock jutting far out.

The History of this Island is involved in all the obscurity which at present surrounds that of the neighbouring Continent. Under the name of Inaon it constituted in the time of the Mug Rajahs, one of four divisions of a province known collectively with the other three, Arracan, Ramree, and Sandoway by the name of 'Preegree.'

The head authority in each division was then called 'Jah,' and was nominated every three years, to prevent any attempt at independence of the supreme power by the Rajah of the Province, a matter not difficult in time of oppression, confusion, and general disorder.

On the conquest of the Province by the Burmese in 1784. its divisions were still retained, but their names, as well as that of the collective Province were all changed. The latter took the name of 'Lemroo,' instead of 'Preegree,' while the name of Chedooba itself was changed from Juaon to 'Mekawuddee,' and its revenue assigned to the support of the King's eldest sister, condemned to perpetual celibacy, as being unable to obtain a helpmate for her.

The alteration in the names of the Province and its divisions was accompanied by a change in those of the authorities. The provincial Governor was called 'Lemroowrain' or Governor of four countries, a title still given to our Commissioner, while 'Juuroowan' took the place of 'Jah,' as designating the head of each division, and is now applied by the inhabitants to the assistant commissioners.

The division of the Districts into Pergunnahs was also left undisturbed by the Burmese, and the head man of each, under the Mug Raj continued to be called 'Soogree.'

Of these Pergunnahs or circles with their Soogrees, Chedooba is divided into seven, viz: Kamman, Krae-rone, Inrooma, Ineubreg, Kyouktan, Tang-roa, and Ree-yueng, the latter its dependency of Flat Island, on its southern coast.

Of these circles, Kammaa and Tang-roa, which divide the whole western, southern, and part of the northern portions of the Islands, are the most extensive, but least populous, Kyouktan the smallest in extent. The other three the most productive and populous, and Ree-kyueng the best cultivated.

DIVISION II.

Population—Revenue—Police.

The population of Chedooba may perhaps, comparatively with the neighbouring countries, be looked on as large, by the census of 1839-40 amounting to 8,534, and when it is considered that this population is confined to the strip of cultivated land surrounding the Island, at least that portion of the Island will be esteemed to have a fair share of inhabitants. No great increase from census to census is at present observed, but as I was informed that formerly the Island possessed a far denser population, evidence of which was afforded in the amount of land now waste, which had formerly been cultivated. I have no doubt that the effect of its present state of comfort and peace must soon develop itself in a large increase of inhabitants, who I was informed by one party were so numerous before the Burmese invasion that famine was sometimes the consequence of the inability of the Islands to support them, a statement I think not to be entirely depended on. As there is but little influx or efflux of strangers, the census from year to year, if correctly taken, presents the changes occurring among the actual Islanders. But from what I saw, and from a portion of the revenue being derived from a poll tax, I incline to think it is greater than the returns shew.

With exception of a very small community of Burmahs lately established on one of the eastern villages the whole population is Vug. Their account of themselves is that they are descendants of parties who originally used to cross to the Island from the mainland and Ramree to cut wood, and who eventually and slowly settled on it.

For sometime subsequent to the English possession of the country, considerable complication prevailed in the district, and partially in Chedooba owing to the mutual ignorance of the governors and governed.

The mistaken Revenue system introduced in 1827 and 1828, have been replaced by an equitable and judicious taxation: its present result is content, happiness, and peace, its future in all probability an increase in all these, in addition to opulence and prosperity. The revenue is raised from

the produce of the land, and from a light poll tax. There are no difficulties found in its collection, nor oppression resorted to; about 25 per cent. is absorbed by the payment of the collectors, the ordinary native authorities. The Soogree of each circle receives 20 per cent. on his collection, the Ruagon or head villager, 4 per cent., and the Ruacharee or Village clerk, assistant to the Ruagon, 1 per cent. These are also exempted from all taxes.

Besides the above, there are two or more officers in each village called Leedo-gongs, or heads of men, whose negative payment consists in exemption from taxation.

There is a native Police taken from among the people. Their duty consists in maintaining peace and quiet among the villagers, for which purpose some shady tree or bamboo clump is selected in the centre of each village, supplied with a bench and sort of small hut, where day and night, the Leedo-gong sleeps his watch. In fact in Chedooba his office is a sinecure, theft or plunder are not known, the men are too good humoured to quarrel, and I was told that the only call ever made on him, was one only occasionally to settle the few little amiable differences sometimes occurring among the ladies of his jurisdiction.

At the Town of Chedooba there is a small Sepoy Police, their business is to keep up communication with Ramree the provincial capital, and act as letter-men in the conveyance of orders, from the assistant commissioner there, to the different Soogrees.

I subjoin the official Statistics of Chedooba, for 1839-40 or Mugaera 1202.—

Names of Circles.	No. of villages in each.	POPULATION.				Amount of Rev of 1839-40.	No. of Buffaloes in 1838-39.	No. of Cattle in 1838-39.	No. of doons of land under Cultivation.
		Men.	Women.	Boys.	Girls.				
Maoun,	5	541	469	446	404	Rs. 3,243	520	545	160
Moubreng,	7	531	461	417	377	4,033	675	208	226
Kreroo,	4	361	315	245	245	1,892	547	187	84
Kyoukiam,	4	295	276	278	222	2,102	407	121	104
Requin,	2	124	120	106	110	1,219	659	.	75
Joungroa,	3	418	353	317	285	2,347	794	13	115
Kama,	3	240	209	190	179	1,429	287	59	76
Total, . . .		2,510	2,203	1,999	1,822	16,269	3,889	1,133	844
Total of Souls,		8,535							

DIVISION III.

Soil and Productions, cultivated and natural,—Waste Lands.

Soil and Produce of Cultivated Lands.—The general character of the soil of Chedooba, is that of a light greyish coloured clay, mixed more or less with vegetable mould and on the low eastern parts of the Island, this admixture again modified with a large proportion of fine sand.

The cultivated lands do not generally extend quite to the present beach of the Island; between them and it there exists, throughout its circumference a slip of land varying from 3 or 4 miles on the eastern parts of the Island, to sometimes less than a furlong on the western, which about 90 years since was upraised from the sea during our earthquakes.

This new land is not yet in general cultivation. On the east-north, and north-west it is so in part; on the west it is so thickly strewn over with stones as to make it probable it never will be. Throughout the circumference of the Island, the old beach line which is distinctly traceable, forms the interior limits of the upraised lands. On the eastern parts of the Island, where the soil is sandy, a difference between the older and newer is scarce traceable. But on the western and northern, the purer quality of the clay in the new lands distinctly marks off their soil from that of the older.

Throughout the soils of Chedooba is a large admixture of stones, with exception of those of the sandy plains eastward. They are generally small angular fragments of a soft greenish sand stone, and present no obstacle to cultivation, (except where large and numerous, as noticed above) the effects of exposure to climate evidently breaking them down into rapid composition with the soil

Large quantities of Coral and Juadrepore are distributed over all the upraised lands. The clayey nature of the soils makes them very tenacious of the rains, for which reason they are well adapted for the construction of tanks, either for irrigation or for the supply of the inhabitants. No water for the former purpose is at present required, for the latter, sufficient is found during the dry season, in the holes of the aullahs, and other natural reservoirs, and in the few springs which exist on the Island. The clay base of the Chedooba soils contributes much to endue them with a great permanence of productions.

They are not manured for cultivation though under yearly tillage, nor is a change of produce, as a relief to the soil, any part of the system of agriculture pursued, nor is the plan of exhausting the soil, and then allowing

it to be fallow for a season, in practice, year by year the same land yields its single crop in due season; the amount which is exacted from it, and to which it is fully equal. Lands in fallow are observable, sometimes extensively; but on enquiry the account always given of them was either that they had fallen out of cultivation from decrease of population, consequent on long continued political disturbance, or that they were lands cultivated for a season by settlers, who had after a time returned to the communities whence they had issued.

From natural causes connected with the character of the soil, and from a practice in use among the people, all the cultivated lands are strictly speaking subjected to an annual process if not of manuring, yet of an addition into the body of the soil of that which must greatly tend to the same effect. The heat of the dry season covers the face of the land with a tissue of deep cracks, in these the decay of leaves, grass, &c. during that season, makes a considerable deposit of vegetable matter.

It is also customary with the natives to burn their paddy stubble, and grass lands immediately previous to the monsoon, whose first rains before closing the fissures, wash into them the ashes thus formed—with regard to the grass lands they are burnt expressly with the view of improving the future crop, and the same benefit is doubtless effected to the rice land by the practice.

Its effect is particularly beneficial to the upraised plains, by assisting greatly the decomposition and dispersion of the calcareous matter upon their surface, and which must contribute largely to bring them into a cultivable state. To illustrate the gradual effect produced by the above means on these particular lands; it was stated to me by an eye witness that the upraised plain of the N. W. part of the Island was 15 years in acquiring its first clothing of grass, not only is it now covered deeply by that production, but many parts have for years yielded crops of rice, and all might do so. Jungle also is fast forming over it. Some parts of the low lands, both new and old, presented a sort of peat soil, still moist in the middle of the dry season, and affording luxuriant and green pasture. These grassy patches were most observable in the Krae-rone circle, which divides, on the north face of the Island, the more clayey soils of the west, from the more sandy ones of the east.

Rice is the staple produce of Chedooba. It is grown on all the level lands which form a land of more or less width around the Island, to which at present all cultivation with slight exception is limited. The yearly amount of this necessary produce varies, more through the fitfulness of temper of the people, than from any irregularity of the seasons. The

revenue claims must be defrayed with the proceeds of a portion, with another portion the family is to be sustained, the overplus purchases the necessaries of the family, and with no people is the list of these a smaller one.

From the more populous Eastern circles of Krae-rone, Inrooma, and Jueng-breng, a large quantity of rice is annually exported, partly in native vessels, which come for it from Akyab, and from the western parts of the Bay of Bengal, and partly in native boats, which come for it from Ramree, Sandoway, Gara, and sometimes from Bassein. The vessels from the westward, and the boats from the eastward generally purchase on their own account, the former bartering some few country goods. It is common for native merchants, or their agents to visit the Island from Akyab, or Chittagong at the season of gathering in the crop, and purchase it up from the different villages, giving a certain amount of earnest money, when it is subsequently collected at a convenient spot for shipment, and vessels sent to take it off. I was very anxiously enquired of by two parties, one from Akyab, the other from Ramree, thus engaged, as to the prices of the grain's market at Singapore, whither both were bound with their venture. A small barter traffic with rice is also carried on by the Islanders with their neighbours of Ramree mainly for fowls.

The western and less populous villages of the Island are also annually visited to see if they have grain to part with, a circumstance depending entirely on the above peculiar temperament of the people.

But independently of the superior advantage to the eastern inhabitants afforded them for a larger rice produce, in the greater extent of their plains, they enjoy also the great benefit of having those plains intersected by deep creeks, generally with a bar at the mouth requiring the assistance of the tide to pass over, but of considerable depth within, where country boats of the largest size, may in perfect security take in their cargo, in the manner pleasing to both parties, quite at leisure. For large vessels also, especially native ones, the anchorage in the straits is safer than that on the western coast, on which although there is anchorage every where, practicable and safe, in the fine season, for such purposes, yet the want of creeks wherein to keep them safe in the monsoon, at present prevents the inhabitants on this part from having any boats for shipment of cargo, which must therefore be taken off at the risk of the purchasers in their own. The rice of Chedooba is considered of very fine quality; a considerable quantity was purchased for the use of the crew of the 'Childers,' and the native

boats employed with her ; the price given was 1 rupee for a basket and a half or 90 lbs., this was cleaned ; grain paddy was at a much cheaper rate.

Both with regard to soil and produce, what has been hitherto stated of Chedoooba stands also true, of Ree-queng or Flat Island, its dependency, and close to its southern shore.

The adaptation of the lands of Chedoooba to the culture of rice, over those parts where it is now grown, is so clearly shewn by the quantity and quality produced, that it would seem hardly to warrant any expectation of benefit to be derived from change of produce to be made on them, and those of like character. To such a change also the preoccupation of the present lands in this produce, and the necessity (if practicable) of instructing the natives in the village of any new one in its place, present obstacles difficult to encounter, if not insurmountable.

In considering therefore for any general improvement in the agricultural value of the Island, as connected with the grain in question, regard can only be had to the extension of its culture where practicable, or to an improvement in the method of it, if necessary. On this latter point I am not competent to speak. On the subject of its extension I may say, that by observation made in passing through the country, from four to six times, the extent at present under tillage exists as waste land, applicable for rice. Limiting its cultivation to those flat plains where alone it can be extensively carried on, so that, assuming all rice land to be most profitably occupied in this production.

That the method of tillage does not admit of material improvement, and also, that of this grain no second crop can be produced in one year, and the above estimate would form the greatest probable increase of annual value derivable from this source. It might indeed be increased if a second crop of other produce could be procurable from the grounds, but even for their full occupation in the staple produce, European energy, intelligence and capital must supply the means.

Tobacco forms the next principal produce of Chedoooba. In general its cultivation is confined to small gardens of about a rood each, in the immediate vicinity of the villages.

The gardens are all clearly kept, and a lighter mould with more vegetable matter in it, is preferred for their soil. The plants were much closer together than I have observed them to be cultivated in Syria, and the Levant, and I think must want light and air in ripening the leaf, as well perhaps as room for arriving at full size.

I found but one spot on the Island where its cultivation was at all extensive ; this was in a small valley about a quarter mile in width, in the

interior of the Island, situated high, and near to the large volcano of Ineng-brew, though in the Inrooma circle. The soil was an alluvial one with a large proportion of clay. A stream ran through the valley. Here were from 8 to 10 acres of tobacco gardens, the plants with much more room given to them, and this spot I was told produced the finest on the Island.

The Tobacco of Chedooba is highly prized, and deservedly so. I procured a quantity of it to be made up into cigars for my own use, and was both surprized and gratified to find among these, several of as high and delicate flavour as any from the Havannah which I had ever tasted, and for the best of which, but for the manufacture, they might have been mistaken by any one, not knowing whence they came. The Tobacco of which they were made was grown in the neighbourhood of the South Hill, and on examining those which gave such satisfaction, they appeared to be made from leaves larger and riper than most.

The native, though never without a cigar from the time even before he can speak, does not smoke pure tobacco; the stems and roots of the plant are cut up into shreds, and with a small proportion of the leaf, enrolled with the leaves of a plant supplied from the jungle, in a wrapper of Tobacco. He cannot therefore be considered a judge of the quality of his own produce, by those who use the purer article. The leaf when gathered, is dried in the sun, and when dry, strung through the stem upon slight skewers of bamboo near two feet in length; these again are woven together with one or two strips of the same material into bundles of between 2 and 3lbs. which sell for our rupee each. This is the preparation of the larger leaves, and is for sale, the refuse supplies the family stock.

The whole of this produce which, from what has been said, will not be concluded to be extensive, is disposed of from time to time along the neighbouring coast, and the Island of Ramree, some of course finding its way further, but at present with exception of the larger cultivation mentioned, it is grown in sufficient quantity only by each family, to be kept instead of ready money, wherewith to supply the different wants or wishes of its owners, its quantity and estimation always making it an article of ready sale or barter.

Tobacco was always found growing on ground perfectly flat. It may be that the heavy rains of the monsoon oblige this, in order to prevent the plant, if on a slope, from being washed away, though this was never assigned as a reason, but simply convenience. Should the above supposition have weight, it would of course tend to limit the cultivation of a plant which necessarily standing very open, is therefore much exposed to such peril

Still there exists throughout every part of the Island, waste lands whose soil would be found applicable to the cultivation of tobacco to a very large extent, even if subject to such limitation, and I am strongly impressed with the opinion that such cultivation would prove one of, if not the most valuable to which the unoccupied lands (not being rise grounds) could be applied. The present extent in which this plant is grown over all parts of the Island, I incline to look on in the light of a experiment only, but one truly valuable, at once for its extent, and its success, and therefore affording data under prudent precaution of similarity of soil, &c., on which to found expectation of great profit to be derived from its extension, in which case the present experience of the inhabitants in its culture, even when necessarily modified with view to improvement, would be found a valuable co-operation. It may be that my own estimate of the flavour of the tobacco I have spoken of above, has been erroneous, but even if so, the general mildness of all Chedooba tobacco, when improved by greater attention to its culture and preparation, would give it an extensive preference over the strong Manilla; whereas should it be found practicable to grow extensively a leaf of the flavour and quantity which I think to have found in the above specimens, Chedooba would become a formidable rival to the Spanish settlement.

The employment to be given by the manufacture of the leaf, if extensively grown and saleable, would add another source of benefit to be derived from such a step.

Cotton—Is grown in several parts of Chedooba; generally spots in the jungle are selected and cleared for its cultivation, which is however very limited, not affording employment by its manufacture for the women throughout the year. The surplus required to keep the looms (of which almost every family possesses at least one) at work, being imported from the main land.

Excepting a few plants in the gardens of the villages, I found no cotton in growth, though land were being cleared for it in several parts, and some of them extensive. Those few plants appeared to thrive well, but from the shortness of the staple of that which I found in use, whether of the Island produce, or the Mainland, I conclude that what is at present grown is as inferior in quality as limited in amount. It was however very clean and white, the articles manufactured from it, a few coarse cloths for the person. The soils on which the best Cottons of India are grown, I have understood to consist generally of a rich deep mould; if such be the case, and necessarily so, for the perfection of this plant, I fear that Chedooba holds out no prospect of benefit from any

extensive culture of it. That soils exist in the Island, where it may be grown with advantage to greater extent, and of better quality than at present, I doubt not, but I think that the advantage to the Island would be limited to the production of a supply of it sufficient to give fuller employment to the native looms, as at present wrought for domestic purposes, without recourse to importation.

In the gardens of every village Sugar Cane in small patches is to be found; it is mostly of a red kind, small, and woody in stem, with short joints. In the Eastern parts of the Island it is grown to extent sufficient for the production of a few maunds of jaghery; but in the Western parts, where it is of more recent introduction, a sweetmeat for children is the highest object of its growth.

As with the Cotton, and for the same reason, I incline to the opinion that Chedooba does not hold out the prospect of any extensive growth of the Sugar Cane.

The only place where I have seen this valuable produce flourishing in this part of the world has been in the Amherst Province of Tenasserim, where it was luxuriating in a soil very different from any which were found, or are I think to be found, in Chedooba, a dark rich vegetable mould. In the neighbouring Island of Ramree it thrives well, and it is fair also to state that not only is the Chedooba plant one of very inferior quality, but that not the slightest trouble in the way of cultivation is taken with it; portions of the cane being merely put into the ground in the month of May, and left to nature to bring to perfection. That therefore as with the cotton it might be both improved in quality and increased in quantity, admits of reasonable expectation. But there seem to be insurmountable obstacles to Chedooba ever becoming of importance as a Sugar Island, arising from the unsuitableness of the soil in general, and, (under the supposition of the occupation of all rice grounds in the cultivation of that staple,) the too limited extent of surface for such purpose, clear of steep hill sides, which would remain. In passing through the jungle on one occasion a cleared spot of some 4 or 5 acres was found occupied half with hemp, and half with indigo.

This was a speculation of a native, and the unusual enterprize it discovered promised to bring its reward, as both crops appeared healthy and flourishing. The planting of Indigo is very limited, the plant of an inferior quality, and its preparation a very clumsy operation. It is not grown for export, but sold in the different villages to dye the produce of the native looms.

I could not learn that the Hemp was a more common production than the other; in fact it is grown in small quantity only on the Island, to whose inhabitants it supplies material for the few nets they possess. I had no means of judging of its quality, other than from the healthy appearance of the plant, which at least seemed suited to its soil, and therefore to afford prospect that this produce might with success be more extensively cultivated in portions of that district of the waste lands which lie between the available rice plains and the steeper hills. In conclusion of this notice of its agricultural produce, and in contemplation of plans for the future improvement of the Island in this regard. the general impression resulting from examinations of its soils, and consideration of the character of its inhabitants, was that such object would be effected in the best and readiest manner by increased care and attention given to extension and improvement of crops already grown on the Island, rather than by attempts to introduce on it extensively any new produce.

A good supply of cattle exists on the Island. The buffalo gives his strength for the more arduous agricultural labours. The lighter cattle draft the produce in hackeries with which the Eastern villages are well supplied. The breed is small, but strong, and supplies very sweet meat. Labour in connection with agriculture is however the only demand made on them by their masters.

Fruits are not very numerous on the Island, unless the multifarious produce of the jungle, familiar alone to a Mug appetite, is to be honored with the name. In the struggles of past times between the Mug and the Burmah, Cheedooba had its share, and from one of the measures adopted during those times in connection with this head, viz., the destruction of all its cocoa-nut trees, that they might afford no sustenance to an invader, it still suffers. Of this valuable fruit therefore there are comparatively few, mostly young trees, but they thrive luxuriantly, and a few years more if attention be paid to their increase, would see the Island supplied with them in quantity sufficient for more valuable purposes, than that for which alone it is now esteemed—the means of making complimentary presents.

The plaintain flourishes well; but is not much cultivated, and is generally an inferior sort, containing a large hard seed.

The pappa is common, and large in all the village gardens.

The tamarind flourishes in great luxuriance and grows to a large size. This tree almost universally supplies shelter and shade to the villages.

Its fruit is not much used by the natives. It is found growing indigenously on the second or old beach, but was observed nowhere else; with scarce an exception, this being also the situation of the villages.

The mangoe grows wild to a great size. I have measured some of more than 4 feet diameter—its fruit is very inferior, nor is it attempted to be improved.

Both the lime and the orange are found in many of the villages, and thrive well.

The orange is of that sort named elsewhere the sweet lime, and if extensively cultivated would form a very grateful addition to the luxuries supplied to the capital.

Vegetables as fruits, are also of small amount. But here again as with his orchard, the Mug looks to the jungle to make up the deficiency of his garden produce.

Yams are good and large, but plentiful only in the eastern parts.

Many species of pumpkins and gourds are grown in almost every garden; brinjals are very fine but not in plenty.

A small shalot is grown in the gardens generally, and some fine onions, which I was taking with me for my own use, were both so much admired and demanded for seed, that this improvement to the Kitchen Garden, will probably in due time become general.

Chillies of all sorts are in every day demand for the curry.

In introducing to notice the more natural productions of the Island, in the vegetable kingdom, it may be well as before first to speak of the soil in which they are found.

This is with little exception of one character, a loose friable earth of light yellow colour, having the general clay base much modified with decayed vegetable matter, the angular fragments of soft sand-stone having passed from a greenish into a dirty yellow colour, and being in a state of rapid decomposition.

The exceptions to this were found in a few spots to consist of a soil bearing more of the character of mould. The above soil extends throughout the interior parts of the Island, embracing all the hills higher and lower down to those flatter lands which have been noticed as applicable for the extension of rice cultivation, and constitutes that of the jungles, which are co-extensive with it.

These in their general character are open, consisting much of detached clumps of bamboo or of trees from 1 foot to 18 inches in diameter, well separated below, but in their branches having creepers thickly entwined. Throughout the lower jungles, open spaces, some deserving

the character of small plains, are of very frequent occurrence. On the higher hills, the trees are closest of growth and largest of size, but still clear of understuff. Throughout therefore, no serious obstacle is presented in the task of clearing the land for cultivation,—a Mug, with a good dáh felling the trees over half an acre a day, and a footman may penetrate without obstruction in any direction.

The tops of the highest hills were visited with ease, save from the steepness of ascent, parts being traversed, which the superstitious fear of the Mug would never have permitted his voluntary approach to.

Timber of great size, and some of valuable quality, is to be found, but it is confined to the very summits of the highest hills, and is therefore partly inaccessible, nor would its amount ever remunerate the labour of constructing roads for its transport. The soil in which these grow is of the same nature as that described above, but within a few hundred feet of the summits, all of which are very steep, it is piled up in the loosest possible manner. The stroke of an axe or dáh on an extensive hill top, would so shake it for a space of 150 yards around, as to make observation in the quicksilver of an artificial horizon impossible.

Precisely at the spot where this loose texture commences—commences the growth of the large timber, increasing in size thence to the summits, and from the trees not being deciduous (or at least not so at the same season) a most marked line of separation is thus traced out between these and the smaller leafless jungle below.

The wood oil tree was the most conspicuous in growth and size, of the larger trees of these summits.

One was felled on the west hill, which measured in diameter at the respective ends, of a 60 feet length, 4 feet 6 inches, and 3 feet 6 inches, and another is left standing as a mark, on the summit, which measures 21 feet 4 inches in girt at 6 feet from the ground. The wood of this tree will not, I fear, be found valuable as timber, but its produce, the wood oil, has yet to be better appreciated than at present. This substance is produced by cutting a hole into the body of the tree,* and kindling a fire in it; the flat floor as it were, of the hole, has a groove cut in it, which receives the oil as it crudes from the wound, and whence a split bamboo conducts it to the pots placed for its reception; the quantity thus yielded from a large tree is surprizingly great. In felling the above mentioned individual the oil ran in a stream from it, and it must have contained even tons. The strict propriety of designating it an oil may be doubted. It has always

* See Dr. Spry's Visit to Arracan, No. 110.—ED.

seemed to me more like a varnish; it speedily forms a highly polished surface on wood work, and has a fine aromatic scent, not unlike that of cedar; mixed with reeds and dried, it makes a brilliant and fragrant torch. The colour of the wood is a dull pink.

In the course of clearing these summits for observations connected with the survey, many other trees were felled exhibiting characters apparently valuable as timber. Among the natives there were differences of opinion about their names, and waiving even this obstacle to any description of them, the remark already made of the difficulty opposed to their being brought down, renders such attempt unnecessary. The oil trees would be found most valuable as a source of supply for that material, and perhaps many of their neighbours also would be found more useful living than dead, by the produce they may be found to yield. One of these, of large size, and with a bark similar to cork, was found to produce caoutchouc in great abundance. On cutting through the outer rough coat, a soft inner one, nearly an inch thick, is found closely attached to the more solid wood; on wounding this, the caoutchouc exudes freely, of a consistency and colour like thick milk. The tree was much avoided by the natives on account of the noxious quality of this milk, which if by accident entering the eye, on the tree being struck, so as to wound it, was said to produce certain blindness.

Another tree of very large leaf but moderate size, was also much avoided, and great care taken in felling it, to prevent its juice from touching the skin, which it was said to blister and poison. The adhesive quality of this substance was therefore more taken for granted than proved.

A plant, with the appearance of a cactus, but growing to the height and size of a tree, and known perhaps generally under the name of *Sisso* (not the timber tree of that name) yielded the caoutchouc in the greatest abundance. On severing a leaf, it ran forth in a small stream like milk. Many of the creepers also contained it in large quantities, and in one spot of the jungle of the Krae-rone Circle, I found the Caoutchouc tree of South America, affording prospect that as European intelligence and enterprize became more attracted towards the products of India, that continent may some day find its exclusive trade in this every day increasingly valuable article, formidably disputed. The wild cotton tree grows to a great size, and at the time seen was covered with a mass of its beautiful crimson flowers and flocks of birds. Its wool is sometimes used for stuffing pillows or beds.

The Gamboge tree was found of large size, and in considerable quantity, in clearing the jungle from the summit of the N. W. Peak; it was well

known to the natives; but no use is made of its beautiful gum, which covered the stems in considerable quantities. It lives in the higher jungles.

It is not doubtless the only tree in these wilds yielding a valuable gum, but want of acquaintance with botanical science prevented researches of that kind, which might have led to useful discovery. The safety and facility, and even enjoyment with which such researches may be carried on in the fine season, in the woods of Chedooba, seem however to point them out as a spot very eligible for the careful examination of an able botanist, unless indeed they be considered too limited in extent to exhibit a sample of the general character of the jungles of this coast.

A very brilliant crimson gum was found to flow in great quantity from a large creeper (*Tallee-medzou-nowy*) which is very common. If dried speedily in the sun, becoming very brittle, but retaining its color, it is of very astringent quality, and is used in some diseases as a medicine by the native quacks.

I may not fail to mention another creeper, whose properties are as valuable as interesting, and not the less so from its being found every where, both high and low. It is truly a traveller's friend, and the wandering Mug well appreciates its value. With his *dáh* he cuts off a junk and quenches his thirst with its contents, a pure, tasteless, cool water, of which it contains as much as its large numerous pores will hold, and which are immediately emptied by holding the piece perpendicular. A piece about 2 feet in length, and as thick as a small wrist, gave rather more than half a pint of water. In the rainy season it would have given double that quantity.

In travelling through the jungles, the liquid of this water creeper (*Jabroon nony*) is the constant beverage of the natives, when not otherwise supplied with that necessary, and its universal presence makes him very independent in his choice of road.

The rattan is every where found in the jungles, and performs all the ordinary duties of rope; it grows to a great size; two were taken from the West Hill measuring 114 feet in length, and $1\frac{1}{2}$ inch diameter.

Although Chedooba may not be looked to for supplying valuable timber to other parts, yet for its own consumption, and most, if not all domestic purposes, it possesses amply sufficient to meet any demand. For such purposes plank may easily be brought down from the hill, whence the whole tree must be immovable. The lower jungles contain woods, perfectly adapted to such uses, and in those of the Eastern Plains was found the *Thew-gaan* growing plentifully, some of the trees between 2 and 3 feet in diameter, and which itself would supply material for almost all

purposes. The wood of this tree is hard and close grained, of a yellow colour and most durable. In the Southern Provinces of Tenasserim it grows to an immense size, and also in the Sandoway district; hereafter its qualities may be appreciated by other than the Natives, with whom its durability has given rise to the proverb that 'a Cemoe of Thew-gaan lasts 99 years.'

It has been thus seen that the soils of Chedooba to the very summit of the Hills, and even there more so, are both productive and easily wrought. That therefore in any future agricultural improvement of the Island, man's industry will lay claim to a very large portion of that extent, now entirely in a state of nature, there can be no doubt; and over the face of all the lower hills, crops of various produce take the place of the jungles, which now occupy them. Such cultivation, even though limited to the extension to the greatest amount practicable of those products which are now but so partially grown on the Island, would therefore leave but a narrow space to be provided for, below those steeper, almost precipitous hills, which must always be given over to nature whereon to maintain supplies of timber and fuel. What such a space might be most profitably occupied with, it is perhaps attempting to look too far into the probable future, to make it other than presumption to speculate on. Yet in considering the nature of the soil, and comparing it with that of the spice gardens of Penang and Singapore, it has seemed at times likely that a similar produce might be found practicable here. For taking into consideration the very great disparity in the mode of the distribution of moisture between the two localities, still the pepper vine flourished at Sandoway, and at Mergiu, if not Moulmein; places all subjected to the same peculiarities of season. The growth of the Nutmeg, Cloves, and Coffee, are not yet despaired of.

Of the productions of the animal kingdom, the Island exhibits but a limited variety—under the head of agricultural produce it has been already mentioned, that large cattle thrive, and are plentiful and might be no doubt much improved—not only at present are they not killed for food, but even their milk is not used, and authority was obliged to be exerted in order to procure this luxury in the midst of herds.

The use to which they are applied has in the same place been already noticed, and beside them there are none.

One pony lives on the Island, the property of the Soogrees, and two goats are claimed, as belonging to the party of police, which is stationed at the chief village of Chedooba.

Of wild animals, the deer is the largest and most plentiful; they are very numerous throughout the Island, though I never either heard or saw but one species, that which is generally known as the 'barking deer.' The natives run them down with dogs; they have no means of shooting them. The flesh was found less dry and unflavored than was expected.

Next in size and number to the deer, is the wild hog, the only species on the Island. They are not large, but numerous, especially in the jungles which lie closest to the rice lands, on which they commit heavy depredations, and our assistance was frequently invoked to destroy at least some of the enemy. But in general the labour of the day was deemed enough for our party without trenching on the hours of rest, which was necessary in order to comply with the request.

Jungle cats are found but are not numerous, but one was ever seen by any of our party.

Squirrels are plentiful, and of large size, though of but one species; a dark brown in colour throughout, with exception of the throat, and a narrow stripe along the belly of yellowish white. One was shot of the size of a full grown rabbit; it was a male, his lady in company was of more delicate size.

Monkeys we heard of, but I much doubt their existence on the Island, at least it is strange that in so long and extensive a traverse of it, such an animal was neither seen nor heard.

The freedom from any formidable wild beast is a circumstance of advantage in these countries, which may not be passed over without remarks; it contributed largely to the comfort and freedom with which we were enabled to penetrate throughout the Chedooba, forming a source of congratulation when obliged to take up a night's lodging, or a day's journey in the jungle.

The Natives state that a tiger did once attempt a landing on the Island, but fortunately being seen while yet swimming towards the shore time was afforded to the inhabitants of the nearest village to prepare for his welcome, and before he could gain footing, either for attack or escape, he was cut in pieces with their dâhs; since which, his example has never been followed.

I know not how far the swimming qualities of a tiger may bear witness to the truth of this story, but the feat in an opposite direction was safely performed by one of the elephants which were placed at our service, which after breaking from his ropes, swam the straits, and landed safely on the opposite coast of Ramree, a distance of seven miles at the least, where he was recaptured and sent back.

Of reptiles, one snake was seen, and a few lizards and insects, the most numerous and beautiful are the butterflies, which were found even on the highest peaks. Bees are plentiful, but the jungles alone supply the honey, which is very sweet and good, and serves throughout the Island in the place of sugar.

Fish forms a very important part of the diet of the Mug, and mainly in this view, are the villages of Chedooba formed around the shores. It is very plentiful though not of any great variety. The most common is a species of bonetea, a muscular fish of rapid motion, and great strength, though seldom arriving at a weight of 4 lbs. It has a very thick smooth skin, without scale, and is of silvery white, longitudinally spotted with blue. On the western coast in the sandy bays, they are very numerous, and are taken in great plenty with hook and line.

The bamboo supplies the fishing rod, and in the evening, when most readily taken, the shore may be seen with 20 natives in a line from the nearest village, as close together as they can stand, up to their middles in the water, with their baskets slung on their backs, and casting their lines as rapidly as if fly fishing, laughing and joking at their success, without the least fear of driving their prey away, though they must be among their legs. The flesh of these fish is very firm and nutritious.

Very great quantities of a tiny little fish, most similar to, if not in fact, the Anchovy or a small Sardine, are taken on the same coast. They are dried in the sun without any preparation, a day or two's exposure being sufficient for the purpose, and exported in great quantities to Ramree and the neighbouring coast; each family also of the western villages where it is taken keeps a large supply, and demand is extensively made for them by the less fortunate communities eastward, so that they form a valuable adjunct to the resources of that portion of the inhabitants in whose neighbourhood they are common. The method of taking them is perhaps peculiar, and forms an interesting and lively scene. The morning is the time of the best 'take,' at which time, and when near high water, young and old assemble on the sand in groups, with flat open mouthed baskets of bamboo work, awaiting the opportunity for a catch. This occurs when the shoals of tiny fish are driven for supposed safety close into the beach by their larger, persecuting, and ravenous brethren. Then away dashes the nearest group of expectants into the water to the back of the surf, which is constantly, though not heavily rolling in on the coast, and driving back the original pursuers, face round in shore and place the flat mouths of their baskets in line together, just outside the

retiring wave, receiving from it, its finny contents. Sometimes more than a gallon will be thus deposited in a single basket.

The uncertainty as to where the shoal will come in, and the rapidity and ability with which the fortunate group take advantage of their opportunity, afford all the excitement and amusement to these cheerful people of a game of chance, and cannot be looked on by a stranger without interest. Flocks of cranes, crows, kites, and gulls of many sizes, colours, and voices, looking out for the stragglers on the sand, who have escaped the mouths of the fishes and the baskets, form an addition to the scene.

The grey mullet of good size and flavour is got from the creeks of the east side of the Island. Rock fish are plentiful, but not easily taken; when intended to be preserved, they are split into quarters, kept together at either end, and then opened by strips of bamboo, and the whole hung up to dry in the sun. Skate were frequently seen, but none caught, they were often observed to make very high, though clumsy leaps, a feat not often I believe, practised by flat fish. A fish of considerable size from 12 to 20 lbs. weight apparently, and in form resembling the salmon, was frequently seen of an evening performing very astonishing leaps. They were always quite perpendicular, and therefore appeared as a gambol, more than an effort to take prey, and sometimes extended to a height of 30 feet.

Of shell fish we found craw fish and prawns, the latter of great size and very delicious; they are limited to the creeks of the east side of the Island, where also the one in the neighbourhood of the Meug-breng village, possesses truly fine oysters. They are large, but of a flavour as delicate as our own Colchester luxury. They were in high condition when we visited their neighbourhood, and it may be lamented that they are not more generally known, and attempts made to grow them elsewhere. They have been transported to Kyook Phyoo, and do well there.

Turtle are common, and are taken by the natives on the sand islands and bays. They are of large size and of good species, but I can make no mention of their quality as food.

Many beautiful and valuable species of shells are to be found on the flats off the North Point of the Island, where however but little leisure or opportunity of dredging for them was afforded.

Fowls are plentiful on the Island, and supply the most solid food to which the natives are accustomed. The demand for them by our people raised the price latterly from 18 to 13 for the rupee. They are of good size, and good flavour.

Of wild birds, the Sarus is perhaps the largest on the Island, and is plentiful. They are common in other parts of India, and are, I believe,

good eating. There are a great many varieties of the Crane, some of very beautiful plumage and great size. These constitute the greatest portion of the feathered inhabitants, and would supply perhaps some new and valuable varieties if not species; Doves are very numerous; a small green Parrot is found, and some few green Pigeons were seen. But in general, other than have been mentioned, the birds are of those species most commonly met with in these climates. The jungles are however scantily peopled, though I may not omit to notice one which, with its sweet and soft note late in the evening, often gratified us, and was deemed not an unworthy brother songster of the Nightingale.

The Mineral Kingdom—Though bare of much value, exhibits specimens of some interest.

Nodules of Iron ore of rich quality, are, on search, to be found generally either embedded in the greenish sandstone, or having been detached from it.

In the former state they were found most numerous, on one of the reefs of the North West Point called the 'Saw reef,' and in the latter on the North beach. But in neither case in quantity sufficient to make them valuable for other objects than those connected with science.

Specimens of copper ore, and some few of silver, were found on careful search, lying on the barren surfaces of the different volcanoes. They are all of very small size, and their amount limited as those of iron, and like them give no indication of the existence of the ore to any greater extent. A piece as large as two eggs was recorded as the largest ever found.

Petroleum is found on the Island, and might be extensively produced.

Two wells sufficiently near each other to afford the conclusion of their possessing one common source, exist in the Krae-rone circle, yielding annually about 60 pots each. A third is found in the 'Mroomce' circle, but it has been destroyed by fire, and yields nothing, being the property at present of no one in particular, the soil around it, is, however, full of the oil. The fourth and most extensive is in the Fangroa circle, and yields near 200 pots in the year.

The method of collecting it is simple; the earth is turned up to a depth of two feet, and a bank of soil raised round a square of about 20 yards, thus disturbed, so as to form it during the rains into a shallow pond of about the above depth. The surface of this pond is in a constant state of ebullition from the escape of gas, with which comes up the Petroleum.

It collects on the surface in three different forms. A green fluid oil first spreads itself over the spot where the gas is bubbling up; as it extends, its edges exhibit a brown curdled substance resembling half-congealed dripping, and amongst this, as it becomes thicker, is seen gathering in spots, a dark brown substance of the color and consistency of molasses. This latter is used to preserve wood, to saturate paper for umbrellas, and is sometimes burnt. But the fluid of green color, is that mostly used to supply lamps. The curdled substance is used with the dark in the coarser purposes to which it is applied. This is the least valuable, and sells at 5 pots for a rupee. The other two at 3 pots for 2 rupees.

A bamboo is used to skim the surface of the ponds, and bring the substance to the bank, it is scooped up with a cocoa-nut shell and put into the pot. It floats so lightly on the water that this process is quickly and effectually performed. The break of day is the time chosen for the operation as from the cooler temperature, it is then of harder consistence on the water, and easier and cleaner skimmed. In the heat of the day it becomes so fluid as to make it difficult to collect without a large proportion of the water.

In the months of March and April the pond gradually dries up, and the oil can then be no longer collected from out the soil. The pond is then dug, and the whole soil in it as much disturbed as possible; on this operation depends the quantity to be yielded during the next season, and the deeper it is dug, the larger will be the produce; while on the other hand, if it be neglected, which is most commonly the case, the quantity of oil to be collected will be very materially diminished. A sort of superstitious fear is attached to these ponds, and on no account would a native dip his foot in its water, though he will not hesitate to dig the soil when dry, nor to handle its produce, to which no sort of deleterious property is attached. The state of ebullition without apparent heat may occasion this feeling among them.

The ponds are surrounded by a rough hedge of stout sticks, to preserve them from the intrusion of buffaloe or deer. Insects were seen in them. I had no means of collecting any of the escaping gas, which I should otherwise have done, but no heat perceptible at the surface is employed for its extensive developement. The Thermometer where the greatest ebullition was going forward shewing but two degrees more than the atmosphere, viz. 74°.

No doubt this mineral produce, might with ease, and little expense, be increased to a very large amount, and the oil has yet perhaps to be

better known, and better appreciated than now, when its value will in all probability be much increased.

I know not whether it has ever been thoroughly analyzed, but the almost pungency of its scent seems to proclaim the presence of a large portion of Naphtha.

In composition it differs from the tar produced from the wells of Zante, or the pitch of the Lake of Trinidad, partaking in all probability the character of the oil, which is found in the wells of the Irrawaddy. The material from these is in considerable use in our Tenasserim Provinces, and its native country, as a preservative of wood from the attack of the white ant, which it effectually prevents, and it is in considerable demand in the construction and preservation of the wooden houses of those countries; affording reason to believe that this, its well known and well tried property, might, with benefit, be more extensively made use of in other places. In a dwelling house perhaps an objection against the painting of the beams with petroleum might be supposed to lie in its scent; though this may prove but a supposition, and at any rate it can form no objection to its use in stores and godowns, and other buildings of that nature, whether public or private. The expense annually incurred in Calcutta for repairs, called for, from the above cause of destruction, where it is necessary to examine, if not renew timber once in 3 years, seems at once to point out an extensive sphere for the application of this, its valuable property, in connection with which is also its employment in the preservation of spars for shipping.

The extension of the wells which are all situated in the jungles, and an increase of their depth so as to hold water throughout the year, are simple means by which this produce of Chedooba might be at once largely increased to meet such extended demand, at present I believe the use of the petroleum to be almost entirely confined to the limited application it finds among the natives. The only other mineral production it remains to notice is coal. This, or a lignite, was found about a mile within the western beach in the Circle of 'Tang-roa.

It had been known for 2 years, and had been dug into, to a depth of perhaps 5 feet without exhibiting any improvement over the surface specimens. It was found shewing itself for a distance of 20 yards in an east and west direction. Its situation, a little above the water mark of a dry creek, formed by the first and second lines of Hills, and its dip an angle of 45 into the body of the latter, which rose 800 or 1,000 feet above the spot where it was shewing. In formation it consisted of a series of layers varying from $\frac{1}{8}$ of an inch to 3 inches in thickness, se-

parated from one another by their laminae of ferruginous sand. It was very brittle, with a dull fracture, and smouldered, but would not ignite. Neither from its situation nor its quality does it promise to become of any value.

DIVISION 4.

Climate.—Chedooba, in common with the Arracan coast, has been generally considered as possessing a climate peculiarly fatal to Europeans, and the mortality of the Troops who occupied it during the Burmese War has given but too painful cause for the opinion.

Nevertheless I cannot but think that its insular situation, and its freedom from that extent of muddy creek, and Mangrove swamp, which peculiarly characterizes the coast of the mainland, together with the greater openness of its jungles, must be the occasion of some difference between them, and that in favour of the Island.

Its seasons are those of the adjoining countries, and may be divided into wet and dry; the rain commences its visit in the beginning of May, with variable winds and intermittent showers, which, increasing in frequency and duration, introduce the deluge which pours down incessantly from the middle of June to that of September, during which period 250 inches of water fall. Thence to the month of November is occupied with the gradual taking off of the rains, which from that month cease till the following May brings them round again.

In every country subject to such periodical rains there are two seasons when the sickness, which is the peculiar one of the climate, prevails, viz. at the commencement and taking off of these rains. Even in those countries which, but more partiality, are subject to a wet and dry season, as Italy, the Levant, and southern shores of the Mediterranean, the same effect is produced, and spring and autumn there, bring with them, their ever accompanying miasma fever. Under the effect therefore of a tropical climate, where the change at this time, in operation throughout the whole vegetable kingdom, is so much more extensive and violent, the effect of the greater developement of noxious vapour, must be necessarily looked for; and accordingly these periods are found to be the sickly seasons of Chedooba, and the coast around, and their regular return calls for great care and prudence on the part of the European, for whom, occupation of mind and body, as active and full as regard to unnecessary exposure will permit, may be strongly recommended then, as perhaps at all times, as a valuable addition to other precautions; as it has frequently been found that our sailors and soldiers, have suffered less from the

effects of climate when under the exposure, than when mind and body have alike been unoccupied and unenlivened.

