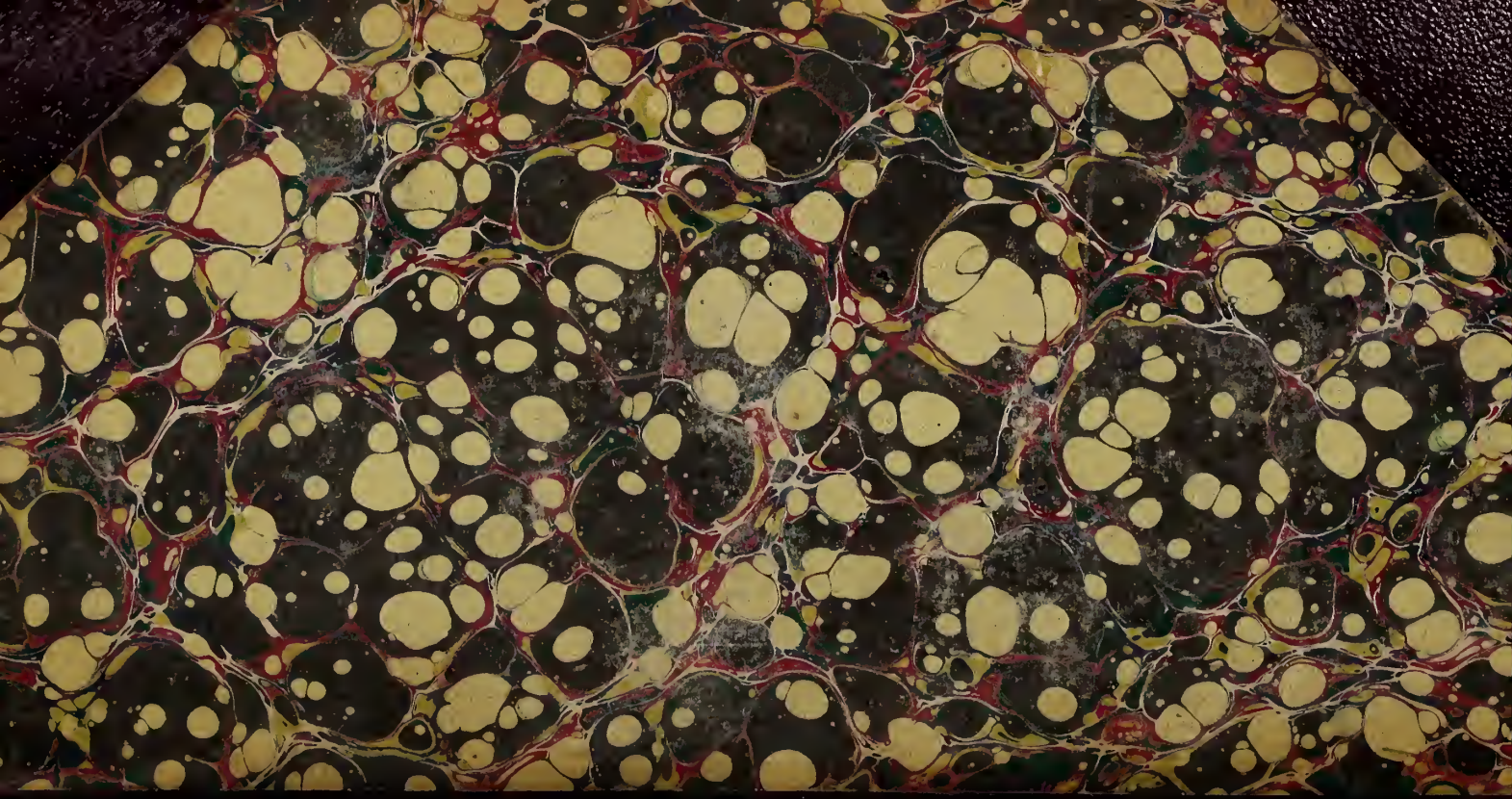

# JOURNAL

OF THE

# ASIATIC SOCIETY OF BENGAL,

EDITED BY

## THE SECRETARIES.

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VOL. XVI.

PART I.—JANUARY TO JUNE, 1847.

"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 at Calcutta. It will languish if such communications shall be long intermitted, and it will die away if they shall entirely cease."—SIR WM. JONES.

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1847.

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# LIST OF PLATES.