Exposure to the direct heat of the sun of Chedooba, and its neighbourhood, is at all times of the year to be carefully avoided, and such imprudence will be the almost certain occasion of illness to an European, to whom the simple remedy of a chattah is always at hand; some peculiarity in the atmosphere appearing to make its rays more than commonly obnoxious at all times to his constitution; but this is more particularly the case in the months of March, April, and May, when the natives themselves are much concerned to avoid the intenseness of its heat. The mornings and evenings however, even at this time afford 4 or 5 hours, when all out door duties may be performed.

The above months constitute the hottest season of the year. The Thermometer in the day ranging at times to above 90°, but falling, from towards evening till before sunrise, down to a temperature, which is pleasantly cool throughout the night, a benefit enjoyed all the year round. On the main land, the nights at this season are frequently accompanied by a dense mist almost amounting to a rain, arising in all probability from the condensation of moisture, attracted from the large extent of water surface exposed by the numerous creeks.

Chedooba, with nights equally cool, and more healthy, is free from this peculiarity. But with the mainland, is, during the day, at this season, subject to a dry haze, at times to thick as so hide the view of the land; at a very few miles distant.

The heat at this time is greatly attempered by the fresh sea breeze constantly blowing, which gradually veering from south-west to north-west, with only a decrease of strength during the night, takes the place, at this latter point, and time, of the direct land breeze, which blows during the night in the cool season.

This cool season, the most enjoyable, and the healthiest time of the year, extends from the setting in of the north-east monsoon, towards the end of October, to the middle of March, during which time the climate is very delightful, the temperature seldom rising, excepting as the season closes to that of the summer heat of our own country. But the sun at midday is still very powerful, and direct exposure to it, to be avoided. This was the season during which I traversed the Island, and though constantly in the thickest jungles, sometimes by night as well as by day, I do not remember to have suffered a headache.

The sea breeze at this time sets in at 10 A.M., and falls with the sun, shortly after which a cool land breeze from the eastward takes its place, till

about 9 A.M., when an hour's calm is again succeeded by a breeze from the north-west. The change of temperature was found very great during this season, between day and night, with the exercise of walking, the lightest clothing was found most suitable during the day, but about two hours before sun set the temperature falls rapidly, and at night with the land breeze blowing, two blankets and a counterpane were not too much to prevent actual cold. This change must always be carefully met, by dressing in woollen, a precaution which should never be omitted.

The same peculiarity of atmosphere, which produces such ill effects from exposure to the sun, may also be the occasion of a greater amount of exhaustion (not fatigue) under the exercise of walking, which I experienced more in going over this Island, than I had ever previously found, in the few other parts of India yet visited. A remedy for this feeling was always found by application to the contents of a haversack, and the precaution was always taken of not setting out on the day's journey without the regular meal. It is not altogether from personal experience in this particular, during so limited a time, that I would express the opinion, that bodily exercise of any sort in this climate, requires for its support, at least by the European constitution, a generous diet. In its corroboration, I was informed, that during the time of service, on this coast, of the 65th Regiment Native Infantry, a very fearful mortality took place among the Sepoys, not so much from the actual violence of the prevalent disease, the well known Arracan fever, as from the consequence of its debilitating nature, from which the constitution of the Native would not allow him to rally, though always assisted by liberality administering strengthening medicine and means; while to this mortality among the privates, a strong contrast was exhibited in the constant good health of all the officers, throughout the whole period of nearly two years, a contrast attributed by the medical, and other officers of the regiment to the difference of diet of the two parties. During the exposure to which the crew of the 'Childers' were necessarily subjected in the execution of a survey on the coast, many cases of the same fever occurred, at the present time amounting to upwards of 60 in number, but of the parties so suffering there were but few who were not perfectly recovered, and at duty again in 8 days, a circumstance which I incline to attribute mainly, not only to the usual liberal allowance supplied to Her Majesty's seamen, but also to the endeavours (fully appreciated) to supply the crew with as much, and as great changes of good food as were, under circumstances, procurable.

There must not be left out of view the great value of the facility of an immediate application, on first symptoms, to a medical adviser afforded in

a man-of-war. Nor again that of the precaution which the service provides under such circumstances, by the administering of wine and quinine to all likely to be exposed. This latter was found of great use, and is much to be recommended, while in regard to the other consideration it is right to notice, as tending to deprive this fever, of something of its formidable character, that in many cases, a simple dose of medicine, administered on first symptoms, has sufficed to drive it entirely away. One case only proved fatal, and with it were connected peculiar circumstances.

The climate during the period of the heavy rains is not an unhealthy one, it will be one necessarily of great confinement to the European, which is perhaps unfavourable, being inclined to attribute much value to personal exercise, but occupation by all who know its value, would not even at such time be found impracticable even for the body, much less for the mind.

The temperature during this season is cool, though the moisture of the atmosphere is very destructive to every thing but stone and metal. It is the time for the growth of the crops which we put into the ground just previous, and it is now that nature puts on her rich clothing of verdure; and vegetation is most rapid. It is accompanied by a constant breeze from the south-west. The natives enjoy this time as much as their Burmah brethren, and with their smallest children, like frogs, delight most in exposure to the heaviest falls.

Great importance as a preservative of health in this climate is to be attached to a very careful watch over the due performance of the digestive functions; both speaking from personal experience, and also by observation of our sick generally, it being found that inattention to this particular was not so much the occasion of dysenteric disease, as that it rendered the party liable to the prevailing fever, which was found to them a very intimate connexion with the state of the stomach, any derangement with the regular functions of which, if not a certain occasion, being at least a strong predisposing cause to taking the disease, and being found in all cases more than ordinarily its accompaniment.

My acquaintance with the climate of Chedooba is but small, and was limited to that of the best season of the year. I therefore would speak on the subject with every deference to the opinions of others of more practical knowledge, and extended experience. But as the result of what I have found and heard of it; I am strongly impressed with the opinion, that, employment for body and mind—to avoid direct exposure to the sun;—good (not intemperate) living; accommodation of clothing to

changes of temperature ; careful attention to the state of the stomach ; with due observation of these precautions, in aid of a sound constitution, the climate of Chedooba, would be found not only healthy, but at some seasons most delightful to the European.

The eastern parts do not enjoy so temperate a climate in the hot season as the western, being less exposed to the fresh sea breeze ; and the immediate neighbourhood of the creeks would be found situations prudently avoided. The fine pulverulent soil in the east, by the quantity and penetrating nature of the dust it creates, is also at that season a very great annoyance ; notwithstanding therefore the greater exposure during the monsoon, and that it is at present far less populous than the eastern. I consider the N. W. portion of the Island, as that which, at all seasons, would be found the most congenial to the European constitution.

While speaking of the climate of their Island, it is fair to notice its effect upon the natives themselves, as well as upon Europeans, and it was found that they also are subject, though but inconsiderably, to occasional attacks of the fever.

All the able-bodied men on the Island were employed with me on one occasion for a fortnight together, and therefore came under my direct notice, and though at hard work all day, and sleeping in the jungle at night, it came to my knowledge that fever had been taken by only one individual throughout that time, an old man verging on 80 years, and who ought not to have been present.

In traversing the Island throughout, I believe not to have omitted visiting any of its villages ; and whatever sick were in them, always made application for relief, either personally, or by their friends. These cases amounted in all to four of fever, one of small-pox, one of dropsy, one of paralysis, one of blindness, and one of deformed limb, three cases of fever occurred also with our Bengallee attendants. The native population therefore seemed to exhibit no signs of a pestilential climate. While on the contrary, throughout the Island, they afforded the clearest and most extensive evidence of its healthiness, and suitableness to their constitutions, in the great number of old men and women, to be found in every village.

As mere old age entitles to the respect and deference of the whole community, the old people, as elders and leaders, always come forth to meet us ; and with few exceptions even to the age of 106 years were found hale, if not vigorous in mind and body, much interesting information being gotten from parties 80 and 90 years old, with memories as fresh apparently, and minds as clear as they ever had been, men even of that age tak-

ing their share in almost hard work. Although this is a double testimony in its favor, it is as impossible, nevertheless to deny, as it is painful to acknowledge, that hitherto, these coasts have proved most fatal to Europeans, that sailors, soldiers, and civilians, have alike fallen victims to its fever, and on Chedooba an ample share; nor may there be a doubt thrown on the attention and ability of those medical officers whose exertions have yet hitherto failed in all attempts to stop its fatal progress. Whether therefore this country is one from which the European is to be ever thus excluded, or whether in the progress of all other improvements, and also if the character of his treatment by himself or by others may be found hereafter to enable him to make here also his temporary home, and introduce, with his wealth, his intelligence, his energy, and above all his religion, their attendant blessings, must apparently be left for the future to shew. But giving to the facts, which constitute this favorable evidence, no more than the weight, they are strictly entitled to—and others may be found perhaps to entertain with me, even more than the hope, that some such improvement may eventually render the climate of Chedooba, and also that of Arracan, no longer so fatal a bar as hitherto, to the advance in these provinces of the Civilization of Europe.

(*To be continued.*)

Memoranda on the 'Chulchulheera' of the Hills, and on some Lichens from the Himalayas in the Collection of the Asiatic Society.

BY HENRY PIDDINGTON, *Offg. Curator, Mus. Asiatic Society.*

My attention having been directed to this subject by our President, I took the opportunity, when examining the 'Chulchulheera,' to test also some lichens sent to the Asiatic Society from Simlah, in 1838, by Mrs. Siddons, which I found in the Museum. I have thought it worth while to make known the results of my work, and to add a few remarks which have occurred to me, in the hope of drawing attention to this very interesting though neglected subject.

I subjected the 'Chulchulheera' to the common ammoniacal test, and found that it yielded a tolerably bright red brown liquid, though not the violet red described by Hellot; I did not succeed in producing any substantive dye with it, though using several mordants, I essayed to manufacture some kind of Cudbear from it also, but did not succeed. The preparation of Cudbear however depends upon *two*

fermenting processes, the first of which is the preparation of fermented urine, and then a sort of fermentation of the lichen with the prepared urine and lime. I am very doubtful whether, at the temperature usually prevailing here, we can obtain the fermented urine at all, in the state in which it is used in Europe, from its passing so rapidly to the incipient putrid state. It may moreover be doubted whether the heat is not also too great for the fermentation of the lichen. Hence, and because all fermentative processes depend so much on heat, and often on the quantity of material used, nothing can be predicted of this failure.

Lichens from the Himalaya.

These are, as above stated, a box sent down by Mrs. Siddons in 1838. I have arranged herewith a box of specimens of them, and one of bottles of the liquids produced. I subjoin a note of the colours as they appear when fresh, and I have marked their differences when seen by transmitted or by reflected light, for this appears worth noticing. To be seen properly they must be examined in a bright sunshine. I observe that some of the colours change a little, or become duller, in a few days.

<i>Nos.</i>	<i>By transmitted Light.</i>	<i>By reflected Light.</i>
1.	Crimson red	Lighted and duller.
2.	Rich bright Crimson	Deeper but very brilliant.
3.	Thin, poor, white-wine colour .	The same.
4.	Deep maroon brown	A fine clove, or red brown.
5.	Dull red	The same.
6.	Very rich port-wine red	The same.
7.	Bright white-wine colour, but } thin }	Duller.
8.	Crimson brown	The same.
9.	Orange crimson	The same.
10.	Crimson	Crimson brown.
11.	Deep crimson	Brown.
12.	Deep crimson	Bright red.

13, 14, 15; much like No. 7, but I had but very small quantities to use for testing:—

16.	A poor dirty orange brown	The same.
17.	A brilliant crimson	The same.
18.	A golden brown	Clove brown.

I should think, from the richness and intensity of the colours, that most of these, excepting perhaps, Nos. 3, 7, 5, 13, 14, 15 and 16 are worth attention; and it should not be forgotten that they have been certainly

three, and perhaps four years since they were collected. I proceed now to set down such remarks as occur to me.

There must be in all countries a season at which lichens and mosses, like all other vegetable productions, possess the largest quantities of colouring matter. At what time this occurs for Indian lichens, we at present know not: for those of the Himalayas' it is probably the autumn, and in other parts the driest seasons.

Judging from the under surfaces, some of these which I have tested are tree, and others rock-lichens; but there must be great numbers more of both kinds in those extensive regions. The rock lichens of cold countries are usually the best, as far as our knowledge yet goes.

We know nothing hitherto of the forest-mosses and lichens of the vast jungles of India, from Assam to Goandwana, and from the Terai of Nepal to the Sunderbunds, the forests of the Southern Ghats, and those of Ceylon, Arracan, and Tenasserim! It is true that it is, as yet, supposed that the lichens of hot and humid climates are little productive of colouring matters; but I know not on what this notion is founded. There would seem to be as many probabilities the other way.

And when all the lichens, above alluded to, are examined, we have other vast fields and these of great promise. I mean the great volcanic plateau of Central India, from the basaltic rocks of Bundelcund to the Toombuddra; the points where, as at Vizagapatam and Cape Comorin, the granite meets the sea; those where, as in some parts of Malabar, the trap rocks from the coast; and the whole of the range of coast and islands, of every formation, which form the eastern shores of the Bay. We may in fact, from the infinitely varied condition of climate, rock, and soil, which I can only hint at here, except every possible variety of moss and lichen; and that many of these must be new and valuable.

Provided a lichen yields a strong and bright colour, we may always hope that it may be turned to account. It will be noted, that all these, which I have now examined, give colours which lie on the yellow side of the red, and not on the blue side of it, which would produce the violets. I mention this, because there seems a notion abroad, that only those which yield at once the violet-reds to the ammoniacal test are of any value. In the instructions for Capt. Beechey, on his voyage to the Straits of Magellan, this is indeed pretty nearly said in direct words. Now we know that, from Lapland to the Mediteranean, the rocks of Europe have been pretty nearly stripped of their lichens, by agents sent out from the great silk and cotton-printing establishments, for much of the work of which the rich Canary lichens are unsuitable, and far too dear. *We may*

hope to find some equal to, or indetical with these, but we may be well content with the goodly supply of the secondary sorts, with our great extent of territory must insure us when they are known. In no trade is there so much competition and so many secrets as in the dying and printing of silks and cottons; and I take it that none of the published notices give any distinct idea of any thing, as to the value and kinds of lichens, beyond what is already well known in the business: the secrets are far too valuable to be given away. The colouring principle moreover is not the only part of the lichens to be turned to account, gummy matter, extracted from them by Lord Dundonald's process, supplies the place of the costly gums in many printing processes.

There is an omission in all the printed notices which I have yet seen, which in many cases might mislead persons testing lichens. An important process—that of crushing or even pounding the moss or lichen to powder—is wholly omitted? A chemist would of course think of this; and Hellot, the inventor of the ammoniacal test, from whose writings all have subsequently copied, mentions it; but the usual directions lead people to suppose that the lichen is merely to be broken to pieces and infused, which may often be insufficient to develope the colour properly, and thus lead to a wrong conclusion.

The single lichen *Rocella* has been a mine of wealth to the Canaries and Cape de Verd islands. We have at least a fair chance that India may produce one, if not more, of these productions of a valuable kind, but nothing can be properly ascertained on the subject unless a considerable quantity—say a maund or two of each promising sort—be sent home. In the hands of European dyers and chemists, with their extensive resources, great experience, and ample leisure, it is quite possible that results may be obtained, which, our petty means, and want of experience and leisure, are quite unequal to develope. I have, for example, strong reason to believe that some of these lichens contain the 'Erythrine,' or violet-red principle of Heeren and Nees Von Esenbeck; but the research is one of those in speculative chemistry, which I have neither means nor time to undertake. I shall nevertheless be happy at all times to contribute my mite of aid, whenever it can be useful in the search for good dying lichens.

LATE

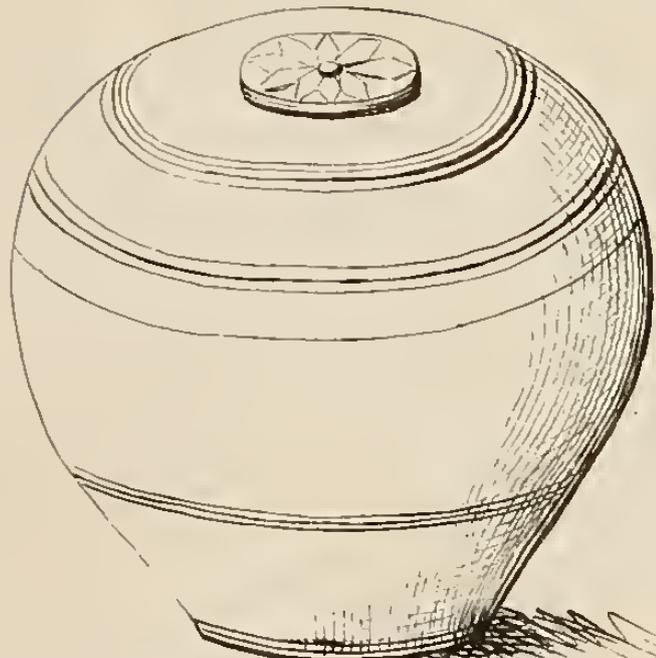
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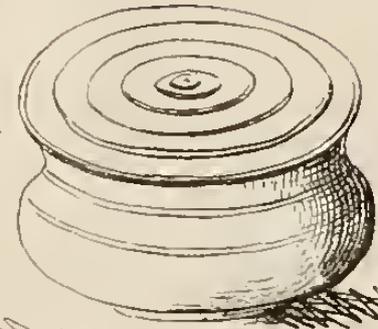
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Rock-Crystal
 Ornament, Found
 in Ba. N^o 3.

*Caves of Bahrabad
 West Face*



Jullalabad R.

Caves and Topie of Bahrabad

Southern Face



Jullalabad R.

On the Topes of Darounta, and Caves of Bahrabad.—BY THE LATE
LIEUT. PIGOU, (*Engineers.*)

At a distance of six miles from Jullalābad in an easterly direction is situated the village of Darounta, at the foot of the Koh-i-Surrukh on the right bank of the Jullalabad river; scattered through the village, and in its environs are eleven topes, of various sizes, but all much smaller than the tope of Manikyala: on some of these are evidences of their having once borne external ornaments similar to those found on that tope; they are built of stone and slate, cemented with mortar, and in some cases merely with mud; all of them possess a chamber from 4 to 8 feet square, and some of them have in addition a shaft running down the centre; at the time of my visiting them, six of the largest had already been opened by Messrs. Masson and Honigberger; in opening the others, the method pursued was, to cut, as it were, a slice from the lip to the bottom, reaching to the centre by this means both the central shaft, and the chamber at the bottom were laid open; out of the four thus opened, one was empty, the contents of the other three were as follows:

Box No. 1, was taken from the Tope-i-kutchera; it was found in a chamber about six feet below the level of the ground; it was contained in a rough case made of four slates (about a foot square) stuck together with clay; these fell aside on being touched. Within the box were the three coins, and a peice of rock crystal; the coins belong (2) to Ermæus III. (?) and one to Azos,

Box No. 2, was found in the Tope-i-fasl, it contained a small gold box, in which were placed several pearls, with holes drilled through the centre, and some small peices of what appeared to be bone; the gold box with its contents has been stolen from me.

Box No. 3, was found in the Tope-i-Hosen-amanat, covered in a manner similar to Box No. 1, it contained a mixture of light red earth, and grey ashes, and three coins, all of Azos.

There can be little doubt but that these topes were built in memory of the illustrious dead; without reasoning from analogy founded on the statements of a late traveller in the crimea, regarding the sepulchral tumuli discovered in the vicinity of the ancient Panticapeum, the metropolis of the famous Mithridates Entapor, the evidence furnished by the relics found in the topes, would irresistibly lead to such a conclusion; with regard to the æra when these topes were constructed, it is more diffi-

cult to give a rational conjecture, but it is at least worthy of remark, that more of the coins formed in them, are of later date than the Bactrian kings.

Opposite to the village of Darounta, and overhanging the left bank of the Jullalabad river, are the caves of Bahrabad;—these have been excavated on the plan of a town, but on a smaller scale, there is a charson or meeting of four roads; that running to the north is the longest, and from it, five chambers open, these receive light from apertures immediately overhanging the river, which runs about 100 feet below them; the passage running to the south leads to a Dallán or Hall, which also opens over the river, the passage to the west leads to the river, while that to the east is the general instance to the whole plan. The chambers are all lofty, airy, and well lighted, but the passages are very low and narrow. The cave mentioned by Honigberger as the *Fil-khana*, is a little to the east, and separated from the principal set of caves. The only antiquity discovered in them, was a small slab of rough reddish marble, about 5 inches square; on this slab was executed in demi-relievo, a pair of human feet, the toes, &c. being all distinctly marked; round the feet, are four Lotuses, one at each angle of the slab executed in bas-relievo. It is said that similar slabs have been found in Ceylon, if so, a presumption may be drawn, that if the caves of Bahrabad do not owe their origin to the Buddhists, they were at least at one time inhabited by them.

R. P.

NOTE.—The objects given in the annexed plate were presented to the Asiatic Society, with the above memoir by the late Lt. Pigou of the Engineers, through our late V. P. Col. Macleod, in his letter to whom Lt. Pigou writes as follows of the gold box (unfortunately lost,) which was the most valuable in all respects of the remains discovered at Darounta.

‘I have the pleasure herewith to forward two boxes, and some coins taken from the Jullalabad topes; the three boxes, I had previously promised to Dr. Athinem to whom it is now made over, it was similar in shape to the box No. 1, but not quite so large. I regret that the small gold box, with its contents, has been stolen, as it was the greatest curiosity of all, but the precious metal excited the cupidity of my servants, who have made away with it. The marble slab is too heavy to send down by *dák*, and I have not got it with me; indeed I am not sure that it has not been lost, but it is possible that it may have been left in my hut at Jullalabad. I also send you a rough sketch of the Bahrabad caves, which will give

an idea of the place, I am sorry I have not time to make a more elaborate drawing, but must forward it rough, just as it was sketched."

*The death of the writer of the above, by the premature explosion of a fuse, which he had with equal coolness, and gallantry laid to the gate of a fort in the Bajowur territory, during the recent employment there of Col. Shelton's brigade, has destroyed all hope of the recovery of even the slab. The presence on it, however, of the most unequivocal of Boodhist emblems, obviates all doubt as to the nature of the caves, were there not ample reason for coming to the same conclusion on other grounds. I alluded (*As. Soc. Journ.* No. 109, p. 97) to the Darounta and Bahrabad discoveries, with reference to those recently made at Kanari by Dr. Bird; the caves of Kanari we know, from the most authentic sources (*Travels of the "Chinese Boodhist Priest Ea—Hian."* A. D. 399. M. Remusat's Translation) to have been a favorite place of Boodhist pilgrimage; the Boodhist character of those at Bahrabad, is proved by the presence in them of emblem peculiar to *Boodh*; the topes at Kanari yield an inscribed plate which records the dedication of the place 'in honor of the most powerful, very wise, and superior *Bhagavana Sakya Muni*,' while 'copper urns, a ruby, a pearl, small pieces of gold, and a small gold box, a silver box, and some ashes' were also found there: at Bahrabad no inscription is discovered, but 'the copper coins, and the rock crystal' (types of the wealth of a poorer people) the 'small gold box in which were placed several pearls with holes drilled through the centre, and some small pieces of what appeared to be bone,' all go to prove that the races, which at points so far apart, have left these traces of their usages, and their religion were equally Boodhist, although the constructors of the Darounta tope would appear to be the ruder, and less wealthy of the two. They are able it is true to deposit gold, but more sparingly; ruby is replaced by common crystal; a stone vase, is used in place of the copper urn, and copper coins supply the bullion of the Kanari tope. The mausolea are evidently those of persons of inferior means, although in the character, and nature of the deposits, we trace an intimate connection with the more gorgeous relics of Manikyala. Mr. Piddington has obliged me, with the following notice of the Darounta vases, and their contents.

'Both the vases are turned out of a fine-grained potstone, and have the marks of the tool (particularly inside) as fresh upon them as if

* Three of my correspondents and contributors in Affghanistan, and among them, not the least valued, Captain E. Conolly, P. B., Lord and Lt. Pigou, were killed in action within the short space of 8 months.

made yesterday! The larger one has, beneath its foot, the oblong mortise by which it was secured on the lathe. Their dimensions are as follows :

	Height, Inches.	Greatest ex- terior dia- meter, Ins.	Thickness, about Ins.
No. 1, Large Vase.....	3·0	3·2	0·4
Small Vase.....	0·9	1·45	0 2

The state of the coins is curious : three of them, Nos. 4, 5, and 6 of the drawing, are completely encrusted with crystallised carbonate of copper, with a few detached scales of a whitish oxide, which may be owing to an arsenical or zinc alloy in the copper? or to carbonate of lime having penetrated to the coins? though this last seems nearly impossible; they are in very minute quantity, and it would not be worth while to disfigure the relics by picking any off for examination.

The remaining three coins Nos. 1, 2, 3, are marked as having been 'found in the box,' and they look so clean that we are inclined to suppose they have been really cleaned; especially, as the metal is much eaten and worn. No. 2, has still traces of the carbonate of copper on its face. No. 3, is the only one which we can suspect of having undergone the action of fire. but the boxes bear no trace of this, and I am inclined to think, that they have not been subjected to it. The rock-crystal ornament requires no particular remark',—beyond, I may add, the peculiar trouble, which has been taken in perforating it; it resembles exactly in size, form, and mode of perforation, the uncut emerald, now universally worn, by native chiefs and gentlemen of rank appended like a drop to the *surpéché*, or head jewel. The people who could have bestowed so much labour upon so common an object, must have been singularly ignorant of the more precious stones, and I might point to this slight index, as affording some proof that the deposit at Darounta, was made by the first leaders of a new race of conquerors, who subsequently left monuments of their rule, then a more polished, and a wealthier people, in the noble works at Manikyala. There too (*As. Soc. Jour.*, vol. III. p. 563) we see, as on a smaller scale at Kanari, the practice of placing inscriptions in the tope obtained, showing perhaps the progress of science in conjunction with that of wealth.

An examination of the coins before us will lead to the ascertainment, with tolerable accuracy, of the date at which the Darounta Topes were constructed. The coins are, No. 1 of Azes : No. 2 is similar to No. 12 (*As. Soc. Jour.* Vol. III. Pl. XXXIII.) of those found in the Manikyalan

Tope by Mons. Court, in so far at least as the figure and attitude of Hercules is concerned; the head on the obverse of the coin is too indistinct to admit of very accurate identification, but I am convinced that the two are similar; Mr. James Prinsep remarked on the difference obtaining between this coin, and the rest of those found with it at Manikyala, and (As. Soc. Jour. Vol. VII. p. 646) he afterwards observes of this coin; 'on the reverse of the coins of the second Hermaios (or perhaps the third) having a Hercules for the reverse, commences another series of native names following what we have designated the Kadphises, or Kadaphes Group.' It is in fact a coin of Kadaphes, who invading, and subduing the country of the last Hermaios, adopted in part, according to the wont of the barbarians, the effigy of his coins, affording a strong contrast in its classicality, when placed, as at Manikyala, in juxtaposition with the peculiar coinage of the Kadphesis and Kanerkis, by whom the types of Grecian domination were foregone. The presence at Darounta of this coin, (or coins, for No. 3 seems to be a duplicate though indistinct) with those of Azes, goes directly to support the truth of Professor Lassen's Chronological Deductions as respects that King, and his immediate predecessor. 'The coins of Azes,' he observes, 'are so closely connected with Greek types, that he must undoubtedly be a proximate successor of the Greek Kings, * * * * *: he must be considered as a cotemporary of Hermaios.' (Lassen on Bactrian History, As. Soc. Jour. Vol. IX. p. 662.) But Mr. James Prinsep connects Kadaphes with Hermaios; when therefore we find their coins together, as in the instance now before us, the advent of the Sacas under Kadaphes, to the destruction of the remains Græco-Bactrian power, and the succession of Azes shortly afterwards, (who founded the great empire of that people) may the more readily be admitted. Professor Lassen gives the following dates, about which we may assign the period of the construction of the Darounta Tope.

The Græcian Empire of Hermaios subdued by Kadaphes about.	120 B. C.
Great Empire of the Sacas, under Azes about.....	116 B. C.
Azilises succeeds him about.....	90 B. C.

I need hardly add that to *Kadhpises* (a Parthian) Professor Lassen assigns a reign about 100. A. D. subsequent to the expulsion by Vikramaditya of Malwa of the Sacas, from the countries along the Indus, A. D. 56, and a re-invasion of the land by new hordes of conquerors.

The coin No. 4 is so much disfigured by oxidation, that the artist, who, in the plate before us, tried for the first time the difficult task of delineating on paper the semi-defaced design of a coin utterly new to him, has

been a little misled. It is simply, like Nos. 5 and 6, the ordinary mounted horseman with outstretched arm to the left, and fillets depending from the head. The only coin in tolerable preservation is No. 1.



Report on Productions and Manufactures in the district of Hunumkoondah, in the dominion of H. H. the Nizam of Hyderabad. BY A. M. WALKER ESQ. M. D., Assistant Surgeon. Communicated from the Political Secretariat, Government of India.

On the 12th instant, I had the honor of reporting my arrival at Hunumkoondah, since that time I have been employed in observing and noting the most important facts in reference to the object for which I am employed, and particularly in making inquiries respecting the production and manufactures in this part of the Nizam's dominions. As far as I could, I have trusted little to mere oral information, but have endeavoured to authenticate by actual observation, whatever appeared to me interesting or useful in nature or in art.

The face of the country in this neighbourhood presents a striking similarity to that in the vicinity of Hyderabad. Here are the same rounded, dark colored, herbless eminences, solitary, or in groups of considerable range, rising to the height of three or four hundred feet with the same ruinous appearance of the lower hills, and the fantastic piling of one boulder of rock on another.

The tank, with its mound of earth or masonry and the sheet of verdure which it nourishes and maintains, serve to complete the resemblance of general form and outline, nor does a more minute examination detect many discrepancies. The surface rock, throughout, is granite, usually of a greyish colour, but varying from a dingey white to a reddish and more rarely to a blackish hue, according to the colour and predominance of each of its constituent parts, quartz, felspar and hornblende. Where quartz is prevalent, the rock is close grained and compact, with little tendency to wear, while on the other hand the most superficial examination will shew that the excess of the two last, and more particularly of the felspar, is the certain cause of decay.

In one locality in the village of Nagwazum, five miles to the north of this, so abundant is the homblende and felspar, to the exclusion of quartz in several specimens of the rocks, that they might be called sienitic

greenstone. I have nowhere seen mica take the place of the hornblende, hence the whole formation might be more properly termed sienitic than granite, particularly if the latter term is to be restricted to a determinate compound. Sienitic granite, however, a compromise between the two, would appear the better and most intelligible term for the rock as it exists here.

In a spur of hills running north south near the vilage, of Erapully ten miles to the west of Hunumkoondah, I remarked that the granite becomes stratified or in other words passes into gneiss.

At the foot of these hills the iron ore, afterwards to be described, is found.

I have not met with lime-stone yet, but from its being very commonly employed by the natives, I should suppose that it existed in considerable quantity. From their account it would appear to form nests in the granite; the soil is of four descriptions, first the Chilka, a red gritty soil little fitted, from the coarseness of its particles, for the purpose of agriculture.

2nd. Lalzumeen, a soil also of a reddish hue, and evidently the former in a more comminuted state; this is put beyond doubt by the ant hills formed on the Chilka soil being composed of this earth.

We thus see that these insects, usually looked on as troublesome and destructive pests, are not without their use in a grand natural operation. The peculiar acid, the formic, which is their chief agent, acts on the alkali and lime and most probably on the silica of the rockdebris, pulverizing it, and facilitating in all probability fresh combinations; the soil when manured is fitted for the reception of all kinds of crops without reference to season.

3rd. The Regur soil. As far as I have yet observed, this soil is of less frequent occurrence than the two last mentioned; as elsewhere it is particularly adapted for cotton cultivation, and is generally esteemed the richest of soils. It requires little or no manure: yet the ryots are in the habit, previous to cropping, to let sheep loose upon it, it being supposed that their urine is very advantageous to its fertility: this is exceedingly probable as the salts which the urine contains, and the compounds they form, must be very efficacious in loosening the soil, and preventing the formation of clods, the common drawback of argillaceous soils.

4th. The Talao-ka-jumeen. The black soil found in the bottom of tanks. This is little esteemed, being a stiff clay, little permeable by moisture; it abounds in fresh water shells and at the beginning of the dry season, its surface is incrustated with carbonate of soda, of which mineral large quantities are collected for soap making. A property, common to all

these soils. is, that they effervesce with acids, thereby indicating the presence of carbonate of lime.

As far as our geological knowledge can lead us, the presumption is, that these soils in all their varieties are nothing more than the decomposed sienitic rock, and considering the number of simple bodies, of which this is composed, viz. Oxygen, Silica, Aluminium, Calcium, Potassium, Sodium Iron, and perhaps Manganese, and the ever varying proportions of its more immediate ingredients, we cannot wonder at, although we may fail to explain their striking diversity. Our notions of what may be termed the chemistry of nature are yet very vague and unsatisfactory, for an appeal to the crucible, electrophorus, and the whole machinery and reagents of the laboratory, has not always been successful in elucidating natural phenomena strictly chemical. Let us rest on the negative evidence of the impossibility of discovering, with our present lights, any other source for these soils than the rocks subjacent or in their vicinity, until strong proofs be afforded of their origin elsewhere. We cannot class among these the opinion, well nigh become an axiom with certain Indian naturalists, that the Regur, soil is always due to the disintegration of basalt; as for this purpose we must bring the Kishna or Godavery over heights and ravines, that existed periods of time anterior to a secondary trap rock being thrown up.

When the ground is left uncultivated, even for the short space of a year or two, it never fails to be covered with a low jungle, composed chiefly of the *Cassia auriculata* and *Zizyphus microphylla*, the former plant is hardy and luxuriant, and is in every respect the peculiar enemy of the cultivator, who certainly does not take the most effectual means to rid his fields of it, contenting himself with burning it or cutting it down to the level of the soil instead of rooting it up. Of the jungle trees by far the most common is the *Butea frondosa*, now in full blossom, which with the *Bombax heptaphyllum*, and the *Erythrina Indica* stand out as the most garish of the forest trees. The *Garuga pinnata*, *Hyperanthera Moringa*, *Cassia fistula*, *Annona reticulata*, *Melia Azedirachta*, *Bauhinia parviflora*, *Capparis trifoliata*, *Ficus Indica*, *Ficus religiosa*, *Bombax gossipinum*, a species with yellow flowers, *Feronia Elephantum*, with four or five species of *Acacia* make up the list of the more common jungle trees. The *Borassus flabelliformis*, (the Palengra tree) is every where seen, which with the *Phonix sylvestris*, also common, yields in great abundance the well known Toddy. Of the common jungle creepers two or three species of *Asclepias*, and *Capparis*, and the *Combretum rotundifolium*, are at this season, the most conspicuous.

The Mango and Tamarind trees are common about villages.

The grain chiefly cultivated is rice, of which no fewer than eight varieties are sown. Of these the *beetee wadroo* is the most cultivated, being both a rain and a dry weather crop, it is a middle sized grain with a husk of a light brown colour; two of the other kinds are much smaller grains with white husks, the other five differ in size, colour of husks, &c.

Little of the rice raised is consumed by the inhabitants, but sent to Hydrabad forming the principal export; in the districts its consumption is limited to the richer Mahomedans, Hindoo Zemindars, Brahmins, &c.; the poorer classes chiefly derive their subsistence from the rain or *punoss* crops.

The principal *punass* or khureef crops, are as follows:—of grains, Andropogon Sorghum (two varieties of jooarry, red and white; the first only properly a punass crop, Andropogon Sacharatum), Bajree, Paspalum scrobiculatum; Triticum wheat, a red sort sparingly cultivated; Panicum Italicum, Italian millet; Cynosurus Corocanus (Raggy), and Zea-Mays. Of oil plants, Sesamum orientale, black and white, Ricinus communis, two kinds.

Of Legumes, Dolichos Lablab, Dolichos gladius, Dolichos fabæformis, Phaseolus mungo, Hibiscus cannabinus (Umbarah), a hemp plant, (leaves used by the natives as greens) and a variety of cotton called Salkapas. The rubbee crop consists of white jowarree, Cicer arietinum, Phaseolus mungo (a black variety), Crotolaria juncea (the sunn plant), and cotton, sugar, and paun. Piper betel is also cultivated to a limited extent, and also tobacco of an inferior quality. It is remarked that tobacco irrigated from a well of brackish water is superior in flavor to that irrigated from sweet water.

This can be easily understood, as a common means with fraudulent tobaccoconists of heightening the flavor of their tobacco is by dipping it in a saline solution. The garden produce consists of red pepper, brinjals, onions, garlic, carrots, radish, sweet potatoes, dill, coriander and bishop's-weed seeds, mustard seed for oil, fenugreek and some speices of amaranthus for greens, they use also the flowers of the *aeschynomone grandiflora* as a potherb.

Melons, cucumbers, and gourds, as in other parts of India, form a considerable article of diet, particularly in the dry season.

The village cattle are small, and at this season of the year far from well flavoured, but is said that a stout breed of bullocks is not to be met

with in the neighbourhood. Flocks of sheep, black and white, are every where seen.

The breed of horses, small, ill-shaped ponies, is very indifferent.

Wool meets a ready market in the districts being brought up for the carpet weaving of Warungal, and the manufacture of Kumlees; a small quantity is sent to Chandah in the Nagpore territory, its price at present is nine seers (the seer of 82 Halle Siccas) a rupee, white wool is 25 per cent. more valuable than black.

Hides were formerly exported, their price varies from twelve annas to (2) two rupees each. The ceasing of the export of hides within the last few years, is a favourable index of the extension of agriculture, as leather is employed in a certain quantity in almost every implement of farming.

The iron ore is found at the foot of a range of hills running N. and S. about ten miles to the west of Hunumkoonda.

It exists in the form of fragments, often of a rhomboidal shape imbedded in a red clay, and accompanied by pieces of gneiss and quartz. It is evident that the neighbouring hill is the source from whence it is derived, and I have little doubt that a skilful miner with some trouble (for the gneiss hill, unlike the granite, is clad with a pretty deep alluvion) might come upon the original bed of ore, of which these are mere detached portions; as it is, the demand for metal is sufficiently met by collecting and smelting these fragments. It is said that the Iron tract occupies a space of ten begahs, the greater part of which is covered by a woody jungle. The shafts are of various depths from 10 to 30 feet; into these the miner descends, and detaches by means of a small pickaxe whatever mineral he meets with from the red clay containing them, he determines by their weight whether they contain ore or not, and thus fills his basket. He can gather during the day six or eight small baskets full, one hundred and twenty of which are sold to the smelter for a rupee. The ore is reduced in the adjacent villages in the usual rude way so well known. It occupies six men for two days to turn out a maund (12 seers) of metal.

The Iron is brought up by Bunyas, for exportation, for R. $1\frac{1}{2}$ a maund, and is sold to other customers for two or three annas more. The ore is of that kind usually called magnetic iron ore, and black iron ore being a compound of protoxide and peroxide of iron; it possesses the magnetic power but slightly. I have made a number of trials, and have found no specimen with magnetism enough to pick up a small needle. The circumstance too of the cutlers here having in their possession pieces of magnetic iron ore, as heir looms and talismans, sufficiently prove that this

virtue in a high degree must be rare indeed. The Sp. gr. ranges from 4.3 to 4.8, which would give nearly an average of 4.5. From this I am inclined to think, that malgre the deficiency of attractive power, the ore is a tolerable rich one; I may add that of all iron ores the black is the richest; by possessing it Sweden is still able to surpass great Britain in the manufacture of the metal.

Besides the *morinda citrifolia* the wool dye, which is cultivated on the regur soil, the *Oldenlandia umbellata* (Cherwell or chay root) grows wild here in great plenty. A man and his wife can easily gather forty bundles in a day, which they sell to the dyer for 4 annas; it is employed to dye cotton of a red and orange colour. The *Oldenlandia* is cultivated on the Coromandel Coast. It is very probable that the dying properties of the wild, excel that of the cultivated, for dyes often follow the same law which renders the smell and taste of the wild plant, growing in a state of nature, stronger than those carefully attended.

The dying process is very tedious, occupying forty days and upwards. Five or six pieces of *Indigofera* are met with here, but one species only, the *Indigofera cærulea*, is used for the preparation of Indigo. It is collected in the rains when the dye is commonly made, the method of preparing which is sufficiently simple. A strong decoction is made of the plant, leaves, flowers, pods and twigs, being all indiscriminately thrust into a gurrah; when this is hot an infusion of *Eugenia jambolana* (rose apple tree) the indigo is immediately precipitated and the superincumbent water being drawn off, is dried in the sun.

The native plan of mounting the indigo vat merits attention: a potash ley is prepared from the ashes of the *Euphorbia Tirucalli* (milk bush hedge) and lime ley, mixing them together and then filtering. In this ley seeds of the *Trigonella fanum-grecum* and *Cassia Tora* are boiled, and the liquor being strained, is poured into the water drawn off, after the precipitation of the Indigo, and the Indigo itself is then put in and some more potash ley is added.

In three or four hours the fermentation is perfected, and the vat fitted for the purposes of the dyer. The theory of this vat is very obvious, extractive matter derived from the liquor in which the Indigo was first boiled, with the sugar, starch, and mucilage, of the two leguminous seeds, cause a fermentation by which the Indigo is rendered soluble in the alkaline solution.

The process is more simple than that usually followed by dyers in Europe, and is in perfect accordance with every rule of practical chemis-

try. There is no superfluity, and no waste; and on the whole it is a most favorable specimen of native ingenuity and skill.

Indigo from Masulipatam, the produce of Bengal, finds its way to this place, and is sold for the same price as the Indigo manufactured here.

The carpet manufacture for which Warungal or rather the villages, Muswarrah, &c., in its close vicinity are celebrated, does not appear to be an indigenous art.

A distinct tradition exists of its introduction, and also the method of preparing and drying the materials that compose it, being due to the Mahometans, facts countenanced, if not substantiated, by the present weavers and dyers being uniformly of that religious persuasion.

The carpet loom is nothing more than the common native loom placed vertically instead of horizontally. The waft is of thick strong cotton twist, being arranged by no wafting mill, but by one of the workmen going round and round two stakes fixed in the ground and dropping the thread at each, as he passes; in the loom it is kept on the stretch by two strong billets of wood, the threads being approached by separate loops of cotton fixed to a bamboo, which is elevated or depressed at the will of the weaver. The worsted is held in the left hand, and a crescent shaped knife in the right, the fingers of both being left free; the inner thread of the waft is then seized, the worsted wound round the outer, crossed on itself, and the extremity drawn out, by which it is made to descend in the form of an open figure of eight to be snipped by the curved knife. It is superfluous to say that this is the work of an instant; when the pattern is new or difficult, the order and position of the worsted threads is changed by a coryphoeus in a kind of rhyme. On a row being completed, the warp, in the shape of a cotton thread dyed dark brown by the bark of the *Swietenia Febrifuga*, is forced down by means of an iron toothed comb, in form something like an adze; the whole is completed by cutting the worsted to its proper length by a large scissors held steadily against the waft. It would rejoice a Manchester or Glasgow manufacturer to learn that infant labour is employed and preferred in Warungal carpet weaving, it being averred that their more limber finger joints are best fitted for the finer parts of the work, but cupidity all over the world is ingenious in finding excuses, and is ever ready to confound the expedient with the right. Dried springs of *Toolsee* (*ocymum sanctum*) and bunches of *Lepidigathis Indica* are attached to the loom frames; the workmen say that they make their labour go on more cleverly. Twelve different worsteds are employed.

The blue is produced from Indigo, the yellow, the sulphur yellow, from boiling the sulphur yellow in water impregnated with carbonate of soda, in which a little turmeric has been mixed, the deepest yellow is produced by dipping the same in potash ley. The reds are all produced by lac dye dissolved by tamarind juice, with sulphate of alumina and potash as a mordant. The depth of colour depends in 3 cases upon the original black, brown, or white colour of the wool; in the fourth on the length of time the last description of wool was allowed to remain in the dye. The greens are produced by immersion in Indigo, and then in polas or turmeric, their degrees also depend on the original colour of the wool. Bengal Indigo is always preferred to the home-manufactured by the worsted dyers, cotton carpeting is also prepared in the same way as the woollen.

The carpet weavers are described as given up to indolence and dissipation, to both of which they appeared on a late occasion most anxious to minister by endeavouring to establish a monopoly. There are at present two hundred looms working; at the village of Hoosun-purti, five miles from this, a good many looms are employed in weaving tusser or jungle silk. As this letter is already too long I shall defer till another occasion the description of this manufacture, and the rearing of the insects producing the raw material. I cannot conclude this without mentioning an import to this place, viz. English cotton yarn, of an orange colour, which comes from Masulipatam to be used by the cotton weavers in the borders of saries, punchees, &c.; the reason they assign for its employment is the quick fading of their native yellows; in all probability the English thread is dyed with fustic wood (*Morus Tinctoria*) the most lasting of yellow dyes. Be this as it may, its use bodes ought but good to the Indian manufacturer.