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| „ | 19 | for Sherí at el Beitha read Sherí 'at el Beitha. |
| 302 | 4 | for Tarimyer read Tarmíyeh. |
| „ | 12 | for Jeddiah read Jedídah. |
| „ | 18 | for Jeddiah read Jedídah. |
| 303 | 10 | for After "When it bore East" read On the right bank, &c. |
| „ | 17 | for Khiyat read Khayt. |
| „ | 24 | for Jeddiah read Jedídah. |
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| „ | 6 | for Nhar read Nahr. |
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| „ | 25 | for Malwújeh read Malwíyeh. |
| 313 | 19 | for Hebla read Kebla. |
| 315 | 3 | for round read mound. |
| „ | 6 | for Shiragoor read Shirazoor. |
| „ | 2 | of note, "Ustrima" read "Ustrina." |
| „ | 13 | for Sammariah read Samarrah. |
| „ | 18 & 22 | for Dina read Dúra. |
| „ | 28 | for Sammariah read Samarrah. |
| 316 | 19 | for this read thus. |
| „ | 24 | for present read personal. |
| 317 | 9 | for Yet alíj read Tel alíj. |
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| „ | 22 | for Mahrwan read Nahrwán. |
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| 319 | 16 & 17 | for after the numerals ° and not t. |
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|---|---|---|
| 319 | 21 | for Abri Delif & Maluryeh read Abú Delif Malwíyeh. |
| ,, | 24 | for Majainmah read Majammah. |
| ,, | 25 | for On the east side, &c. read On the east side. |
| ,, | 26 | for Mahrwan read Nahrwán. |
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| ,, | 23 | for M. Batta read M. Botta. |
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| ,, | 21 | for "Durn" read "Dum." |
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| 326 | 11 | for "Al'arab" read "Al'Arab." |
| ,, | 14 | for Tekrith read Tekritlís. |
| ,, | 24 | for a Scorpii read α Scorpü. |
| ,, | 13 | for Khanisah read Kanísah. |
| 327 | 2 | for Arnin read a ruin. |
| ,, | 3 | for Kamsah read Kanísah. |
| ,, | 4 | for "El Tet'bha" read "El Fet'hha." |
| ,, | 6 | for S. W. read N. W. |
| ,, | 4 | of note, for (Tageit) read (Tagrit). |
| 328 | 1 | for easting read casting. |
| ,, | 13 | for Khalidj—fresh sentence, Observing, &c. |
| ,, | 24 | for Extending to the Eastd. read Extending to the Eastd. from it; |
| ,, | 1 | of note, for "E. Seliva" read "El Selwa." |
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| ,, | 6 | for gazing read grazing. |
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| 332 | 11 | for Trumbee read Trúmba. |
| ,, | 12 | of note, for Al Athus read Al Athur. |
| ,, | 14 | for Bukhtyari read Bakhtiyárí. |

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| | | |
|---|---|---|
| 614 | 16 | for Potamida read Potamidæ. |
| 621 | 23 | for *biporcatus* read *porosus*. |
| 623 | note, | for *Geckotidæ* read *Geckonidæ*. |
| 643 | 3 | for on the Pinang read in the Pinang. |
| 656 | 5 | for *Polycopodium* read *Polypodium*. |
| 909 | 14 | for $3\frac{3}{8}$ inch read $0\frac{3}{8}$ inch. |
| 921 | 30 | for Hexahonotus read hexagonotus. |
| 927 | 6 | for *catenularies* read *catenularis*. |
| 929 | 5 | for Dryiphis read Dryiophis. |
| 1066 | 11 | for *twelveth* read *twelvth*. |

JOURNAL

OF THE

ASIATIC SOCIETY.

MARCH, 1847.

*On the Ruins of Anuradhapura, formerly the capital of Ceylon, by* WILLIAM KNIGHTON, *author of the "History of Ceylon," and late Secretary, Ceylon Branch Royal Asiatic Society.*

The ruins of the former capital of Ceylon are situated in the northern province of the island, about midway between Aripo and Dambool, on the road or trace which unites the two. It is distant from Aripo about 45 miles, and from Dambool not quite 48. On both sides of it the road passes for many miles through a desolate and unhealthy region, unvariegated by any scenery of interest to take from the monotony of the journey. But a few native huts are now in existence on the site once so densely populated, and were it not for the existence of a District Court, and a Government Agency there, it would probably be entirely deserted. Dense masses of jungle now surround the monuments of ancient civilization, amidst which are to be seen in all directions, granite pillars, varying in height from fifteen to twenty-five feet, and occurring so frequently as to give rise continually to the thought, what could have been their use? But before entering particularly upon any description of the ruins, it may not be amiss to take a brief review of its foundation and history.

Anuradhapura was founded about five hundred and forty years before our era, by Anuradha, one of the followers of Wijeya, who had shortly before invaded the island. It is thus coeval with the earliest authentic facts in the history of Ceylon. The Mahawanso in noticing its

foundation merely relates that it was then but a village, though subsequently a city, and that it was founded on the banks of the river Kadamba, the present Mulwatte Oya. The village thus early formed appears to have remained in its original obscurity for upwards of one hundred years. It was then greatly enlarged and improved by the usurper Pandukabhayo, who, in 437 B. C. made it the capital of the island. His improvements would appear to have been very extensive, inasmuch as the city was divided under him into four parts, over each of which an officer was appointed as conservator. A body of five hundred chandalas,* we are told, was appointed to be the scavengers of the city, two hundred to be nightmen; one hundred and fifty to be carriers of corpses; and the same number were engaged at the cemetery. For these chandalas a distinct village was appropriated to the north-west of the city. We have here sufficient evidence that at this early period the city was already rapidly advancing to that degree of greatness which it subsequently attained.

We next hear of the advancing greatness and extent of Anuradhapura in the reign of Tisso the first (surnamed Devananpiatisso), on the occasion of the transportation of the sacred Bo-tree of Gotamo from the banks of the Ganges to Ceylon; (B. C. 307,) where it was deposited in the Maha Wiharo, and where, if tradition and the priests are to be believed, it still exists. In fourteen days, the Mahawanso informs us, the pious Tisso had the branch of the sacred tree conveyed from the port at which it landed to the capital. "At the hour when shadows are most extended," proceeds the Singhalese historian, "the monarch entered the superbly decorated capital by the northern gate, in the act of making offerings; and passing in procession out of the southern gate, and entering the Mahameyo garden, hallowed by the presence of four Buddhas, he, with sixteen princes raised up the Bo branch upon the spot where the former Bo-trees had been planted." From this account it would appear that the Maha Wiharo was at that time without the city, although certainly not so, afterwards. From this period till the reign of Dutuyaimono, and in fact till about the period of the Christian era, it would appear that the city gradually advanced in size and importance, till it became the extensive and remarkable place which its ruins at the present day attest it to have been.

* Low caste people.