Roree in Khyrpoor; its Population and Manufactures.—By
CAPTAIN G.E. WESTMACOTT, 37th Regiment, Bengal N. I.

Roree or more correctly Lohuree, the ancient Lohurkot, is a town of considerable antiquity, and said to have been founded with Bukur, about the middle of the 7th century of the Hejira. It is built on a steep limestone ridge that sweeps in a crescent form along the east bank of the Indus. The strata of the rock is horizontal, and exhibits marks everywhere of the the action of the river, which must have risen formerly at least fifty feet above its present level in the season of floods, and washed the foundation of the houses. In the sandy bays, creeks, and hollows aban-

doned by the stream, date and peepul trees grow luxuriantly, and rocks worn by the water, and shattered and broken into gigantic masses, were submerged at no very remote period. Along the base of the hills, on both banks of the river, the land bears the appearance of having been under water. The remains of a stone and brick wall, or quarry, built evidently to oppose the encroachments of the river, runs along the edge of the precipitous ridge which supports the town, and under it is an extensive cavern. Clay buttresses shore up the houses, which rise to four and five stories, and being composed of frail materials and badly built, threaten momentarily to topple over into the great road leading to the watering place, which is usually thronged with people.

The inhabitants affirm that the periodical rains have failed the last twenty years, and that the river rises less annually. An old Bunneah pointed to a spot, which he recollects to have seen covered by the river, and is now removed at least six feet above its level in the floods. To this cause partly, the people attribute the decline of the prosperity of Sind, and the extortions of the Talpoor Beloochees and the large expense incurred in digging canals and cuts for irrigation, swallow up the entire produce of their industry.

The Bunneah remembers upwards of fifty houses in Roree, being washed down about twenty years since by rain, and I can easily fancy the havoc a storm would make among the frail and ruined tenements in the town. The Indus rose, within his recollection, ten or twelve feet higher than it does now; for the last four years scarcely any rain has fallen, and grain has become progressively dearer, but there was a plentiful supply in 1839, compared with the quantity that fell in the preceding seasons.

The lime ridge behind Roree is without a blade of vegetation, it swells into peaks and eminences, and stretches several miles inland, and along the river, to the south. Some of the hills are isolated,—and intersected by little valleys, and some are capped by tombs, shrines, and other buildings in ruins. These parched and arid hills are in powerful contrast with the deep verdure of date groves and *bajree* fields that are scattered in rich luxuriance over the low grounds towards the capital of the principality. The *ledgah* of Roree is about five hundred feet above the river, and few spots in the Eastern world surpass the view from it in beauty, and present a greater variety of objects. In front of the spectator are two picturesque little islands; the one covered with date palms, the other with tombs and mausolea, shooting up into innumerable pointed spires of glazed porcelain. The fort of Bukur, beyond it, embraces a

vast oval rock in the midst of the Indus, and exhibits on this face twenty-three bastions of different forms resting on the edge of the stream; and date and peepul trees spring from the naked rock, and fix their roots in the foundation of the embattled curtain. On an elevated citadel in the middle of Bukur, floats the small blood-red flag of the Meer of Khyrpoor, emblazoned with the national emblem of a rampant tiger, and near it on a loftier staff, the more gorgeous standard of Britain, fourfold the size of the banner of the Meer; above and below the fort, are small wooded islands, inhabited by holy beggars, who are fed and attended by votaries from both sides of the water. The eye delights to rest on fertile groves of lofty date trees, mixed with vineyards and mango trees, and the Indus is seen meandering, far away in the distance, in snaky folds, through a perfectly flat and verdant country. The heights of Sukhur are a prominent feature in the landscape, and every hill crowned with a tent, a tomb, or a ruin. A battery of seven guns is in the midst of the British camp, and to the west of it the decayed mosque, the sainted shrine and minaret of Meer Masoom. The living objects in the foreground of the picture communicated to it, at the time of my visit, additional interest and animation; an encampment of several hundred camels occupied a small valley leading to the river, and their drivers had tents of black goat and camels hair raised on sticks. Belooch horsemen, with flowing beards, each in his national cap of coloured cotton and accoutred with sword, shield, and matchlocks, rode slowly among the hills, and asses heavily laden with grass and wood for the citizens, wound up the steep rocky ascent into the town. The monotonous song of the washerman filled the air as he beat garments of many colours upon planks, and troops of Hindoo and Moosulman women bathed at the different ghats, each of the former, on her way home, carried a vessel of river water to lave, with pious reverence the roots of a peepul tree, and the emblem of Muhadeva which stood beneath it.

Most of the houses in Roree rise to three and four floors, and some have five, and standing on elevated ground they assume an appearance of great vastness to the eye. They have no ventilators or towers on the roofs, to catch the wind like the houses in Lower Sind and Arabia; but the walls of the upper chambers are pierced with small windows without regard to symmetry. They are not glazed, but some of them in the harems of the principal residents, are filled with fine gratings of wood or mortar; some are open, and others furnished like the doors with folding shutters, which close badly, and are secured on the outside with a hasp and padlock; they are not painted any more than

the doors. The roofs are surrounded by a light rail or balustrade, and have spouts to carry off water. The upper story has sometimes a wooden balcony, supported on frail posts, and the houses of the rich are contained in a walled court, along with buildings and sheds for servants. The rooms have pannelled ceilings tastefully carved, as are the window-frames and door posts. It forms the only ornament, and there is scarcely any furniture; coarse woollen carpets, and mats, supply the place of tables and chairs; some houses are constructed of burnt brick plastered with clay; when sun-dried bricks are used, they are not laid horizontally, but in a sloping or diagonal direction, (v. Fig. 1,) and the upper walls, which are extremely thin, are any kind of timber placed without regard to regularity, with tamarisk twigs between them, and plastered with clay, and chopped straw. Lime abounds every where; but it is not the custom in Roree nor other parts of Sind to white-wash the outer and inner walls of houses, and they have a dingy uncomfortable appearance. The upright posts are chiefly tamarisk, fixed into horizontal beams of the same, and set in a stone foundation to preserve them from the depredations of white ants. Roofs are flat, and built of slight timbers, covered with reeds, and when reeds are not procurable, mats are substituted. The frame work is acacia, date, a whitish coloured wood called *Bank* or *Buhan*, and any other kind of timber; the acacia is scarce at Roree and Sukhur, and the date never used for door posts and pillars. The people put on the rafters a layer of *teer, then †chupree, and thirdly a kind of reed called *Gondnee* (*Typha*), upon which they spread a coat of fat yellowish clay (*peela muttee*) mixed with chopped straw and the sweepings of houses. Those who can afford it mix wheat chaff with the clay, and when it is dry lay over it a compost of cowdung and clay, to fill up crevices. Dry cowdung is sometimes put on the reeds, and covered with chopped straw and clay; a roof thus formed is about a cubit thick; the wood and reeds occupy eight inches, cowdung the same, and clay two inches. The people assured me, that a roof properly constructed will endure half a century, and resist for twenty years the small quantity of rain which falls in Sind; a roof commonly stands ten years without requiring repairs, but the mats are soon rotted by wet. The cost of building a good shop, of burnt brick on the ground floor in Roree, is 400 or 500 Rs., and double the sum if a story be added to it; a large shop may be constructed of sun-dried

* The upper stem of moonj grass called in India Sirkee.

† The thick part of the stem of moonj grass called in India Surkunda.

brick for 300 Rs., and a small one for 50 or 100 Rs ; most of the houses in Roree are calcined brick. To prevent insects penetrating the floors of warehouses, which are intended to receive grain and goods, they are sometimes paved with blocks of stone which may be procured in any quantity in the neighbourhood ; the stones are covered with clay, and plastered with cowdung, and a thick coat of coarse salt strewed over it.

Houses above one story, belong to, and are occupied by one family, and when the children marry, they remove to another dwelling ; all houses of this description, were built by wealthy merchants and bankers, before the reign of the Talpooras, and through their oppression many have been deserted by the proprietors. Families occupy the lower floors in the cold months, and remove above in summer ; they cook and light fires, above and below, and there are no chimnies for the smoke to escape. The great height of the houses, and narrow streets and lanes, exclude the sun's rays, and the heat in the lower stories is quite insupportable to an European in summer. A single narrow door gives admittance to a gloomy and dirty parlour, which is not furnished with windows nor any aperture for light and air ; to get at the door you mount an earthen stair with a narrow terrace at top. Poor people rarely use bedsteads,* and have neither pillows nor sheets ; they spread their mats at night on the house tops, or terrace in front of their doors, and cover themselves with a blue cotton cloth, which serves them for a garment in the day time. Others lock up their goods in a back chamber, and sleep in their shops, which are open towards the street.

The principal thoroughfare leading up from the Indus is paved with bricks laid edge ways, and some of the lanes and passages in the town, are as narrow and dirty as the closes in the old city of Edinburgh. The bazars are covered in with mats like those of Arabia and Egypt, to keep off the sun's rays, but so much neglected that they are a public nuisance, rather than a comfort, and a horseman cannot ride under them without coming in contact with sticks and cotton straw, which cover him with dust. The interior of houses, is extremely dirty ; dunghills fill the open spaces and suburbs of the town, and it presents altogether a scene of great squalidness and filth : here are neither swine, vultures, nor storks to devour the offal as in Indian villages, but loathsome, mangy, and half-starved dogs are numerous, and almost the only scavengers.

* A common bedstead, laced with a string of moonj grass, costs eight or ten annas (12 or 16 pence).

Roree contains about forty mosques, where prayers are recited, and more than double the number ruined and deserted. The great mosque stands on an elevated platform in the N. E. quarter of the town, and was built, according to a Persian inscription on the front, in the year 992 of the Hejira, or 265 years ago, by Futteh Khan Lieutenant of the Emperor Akbur. It is a solid, heavy looking pile of red brick, covered by three domes, and faced with porcelain tiles, and on the east or front face, are a paved court and cloisters, where travellers formerly lodged, but now in ruin. When I entered the court, a traveller was just arrived from a long journey, and stretched at length upon his back on the pavement, while a monjawur, or attendant of the mosque, trampled upon his thighs to give relief, I was told, to his weary limbs.

Near the mosque, in the Hindoo quarter of the town, the *Mose Moo-baruk*, a hair of Mahomed's beard is preserved in a shrine covered with ill painted arabesques. The Sindees say there are only $2\frac{1}{2}$ of these precious hairs to be found in the world; the one at Roree, one at Dilhee, and the remaining half in Persia; the relic, it is believed, was brought to Bukur four generations ago and is enshrined in amber, in a gold case set with rubies and emeralds. The gold case is kept in a golden box, shaped like the pen-holders used by Asiatics, and wrapped in silk, plain and worked, with gold and silver flowers, and again enclosed in a wooden box clamped with silver. The hair is exhibited to pilgrims, and said to change colour like a camelion before their admiring eyes; a number of *Moojawar* or custodians, are attached to the shrine, and four of the principal families receive among them a daily allowance from Government of $1\frac{3}{4}$ rupee.

Roree has two great bazars, one filled exclusively by grain-seller's stores, and the other with shops of cloth merchants, fruiterers, fish-mongers, *et cetera*; people of a trade reside together, and Hindoos occupy quarters of the town distinct from Moosulmans. In the east quarter are the remains of a mosque and serai of noble proportions, which might be restored and made habitable at a moderate outlay, and would be a great benefit to the town, and convenience to travellers, who still lodge under the broken arcades which surround the ample court.

The town contains a number of shops, where turquoises are set and polished, it is a favourite gem but the specimens shown me were small, and of bad colour. People who cannot afford to purchase real stones wear false ones set in rings, and women adorn their toes with blue enamelled buckles or clasps, and their nose with a very unbecoming gold ornament, one half circular, and the other half moulded in form of a

crescent. Silver anklets are common, and females who are too poor to buy ivory bangles wear bone, poverty often prevents their appearing in gay coloured raiment, which is nearly confined to the public women, but they display their fondness for trinkets, by frequent visits to pedlar's shops, where mirrors, combs, leaden rings set with false stones, and other female ornaments, are sold. These shops are crowded with the wives and daughters of tradesmen, who pass much time turning over and trying on baubles, and I observed many sorrowful faces when they relinquished a favourite trinket from inability to pay for it.

In the fish market, a number of women congregate round people who sell *Singhara*, a fish like a shark considered to be very unwholesome eating, but preferred for its cheapness. The fish is cut in pieces, and the women go provided with small bowls to receive any quantity they require for their families.

Roree is divided into 46 Muhullas or quarters, and I add a list, and the description of inhabitants in each, which may be received, I think, as a close approximation to truth.

1.—Kanoongo,* Government Officers, Kardars, Moonshees, Putwarees, &c.

2.—Wutchoowaree, goldsmiths, &c.

3.—Suthdura, M. polishers and setters of stones, silk-weavers.

4.—Thushar (the name of a tribe of Moosulmans), M. cotton weavers, agriculturists, &c.

5.—Arain Khudwala, M. gardeners and fruiterers.

6.—Tukkur (a hill), H. Bahmuns, about 22 families of Hindoo shopkeepers.

7.—Musund, name of a tribe of Hindoo Gooroos.

8.—Arain (2d) Dulewala, name of a tribe of Moosulmans, M. farmers and agriculturists.

9.—Arain (3d) Ootradee, name of a tribe of Moosulmans, M. Farmers and agriculturists.

10.—Durgah, M. Moojawars, shopkeepers, cloth sellers, and labourers.

11.—Chyn Rae (name of a wealthy Hindoo living), H. shopkeepers and others.

12.—Chubootru, H. shopkeepers.

13.—Suyud Yakoob Khan Bazar, M. singers and musicians, H. shopkeepers, &c.

* H. denotes that the Muhulla is inhabited by Hindoos and M. by Moosulmans.

- 14.—Gujwancee name of a tribe of Moosulmans.
- 15.—Suyud Jan Shah (name of a Suyud living), inhabited exclusively by Suyuds; they are all Sheeas and permit no other class of people to reside in the Muhulla with them.
- 16.—Suyud Ghoun Sulee Shah (name of a Suyud living), inhabited exclusively by Suyuds.
- 17.—Suyud Ghoolam Shah (name of a Suyud living), inhabited exclusively by Suyuds.
- 18.—Moonda Kube (Moonda name of a deceased Fukeer), M. cotton-spinners, H. shopkeepers and labourers.
- 19.—Kazee Ghoolam Mahomed (name of a Kazee living), M. 15 houses of Hukeems (physicians).
- 20.—Moohur Kundee, M. stone and seal cutters.
- 21.—Kussab, M. butchers.
- 22.—Jiya Shah (name of a deceased Suyud), M. husbandmen.
- 23.—Kazee Pural (name of the chief Kazee of Roree), inhabited by his family and dependents. I may observe that the names of Muhullas which are derived from inhabitants of note are often changed on their decease to that of their successors.
- 24.—Bokharee Shah (name of a *peer* or holy man living), M. mat, fan, and basket makers.
- 25.—Mootrib, M. singers and musicians.
- 26.—Boola (name of a deceased Shuekh, a tailor), M. tailors.
- 27.—Kazee Wudha, inhabited by the family and dependents of Wudha Kazee and Hukeem.
- 28.—Satee, name of a tribe of fish-sellers, Soonee Moosulmans.
- 29.—Puba, name of a tribe of fishermen who float on the Indus on earthen vessels, Soonee Moosulmans.
- 30.—Tukurwala Puba, fishermen; Soonee, Moosulmans.
- 31.—Suyud Gholam Ulee Shah, (name of the Moorshid or spiritual guide of Meer Roostum of Khympoor,) all Suyuds.
- 32.—Bahmun, all Bahmuns.
- 33.—Buzzaz, H. cloth sellers.
- 34.—Wudweerhye Kurmoollah, the name of a Shykh of the Wudweehya tribe, in the service of meer Nuseer Khan.
- 35.—Shykh Hydur Ulee, M. Moollas, husbandmen, &c.
- 36.—Churkh durwazee, M. tailors, H. labourers.
- 37.—Dhoora-wala, (from Dhoora a valley. The Muhulla being placed between two hills,) H. shopkeepers and labourers.
- 38.—Moondur, (name of a tribe of Moosulmans) milk-sellers.

39.—Ruseewut, Moosulmans who make string of *wan* or *moonj* grass to lace bedsteads, &c.

40.—Tuwelee, so called because it held formerly many stables. It was inhabited exclusively by Moguls, and devastated by the Tulpooras on their accession. It is now almost deserted being occupied only by about twenty families of Hindoos and Moosulman silk weavers.

41.—Khuchurpoor (name of a tribe of Moosulmans), H. M. coolies, labourers, and poor people.

42.—Mumnanee (name of a tribe of Moosulmans), M. dyers.

43.—Miyanee, inhabited by a tribe of Moosulman boatmen so called.

44.—Peer Bodla, M. shoemakers, leather cutters, and husbandmen.

45.—Mudtur, Moosulman soldiers of the Kuheeree tribe in the service of Meer Roostum.

46.—Khanpoor, formerly inhabited by Pushans, and now deserted except by three or four Hindoo families.

I ascertained the number of houses to be 2,130, at $5\frac{1}{2}$ inhabitants to a house, which is I think a low average, this will give a population of 11,715 souls.

The shop-taxes (*mutkee*) of Roree, are called twice a year, and each trade nominates a *khulatree* or chief, and pays him a per centage on their profits, to gather the Government dues. The people assert that the Moghul emperors of India did not levy the tax, and that it was introduced by the Kathoras, but this is doubtful. All trades are conducted by Moosulmans; they are ironsmiths, carpenters, shoemakers, leather cutters, tanners, stone-cutters, tailors, dyers, weavers, fishermen, and fishmongers. The Hindoos work in gold and silver and are not prohibited following other trades, but it is considered a crime by their own people, and those who break the rules are accused of a tendency to Islamism. I took considerable pains to ascertain the amount of tax levied from different trades but am not sure that the following schedule is correct; the tax is subject to alteration, and some shopkeepers who are supported by chiefs and nobles are exempted from the cess.

Cloth merchants (Buzzaz), Rs. 6 per annum.

Cotton cleaners, Rs. 9 per annum.

Weavers of cotton cloth, (Koree)—cutters, polishers, and setters of turquoises and other stones (Weenjurr); barbers and washermen, Rs. 2 per annum.

Venders of brass, copper, and pewter ware, carpenters, slipper makers, and leather cutters, Rs. 4 per annum.

Ironsmiths, each person, $3\frac{3}{4}$ per annum.

Bankers and money changers, Rs. 8 per annum (some of them are exempted from the cess.)

Goldsmiths and jewellers, $1\frac{1}{2}$ Rs. per annum.

Dyers of silk and cotton stuffs (Khombatee), Rs. 5 per annum.

Cleaners and polishers of swords, matchlocks, &c, (Tewura,) Rs. 10 per annum.

Dealers in pedlery (muharee furosh), such as combs, pictures, rings, mirrors, beads, boxes, and glass bangles. Wholesale fishmongers, and steersmen of boats, Rs. 3 per annum.

One distiller (a Hindoo), Rs. 3 per annum.

Tailors and tinkers, $\frac{1}{2}$ Rupee each person per annum.

Ox Butchers, (2 persons) each, 17 Rs. per annum.

Manufacturers of Indigo (2 persons), 18 Rs. per annum.

160 silk looms, 900 Rs per annum.

Fishermen, without reference to the form of their nets and mode of fishing, together 100 Rs. per annum. I have noticed the manner of levying the cess in the Journ. As. Soc., No.

Retail fishmongers, five fish per basket.

Wood cutters, together Rs. 100 per annum.

Goat butchers, together Rs. 95 per annum.

Roree contains seven families of tailors and four of ironsmiths, all of whom deserted their homes in 1839, for the British bazar at Sukhur to escape the shop tax, other tradesmen and artisans threatened to follow their example, and Meer Roostum was obliged to suspend the obnoxious tax, but continues to levy it in Khyrpoor.

There are no brass and copper smiths in the town, nor makers of blankets, canvass sacks and bags, and leather vessels for oil. The two last are made in Khyrpoor and Shikarpoor.

There is one tinner of copper vessels, and four polishers and cleaners of five arms, and a *Kular-khanu*, kept by a Hindoo of the Bhata caste, who distils liquor from dates both dry and fresh.

The number of water bearers (Panee bhurne-wala) amounts to ten families, and before the arrival of the British they sold *dillas* or earthen vessels, each containing about twenty seers of river water, in Roree, for a copper *pys*. Now they only give seven *dillas*, and earn about four *pys** a day.

* In 1839 the Sohrab rupee was equal to 51 copper *pys* or about two shillings English Currency.

The same individual works as carpenter and bricklayer; a clever fellow earns one *rupee* a day, and an indifferent workman four *anas* and his food, or two *anas* in lieu of food: the common hire is 4, 8, and 10 *anas* a day and food, but those who receive 12 *anas* and 1 *rupee* find their own. These wages equal what is paid in Savoy, where a carpenter or wheelwright has two francs or 1s. 8d. a day. There is no *Nirkh* or price current fixed by the state; every carpenter pay two *pys* of his daily earnings to the *khulatree* or head of his trade, who is chosen for superior ability. The Governor sometimes confirms the appointment, but it is not necessary to render it valid, and the *khulatree* is exempted from the shop tax which is levied on other carpenters; the tax is taken irregularly, and the amount uncertain. The rich and the young generally pay more than the poor and infirm, and the cess varies throughout the country under different Princes and Jalgeerdars.

A labouring carpenter with small business requires the following tools:—

	R.	A.	P.
An iron adge weighing $1\frac{3}{4}$ seer,	3	0	0
A small hand-saw weighing $\frac{1}{8}$ of a seer (6 or 8 <i>anas</i>)	0	8	0
A chisel weighing $\frac{1}{2}$ a seer,	0	8	0
A gimlet or borer, turned as in India with a bow and leather thong,	0	4	0
A small hammer weighing $\frac{1}{6}$ of a seer,	0	4	0
A plane,	0	2	0
A file weighing $\frac{1}{8}$ of a seer,	0	8	0
	<hr/>		
	Rs.	5	2 0

A man, with extensive business, who keeps a shop, has four or five saws which cost together 5 or 6 *rupees*. A two handed saw weighing $\frac{3}{4}$ of a seer costs 2 *rupees*, and he has other tools in the like proportion but of bad iron, and not better made nor more expensive than the tools of the poorest carpenter.

Labourers, porters, coolies, grasscutters, *gare-walas*, who mix mud for building and plaster walls, earn 8 and 10 *pys* a day from the British, and 5 *pys* from shopkeepers and husbandmen, if employed at hard work, but the Governor and principal officers of Roree give 4 *pys*, and the prince 3 *pys*.

Sun dried bricks are formed in wooden moulds, and the makers earned in 1838, 4 *anas* a day and double the sum in 1839; two more are required for the process, and will prepare two thousand in a day at the cost of 1 *rupee*; in 1838, they sold double the quantity for the same sum.

There are very few builders in Roree, and in 1839, there was a great advance in the price of labour, consequent on the number of public works in progress, and the formation of a new cantonment at Sukhur, and private individuals were obliged to procure workmen from Shikarpoor.

The washermen of Roree and Sukhur call themselves *soomrae* and do not wash by contract; they charge so much per piece and more for fine garments than coarse ones. Their charges are:—

For a silk loongee,	4 or 5 Pys.
For a turban, and drawers of soosee,	2 „
For a bochun, loongee, and woman's mantle,	1 $\frac{1}{2}$ „
For a shirt, sheet, and petticoat of coarse cotton, 1	1 „
For a boddice,	$\frac{1}{2}$ „

Rich and poor pay alike; children's clothes are charged the same as adults, and a double charge made for washing new clothes. The principal *suyuds*, merchants, and bankers, change their clothes four times a month, and sleep in their drawers, but put off their shirts and *bochuns*. Tradesmen, shopkeepers, and peasants, change their clothes twice, and sometimes only once a month; they consider dirt of no moment and wear their clothes till they are offensive, and Moosulmans and Hindoos are alike neglectful of their persons, and filthy in their habits.

After the washerman has collected the foul linen from different houses, he mixes a quantity of camel dung with water in a large and strong earthen pan, throws the clothes into it and rubs them forcibly against the dung; he then srinces them, carries them to a river, and dips them into a vessel of water mixed with *khar* (alkali) obtained from a wild plant called *lana* which yields impure carbonate of soda, and is burnt to obtain the alkali. He beats the clothes on a plank cut into sharp ribs until the dirt and dung are washed out, dipping them occasionally into the alkali and water; he then srinces the clothes, and steams them twenty-four hours over a large earthen vessel built into the wall of his house, to purify them and take out stains, and on the following morning carries them back to the river and washes them as before. He then takes them home, and squirts some water with his mouth on each cloth to moisten it, and folds four or five pieces one upon the other on a table. He next beats them with a stout wooden roller about twelve inches thick and eighteen inches long, which he uses with both hands, instead of a smoothing iron, to flatten them, and they are ready for use. Neither starch or indigo are used as in India; a few washermen have copper vessels but they are scarce.

Common soap is compounded of mustard oil with lime and *khar* (alkali), pulverized and imbued with water in the following proportions :—

Lime	48
Alkali	12
Oil	27
Water	12

Four seers of lime are mixed with one seer of alkali, and three quarters of a seer of oil; the stuff is strained four or five times through coarse cotton rag into earthen vessels, one and a half seer of oil is added to lignify it, and it is exposed to the sun in an earthen vessel for two days, and stirred with a ladle until it combines; the paste is not run into moulds, but set on stones in the shade to cool and harden, and is cut into small square cakes with a knife. Soap is not made in Roree, but there are four or five manufacturers in Khympoor, three of whom came from Bauwulpoor, and the rest from Mooltan, and I believe the Scindians are not acquainted with the art. The price of soap in Roree in 1839, was 4 seers the rupee, and 5 and $5\frac{1}{2}$ seers in the preceding year.

The process of tanning and curing leather is generally inferior to the mode adopted in India; the leather workers of Larkhanu are however famous, and produce the best shoes, sword-belts, and water-skins in Sind. Good water-skins (*chhagul*) are made also at Shikarpoor and Kurachee, of bull's and buffalo's hide, capable of holding about six quarts, and a traveller always provides himself with one, or a tanned goat's or sheep's skin, before he starts on a journey. The native soldiers of the Bengal army felt severely the want of water, when the army crossed the desert between Shikarpoor and Bolan Pass in March 1839, and feelings of caste would not allow many of them to drink from leather. The Bombay Sipahis furnished themselves with water bags, and suffered comparatively little annoyance from thirst.

The form is graceful, and it is usually about eighteen inches long and fourteen inches wide, and sewn neatly at the edges with thongs; it keeps water very cool and costs about 2 rupees. The leather braces at the sides are to suspend the *chhagul* to a bush, or tent pole on a journey. (v. Fig. 2.)

A sack of sheep or goat's skin is used to carry water across the sandy deserts of Sind as the country does not possess the tanks, wells, and reservoirs which pious men have constructed in India, in uninhabited spots, and are a blessing to the way-farer and his beast. When the traveller arrives on the bank of a river, he empties the skin, blows it up, and binds it on his belly and floats buoyantly over the liquid element. On touching

land he lets out the air from the sack, replenishes it with water and resumes his journey. He fixes the goat skin with loops to the upper part of his thighs and binds it lengthwise on his stomach with the legs of the beast uppermost, taking care that his head is exactly between them. It is a delicate task to preserve the balance. If the traveller shifts a little to either side the skin it turns him on his back and it would be a miracle if he escape drowning. He is instructed to make short and regular strokes with his hands and feet and preserve his presence of mind. Two native soldiers of the British army, attempted in my presence to swim the Indus at Sukhur on skins with their clothes tied upon their heads, and did not accomplish a dozen yards before they were thrown on their backs in the manner described, and but for the assistance of some Sindees, who swam with them in expectation of the accident, they would have been drowned.

The following is a description of the rude process of tanning and curing leather in Khyrpoor. After the skin of an animal has been well rubbed on both sides for a day, with a solution of lime to remove the hair and cellular fibre, it is left twenty-four hours, after which the lime is washed off and the hide soaked in water for the same period. When removed from the water it is rubbed over on both sides with thick gruel of wheat and rice flour for another day and night, and dried four hours. It is then well rubbed with *goor* (molasses) and linseed oil and rolled up very tight. It is suspended next day to a wooden triangle and stuffed full of the bark of acacia and **khyr* trees which contains the vegetable principle called *tannin*. Water is poured into it three days and the tan liquor that falls into a vessel placed underneath to receive it, is poured again and again into the hide which acquires a reddish brown hue in about the period mentioned. The hide being withdrawn from the infusion of bark, is drained and dried by turning it in the sun twenty-four hours. Some finely pounded salt is sprinkled upon it and it is well rubbed inside and out with linseed oil. It is then subjected to heavy pressure with stones for a day, and afterwards rubbed dry with cloths which concludes the tanning process. The hide of a Bull, Cow, or Buffalo costs 14 annas (9 pence) tanning and curing, of which six annas are expended on the materials and eight annas on labour. The sale price is 2½ rupees (5 shillings.)

One of the principal confectioners of Roree gave me the following list

* *Mimosa Chadira*. The Catechu (*terra Japonica*) is obtained from this tree.

of articles in his shop, which were, he said, necessary to carry on the business, and estimated the value at sixty rupees.

4.—*Kurahee*, Flat iron vessels with handles in which sweetmeats are boiled or fried.

2.—*Khoorpu*, Iron instruments for scraping off sweetmeats from pans and dressers.

2.—*Chutee*, Iron ladles perforated like a colander through which sweetmeats are forced with the wrist to give them a shape.

2.—*Khooruchnes*, a large scoop or iron shovel with a spout.

2.—*Chumchu*, large circular iron ladles.

2.—*Jhara chumuch*, one large ladle, and one flat spoon, both of iron and perforated like a colander, for making *luddoo*, a species of round comfits.

10.—Brassplatters (*Shalee*.)

10.—Wooden platter (*Khooncha*.)

2.—*Julebee ke turve*, an iron oven with a hole in the middle for making the sweetmeat called Julebee.

2.—Large brass bowls (*Kutorah*) with bamboo ladles attached to them.

2.—Small brass bowls.

2.—*Doa*, Wooden spades for rubbing and mixing sweetmeats.

2.—*Belna* Rolling pins.

4.—Dressers or tables on which sweetmeats are laminated.

2.—Table cloths on which *Butasa*, a kind of sweetmeat of a light spongy texture, is made.

2.—Sackcloth bags on which sweetmeats are laid in the shop.

1.—Wooden stool.

1.—Pair large scales.

1.—Pair small ditto.

Suyuds Ghoolam Shah, Yakoob Khan, and Ulee Ukbur Shah are wealthy, possess landed property, and keep domestics who live in their house; and there are also three *Suhokar* (great merchants) in Roree, who keep servants to fetch wood and water and cook their victuals. They get 3 or 4 rupees a month, and food once a day from their employers' mess. None of the other merchants and tradesmen keep servants, and journeymen who work for their masters in the day time return to their own dwellings at night.

Madhoo Rae Chhutree, formerly Moonshee of the deceased Prince Meer Sohrab, resides in Roree. He received a stipend of 120 rupees a year and 8 khurwars of grains, but on the death of his patron, his son and successor, Meer Roostum, threw the Chhutree into prison and extorted from him the sum of 3,000 rupees under pretext that he was guilty of peculation

in office. The accusation was, I believe, partly true, but his enemies exaggerated his offence.

Hindoos do not hire barbers permanently, and give them a *pys* for each visit. Suyuds and wealthy Moosulmans have barbers on their establishments, who live, however, in the bazar, and practise their vocation elsewhere during their leisure hours. They yet 8 or 10 rupees and clothes every six months. The barber cooks the meat, rice, and sweetmeats for a marriage feast among Moosulmans, and receives for his services 4 rupees, a complete suit of caste off cloths including turban and slippers, and food during the period he is employed. He also shaves, washes, and decorates the bridegroom. He nets usually four or five rupees at a wedding, but it quite depends on the means of the family. The prince gives him 40 or 50 rupees. The barber carries the torch at Hindoo bridals (*burat*) which last from one to four days, according to the wealth and means of the bridegroom. For this service he gets a present of three rupees, and four *pys* from each family of the bridegroom's friends. He is an important member of a household, and Solyman, the prince's barber, is I believe, the only person allowed to serve him with water to drink.

There are eight families of *Mootrib* (Moosulmans singers and musicians,) who come from Sehwan, and attend marriages. The men are admitted to the bridegroom's apartments and their women to those of the bride. The men sing and beat the *dhol* and *nuggaru* (kettle drum). The women sing and beat the *dhol* only. The bridegroom and his friends give a few *pys* to each *Mootrib* on the days they attend.

The *Chokro* or cleaner of privies eats carrion, and his occupation is distinct from that of the *shekhree* or sweeper, who is more choice in his diet. Families give the *Chokro* from five to eight *pys* a month and food on the days he attends, which is not oftener than once a week at some houses, and morning and evening at others. He also frequently receives a cast off suit of clothes once a year. A respectable land owner of Sukhur of my acquaintance, gives the *Chokro* who attends at his house morning and evening, two rupees a month and food consisting of a seer of wheat or jooawaree, and two *pys* instead of *bor*. Some people give grain at the end of a month (30 seers and 60 *pys*.) The *Chokro* employs his leisure hours in making screens or tatties of Surkund, a reed, and earns by both occupations about $2\frac{1}{2}$ annas or 4 pence a day.

Shekhree or sweepers, are not kept on an establishment as servants, but go round the city daily, and get from one to four *pys* for cleaning and sweeping a house, and earn thus from eight to fourteen *pys* a day. Shopkeepers usually sweep their own shops, and the part of the street im-

mediately opposite to them. The land owner mentioned above, gives the *Shekhree* who attends every morning to sweep his house, one rupee a month, and he earns altogether about four rupees a month. There are no sweepers or other public servants maintained at the charge of the city, but four or ten shopkeepers have a watchman between them to guard their property at night, and each pays him two annas (three pence) a month. The guard is not, I should suppose, very active, as he usually labours all day at another vocation.

Bankers and merchants live out of the Bazar in another quarter of the town and take with them sufficient money for their daily transactions, and lock up their shops at night, and carry away their money bags. There are two great *Suhokar* or merchants. Khooba, who has four *Gomushtus*, and Jeo. Both are inhabitants of Roree, and Hindoos of the *Bhata* caste from Marwar. Each is said to be worth two lacks of rupees.

The principal bankers (*shurraf*) are Tara, Koondun, and Tikyn also *Bhatas*. Tara is reputed to be worth two or three lacks of rupees, Koondun about two lacks, and Tikyn between three and four lacks of rupees. Tara has the most business and his credit and respectability stand high in the estimation of his countrymen and foreigners.

The Bunneahs of Roree deal in grain, tobacco, oil, groceries, spices, sugar, and fruit, and realise larger profits than any other class of tradesmen. Their daily receipts average from ten to twenty rupees and some in the British camp take as much as forty rupees. Grain and other articles brought from the country, are weighed before they are offered for sale by the *Mookhee* or chief of the trade, who is entitled to a seer in every *mun*.

The Bunneahs choose the *Mookhee* from their body by a majority of votes, and he is not precluded carrying on business on his own account in the usual way. They treat him with respect and submit all important questions for his decision. Instances have occurred of the townspeople ill-treating the *Mookhee*, and the Bunneahs closed their shops and refused to sell grain until the culprit was brought to trial and punished. He usually regulates the price current of grain, but the Bunneahs can alter it without his concurrence. He transacts a good deal of business for them and they reward him liberally. The *Mookhee* beats with a shoe or stick a Bunneah convicted of cheating, using false weights, or taking from a customer more than the market price of grain, but he may undersell his neighbours if he pleases. If a case of fraud is brought before the Governor, he levies a fine (*wultr*) of the delinquent and places it at the credit of government. When a respectable Bunneah

is imprisoned for a breach of the law, the *Mookhee* not unfrequently becomes his surety, or furnishes security in a sum of money for his appearing to answer the charges. The *Mookhee* also investigates debts and pecuniary transactions between *Bunneahs*, and adjudicates between them.

The readiness with which shopkeepers disposed of their goods to our troops at Sukhur and realized payment, the absence of imposts and the security afforded them against oppression, induced numbers to pass from Roree to the west bank of the Indus. Settlers came from all parts of Khyrpoor, Shikarpoor, and Larkhanu. They were principally *bunneahs*, cloth-merchants and confectioners, and there rose up in a short time, an extensive, bustling, and populous bazar which excited the wonder of the *Sindees*, who, familiar only with the sight of towns in decay and a decreasing population, flocked from distant parts to visit a market where a few short months before there was nothing but a *Golgotha* and a wilderness. I counted upwards of one hundred shops in the bazar six months after the arrival of our troops. The readiness with which the people drew to Sukhur was the more remarkable because they entertained considerable doubts if we should occupy *Sind* permanently, and felt reluctant to incur expense in erecting even temporary sheds to receive their goods. It might have taught *Meer Roostum*, if he had sense to profit by the lesson, how much could be accomplished in a short period under a just system, towards restoring the prosperity of a town, which enjoyed in time past, a high reputation for wealth and magnificence. There is little doubt if the British continue at Sukhur and the Prince persists in levying the present exorbitant duties and taxes on merchandise in transitu that Sukhur will encrease rapidly in importance and become the great emporium of the commerce of the Indus for which its situation admirably fits it. The merchants and bankers of Shikarpoor, Khyrpoor, and Roree who bury their wealth from the fear of robbers, will find a secure asylum within its walls, and those towns, being deprived of the chief source of their prosperity will share the fate of *Thatta* and fall away gradually in importance.

There are eight descriptions of officers and servants employed by government in the revenue, police, and customs, and paid once in six months. The officers and dependents of the Prince's household usually receive *jaegeers* and assignments of land in lieu of money.

The public officers and servants are :—

The Kardar or Governor.

Darogha

Izardar or Revenue Farmer.

Masool or Karao.

Dhurwae, or Weighman.

Kotwal or Watchman.

Muhta.

Moohurrir.

The Kardar is the Magistrate of Police. Lattu Nimbhun, the present incumbent, is a Chhutree of Thatta and usually resides at the capital, and deposes his brother, Mool Ram, to administer the functions of office in Roree. He has held the situation two years, and has considerable property in land. He is frequently bribed by offenders against the law to remit their punishment, but enjoys on the whole a fair share of popularity. His stipend is 40 rupees a month.

Lattu Deeper, the Izardar, resides in Roree. The Darogha exercises a general surveillance over the Izardar or Revenue Farmer, and checks his accounts, and assists the Kardar to control the Police.

The Masool is invariably a Moosulman and under the Kardar. He receives a seer of flour and two pys per diem, and a *Khurwar* of grain every six months. It is his duty to guard the crops and to see that no one cuts and injures them.

A Dhurwae is nominated to every town and considerable village in Khypoor and Mogherlee, and his duties correspond in some respects with those of the *Dundeedar Dundiya* who collects the market duties in India. He weighs grain, oil, spices, drugs, &c. sold in the town, and receives from the dealer two pys on a *mun* of ghee and oil, and a double hand full of each rupee's worth of wheat, rice, joowaree, bajra, and other grain. No grain can be sold of a *mun* weight and upwards without his attending to weigh it. He usually helps himself to a great deal more than the quantity he can legally claim. Without waiting to see the grain weighed he thrust his hands into the heap and scoops up a couple of double hands full. This is so much the custom of these officers that shopkeepers almost regard it as their right, and do not utter a remonstrance unless the Dhurwae is more greedy than usual.

Since the British camp was established at Sukhur, the Bunneahs had such extensive dealings with their brethren of Roree, that to facilitate business, they found it necessary to have a weighman of their own, and appointed a Sindee to the office by consent of the Bunneahs of Roree.

Meer Roostum had no voice in his appointment and his transactions are confined to the town and cantonment. The proximity of a large military force to Roree, infused such bustle and activity into the heretofore quiet town that the Government Dhurwae did not find his receipts diminished by the interloper. The regulations framed by the Bunneahs of the British cantonment do not oblige them to employ the Weighman, nor do they avail themselves of his services in their transactions with the country-people, but they are valuable in other ways, and they fixed his remuneration at two pys in every *kora* and company's rupee worth of grain, vegetables, and fruit they purchased in the town of Roree.

The Kotwal fulfills the same duty in this country as the chowkeedar or watchman in India. There are five in Roree, who receive each 2 rupees a month, and one is nominated to each of the *chousool* or beats into which the great bazar is divided. The grain market, and other quarters of the town are without public watchmen and the inhabitants protect themselves. The Kotwals remain during the day with the Kardar from whom they receive orders. They collect oil from the shop-keepers of the great bazar to feed a lamp which is burnt at night in each watch house, and they usually get small presents of money and food from the citizens on occasion of a marriage, and are sometimes invited to the nuptial feast.

The Moohurrir or writer is either a Moosulman or Hindoo and one is appointed to each town. His stipend at Roree is 12 rupees a month.

There are several *muhtas* attached to the offices of Kardar and Izardar to keep the accounts of revenue and commerce and record offences against the law. There are also ten soldiers under the Kardar's orders ready to proceed to any quarter of the town which may require their presence. They are an indolent half-armed band much addicted to the use of *bhung* or hemp juice, and each receives a stipend of from 2 to 10 rupees a month.

The mortar of the oil mill used in Roree is the trunk of a tree seven feet in circumference, hollowed to the depth of eighteen inches and terminating in a cylinder. The diameter of the cavity at top is twelve inches, and it is calculated to hold a *naree*, or nine seers of seed. The mill is set in motion by a single camel or bullock which is changed at noon, and the quantity of oil that two camels or bullocks worked alternately, can express in a day, is about twelve seers, the produce of four *narees* of seed. Nine seer of seed yield by pressure about one-third oil, very rarely a fourth. Mustard seed (*sursluf*) sold in the Roree bazar in 18.9 at 4 rupees the *mun*, or 60 rupees the *khurwar* of fifteen *muns*, and the same price in the country. After a bad harvest the price rises to five rupees a *mun*. In the



autumn of 1839, $3\frac{1}{4}$ or $3\frac{1}{2}$ seers of oil sold for one rupee and 30 seers of cake (*khur*) for the same money. Oil cake is given to cattle with chopped grain stalks (*khurbee*), and is not converted to any other use.

Bullocks employed in a mill wear a cloth over their eyes, and camels small blinkers of basket work to prevent their shying. The pestle which revolves in the mortar has some times a pointed stick attached to it which throws back, of itself, the seeds and cake which fall over the mouth of the mortar as the pestle passes round. Sometimes a servant sits on the edge of the cavity and performs this office with a *rumba*, a sort of blunt iron chisel weighing about two pounds.

The lever E (see *Fig. 2*) is a piece of timber fastened to the Regulator D. with cords, and pierced by holes furnished with adjusting pins for the purpose of lengthening or shortening it when it is required to increase or diminish the obliquity of the pestle. At the extremity of the horizontal beam C. is a lump of clay modelled in the shape of a basket and bound together with sieves and date ropes. Some heavy stones are piled on the top and form a rude seat for the camel driver, and the camel is yoked to the end of the beam by ropes.

A camel for turning a mill costs 40 or 50 rupees, a bullock 25 or 30 rupees, and a press complete 30 or 40 rupees. The cost of two mills I examined was as follows:—

	Rs.	As.
Mortar of <i>ghana</i> wood A.....	20	0
Four square beams that surrounded the mortar B..	4	0
The pestle, lever E, and horizontal beam C. all round....	3	0
Iron <i>rumba</i> ...	0	8
Four earthen pots for oil, each holding three seers.....	0	8
The carpenter who shapes the wood gets 5 rupees, and a meal a day for as many days as he is employed. It takes him about ten days to make a press.....	5	0
Cost of carpenter's food, say.....	1	0

Rs. 34 0

Three men are required for a mill. One drives the camel and feeds the mill, and receives 5 rupees a month and food from his master's kitchen. He is expected to extract four *narees* of oil when his labour terminates for the day. The second domestic cleans the camels or bullocks and prepares their food, and receives 3 rupees a month; and the third domestic brings water from the Indus for the use of his master's household and cattle and gets 2 rupees a month. All the servants are expected to assist occasionally in house work.

Oodoo, the proprietor of the mills I am describing, is the principal oil-maker in Roree, and has two mills worked by camels and bullocks, and three servants for each mill. He is a bunneah; and the produce of a *naree* of oil seed is carried away in an earthen receiver as soon as expressed to his shop for sale. He lets out his mill on hire by the day, or to press any quantity of oil, at the following rates, which include the services of domestics and camels.

	Rs. As
For pressing a <i>naree</i> of mustard seed (<i>surshuf</i> ,)*.....	0 2
Hire of mill per diem for ditto,.....	0 8
For pressing a <i>naree</i> of linseed,† khus grass, and safflowers,	0 2½
Hire of mill per diem for ditto,.....	0 10
For pressing a <i>naree</i> of cocoanuts,	0 3
Hire of mill per diem for ditto,.....	0 12

The cost of feeding a camel and a bullock in the town of Roree is the same or about 3¼ rupees a month, but a camel is more easily nourished in the jungle about Roree which does not produce grass and herbage for cattle. The oilman assigned another reason for preferring the camel, that he could, when not employed in the mill, make him more generally useful than a bullock, in bringing oil seed, grain, and fodder from the country.

Oil seed is measured with a *pinkee*, a wooden measure of fourteen † *anas* weight, and ten pinkees go to a *naree* of nine seers.

By far the largest quantity of oil consumed in Khyrpoor is obtained from mustard seed (*surshuf*). But the following are also subject to pressure, linseed § (*koonjuck*), khus safflowers (*puwaree*), and cocoanuts. Twelve seers of the best linseed yield half the quantity of oil. || The average return is from four to six seers and never less than a fourth. A small quantity not exceeding one or two seers is extracted at a time for medicinal purposes. The seed sell at 5 Rs. the *mun* of 40 seers, and oil at 32 Rs. the *mun*.

Khus seed sells at 4 Rs. the *mun*, and oil at 13 Rs. the *mun*. Ten seers of seed yield from 2½ to 3¼ seers of oil.

* *Sinapis dichotoma*. Roxb.

† *Andropogon muricatum*.

‡ The *ana* is a weight equal to 6 shorabee rupees or the sixteenth part of a seer.

§ *Linum usitatissimum*.

|| This is about the return in the district of Etayuh, 7½ seers of linseed, castor, and mustard, give about 3 of oil, and the man who works the press is paid in grain.

The return of oil from a *naree* of safflower seeds, if good, is 1 or $1\frac{1}{2}$ seer but sometimes they yield nothing. The price of seed is 1 R. 11 As. per *mun* and oil 20 Rs. per *mun*.

There is no demand in the town for cocoa-nut oil. The nuts are nets to the press across the desert from Jeysulmeer chiefly by the Rajah of that principality and are worth 18 Rs. the *mun*. If good, they yield half their weight of oil; the average return is one-third or a half.

(To be continued.)

Report of the Curator (HENRY PIDDINGTON ESQ.) of the Society's Museum for May.

For the month of May, I have to report as follows:—

Geological, Minerological, and Palcontological Departments.

—We continue to catalogue and arrange in these departments. I have been able, by the kindness of Mr. Prinsep, to recover three more of Dr. Voysey's note books amongst the papers of Mr. J. Prinsep, making in all 5 books of notes, from which I trust we shall be able to extract much valuable information relative to our collections; and it is only thus, by collecting slowly, putting together piece by piece, and collecting all with the series of specimens, that we shall be able to establish any thing like order, I regret deeply to state that I can obtain no trace of Captain Herbert's catalogue of his Himalaya specimens.

Ornithological and Mammalogical, &c.—Nothing new.

Osteological.—We have been able to acquire here two Samurs and a Neelghye for the trifling sum of 78 Rs.; both are desiderate in our collection. The Neelghye is killed for the purpose of obtaining its skeleton.

Botanical.—I have been fortunate enough to discover a box of Himalaya mosses, sent down from Simla in 1838, by Mrs. Siddons. Upon testing these, I find that, of 18 sorts, at least a dozen give very fine, and some of them brilliant colours (crimsons and crimson browns), so that they are thus of themselves of much promise as dying lichens; and will I hope give

rise to a spirit of enquiry to this hitherto neglected branch of the resources of India ; specimens of the lichens and a box of the test liquors are on the table. I have embodied my remarks in a paper for the Journal, of which spare copies are also available, and now on the table. I beg to suggest its early communication to the Agricultural Society, with a set of specimens for their information.

Museum of Economic Geology.—From not being able yet to procure our cases from the native mistry we have not been able to finish our arrangements. We have obtained several valuable additions to this department, which I notice in the donation, amongst which are an excellent series, from the iron ore of Burdwan to the forged metal, by Mr. Wm. Prinsep ; American lead ores from Mr. Tregear, with ores and specimens of various kinds from Ajmeer, by Captain Thoresby, and the Nizam's territory from D. Walker (M.A.). A very valuable, though not a showy contribution, is one of a specimen of fire-brick from Futtyghur ; presented by Dr. Angus on the part of Dr. Hunter.

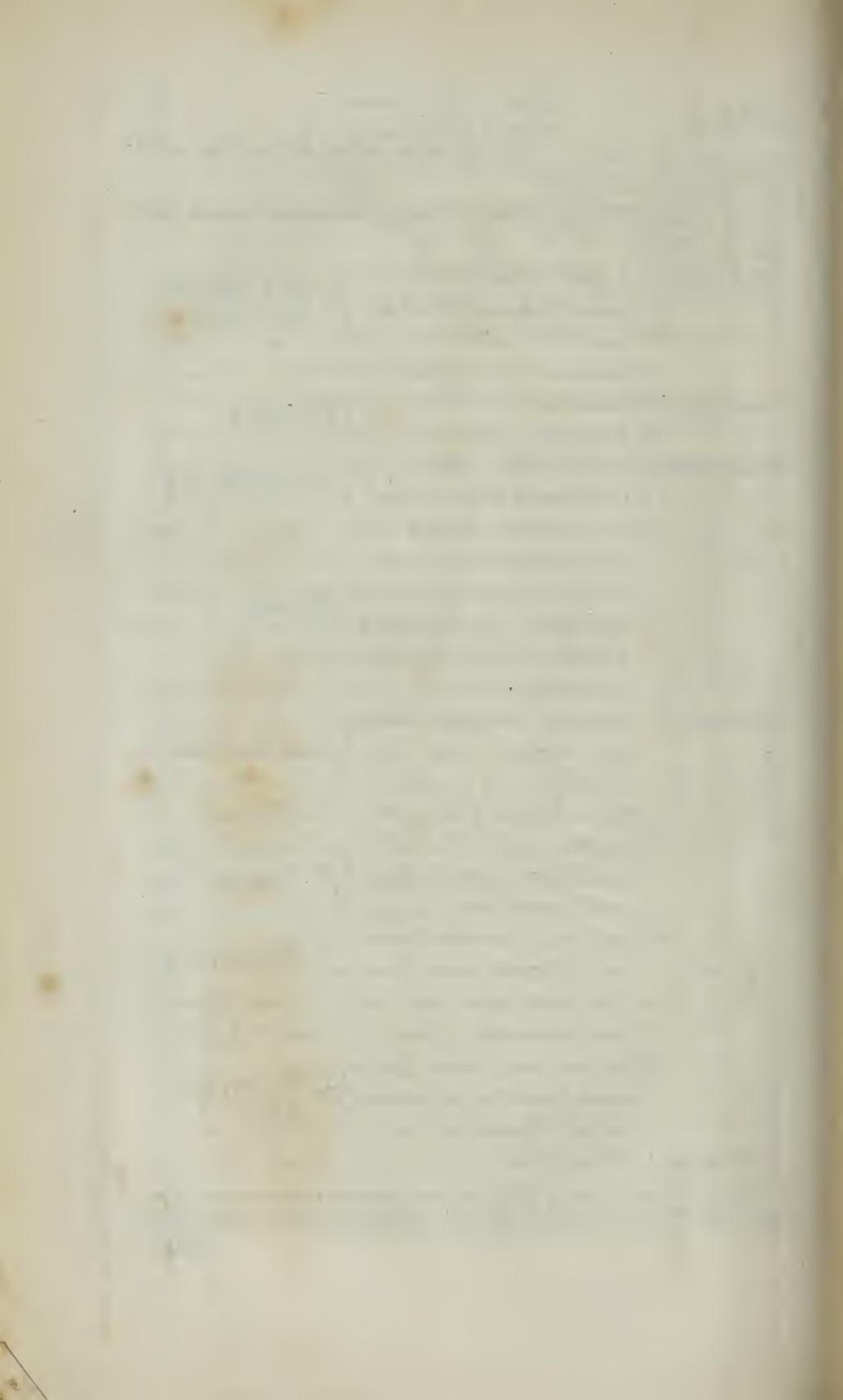
We have been able to make a very interesting discovery in this department. In some soils brought from Chedooba by Captain Halstead of H.M.S. 'Childers,' and referred to me for reporting upon, I recognised one resembling the curious Sea-Island Cotton soil of Georgia, which looks like a mixture of sand and charcoal (specimens of both are upon the table.) Upon a careful analysis they prove to be identically the same, and a special report has been made on the subject to Government. It is highly satisfactory, that, almost at its very outset, the Museum of Economic Geology should thus have given the most practical proof possible of its utility, by doing full justice to this valuable discovery of Captain Halstead's ; for I need not remark that this soil was hitherto considered unique in the world, and thus was supposed to give the Americans a natural monopoly of the production of Sea-Island Cotton. We now

know that it exist in a country where cotton is a regular crop ; and almost at our doors !

The additions to the Museum during the present month have been as follows :

- Conchology*.—A shell called by the Chinese Shew-cha from Chusan, } Captain Rankin,
Beng. Vols.
- (Pollicesses cornucopia,) ..
- Osteology*.—2 Samurs,..... } Purchased.
1 Neelghye,
- Miscellaneous*.—2 Neptune's Cups, ... } W. Prinsep, Esq.
1 Coil Assam Rope,
- A set of the coloured Liquids obtained by the ammoniacal test from 18 specimens of Himalaya Lichens in the Society's collection, } Curator.
- Museum of Economic Geology*.—Soils and minerals from Chedoo, } From Government
- Fire-brick from Futtighur, . Dr. Hunter.
- Ore, flux, slag and manufactured iron ; from the Burdwan Iron-mines, } W. Prinsep, Esq.
- Lead ores, from the Grossic mine, United States, } V. Tregear, Esq.
- Copper and other ores and specimens from Ajmere, .. } Captain Thoresby,
O. R. Agent.
- Iron ores and other specimens from Hunumkoondah in the Nizam's territory, .. } J. Walker, Esq.
M.D.
- Museum, 1st June, 1841.*

NOTE.—I insert this report in this No. with reference to a further notice on Chedoo soils which will appear in No. 114, and to which the above remarks are inductive.



JOURNAL
OF THE
ASIATIC SOCIETY.

*Report on the Island of Chedooba.—BY EDWARD P. HALSTED, ESQ.
Commander of her Majesty's Sloop 'Childers.'*

(Continued from page 377.)

DIVISION V.

Manners and Customs, Education, Language, and Religion.

The population of Chedooba is, with few, and trifling exceptions, entirely Mug, and from their isolated position, its inhabitants afford perhaps a truer exhibition of the character of these people than their brethren of the main land, or of Ramree, whose intercourse with their fellow subjects of different parts of the Peninsula, has by no means been attended with benefit to their original and national character. The Mugs of Chedooba, are a simple, moral, and inoffensive race, of frank open manner, cheerful, and forgiving disposition; exhibiting much independence of feeling, the consequence of a thorough contentment with their lot; respectful to their superiors, though perfect strangers to the crouching servility of the Hindoo; throughout their character, exhibiting those traits, which are most readily appreciated, and admired by ourselves, some which might even be copied with advantage, and which, if duly fostered and encouraged, offer with his freedom from all the obstacles of caste a ground work whereon to elevate the Mug high, if not the highest, in all the benefits of European civilization of all the natives of the East, subjected to our rule, from whom in almost every point of character, as in appearance he differs most widely; in the last particular less to his advantage, than in the

former, as his features proclaim him a Tartar, and are but rarely found modified with the more regular ones of the people on whose border he has so long inhabited.

The only custom among them, (other than the idolatrous ones of their worship of Gaudma) which appear at all repugnant to our own feelings, is that of a plurality of wives, which is permitted; but is a permission seldom taken an advantage of, especially in Chedooba.

The most notorious case met with, was in that of the Soogree of Meng-bieng; a fine intelligent man of 45 with 3 wives, and a family of 18 children, from 24 years old to 6 months, all living in the most perfect harmony and peace under the same roof. Although in every respect *bona fide* wives, yet the two younger observed a dutiful attention and submission to the first and eldest, who was considered as the governess of the household, the others in regard to her, conducting themselves more as daughters. It was a curious and not uninteresting family scene, and I spent near two hours with them, enquiring, without the slightest offence to husband, wives, or children, into the peculiarities, and relative duties, and stations of a style of family partnership I had never before witnessed so extensively, and was answered with the greatest frankness and good nature, our remarks often causing a general laugh. The elder wife had supplied her share of the family circle, not so the two younger, and at least in this case, polygamy does not threaten a cause of depopulation to Chedooba.

Marriage is merely a civil contract unmixed with any religious ceremony or sanction, and is the result of mutual preference, as well as of the interposition of friends and parents. Those of the would be bridegroom proceed with fruits, flowers, wearing apparel, and ornaments to the parents of the bride, and seek her formally in marriage. If granted, the presents are left for the bride, to whose house the bridegroom proceeds in the evening, and where he resides and serves his father-in-law, not as a servant, but as a partner or a son for an indefinite period.

As with mutual consent the ceremony is performed, so with the same is it annulled; and though this privilege is not unfrequently acted on in the more populous towns of Ramree, and the Main, yet it is merely so in Chedooba, and three cases came under observation, where, although separation took place on the side of one of the parties, the other denied all acquiescence in the transaction, and with the community in general esteemed it a desertion. One was on an interesting case, arising from the conversion of the husband to Christianity; to all attempts at reconciliation on the part of himself and others, an obstinate denial was

returned by the wife, while he persisted on his part, on keeping and educating his children, two sons.

On Flat Island, the Soogree and his dame, had been man and wife upwards of half a century. They were both verging towards 80 years of age, and their direct progeny on the Island, with themselves, amounted to 50 souls.

In the case of mutual consent, both parties are at liberty to form a new connexion, and there are no such matters as family names, whereby such intermixture of families may be perceived. Not the slightest relation exists between the names of children and parents. All appellations have a meaning, the males generally of some enviable moral or personal quality, or happy anticipation of the future. The females of some tree or flavour, or feminine Mug grace.

Marriage generally takes place early in life; as soon as marriageable, the females assume a particular dress, a species of jacket, which is changed on that happy event to a larger covering over the upper parts of the body. The lower garment, both before and after entering on that state, admitting perhaps of improvement on the score of ampleness; on widowhood, the maiden dress is again assumed. An ample cloth around the middle, and a fellow one, thrown over the shoulders when cold, constitute the covering of the younger males, who as bachelors live in a distinct part of the village. The elders wear a white jacket shorter or longer; an article of this sort, made of dark coloured glazed cotton, slightly padded with the same material is frequently used by the elder males in the cold or fine season, and is brought from Ava, which also supplies a gaudy silk cloth of curiously interwoven colors, but coarse workmanship, which is used as a waist cloth on high occasions by all who can afford it. The common cloth is a cotton plaid of blue shades, and of home manufacture. A finer cloth or turban of white is used by the men, and interwoven with the hair, which, in both sexes, is of a beautiful glossy black, and great length and luxuriance, it occasions with both the only labour of the toilette, and they are very proud of this natural ornament. With the females, it is simply formed into a roll or knot at the back of the head, being parted for that purpose in front, and brought along the side of the head in a manner not uncommon in England; much good taste is sometimes displayed by the simple addition, as ornament, of some favourite flowers. Children of both sexes are frequently ornamented with silver rings on the wrists and ancles, and a string of silver coins around the neck; these are usually heir looms in a family, and in turn, grace all the young olive branches as they shoot forth.

Infants are slightly, if at all clad, and there is no custom among these people tending to produce any deformity of limbs, which from the birth are allowed free development, nor is any care taken to prevent exposure to either sun or rain. Infants are seen in the houses of all the villages crawling about alone, and as soon as old enough to get down the, so called, stairs of the raised floors, they are to be found in groups amusing themselves without any controul, and naked as when born. The girls clothe when 5 or 6, the boys seldom submit to the restraint till 8 or 9 years old. This freedom enables them to exhibit in youth well made persons, tends to much personal activity, and inures them to subsequent exposure, without any fear of ill consequences. The government of their children is mild and affectionate, and is repaid by duty and attention in after life, and there is little evidence to be derived from their noise of crying, of the number of children who flourish in a Cheedooba Village.

Though well proportioned, and exhibiting a good share of muscle, especially on the lower limbs, they are a small people, and of moderate stature, the tallest among them not attaining a height of 5 feet 10 inches; 5 feet 4 or 5 inches may be the average; the females less.

Though with decided Tarter features, all search for any thing approaching to what constitutes in our ideas, beauty, must be in vain, yet there is an open expression of frankness and good humour, in the countenances of many of both sexes, and very commonly so in age, which with us must be allowed to pass in its stead, and among themselves constitutes that envied distinction. But truth compels to the avowal that this is found oftener with the males than females. The colour of the skin is not a black but that of a mulattoe.

Of ornament, when grown up, neither sex have any; but a practice designed for such purpose in all other countries, is here transferred into one of every day usefulness; with both, the lobe of the ear is perforated, and the large hole fully occupied with the ever accompanying cigar. A roll of paper fills its place, when not present, in order that the capacity of this natural cigar case may not be diminished by contraction; where it can be afforded, silver is used instead of paper, and sometimes the white pith of a particular wood is used. When about to make a journey, the dimensions of the cigar are greatly increased, and it is then as thick as the fore-finger, and from a foot to 15 inches in length; a party on the road with both ears thus mounted, looks not a little singular. Neither the practice of smoking, nor the method of carrying the cigar is confined to the men, and from infancy both sexes are accustomed to the indulgence;

but as before noted it is of a most mild quality, and made principally from a leaf found in a jungle, with but little tobacco. It is the only one of an excitable nature in use, if indeed the mild mixture they smoke, is so at all. The only beverage is water, and though the licensing of shops for liquor and opium, is, in the more populous towns of Ramree, and the mainland, gradually tending to deprive their neighbours and countrymen of those parts, of the invaluable inheritance of national sobriety, Chedooba is as yet clear of the infection.

The acquirements of education are the result of the labours of the priesthood, who thus repay the maintenance allotted them by the public. All classes receive a like attention, the extent of which goes to the learning to read and write; of this benefit however, the children alone of the more populous villages of Chedooba principally partake, they alone being large enough to maintain continually an establishment of the sort, though every village has attached to it, a Riong or Church, and a School room, to which occasional visits are paid by itinerant priests. Spinning cotton, and the use of the loom are branches of domestic education, learnt by the females at home; while as soon as he is old enough to bear its weight, the boy sallies forth with his parent, and his dâh, to assist in clearing the jungle for cultivation, or in felling it for fuel.

The skill in the use of this weapon, thus learnt, is very great; in shape it resembles our bill-hook, with the sharp edge along the outer or convex side, but it is without the crook, longer and heavier, the largest in this latter particular fully equalling that of one of our own axes, with a blade nearly two feet long, and about 4 inches in width. With this weapon, the ease and rapidity with which the largest trees are felled is very great, and the Mug is perhaps as dexterous a woodsman as the Kentucky man himself; the facility with which acres of large trees were felled on the hill tops, to clear them for Theodolite observation, gave ample opportunity to note and appreciate his ability in this point, as from it was reaped a most valuable and correct means of effecting a survey, which without it would have been greatly increased in labour and sources of error, as well as occupation of time.

The tree is not felled so low down as with the axe, but breast high, which raises an objection to felling with it for timber, though not in mere clearing for cultivation. Every man in the Island has his dâh, which is his constant companion, and is in constant use, to fell his timber, to make his cart, his house, his canoe, his baskets for fishing or other purposes, and last not least to chop up his curry. A Mug without a dâh might as well be without a right hand.

In felling trees of very large diameter, an axe is made use of, it is a sort of thick chisel, with about a two inch blade, inserted into a handle knobbed at the end for its reception, where it is further secured by a seizing of rattan. This is a formidable weapon in a Mug's hand, and he fells his tree with it quickly and clean.

With a disposition greatly averse to any continued or fixed labour, the Mug yet is always on the move, either at work, or half amusement with his *dâh* in the jungles, or wandering through them from village to village; this constant out door exercise and use of limb, gives a suppleness, and developement of muscle to their legs and thighs particularly, which constitute him an untiring walker, and is very perceptible even in very old age, rendering him to the last independent of all other means of progression, and able still to indulge his love of rambling with those he was born with.

I found to my astonishment that the oldest man on the Island, numbering 106 years, had walked from his own village, a distance of 13 or 14 miles, in order to meet me at another, and walked back again on being disappointed. He subsequently came two miles from his own village to where we did meet, and during our interview, I could not but be much struck with the exhibition he made in illustration of the above remarks. While on his body the skin lay quite loose, and was perfectly festooned with wrinkles, his legs and thighs exhibited as much plumpness, and fullness of flesh and muscle, as they could have done, when they had performed but half their over century of work, and though in other cases I found old men, whose faculties had broken down under years, I never heard of one whose limbs had given way, or who was bedridden; a staff was all the assistance the above old gentleman required.

Beside the above out door duties and amusements all the heavier labours of agriculture fall to the share of the man; but the cleaning of the rice for ordinary consumption after it is brought in, is done by the women, with the instrument in common use for this purpose in other parts of India. This falls to her lot as one of the household duties which are assigned to her; but in none any more than in her general treatment and place in society, has she ought to complain of. Besides her household affairs, she goes to market, and prepares the family meal, at which she invariably eats out of the same dish with her husband. No restraint is imposed on her liberty, and she may attend all places of amusement and religion, unaccompanied by her husband. In the performance of religious duties, the women are more punctual and attentive, than the men. But she is restricted during her monthly state from

having any connexion with them; to this restraint is added, that she may not touch her husband's head, save for the purpose of cleansing it, when she makes obeisance before commencing work; that she may not touch the sacred books nor the consecrated image of Gaudma, nor pass over the shadow of a temple or any place containing the said image, but on foot and barefooted.

The villages of the western circles are, strange to say, in better condition, and cleaner than the eastern ones, and the houses display more neatness and attention to repair.

In erecting his hut, the Mug has only to purchase materials, the neighbours assemble as soon as these are prepared, and his house is established in a very short space of time. They are all constructed on the same plan, raised on poles from the ground several feet; the flooring and walls are of bamboo matting, wove in a neat pattern; the roof of the Ahtup leaf neatly covered with a frame work of bamboo to prevent its being injured by the monsoon winds.

All apartments whether sleeping, sitting, cooking, bathing, or private, are on this raised floor, through which all refuse finds its way underneath, where what is left by dogs and vermin, serves as manure for the garden attached to each house. Shelter is also afforded underneath to the poultry, of which they have much, and sometimes to the smaller kine. The kitchen range is formed by a round tray of moist clay about 3 feet in diameter, and 5 or 6 inches thick, leaving three small projections or columns on its centre, whereon to rest the cooking pot, when dried in the sun, it is fit for employment, and effectually protects the combustible floor; the furniture consists of a few reed mats, and each member possesses a wooden pillow, these are the whole amount. The rice for the family meal is served up in a wooden bowl, around which the whole party squat; the fish, flesh, fowl or vegetables are served in small coarse China tea cups, the right hand, and the mouth are always washed before, and after the meal; water is the only beverage at the meal, and when it is over, pawn is in use, and the cigar lit. Two meals suffice during the day, the one at 7 in the morning, the other at sun down, and both are very soon despatched. On taking a journey the meal is carried in a few leaves bound up with a rattan; on such occasions they have also a practice of cooking rice, which I believe to be peculiar; it is partly boiled, and then pressed with force into a bamboo, with a further portion of water, and when full, the bamboo is put into the fire, and roasted. The rice within, when dressed, thus keeps for many days, and a bundle of these bamboos is the simplest

manner of carrying more than a day's provisions through the jungle. When to be eaten, it is split with the *dâh* ; the rice is formed into a kind of semi transparent jelly of strong consistency with the soft inner lining of the bamboo firmly attached to it, which is eaten with it. When baked with milk instead of water, and with the addition of a little flour, rice cooked in this manner, is described as quite a luxury.

As in the construction of his hut, so in all other labours and necessities, the readiest assistance is rendered by every one to all ; hospitality is universal, and the last grain of rice will be cheerfully shared with the stranger ; every village has its traveller's house, and he who occupies it is the general guest. Besides being too independent to beg when able to work, amongst a people so disposed charity has no place, or rather the universal hospitality is exalted into that virtue. At a late period when the whole province suffered from the visitation of cholera, hundreds of children were orphaned, but neither were they sold as is common in India, nor was the assistance of Government called in charitable aid for their support ; all were adopted at once into families of neighbours or relations, and treated as their own sons and daughters. No part of the revenue was sought to be remitted, on account of the general calamity, but all was paid.

The Mug of Chedooba is strictly honest, no such thing as theft is known among them, and even in the more populous towns, it is most rare, if known, for a Mug to be brought into court on such a charge. In their dealings with one another but one price is asked, though the simplicity and honesty of such a custom is giving way before the worse example of the Bengallee in the larger towns ; but no Mug will degrade himself by a charge of 'customs' on the purchaser, for the benefit of his servant. To this may be added that in all my experience of them, I do not know to have had occasion to entertain even suspicion of their word. The Mug will not bear the restraint on his time, or his will, necessary to qualify him as a servant ; and though hard labour, when imposed, is submitted to with his universal cheerfulness, it is never freely chosen. Their respect and esteem of Europeans is very great, and any services in their power, were cheerfully performed for our party with no object beyond that of giving satisfaction. On many occasions I have found it necessary to despatch a messenger to the ship, both to take, and to bring communications or supplies ; the parties were always punctual to the time they would appoint for their return, but would never take a pice in remuneration, seeming hurt even at the offer, and whatever return was made them was always obliged to be given strictly as a present, and as a pledge of

approbation and kindly feeling. When engaged in the endeavour to bring down from the West Hill a large tree, which I was anxious to obtain, nothing could exceed the cheerfulness with which the labour was undertaken, in fact so much so as to give it more the character of an amusement; with the exertion of all the able bodied men of the Island, amounting to about 1,200 they were yet unable to move it after many days trial; and they requested assistance from us. With a party of twelve men, and purchases we joined them, and with this assistance the ease with which the tree was moved, astonished and delighted them; the labour was subsequently given up as occupying too much time, but up to the time of their dismissal to their villages, nothing but cheerfulness and good humour prevailed.

Not the slightest inconvenience was occasioned during their stay of 14 days in the neighbourhood of the village, which was our head quarters; parties were sent for their provisions from their own houses, and not a grain of rice or a fowl was demanded from the village, which was just as quiet, with the close neighbourhood of a body of men, as if no one had been there, the jungles affording shelter by night. A dinner was given to all who would remain to partake of it, on their giving up the work, the only return which could be made in approbation of their cheerful and efficient labour, and a promise was afterwards procured for the remission of a portion of the annual taxation, to those villages who were called on to render the greatest assistance in the labour of the Survey.

In the case of one of our Bengallee attendants who had struck a Mug, of which complaint was made to me, was afforded an evidence of their forgiving and unvengeful disposition. The man though much hurt with the blow of a stick, and indignant at it, expressly requested on the offer being made, that no punishment might be awarded, all he required was that such treatment might not again be repeated. They are very fond of public amusements, which are generally given in honor of the exertion of some work of public utility, at these, plays, dancing, and wrestling take place; of the former two, not much may be said; of the latter, the most remarkable feature exhibited, appeared the total absence of all angry feeling on the part of the antagonist. Boxing is also at such times another exhibition.

Old age is treated with great respect, and the elders of a village, even when not officials, are consulted and listened to in all matters of debate relative to the interests of the community. When addressed they are called 'Appogee,' a title of respect.

From his frequent indulgence in bathing, the Mug may be inferred to be partial to cleanliness, but it is more with the idea of cooling his body that so much water is used, his head being seldom wetted, and on this score there is room for improvement in his character, as relates to person and to clothing, but especially with regard to children, whose great freedom from any confinement, calls perhaps for the greater recourse to means of cleanliness in their case.

The language of the Mug is with slight difference, the same as that of his neighbour the Burmah, of which it would seem to be a mere provincialism, and the similarity in this, in feature, religion, and all leading customs, and points of character, proclaim them both to be the offspring of one common stock. A difference in the pronunciation of certain of the letters, constitutes the principal distinctions between the two languages, and of these distinctions, that affecting the Y and the R stands first; the Y with the Burmese is always changed into an R by the Mug. The language in general use sounds uncouth and indistinct, but when properly spoken is said to be otherwise; it is difficult to acquire by Europeans.

The character again is the same as that of the Burmese, so that these people have all the benefit of the productions of the Moulmein press, which are printed in that character, and amongst these that of a translation of the whole Bible into their vernacular. Their own books which treat principally of religious or philosophical subjects are impressed with a style on dried leaves stitched together, and rubbed with the finer produce of the Petroleum wells to preserve them; paper is only used by the district officers of different grades. The religion of the Mug is that of Boodh, and in Chedooba I believe, the only exception to this, is to be found in the Christian convert, who has been before mentioned; in Ramree and the main coast, Mug Mussulmans are not uncommon.

How far the character of the Mug has been moulded by his religion, or how far it is the result of mere natural constitution, is a speculation well omitted here. But in the mild morality inculcated in the code, and practised in the conduct of its professor, at least an adaptation of the one to the character of the other is observable, beyond the common case in these matters, and is both pleasing in itself, and betokens wisdom if not goodness in the framer of the system; this much may be truly said in its praise, but to this is all favorable opinion I think to be limited. The sanction by which its observances are enforced are absurd, and unworthy the attention of a reasonable being. Its history a most childish invention, and is comparatively commendable again in its freedom

from the obscenity which stigmatizes other religions around it. It stands also peculiarly marked off from them, based on its principles of perfect selfishness, in not even acknowledging fear or respect for a Supreme Being.

Annihilation is the goal to be attained, not participation in the perfections, nor reward at the hands of deity; in reference to whose anger or approbation, not an action to be performed has the slight regard, even if his very existence be at all admitted. A certain amount of good deeds registered in the sacred books are to be performed, in order to entitle you to a happier state of existence for another life, which is again to be a scene of endeavour to the same purpose, and this gradual improvement in successive periods and states of existence (if merited) is to continue progressing till a certain point of goodness is attained, when as he can then become no better, existence itself is of no further use, and as the reward of all this labour, in the attainment of perfection, the fortunate being is annihilated; a consummation to which their object of worship, Gaudma, arrived in the most limited number of existences ever yet run through. On the other hand the usual terrors of transmigration are held out, and a fish or a dog, or some less reprobate animal, is to be the lot of those whose misdeeds prevail against their good ones. Some infractions of the law, indeed are of themselves sufficient to ensure such punishment, and I was gravely assured by the principal man on the Island, who was ordered to attend me throughout it, that if unluckily I did shoot a wild pig, hereafter I should meet my desert, in not only being turned into, but actually shot by one myself.

This person, the Soogree of Chedooba, was otherwise a very intelligent young man, and though the most zealous adherent of Boodhism on the Island, yet he seemed but half pleased with it, and was fond of bringing its merits into discussion, and never shewed the slightest symptom of annoyance at the laugh which a relation of its absurdities sometimes called forth, and which his better reason told him was well deserved. He had been at school at Ramree studying English, when called away to succeed his father in the Soogreeship 4 years since; and he had then built a *King* or Church, a work which had fairly committed him to as strict observance of all other good works, saving celibacy, as if a priest. In observing the prohibition to eat of any thing which had ever enjoyed life, in order not to encourage its destruction, he would not touch of food wherein were eggs or milk; but in the list of the protected the poor fish are not included, and he laughed heartily while taking advantage of his privilege, and making a sound

meal of some delicious oysters all alive. When on board the '*Childers*,' he reconciled his conscience to the indulgence of eating salt pork with the reflexion, that as it had been killed so long, and so far off, it was impossible it could have been killed for him.

The observance of this prohibition is the only one generally practised in the Island, and that more through habit, than with a sense of its religious necessity. In short, their religion sits but lightly on them, maintaining its supremacy more because it is unopposed by any other, than from any attachment of the people to its precepts or practice, and when discussing, and ridiculing its absurdities, as brought forward by our friend its advocate, the laugh and joke was fully participated in by all the hearers, who appeared much to enjoy and even promote such a scene.

All the Pagodas are in a state of ruin or decay, or rapidly approaching to it, and broken fragments of the image of Gaudma lie strewn about, without any one attempting the restoration of him or his temple. The old Christian before mentioned, had taken forth his god years ago, and both broken, and deserted him on the high road side, where his remains were pointed out to us without either mark or expression as to any impropriety in such conduct, but contrariwise, the forlorn state of the poor idol excited laughter instead of commiseration. On a remarkable hill in the centre of the Island stands the principal Pagoda in the common ruinous state; no pious hand, had for many a year attempted to annihilate himself by its restoration; but whether in waggery or not, its chief ornament consisted of a cut glass decanter, turned bottom up, on a bamboo stuck into its pinnacle, and excited the laughter of our native party, as much as our own.

The Mugs are superstitious, and though by no means more deficient in personal courage than their Burmah neighbours, yet exhibit in some points a weakness, which might cause a doubt on this point. No Mug will travel alone in the dark, nor even on moonlight nights, for fear of evil spirits or Naths; but when together 'three Mugs will face the devil.' Nothing but positive order and accompaniment by us would induce them to trespass on many of the hill tops, which were inhabited, they said, by these demons, but with us not only would they advance fearlessly, but did not hesitate to fell the trees, though the blame of such sacrilege was always laid on us, in direct apostrophe to the supposed injured inhabitants. On felling any very large tree one of the party at work on it, was always ready prepared with a green sprig, which he ran and placed in the centre of the stump, the instant the tree fell, as a

propitiation to its spirit which had been dislodged so roughly, pleading at the same time the orders of the strangers for the work. In clearing the top of the South Hill, the Chupprassie, whom I had sent to see it done, though attended to the summit with the labourers all ready prepared, was forced to take a dâh, and fell the first tree himself, before a Mug would make a stroke, and was considered to bear all the odium of the work with the disturbed spirits, till our arrival relieved him of the burden. On such occasions, with their customary cheerfulness, the whole body would join in the laugh at the folly of their own superstitious fears, of which they latterly seemed half ashamed. Several of the circles are without any priest at all, and those who are found on the Island do not suffice for the instruction of the children, a subject complained of, and offering an opening of favour to these simple people, which has only to be afforded in order to be appreciated and embraced. Any person of any religion has only to assume the dress and follow the observances of the sacred book, and he is at once acknowledged a bona fide priest.

At Meugbrenge an old priest paid me a visit, and begged alms, the only case I ever met with, and not only unnational, but most unpriestly; he avoided the prohibition to touch money by taking it through his yellow gown, and then handed it to an attendant pupil; he had been a Soogree in one adjoining circle, and gave up his office in order to get worshipped as he said. He was nearly 80 years old. No distinction of caste is recognized by their religion, and the priest both eats, and will accept the offering of all and every class. There exists however on the Mainland, some distinction of this sort, observed among the laity; they are the remains of the political quarrels and dissensions of the Mug Raj, and are fast wearing out. They consist in feelings of prejudice against the eating and drinking with those who are descendants from the captives of former wars, to whom the most menial offices were assigned; they have no existence on Chedooba, nor will have shortly elsewhere among the Mugs. The priests are forbidden even to look at women, even their eyes may not wander above a limited distance beyond their feet, lest they should light on the forbidden image; he may not eat after midday, when his second meal is taken, his first having preceded it about 6 hours. The dead are burnt, the bodies of priests with great pomp and ceremony, after being preserved a considerable time, and the bodies of all with decency; this constitutes a very meritorious deed when performed with the remains of a stranger.

Chedooba as observed, has not many strict votaries of Boodhism; but its effect in the neighbouring countries where acted on in strictness, is

curious in some particulars. It has a direct tendency to destroy all feeling of gratitude, the real favor conferred being on the part of the receiver, in the opportunity afforded by him to the giver of performing a meritorious act. Robbery and even murder have been committed for the sake of the means of erecting a church, or constructing a road, or a tank, and the end has consecrated the means. These good works are performed in Chedooba as elsewhere among Boodhism, but I was inclined to think with motives more pure, and that the general character of its inhabitants would justify the opinion, that the reward outwardly and inwardly reaped by the performance of such public benefactions, is inducement enough to their execution there.

The construction of such as above, of wells, traveller's houses, or the keeping of any of these in repair, renames the party undertaking them, and he is thenceforth only known by the honorable title of the 'well digger,' the 'road maker,' the 'house builder,' &c.

The old Christian above mentioned, is the only one on the Island, and is a sincere, and pious old man, deeply interested in the improvement, social and religious, of his Island countryman. He is intelligent and well informed for his means, of the mildest manners, and benevolent appearance; though between 75 and 76. His pittance is small, 5 rupees a month from the American Baptist Mission, of which he is an assistant; he is listened to with great attention and curiosity, but, unsupported as he is, and with but little encouragement, his success is small.

Ramree, the chief town of the Province, enjoys the privilege of a School, where English is taught, and Chedooba, as a part of the province, is entitled to send its quota of pupils. But the habits of the people, and even the regulations of the school, deprive its inhabitants of making almost any use of it. Payment is required; there may be no friends at Ramree to take charge of the children, and the Chedoobans are attached to their Island too much to allow willingly even their children to leave it for any length of time, very few parents, therefore, and those chiefly the Island authorities, give their children the benefit of the advantage offered by the provincial school. But the payment which is begrudged to the Ramree establishment, would be willingly made even in higher amount to one at home; both children and parents in Chedooba are all common friends, and mutually known; and such an establishment, which the deficiency of priests, for educational purposes, points out as wanted, would soon meet with that most grateful appreciation of the boon, a large attendance, nor in other respects would it be without reward to its founders. Not a whit behind his Ramree brother in intelligence and

desire to improve, and especial desire to learn English, the simpler, and more honest and moral character of the Chedooba scholar, would give to him the preference, for filling those grades of employment in the public offices open to him; while the grateful reflection would not be wanting, of affording a valuable means at once of improvement, and of the maintenance in fact from contamination, of a character high and rare, to perhaps the most interesting community under the Government of British India.

DIVISION VI.

Geology.

The Geology of Chedooba presents characters of so much general interest, that any report on this Island might be looked on as imperfect, in which the subject was wholly omitted.

But as it is intended in a separate notice to give such details, accompanied with specimens, as may render the subject capable of investigation, by those able and interested in the science; the present one will be here confined to a mere statement of the general features exhibited. The elevation, out of the sea, of large tracts of land by effect of volcanic action, has in more modern times been noted as occurring on the coast of Chili in South America, and in the territory of Cutch in this country. In the former case some doubt has been thrown both on the fact itself, as well as its amount; and the circumstance of a similar phenomenon having taken place within the memory of man, not only throughout the coasts of Chedooba, but extending over all the shoals and islands from the Terribles, off the north end of Ramree, to Foul Island, will be held a not unwelcome addition to the evidence yet gleaned of the occurrence of such extensive changes of level in the present day. The above are the limits of the survey on which the 'Childers' has been employed, over every part of which the evidences of this elevation were seen, and in many places accurately measured, and it includes the whole of that irregular collection of Islands and shoals, which, projecting far into the Bay of Bengal, yet maintain the general direction of the main land coast near it.

But these limits are not to be taken as those which bound the elevation, which, with little doubt, from similarity of formation, will be found to extend north and south and east, over all these parts of Arracan, so peculiarly marked by the intersection of deep narrow, salt water creeks, from Akyab, even perhaps as far south as Cape Negrais.

The line which was under observation is about 100 miles in length, varying from 20 miles in width, to that of a mere patch, according as

opportunity of notice was afforded by the existence of rocks or islets above water, and its general direction is from N. W. b. N. to S. E. b. S. The elevation has been greatest towards the centre of the line examined; at the Terribles about 13 feet, on various parts of the N. W. reef of Chedooba 22 feet, at the north point of the Island 16 feet, at the centre of the Island on the west coast 13 feet, at the southern end 12, and at the Islands south of it, as far as Foul Island from that to 9 feet.

It would also seem to have been greater on the western limit of Chedooba, than on the eastern, a fact not however ascertained from the extensive level plains which exist on this side, whereas on that, measurement was easily made on the sides of perpendicular rocks. This elevation occurred about 90 years ago, and there is, now living, a party 106 years old, who was then 15 years of age, and had been accustomed to fish over a portion of the now upraised land. On the coasts of Chedooba, its traces are in most parts as clear as could be wished, bounding the natural jungle with a bank of greater or less height, composed of sand or of shingle—the plain beyond being thickly strewn with coral and shells, such as are now growing on the shore. The natives are all perfectly aware of the bank having formerly been the limit of their Island, and even the youngest would point it out, if asked to do so.

The old man above mentioned was not in Chedooba, but at Ava, when the event happened, he had gone thither that year, and experienced at that place the violent earthquake which accompanied the elevation. From other natives of great age, I received information of the occurrence, not direct, but traditionally from their parents.

The earthquake was very violent, the sea washed to and for several times with great fury, and then retired from the grounds, leaving an immense quantity of fish; the feasting on which is a favorite story throughout the Island; no lives were lost, no rents in the earth occurred, nor fire from the volcanoes of the Island.

The above is not the only event of the sort traditionally known, another occurred a century previous to it, and these elevations are considered periodical by the inhabitants, occurring every 100 years, and the next one is even expected in the course of a few years, and would excite but little surprize. Traces of a third beach line were several times thought to be found, before this information was given; but on the western coast, about half way down, an evidence of its truth was afforded; a remarkable column or rock, about 40 feet high, standing on the beach shewed the remains of a second line of rock. Oysters adhering to it, at an equal elevation of 13 feet above the first, as it was again, above the one, which on

all the rocks of the western coast distinctly points out the limit of the present high water. On Flat Island was subsequently found three distinct beaches, and the coral found on the different extents of the Island clearly proclaimed in their relative states of decomposition, the difference of their periods of exposure.

The external and more apparent means by which these great changes are effected, are as yet known, I believe, quite peculiar, and exhibit features which may be valuable in assisting investigation into the immediate causes of volcanic violence.

Every one of the mud volcanoes of Chedooba were visited, and examined as well as those of the neighbouring Islands, south of it, and on none with strictest search could be found any traces of direct fire, or of those peculiar formations produced by that agent, gas alone seems to be the one immediately occasioning these strange exceptions to the general character of volcanoes. It is no doubt inflammable gas, and the light given by some of them in activity has been so great as to enable a book to be read by it at a distance of 9 miles, as was credibly related to me as having occurred at the last eruption of the large Volcano of Meugbreg, the largest on the Island: that heat is present in the more recent ones, I found it myself to be the case, in one examined on Ramree, where the mud brought up on a bamboo from, 17 feet in depth, shewed a temperature of $92^{\circ} 20'$ above that of the atmosphere. But a white stone like chalk found on all the large volcanoes, which was considered as the common greenish sandstone discolored by heat, was the only substance found, which exhibited a trace of no intense heat, and in this case the abstraction of color alone was effected without the least change of composition or form. The large volcanoes of Chedooba are four in number, they are detached mounds rather than cones, varying from 100 to 1,000 feet above the level of the sea, composed of a stiff grey clay with large quantities of singular fragments of stone, their sides much cut up by the effects of rain, their summits quite bare, and from 240 to 50 yards in diameter; on these are disposed cones of stiff clay from a few inches to 4 feet in height, and the same variety of dimensions, in diameter. These are hard on the outside, but filled half way up with a thick well mixed mud, which every now and then exudes from a hole at the sides or summit*, at the bursting of a bubble of gas which occurs every 3 or 4 minutes. There are two other volcanoes of small dimensions, and but little elevated above the plains where they are found to exist; they are composed of the same

* The readers of the Journal will be struck with the similarity of the description to that of the mud pools at Hinglaj.—*As. Soc. Jour.* No. 94.

soil of mud, emitting large bubbles of gas; and besides these there are two spots whence water alone is brought up by the gas. In all these the water or mud is salt, and their number with the four Petroleum wells which are in constant ebullition with gaseous exhalation, seem to exhibit this agent as powerfully, and extensively at work, throughout the Island. The minor volcanic vents seldom exhibit any change; the larger ones when in eruption, which generally takes place during the rains, either throw forth to a considerable height accompanied with flame, fluid mud, which spreads over a certain extent, or the surface effected boils with the escapement of gas, bring too consistent to flow or be thrown up. The angular fragments of stone mixed with the mud are clearly torn from the strata, through which the vent is forced, and small portions of copper ore are found attached to some.

Besides the volcanoes seen, one was described as existing under water on what is now a reef N. W. of Flat Island, and which a few years since gave forth flame when in eruption. But independent of such direct evidence a mere examination of many of the reefs would convince of the fact of the bed of the sea being equally affected with the surface of the land.

I conclude with the observation that the clearness of the jungle of Chedooba, the healthiness of its climate, and the late clearing of the principal hill tops for purposes connected with its survey, afford for the ensuing fine season a most interesting ground whereon to examine, more minutely than either time or ability would enable me to do, the peculiar geological features thus briefly noticed.

Examination and analysis of a soil brought from the Island of Chedooba by Capt. HALSTEAD, of H. M. S. 'Childers,' by HENRY PIDDINGTON, Offg. Curator Museum Asiatic Society.