That the three centuries preceding and the three succeeding the Christian era, were the years during which Anuradhapura flourished most, is proved by the fact that all the great buildings whose remains at the present day astonish us by their massiveness or size were erected within that period. The remains of the walls of the ancient town, which were erected about sixty years after our era, prove by their great extent the space which the city then covered. They were sixteen miles square, and were built due north and south, east and west, thus enclosing a space of two hundred and fifty-six square miles. Within this vast space, however, we must remember that there were, besides the streets and buildings, extensive gardens, and water-courses, which must have occupied a very considerable extent. It would be futile to endeavor to discover the amount of the population of Anuradhapura at its most flourishing period, no data being afforded in the native histories by which it could be judged. That it must have been very considerable is evident, as well from the accounts given us of its importance, as from the ruins which even now exist.

The first blow to its prosperity appears to have been given by a wavering monarch named Mahasen, who reigned in the third century, and who, at first becoming attached to a small and heterodox Buddhistic sect, employed his power in the destruction of the great buildings occupied by the more numerous and more orthodox community. At a later period his opinions having changed, he endeavored to restore what his fanaticism had formerly defaced. In the fifth century a still greater check to its prosperity was inflicted by a protracted struggle between several Malabar invaders and the royal race, in the course of which the capital fell, sometimes into the hand of one party, sometimes into that of the other, and as the struggle lasted for a period of twenty-four years, we will not find it difficult to picture to ourselves the injury which the city must have sustained in the contest. Towards the close of the same century it was deserted by a usurper for the rock Seegiri, mentioned in my former paper, and from this period till its final desertion by the royal line, A. D. 769, it appears to have been gradually decreasing nearly as fast as its rival Pollonaruwa was advancing in extent, in population and in wealth. In the eleventh century one more attempt was made by a Singhalese monarch to restore the former capital, but without success, and after this period, the notices of it by the native histo-

rians are few and far between, till we reach the period of the arrival of the Portuguese under Almeida in 1505. Indeed for so long a period as two hundred and fifty years previous to that event, I can find not even a passing allusion to it in the chronicles of the island, a proof, I imagine, either of its utter desertion or of its extreme insignificance about that time. Towards the latter end of the seventeenth century it would appear, from Knox's relation, that when he passed through it he found it completely deserted, and nothing left but the ruins of its once magnificent buildings to prove its former greatness.

The reception of the branch of the sacred Bo-tree by Tisso, three hundred years before our era, and its plantation at Anuradhapura, has already been noticed. To attend to this, the chief object of Buddhistic worship there, a college of priests was established, for whom a suitable building, called the Maha Wiharo, was raised ; of this there are now but few remains, the name having been transferred to the Bo-tree itself and to the pile of building or platform by which it is supported and encompassed. This platform is a square erection about twelve feet high, from the summit of which the various branches of the Bo-tree appear issuing, and has nothing about it worthy of particular notice save the sculptures on the steps leading to a rude and recent building, through which the visitor passes in going to the sacred tree. I know not how better to describe the platform by which the Bo-tree is surrounded than by likening it to a gigantic square flower-pot, from the earth in the centre of which the tree springs. The sculptures to which I have referred are exceedingly interesting as a monument of the state of the arts in the earliest ages of Ceylonese greatness. They were evidently a part of some other building long ago destroyed, and replaced by the rude wooden structure to which allusion has been made. On one of the stones, a large, flat step, a number of concentric semicircular arches have been deeply cut in the spaces, between which are admirably represented in deep and bold cutting, the horse, the buffalo, the elephant, the lion, together with birds and flowers. I was surprised at the excellence of these sculptures, having seen nothing before of Singhalese workmanship, at all equal to them. Their spirit, workmanship, design and execution prove incontestibly that those who executed them must have been far indeed from barbarism. They are as superior to the native sculptures which I had seen elsewhere as the massive ruins of

Anuradhapura itself are superior to the paltry remains of Cotta or of Kurneyalle.

The earliest building whose remains still attract the attention of the visitor, is the Thuparamo, or Thupharamaya dagobah, erected by the pious Tisso formerly mentioned, three hundred and seven years before our era. The spot on which it was erected was said to have been hallowed by the presence of Gotamo himself, and the purpose of its construction was to enshrine the right collar-bone of that prophet. Considering the great length of time during which it has stood, (upwards of two thousand years) it is in excellent preservation, and the piety of the present high-priest has lately re-erected the spire which had fallen, without taking from the appearance, or adding anything foreign to the original design of the structure. It is situated a short distance to the north of the road by which Anuradhapura is usually reached, that from Dambool to Aripo. The approach to it is along the ancient north and south street of the city, a broad and well-defined road, now cleared of jungle. On each side of this street large trees and low brushwood extend over the greater part of the adjoining lands, amidst which hundreds of square granite pillars lift their heads in lonely desolation, the silent witnesses of the present desertion, as they once were also of the busy multitudes who thronged these streets. Masses of stone cut into the forms of bullocks and lions are also seen lying numerously about, together with the fragments of sculptured columns, and the blocks of irregular and regular stone, usually seen on the site of deserted habitations. But one object cannot fail to strike the most inattentive in traversing the great and now grass-grown street by which he is led to the Thupharamaya, that is, the towering mass of the Ruanwelle dagobah, rising on his left hand like a pyramidal hill overgrown with trees and bushes. A little further on he crosses what now remains of the east and west street, running at right angles to that on which he stands, and of equal dimensions, both being quite as broad as the widest streets of London or Paris at the present day. Near a bend in the road which leads the visitor in a north-westerly direction, stands one of the most extraordinary monuments of royal Singhalese refinement. It consists of an enormous trough, composed of a single block of granite, about ten feet long at the top, five broad, and in depth four feet—the excavation measures nine feet by four, being also two and a half feet deep. The tradition

is that it was ordered by Dutuyaimono to hold his elephant's food when feeding. I should imagine that six elephants could have fed from it at once without incommoding each other.