This soil was sent with a collection of soils and minerals from Chedooba, for the Museum of Economic Geology, with a request that a report might be made upon them. I was immediately struck with its resemblance to the finest Georgia Sea Island cotton soil which I analysed in 1838, and which has such a peculiar appearance—resembling a mixture of sand and charcoal—that it immediately attracts attention; I thought it well worth while to ascertain their identity. To show how nearly they are like I set down in parallel columns the results of my examination of the Chedooba soils and of the American one; the last abridged from my paper on the cotton soils of America, India, Mauritius &c. in vol. VI. of the Transactions Agrl. Soc. of India, p. 198.

APPEARANCES.

American Soil.

Chedooba Soil.

1. When sifted, like fine dark-
grey sand and charcoal dust, arti-
ficially mixed. } The same.

2. The sifting coarse sand, frag-
ments of sandstone and shells with
pieces of dried and charcoal wood,
or charcoal in all states from char-
coal to soft lignite. } The same, but no shells, and the
sandstone in very minute frag-
ments—perhaps owing to the spe-
cimen being in very small quan-
tity.

With cold water.

3. When agitated settles in a
coarse greenish-grey sand, with a
layer of black matter above it. } The same.

4. When left for a day or two
water is tinged of a pale yellowish
colour. } The same.

Heated in the Matrass.

5. Smokes and gives out a
strong peaty odour. Silver leaf
and litmus paper are discoloured
and a brown smoky-tasted oil is
deposited in the tube. } The same. The silver leaf I think
more discoloured; the litmus pa-
per not so immediately. In all
other respects the same.

Analysis gave

Saline matter, Mur. of lime and soda, but no po- tass.....	} 0.20	Saline matter Mur. of lime and sulphur of soda, but no potass	} 2.00
Vegetable matter: most- ly lignite or peaty powder with a little water.	} 3.20	The same	2.00
Iron, protoxide.	1.00	Protox. (and peroxide in small quantity?)	} 1.75
Carbt. of lime	2.76	Carbt. lime.....	3.00
Alumina.....	0.20	Alumina	0.40
Silex	92.00	Silex	91.65
	<hr/>		<hr/>
	99.15		99.05
Water and loss..	.15	Water and loss..	.95
	<hr/>		<hr/>
	100.00		100.00
	<hr/>		<hr/>

Remarks.

<p>Silex is mostly in coarse glittering grains like pounded loaf sugar, shewing that it is mostly from <i>disintegrated</i> and not decomposed rock.</p>	}	<p>The same, but grains of silex duller and more powdery, silex with them.</p>
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N. B.—The smell of Petroleum is owing to a bottle of it having been sent in the box.

For all agricultural purposes these soils may be pronounced so nearly the same, that, in the same climate, the difference would only lie in the amount of produce being a little more or less on the one than on the other. The Chedooba soil contains but one ingredient, Sulphate of Soda, not found in the American, but this is in extremely minute quantity, and moreover seems favourable to the growth of cotton, for the soil of the Tinnevely district, which produces the Madras, Bourbon cotton, contains it, as does also that of Singapore, on which very fine Bourbon cotton is grown.

Captain Halstead's remarks on this soil are as follows.

'No. 11, represents the more sandy soil of the eastern circles. It was taken from the neighbourhood of Mengbeng. The circle of that name with the one just noticed (Mrooma) are the most populous on the island, the greatest quantity of exports being produced in these, and chiefly on this soil—a more productive one than its appearance would seem to warrant.'

The importance of this curious soil to America we well know. It may be hoped that ours may be ere long turned to account and that many other spots on the islands and coast, from Akyab to Sandoway, may be found to possess it. From difference of climate, as far as this may affect the cotton, there will be, I trust, little to fear, for we know that the dry months allow time enough for the production of all kinds of cotton, some of very fine quality, on the main land of Arracan; and it is mentioned as a product of Chedooba by Captain Halstead. Very fine Sea Island has been produced on Saugor Island, and the late Mr. Kydd gave me a very beautiful sample of it, which he said was grown there 'upon a sort of black sandy soil' but I could not obtain a specimen of it. I venture to suggest that if a small quantity of the Sea Island seed was sent down to the Commissioner, accompanied with a brief notice, to be translated into the Mug language, and distributed with the seed, stating what it was, its great value when carefully picked, and that no sort of extra rent or claim would be made for this kind of cultivation, we might hear of it again? Small prizes might be offered to those who produced the best samples.

HENRY PIDDINGTON.

List of Soils and from whence taken.

1. Clay of upraised plain, near the N. W. point of the Island.
2. From Rua Tanghee inside the above plain.
3. From the N. W. peak.
4. From the West Hill.
5. From interior of Krae-roue circle.
6. From Eastern part of Krae-roue circle.
7. From Petroleum well of Krae-roue.
8. From West part of Inrooma circle.
9. From central valley of Inland (Inrooma circle.)
10. From Petroleum well of Inrooma circle.
11. From village of Meugbrenng.
12. From interior of Meugbrenng circle.
13. From Tang-roa circle near Rua Sekkea.
14. From the summit of Pagoa Hill.
15. From Ree-giung (Flat Island).
16. Iron ore from North beach of Chedooba.
17. Copper ore from different volcanoes of Chedooba.
18. Coal or lignite from Tang-roa circle.
19. Petroleum of Krae-roue.

It appeared advisable to attach to the accompanying selection of the soils of Chedooba, the few following observations on the subject in addition to the mere list of places whence each was procured.

In making the selection, which was done during a progress on the greater part of the Island, high and low, jungle and cultivated, and mostly on foot, from the 1st of January to the beginning of March, care was taken to choose soils which should represent those of the greatest extent to be found on the Island, and where specimens have been taken of soils less general, they have still existed over extents ample enough to afford room for the cultivation of that produce, for which they might be considered most applicable. But here it may be at once observed, that no material difference or contrast was found to exist in the soils of Chedooba; a clay of light brown or grey colour, more or less modified, as it had been subjected a longer or shorter period to the effects of tillage or natural vegetation, constituting the bases of all. This clay base being again on the eastern parts of the Island found with a large admixture of fine sand. This clay base seemed to give throughout a permanence to the productiveness of the soil, which must constitute a very valuable quality,

placing it on a par with those which if more fertile or sooner exhausted, from generation to generation the same lands being yearly cultivated without manure; traces of lands lying fallow it is true, were discoverable in many parts, and sometimes extensively, but on enquiry they proved to be those which had fallen out of cultivation from the decrease of population attendant on the disturbed state of all these countries for many tens of years previous to our occupation of them, and not from exhaustion of the productiveness of the soil. But the clayey nature of the soil appears to make it liable to yearly improvement by a process of manuring of natural occurrence, and which is most effective where most needed, in the newer soils of the lately upraised lands.

During the dry weather the surface of the soil becomes cracked in every direction to a considerable depth, but mostly so in the above lands, where a stiffer clay is found, and into these cracks dried leaves and grass at such times fall in considerable quantity.

A custom is also prevalent of burning the dry grass, stubble, &c., every year at the close of the dry season, the ashes from which are therefore all ready to be washed deep into the body of the soil, by the first heavy rains of the monsoon, which do not close the large openings for some time. The large quantities of Coral and Madrepore distributed over the surface of the new plains, is also by this practice of annually burning very much aided in its decomposition.

I was informed by a native that the extensive new plain of the N. W. part of the Island, which was raised out of the sea about 90 years ago, was only then acquiring its first covering of grass when visited by him 15 years after its elevation. That produce now covers most parts of it high and luxuriant enough to screen a buffaloe from sight, while other parts yield ample crops of rice, and where not otherwise claimed, the jungle is fast taking possession of it, especially over those more rocky portions which have on them the greatest amount of Coral.

The clay soil of this plain is shewn in No. 1, compartment. Embosomed in trees on the old N. W. point of Chedooba, and therefore just within the border of the above plain, stands the village of Tanghee, the soil of its neighbourhood includes a larger amount of vegetable mould, than is to be found in that of the plain so low as will be seen by the specimen of it in No. 2.

This soil may be taken as representing all the cultivated soils of the western part of the Island which lie within the limits of the old beach time. It amply repays all labour bestowed on it, though such labour is at present small, owing to the smaller amount of population to be found in

the two circles of Kam-mad, and Tang-wa, which enclose this side of the Island, than in any of the others with one exception; this want of population arises from other causes than any connected with want of productiveness in the soil.

Chedooba was originally peopled from the eastward, and has never been so thickly inhabited, as to oblige the cultivation of the western lands, which have therefore been hitherto visited, more than inhabited, the want of gratification for his social habits always driving the western settler, after a certain period of sojourn back again to his more thickly populated native village to the eastward. The present Rua-gong of the village of Kammaa was formerly Soogree over but seven houses, in a district where his own village now numbers 300.

The extent of plain between the hills and the sea, half way down the west side of the Island is small, but I here saw one of the largest and richest gardens of plaintains in the whole Island, while as the general produce of the above soil along the limits mentioned. I observed, rice (the staple) tobacco, sugar cane, some cotton, hemp, and indigo (in cleared spots in the jungle); of fruits and vegetables, the cocoanut, plantain, orange, lime, tamarind, yam, bringals, and other garden produce of these climates.

The specimens in 3 and 4, represent the soil found generally in the hilly, and jungly parts of the Island. The largest and most luxuriant trees in the Island are found in the loose friable soil which is found on all the hill tops, in that of No. 4 were flourishing perhaps the very largest on the Island. An oil tree felled measured for a length of 60 feet, 4 feet 6 inches, and 3 feet 6 inches in diameter at its respective ends, and a like tree left as a beacon, on the summit of the hill, measured 21 feet 4 inches in girt, as high as the arm could reach.

In mentioning however the size of these trees, it is not to be inferred that valuable timber is to be looked for as a produce of Chedooba. The largest trees are almost exclusively confined to the hill tops, where they are difficult of access, and of no very valuable quantity, enough however, and of sufficient size, and good quality for all domestic purposes, is every where to be found, nor do I doubt that woods, affording valuable produce of different kinds, would on examination be found among the jungles. The wood-oil tree as has been observed, was found in luxuriance on the west hill, where was also the gamboge, and many trees large and small yielding caoutchouc, some in great profusion. I would here mention while on the subject of the jungles, that no part, in the many miles of it, travelled through, appeared to offer any serious ob-

stale to clearing for cultivation ; there are few parts where a Mug with a good dâh would not fell in one day the trees over half an acre ; much of it consists of open clamps of bamboo, and throughout the lower part, open plains of grass of more or less extent are very frequent ; in no part which was seen would a person on foot find any obstruction in walking which way he would, and this is stated from experiment, having been over many parts where no native ever before penetrated, not from inability but from superstitious fear.

No. 5 and 6 represent generally the soil of the Krae-roue circle, the Northern one of the Island of which parts are more sandy than others, but the whole very productive. I found the betel in this circle first, and in its jungle, of which it has a due share, the caoutchouc plant of South America ; a good deal of Rice for export is here grown.

No. 7 is a soil taken from the neighbourhood of two Petroleum wells, which lie close to one another in this circle, having no doubt one common source of supply. This article, as may be seen, is surely a produce of the soil, which by simplest means might greatly be increased ; at present these two wells yield about half of the 300 pots, which constitutes the yearly produce of the four petroleum wells of Chedooba.

No. 8 is a soil taken from the next adjoining circle, eastward to that of 'Inrooma.' Its principal village (Chedooba) boasting to be the capital of the Island. The specimen, and No. 5 may be taken to represent the interior and more clayey soils of all the Eastern circles, including those of Inrooma, Mengbren, Kyonk-tair, and the eastern part of Tang-rua. While No. 9 taken from a spot in the same circle, is, I apprehend of more limited extent.

Near the centre of the Island, and not far from the large Volcanoes of Meng-bren we came on a small level valley with a stream running through it, on either hand overlooked by wooded hills. This valley whence No. 9 is taken, was the best cultivated spot I had yet found, being one continued tobacco garden and were the best of that plant on the Island is produced. While speaking of this article, I venture to express by belief that parts of Chedooba would produce with proper care and attention, as good tobacco as perhaps any in the world ; and here I speak also from experience. My own stock of Cigars having been expended, I procured some to be made for me on the Island, out of native tobacco, many of which to my gratification and surprize I found of as high and as delicate a flavour as any which I had ever tasted direct from the Havanna. But the leaves of which these were formed, appeared to be accidentally larger and more ripe than they are generally gathered. Though as it is at present planted and prepared. Chedooba tobacco is highly prized.

No. 10, shews the soil from the neighbourhood of a petroleum well in this circle (Inrooma). Some time since it was destroyed by fire, since which the public claim it, but its produce is therefore nothing, though the soil is full of the oil.

No. 11, represents the more sandy soil of the eastern circles. It was taken from the neighbourhood of Mengbrenng. The circle of that name, with the one just noticed (Inrooma) are the most populous on the Island the greatest quantity of export rice being produced in these, and chiefly in this soil,—a more productive one than appearances would seem to warrant.

No. 12, is also a soil of the Mengbrenng circle, and taken from a spot about 3 miles W. S. W. of the village of that name, and amid the jungle. It may not be put forward as a representative, though in the neighbourhood whence taken, it may be extensive. The largest trees were found on the lower grounds principally; the wild mangoe were found growing in this soil.

No. 13, from the Tangee, a circle and neighbourhood of the village of Tekkea, at the foot of the south peak, is again a soil peculiar as far as was observed. East and west of it the cultivated soils are represented by No. 2, while Nos. 3 and 4, perform the same office for the soils of the hills which are highest in this the southern circle of the Island.

No. 14, is a specimen of the most peculiar soil on Chedooba, taken from its only barren spot, the higher parts of its central hill.

No. 15, is not of Chedooba at all, but from its sort of dependency, Flat Island, separated from it by a narrow strait. It has been added from its great similarity to the stiff clay of No. 1, whose productive properties it may serve perhaps to illustrate.

It was taken from the centre of the Island where it had been under constant cultivation for more than one century, yielding an ample annual return. Every patch of available land on this Island is fully tilled, its centre, one continued rice ground.

Nodules of Iron ore, as in No. 16, will on search be found generally over the Island, either embedded in the greenish sandstone, or having been detached from it. Though often very rich, they are not in sufficient quantities to amount to valuable, nor am I of opinion that the ore in continuous beds will by any search be discovered.

No. 17, shews some fragments of copper ore, a few also of silver may be found, but both are confined to the surface of the volcanoes in the Island, and have been ejected by them from beneath. Even on these sites a strict search is necessary to detect them. I only heard of one piece of the size of two eggs having ever been found.

The 18th compartment shews specimens of a coal or lignite found in the northern parts of Tang-wa circle, and not a mile distant from the beach. It lies a few feet above the level of the watercourse formed between the first and second lines of hills, dipping deeply under the latter, which rise 800 or 1,000 feet above it. Its site is therefore I fear a very bad one; perhaps a matter of no great moment as its qualities I also fear partake of the same character. It is traceable in an east and west direction about 20 yards, the vein, 3 feet and a half thick, is a series of small layers from the 16th part of an inch to 3 inches in thickness, separated by their laminæ of ferruginous sand. It has been dug into by the natives, and perhaps two tons of it excavated, from which the specimens shewn were selected. On the spot, I could not make it ignite, it only smouldered.

No. 19, shews a specimen of the Petroleum of the wells of Krae-roue.

As it may not be considered a matter very foreign to the subject under notice, and is inserted in furtherance of the same view, that of, it may be, usefulness to any concerned. I venture to conclude with a slight notice of what I experienced of the climate of Chedooba in traversing it, throughout all parts from the beginning of January to the middle of March, 1841; a period which no doubt constituted, with the previous month of December, the healthiest time on the Arracan Coast, or at least when exposure to weather may best be borne by the European. As is the case in all countries subject to periodical rains, the time of commencement, and taking off of these, will also here be doubtless found the most unhealthy.

But previous to the arrival of the Monsoon, I think that, to all Europeans, exposure to the direct rays of the sun, (often done incautiously or unnecessarily) would be found almost a certain cause of illness, and this more particularly during the months of March, April, and May, when its heat is most violent. But exposure of the above sort must at all times, I think, be deemed highly imprudent, especially when the remedy of a chattah is so easily procured.

This effect may be constitutional and peculiar, but I am inclined to think, that any exercise in the climate of these parts requires for its support good generous food. In the 65th Regiment N. I., while on the coast for nearly two years, mortality from fever among the troops was fearful in amount, among the officers no case of fever occurred. I do attribute the contrast to the difference of living, in which the statement made to me by the Medical Officers and others of that Regiment seems to bear me out, viz., that the troops died from the consequences, more than the fever itself, that in spite of all cordial and strengthening food, and

medicines liberally administered, there was not stamina in their constitution to enable them to rally from the debilitating effects of the disease.

In the course of our duty in surveying along the coast, considerable exposure was necessarily made of the crew of the 'Childers.' On all such occasions it was as much as possible endeavoured to give the people extra food, and quinine was also administered, in fact, throughout the service, every exertion was made to procure as much and as great changes of diet as circumstances would permit. Up to this date, March 24th, twenty-seven cases of fever have occurred; (12th of May, 63) cases on board, all of the same debilitating nature; but, with the exception of one, under peculiar circumstances, which proved fatal, all were recovered, and in general at duty again in 7 days.

I believe that my own experience of the shore climate was far greater than that of any one else among us. But I have reason to be thankful that, though occasionally unwell, I did not suffer from a headache throughout my whole visit.

Next to the two precautions which may be inferred from what has been said, viz. those of keeping from direct exposure to the sun; and a generous—not intemperate—diet. I would mention the necessity of watching and preparing for the great changes of temperature to which the climate is liable; while by day the lightest clothing was too heavy, by night it has been chill under two blankets and a counterpane. An hour before sunset this change takes place, and should always be met by a change to woollen clothing; last, not least, I mention the necessity of keeping a careful watch over the due and regular performance of the digestive functions. Under employment for mind and body, with the above cautions, viz. avoiding undue exposure; good—but temperate living; accommodation to changes of temperature; attention to regularity of digestion, I incline to think that Chedooba, if not Arracan generally, would be found not so fatal a climate to Europeans as has been hitherto supposed.

With regard to the effect of climate on the natives, I would observe firstly, that in the course of their employment for objects connected with the survey, there are few of the able bodied males on the Island whom I had not under personal observation. A small, but well made, active, intelligent race, most cheerful and enduring of fatigue (when obliged to it). In my journeying through the Island, at every village (and few if any were not visited) all ailments were made subjects of application for advice or medicine. These cases amounted to two of fever, one of dropsy, one of paralysis, one of blindness, and one of deformity of limbs. Three cases of fever also occurred among the native (Bengallee) attendants who were with me.

But it may be fair perhaps to increase the apparently small list, by the admission that there exists a disease to a considerable extent, to which the inhabitants of Chedooba are subject, and under which at every village we found perhaps many sufferers, women as well as men, but chiefly the latter; nor in any case though always coming forth to meet us, did it seem to be looked on by either the parties themselves, or their friends as a case on which to apply for commiseration or relief.

'Old age' is very prevalent on the Island, and but few of the villages of Chedooba but can produce more than one, often several, of their inhabitants labouring under the affection of four score years or upwards; many under such burthen, hale, almost vigorous, in mind and body. The party who informed me of the period taken for the clothing of the N. W. plain with verdure, and who had till 15 years old been in the habit of fishing over it, when under the Sea, with his father by name Pallaree, and living in the Inrooma circle, is generally looked on as the senior amongst these 'Appogee' (a respectful term of address to old people). He claimed to have run through 106 years, at which age he walked 12 or 13 miles in order to meet us, and on being disappointed then walked back again (not I believe the same day); when we did meet, it was after a walk of nearly two miles, when he was certainly in body, rather shakey, but after a short rest he recovered himself perfectly. His mind and memory were perfectly sound, as also his hearing, and sight, his speech very slow, but clear and distinct; not a tooth in his head was gone or apparently inclined to depart, and he was not only cheerful, but joking with all around. He ridiculed my not being so old as his great-grandson, who accompanied him, said that he had left off eating animal food but two years since, and when questioned as to what had been his customary food in ages by-gone, answered readily 'any thing even a part of a man if I had wanted it,' a confession which he only modified, to the laughter and remark of the party around, by adding 'if it had been given as medicine,' I know not whether it may be taken as evidence of the existence, to any considerable extent, of another interesting disease in Chedooba, to add that Pallaree, entered into the bonds of matrimony with his last wife 2 years ago.

(Sd.) C. P. HALSTED,
Commander.

Report on the Soils brought from Chedooba, by H. M. S. 'CHILDERS.'
By the Officiating Curator, Mus. As. Sco.

The box of Soils and Minerals, brought by Capt. Halsted, having been referred to me for report, I take leave to subjoin the following remarks to Captain Halsted's very able notes. He has, most unfortunately, omitted to bring us specimens, of the different *rocks* as well as of the soils. It would have been highly desirable to have had a complete series of these, from the beach lines to the highest point, and in various directions, with as many shells and other organic remains, as could be found, and measurements of elevation; especially those of the 'old beach lines' alluded to by Captain Halsted. Such a series if it can be still obtained, would be of the greatest interest, for we have there an active volcano in the centre of an Island, upheavements going on on the Coast within the memory of man, and coal found; all within the space of a few miles! I need not say how valuable rocks and organic remains would be to illustrate all this.

In the absence of any geological data then my remarks must be mostly agronomical, as regards the soils, and mineralogical in regard to the minerals. I take them in the order in which Captain Halsted has numbered them.

No. 1. Of this little or nothing can be said in addition to Captain Halsted's remarks. The process of natural manuring, to which he alludes is not however, I should think, the sole cause of the fertility of the soils. It will be seen upon close inspection, particularly with a magnifier, that minute particles of carbonaceous matter are dispersed throughout the mass as if they had been originally deposited with the soil, by whatever process this was formed; the one described by Captain Halsted would scarcely we may suppose have distributed it so evenly, but a more extended examination on the spot, could alone entitle us to argue safely on the subject which is one of much importance. No 15, is a soil of the same kind, and it has also some, though a smaller, mixture of carbonaceous matter dispersed through it: both appear to be surface soils only.

No. 2 and 3, are more sandy. No. 3, seems to contain some carbonaceous matter also.

No. 4. Remarkably assimilates to the tea soils of Assam and China, in appearance! and like those of Assam this also occupies the higher spots. As the climate and population of Chedooba probably place tea out

of the question, as a product, I have not thought it worth while, to institute any closer examination.

No. 5. Contains, apparently, a portion of carbonaceous matter.

No. 6. Does not shew any trace of it.

No. 7. Is a very curious soil, if of any extent, on account of its locality in the neighbourhood of the petroleum wells. Captain Halsted does not say if these soils are fertile or barren, which it would be of interest to know; vegetable matter, in the shape of leaves and roots, abound in the specimen. As No. 14, is said to be 'the only barren spot' so that we may suppose this was not wanting in fertility. Nos. 10 and 12, much resemble No. 7. in appearance, though they are not so strongly impregnated with petroleum.

Nos. 8 and 9. As tobacco soils probably owe their superiority to the free peroxide of iron dispersed through them in veins and spots.

No. 11. Is identical with the best Georgian Sea Island cotton soil. I must refer here to my special report on this soil:

No. 13. Is remarkable as being the only soil which offers any sensible proportion of free calcareous matter in the shape of *debris* of shells; and here again we have to regret the want of the rocks, for these would have assisted us in forming a judgment as to whether the soils have been formed from their decomposition, or in horizontal beds and raised up with the Island. We have here a succession of strata through which the volcana may have forced its way without much disturbance? or which may have been raised up so as to shew its edges in overlying beds? Which should then correspond round the volcanic centre; or which may have been formed by the eruptions? All these are curious questions for investigation, and it is to be hoped will not long be left unexamined.

No. 14. 'The only barren spot on the Island' says Capt. Halsted 'being the highest part of the central hill,' I could not on examination detect any saline or acid impregnation in this soil, and I should take its barrenness, in the absence of any gaseous exhalations, which are no where noticed in the report, to be owing to the great quantity of peroxide of iron which it contains, so much indeed that it is almost a red ochre.

No. 15. I have already referred to above.

Minerals.

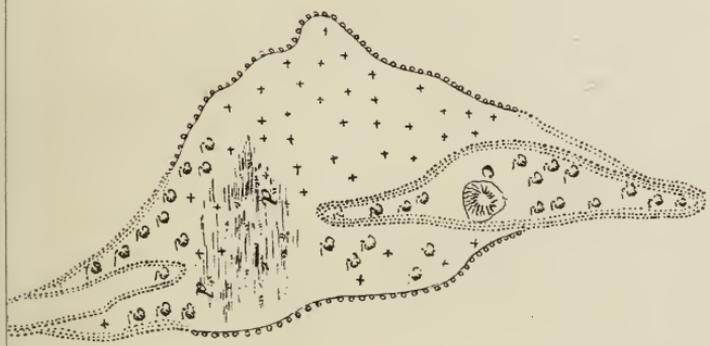
No. 16. Is sent as iron ore. It is merely composed of masses of amorphous iron pyrites, and wholly useless as an ore of iron.

Plan of Regrain

by
Lieut. W. McLellan, R.N.
"Sp. M. Brig. "Chilfers"
1841

Compass North

Scale 1 Mile = 2 7/8 Inches

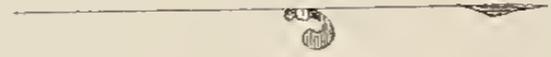


-- Represents the beach of the land subsequently raised, this
 crum out mount from which issues a quantity of petroleum. The
 which surrounds it and also the one further Southward were
 apper note masses of coral and of other rock; they completely cover
 the at with the exception of a slight sprinkling near the stream bet.
 f. on.
 The feet above the sea.
 The
 □. 5.

Plan of
Reguain

by
Lieut. W. McCallum, R.N.
H. M. S. "Porpoise"
1841

Compass North



EXPLANATIONS.

..... Shows the beach of the original Island.
 Represents the beach of the land subsequently raised at this
 eruption commences North^d at the points *p* & *v* and South^d at the point *o* of the 1st beach. *o* Is a very small volcanic mount from which issues a quantity of petroleum. The
 The portion of the Island was raised about 50 years ago. *o* Was a small islet before the last eruption; the dotted line which surrounds it and also the one further Southward were
 apparently sand banks. *o* Denotes a well. *u* ... Salt-marshes *e* ... Former streamlets. The marks + + denote masses of coral and of other rock; they completely cover
 the outer, or last formation; the 2nd formation has but a few here and there, and the original Island is perfectly clear of them, with the exception of a slight sprinkling near the streamlet.
 at its northern point. The land last raised is quite uncultivated, the remainder of the Island is one large paddy field.
o Is one of several rocks on the last raised land which exhibit a water line of the same height as that of the 2nd formation.
 The whole Island consists of three perfect levels different by 6 or 8 feet in height, the inner one having at its centre a Volcano about 90 feet above the sea.
 The water is very shoal to the Northward, and also on the Eastern side of Reguain. *L* Landing place.
 2. Specimens of the soil taken from spot thus marked.

No. 17. Is also unfortunately not copper ore, but cubical iron pyrites, containing no trace of copper, and quite valueless, unless it be abundant enough to smelt for its sulphur where fuel and labour are cheap. The mass of silver ore alluded to by Capt. H. was probably a lump of the white kind of pyrites.

The coal I should think promises well, judging from these specimens at the out-crop of a seam. It is bituminous, though not highly so, and I found also its Sp. Grav: to be 1.31, which is that of the best Burdwan coal. Its appearance and the fracture of some of the specimens are also in its favour, but any opinion would be premature till we have samples from a greater depth.

The petroleum does not call for any remark.

H. PIDDINGTON.

Illustrations of the Genera of the Bovinæ.—Part I. Skeletons of Bos, Bibos and Bison, the individuals examined being the Common Bull of Nepal, the Gowri Gao of Nepal and the Yak.

Bos and Bibos, resemble one another in the general formation of the trunk, and in having each 13 pairs of ribs, and 6 Lumbar vertebræ. In both, the ribs, from the 5th pair inclusive, bulge outwards gradually to the 13th which are the farthest apart. In *Bisonus*, on the contrary, all the ribs are much straighter; the first 6 pairs diverging very little more from the perpendicular than in a horse; from the 7th to the 10th pair inclusive, the bulging is greatest; the latter pair being the farthest apart, whence to the 14th they rather approximate, the last pair being nearer one another than the intermediate ones. This gives a cervine character to the trunk of *Bisonus*. In *Bisonus* 14 pairs of ribs, and only 5 Lumbar Vertebræ, making an equal number of Vertebræ, in all 3 animals.

The differences between Bos and Bibos, are as follows. The spinous process of the Dorsal Vertebræ in Bibos from the 3d to the 5th inclusive are of equal length, with a very gradual shortening of the others to the 10th which is 2 inches longer than the 11th, and the 12th is two inches shorter than the 11th. The droop towards the loins from the greatly elevated spinal crest of Bibos is so sudden, that in one specimen in which the spinous process of the 10th vertebra measured $10\frac{1}{2}$ inches, that of the 13th was only 5 inches. In Bos, the 3d spinous process is the longest whence the droop commences, the dorsal spines gradually shortening until the 10th, whence to the 13th they are not longer than those of the

Lumbar vertebræ. The Humerus in Bos, compared with the fore arm is somewhat shorter than in Bibos. The carpus and canon united, compared with the fore arm is shorter in Bibos than in Bos.

The following comparative peculiarities in all these animals present themselves:—

The skull and horns are greatly heavier in Bibos than in Bos or Bisonus. The forehead of Bibos is at first sight hollow, but is actually flat; the concave appearance being derived from a great transverse arch of bone which surmounts the face; projecting forwards in some degree, but its direction taken along the convexity parallel with the centre of the horns' cores. The orbit in Bibos projects more than in Bos, or Bisonus: the nasal bones are *most* arched (transversely) in Bibos, *least* so in Bos. The face—from anterior margin of orbits to muzzle—*longest* in Bisonus, about *equal* in Bos and Bibos. In Bisonus the forehead above the orbits, is transversely arched, in Bos it is quite flat. In Bos, placing the muzzle on the ground, the parieto-frontal junction is flush with the superior aspect of roots of the horns' cores. In Bisonus, placing the skull similarly—the superior portion of the frontal bones is, for about an inch and a half on each side, on a line with superior aspect of roots of horn cores; the medial portions and frontals are considerably elevated, forming a central truncated cone between the two portions already noted as being on a line with superior aspect of root of horn cores. In Bibos again, the skull disposed as above, a large bony arch protruding so as to overhang the forehead runs across from horn to horn, the arch commencing at once from their roots. Viewing the three skulls from the superior margin of the intercornual space, (skulls placed as before with muzzles on the ground) to the foramina magna, the following differences appear so remarkable in Bibos, as to be alone eminently fitted for at once distinguishing it from the others. In Bos, the entire space from the superior margin of the foramen magnum, to the intercornual crest of the frontals, is occupied by the insertions of the nuchal muscles, and it is nearly square (trapezium.) In Bisonus, the same space is an equilateral triangle, and divided into two separate parts. 1st. The truly occipital portion, into the whole of which the nuchal muscles are inserted, formed *anteriorly* (the muzzle on the ground) by a slightly arched line drawn between the posterior margins of the bases of the horn cores; and *posteriorly* by the superior margin of the foramen magnum. 2nd. The parieto-frontal portion, of a triangular shape, free from muscular insertions, only $\frac{1}{4}$ th the extent of the 1st portion, and forming the apex of the larger triangle.

In Bibos, the same space (or postea aspect of the skull) is of a spheroidal shape, deeply indented about its centre by the temporal fossæ, thus dividing it into two nearly equal hemispherical portions, viz., the anterior and larger one formed entirely by the great intercornual crest, and free from the insertions of nuchal muscles and ligaments, and the posterior or truly occipital portion, occupied wholly by the insertions of the neck muscles. The size of the intercornual crest in Bibos is so great that the postea aspect of the skull equals in extent the antea one, bounding the latter inferiorly by a line drawn across the face from the centre of the orbits. Leaving the skulls, the following are the comparative differences in the trunk of these three animals.

The great development both in elevation and extent of the spinous ridge in Bibos, at once distinguishes this animal from Bos and Bisonus. In Bos the greatest elevation, much inferior in height, is confined to the spinous process of one vertebra (the 3rd) whence the declension is uniform to the 10th. In Bibos the extreme elevation is extended to three of the spinous processes (the 3rd, 4th and 5th), and considerable elevation prolonged to the 11th. In Bisonus again, which occupies a middle station between Bos and Bibos in regard to *extensive* development of the spines, the extreme elevation, great in height as compared with Bos, is confined to one spine, whence the declension is more sudden than in Bibos, but less so than in Bos. These differences in the skeletons are manifested in the living animal thus: in Bos the rise from the neck to the greatest elevation of the spinous processes is most gradual, the highest point being between the scapula, with declension thence gradual and uniform. In Bibos the rise from the neck is more abrupt than in Bos, and the declension very gradual until near the loins (at 10th Vertebra), whence to level of loins very sudden indeed, giving the animal an appearance of disproportioned smallness in its hinder extremities. In Bisonus the rise from the neck is most abrupt, and confined as in Bos to the shoulders, or rather entirely to the withers, whence the droop is more gradual and uniform than in Bibos, but less so than in Bos.

In detail these appearances arise from the following state of spinous process. In Bos the first spinous process is only 2-3ds the length of the 2nd. In Bibos the 1st spine is to 2nd as 7 to 8. In Bisonus the 1st spine (dorsal) is of extraordinary length and only perceptibly shorter than 2nd one, which is the longest of all, whereas in Bos and Bibos the 3rd is the longest.

Summary of Osteological Characters as noted above.

Bos.—Dorsal Vertebrae and Ribs 13; Lumbar Vertebrae 6; Ribs laterally bulging from the sixth pair giving great expansion of costal region;

transverse processes of Lumbar Vertebrae long and strong, spinous process of this not specially developed: the 3rd Dorsal Vertebra the longest, whence a gradual and uniform shortening of spinous processes to 10th, which is not longer than those of Lumbar, Metacarpal bone (Canon) long, ditto Metatarsus, forehead flat, nasal bones obtusely arched; facial portion of skull (all below the orbits) longer than in *Bibos*, shorter than in *Bisonus*, or *Bubalus*, in which longest of all. Intercornual space scarcely arched; skull less massive than in *Bibos*, more so than in *Bisonus*; Postcal aspect of skull square and smaller compared to forehead (all above orbits) than in *Bisonus*, greatly so than in *Bibos*.

Bibos.—Skull deep, broad, and very massive, an elevated massive and protruding intercornual crest, overhanging the forehead nasal bones, longitudinally arched (especially in the male), giving along with the protruding intercornual crest, a hollow appearance to the forehead. Postcal aspect of skull as extensive as the forehead. Horns of great thickness, short and invested over their intermediate crest. Ribs and Dorsal Vertebrae 13; Lumbar 6; lateral processes of Lumbar, less developed than in *Bos*, more so than in *Bisonus*. Ribs laterally bulging as in *Bos*—if any difference less so. Metacarpus (Canon bone) and Metatarsus shorter than in *Bos*, longer than in *Bisonus*. Spinous ridge greatly developed both in altitude and in extent—the processes continuing of great length to the 11th. They exceed those in *Bos*, even in a greater degree, than the massiveness of skull and horns would indicate.

Bisonus.—Dorsal Vertebrae and Ribs 14—Lumbar 5—Ribs straight, and costal cavity compressed and cervine compared with *Bos* and *Bibos*. Spinous ridge greatly developed anteriorly, but less protracted in extent and declining (from 3d spinous process) more abruptly than in *Bibos*. Skull less massive than in *Bos* or *Bibos*, facial portion longer and more finely tapering. Superior portion of forehead transversely arched. Intercornual space centrally elevated, viewed anteriorly, this portion is a truncated cone, postcal aspect of skull triangular, more extensive than in *Bos*, but greatly less so than in *Bibos*. Metatarsus and Metacarpus, shorter than in *Bibos* or *Bos*.

Remarks.—The character of the limbs in *Bos*, indicate the greatest degree of locomotive speed, and the development of the Lumbar region, promises the greatest burden-bearing power. The cervine character of costal region in *Bisonus* may, in locomotive energy compensate the longer canon bone, and Metatarsus of *Bos*, nor is it improbable, that the additional pair of ribs in the same animal, by adding to his length of barrel and shortness of loins, may compensate to him the greater indications of strength in the Lumbar region of *Bos*.

P. S.—Since writing the above I have seen the skulls of a male and female Gayal from Sylhet. The face is flat, the intercornual space is flush as in Bos; the horns are somewhat triangular at their base, tapering to a sharp point, dark green, about $4\frac{1}{3}$ feet apart at the apices, and laterally diverging from their base. The Gayal, Mr. Hodgson informs me, has 13 Ribs: its head it indisputably Bovine, much more so than in Bibos.

A. C.*

Part II. Craniology of Bibos, Bison and Bubalus, the subjects of examination being the Gouri Gao, the Gayal, the Yak and the Arna.

Adverting to the annexed table of admeasurements, I proceed to remark upon the several skulls:

Dimensions and weight of the skulls and horns of Bibos Cavifrons (1), Bos Gavæus (2), Bisous Poephagus or the Yak (3), and Bubalus Arna (4), Common Domestic Bull of Nepal (5), 6, 7 fem of 1 and 2.

	1.	2.	3.	4.	5.	6.	7.
Length from Symph: intermax: to crown of forehead,	1 10 $\frac{1}{2}$	1 7 $\frac{1}{2}$	1 7 0	1 11 $\frac{1}{2}$	1 5 0	1 8 $\frac{1}{2}$	0 5 $\frac{1}{2}$
Greatest height,	1 3 $\frac{1}{2}$	1 1 0	0 9 $\frac{3}{8}$	1 2 0	0 9 $\frac{1}{2}$	1 0 $\frac{3}{8}$	1 0 0
Greatest width of frontals between the orbits,	0 11 0	0 10 0	0 9 0	0 8 $\frac{1}{2}$	0 7 $\frac{1}{2}$	0 8 $\frac{3}{8}$	0 8 $\frac{3}{8}$
Least ditto ditto,	0 8 $\frac{1}{2}$	0 7 $\frac{1}{2}$	0 7 0	0 6 0	0 6 $\frac{1}{4}$	0 6 $\frac{3}{8}$	0 6 $\frac{3}{8}$
Greatest width of frontals, between antea and inferior bases of horns,	1 2 0	1 1 $\frac{1}{2}$	0 10 0	0 10 0	0 7 $\frac{1}{2}$	0 11 $\frac{1}{4}$	0 1 0
Height or length of postal plane of skull from lower edge of foram: condyles to crest of forehead,	0 11 0	0 8 0	0 6 0	0 8 0	0 5 $\frac{1}{2}$	less 0 9 0	less 0 7 0
Length of frontals from line drawn through mid orbits to crest of forehead,	0 9 $\frac{1}{2}$	0 8 $\frac{1}{2}$	0 6 $\frac{1}{2}$	0 7 $\frac{1}{2}$	0 6 $\frac{1}{2}$	0 8 $\frac{1}{2}$	0 7 $\frac{3}{8}$
Length of Nasals,	0 10 0	0 6 $\frac{1}{4}$	0 7 $\frac{1}{2}$	0 10 $\frac{1}{2}$	0 7 0	0 8 $\frac{2}{8}$	0 5 $\frac{1}{2}$
Greatest breadth at Muzzle (intermaxill:)	0 4 $\frac{1}{4}$	0 3 $\frac{3}{8}$	0 3 $\frac{3}{8}$	0 4 $\frac{3}{8}$	0 3 $\frac{1}{2}$	0 3 $\frac{3}{8}$	0 3 $\frac{1}{4}$
Diameter of orbits,	0 2 $\frac{3}{8}$	0 2 $\frac{3}{8}$	0 2 $\frac{3}{8}$	0 2 $\frac{3}{8}$	0 2 $\frac{1}{4}$	0 2 $\frac{1}{2}$	0 2 $\frac{1}{2}$
Symphysis of intermaxill: to inferior edge of the orbits,	0 11 $\frac{1}{2}$	0 10 0	1 0 0	1 2 0	0 10 0	0 11 0	0 9 $\frac{1}{2}$
Thence to bases of horn,	0 6 0	0 5 $\frac{3}{8}$	0 4 $\frac{1}{2}$	0 5 0	0 5 $\frac{3}{8}$	0 6 $\frac{1}{4}$	0 5 $\frac{3}{8}$
Basal circuit of the horns, ..	1 6 $\frac{1}{2}$	1 5 0	0 10 $\frac{1}{2}$	1 7 0	0 8 $\frac{1}{4}$	1 1 0	1 1 0
Terminal interval of horns, ..	1 8 0	2 10 $\frac{1}{2}$	1 3 $\frac{1}{2}$	1 9 0	1 7 0	0 8 0	1 9 0
Greatest interval of ditto, ..	2 1 $\frac{1}{2}$	2 10 $\frac{1}{2}$	1 7 0	3 0 0	1 7 0	1 3 $\frac{1}{2}$	1 9 0
Length of horns greatest by outer curve,	1 10 0	1 8 0	1 5 0	4 4 0	0 9 $\frac{1}{2}$	1 5 0	1 3 0
Weight of skulls and horns, ..	30 lbs. 8 oz.	17 8 0	15 8 0	27 0 0	9 $\frac{1}{2}$ lbs.	15 $\frac{1}{4}$ lbs.	10 $\frac{1}{4}$ lbs.
Length of face from Symph: intermaxill: to lower edge of orbits,	0 11 $\frac{1}{2}$	0 9 $\frac{1}{2}$	0 11 $\frac{1}{4}$	1 2 $\frac{1}{2}$	0 10 0	0 0 0	0 0 0
Length of forehead from lower edge of orbits to crown of frontals,	0 11 $\frac{1}{2}$	0 9 0	0 7 $\frac{1}{2}$	0 9 $\frac{1}{4}$	0 8 0	0 0 0	0 0 0

* These initials indicate the work of Dr. Campbell of Darjeeling, formerly my assistant, and who was kind enough to afford me his aid on this, as on various other occasions.

The prime characteristics of No. 1, or the skull of the Gouri, are enormous size, (above a third greater than that of the ox); more than proportionate massiveness or weight (being treble that of the ox); and lastly, great breadth, without marked deficiency of correspondent height or length. The greatest width of the frontals, between the extreme bases of the horns, is to the length as 14 to $9\frac{1}{2}$; but the greatest width between the extreme margins of the orbits is to the length only as 11 to $9\frac{2}{3}$. At first sight the frontals, *exclusive* of their crest, look flat; but they are really somewhat concave, and that, as well across between the very salient orbits, as longitudinally between the arched nasals, and the commencement of their own crest. That crest is most remarkable: it occupies the whole breadth of the bases of the horns and ascends nearly 2 inches above them, in a bold transverse arch. From the plane of the forehead it rises with a slight declination backwards, has a round edge on the crest, and thence falls perpendicularly upon the parallel plane of the occiput of which it constitutes (with the entirely merged parietes) above one half. The postcal plate of the skull thus becomes of an extreme size, being in depth to the lower edge of the condyles of the great foramen, longer or deeper, than the antecal plane of the frontals, great as the latter is. Another feature of the postcal plane is the very deep indentation of the temporal fossæ, which cut half in two the superior, pseudo-occipital or cristate, and the inferior or truly occipital portions of the postcal plane.

Of the trigonal ridge, which, in the Bisons, bounds superiorly the parietals, there is no trace, and very little of the true transverse ridge of the occiput which commonly limits the parietes inferiorly. With regard to shape, the occipital plane is neither square or semi-circular, but rather! if you *exclude* the interruption made by the temporal fossæ, spheroidal between the incurved salient *alæ* of the condyles below, and the bold transverse arcuation of the crest above; and if you *include* that interruption, bi-elliptic or composed of two oblate rounded figures of an ovoid or elliptical outline, and lying, one above the other, transversely to the skull, the upper or pseudo-occipital portion being the larger. The facial portion of the skull is equal in length to the frontal portion: the orbits are very salient and cervine, with rapid contraction of the head's breadth before them towards the nasals, which are of ample length and exhibit an arched form both lengthwise and across. The breadth of the intermaxillaries is moderate, in the position of the muzzle, which in the living animal is small; and though the nasals are produced much to the front, yet the lateral solution of continuity in the bones towards the malars

(the intermaxillaries not reaching the bones of the nose at all) is ample; and this, with the convexity of those bones, leaves abundant space for the olfactory apparatus. Other peculiarities of this skull, are, that the rami of the lower jaws are but slightly bent in comparison to those of *Bos*; and that their condyles as well as those of the foramen magnum have a lower than ordinary position. The horns, of very moderate length, and gradually attenuated from a very thick base, occupy the extreme ends of the frontal crest, filling its breadth but not ascending within two inches of its greatest height. Their direction is towards the sides with a slight uniform ascending and retiring curve, which brings the points back about half way to the bases with a direction suited to their junction over the neck, though, in males especially, the distance between the points always remains great. The horns are upon the whole rounded, but with considerable oblique depression towards the massive bases, so that their breadth is greater by $\frac{1}{3}$ than their depth, and the anterior surface sharper or narrower than the posterior one, the greatest surfaces being (in a horizontal position of the skull) towards the zenith and nadir. The result is a subtrigonal or ovoid section at the base, where in old animals there are externally several heavy wrinkles: the colour is horn green with black tips.