The Thupharamaya is certainly the most elegant structure at Anuradhapura, and exceeds in beauty all the others. The rough sketch of it which I annex may serve to give some idea of its present appearance. A very elegant and well-executed view of its aspect before the restoration lately effected by the high-priest may be seen in Major Forbes' account of Ceylon. The dagobah itself consists of the usual semicircular mass of masonry standing on a square platform of flagged brickwork, and surmounted by a tapering spire. The entire height of the building above the plain on which it is situated, and including, of course, the platform on which it stands, I estimated at fifty feet. The columns surrounding it are exceedingly graceful—long, slender and well proportioned as they are, they may give us a very favorable idea of the taste of the artists by whom they were designed. They consist of two distinct blocks of granite, one forming a square base and octagonal shaft, both together being twenty-two feet long—the second forming the capital richly ornamented with small human figures standing round the lower part of the projecting ornament, which may be seen at the summit, and adding about two feet to the height of the pillars. Originally there were one hundred and eight of these pillars divided into four rows, standing round the dagobah and issuing from the platform on which it stands —many of them are now fallen down, some have been removed and others lie in the positions in which they fell.

Six hundred years after the erection of the Thupharamaya a temple was built beside it to contain the celebrated Dalada, or tooth-relic, then first imported into Ceylon. The remains of this temple are still visible, without having any thing about them greatly to distinguish them.

On looking at the Thupharamaya, the question is naturally suggested to us what was the object of those pillars, and for what purpose were they intended? To this question I could never get a satisfactory answer. My own impression, however, is, that if not intended as ornaments, they were designed to support a roof which should stretch from the summit of the spire to the outer line, so as to protect the dagobah from the influence of the weather. It is, however, equally true that such a roof

would also protect them from the gaze of the worshippers, and that it would require only one line of pillars instead of four to support it.

The Thupharamaya, we can easily believe, would follow the fortunes of the city in which it stood. The unbelieving Malabars would show it little respect, although they might consider the trouble too great of levelling it with the ground, whilst the Singhalese monarchs would restore it at intervals to its first condition, or leave it to its fate, as piety or indifference had the ascendancy in their minds.

The ruins which usually strike the eye of the traveller on first entering Anuradhapura from the southern side, are the remains of the numerous pillars which formerly supported the Lowa Maha Paya, or brazen place for the priests. This building, one of the largest that ever existed in the east, was erected by Dutugaimono, a hundred and fifty years before our era. One hundred and fifty years before that again, its erection, Singhalese tradition assures us, had been prophesied by Mahindo, the great priest of Buddhu, who arrived with the Bo-tree in the time of Tisso. Dutugaimono, having heard of this prophecy, the Mahawanso informs us, searched for a record of it said to have been deposited in the palace. This record, with the assistance of the priests, he at length found in a vase, inscribed on a golden plate. It mentioned his own name we are told, and gave a brilliant account of the palace he should build for the priests. The monarch, unsuspicious of deception, was delighted at the heavenly warning, and assembling the priests in his garden, many of whom were doubtless laughing in their sleeves at him, informed them that if they could but find out what kind of a palace the devas or heavenly spirits had, he would build them one like it. Nothing was easier for the priests than this; so sending off eight of their number ("all sanctified characters," reverently observes the Mahawanso) to the other world, they told them to bring back a drawing of the palace of the devas. It would seem that trees grew in the other world also, for the eight "sanctified characters" returned with a sketch of the palace of the devas drawn on a leaf, with a vermilion pencil. The monarch seems to have asked no impertinent questions as to the road they took or the reception they met with, but at once proceeded with the erection of the Lowa Maha Paya. It was one hundred cubits, two hundred and twenty-five feet square, and the same in height, being supported on sixteen hundred stone pillars, having forty on each side.

These with a few exceptions are all standing at present, but not in their original condition, many of them having been split to forward the schemes and lessen the trouble of future monarchs. In the centre they are generally twice the thickness of those on the outside. They are in general about twelve feet high and were evidently intended for being built on—the spaces between them being too small to admit of being separate apartments. As at first erected, the Lowa Maha Paya was nine stories in height and contained in each story one hundred apartments. This number seems large, but it will be found on calculation that one hundred apartments (supposing them all of the same size) each twenty-two feet square, could be constructed in the space given, and the cells usually occupied by the priests are much smaller. In the centre of this palace there was a large and splendid ivory throne, on one side of which stood a representation of the sun in gold, on the other a similar emblem of the moon in silver, and above shone the stars in pearl. The account of this building as given by the Chinese Buddhists who visited Anuradhapura three hundred years afterwards, confirms the description of the Mahawanso. Such was the fruit of the visit of these eight priests "all sanctified characters," to the deva-loka. When stretched upon his death-bed, Dutugaimono, anxious for his future welfare, asked the attendant priests respecting his hopes of happiness in a future world, particularly reminding them of the palace which he had built for them, and on the ground of this, and his other meritorious works he was promised an immediate entrance to the deva-loka, where he was doubtless received into that palace, the architecture of which he had copied on earth. The name of the "brazen palace" arose from its having been roofed with sheets of metal, and not with the ordinary tiles.

Soon after its erection, or in the thirtieth year after the Christian era, the Maha Paya required considerable repairs, but it was not till Mahasen's reign in A. D. 286, that it met with any very serious disaster. By that apostate monarch the entire of the nine stories were swept away and nothing left but the pillars which had supported it in the centre. To repair this destruction his son and successor Kitsiri Maiwan in A. D. 302, was obliged to split many of the pillars in two in order to complete the original number. The palace was subsequently reduced to five stories, and gradually fell into neglect and decay until

the removal of the seat of government to Pollonaruwa, which completed its desertion.

The stone pillars on which it stood are a little to the north of the Maha Wihare, on the south side of the trace leading to Aripo, and near them, are shewn the tomb of Gaimono, and the mound of earth on which the kings were usually burnt. A little to the south of the Maha Wihare and about five hundred yards from the remains of the brazen palace, a mound of earth, formerly a small dagobah, points out the place where the action between Gaimono and the usurper Ellala commenced, as also the spot on which Ellala fell.

On the road to the Thupharamaya dagobah I have already mentioned that the visitor sees on his left hand the conical mass of the Ruanwelle dagobah rising like a mountain near him. The entrance to this, as to most others of the ancient buildings, is through an erection of modern structure, chiefly formed of wood. The site on which it is erected is said to have been hallowed in various ways, and the prophecy to which I have referred in the case of the Maha Paya, also mentioned that Dutugaimono should construct a Maha Thupo, or great dagobah. A long and tedious account is given in the Mahawanso of the miraculous manner in which the materials for this erection were formed and procured. When every thing had been obtained which was requisite, the monarch commenced the structure by digging a foundation which, tradition tells us, was a hundred cubits or two hundred and twenty-two feet deep. This is most probably exaggerated, yet as the dimensions are in general given with great exactness, I should hesitate before pronouncing it false. Certain it is that the stone platform on which it stands is massive and of enormous dimensions, being five hundred feet square, thus giving us a superficial extent of solid masonry of 250,000 square feet, or upwards of 27,000 square yards. This platform is surrounded by a fosse seventy feet broad. On the sides of the platform are sculptures representing the heads and fore-parts of elephants as if in the act of emerging from the mass. Unfortunately Dutugaimono did not survive to see the completion of the dagobah which he had spared no pains to erect, and in order that he might have some idea of what it would be when finished, he had a spire of wood placed upon it of a similar form with that intended to be subsequently added of more durable materials. He is said to have expired in the act of gazing on

this building, and the spot on which His Majesty reclined is still pointed out. At some distance on the other side of the ancient street is a large stone slab, which it is said covers the entrance to the interior of the dagobah. Ceylonese history records its having been twice penetrated, once by miraculous power invoked by faith, and on another occasion by the sturdy arms of an usurper's soldiery. It is now nearly completely overgrown with jungle, as will be seen in the accompanying sketch—the original brick-work of which it is composed being only visible in a few detached places. The squared platform on which it stands and which is still well paved with slabs of granite, has been cleared of the brushwood with which it was overgrown by the high-priest, and lying on the southern side of it is to be seen a broken statue of Batyatisso, who reigned from B. C. 19 to A. D. 9, "and appears," justly observes Major Forbes, "to have been one of those persevering zealots who 'hope to merit heaven by making earth a hell.'" On the granite pavement are pointed out indentures said to have been worn out by the knees of Batyatisso during his frequent and lengthened prayers. The Ruanwelle dagobah appears to have suffered more from the ravages of Magha, the usurper alluded to, who forced a passage into it in the thirteenth century, than from any of the other revolutions to which the capital was subjected, and it does not appear that any attempt was ever afterwards made to restore it to its former condition. It was originally two hundred and seventy feet high, and would appear to be now decreasing in elevation with the rains of every successive year. When Major Forbes visited it in 1828, he states it to have been one hundred and eighty-nine feet in height, whilst now (in 1846) it is but a hundred and forty—having thus lost forty-nine feet of elevation in 18 years.

The invasion of the Malabars and the flight of the king Walagambahu, has already been noticed in the account of the caves of Dambool. It would appear that his first act on his regaining his throne was the erection of a stupendous dagobah as a monument of his good fortune. This he called the Abhayagiri, a title compounded of a surname of his own—Abhaya—and the name of a Hindu sect. It was originally a hundred and eighty cubits, or four hundred and five feet high, and stood on a mass of masonry of even larger dimensions than that particularly noticed as forming the foundation of the Ruanwelle dagobah.

From the great size of the Abhayagiri dagobah, together with the numerous other erections of Walagambahu about the same period (87, B. C.) it would appear that notwithstanding the recent invasion of the Malabars, the kingdom must have been in a very prosperous and flourishing condition. To the Abhayagiri dagobah was attached a wihare and priests' residence, which would seem to have been for a long period the centre of the Buddhistic hierarchy in the island. At length a schism arose in the third century of our era; a small part of the Abhayagiri priesthood joined the heretics,—the king Mahasen favored them, expelled the orthodox followers of Buddhu, and spared no pains to raise to eminence and popularity the sect whose principles he had embraced. This was the period of the greatest splendour of the Abhayagiri, but it was destined to be but of short continuance. While the monarch's partiality for the sect continued, however, the spoils of the Lowa Maha Paya, the Ruanwelle, the Maha Wihare and the Thupharamaya, all went to decorate the Abhayagiri and enrich the schismatics. But Mahasen soon found that whatever respect the people might have for his person, they had a greater for their religion, and a popular revolt which ensued on these changes, warned him not to persevere in his schemes. He accordingly gave up the minister (by whose advice he pretended to have been guided) to the fury of the populace, and by his death diverted the torrent of indignation from himself. The unconscious dagobah and wihare shared somewhat of the fate of its supporters, and though not utterly destroyed, they were yet very much reduced in magnificence and importance. After this period we still read of the Abhayagiri wihare as a common resort of the priesthood, till the removal of the seat of government to Pollonaruwa, when it is of course to be supposed, that the ancient capital would lose the greater portion of its sacred inhabitants. There is little to distinguish the dagobah in its present condition: overgrown to the very summit with jungle, it affords, like the Ruanwelle and the Jaitawanarámaya, but a glimpse here and there of the brick-work of which it is constructed. In form it more approaches to the Jaitawanarámaya than to any other of the ruins, a small portion of the spire being still apparent. The Abhayagiri lies to the east of the Ruanwelle and Thupharamaya, being about a quarter a mile distant from the latter. It is at present about 240 feet high.