No. 2, which is the half reclaimed stock of *Gavæus* vel *Bos sylhetanus*, is likewise a large skull, not above a 6th less than the preceding in dimensions of extent, but scarcely exceeding half of the weight of it, the bones being far less massive and also smooth on the surface. Here again we have signal length and breadth in the frontal region, both rapidly diminishing in the relatively contracted facial, so that the distance between the small fine muzzle and the eyes exceeds not that between the latter point and the summit of the head. In the precedent skull, the same proportion was observed. But in the profile of the present there are none of the curved lines, so noticeable in the last—no frontal crest, no saliency in the orbits, and no arcuation in the length of the nasals, which are, besides, as well comparatively as positively short, whence the interval, between their points, and those of the intermaxillaries is much greater than in the last; though, as in it, these bones are entirely disconnected by the intervention of the malars. The greatest width of the frontals, at the two points before indicated, is to their length as 13 and 10 to $8\frac{1}{2}$. These are dimensions and proportions pretty similar to the last, and exhibit a comparative breadth not found in the common types of *Bos*, with which however the present skull agrees in the perfect flatness and rectilinearity of its frontals,

owing to the non-saliency of the orbits and to the straightness of the culmenal line drawn between the bases of the horns. There is a further essential agreement with *Bos* and disagreement with the last, in the circumstance of the horns being inserted on the summit of the frontals, which however, as in the last are carried high up between the horns and thence dropt perpendicularly upon the parallel plane of the occiput, of which they constitute with the entirely merged parietes, not indeed a half as in *Bos*, but a very material portion, almost $\frac{2}{3}$ th. The postcal plane of the skull is consequently of dimensions inferior only to those of the last but superior to those of the occipital surface in *Bos* or *Bubalus* or *Bisonus*. In the present subject its depth or length is not far from equal to that of the frontal plane, large as the latter is; and as in the last temporal fossæ make a deep indentation upon it, though not so deep as in *Bibos* nor so centrally placed in respect to the height or depth of the plane. This indentation in both skulls marks by its position the extent of the false and true portions of the occipital plane, or that composed of the frontals and the parietals, and that composed of the occipital bones inclusive of those of the foramen and its condyles. In *Bibos* the former portion is equal, and more than equal to the latter, and the indentation is consequently central; in the present animal the proportions of the two parts are as 2 to 3 and consequently the indentation is supercentral. This indentation likewise, as already noted is much less deeply cut, though more so than in the more ordinary types of *Bos*; in which latter, however, the false occiput, so characteristic of these 2 skulls (*Gouri* and *Gayal*), cannot be said to exist; nor is there in *Bos* proper any sign of the trigonal ridge defining the course of the parietes *superiorly* in the *Bisons* and in them only. The transverse ridge bounding the parietes *inferiorly* is defined in this skull (*Gayal*) about as distinctly as in *Bibos* and in *Bos*. In point of shape the postcal plane of the present subject represents in its upper portion a vague transversely laid parallelogram, and in its lower, an oblate sphere—of which two the proportionate size has been already stated as 2 to 3. But, if we take no heed of the indentation of the temporal fossæ and moreover consider (as *Cuvier* always does) the *base* of the plane as *rectilinear*, the figure of the plane may be called square. In the common *Ox* this indentation is *really* almost obsolete: but in both *Ox* and *Yak*, as in the *Bibos* also, the basal line is arched downwards. The culmenal line is arched, (upwards) only in the *Gouri* or *Bibos* and in the *Bisontine Yak*. The angle formed by the postcal with the antecal plane of the skull of the *Gayal* is very acute and in fact a right angle as in *Bos* and *Bibos*. The non-saliency of the

orbits and the straightness, longitudinally viewed, of the nasals, have been already noticed. In these respects, as in the lesser compression of the lachrymal and malar bones, the present skull agrees with that of the common Ox; but the intermaxillaries are narrower at their extremity, and the nasal bones are shorter in proportion to them, and to all the other dimensions indeed, than in the common Ox. In the narrowness of the muzzle (intermax:) there is a point of affinity with *Bibos*: and with regard to the bend of the rami of the lower jaws and to the position (high or low) of their condyles, as well as those of the foramen magnum, the skull exhibits a mixed character composed half of *Bibos* and of *Bos*. Duvancel erroneously I think stated to Cuvier that the Gayal species in the wild state have no proper dorsal ridge. Dr. Buchanon, however, asserted, of the reclaimed race, that the true ridge is present but short in extent, not extending over more than a third of the back. I cannot decide that essential point: but I know that the Cayal has only 13 pairs of ribs; and from the characters of the skull, I deduce a confirmation of H. Smith's opinion that the animal is an osculent species, as I should say of *Bos* or of *Bibos* according as it has, or has not the true dorsal ridge. The horns are placed at the ends of the highest part of the frontals, a large portion of which on both surfaces of the skull they cover or flank rather with their thick bases. Towards the bases they exhibit several wrinkles, but are smooth upwards and rapidly attenuated to the blunt points; as in *Bibos* the horns are subtrigonal and depressed the broadest faces (in the horizontal position of the head) being the superior and inferior, the next so, the postæal, and least broad, the antæal. The depression is even more distinct than in *Bibos*, but still the section is, upon the whole, ovoid. The horns are directed outwards with a slight inclination backward and upward, and hardly any curvature so that their divergency is extreme. The colour is wholly black, and this as well as the very moderate curve of the horns, and their position upon the summit of the perfectly flat frontals, may be used as decisive criteria to distinguish the spoils from those of *Bibos* or No. 1. In the females of *Bibos* the frontal crest, though less conspicuous than in the males, is ever present, and may be marked at once by the arched line passing between the *highest* bases of the horns, which it transcends in the middle—and by the depression of the frontals between their *lowest* bases. The skulls too of *Govæus* are from a half to a third smaller, taking weight and dimensions together. In the females of *Bibos* the horns are so much bent that the tips are as near as the bases, and pointed directly at each other just behind the nape. I proceed now to No. 3 or the Chowry Bull of Tibet which has 14 pairs of ribs and a strong dorsal ridge, though

limited in extent to the withers; and which is therefore justly considered to belong to the Bisontine group, though it be perhaps an aberrant or osculant species more connected by some of the characters of its skull with the Bubalines than with the Taurines. The distinctive characters of this skull are moderate size and weight, dimensions of length more preponderant (from increase in the facial region) over those of breadth, and more specially of height, than in either of the foregone or even in the common Ox; and, lastly, frontals distinctly though trivially convex in the upper part, whence they pass with a somewhat obtuse angle into a semi-circular or rather trigonal occipital plane of very moderate size. The excess in length of the facial over the frontal portion of the skull is as 11 to 7. The greatest width of the frontals at the two points before named is to their length as 10 and 9 respectively to $6\frac{1}{2}$: but as, owing to the higher position of the orbits, the nasals do not really extend upwards beyond a line drawn across *anteal* the edge of the orbits, the proper proportion of length to breadth of frontals is really about $7\frac{1}{3}$ to $9\frac{1}{2}$. This is an excess of proportionate width by no means exceeding that of the preceding examples, nay rather falling short of their proportionate breadth. It, however, exceeds the proportion in the common Ox, whose frontals, measured in the way just suggested and for the same reasons, are only as broad as long, and that equally whether we take the breadth between the orbits or between the bases of the horns. At first sight the frontals seem flat, owing to the elevation of the orbits; but they are effectually, and especially in the upper part, arched, as well across as longwise, so as to lessen the angle made with the occipital plane which is of moderate size, and composed entirely of the true occipital and parietal bones. These bones, delimited by a continuous ridge, whose apex constitutes at once the summit of the frontal crest and of the occipital plane, constitute the latter a right angled triangle, defined laterally (below the parietals) by the temporal fossæ and lambdoid crest, and basally by an imaginary straight line drawn transversely through the condyles of the foramen magnum. The indentation of the temporal fossæ upon the occipital plane, though larger than in the domestic Ox, is far less than in either of the preceding species; and, as it is drawn much upwards close under the horns, the occipital trigon is uninterrupted; as, for a similar reason, is the occipital *square* of the Ox, whose parietes, however, are merged, as in the Gouri and Gayal, though placed as high as in the Yak. Owing to this merging and to the absence of transverse arcuration in the frontal ridge line, the occipital plane in the Ox becomes square; whereas, owing to the boldly defined and pointed parietal ridge, and to the rounding off of

the frontals on either side of it, the same plane in the Yak becomes trigonal—or where the parietal ridge is more obscure and the rounded off and transversely arched ridge line of the frontals is made to define the occipital plane superiorly—semicircular; the *base* being *always* considered a *straight* line. There is a strong tendency, no doubt towards the Bubaline skull in the Yak, and not merely in the round and sloped off frontals as above noticed, but also in the great extent of the facial portion of the skull, and in the very small curve of the rami of the lower jaw. Towards Bibos again there is an inclination in the transverse intercornual arch though it be vague, in the salient orbits, and in the longitudinal arcuation of the nasals, as well as in the large lateral vacuity towards the molars. The intermaxillaries cease considerably short of the nasals and the two sets of bones are consequently wholly unconnected, more so even than in the Gouri or Gayal. The nasals are no way deficient in length; yet is the interval between their anteaal extremities and those of the intermaxillaries more signal than in the Gouri, the Gayal, or even the Arna in which last the nasals are at a maximum of development so as to be connected with the intermaxillaries for a considerable extent—a circumstance sometimes observable to a less extent in the skulls of the common Ox. In the living Bison or Yak the muzzle is small as in Bibos, but I cannot say I clearly trace the symptoms of this in any unusually narrowness of the intermaxillaries at their symphysis. Upon the whole the skull of the Yak as compared with that of the common Ox, is larger in proportion to the size of the animals, and exceeds the Bovine skull as much in breadth as it falls short of it in depth or height. These are characters of *depression* and are no where else so noticeable as in Bibos (excluding the crest) whence the skulls of both come further to agree in the common inclination towards straight lower jaws lowly articulated. But in the length of the facial portion of the skull as compared to the frontal and consequent high position of the orbits, and in the tendency of the rounded frontals to slope off easily towards the occipital plane, the Yak's skull differs antipodally from that of Bibos, approaching in the same degree to the Bubaline cranium. Of all the skulls now before us the position of the orbits is highest (longitudinally viewed) in the Arna or wild buffalæ, and lowest in the wild Gouri or Bibos; in the Yak its position is most analogous to that it holds in the common Ox. In regard to saliency of the orbits, there is the strongest resemblance between the Bison and Bibos—none of the others showing the least tendency that way. The horns of the yak, of moderate size, jetty black, rounded and smooth occupy, as usual, the ends of the frontal

apex having the frontal bones somewhat arched between them as well transversedly as lengthwise, though the evenness of the arcuation both ways be somewhat broken by the saliency of the apex of the parietes, which apex shows itself palpably on the central point of the crown of the forehead sometimes rising a little above and in rear of the cases of the horns. The horns are directed at first outwards, and then reverted upwards and backwards with a bold curve, which often leaves the points not remoter than the bases, in which case the points will tend towards the crown of the withers, or if less curved, directly backwards and parallelly.

I proceed now to No. 4 or the Bubaline skull, the most signal characters of which are elongation or preponderance of length over both width and depth, the very large proportion of that length borne by the facial portion in comparison of the frontal or cerebral, and the easy rounded slope by which the clearly convex frontals pass into the occipital plane. In regard however to the last named characters there is considerable diversity of degree found in different skulls, those which have the horns directed most backwards from and at their bases being most signal for the confluent rotundity of the frontals and parietals (in some almost as noticeable as in our own heads) and those which have the horns directly least backwards, being least so. Massiveness and size are no doubt further characteristics of the Bubaline skull; but characters in which it will bear no comparison, at least in regard to weight with that of Bibos, though the vast size of the Arna's horns will sometimes approximate the weight of both skull *and horns* to that of the skull and horns of Bibos. The Arna or type of Bubalus has 13 pair of ribs and no trace of the dorsal ridge of Bibos and of Bison, the ridge line being perfectly straight in the living animal from the nape to the root of the tail. The Arna is one third larger than the finest domestic breeds of buffaloe, and, like the wild type of Bibos, is distinguished for a short tail reaching only to the hocks. The limbs are much less fine than in the other Bovines, the body longer in proportion to its height, and the habits quite different, leading the animals perpetually to wallow in mud and water. Mais revenons a nos ossements. The length of the facial portion of the skull compared with that of the frontal is as 15 to 10 nearly. The greatest width of the frontals at the two points before indicated is to their length as 10 and $8\frac{1}{2}$ respectively to $7\frac{1}{2}$. The frontals in fact are both short and narrow, and they are invariably more or less, and generally markedly, convex, as well transversely between the unsalient orbits as lengthwise from behind the orbits to the occiput. The

more arched the forehead the obtuser the angle formed with the occipital plane and the more distinctly do a portion of the frontals and all the parietal go to from a part of that plane. In such cases the pseudo-occipital portion of the posteaal plane is very noticeable constituting nearly one half of its whole depth and representing a transverse ovoid figure or oblate spheroid bounded above by the vaguely defined crown of the frontals, and below by the rather deep indentations of the temporal fossæ connected by any imaginary line. But usually, and whenever the frontals are not very much curved in their length, the pseudo-occipital portion of the posteaal plane of the skull is trivial in depth, and defined above by a nearly straight line between the ends of the horns—the rest of the posteaal plane constituting a second and less depressed sphere, defined above by the course of the true occipital ridge, and nearly excluding the parietal trigon so strongly marked in the last or the Bison of Tibet, but here wholly unmarked, the bone itself being utterly merged in the frontals.

In point of size the posteaal plane of the skull, though moderate on the whole, is yet usually larger than in the Ox or in the Yak, but far inferior in extent to what is seen in Bibos—most nearly resembling the proportion and figure too in the Gayal. The nasals, molars and intermaxillaries are extremely developed longitudinally, so that the orbits are nearly twice as far from the symphysis intermaxill. as from the crown of the frontals. These bones have no proportionate breadth so that the face is narrow as well as long, except at the symphysis of the intermaxillaries where the dilation of the bones clearly indicates the broad massive muzzle of the live animal. The intermaxillaries intervene between the molars and nasals for 2 to 3 inches: the nasals are not at all arched and are well produced to the front so that the nasal cavity is upon the whole small, though somewhat increased by the lateral dilatation of the intermaxillaries in the region of the muzzle. The deficient width of the skull is indicated by the close position of the rami of the lower jaw, and its moderate height, or depth, by their small curvature, though in the last particulars of deficient depth and consequent straightness of the lower jaws, the Yak's skull is pre-eminent. The horns of the Arna are signally remarkable for size, for horizontality, and for depression: their thickness is not so remarkable as their length and their tendency backwards parallelly to the plane of the face with bold lateral single curves (to the sides neither sinking nor rising) and more or less of divergency. Their length is sometimes enormous and there is a clear distinction between the breeds with the longer and less divergent, and

those with the shorter and more divergent horns. The horns are inserted typically at the ends of the frontal line which usually lies evenly between them, but is sometimes arched. They are so much depressed that the width is more than double of the depth, and the depression being at the same time oblique, the outer or anteal side presents a considerable flat surface, while the inner or posteaal one shows an edge only. The horns are therefore strictly triangular and that invariably so, 4 or 5 inches only at the points being rounded, and there only the horns are smooth, the rest of the surface being covered with close transverse wrinkles or rugae.

With regard to the skulls of the domestic Ox and those of the females of the Gouri and the Gayal, I will not fatigue the reader by any separate remarks on them. They have been sufficiently mentioned incidentally.

General dimensions, aspect and external characters of the Gouri Gao, the Arna and the Yak.

	(1) Gouri Gao,		(2) Arna or wild Buffaloe.	
	(1)	(2)	(1)	(2)
Nape to root tail, straight.....	7 6	$\frac{1}{2}$	7 9	0
Height at shoulder ditto.....	5 8	0	5 4	$\frac{1}{2}$
Ditto at croup ditto.....	5 0	0	5 5	$\frac{3}{4}$
Depth of chest ditto.....	3 1	$\frac{1}{2}$	3 0	$\frac{1}{2}$
Girth behind shoulder	8 7	0	8 6	0
Fore leg to line of Chest	2 3	0	2 4	0
Tail only.....	2 7	$\frac{1}{2}$	2 9	0
Tail and tuft	2 9	0	2 11	0
Head, length from nape to snout along the curve	2 10	$\frac{1}{2}$	2 8	$\frac{1}{2}$
Ditto straight, snout to crown forehead.	1 10	$\frac{1}{2}$	1 10	$\frac{1}{2}$
Ditto ditto Snout to fore angle of eye..	1 0	0	1 2	0
Thence to nearest base of horn	0 5	$\frac{3}{4}$	0 4	$\frac{1}{2}$
Depth of head, greatest from crest of forehead to edge jaw.....	1 4	$\frac{1}{2}$	1 1	0
Breadth of forehead, greatest above or- bits.....	0 11	$\frac{3}{8}$	0 9	$\frac{3}{8}$
Length of ditto from line of upper edge of orbits to crest of head	0 11	$\frac{1}{2}$	0 8	$\frac{1}{2}$
Length of ears.....	0 10	$\frac{1}{2}$	0 11	$\frac{1}{2}$
Greatest width of.....	0 6	$\frac{1}{2}$	0 0	0
Length of fore hoof	0 6	0	0 7	$\frac{1}{4}$
Greatest breadth of ditto.....	0 4	$\frac{3}{4}$	0 7	0

Length of hind hoof.....	0 5 0	0 6 $\frac{3}{4}$
Greatest breadth of ditto.....	0 4 0	0 5 $\frac{3}{4}$
Horns length outside curoge....	1 9 0	4 6 0
Terminal interval of tips.....	1 9 0	1 9 $\frac{1}{2}$
Nearest basal interval postea.....	0 7 0	ant — 6 0
Remotest basal interval antea.....	1 1 $\frac{1}{2}$	post 1 0 0
Weight of skull and horns.....	32 lbs	30 lbs.
Girth of horns at base.....	1 6 $\frac{1}{4}$	1 8 0

Character of the heads with their integuments.

GOURI GAU. The head is large and massive with great breadth and depth rapidly diminishing towards the gape where the ample lips and muzzle cause it to swell again : the straightness of facial line is slightly interrupted by the arcuation of the chaffron, even before you reach that light point where the frontals commence to make their huge curved sweep towards the occiput. The crest of this sweep is about $1\frac{1}{2}$ inch above the horns ; its antea base $5\frac{1}{2}$, and its postea, $2\frac{1}{2}$ above the proximate planes, fore and aft. Its form is almost cylindrical between the bases of the horns which occupy its ends entirely, and pass behind it on the dorsal surface ; muzzle of small size for a taurine animal and somewhat indented curvately on superior edge instead of running straight across between tops of nares ; nares broad, lunate and oblique : upper lip full, laxly applied to head, and falling over lower lip which has a small beard : both lips near the gape have large soft pointed and recurved papillæ. The 8 incisors below, which are ranged in a small arch with broad nearly level crowns, are quite moveable in the gums : the chaffron is of medial length and boldly convexed lengthwise and across : the forehead is long, broad and flat, till the arched sweep between the horns commences at 7 inches from the extreme antea base of forehead or a line drawn across the *antea* points of orbits : From *this* line to the crest of forehead there is a length exactly equal to the greatest breadth between the orbits, which is at their postea salient angles. From the great length and bread the of forehead result the low position and great separation of the eyes. The interval between them across the top of the chaffron is one foot by the natural curve ; and the distance from their anterior canthurs to the nearest base of the horn is $5\frac{1}{4}$ inches. In the Arna the same interval is but $8\frac{1}{2}$; and the same distaunce, but 3. The ears are of ample size and spread greatly towards the tips, the shape being somewhat ovoid ; from anterior edge of helix proceed some long hairs, and the lower margin is indented by short striæ of closer hairs which run all round its edge :

the rest of the interior is nude ; the auditory orifice is at the very bottom of the ears, small and round, and protected on the antea side by a process equivalent to the tragus, but wholly internal above this a short transverse bilobate process defining the upper line of the small and vague concha, and having a deep inclination above it answering to the lower ridge of the antihelix and seapha respectively.

The eyes are rather small, oblique, full with oblong oblique pupil and large soft lashes to upper lid. The horns are very remote, short thick, directed nearly outwards and a little backwards with the tips recurved inwards and backwards. They have a very broad base passing gradually into skin and posteaally secreting and nude. They are depressed and subtriangular, the broadest faces being the superior and inferior, and the third of the triangle, the postea face : the antea is reduced to an obtusely rounded edge merely : the trigonal form gradually gives way upwards, and the recurves are conic, ending in a sharp point : two or three heavy rugæ near base : rest of horn very smooth and glössy : colour pale green with black points. As already noted, the horns lie $1\frac{1}{2}$ inch below the crest of the forehead ; but a portion of their base passes a good way *behind* that crest, which ends on the occipital surface of the head in a small segment of a circle, below which the plane of the occiput is quite and falls perpendicularly on the nape with a clear dip of several inches wholly unoccupied by the muscular attachments of the neck.

The hoofs in the living animal are not spread, but rather compressed, with the flat sides of the cleft nearly touching. The sole is flat, rounded, softish, and ascending posteaallywards the false hoofs which are considerably developed and conical, the fore hoofs larger than the hind : the neck short thick, and sunk between the frontal and dorsal crests the shoulders and trunk very massive and deep, being surmounted by an elevated dorsal ridge conterminous with the ribs : the hind limbs and croup lower and feebler ; the barrel tapering ventrally towards the hind legs : limbs low, stout, fine ; tail hardly reaching the hocks, slender, cylindeco-tapered, closely haired and ending in a full tuft. The hide is exceedingly thick : the hair close, glossy and of one sort only, though the specimen be a mature male killed in mid winter. On the forehead, on the chin, and thence to the chest (along the abdominal aspect of neck) and on the fronts of the limbs below the central flexures, and there only, is the hair a little elongated and slightly waved or curled ; but only slightly and every where else the coat is short, straight and applied. The hairs of the tail tuft also are course, a little elongated.

There are 4 teats plainly developed and running in two lines on either

side the scrotum before it begins to depend : a fifth is bastard and irregular. The colour of the animal is black : but the forehead, the whole limbs below the central flexures, the edge of the upper lip and the chin are dirty yellow white : the scrotum, and insides of thighs near it, tan colour : insides of fore legs near body, or sides of chest, also paled and yellow grey : internal nude parts of lip and palate, fleshy white : insides of ears, ruddy fleshy.

BUFFALOE WILD. The head is as long as the Gouri's but not so massive. Its entire facial line is straight : the forehead is much shorter and narrower and convexed across. By reason of the shortness of the frontal bones, the eyes are more raised and much nearer to the horns. In proportion as the frontals are shortened, the nasals (or chaffron) are elongated, giving the head a narrower longer look. The frontals are not raised above the superior edge of the horns, and they pass with a gentle curve to the occiput : Ears larger, narrower and more pointed : muzzle larger and squared between superior edges of the nostrils, which have a longitudinal direction not obliquely across, as in the Gouri. The whole animal is clearly in make longer than the Gouri but not more massive on the whole, more so in the hind quarters, less so in the fore. The back is quite straight without osseous crest or fleshy hump, and the neck and head are in line with it : the tail as short as in the Gouri : skin nearly as thick. The Gouri has more massiveness in the head and shoulders, and its chest is quite as deep or deeper, but the barrel and croup both follow much behind. As the Gouri stands at ease, the crown of his forehead is as high as the crest of his shoulders ; but there is a deep fall between the two, and the back has a long and pretty equable slope from the withers to the croup where there is a sudden droop. The limbs are shorter but as strong though less gross than in Arna, and the hoofs are smaller and less spread : tail similar in both : Ears shorter broader and less drooped in the Gouri Gau. The Arna is longer and higher on the whole ; is equally strong fore and aft ; and the line of the back is quite straight from the head to the tail. Both have the knees and forehead tufted : but the Gouri is uniformly and fully clad in short Bovine soft hair, while the Arna has its head, neck, chest, shoulders and greater part of its body above, scantily dressed in bristly hair, and the rest of the skin, more or less denuded.

June 1.—FŒTUS IN UTERO OF GOURI GAU. Snout to rump 16 inches. Height at shoulder 1⁰, at croup 9½. Head (straight) from snout to frontal ridge, 5. Tail 4, is probably not above 3 months old, nude, fleshy

red, with yellow hoops; is a female. 13 Pairs of ribs, 7 true and 6 false per side: dorsal vertebræ 13: Lumbar 6: (Ilium in fœtus joined only to one sacral vertebra) alias, ossa ilii jointed with 1st sacral vertebra only. Hollow of sacrum formed of three. In all 4 sacral: caudal 16: cervical 7: Spinous process of the 7th but moderately raised, process of 1st dorsal twice as long as 2nd and 3rd dorsals, gradually increasing: 4th to 8th nearly equal and longest: 9th 10th about length of 2 3: 11 to 13 gradually falling off; spinous process of lumbar not noticeably larger but broader than those of dorsal. Dorsals: Dorsal vertebræ 13: Spine of dentale vertebræ rather large. The general contour of the head from nose to occiput presents an equable arch in all its length, the frontals having no transverse dip, and but a moderate crest passing backwards with a broad quiet swell: frontals 2, divided longitudinally: 2 parietals occupying the sides of the head, contributing to the full uniform swell of superior surface and indented posteally in a triangular shape, which indentation is filled by the anteaal portion of the occipital, and is still on superior surface of the skull. This triangular occipital bone is bounded below, by the transverse suture, and here the fall towards the posteaal surface of the cranium *begins*. The second, or true occipital bone, bearing the crest is shaped differently. The others are two for the codyles, and one for the cuneiform process.

This young is a female, and probably therefore as well as on account of its imperfect state, the head shews nothing of the transverse depression or of the huge crest, characterising the frontals of mature male. Kidneys, as in *Bos*, oblong and multilobular, Intestines 20 feet, of thin uniform diameter. Cœcum $1\frac{1}{2}$ inch long, and 36 inches from end; its diameter and that of gut below it, rather plus that of the small guts. Stomach 8 inches long; length between orifices, 5—from Cardiac to funders, 3; peculiar formation vaguely traceable; great paunch largest; next solvent, rather less.

June 20.—MOTHER OF ABOVE, FROM SAUL FOREST. Snout to rump nine feet. Height before 5 feet. Tail 2 feet one inch. All essential characters and the aspect, of *mas*, but smaller considerably and dorsal and frontal crests less developed. Colours identical.

Yak, Bisonus Pæphagus, male, mature, July 12.

Nape to root tail (straight),	5	6	0
Height at shoulder,	4	2	0
Ditto at croup,	3	6	0

Depth of chest,.....	2	6	0
Girth behind shoulder,	5	10	0
Foreleg from rest to elbow,	1	10	$\frac{1}{2}$
Hindleg from ditto to true knee,	2	4	$\frac{1}{2}$
Tail only,	1	3	$\frac{1}{2}$
Tail and hair,	2	10	0
Head, from nape to snout (curve),	1	11	0
Ditto from snout to top frontals (straight),	1	8	0
Snout to fore angle of eye,	1	1	0
Thence to nearest base horn,	0	4	$\frac{1}{4}$
Greatest depth of head frontal crest to lower edge of jaw,	0	11	0
Ditto width ditto,.....	0	9	$\frac{1}{2}$
Ear's length,.....	0	5	$\frac{1}{4}$
Ditto maximum width,	0	2	$\frac{3}{8}$
Length of fore hoof (rest),.....	0	4	$\frac{1}{4}$
Greatest breadth of ditto,	0	3	$\frac{3}{4}$
Length of hind ditto,	0	4	0
Greatest breadth of ditto,	0	3	$\frac{1}{2}$

4 teats narrowing wedgewise backwards. Whole of perineum, scrotum, inside thighs and hypogastric region, from anus to prepuce, nude; skin, white. Hair along superior edge of whole of above nudity forming a long fringe with a very definite margin: nudity carried *partially* forward from prepuce to end of sternum with accompanying fringe; and armpits quite bare.

Head largish: facial line straight: muzzle vague and small: nares oblique; eye medial and with brown iris: ears small, oval, horizontal: Dorsal ridge true, elevate, abrupt, confined to withers: limbs very short, sufficiently fine. Barrel deep and compressed. Tail (true) very short, tapered, reaching only to mid buttock. Hoofs and false hoofs much scooped below: the latter, also large. The small guts are 107 feet, mean diameter, $1\frac{1}{2}$ inch: diameter for 19 inches from pylorus, 2 inches: cœcum 2 feet 3 inches, not saccid: max. diam. 4 inches. Ditto at entrance of small gut, 3 ditto at blind end, 2: Large gut 33 feet 4 inches: mean diam. 2 inches; for 18 inches from cœcum, diameter 3 inches, diam. of rectum, 2: spleen 22 inch by 4, of uniform diam.; ends rounded, weight $1\frac{1}{2}$ lb.; kidneys lobulated greatly; $6\frac{1}{2}$ long by $2\frac{3}{4}$ of equable diam: weight of each 10 oz. Liver one great lobe, with 9 small lobuli on lower surface, white without, gamboge when cut into, and full of tubercles: gall-bladder 5 inch. by 4, of uniform width, attached to costal margin of liver which is 7 lb. weight.

Length of 4th stomach 1-10 shape of a bottle with a neck of 4 inches long and $2\frac{1}{4}$ in diameter; above which is an oval dilatation 5 inch in diameter, coarsely rugose internally, and with glandular looking bodies between its inner and outer coats, diameter of pyloric orifice itself, $1\frac{1}{2}$ inch; basal width of 4th stomach, 10 inch: 3d stomach, round, 10 inch of diameter: 2d stomach sporan-shaped or hemispheroidal, 10 inch long by $7\frac{1}{3}$ of diameter: 1st stomach, quite round, 27 inch in diameter. Bladder, as spread, 13 by 7 inch. Depth of sternal cavity, or thorax, 20 inch: from ensiform to spine, width between 11th pair of ribs, $20\frac{1}{2}$. Lungs—right 4 divisions and much the largest, one is the lowest of them—left, 3; lowest largest: another central one from the right, under apex of heart, very small—8 lobes in all. Larynx ringed only in front. Heart 11 inch by $6\frac{1}{2}$ of greatest diameter. Diameter of larynx at branchial division, 3 inches. Thoracic viscera, 14 lbs. Heart with pericardium, 3 lbs. 3 oz.

Another Yak, alive, head large with round forehead and straight facial line; eye full; muzzle moderate; ears small and rounded; body full; limbs low; large, abrupt, sloping ridge occupying the hind $\frac{1}{2}$ of the neck and fore $\frac{1}{2}$ of back, Dewlap none.

Nape to rump,	6	1
Height a fore,	4	3
Ditto a hind,	3	6
Fore leg (from body),	1	5

Tongue white and strongly aculeated, processes corneous, pointed and inclined back in fore part, flatted and level and larger towards root of organ.

In concluding these tedious, but in the present state of science, indispensable details, we may be permitted to enquire whether they suggest or lead to any general principles or facts? Whether, for instance, they justify our separation of the Gouri Gao as a distinct type among the Bovinæ? and whether, as well with reference to the introduction of this new form as to the obvious vagueness characterising the extant definitions of the other forms, these details suggest no feasible improvements upon those definitions?

Both these questions may I think be fairly and usefully answered in the affirmative and I shall terminate this paper with the following improved indications of the principal Genera or groups of the Bovinæ.

Bos. Cranium moderate, proportional or without excess in the cerebral or facial region: frontals shorter than the face, flat and not broader than long. Occipital plane of the scull quadrangular, never arched along the culmenal line, nor indented by the temporal fossæ; smaller much

than the frontal plane and forming an acute angle therewith: Horns attached to the highest line of the forehead, rounded, moderate, curved up or down or forward: 13 pairs of ribs: no true dorsal ridge, but sometimes a fleshy hump: dewlap and muzzle large and square.

Type. *Bos domesticus*.

Bibos. Cranium large, massive, exhibiting preponderance of the frontal and cerebral portions over the facial: frontals as long as the face, concave, broader than long, and surmounted by a large salient crest ascending above the highest bases of the horns. Occipital plane of the skull spheroidal, very large, larger than the frontal plane, deeply indented in its centre by the temporal fossæ and forming an acute angle with the frontal plane. Horns attached below the highest line of the frontals, massive but short, ovoid or subtrigonal, and curving ascendantly: 13 pairs of ribs: a true dorsal ridge coextensive with the ribs and terminating abruptly: Dewlap and muzzle small; period of gestation longer than in *Bos*.

Type, *Bibos Cavifrons*.

N. B. *Gavæus* an aberrant species leading to *Bos*?

Bison. Cranium moderate, depressed, inclining to Bubaline forms in the excess of the facial portion over the frontal, and in the rounding off of the frontals into the occiput: frontals decidedly broader than long, more or less convex, and forming an obtuse angle with the semicircular or trigonal occipital plane, which is strongly ridged by the parietes at its summit, is smaller than the frontal plane, and moderately indented. Horns attached rather in advance of the parietal apex of the Cranium, small, rounded, curving ascendantly, or out of the horizontal: 14 (or 15) pairs of ribs; a true dorsal ridge but confined to the withers and terminating postally in a gradual slope: Dewlap and muzzle small.

Types, *B. Americ anus*, et *Poephagus*.

Bubalus. Cranium large, elongate compressed or narrow, disproportional exhibiting great excess (a 3d) of the facial over the frontal or cerebral portion: frontals short, narrow, convex, usually forming an obtuse angle with the occipital plane, which is large and circular in proportion to the obtuseness of that angle and to the consequent arcuation of the culmenal line of separation: Parietals merged, not ridged as in the last, nor culmenal. Horns attached to the ends of the highest line of the skull, always exceeding in length that of the Cranium, and usually greatly so depressed, strictly trigonal and neither ascending nor descending but directed horizontally backwards: thirteen pairs of ribs: no true dorsal ridge nor fleshy hump: muzzle large and square: Dewlap medial.

Type *Bubalus Arna. fæm*, *Arnee*.

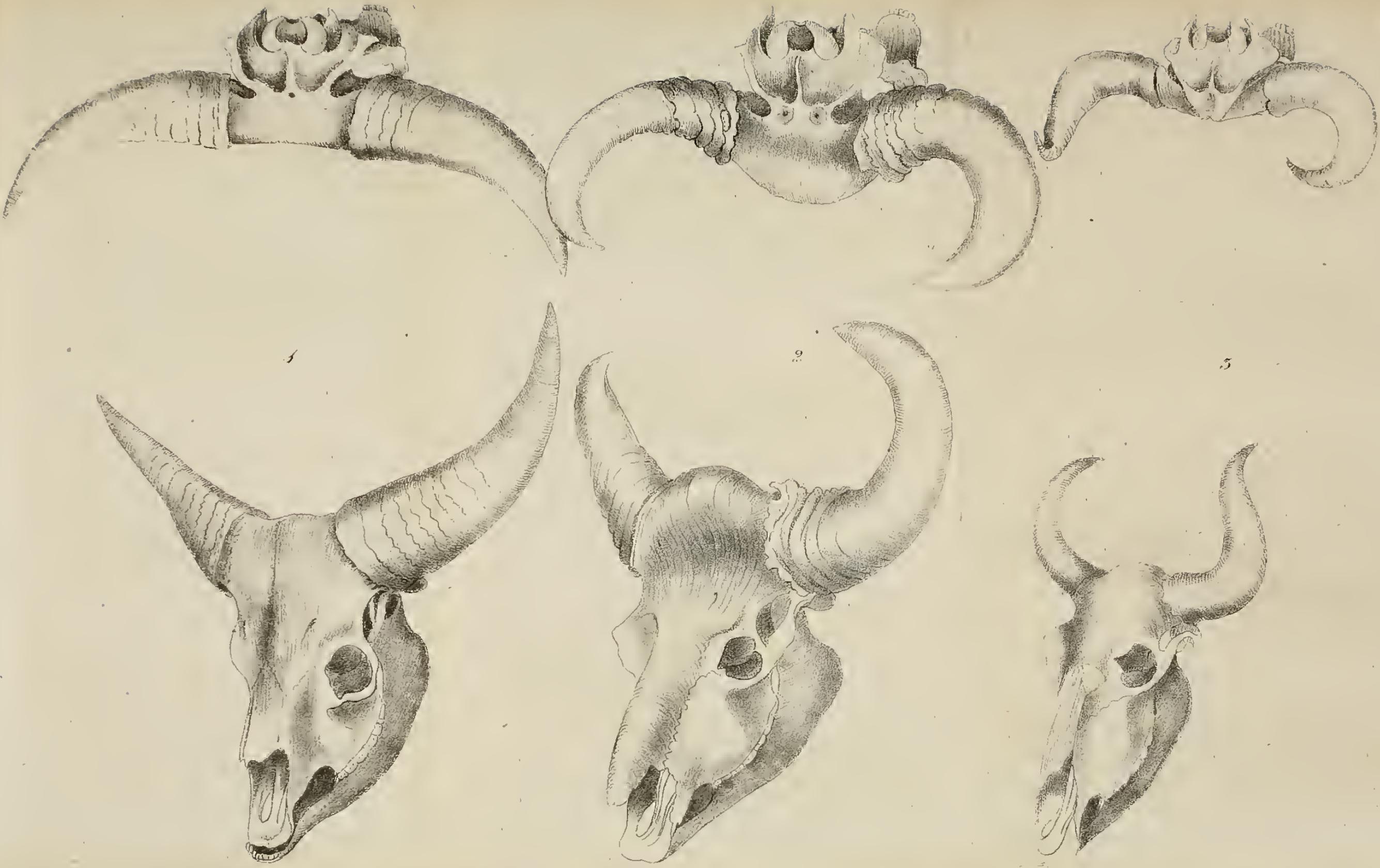
Cuvier first divided the Bovinæ into subordinate groups, as usual with him employing only craniological characters. H. Smith has since added to Cuvier's the osteological characters of the *carcase*—the number of ribs and the all important dorsal ridge. I have only more consistently and thoroughly applied these principles at the same time rejecting several palpably false or trivial diagnostics; and having said thus much for my suggested definitions I now leave them to the discretion of the expert. Though I have thought it expedient for the present to consider the *Bos Gavæus* vel *Sylhetanus* (Gayal) as an aberrant species rather than as the type of a new form, I have not failed to remark how singularly, were it regarded in the former light, the entire series might be made to exemplify the quinary and circular system. If we dispose the five supposed types thus. *Bibos*, *Bison*, *Bubalus*, *Bos*, *Gavæus*, we shall find the circularity of the series in many respects very curious and complete. Thus, looking to the cræna alone, *Bibos* is connected with *Bison* by broad frontals, salient orbits, and other quasi cervine attributes. *Bison*, with *Bubalus* by the prolongation of the facial part of the skull, and the easy rotund transition from the frontal to the occipital plane. *Bubalus* with *Bos* by comparatively narrow frontals and broad square muzzle. *Bos* with *Gavæus* by flatness of frontals and the acute angle they form with the occipital plane. *Gavæus* with *Bibos* by great width of frontals and increased extent, and peculiar characters of the occipital plane as well as by contraction of the muzzle; the acute angle of the two planes of the skull being still maintained.

If again we pass from a consideration of the cræna to that of that osteological carcasses, in regard to that most important feature the osseous dorsal ridge, we shall find this ridge at its maximum of development in height and extent in *Bibos*; next diminished in extent in *Bison*, but not in height; lost in *Bubalus*; tending to reappear in *Bos*; and clearly resumed (as is alleged) in *Gavæus*, and in that peculiar shape too which is so highly developed in *Bibos*.

The above indications of circularity in a complete series of five forms are at all events curious and calculated to stimulate further observation. They have therefore been thus mentioned and should future inquiry tend to confirm the conjectured importance of *Gavæus*, it will be but the work of a few minutes to characterise this species as a distinct type.

B. H. HODGSON.

Valley of Nepal, April, 1841.



Comparative view of the Skulls of the Gyal of Sylhet or Bos Garous. of the Gowri Gan of Nepal, or Bibos Navifrons. and of the Yak of Tibet, or Bisonus Pcephagus - being Figs 1. 2 3 respectively.



Dallas, Tex. Lith.

Bubalus Arna. The Arna or Wild Buffalo of India.



Dallin & Co Lith.

toe of India.



Buller 46 lith

Bibos Cuvieronii. The Gaur or Wild Bull of the Indian Forests

On the Geology, &c. &c. of Hunumkoondah (H. H. the Nizam's Territory) by DR. WALKER, Madras Army, continued.

The route from Hunumkoondah to Pakhall, lies almost due east. The intervening country is on the whole less hilly than that left behind as far as this place, when a chain of low flattened hills, covered with trees, and shrubs, is observed to extend in a direction from N to S, and is lost in the horizon at both points. The black soil becomes more abundant, no longer occupying mere patches, but forming tracts of considerable extent, and here it may be noted that to an eye at all accustomed to observe this country with reference to its vegetation, an open treeless plain suggests at once the prevalence of the regur soil; for with the exception of the *Butea Frondosa* (Palas), which here, and there appears, there is scarce a tree that affects it, while on the red soils care and industry can alone prevent high jungle from springing up. The granite continues the only surface rock until Sarapore, near which there is an out cropping of sandstone, granite however, re-appears, and may be observed near the road leading from that village to the lake at the crossing of the first stream, but in this neighbourhood it is soon lost in sandstone, which as far as I have remarked forms the masses composing the hills abovementioned. This rock is of various degrees of hardness; it is sometimes of such a dense crystalline structure, as to possess the qualities and appearance of quartz rock; at others the arenaceous form is distinctly visible; the stratification also is of great variety; at certain points the layers are so thick, massive, and irregular, as to resemble unstratified rock; at others the strata are not thicker than a quarter of an inch, and are disposed in parallel layers. This last appearance is particularly well marked at the Chubootra of Shetab Khan, where the rock looks more like a schist than a sandstone. No specimen I have yet met with of the rock effervesces with acids, and the only earthy minerals that it appears to contain are fragments of red jasper, and chalcedony approaching to flint. I have not seen these in situ, but think it probable that they form with the rock a conglomerate. Dr. Voysey speaking of the sandstone rock of the Nizam's territory states 'in no instance have I seen the sandstone stratified,' by which it is clear he could not have been at this place; it is likely that beds of oxydulous iron are to be met with here; I draw this conclusion from the fact of the sandstone being in some cases distinctly encrusted with thin layers of this mineral, and also from the point of junction of two rocks being the locality where metallic minerals are most frequently met with. This

Pakhall tank (for the name of lake, is scarcely in accordance with its artificial embankment) is a fine sheet of water, and takes precedence of all the tanks in Telingana, both as to depth and extent of surface. It is at least thirty miles in circuit when quite full, and besides affording a deep and copious stream for the purposes of irrigation, sends a tributary to the Kistnah, which even at this season of the year merits the name of a small river; it is bounded on three sides by low hills covered with wood, and although the vegetation is now, parched and burnt up, picturesque beauty is by no means wanting to the landscape; immediately after the rains it is quite conceivable that it may vie in scenery with the better known and much lauded Italian Lakes; considering its extent, its value is small, for its whole circumference to some depth is occupied by a dense jungle, and fifteen hundred bigahs under cultivation from its irrigation are but slender tribute to the chief of tanks; the situation is said to be unhealthy, for at least eight months of the year, which may account in part for its thinly peopled neighbourhood.

The draught and carriage bullocks met with appear strong and hardy; they are not equal in symmetry or size to those of Guzerat, or the Ellichpore part of Berar, but very similar to the Malwah animal, to the strength and vigour of which they probably come up; they are usually of a white colour, and are much sought after by the Bunjarries. The method of breeding and rearing these animals would be deemed singularly judicious, did not the necessity of the care, which forces the proprietors into the best mode of management, take from it all merit. The cows from which they are bred are allowed to roam about the jungles in a half wild state, with a few keepers nearly as wild as themselves to tend and occasionally milk them. These possess many of the habits of the wild cattle of South America, and also of the remnants of that aboriginal race still kept in a few British preserves, such as combining for mutual defence, and attacking by the whole herd rushing on in a body; they guide rather than follow their herdsmen, who wisely enough suffer them to choose their pasture ground by that instinct which domestication blunts without annihilating. In a dry year they congregate in great numbers around this tank, from all parts of the country, during the months of April and May, for the pasturage which at that period in the less extensive jungles fails them.

It is evident that no better means could be devised for keeping up a vigorous and serviceable race of bullocks than this treatment of the cows.