The only remaining dagobahs of which I think it necessary to speak particularly, are the Jaitawanarámaya and the Sankarámaya, both of them lying to the north of the ancient city, at a considerable distance from the others. The sketch opposite represents the Jaitawanarámaya in its present condition. In the Mahawanso it is styled the Jetawanno dagobah, which as the shorter name, although it is now better known by the former, I shall adopt. The Jetawanno was commenced by Mahasen as a measure of retribution to the orthodox for the destruction which he had before caused. It was originally three hundred and fifteen feet high, and is still upwards of two hundred and forty. It is an enormous solid mass of masonry, and some idea of its size may be obtained by reflecting that its cubic contents are upwards of 456,000 yards. Yet so inferior was the Jetawanno considered when compared with the more imposing buildings at Anuradhapura, that the Singhalese historian passes it over with two slight notices, each of a single line's length. The Jetawanno does not appear ever to have attained any considerable distinction either as the scene of any remarkable events, or as a considerable resort of the Buddhistic priesthood. The erections in its neighbourhood would appear to have been at one time highly ornamented from the profusion of carved stones which lie scattered in its vicinity. A massive square pillar lies by the side of the path at some distance from the dagobah, which on being measured, proved to be twenty-six feet long and a yard square, being cut out of a single block of granite. It must be borne in mind that although composed of brick, these dagobahs were originally coated with a white cement, which, when polished, as they were, would give them all the appearance of marble. There can be little doubt that originally they would have a very imposing effect, and that especially as seen from a distance they must have added great beauty and grandeur to the distant view of Anuradhapura.

Of the present condition of the Lankarámaya the accompanying sketch may afford some idea. It was erected by the enthusiastic and wavering Mahasen between the years 276 and 302 of our era. There can be little doubt that it was modelled on the plan of the Thupharamaya, but although apparently built of more durable materials, it does not at all approach the original in the proportions of its columns or the excellence of its carvings. The Lankarámaya stands, like all the other

dagobahs, on an elevated platform, paved with granite slabs, and immediately in front of it stands a stone altar about five feet high, which there can be little doubt was intended for the reception of the offerings of the faithful. The Lankarámaya stands between the Thupharamaya and the Jaitawanarámaya, a little to the eastward of both—the ruins of a priest's residence are in its immediate vicinity, but of a character so common as not to need any particular remarks.

Other dagobahs there are in the vicinity of Anuradhapura, but greatly inferior in size to those which I have endeavoured to describe. The Mirisiwellia, the Sailya Chaitya and the Ellala Dagobah, with many others of less note, are but shapeless heaps of ruins overgrown with jungle, with but a few pillars, or carved stones to mark their former importance. As I have said before, one of the most extraordinary characteristics of the ruins of the city is the immense number of stone pillars, generally square, which present themselves in every direction in which the visitor may turn his steps. These, with the large masses of the remaining dagobahs, and the immense quantity of carved stones that lie about the paths in all directions, will convince the most sceptical that he is treading on the ruins of a once great and populous city, and that those who inhabited it were to a very considerable extent civilized and refined. One peculiarity, if at all observant, he cannot fail to notice, the great superiority of the more ancient to the more modern structures—a superiority as decided and unquestionable as the greater excellence of Grecian sculpture in beauty and sublimity to the massive but rude masses of Egyptian architecture.

In conclusion, let it be borne in mind that great as must have been the expenditure of labour and power to erect the Lowa Maha Paya, or the Ruanwelle, there are monuments of ancient Lanka and its people still more demonstrative of their former greatness. I refer to the embankments of the various tanks scattered in such profusion over the north of the island, and especially in the immediate vicinity of Anuradhapura. To these I would point as the most conclusive evidences of what the power of the Singhalese monarchs once was, and I can only regret that my own observations have been too limited to allow of my entering upon the subject in a manner likely to be satisfactory either to my readers or myself.

## *Notes of an Excursion to the Pindree Glacier, in September* 1846.

*By Capt.* ED. MADDEN, *Bengal Artillery.*

*September* 10*th*.—From Almorah to Sutralee, 13 or 14 miles, which occupied us (my companion, Captain Hampton, 31st Regt. N. I.) from 6 till 11 A. M. our progress at first being much impeded by a heavy fall of rain, the termination as we hoped, of the season, but which in fact proved to be only a shadow of what was in store for us. The road lies over the mountain called Kaleemuth, 6,300 feet high, and so called, the Almorah people say, from a coarse kind of black lead which abounds there: the summit is of mica slate and gneiss, in horizontal strata. 2,300 feet below, to the west, is Hawulbagh, now famous like Almorah and Bheemtal, for its thriving plantations of tea; the visiter however, will be disappointed who expects anything picturesque in this cultivation, any more than in the vineyards of France; the shrubs being generally under four feet high, and anything but elegant in form; the tea is made in spring; the plant flowers here at that season, and notwithstanding the extreme plucking it undergoes, produces a profusion of seed in October and November. It may be satisfactory to Drs. Royle and Falconer to know that even at Almorah the plantations suffered not the trace of injury from the snow storms of Jan. 26, and Feb. 2. 1847, the heaviest known to the oldest inhabitant of Keemaoon, when about 2 feet fell at Almorah, and lay for many days. Hawulbagh takes its name, "The garden of mist," from the heavy clouds which rest over it almost every morning during the cold season, at about 4500 feet elevation; the Kosilla runs about 200 feet below the station, which has a greater extent of level ground than any other in the N. W. mountains. The river is invariably known to the mountaineers as the *Kosee*, which H. H. Wilson derives from the Sanscrit Kausika, a sheathe, probably in allusion to its generally deep and narrow glen; the Hindustani name Kosilla, may be from the Sanscrit Kausulya, "good fortune." It has become an axiom in the Geography of the N. W. Himalaya, that the Giree is the only river which does not rise in the snowy range: but the assertion is equally true of the Kosilla, and western Ramgunga of Kumaoon (the latter known also as the Ruput in Gurhwal); while the Surjoo and eastern

Ramgunga originate in branches of the snowy range which for many months in each year are completely denuded of snow.