In addition to the cultivated plants mentioned in my first letter a small quantity of sugar-cane has been lately added to the list, and with some success; it is unnecessary to say that the expression and boiling of the juice are conducted in the same manner that these operations are performed throughout India from the Himalaya to the Cape Comorin, and that the compound of sugar, molasses, earthy matter and other impurities, called *goor* is the result. A Sugar Mill, wood, carpenter's work and all costs from five to six rupers. The fixed state of the industry of Asiatics cannot find a more fit illustration than in the management of their Sugar Cane. For at least two thousand years, for of that period we have record, that the same rough process has been gone through, the same amount of labour wasted rather than expended, and the step beyond their rude and economical preparation of sugar-candy (in which they have been completely distanced by the Chinese), has never been thought of. A follower of the School of Madame de Stael, who apportioned invention and suggestion to certain parallels of latitude, and improvement, and perfection without discovery to others, would point to the history of the manufacture of this necessary springing up in the South, but perfected by Northern skill as proof of their theory: but another estimate would refer this backwardness to improvement on the part of the Asiatic to that ever enduring insecurity of property which has taken from capital nearly all its power to stimulate or reward industry, from combination all its force, and from skill every disposition to suggest, far less improve.

It would be wandering far from the subject to enquire how this insecurity arose, and how it has been perpetuated, but deficiency of moral, much rather than intellectual energy has been at its root and accompanied its growth.

A very common plant grows on the black soil, chiefly in the jowarrie fields, the *Croton plicatum* mistaken by Burman, for the *Croton tinctorium* of the South of Europe, which plant it greatly resembles in properties and appearance. The *Croton tinctorium*, is cultivated in the South of France for its dye, the litmus or turnsole as it used to be called. Drs. Ainslie and Roxburgh have both suggested the employment of the *Croton plicatum* for this purpose; acting on their opinion, I have extracted, by a simple infusion from the capsules of the plant, a dye having the peculiar properties of litmus, but have failed in purifying it from the extraneous substances contained in the aqueous solution. This is commonly done in Europe by fermentation and by admixture of some alkali, or alkaline earth, by which the blue violet, its peculiar colour, is maintained, but these means will not answer in a tropical country, where the great heat

causes the infusion to pass almost at once to the putrefactive fermentation, whereby the colour is vitiated or altogether discharged, a thing not likely to occur in the more temperate climate of Europe. I see that the same vitiation of colour of the Himalaya Archil, a litmus lichen, is complained of in the transactions of the last meeting of the Agricultural Society of Bengal, and I would recommend that a sufficient quantity of capsules of this plant (which I can readily supply) be sent to England there to be tested by superior Art, and under the more advantageous circumstance of a cooler temperature. The natives regard the plant as completely useless, and are even ignorant that the juice of the capsules gives a blue stain to cloth; I shall now give some account of the more useful trees and shrubs, all of which are found growing in the neighbouring jungles.

Caryota Urens. This stately palm is indigenous to these jungles, but from all I could hear is not to be met with in great abundance.

The soil would appear to suit it well, as one specimen I saw grew at least to the height of 60 feet. This is the sago palm of the interior as the other species which yield that article are either insular, or coast productions, which would in all probability perish if transplanted from the soil and climate they most affect. To those who have witnessed or even heard of the dreadful and unavoidable calamity of famine to which every well peopled tropical region is subject, any suggestion by which the horrors of that scourge may be averted or even mitigated must prove acceptable; a feasible means of doing this would appear to exist in propagating and carefully preserving these sago trees, and I cannot conceive a fitter purpose for the almost useless waters of this splendid tank, than their contributing to the inestimable end; for a preserve of these palms in its neighbourhood would not only be secured in a never failing supply of water, but the tree jungle with which it is surrounded would afford shade to the young plants, which, from the situation that they are found wild in, would seem requisite. Far be from me the wish to see a race of men palmivorous, for lotophagi and anthropophagi notwithstanding all that the poets have sung of the golden age, may on most occasions be made convertible terms without any violation of the truth, but the very nature of things precludes the supposition of the natives of India ever becoming so, as much as it does our painting ourselves with wood or worshipping the mistletoe. As to the fitness of the food for the support of life during famine, I subjoin the statement of Dr. Roxburgh, who must have been an eye witness of the facts related. 'The pith or farinaceous part of the trunk of old trees, is said to be equal to the

best sago, the natives make it into bread and boil it into thick gruel; these form a great part of the diet of those people, and during the late famines they suffered little, while those trees lasted. I have reason to believe this substance to be highly nutritious. I have eaten the gruel, and think it fully as palatable as that made from the sago we get from the Malay countries.'

The fronds make a better cordage than those of the *Elate sylvestris* commonly used by the Coonbies.

The worst property of this palm is the only one with which the natives are familiar, the inexhaustible supply of Toddy which it yields.

Butea Frondosa (Palas) *Butea Superba*.

Both these, and especially the last, which is a magnificent climber with a trunk of the thickness of a man's body, yield the palas gum or East India kino as it has been called; of this a specimen is sent. Dr. Royle has lately estimated the quantity of tannin, which this gum yields at no less than 50 per cent, two per cent more than that yielded by the Catechu of Bengal.

Tannin is the substance which, by combining with the gelatine of hides forms leather, and is that which gives to oak bark, Aleppo galls, Valonia, &c. their high commercial value. Although every second tree in this part of Telingana is the Palas, there is not one ounce of gum collected, being reckoned wholly useless and unprofitable by the natives.

I cannot help thinking that this production will soon be looked on as very valuable in the arts, should this happen, they will not be wanting a supply from Telingana, where both *Buteas* are so common.

Rohuna tree—*Swietenia Febrifuga*.

The bark of this tree is the well known febrifuge—On the authority of Dr. Ainslie, certainly very respectable—Dr. Lindley, in his valuable works has stated that given in large doses it is apt to produce nervous symptoms and hence objects to its use—does not the very same objection apply to *Cinchona*?

Besides the evidence of any one physician on the febrifuge properties of a medicine is wholly insufficient, for what is so common as head affections in tropical fevers. With the permission of the resident, I shall send a parcel of the bark to the medical store-keeper of H. H. the Nizam's Army, that it may be sent to Britain for trial in the less bulky form of an extract.

Wrightea Antidysenterica.

The bark of this small tree is the once celebrated Conessi bark, it is said to have got into disuse from other inert barks being substituted for

it. I shall send also a parcel of this bark to the medical store-keeper. *Sterculia Urens*. It is said this tree yields a gum similar to the gum *Tragacanth* of commerce (Royle).

Buchanania Latifolia Chironge tree. The nut is used for all the purposes of the Almond by the natives, it would in all probability produce as good an oil as the almond.

Chloroxylon Swietenia, juice said to give a yellow dye. Of other useful trees here are *Nauclea Cordifolia*, *Mimosa Xylocarpa*, *Mimosa Serissa*, *Allangium Hexapetalum*, *Pentapteracoriacea*, *Dalbergia Latifolia*; *Hibiscus populneus* *Terminalia Bellerica*, *Strychnos Nux Vomica*, and a species of *Gmelinu Ulmus integrifolia*, well adapted for furniture building, &c. all are in great abundance. The *Teek Tectona grandis* is stunted and worthless in these jungles, and the *Diospyrus Melanoxylon*—Black ebony, grows to no great size. Of the less useful trees are *Careya Arborea*, *Barringtonia acutangula* *Ixora parviflora*, *Ficus Comosa*, *Erythrina Suberosa*, &c. The principal shrubs consisted of the *Ochna squarrosa*, *Grewia orientalis*, *Symphorema involucrata*, *Gardenia Latifolia*, with fragrant beautiful flowers, *Trophis Aspera* and *Premna Tomentosa*. The climbing plants are chiefly the *Sifonia Nutans*, *Combretum Ovalifolium*, the *Ventilago Madraspatana* and the *Olax*.

The *Cissus Cornosa* and *Dalbergia Scandens* were also seen. The most common parasite was the *Loranthus scurrula* the *Bassia Latifolia*, *Mowah* tree was comparatively rare. Some trees were so utterly without leaf, or flower, that their names or value could not be conjectured but these were in no great number. The Herbaceous vegetation was completely burnt up.

Note and Tabular Statement N. W. Frontier.

The annexed statement (No. I.) will shew the enormous increase which has taken place in the Export trade to Cabool during the past year, aggregating on the three descriptions of produce no less than 38,08,873 rupees as compared with the preceding year.

Of the three denominations of exports, one only, being Country produce is prepared from Official records (chokie registers). No Account being taken at the customs chokies of free goods, I have been obliged to refer to the Merchants themselves for information as regards them, and they have obligingly allowed me access to their ledgers, from whence the amount of exports under the heads of 'British Manufactures and Productions,' and Sea Importations, has been ascertained, not in exact details, but sufficiently accurate to meet the object in view.

30 from 1st May 1838 to 30th April 1841.

1840 to 30th April 1841.

Invoice value.	Increase in value as compared with 1838-39.	Increase in value as compared with 1839-40.	REMARKS.
3,00,000	1,35,000	2,58,000	} Unbleached Long Cloth is preferred to the bleached as it is more durable and admits more readily of being dyed blue, the favorite colour of the North.
4,20,000	3,80,000	4,02,000	
3,95,000	3,40,000	3,55,000	} Flowered Muslins in high demand. The finest quality prized.
3,36,000	2,96,000	3,04,000	
2,90,000	2,12,000	2,70,000	} Scotch Cambrics eagerly bought up. This includes Coarse Chintzes also, which from the durability of the colour, are valued.
2,52,000	2,16,000	2,25,000	
2,20,000	1,85,000	1,97,750	} Used chiefly for Turbans. Coarse quality and sombre colours preferred.
5,87,000	5,06,000	5,33,000	
60,000	60,000	60,000	} Very little used in Affghanistan proper, but great demand for Balks Bokhara, Khorassan and Tabreez markets.
28,000	23,000	24,500	
77,000	67,000	70,000	} British Metals, not only from the original superiority of the ore, but from the superior method of smelting, are in great demand throughout Asia.
7,000	6,000	6,400	
2,03,350	1,74,300	1,75,475	} British Hardware next to cloth is so much prized that it is expected it will comprize one of the Chief Staples of commerce.
29,750	25,500	27,425	
10,250	10,250	10,250	} Bought up at Cabool and exported to Herat, Balk, Bokhara, &c. but
20,317	20,317	20,317	

Statement of Goods Exported via Delhi across the N. W. F. to Cabool, from 1st May 1838 to 30th April 1841.

NAMES OF GOODS.	From 1st May 1838 to 30th April 1839.		From 1st May 1839 to 30th April 1840.				From 1st May 1840 to 30th April 1841.				REMARKS.
	Quantity.	Invoice value.	Quantity.	Invoice value.	Increase in value.	Decrease in value.	Quantity.	Invoice value.	Increase in value as compared with 1838-39.	Increase in value as compared with 1839-40.	
BRITISH MANUFACTURES AND PRODUCTIONS.											
Cloth, Bleached,	5,000 pieces	65,000	3,500 pieces	42,000	..	23,000	25,000 pieces	3,00,000	1,35,000	2,58,000	Unbleached Long Cloth is preferred to the bleached as it is more durable and admits more readily of being dyed blue, the favorite colour of the North. Flowered Muslins in high demand. The finest quality prized. Scotch Cambrics eagerly bought up. This includes Coarse Chintzes also, which from the durability of the colour, are valued. Used chiefly for Turbans. Course quality and sombre colours preferred. Very little used in Afghanistan proper, but great demand for Balks Bokhara, Khorassan and Tabreez markets. British Metals, not only from the original superiority of the ore, but from the superior method of smelting, are in great demand throughout Asia. British Hardware next to cloth is so much prized that it is expected it will comprize one of the Chief Staples of commerce. Bought up at Cabool and exported to Herat, Balk, Bokhara, &c. but chiefly to Persia.
ditto, unbleached,	4,340 ditto	40,000	2,400 ditto	18,000	..	22,000	45,000 ditto	4,20,000	3,80,000	4,02,000	
Muslins, plain and flowered,	11,000 ditto	55,000	8,000 ditto	40,000	..	15,000	77,000 ditto	3,05,000	3,40,000	3,55,000	
Coarse Muslins,	6,000 ditto	40,000	4,000 ditto	32,000	..	8,000	42,000 ditto	3,36,000	2,00,000	3,01,000	
Cambrics,	5,400 ditto	45,000	2,000 ditto	20,000	..	28,000	28,000 ditto	2,00,000	2,12,000	2,70,000	
Chintzes,	4,000 ditto	30,000	3,000 ditto	27,000	..	9,000	28,000 ditto	2,52,000	2,16,000	2,25,000	
Chief Pieces,	2,000 ditto	35,000	1,500 ditto	22,250	..	12,750	14,000 ditto	2,20,000	1,84,000	1,97,750	
Small Cloth,	3,000 ditto	81,000	2,000 ditto	54,000	..	27,000	21,000 ditto	5,81,000	5,06,000	5,33,000	
Fabrics,	..	..	..	..	..	..	400 ditto	60,000	60,000	60,000
Copper and Iron,	50 mds. & 200 sheets	5,000	30 mds. & 100 sheets	3,500	..	1,500	350 mds. & 1,400 sh	28,000	23,000	24,500	
Lead,	250 pigs	10,000	175 pigs	7,000	..	3,000	1,750 pigs	77,000	67,000	70,000	
Ac. scales,	1,000	1,000	600	600	..	400	7,000	7,000	6,000	6,400	
Copper, Brass, Iron and Block Tin,	581 mds.	29,050	557½ mds.	27,875	..	1,175	4,067 mds.	2,03,350	1,74,300	1,75,475	
Knives and Pans,	20½ gross	2,450	11 gross	2,325	..	1,925	14½ gross	29,750	21,500	27,425	
Knives, Scissors, &c.,	..	..	..	..	..	..	512 mds.	10,250	10,250	10,250
Lead,	..	..	..	..	..	..	800 scores	20,317	20,317	20,317
Ware,	..	..	..	..	..	..	5,111 gross	10,000	10,000	10,000
..	..	..	..	..	..	..	1,660 mds.	25,000	25,000	25,000
Total,	..	4,40,300	..	2,96,550	..	1,52,750	..	32,70,667	28,21,367	29,74,117	
SEA IMPORTATIONS via CALCUTTA AND BOMBAY.											
Drugs, &c.,	25 mds.	700	18 mds.	450	..	250	3,500 mds.	75,000	74,300	74,550	These are bought to Delhi from Bombay via Palee. They are originally imported from the Persian Gulph.
Wood,	32½ ditto	224	..	..	..	224	2,400 ditto	23,000	22,776	23,000
Stones,	..	..	..	..	..	..	530 ditto	8,480	8,480	8,480
Silver,	..	..	..	..	..	..	30 ditto	5,000	5,000	5,000
..	5½ mds.	68	..	..	..	68	500 ditto	24,000	23,932	24,000
Woods,	..	..	..	..	..	..	320 ditto	3,800	4,800	4,800
Nuts,	10,000 mds.	50,000	600 mds.	3,000	..	47,000	70,000 ditto	3,50,000	3,00,000	3,47,000	
Stone,	..	..	..	..	..	..	2 mds.	2,000	2,000	2,000
..	..	..	..	..	..	..	28,000 strings	3,500	3,500	3,500
Total,	..	50,992	..	3,450	..	47,542	..	4,95,780	4,44,188	4,92,330	
COUNTRY (INDIAN) PRODUCTIONS AND MANUFACTURES.											
Goods, Cotton, Silk, Madras and Benares Dooptias,	49,926 pieces	85,500	28,923 pieces	82,628	..	2,874	1,60,832 pieces	2,78,501	1,92,990	1,95,873	The rich stuffs of India are very much admired, and the coarse linen cloths are preferred to those of the north, in consequence of their being worn with country and English yarn. Indigo is the only article of commerce which is not conveyed directly by the Cabool merchants. It is, in the first instance, consigned by the Delhi merchants to Bewamie and Amritsir, and from thence is exported to Cabool where it meets with a ready market. The quantities herein exhibited are not a tithe of what are actually exported from India, as within the last few years immense quantities have been raised West of the Jumna, especially at Munny majra in Sirhind, the whole of which are carried to the northern marts; there is no possibility of ascertaining quantities correctly, but 5,000 mds. are assumed as the annual supply sent to Cabool; Indigo manufactured after the native manner is preferred to that produced by Europeans, both from cheapness and the facility of applying it to purposes of dyeing. Spurious gold and silver lace and tissues used, formerly, to be imported into Cabool from Russia, but these have now given place to the rich and beautiful manufactures of India.
Indigo,	1,500 mds.	1,65,000	1,143 mds.	1,25,763	..	39,237	2,405 mds.	2,03,641	08,641	1,37,878	
..	934 pairs	545	1,113 pairs	905	360	..	4,408 pairs	2,182	1,637	1,277	
..	1½ mds.	282	..	..	..	282	8 mds.	283	1	283
Gotah Kenarie Gold and Silver, Lace and Tissues,	..	..	..	..	..	..	1,074 tolahs	2,511	2,511	2,511
Embroidered Goods,	..	..	..	..	..	..	72 pieces	821	821	821
Mirzapore Carpets,	..	..	..	..	..	..	255	868	868	868
Beetlenuts,	16 seers	12	..	..	..	12	20½ mds.	215	203	215
Cocconut Oil,	..	..	..	..	..	..	20 ditto	280	280	280
Hides, Raw and Tanned,	144	65	..	..	..	65	585	434	369	434
Leather Stockings,	..	..	..	..	..	..	100 pairs	300	300	300
Wax Candles,	..	..	..	..	..	..	1½ mds.	580	580	580
Verdigrease,	..	..	..	..	..	..	35 seers	96	96	96
Amber,	..	..	..	..	..	..	43 tolahs	129	129	129
Cocconuts,	..	..	..	..	..	..	3,300	132	132	132
Wrought Iron,	..	..	..	..	..	..	58½ mds.	190	190	190
Brown Sugar,	..	..	..	..	..	..	5½ ditto	46	46	46
Oil Seeds,	..	..	..	..	..	..	31½ ditto	63	63	63
Hookah Snakes,	..	..	..	..	..	..	2	20	20	20
Old Brass,	..	..	..	..	..	..	2½ mds.	101	101	101
Spikenard,	..	..	..	..	..	..	1 ditto	10	10	10
Pigments,	..	..	..	..	..	..	36 seers	48	48	48
Sandal Wood,	..	..	..	..	..	..	11 ditto	2	2	2
Brimstone,	..	..	..	..	..	..	12½ ditto	13	13	13
Gum,	..	..	..	..	..	..	10½ mds.	137	137	137
Iron,	..	..	..	..	..	..	35 seers	88	88	88
Lack,	..	..	..	..	..	..	2½ mds.	23	23	23
Tobacco,	..	..	..	..	..	..	1½ ditto	8	8	8
Total,	..	2,51,406	..	2,00,206	300	42,470	..	5,51,722	3,00,316	3,42,426	
Grand Total,	..	7,51,698	..	5,09,296	300	2,42,792	..	43,18,169	35,60,471	38,08,873	

Note.—This statement being compiled from Official Returns and the Ledgers of the Delhi Merchants, as well as those of the Cabool Trader's Agents in Delhi, is considered to be tolerably correct, but, as much time would be taken up in calculating small numbers, the quantities and values of British Goods and sea Importations are given in the rough, care being taken—to keep below the mark, to the end that no exaggerated idea of the extent of the Trade might be conveyed.
 The Bond Side Export Trade with Cabool is only embraced in this statement, and no account is taken of the goods exported from Delhi and Juggadree to Bahawalpore, Scinde and the Punjab, the export Trade with which is reported to have increased in the same ratio as that with Cabool.
 The great decrease in the exports of 1839-40 is attributed to the unsettled state of the North during the period.

I may as well mention, that previous to the occupation of Afghanistan by our Troops in 1838-39, the Exports from these Provinces were trifling to a degree, the returns for the Imports being for the most part sent back in specie. Within the last year or two, however, the demand for our Exports has so greatly increased, that instead of taking back specie, Hoondies to a very large amount are sent to Delhi from Cabool, to meet the deficit caused by the excess of Exports from these Provinces, over the Imports from Afghanistan. Some time last year one merchant sent us a single remittance, Hoondies on Delhi from Cabool for no less a sum than forty thousand rupees, to be invested in the purchase of British goods.

Formerly the whole of the Export trade with Cabool, was carried on by the fruit merchants, who merely took back a small portion of their returns in British manufactures. There are now, several highly respectable merchants wholly unconnected with these traders, who confine their operations to exporting, from our Provinces goods for which, at present, they are unable to find a return in kind.

As it shews how anxious they are to establish a return trade, I will mention, that more than one instance has been reported to me of Russian goods (principally hardware and spurious gold tissue) having been, brought across my frontier line, the packages having Moscow marked on them, these goods were however of so inferior a description as to be rejected by the natives whenever offered for sale. Indeed the cutlery was inferior to that made at Monghyr and in the Delhi Bazar.

In reply to your second question, as to whether I can do nothing to help the Cabool Merchants, I can only state, that I have done and am doing all in my power to encourage this enterprising and deserving class of men, in every way possible.

In the mean time, I would suggest that the first object of Government should be to open the route for trade, through the Khyber Pass, by obtaining from the intermediate states, some modification of their present system of duties, which press so hard on the merchant, as to drive him round by the circuitous route now taken, where they are subjected to exactions it is true, though less oppressive and vexatious in their nature than those in force in the Seik states.

P. S.—To shew the enterprising disposition of the Cabool Merchants, I will mention that a short time ago I gave one of them a note to Mr. Clarke, to aid him in his endeavour to take an investment of Indigo, Jewellery, Gold Lace, &c. to Yarkund.

On the 'Electro-type.'—BY CHARLES HUFFNAGLE, ESQ.

REFERENCES TO THE PLATE.

- | | | |
|------------------------------------|--|--|
| 1. Wooden cell. | \| | 5. Copper plate, on which coin is placed. |
| 2. Glass cylinder. | | 6. Zinc plate on acid liquid. |
| 3. Brass binding-screw. | | 7. Crystals of sulphate of copper to keep up a saturated solution. |
| 4. Shelf perforated in the centre. | | |

MY DEAR TORRENS,—I felt gratified, at our last meeting, to find you were also much pleased with the fac-simile of my coin of 'Alexander' by the Voltatype, and I cheerfully promised at your desire an account of the process, for which, and also for the successful result of the experiment, I am indebted to my talented friend Professor O'Shaughnessy. I believe detailed accounts have already appeared in print, but this mode of copying coins and medals is so exceedingly *simple*—the result so surprising and satisfactory, and it is so fully in the power of every body disposed to devote the slightest attention to it—that we cannot make it too widely known.

1st. You must provide yourself with a wooden cell 8 or 10 inches square—with an inside coating of sealing wax—or other cement to render it water tight. This box should be 3 inches deep, with a ledge 1 inch from the top to support a wooden shelf.

Affix to the edge of the box a brass binding-piece, formed of square brass, perforated with two holes and furnished with binding-screws.

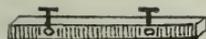
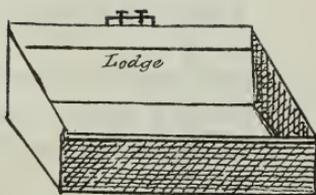
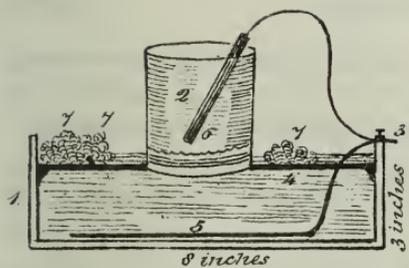
2d. A glass cylinder open at both ends, to the lower end of which a piece of *moist bladder* must be secured with a *waxed cord*, and the diameter of this cylinder must correspond with the perforation in the shelf fitted to the square box.

3rd. Plates of *sheet zinc* amalgamated by mercury; i. e., by rubbing a few globules of mercury over the zinc, after dipping it into a mixture of one part of sulphuric acid and one of water, must also be provided; and these plates corresponding in length and breadth to the size of the cylinder, must be attached to a *copper wire* 6 or 8 inches long.

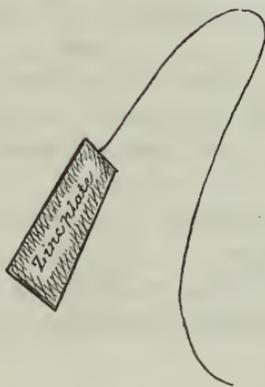
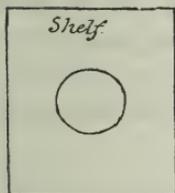
4th. A *plate of copper* 3 or 4 inches square with a copper wire 6 inches long.

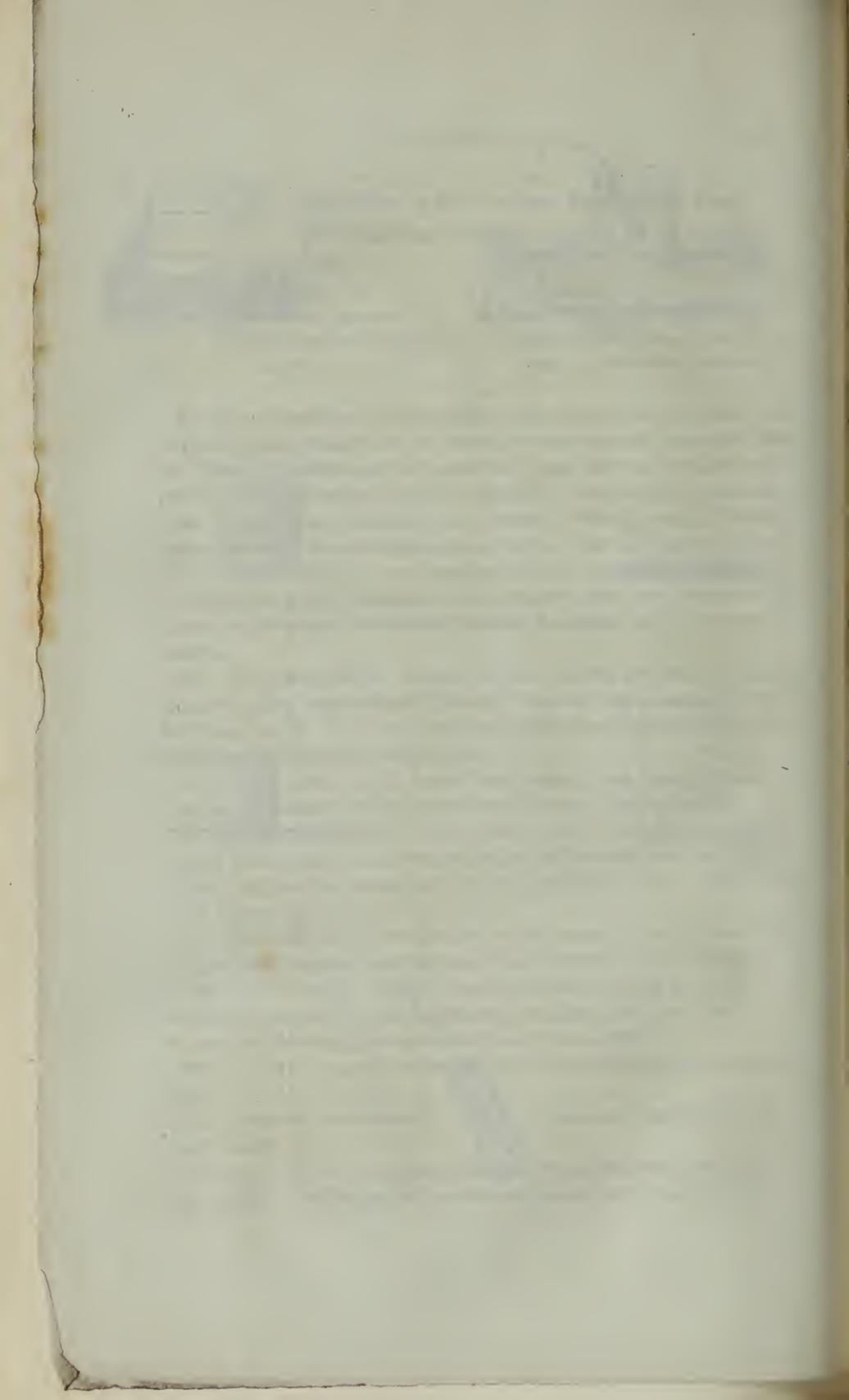
5th. Supplies of sulphate of copper in crystals, and concentrated sulphuric acid.

When you proceed to use the apparatus, prepare a saturated solution of the blue salt, in soft hot water, strain it off turbid and allow it to cool—



Cylinder





prepare a dilute acid with one part of concentrated sulphuric acid and a pint of water.

Brighten the *copper plate* and place the coin to be copied thereon, then apply a coating of bees-wax over all parts of this plate and wire, allowing the surface of the medal you wish to copy, to be the only surface exposed.

Place the plate so that it shall rest flat upon the bottom of the cell—fill this with the solution of sulphate of copper to within half an inch of the top—fix in the shelf, and over the perforation place the cylinder, charged with the dilute acid. Into the acid introduce the zinc plate, and now let the wire of this as well as that of the plate of copper be inserted into the *brass 'binding-piece.'*

[The coin should be previously warmed—wax rubbed over the side we wish to copy and then the wax while warm rubbed off carefully with a soft rag. Lumps of sulphate of copper must also be placed upon the shelf in order to keep the solution in a saturated state.]

In twenty-four hours a reverse impression of your coin will be deposited, to remove which, take the coin from the copper plate, and warm it over a spirit lamp for a few seconds, then introduce the edge of an ivory knife, and you will be able to detach the copper deposit with ease. You have now only to substitute *this mould* as in the first step for the coin, and you will have your 'fac-simile.'

Here then you have the account you wished for, in which, recollect, I don't claim the least *originality*.

Yours very truly,

CHARLES HUFFNAGLE.

9th June, 1841.

Roree in Khyrpoor; its Population and Manufactures.—By CAPT. G. E. WESTMACOTT, 37th Regiment Bengal N. I.

(Continued from page 415.)

There were four paper factories in the town of Roree in 1839, worked alternately by men who had learnt the craft from their master Jhoora, the principal manufacturer, who receives two anas a day from each apprentice. The finest paper he produces is inferior in quality to that of Delhi and Agra; it is made entirely of old hempen rope and string, brought from Hyderabad in lower Sind, and sells in Roree at 6½ rupees a *mun*; the consumption is very limited and it forms no part of the regu-

lar imports of Roree. The manufacturer draws his supplies from time to time from Motoo, a *suhokar* of Nousuhra, who also supplies the factories of Khyrpoor and Shikarpoor. The *suhokar* is exempted by government from taxation, in consequence of services rendered by his ancestor to the Talpoor family of Khyrpoor, who resided, I believe, at the town of Nousuhra belonging to Meer Roostum, before they acquired sovereign power; this of course enables the *suhokar* to sell hemp at a cheap rate and gives him almost a monopoly of the trade.

The hemp is chopped on a plank, with a knife, into small pieces, and thrown into a washing vat one yard square, and half the depth, coated with mortar. It holds three seers of lime and two of *khar* (impure alkali), with water contained in five or six earthen pots; the manufacturer does not measure the water and is ignorant of the quantity required, but a pot contains usually ten seers, and when very foul and sandy it is purified with alum.

The hemp is washed, bleached, and macerated in the vat, and after being shaped into cakes and masses of all sizes, is put in the sun to dry; it is thrown afterwards into a pit to reduce it to pulp. The pit is five feet long, four feet broad, and three feet deep, paved with large stones and half of it nearest the bottom lined with stone. The tow is pounded half as long again in winter as it is in summer; in the latter season the shreds are more easily divided and macerated. Two or three men work the machine by placing one foot on a lever (F.) nine feet long, connected with a hammer (E) (see plate Fig. 4, No. 113) half the length, and the other foot on a bank of earth (B.) along side it, four feet long and eight inches high. They support themselves on a transverse rest six feet long (A.), or by grasping loops of ropes suspended from the timbers of the shop roof. The lever is kept in its place by stakes and a groove, and a transverse beam seven feet long (C.) prevents it rising above a certain level. The labour of working the pedal is extremely fatiguing in the hot months; a man sits in the pit (D.) during the operation of pounding the tow, to separate and moisten it occasionally with water, and pushes it under the hammer; this is usually done by the master; twelve hours labour are required to reduce to pulp a seer of tow, but a larger quantity is generally prepared at one time. The tow is taken from the pit in flat cakes and masses of the pulp weighing fifteen or sixteen pounds, and piled on stones in the sun to dry; afterwards it is thrown into another vat four feet square and two feet deep, lined throughout with mortar, and, after being diluted to a proper consistency with water, is separated with the hand and stirred two hours, and left about nine hours in the

vat. It is then dipped up by the workman on a light wooden frame or mould of seven bars, on which a mat (*boora*) is laid of the size of the intended sheets, made of *sur* (the stem of *moonj* grass) split into extremely fine pieces and united with horse hair.

The man sits on the edge of the vat, and is often provided with a pipe with a long tube, to which he applies his mouth from time to time without staying his work. He regulates the number of dips of the mould accordingly as he wishes to give consistency to the paper, always taking care to stir the liquor well before he raises it. He transfers the sheet, as soon as formed, to another frame of fine reed, which is placed upon one of *sirkee* (the upper stem of *moonj* grass,) carefully laying sheet upon sheet as he takes them from the vat, without the interposition of cloth of any kind, and leaves them about nine hours to drain; the sheets are then pressed under a plank, upon which two men stand for an hour. Those made during the day are pasted at night against a mud wall made smooth with clay and cow dung, and the men use for the purpose soft brushes of *moonj* grass ten inches long, which they prepare themselves. The paper is removed in the morning to a plank or board, where it is rubbed with a cotton cloth dipped in wheat flour, and suspended on hempen strings raised on sticks in a yard for twelve hours until perfectly dry; it is then carried back to the board and put into the hands of the polisher, who does not belong to the factory: he rubs it with a large smooth stone to give it a glaze or polish. Some of the stones are black basalt from Khorasan, and appear to have been rounded by the torrents; and smooth pieces of limestone and white marble are also used. On the completion of this process, the rough edges of the paper are cut with large scissors, like those used by tailors, and it is now ready for sale in the bazar.

On my second visit to this factory I found the work stopped in consequence of the men having gone to the British camp at Sukur, where they were employed in other labour at eight pys (four pence) a day. Until the establishment of our camp, there was a small consumption of paper, and it is by no means a profitable occupation; Jhoora could not afford to employ men above half a day at a time, and their labour in the factory was more severe than that exacted from them in the cantonment. The manufacturer (Jhoora) employs four men (Moosulmans), at ten pys ($4\frac{2}{3}$) each per diem, to sweep the building, chop hemp, bring water from the Indus, and conduct the whole process of manufacture. He estimated the cost of his shop and machinery at 100 rupees, and the pit in which the tow is beaten at half the sum, but was not positive as his father built it. It is a large sum, but I do not question his veracity, as he did not over-

value other parts of the machinery; the large stone at the bottom of the pit took twenty men to lift it, and this, and other large stones at the bottom and sides of the pit, were brought from a long distance.

	Rs.	A.	P.
Pit,	50	0	0
Two vats lined and terraced at the edges with two <i>muns</i> of mortar,.....	10	0	0
Wooden lever (<i>Talee F.</i>) and hammer, E.....	10	0	0
This is exclusive of seven seers of iron fastened to the bottom of the hammer which cost,	7	0	0
Transverse beam (C.) and supports,	2	0	0
The beam (A.) and its two supports,.....	1	0	0
The shop which holds the three vats and machinery,.....	5	0	0
The shop was a kind of shed, open at the sides and measured twenty-four feet in length and eleven in width. Two sides were walled in with boughs of the date tree, and the roof was mat and reeds upheld by wooden posts. Neither mud nor bricks were used in the construction.			
Six frames or moulds of fir wood measuring 23 inches in length and 20 in width, for raising the stuff from the cistern, at 6 anas each,	2	4	0
Three fine mats of split reed 23 inches long bound together by horse hair to place on the frames, at 6 anas each,	1	2	0
Sirkee mat to receive the sheets,.. ..	0	0	2
Board on which the paper is polished,	0	4	0
Polishing stone,.....	0	2	0
* Earth pot (<i>multee</i>) to contain a <i>mun</i> of water,.....	0	3	0
Two earth pots (<i>dillee</i>) containing each ten seers,.....	0	0	4
Thirty strings to hang paper on,.....	0	4	0
Pair of scissors for cutting paper,.....	1	0	0
Chopper (<i>koolharee</i>) to chop hemp, containing half a seer of iron,.....	1	0	0

Rs. 91 5 0

I need hardly observe the fine texture of paper depends on the hemp being well beaten, and the number of dippings required to form a sheet depends a good deal on the vatman's dexterity in raising the stuff; sometimes five and six dippings are necessary. Hemp is pounded four days

* Earth pots are dear at Roree, and there are only two potters in the town.

to form fine paper, and three days to form a coarse kind, 18 or 20 days are required to convert a *mun* of hemp rope into paper, which gives sixty large quires of twenty four sheets to a quire, each measuring 22 inches by 18; or one hundred small quires measuring 20 inches by 12; supposing the assertion of the manufacturer to be true, that to convert a *mun* of rope into paper costs him twenty rupees, he derives a profit of 25 rupees.

	Rs.	A.	P.
One <i>mun</i> of hempen rope to make paper of the best quality,..	6	8	0
Wages of Workmen,...	9	8	0
Lime at 50 seers per rupee,.....	0	1	0
Two seers of khar (alkali) at 1 pys per seer,..	0	0	2
Polishing 60 quires at 1 ana per quire, ..	3	12	0
Alum,	0	1	0

Rs. 19 14 2

The manufacturer sells a quire of large paper of the best quality when polished at 12 anas, and unpolished at 10 anas; sixty quires at 12 anas per quire give Rs. 45.

Five quires of paper made in another factory, sold for a rupee, and were the produce of three and four layers of stuff; the machinery and apparatus were similar to those I have described, but not so expensive, and the manufacturer had less capital than his neighbour. The pounding pit had a single stone at the bottom over the spot where the hammer descended, the rest of it was covered with planks to prevent the stuff mixing with earth, and the sides faced with brick; the pounding pit, hammer, and shed, cost together 80 rupees.

There was only one reservoir lined with mortar measuring nearly two feet square and $2\frac{1}{4}$ feet deep, into which the stuff was thrown after it was removed from the beating pit;

	Rs.	A.	P.
It cost,.....	5	0	0
The branch frame for taking up the stuff,.....	0	8	0
Fine mat to place upon the frame,	0	4	0
Board on which the paper is polished,	0	6	0
The shop which held the vat,	32	0	0
Lever, Hammer, and supports,	21	0	0
Pit,	18	0	0
Polishing stone, earth pots, and strings,.....	0	8	0
Scissors and chopper,	2	0	0

Rs. 79 10 0

The shop measured eleven feet in length and seven in width. The walls were sun baked brick, and timber interlaced with tamarisk boughs, the interstices filled with mud, and the roof of timber covered with reeds and clay.

The factor paid four workmen from six to ten pys a day (three pence or five pence), but did not employ them regularly; the vat man who raised the pulp worked only half the day, as his labour is very constant and tiresome, and received two anas (three pence.) The factor does not weigh the tow as he considers it would bring ill-success on his work, and throws into the pit any quantity that is cut.

Roree receives silk from Persia, and from Bokhara and other parts of Toorkistan. During the war between Shah Shoojah and Dost Mahomed Khan in 1833, the supply was stopped six or eight months and the weavers out of employ. The invasion of Afghanistan by the British eight years afterwards, interrupted commerce by the route of Kandahar and the Bolan Pass, but did not interfere with the supply of silk from Cabool which was, on the contrary, in excess of the quantity imported the preceding years, and came as usual, on camels *viâ* Peshawur, Dera Ismail, Mooltan, and Bahawulpoor.

A single hand silk loom can be established in Roree for 4 rupees, or about 8 shillings English. I annex a list of tools and their cost :

	<i>Rs. A. P.</i>
A Spinning Wheel,	1 4 0
Rods of Surkunda reed passed through the warp to preserve the shape or lease, cut in the wilds.	
The pit or workshop, three feet long, two feet wide, and two feet deep, dug by the weavers.	
The cloth-beam or breast roll, a square beam of <i>talee</i> wood three feet long, placed over the pit and to which the ends of the warp are fastened,	0 8 0
<i>Kite</i> . Two upright posts six inches high which support the breast roll and in which it revolves,	0 0 4
Handle (<i>phirnee</i>) to turn the breast roll,	0 0 1
<i>Sundulee</i> . Two sticks attached to the breast-roll to which the warps are fixed,	0 0 2
<i>Hutha</i> . The lay cap $2\frac{1}{4}$ feet long,	0 8 0
<i>Phunee</i> . 'The reed' a sort of comb of split Surkunda reed between which the warp passes,	0 1 0
<i>Dootna</i> . Two painted and varnished rollers forming part of the heddles to which the loom is fixed and suspended from the shop roof,	0 0 2

<i>Ruchee</i> . Four thin sticks set upright and connected by cotton threads and forming part of the heddles,	0	4	0
Cotton threads to form the heddles for suspending the <i>ruchee</i> , and lay cap to the shop roof,	0	2	0
<i>Ponsur</i> . Two round sticks attached to the <i>ruchee</i> and suspended in the pit,	0	0	2
Two wooden treadles,	0	0	2
<i>Duna</i> . Horizontal beam or yard roll on which the ends of the warp are wound,	0	0	1
Post to which the yard roll is fastened by a rope,	0	0	4
Rope of date leaves,	0	0	6
<i>Nar</i> or shuttle of <i>taree</i> wood, the only part of the machine that is formed neatly,	0	8	0
Iron reel or needle,	0	0	$\frac{1}{2}$
<i>Sipee</i> . A thin plate of blunt iron $2\frac{1}{2}$ inches long and $1\frac{1}{2}$ inches wide for scraping the woof,	0	2	0
<i>Buhla</i> . A piece of leather paid with the hand under the woof when it is scraped,	0	0	4
Iron pincer to pick off rough threads from the surface of the silk,	0	0	2
			0
			Rs. 3 14 0

A weaver earns four anas (six pence) a day, and will finish a piece of silk 24 yards long and 11 inches wide in a month. The manufacturer's profit is from 3 to 5 rupees.

A piece of *Duryaee* 24 yards long and 11 inches wide manufactured of *Shalbutfee* or *Nuwabee* silk from Toorkistan, costs :—

Orange colour	12 rupees	or	8 annas	a yard.
Blue	11 do.	or	7 do.	do.
Yellow and green	10 do.	or	6 do.	do.

Raw undyed silk thread imported from Persia and Toorkistau sells in the bazar at 16 or 17 rupees the seer, and $\frac{1}{2}$ or $\frac{3}{4}$ of a seer are required to weave a piece 96 yards long and 11 inches wide. The import duty on undyed silk thread is 1 rupee per seer and $1\frac{1}{4}$ ana extra on thread dyed at Shikarpoor or elsewhere in Sind.

The dyer's charges are :—

For reddish-brown or orange colour, formed by safflower (the dried flowers of the *Carthamus Tinctorius*), $2\frac{1}{2}$ seers per rupee.

For blue, formed by Indigo, 1 seer per $2\frac{1}{2}$ rupees.

For green, formed by Indigo with gooljuleel (mettilet,) 3 seers per rupee

For yellow, formed by gooljuleel, 3 seers per rupee.

They are the only colours used in Roree by silk-dyers, and the weavers are ignorant how to produce any pattern or design.

When the weaver receives thread from the dyer he smears ghee over it to give it strength and flexibility, and applies wheat starch occasionally to the woof with the point of a stick enveloped in cotton rag.

As far as I could ascertain there are 160 silk looms in Roree which pay a yearly tax of 900 rupees, which is 200 rupees less than the sum realized in the time of the late Meer Sohrab. I visited several loom-shops and found them all in a state of wretchedness and discomfort. The shop from which the description is taken, measured eight feet in length and twelve feet in width, and cost ten Shorabee rupees; it had a pent roof of reeds, mats, and date leaves in bad repair; the ends rested on square pillars of sun baked bricks and the middle on posts, and a low door was built in a wall of tamarisk boughs kept together with posts set on end and sticks tied across them. It was no protection from thieves. Work-shops are not, however, built with a view to secure property, and tradesmen and mechanics rarely sleep in them; they return home at night and carry with them any articles and machinery likely to tempt the cupidity of a thief.

Cotton weavers have a loom of the same description as silk weavers, and worth 3 rupees:

	Rs.	A.	P.
The spinning wheel,	1	0	0
The hand wheel,	0	0	3
(This is worked by a female whose hire is included in her husband's wages of two anas (3d. a day),	1	0	3
30 lease rods of Surkunda reed cut in the wilds.			
The pit in which the weaver sits dug by the weavers.			
The cloth-beam or breast-roll $4\frac{1}{2}$ feet in length,	0	8	$\frac{1}{2}$
Two posts in which the cloth beam revolves,	0	0	2
The lay cap 3 feet long,	0	8	0
<i>Dootna</i> and <i>Sundulee</i> , part of the heddles,	0	0	4
Two <i>Ruchee</i> part of the heddles,	0	6	0
The 'Reed,' of split Surkunda reeds,	0	0	3
Two <i>Ponsur</i> ,	0	0	2
Two treadles,	0	0	2
<i>Duna</i> , or horizontal beam,	0	0	1
Goats' hair rope to which the end of the warp is fastened, ..	0	0	5
Shuttle of <i>kundee</i> wood, and iron reel or needle,	0	4	$\frac{1}{2}$
Cotton threads and horizontal sticks firming the heddle or harness for suspending the loom to the shop-roof, made in the shop.			