Opposite Hawulbagh, at Kutarmul, there is a very large temple dedicated to Aditya, the sun; it is surrounded by a multitude of smaller ones, but all is now forsaken, the main pile having been so shaken by earthquakes as to be dangerous. Many of the large terminal ornamental "Turk's cap" stones have been turned half round. The view from the summit of Kaleemuth is very fine and extensive; to the east, are the dark ranges of Binsur and Jugesur; to the south and south-west the lofty Ghagur completely excludes Kumaoon from any view of the plains; from north-east to north-west extend the snowy range, of which the view given in Dr. Royle's illustrations was taken from this point. As might be expected it fails in conveying any just idea of the grandeur of the scene, and is moreover not very correct, most of the groups and peaks being misnamed. What is called the Kedarnath cluster, is really the bastioned mass of Budreenath; his "Juwahir cluster" is properly named "Trisool;" and the peak called Nundadevi, is in fact one to the east of Pindree, commonly known to Europeans in Kumaoon as Nundakot, No. XV. of the map. The true Nundadevi, most conspicuous in nature, was perhaps clouded when the artist took his view, being either suppressed, or very imperfectly delineated by the peak marked XIII. which is really the eastern shoulder of the Trisool.

Looking at the snowy range from this and similar points, it appears a matter of no difficulty to reach it; an impression produced by the almost total suppression in the view, of the great spurs and secondary ranges sent off to the south and south-west from the main range; all these, being seen in the direction of their length, present comparatively small points; and it seems to be for this reason that the mountains as seen from Seharunpoor, Umballah, &c. have the appearance of three or four long ranges, successively rising; but the moment we get amongst them this apparent regularity is lost, and the mountains appear to branch in every direction.

In common with the vicinity of Almorah in general, Kaleemuth is too well grazed by cattle to afford much room for vegetation. In the spring a shrubby Dipsacus, with lilac blossoms, is common; and in autumn the warmer declivities abound with the beautiful Osbeckia stellata, the Kookurmakree of the natives. The Scilla indica, Anquilla-

ria indica, Curculigo orchioides, and Fritillaria Thomsoniana, all reach up to this point, and are abundant.

Hence, the route follows the neck which joins Kaleemuth with Binsur; about two miles on, a Cairn, called "Kutputiya," occurs on the left hand; these heaps of stones are raised where three ways meet, many of the people considering it meritorious to add a stone; a custom well known to this day amongst the Celtic tribes of western Europe.* Soon after passing the Cairn, the road quits the Binsur route, and after passing Jak village, crosses by a rocky ascent the western spur of Binsur, called Bhynsooree Cheena; the northern aspect of this is covered with pretty thick woods of Rhododendron, Andromeda, &c. through which we descended to a glen, extensively cultivated, where a stream from Binsur joins the Takoola from Gunnanath. The united stream is a rapid burn, which joins the Kosilla above Hawulbagh: our route lay sometimes on one, sometimes on the other bank, and not unfrequently in the stream itself. Rice is abundantly produced along the banks, and the Kodah on the higher grounds. This is a late crop, and suffers much from the bears; it is now infested by a considerable number of locusts, which we found daily hence to the snows.

Sutralee is the name of a district belonging to the astrologers of Almorah; and in the midst of abundance, the traveller finds himself like Sancho Panza, in danger of starving; for these "gods of the earth" are infinitely more liberal with their horoscopes and predictions of good weather and fortune than with their supplies of grass, ghee, and flour. We encamped in a confined but pretty spot, surrounded by woody spurs from Binsur and Gunnanath, neither of which is visible; a rivulet from the former has cut a deep perpendicular gorge in the rock, on the brink of which are some old temples dedicated to Umba Debee, from whom the place is called Umkholee. A

* One is constantly struck in India with the identity of the customs and ideas of its population with those of Europe, ancient and modern. A few years since at the Jeypoor Durbar, the sitting was prolonged to so late an hour that it became necessary to introduce lights, on which all the chiefs got up and saluted each other, as if they had met for the first time in the morning. One of them told me it was a common custom. Thirlwall incidentally mentions the very same as having been usual amongst the ancient Greeks.

few cedars overshadow the temples, which are not remarkable. Water boils at 208°, or with correction of thermometer, at 207½°, giving about 4700 feet as the elevation. The pretty white Barleria dichotoma, the Photinia dubia; a shrub which I took for Ligustrum Nepalense; and Kadsura propinqua, "Sindrain," are common on the banks of the Takoola.

The mountain of Gunnanath, near this, is said to be very beautiful; the Ghoorkas had a stockade there; and on the advance of our troops toward Almorah in 1815, they were attacked from this point by a body of men under the command of Hustee Dhul; he was killed by a random shot, his men retreated, and the fate of Kumaoon was decided. This chief was uncle to the rajah of Nepal, and had been employed in the unsuccessful attempt on Kot Kangra. The contrast of our speedy capture of that celebrated fortress, is to this moment very unpalatable in Nepal: and the story goes that fakeers and other travellers are warned under penalty of a severe beating, to conceal or deny the fact of Lahore being now a British Garrison!