Rs. 3 2 0

In 1839, coarse cotton thread fetched in the Roree market from four to sixteen anas a seer, and fine thread four rupees a seer. A weaver works a piece of cloth 12 yards long and $\frac{1}{3}$ a yard wide in a day, $\frac{1}{4}$ seer of thread is sufficient for a piece this size which sells for $1\frac{1}{4}$ rupee. A piece of coarser texture which consumes a seer of thread sells at $\frac{3}{4}$ rupee. A weaver in Roree earns 2 anas (3 pence) a day, which is a half-penny more than is paid in the best cotton factories at Boulac (Cairo). The master's labour is calculated to be worth double, and he prepares the most difficult part of the work.

The shop I visited held two looms and a female spinner. It measured 15 feet long and 9 feet wide and cost 5 rupees, three of which went for labour; two sides of it were fenced with tamarisk twigs unplastered and kept together with sticks laid across them; the third side was open, and the fourth joined a mud wall of another house: the shop had a low wooden door and a broken roof of mats and reeds propped on posts, and this is a fair description of by far the greatest number of shops belonging to mechanics and artizans in Roree.

Cotton cloths were among the few articles which became cheaper at Roree after the arrival of the British. This was owing to the large quantity imported by merchants from the Punjab and Bhawalpoor: they took advantage of the diminution of duties and increased facilities of navigating the Indus.

The process of printing and dyeing calico is usually conducted by one person, and the proprietor of the shop I am to describe, had no assistants, and performed the whole work himself. Working dyers receive 2 anas a day, and food morning and evening, consisting each time of half a seer of wheat flour. The dyer had a walled court ten yards long and six yards wide which enclosed two sheds. The one he occupied himself measured twelve feet in length and ten in width, and he let the other to a cotton spinner.

To prepare cloth for the print and dye, it is immersed four hours in an earthen pan of alum and water mixed in the proportion of 1 to 16, and care must be taken if it be intended to give the piece a uniform tinge from the dye, that this substance, technically called mordant, is universally applied over the whole—otherwise it is applied only in parts; it is then withdrawn from the alum mordant, drained, and washed. A piece of cloth, 24 cubits long and 1 cubit wide, requires an *ana's** weight of alum and five seers water. The dyer afterwards grinds some tamarisk flowers (*sak oor*)

* An *ana* is a Sind weight equal to 6 Shorabee rupees.

in a common stone hand mill and mixes one part flour with sixteen of water. Cloth impregnated with this fluid acquires a yellowish hue, and the immersion is repeated before it is consigned to the colouring vat.

Black spots are left on a white ground of cloth by applying to these points a paste, composed of acetate of iron, gum (*cheer*), and fuller's earth. The dyer forms the acetate from old nails or any rusty iron which he throws into an earthen pot with wheat starch and water, in the proportion of one of iron, two of water, and one fifth wheat starch, and exposes it in the sun four days in summer, and eight in winter as the iron is then longer dissolving. The stuff is transferred to another vessel and fullers' earth melted with it in no fixed proportion until it becomes a thick paste, and to every five seers he adds an *ana's** weight of gum.

The dyer pours the stuff into a shallow box of baked clay, glazed inside and out, and measuring eight inches square and three inches deep. A frame five inches square formed of twelve small bars of *sirkee* reed, bound together at the ends by transverse wooden bars and twine, is set on the paste, and over it a piece of coarse wool on which the dyer presses the block to avoid taking a superabundance of the stuff which would happen if he plunged the block directly into it. The dyer had twenty blocks or engravings in relief, of different designs, made at Shikarpore of tamarisk and tamarind wood, and measuring four and five inches each way. The stuff which accumulates from time to time in the engravings, is removed at intervals by small brushes made of boar's bristles.

Madder (*munjeeth*) is the dye stuff used for producing red colour, and the best kind sells at $2\frac{3}{4}$ seers per rupee; it is not a product of Khyrpoor and imported from Khorasan and India, and through the sea port of Korachee. The stuff is obtained by boiling one part madder in thirty parts water in a copper vessel, till the colour is thoroughly extracted from the root, which takes about four hours. The root is then withdrawn from the pot and thrown away. Eight pieces of cloth each 24 cubits long and 1 cubit wide, are sometimes dyed at once, and boiled two hours in four seers of madder. The cloth is taken from the colouring bath to a river, and beaten on a plank cut in furrows, like the one used by washermen, to deprive it of superficial colouring matter. It is rubbed an hour with cowdung and left all night to dry, and in the morning washed again in the river in the manner noticed, and spread in the sun to dry. The dyer renders the colouring matter a more decided red by mixing *khar* (alkali, with water,) and sprinkles it upon the

* An *ana* is a Sind weight equal to 6 Shorabee rupees.

cloth. Two ana's weight of alkali are sufficient to moisten a piece of cloth 24 cubits long. He washes the cloth a third time in the river, carries it home, and, after folding it, beats it into a smooth even surface with a wooden roller which terminates the process. Four days are required to print and dye a piece of cloth 24 cubits long and 1 cubit wide of any pattern. Fine calico absorbs a larger quantity of fluid than a coarse kind. The man charges one rupee for printing and dyeing a piece this size of the best pattern, and half the money for an inferior pattern. In both instances the charge for printing amounts to one fourth of the whole sum. The man does not use any other colour than madder, and he was the only dyer in Roree in 1839. The dyers of green and yellow cloths had fled to Khyrpoor to escape the exactions of the Governor, and the dyer of blue cloths had removed his shop for the same reason to the British camp.

The Roree cotton printer had :—

	Rs.	As.
Ten wooden blocks (<i>chemba</i>) 4 inches long and $2\frac{1}{2}$ inches which cost 5 anas each,	2	2
Ten wooden blocks 4 inches square at 4 anas each,	8	3
Two small brushes of hog's bristles for cleaning the blocks,	0	5
Two boxes (<i>dubkee</i>) of baked clay, 2 anas each,	0	4
Bench $4\frac{1}{2}$ feet long and 2 feet wide raised on legs to hold the cloth for printing,	1	0
Mat of date leaves,	0	1
Large earthen pan,	0	8
Three earthen pots,	0	3
	Rs. 7	15

The price of ingredients he requires to carry on his business is stated below :—

	Rs.	As.	Ps.
Madder root $2\frac{3}{4}$ seers,	1	0	0
Tamarisk flowers (<i>sakoor</i>) brought from the wilds per seer,	0	0	8
Gum (<i>cheer</i>) per seer,	0	8	0
Alkali (<i>khar</i>) per seer,	0	0	1
Alum per seer,	0	6	0

The road duties, and *octroi* or barrier duties, levied on four-footed animals is ruinously high, and of course affects their hire. For instance between Roree and Kyrpoor, a horseman pays :—

	<i>Pys.</i>
At the gate of Roree,.....	2
Half way,	$\frac{1}{2}$
At the gate of Kyrpoor,.....	2
	<hr/>
	4 $\frac{1}{2}$
	<hr/>

The distance between these places is only 8 kos.

Between Roree and Shikarpore, 16 kos, he pays:—

	<i>Pys.</i>
At Roree,...	2
Indus ferry,	3
At Sukhur,	9
Village of Driha 4 kos from Sukhur,.....	4
Barrier of Shikarpore,	5
	<hr/>
	23
	<hr/>

or nearly one shilling English. These heavy charges are the consequence of Roree, Sukhur, and Shikarpore being under separate Governors.

Hire of cattle from Roree to Shikarpore, and Khyrpoor.

	<i>Rs. As.</i>	<i>Rs. As.</i>
Of a Camel,.....	1 4	1 0
Of a Horse or Pony,	0 12 or 16	0 8 or 9
Of a Mule,.....	0 10	0 8
Of an Ass,.....	0 7	0 5

Hindoo merchants and Bankers exact 24, and sometimes 36 per cent. for money borrowed by zumeendars and persons in needy circumstances, and collect it monthly. But in money transactions with each other they only take 6 per cent. No moosulman practices usury.

Ferries are little frequented except on the line of commercial intercourse, and the roads leading directly to large towns: in other situations they do not give regular employ to the boatmen. Flying bridges of a single rope fixed to stakes on the banks, are thrown across canals and streams cut from the Indus, and a man pulls the passenger across in a boat. The charge for crossing the Indus is, one pys a head for foot passengers double for an ass, and quadruple for a cow or buffaloe, and on small rivers like the Anul and Nuhra, half these respective amounts.

Boats proceeding up and down the Indus before the treaty of 1839, which established the free navigation of the river, paid a toll of one rupee

at Bukur without reference to their tonnage, and tolls at Kurdehee and Thatta. They were searched at Hyderabad, Sehwan, Chilka on the Arrut, Khyrpoor on the Nuhra, and at Roree. An attempt to conceal goods not entered in the bill of lading, condemned the cargo to confiscation and the owner to fine and imprisonment. He must exhibit the merchant's accounts of whom he purchased the goods and a certificate of the custom house officer of the place where they were embarked, without which they are stopped. Grain landed at Roree is charged about $4\frac{1}{2}$ per cent. duty regulated by the price current of the town.

The natives of Sind, with the exception of a few high caste Hindoos who abstain from fish, subsist on fish, milk, and wheat or *joowara*, or rice where it is cultivated, and a variety of vegetables which grow in plenty. From motives of economy they eat wheat during the *rubbee* or spring harvest and *Joowara* or maize in the *Khureef* or autumnal harvest. The price of rice has risen considerably since 1838, and is now beyond the means of the lower orders except in districts where it is the staple. Rice is the red kind and people clean it by pounding it in large wooden mortars with salt in the proportion of one part salt to six of rice. It is sifted from the salt and something less than a pound of wheat flour added to bleach it. Every boat on the Indus is provided with a deep wooden mortar formed of the hollow trunk of a tree. The boatmen buy grain in the husk because it is cheap and beat it in the mortar with a club to separate the chaff.

Meer Roostum obliged the milkmen of Roree to dispose of milk at $2\frac{1}{2}$ pys a seer, but on their threatening to go over to our camp, allowed them to sell it at 3 pys. At Sukhur the price formerly was 2 pys a seer, and doubled in 1839. Curds (*Duhee*) continued at the old rate of 2 pys. Ox and Cow beef sold formerly at 2 pys a seer in Roree, and latterly at $2\frac{1}{2}$, and goat's flesh rose from 5 to 6 pys. The beef and mutton killed in camp for the troops, was extremely lean and tough, and hardly eatable, when cooked in a common way, nor was this surprising as the Sind butchers feed their sheep and cattle on the refuse of stables, and do not give them grain and very rarely Kurbee (the stalk of *joowara* and *bujra*.)

Labourers and other poor people, eat twice a day, in the morning and evening, and consume $\frac{3}{4}$ of a seer of wheat or *joowara* flour, and one pys worth of *bor*, a condiment made of fish, spinach, or pulse. To prepare *bor* the fish is cut in pieces and thrown into boiling water, and onions, black pepper, coriander seed, turmeric, and pomegranate seeds, are added as seasoning. At present (1839) $\frac{3}{4}$ of a seer of wheat or *joowara* flour costs

3 pys, so that including the price of *bor*, a poor man consumes two pence a day. Labourers earned high wages in our camp and could afford to purchase comforts, but they had been so little accustomed to possess cash beyond their daily and pressing wants that they spent the surplus improvidently. After working a few days they absented themselves, without leave, for a week, and squandered their earnings on hemp juice and tobacco. They returned to ask their employer's forgiveness and to resume their labours, but followed again the same improvident course when they amassed a little money.

The food of a Moosulman of the better class costs about a rupee a day, and consists of :

	<i>Pys.</i>
1 lb. Rice,	3
1 lb. Wheat Flour,	2½
1 lb. Goat's Flesh,	4
1 lb. Ghee or Clarified Butter,	8
2 lb. Butter Milk,	4
¼ lb. Butasha,	4
	25½

The family eat half about sunrise and the other half at noon, and a third meal, consisting of the same quantity, at the first watch of the night. A Zumeendar of Sukhur of my acquaintance, spends $\frac{3}{4}$ of a rupee a day on food, and his servants eat what is left. Hindoos live more frugally.

Poor people eat with their food a large quantity of chillies which they pound in a mortar with an equal quantity of coarse salt, and add some oil to diminish their fiery taste. Three pys weight of whole chillies are sold for a copper pys, and half the quantity pounded for use. Fish is dressed with linseed oil and a variety of spices, and the lower orders grill the entrails on wood ashes and eat them with salt.

There is little in Sindian cookery to tempt an epicure who has tasted the delicacies of a Parisien *restaurateur*, or the royal kitchens of Dilhee and Lucknow. I shall give the reader an idea of their cookery by describing a banquet at Sukhur in 1839 to which about two hundred guests were invited. Sher Moohummud, a great *savant* of Roree, gave the dinner to the principal tax gatherer of Khympoor, who sent a *nuzzur*, exceeding the expense of the entertainment, which cost about eighty or ninety rupees. He and she goats were cut in pieces and stewed to rags in large copper cauldrons; and salt, garlic, turmeric, blackpepper, cocoanuts, onions, and the seeds of black cummin, coriander, and anise

were pounded and mixed with the meat and some ghee added after it was removed from the fire.

Another dish consisted of rice served in the water in which it was boiled, and seasoned with salt, ghee, and lime juice.

A third dish, called I think *Ruhta*, was made of white pumkin cut in small slices, parboiled, and thrown into about eighty pounds of *duhee* or coagulated milk, and served with cayenne pepper, salt, onions, and garlic. Every one was helped to a small cup of *ruhta*. The rice was thrown into large earthen platters each capacious enough to allow eight or nine persons to sit round it, and the meat was heaped on the rice and a little *ruhta* poured over it. The Company dined in the open air and were much scattered. Some sat on mats and blankets they brought with them, and the greatest number on the bare earth. It would have been pronounced a shabby banquet in India. According to a Sindian custom, each groupe before they drew to the platters, looked cautiously round, to ascertain if an enemy not bidden to the feast, was watching them. They devoured the meat in unseemly haste and it was over in about an hour.

The Belooch, Puthans, Moghuls, and other northern tribes, settled in Sind, are tall and well made, and the upper classes have dark brilliant eyes and expressive features. They as much surpass the inhabitants of Oude and the Delhi Territory in bulk and stature, as the latter do the tribes of Bombay, Bengal and the Konkan. In complexion, they are fairer than the Bengalees but less so than the Moosulmans of Northern India. They let their beards grow to a great length regarding a well covered chin as a handsome and becoming ornament of the face. Asiatic monarchs, like the early French Kings (the Franks,) never allow the scissors to touch their beards, and regard the beard as a mark of freedom and illustrious birth, and cultivate and prize it exceedingly. The Belooch also permit the hair of their heads to grow in wild profusion which I need not observe, is expressly prohibited by the Koran, for a Moosulman is enjoined to leave only a small tuff of hair on the crown of the head to afford Moohummud a hold in lifting him to Paradise.

The beards of the Belooch, like those of other Asiatic faces, are mostly black and the practice of staining them as they turn grey, is almost universal. An extract from the leaves of *hina* (*lawsonia inermis*) and indigo are used for the purpose, and if not renewed at proper intervals, changes the beard of a fiery red or deep orange colour. It is much the custom, among the Persians and Afghans, and they assist the operation by the vapour bath.

Hina leaves are ground in a mortar or stone hand-mills and immersed an hour in warm water until they acquire the consistency of thin paste. Women mix it with the paste and apply it to their ringlets to conceal the ravage which time has made with them, and it gives their hair a disagreeable smell.

The *hina* paste is strained and applied to the beard with paper and cotton cloth which are passed under the chin and over the head, and a warm situation, particularly a hot bath, favours this troublesome operation. It is left on four or five hours to produce a good colour. Afterwards the beard is thoroughly washed with warm water, combed clean and dried, and covered with a decoction of indigo leaves made into paste like *hina* and tied on the beard for double the period. It is generally put on at night and washed off in the morning, and the beard combed and cleaned. The dye should be applied once a week, to procure the colour, but is not usually renewed oftener than the tenth day.

The national head-dress is a circular cap called Shuhzadpooree. It is about eight inches in height and made of silk or cotton thread of several colours according to the prevailing fashion and taste of the wearer. Scarlet was the favourite colour at Hyderabad in 1839. The crown is flat with a sharp projecting rim, and of a different colour from the rest of the cap, and sometimes covered with brocade. A gay coloured band, the depth of the cap, goes round it with the exception of two inches in the front which is of another pattern. Caps are made upon very small blocks, and worn on the brows so that they just cover the crown of the head. They cost from six annas to five rupees, and common people wear one, three months, or until the threads fall in pieces, and are discoloured from dirt and grease.

Many Puthans, Moghuls and other foreigners, who have settled in Sind, adopt the Belooch cap, and dress to identify themselves with the conquerors of the country and to procure respect and security from oppression, and even Hindoos, in Government employ, wear it. The Ameer occasionally presents his servants with a cap or a dress, and they could not neglect his gifts without giving offence.

Suyads sometimes wear a three-cornered cap made of rich crimson silk sprigged with flowers, or covered with gold brocade, and a handsome one may be purchased at Shatta for 4 or 5 rupees. They are stiffened with paste or buckram and fold up like an English cocked hat.

A few Belooch have adopted the turban, but they usually prefer the national cap. Poor Sindees have cotton turbans either white or dyed

blue with indigo. They take from six to twenty yards of cloth about sixteen inches wide, and cost from 6 annas to 2 rupees.

Slippers are of brown leather made of a peculiar form, and the soles stitched together with cotton thread. They cost half a rupee per pair, and an inferior kind six and seven annas. Poor tradesmen and manufacturers change their shoes every six months and sometimes twelve months.

The upper garment (*cholo*) of the Sindees, is a loose shirt of white cotton similar to the smock of an English ploughman : it has a low collar fastened over the right breast and reaches below the knee, and takes six or eight yards of cloth. The pastoral tribes of the desert and poor farmers, usually dye the frock blue, and other classes a sort of yellowish brown colour with extract of turmeric and pomegranate shells. Some wear a loose waistcoat with a cotton sheet (*bochun*) twisted over it, containing from six to twenty yards of cloth according to the means, and taste of the wearer.

Their trousers or drawers are of course cotton stuff usually dyed blue, made very full, low in the seat, and rather tight above the instep. Some reach only to the small of the leg and are fastened at the loins with a running string. Tradesmen and manufacturers allow themselves four or six suits of clothes in the year.

The higher ranks wear round the waist a *loongee* made at Thatta of mixed silk and cotton threads of gay colours. The middle ranks have *loongees* of white cotton with blue cross bars six or seven cubits long with a border of crimson silk and cotton mixed, and the poor gird their loins with a bit of coarse cotton cloth.

Some women of the lower class wear drawers (*Sootun*), but ladies who are behind the curtain and do not quit their chamber, wear petticoats confined at the waist with a string. Cotton drawers are sometimes striped red, made full to the knee, and tight below it, leaving an opening scarcely wide enough to admit the foot, and falling under the heels.

Their body is cased in a sort of spencer or boddice with short tight sleeves : it reaches to the waist and is tied above and below the bosom with strings, leaving the back exposed. The spencer is dyed brown, red, or dark blue, and sometimes prettily worked and spotted with coloured silks and covered with talc spangles fixed on their leaden medallions, which are also used to decorate mantles and petticoats. They are put on with gum and other adhesive substances.

The following list exhibits the wearing apparel and its cost, of a landholder of the middle class, and of Government officers, in Khyrpoor.

	Rs.	As.	Pys.
<i>Cholo</i> or Shirt of coarse cotton called 'Udhotur' of Khyrpoor manufacture, 20 cubits, at 28 cubits per rupee	0	113	0
<i>Bochun</i> or mantle of the same material 28 cubits long	1	0	0
<i>Sootun</i> or Drawers 11 cubits at 9 cubits per rupee	1	3½	0
<i>Loongee</i> of striped cotton	2	8	0
Shahzadpooree cap of yellow silk and crown of red cotton.	1	0	0
Pair of Shoes	0	8	0
	Rs. 6 15½ 0		

The three first articles on the list are sewn at home, and the usual allowance is six suits in a year which cost	17	11½	0
Six Caps	6	0	0
Four pair of Shoes	2	0	0
	Rs. 25 11½ 0		

About 4s. 6d. are sufficient to provide a poor person such as stone-cutters, silk and cotton weavers, washermen, leather cutters &c., with a suit of wearing apparel, and women of this class may be clothed for 4 or 5 shillings.

A man requires :—

A cotton <i>chola</i> 12 cubits 6 annas, sewing 1½ anna	0	7½	0
A cotton <i>Bochun</i> 18 cubits 9 annas, sewing 1 anna	0	10	0
Drawers, of cotton cloth 10 cubits long 1½ cubit wide 5 annas, sewing 1 anna	0	6	0
Cap 6 annas; or cotton turban 12 cubits long, the same valuse	0	6	0
Shoes 7 annas per pair	0	7	0
	Rs. 2 4½ 0		

<i>Chola</i> 4 per annum, at annas 7½ each	1	14	0
<i>Bochun</i> 4 per annum, at annas 10 each	2	8	0
Drawers 4 per annum, at annas 6 each	1	8	0
Cap 4 per annum, at annas 6 each	1	8	0
Shoes 2 pair per annum at annas 7 each	0	14	0
	Rs. 8 4 0		

About 16s. 6d. per annum,

Rs. 8 4 0

A woman requires :— Rs. As. Pys.

A cotton petticoat (puro), 24 cubits golang and 2 cubits wide
1 rupee, sewing 2 pys. . . . 1 0 0 Four per annum 4 3 2

A Boddice (*Choolee*) of cotton cloth 4 cubits long and $1\frac{1}{4}$ cubit wide, 2 annas, sewing 2 as. 0 4 0 ditto 1 0 0

1 4 2

A mantle or sheet (*Chuddur*) 20 cubits long. It is thrown over the head, envelopes the figure, and descends to the heels, cost 12 annas, sewing 1

anna 0 13 0 Four per annum. 3 4 0

Shoes 7 annas per pair . . . 0 7 0 Two per annum. 0 14 0

2 8 2

9 5 2

Drawers take about 9 cubits of cotton cloth, $1\frac{1}{4}$ cubit wide and cost 8 annas and 1 anna sewing 0 9 0 Four per annum. 2 4 0

Clothes are generally made by the females of a family. Women sometimes wind a cloth or mantle round the body and veil their features like Indian women.

The Ameer's dress costs about £ 7 10, and he is said to allow himself four suits a month. The cast off suits he gives to his servants

A Chola costs 3 0 0

Drawers 10 0 0

Loongee 50 0 0

Roomal or Handkerchief . 1 0 0

Cap 10 0 0

Shoes 1 0 0

Rs. 75 0 0

The dress of ladies of the Ameer's Haram costs about the same, and they wear also a silk *Uorungshahee* of Persian or Toorkish manufacture, worth 30 or 40 rupees. The best *Uorungshahee* are usually red and studded with emeralds, pearls, and other precious stones arranged in patterns. There are some in the Palace valued at 2,000 rupees, and Meers Roostum and Ali Morad have each one said to be worth 5,000 or 6,000 rupees.

So strong is the women's passion for jewels and ornaments, that even the poorest lay by a trifle out of their scanty earnings to gratify it, and I recollect seeing a female at work in a field at Sukkur covered with filthy rags, who had ornaments on her person worth twenty rupees. A triple amulet of silver round her neck cost alone six rupees.

The gold and silver ornaments worn in Khympoor and Moghulee, are more remarkable for their weight and number than delicacy of finish.

The *Chotee Phool* is a medallion for the back of the head.

Tiko. A large oval forehead ornament of gold or silver, painted three or four colours usually red, green, and yellow. A similar ornament is worn in India by shop-keepers wives and prostitutes, but not by peasants. The peasant women of Sind wear the *tiko* at feasts and holidays, and fix it on the middle of the forehead by gold or silver chains (*daonree*), which are brought across the forehead and fastened with hooks behind the ears, or to the crown of the head. A gold *tiko* cost 32 rupees and a silver one $1\frac{1}{4}$ rupee.

Punra from seven to sixteen ornaments worn in the rim of the ear with pearls or silver beads.

Nusbee worn near the orifice of each ear.

Joomuk suspended before the ear to cover the orifice.

Chupla gold or silver wires set with about a hundred small turquoise stones worn in the middle of the rim of the ear.

Boolu a small ring set with pearls worn through the cartilage that divides the nostrils.

Nut ring generally set with three pearls worn in the right nostril. It is always gold, and the lowest half swells into a crescent form. The gold costs from 5 to 9 rupees. A poor woman will have a nose ring worth ten rupees of which the gold costs five and a pair of pearls five. Country people have a cumbrous description of nose ornament resembling in shape and size the two handed instrument used in India to cut betel nut.

Kundhee necklace of gold or silver beads strung on silk threads and falling below the bosom and fastened to an angular barrel-shaped ornament (*pootlo*.)

Taweez, three square amulets of gold or silver, sometimes coloured green or red, suspended round the neck by silk threads.

Sookree, an oval ornament suspended round the neck and below the bosom.

Zunjeeree, a double chain which is passed over the neck and across the loins and attached behind and before to oval medallions, and falls below the bosom.

Chelkee, a waist chain.

Dorhir, armband of three barrel shaped ornaments like the *pootlo*, worn below the elbow.

Banhee, long bangles of embossed gold or silver, worn from the wrist to the shoulder leaving only a small opening at the elbow joint, so that the arm is in fact cased in metal. Ivory armbands are turned on a lathe and sold by weight, and a sufficient number to reach from the wrist to the shoulder may be purchased for 25 rupees. They have a clumsy and disagreeable effect on the sable skins of the women.

Moree, pointed bangle of gold or silver fastened with silk threads on the wrist.

Wadolu, *Mungloo*, and *Kungur*, three kinds of bangle for the wrist.

Moondree, seal rings worn on the fingers. A chain (*wung*) is attached to the ring on the middle finger, carried round the thumb and fastened to the bracelet.

Wehr, ring worn on the fore finger of the right hand.

Aeenu, Mirror ring worn on the thumb.

Kuriyon, heavy silver anklets each weighing from 40 to 100 rupees.

Ghinguroon, anklet worn below the *Kuriyon* and fastened with an ornament (*noora*.)

Paenzeb, silver anklet worn below the *ghinguroon*.

Ungoothee, angular medallions fastened on the toes by rings and sometimes ornamented with blue enamel.

Men of the middle class wear a gold or silver finger ring with a white or red cornelian or other coloured stone, set in it. If set in gold it costs 8 or 9 rupees and 8 or 9 annas in silver. The stone costs a rupee.

Boys wear a ring (*walee*) through the lobe of the ear; an ornament (*Kewatee*) in the rim of the ear; or *Kungna* or bracelet on the wrist, and sometimes seal rings (*moondree*) on the fingers.

*Proceedings of the Asiatic Society, Wednesday Evening,
2d June, 1841.*

THE HON'BLE SIR E. RYAN IN THE CHAIR.

Mr. S. G. T. Heatly was proposed a Member by Dr. J. T. Pearson, seconded by the Secretary.

Books received for the Library of the Asiatic Society, 2d June, 1841,

Annals and Magazine of Natural History, Nos. 37 to 40, December, 1840 to February, 1841,.....	4
The Calcutta Monthly Journal, for April, 1841, 3d Series, No. 77, .	1
The London, Edinburgh and Dublin Philosophical Magazine, 3d Series, vol. 17, Nos. 112 and 113 and vol. 18 No. 114, London, 1840-41,.....	3
Yarrell's History of British Birds, January 1841, part 22,	1
Ouchterlony's Mineralogical Report, Madras, 1841,.....	1
Dollard's General and Medical Topography of Kalee Kemaoon and Shore Valley, Calcutta, 1841,.....	1
Cuvier, Histoire Naturelle des Poissons Tome 15, et Planches, Nos. 389 á 420,.....	3
Journal des Savants, Septembre, Oct. et Nov. 1840,	3
Tassy, Doctrines et Devoirs de la Religion Musulmane, tires du Coran Paris, 1840.....	120, .. 1
Antiquitates Americanæ, Hafniæ, 1837, (in Danish and Latin,) 4to,..	1
Samlede Afhandlinger of R. K. Rash Kobenhavn, 1838. Fredil del, -8vo.	1
List of Mammalia, Contained in the Museum of the East India Company, (for distribution,)	
Pamphlets in Chinese Characters,	2

Read the Report submitted by the Officiating Curator for the month of May last already published in the body of the Journal.

Read Letter, from Mr. E. Blyth, dated, London, 30th March, 1841, apprising conclusion of an arrangement for his passage to India per 'Larkins,' and expressing obligations for conferring upon him the appointment of Curator to the museum of the Asiatic Society of Bengal, also forwarding abstract of a memoir on the wild sheep.

Read the following correspondence with Professor Wilson.

EAST INDIA HOUSE, 31ST MARCH, 1841,

To

The Secretary of the Asiatic Society of Bengal.

SIR,

I have the satisfaction to inform the Asiatic Society, that at last the travels of Messrs. Moorcroft and Trebeck have been given to the public. The society is no doubt aware that the work was printed, and even reviewed three years ago, at which period it was expected by the publisher that the map would have been completed. The unaccountable and unjustifiable tardiness of Mr. Arrowsmith in the preparation of the map has been the sole cause of the delay.

The Society was apprised as soon as Mr. Murray engaged to publish the work of the nature of the arrangement, which had been entered into with him. It was stipulated that the Society would guarantee him against loss in case the book should not meet with a ready sale, either by payment of the deficiency or by paying for such copies as they might desire to possess. If the book were sold, a certain number of copies (40) should be placed at the disposal of the Society. Mr. Murray has sold all the copies except the 40 thus reserved. They have been handed over to me. A promise was given to Mr. Trebeck, the brother of the traveller, that of the copies so received by the society, 12, should be made over to him. As he was recently in town the 12 sets have been delivered to him. Of the remaining, 10 have been sent to the Society on board the Tamerlane. I have distributed six others in the following manner :

- 1 To the Royal Society.
- 1 To the Royal Asiatic Society.
- 1 To the Royal Society of Edinburgh.
- 1 To the Asiatic Society of Paris.
- 1 To the University of Bonn.
- 1 To the Royal Geographical Society.

They have been presented in the name of the Society. There thus remain 12 copies to the appropriation of which by myself I trust the

Society will not object, as I had much trouble in preparing the book for publication, having been obliged indeed to re-write the whole of it. Of these 12 copies, several will be presented to public Libraries. Of those sent to India, I take the liberty of suggesting that a copy should be sent to the son, and another to the daughter of Mr. Moorcroft. They are both in India. The son is, I believe, in the Madras Army, the daughter is married to an officer in the Bengal army. I am not able to furnish more particular directions as I omitted to ask Mr. Trebeck when I saw him, and I do not know where to apply to him; but it will probably not be difficult to obtain the necessary information in Bengal, from persons connected with the houses of Palmer and Co. and Cruttenden and Co. with whom Mr. Moorcroft was in correspondence.

Mr. Blyth has taken his passage in a ship that is to sail at the end of this month, I am in hopes that the arrival of the mail will bring the Society's approbation of the measure of making him an advance for outfit and passage, as without it, he could not have joined the museum.

I believe I have already acknowledged the receipt of the Bill for £200, for Mr. Prinsep's bust. The charge is 200 guineas or £210, the difference can be remitted hereafter. In the case of my own bust I paid it myself. The Society may do as it pleases about the repayment. Mr. Prinsep's bust has been modelled, and will I hope be as good a likeness as can be expected under the circumstances under which it is made; it will no doubt be worthy of the reputation of the Artist.

I am, &c.

(Signed) H. H. WILSON.

To

Professor Wilson.

SIR,

The Hon^{ble} the President and Committee of Papers of the Asiatic Society of Bengal desire me, in reply to your letter of 31st March last, to state that they have duly received from Mr. Blyth himself notice of his embarkation for Bengal to assume the office of their Curator. The Local Government have called upon the Society to reimburse the Court of Directors in the sum of £150 advanced to that gentleman. The Society, I am desired to observe, was not consulted before this advance was made, but the local Government have consented that payment shall be deferred until Mr. Blyth arrives.

Notice has been given to our Agents, Allen, Parbury and Co. to pay to your order £10 being the balance due on account of your bust, and we regret that you should have been called on to advance this sum on account of the Society. The Society is happy to say that the funds available for that of Mr. James Prinsep are ample; its members desire me to return you their thanks for the continued interest which you have evinced on this subject.

The Society observes with satisfaction that the travels of Messrs. Moorcroft and Trebeck, ably edited by yourself, have met with so ready a sale. The period of three years however, which elapsed between the printing and publication of the work might, in the opinion of the Society have allowed of a definite reference to it on the subject of the disposal of the 40 Copies to which by the terms of an ample and hazardous guarantee it was entitled. The Society anxious to improve its connections with scientific bodies on the continent of Europe, would have availed itself with readiness of the occasion thus offered, of making presentations on its own immediate account of a work published only by its interposition.

40 Copies of Moorcroft's Travels due to Asiatic Society of Bengal.

12 Given under promise (of the Society?) to Mr. Trebeck's Brother.

2 Intended for Mr. Trebeck's son and daughter.

6 Presented by Professor Wilson to learned bodies.

12 Taken by Professor Wilson.

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8 For the Asiatic Society of Bengal.

The receipt of the 8 copies sent to the Society will be acknowledged in due course.

I have, &c.

(Signed) H. TORRENS.

Secy. to the Asiatic Society.

Asiatic Society's Rooms,
Calcutta,
The 8th June, 1841.

The Secretary presented to the Society a valuable collection of coins, consisting of the following:

List of the Coins; presented to the Asiatic Society, by H.W. TORRENS, ESQ.

I. Greek and Carthaginian Coins in 5 packets:

1. Ptolemy (copper)

4. Five coins (copper) of Carthage.

2. Ptolemy (copper)

5. Silver coin of Carthage.

3. Two coins of Melite (Malta)

II. Bad Roman copper coins :

One packet, containing 35 various coins.

III. Roman Copper coins in 14 packets :

- | | |
|------------------|---------------------------|
| 1. Minimus. | 8. Carus. |
| 2. Tiberius. | 9. Maximianus. |
| 3. Antoninus. | 10. Licinius. |
| 4. Faustina. | 11. Constantinus. M. (11) |
| 5. Lucilla. | 12. Constantius (6) |
| 6. Gordianus (2) | 13. Magrentius. |
| 7. Alexander. | 14. Decentius- |

IV. Copper coins of 12 Rajahs of Cashmere in 12 packets.

- | | |
|-------------------|--------------------|
| 1. Taga Deva. | 7. Kalasā Rajah. |
| 2. Sangrama. | 8. Sankara Vermma. |
| 3. Sassala. | 9. Ananta Rajah. |
| 4. Diddâ Râni. | 10. Taya Sinha. |
| 5. Kshéma Gupta. | 11. Kersha Rajah. |
| 6. Gopala Vermma. | 12. Sugandhâ Râni. |

V. Copper coins of some of the Mussulman Kings of Dehli.

1. Three coins, Julal Shah, A.H. 841, (scarce.)
2. Four coins, Naser ood deen Mahmood, I.A.H. 643 to 644.
3. One coin, Noosrut Shah (usurper,) A.H. 790 to 800, (very scarce.)
4. Four coins, Mahomed Tughlaks, A.H. 725 to 752.
5. Four coins, Tughlak, A.H. 721 to 725.
6. Four coins, Kutbood deen Moobârak, A.H. 717 to 721.
7. Four coins, Feroz 3rd, A.H. 752 to 790.
8. Four coins, Shums ood deen Iltumsh, A.H. 607 to 633.
9. Three coins, Aboobukr, A.H. 791 to 793, (very scarce.)
10. Four coins, Mahomed, A.H. 837 to 850.
11. Four coins, Mahomed Adil, A.H. 960 to 962.
12. Four coins, Islâm Soor, 952 to 960.
13. Four coins Ala ood deen Masâood, A.H. 640 to 643.
14. Four coins, Naser ood deen Mahomed, 2d A.H. 796 to 816.
15. One coin, Sikander Humayun, A.H. 796, (extremely scarce.)
16. Four coins, Bhatool, A.H. 854 to 894.
17. Four coins, Mubarak, 2d A.H. 824 to 837, (very scarce.)
18. Four coins, Naser ood deen Mahomed, A.H. 793 to 796.
19. Four coins, Ghias ood deen Bulbun, A.H. 664 to 685.
20. Four coins, Moaz ood deen Kai-Kobâd, A.H. 685 to 688.
21. Four coins, Ala ood deen Mahomed. A.H. 695 to 716.

22. Four coins, Shahab ood deen Mahomed bin Sam, A.H. 588 to 602.

23. Four coins, Sheer Shah Soor, A.H. 947 to 952.

24. Four coins, Jelal ood deen Feroz, A.H. 688 to 695.

A beautiful set of casts of coins by V. Tregear Esq. was also presented.

Read the following List of Silver Coins of the Mehomedan Kings of Delhi purchased from Lieut. A. Cunningham by the Society.

Silver Coins of the Mahummudan Kings of Delhi.

PUZHANS.

A. H.	A. D.		Size.	Price. R. A. P.	Remarks.
588.	1192.	Shahab ood deen Mahummud,	1	Rupee 10 0 0	Type. Unique & unpublished.
643.	1245.	Naser ood deen Mahmood,	. 1	do. 3 0 0	Common.
664.	1265.	Ghias ood deen Bullum,	. . 1	do. 5 0 0	Rare.
685.	1286.	Moozood deen,	. . . 1	do. 7 0 0	Very rare.
688.	1289.	Jelal ood deen Feroz,	. . . 1	do. 5 0 0	Rare.
695.	1295.	Alaoodeen Mahummud,	. . 1	do. 2 0 0	Very Common.
717.	1317.	Kutt ood deen Moobaruk,	. . 1	do. 7 0 0	Very rare.
		Ditto,	. . . 1 ½	Rupee 1 0 0	Common.
721.	1321.	Ghias ood deen Tughlak,	. . 1 ½	do. 2 0 0	Rare.
					Type.
725.	1324.	Muhummud Tughlak,	. . . 1 1	Rupee 10 0 0	Unique & unpublished.
		Ditto,	. . . 1 ¼	do. 1 0 0	Common.
947.	1540.	Sheer Shah, Fareed ood deen,	1	Rupee 2 0 0	Very Common.
952.	1545.	Islam or Suleem Shah,	. . 1	do. 2 0 0	Common.
				<hr/>	
				13 at Rs.	57 0 0

MOGULS.

963.	1556.	Akber, Roundjul julaleh,	. .	Rupee 2 8 0	
		Ditto, Squarejul julaleh,	. .	do. 2 8 0	
		Ditto, Char yareh rupee,	. .	do. 2 8 0	
1014.	1605.	Ichaugir Square, in beauti- } ful preservation, . . . }		do. 2 8 0	
		Ditto, Round, }		do. 2 8 0	
1037.	1628.	Shah Jehan,	. . . . .	do. 2 8 0	
		Ditto,	. . . . .	do. 2 8 0	
1068.	1658.	Murád Buksh,	. . . . .	do. 5 0 0	Extremely scarce.
1068.	1658.	Aurungzeb,	. . . . .	do. 2 8 0	
1118.	1707.	Behadur Shah,	. . . . .	do. 2 8 0	
1124.	1713.	Jehandar Shah,	. . . . .	do. 4 0 0	Very scarce.
1124.	1713.	Ferokhser,	. . . . .	do. 2 8 0	
1131.	1719.	Rafi ud darjât,	. . . . .	do. 10 0 0	} Unpublished extreme- rare.
1161.	1749.	Ahmed Shah,	. . . . .	do. 2 0 0	
1167.	1754.	Alumgir Sain,	. . . . .	do. 2 0 0	
1173.	1759.	Shah Jehan Sain,	. . . . .	do. 15 0 0	
1173.	1759.	Shah Alum,	. . . . .	do. 1 8 0	
1221.	1806.	Akber Sain,	. . . . .	do. 1 8 0	
				<hr/>	
				18 Coins,	66 0 0
				13	57 0 0
				<hr/>	
				31	123 0 0

N. B.—The Mogul rupees are all in the most perfect preservation, having been selected out of 200 Coins at Delhi, at 2 Rupees each.

The Secretary submitted a sample of the Tooloot paper presented by Mr. John S. Torrens. In forwarding it that Gentleman writes, 'I was reminded of it the other night on hearing the Curator speak of the inconvenience caused by the rapid destruction of the labels, on the various specimens in the Society House. This paper is prepared at Nuddea, where it has long been made use of by the Brahmin's in their writings. It is proof against insects, and I am afraid to say the age of some writings on it, which have been produced before me in a perfect state of preservation. I am also told that moderately sized boxes, lined with it will secure papers deposited in them from the attacks of insects; and from some experiments, I have myself made, I should think the paper would be of much use in libraries by merely pasting a slip of it down the backs of books between the leather, another stitching. In records in public offices, it would doubtless be of use.'

'It may be as well to mention that it is impregnated with Sulphate of Arsenic.'

Dr. H. H. Spry presented on behalf of Mr. R. N. C. Hamilton, Commissioner at Agra, a beautiful specimen of the musk deer of the Himalya.

Mr. Hamilton in sending it, writes, 'I have sent to you a skin of a musk deer, quite perfect, the head is good, but from having been badly packed in the hills beyond Almorah, it is crumpled up. I know not whether it will be acceptable to the museum of the Asiatic Society, but if so, will you present it?'

The Hon'ble H. T. Prinsep Esq. presented several Chinese pictures and books brought round in one of Aga Kurboloi Mahomed's Ships, which had been engaged in going to the northward for cattle for the China expedition.

Read letter of 16th April, 1838, from Mr. C. C. Rafer, Secy. Royal Society of Northern Antiquities, Copenhagen, offering the establishment of a connexion between that institution and the Society of Bengal, and with this view presenting a copy of the 'Antiquities of America before the time of Columbus.'

Ordered that the civility be reciprocated by the presentation of a copy of the Transactions of the Asiatic Society, and that Mr. Rafer be requested to enroll the Society as subscriber to the publication.

Read the following letter from Mr. Acsoma Korosi of 22d May, 1841.

TO H. W. TORRENS, ESQ.

Secretary to the Asiatic Society of Bengal.

SIR,—I beg to acknowledge the receipt of your letter dated on the 15th instant, acquainting me with the resolution of the Committee of papers, in answer to my letter to you.

I feel greatly obliged by the Asiatic Society's kindness, generosity and liberality towards me, in having accepted my resignation, in having declined to accept the money, which I most willingly and respectfully offered to repay, and in having permitted me to remain at this place until my departure from Calcutta, granting me in the same time a monthly allowance of 50 rupees for which I return herewith my respectful thanks, and beg to be kindly excused from accepting the offered monthly salary; since I cannot employ the money. Should I be successful on my intended journey to Tibet, to find an opportunity for improving myself in the language and literature of that country, and to procure some interesting works, I shall then take the liberty to apply to the Asiatic Society.

I sincerely declare herewith that, if not hindered by death, I intend to return again to Calcutta, and to acquaint the Society with the result of my peregrination.

I beg to remain with great respect,

Sir,

Your obliged and obedient servant,

A. CSOMA KÔRÔSI.

As. Society's Rooms, }
Calcutta, }
 22d May, 1841.

This letter having been read, the Hon'ble the President observed that that eminent scholar was not less remarkable for the high and gentlemanly feeling which he had always manifested in his intercourse with the Society than for his great erudition, perseverance and enterprize. The expedition Mr. Csoma now meditated to Lassa would be undertaken wholly on his own resources, its object being the noble and laudable one of furthering the ends of Philological and Historical enquiry. The President trusted that should Mr. Csoma find himself in a position during his expedition into Thibet, to require aid, he would not fail to consider the Asiatic Society of Bengal as gratified by being able to lend their assistance to so esteemed a co-adjutor.

The Asoka stone bearing the Palee Inscription, forwarded by Major Thoresby. The mass of granite bearing the Asoka Inscription, fac-simile and translation of which was published in No. 95 of the Asiatic Journal, was laid in the Society's rooms for the inspection of the meeting, having arrived only four days previously. This the most ancient (B. C. 250) and one of the most valuable of the relics of Indian Antiquity in the possession of the Society, was inspected with extreme interest by all the Members present.

It is in admirable preservation, and the characters are cut with distinctness and elegance. A careful comparison with the published fac-simile shewing that it is perfectly correct. The Society have now by the intervention of that zealous antiquarian Capt. Burt, and the obliging kindness of Major Thoresby, been placed in possession of an *Original Edict of Asoka*. It is the decyphering of the character in which the Edicts of that Monarch are written, and the interesting and important historical results deduced from the interpretation of them, which have so greatly contributed to raise the reputation of the Society among learned bodies in Europe, the credit and the merit of the discovery being wholly due to the late Mr. James Prinsep.

It was suggested that on receipt of the bust of that lamented and distinguished man, the inscription now before the meeting, could not be better placed in the museum of the Society that at the foot of the Pedestal, which is to bear his effigy.

For the presentations and contributions, the thanks of the Society were accorded.