Along the borders of the fields here, as at Almorah, the Perilla ocimoides—"Bhungera," is extensively cultivated for the sake of the oil expressed from the seeds: it is now in flower, and will be ripe in October and November.

*September 11th.*—To Bagesur, 12 miles; at one and half miles, up a pretty valley, by an easy ascent, but over a rocky road, we reached the crest of a ridge, called the Kurngal ka Cheena, which separates the affluents of the Kosilla from those of the Surjoo. It may be about 5,500 feet high, and like all the hills in the neighbourhood, is well clothed with Pines, (Pinus longifolia,) as the north side is with Rhododendron, Cornus, &c.—The Quercus annulata, "Funiyat," (the "Banee" of Simlah,) is a common tree on the ascent, and is large and abundant on the Surjoo above Bagesur, mixed with trees which one scarce expects to find with an oak. From the Kurngal Pass, a steep descent through shady woods, brought us to the beautiful valley of Chonna Biloree, watered by a large brook, the Jynghun, which flows round the north side of Binsur to the Surjoo. Biloree, a pretty hamlet, with a small temple amidst a clump of firs, on a conical knoll, much resembling an Irish *Rath*, lies to the right of the road, and a short distance above, to the left, is Chouna, another village, near which is a group of the Cheoorra

tree—Bassia butyracea, which does not appear to extend more to the north-west. It is common at about 4000 feet elevation, near Bheemtal, and on the Surjoo near Ramesur; and I have even found it on the low outer range of hills to the north-west of Kaleedoonghee: the seeds furnish the so called butter, or Phoolel, of Almorah. Near Biloree several large specimens of the Castanea tribuloides—"Kutonj" or Chestnut, were in full flower; this tree is another instance of the approximation of the vegetation of Kumaoon to that of Nepal; it occurs sparingly in the glens of Binsur, and becomes abundant east of the Surjoo, but is unknown I believe in Gurhwal, &c.

At Chonna Biloree the soil and rocks are deeply colored with red oxyde of iron: here the road quits the Jynghun, and turning to the left, soon reaches the base of the "Ladder Hill," so called from a good, but long and steep flight of steps constructed nearly to the summit, by Toolaram, the Treasurer of Almorah. The total ascent is about 800 feet, 150 or 200 short of which we halted to breakfast, at a spring called the Bhoomka Panee. This pass is known as the Palree or Kurrei Cheena, and may be about 5,500 feet in height; on the left the ridge rises many hundred feet higher in a bold rocky bluff, on which is a temple to the Mychoola Debee. Close above to the east is the rounded "Nynee" summit. With the exception of a little clay-slate, the whole range is of limestone, and stretches far down to the south-east, crossing the Surjoo near the Seera Bridge, and every where presenting to the south-west successive tiers of cliffs. This limestone forms the glen of the Surjoo up to the Sooring, where as at Landour, it is capped by a granular quartz. The view of the Himalaya from the top of the Ladder Hill is considered one of the finest in Kumaoon; but was entirely eclipsed to-day by dense clouds, which bestowed some sharp showers on us while at breakfast. An easy descent of three miles hence brought us to the Dhurmsala of Mehulee, near the village Patulee, erected by one Debee Sah, the brâhman in charge, being endowed with a monthly salary of less than three rupees;—this he ekes out by the cultivation of a garden, which he entertained a not ill-founded fear would be plundered by our followers should he accompany me to the Soap-stone quarries about a mile distant; this difficulty overcome, we started, and after a slippery walk from one terrace to another, reached one of the five or six quarries in this vicinity. So far as I could

observe, the rock lies in large detached masses, but the mine had been apparently neglected for several years, and was choked up with rubbish. The steatite is called "Khurree;" and at Almorah is turned into a variety of cups, &c. less durable and useful than if of wood. From the Dhurmsalá to the Surjoo, the descent is very long and steep, through woods of superb pine; the soil is a red clay, which with the fallen pine leaves, we found so slippery as with great difficulty to keep our feet. At the base the Cheer Gungá, a rattling stream, flows to the Surjoo, along the right bank of which lies the rest of the route, about $2\frac{1}{2}$ or 3 miles, to Bagesur. The Surjoo is here a large and rapid river, the water of a whitish tinge, and perfectly impassable except on rafts supported by gourds. Wilson gives us the etymology of the name from *sri*, to go: Gunga, from *gum*, to go, to *gang*; and Pindur, probably from pud, pundute, of the same import; so strongly must the primœval Hindus have been struck by the extreme impetuosity of these rivers.* The elevation of the valley here is between 2,500 and 3,000 feet; it is narrow, with here and there a partial expansion, carefully cultivated with rice. The scenery is exceedingly diversified and verdant. In such a valley to the north-west, as that of the Sutluj, we should have little but arid rock; here all is grass, wood, and swelling hills of the deepest green and most beautiful outline. As a drawback, the climate is considered very unhealthy at this season, and in the months of May and June the winds are said to be nearly as hot as in the plains. The vegetation is nearly that of the Tarai and Dehra Dhoon. Robinia macrophylla, (Gonjh,) Rottlera tinctoria, (Rolee,) Phyllanthus emblica, (Amla,) Pavetta tomentosa, (Pudera,) Murlea begonifolia, (Toombre,) Sapindus acuminata, (Reetha,) Mucuna atropurpurea, (Buldaka,) Zizyphus, (Bair,) Sponia, Toddalia aculeata, (Khuseroo,) and a species of Adelia, are common as trees, with the Photinia dubia, called Gur-mehul or Soond, which is also found north-west of Kumaoon; where it occupies a zone reaching from 3,000 up to 7,500 feet. Among lesser plants I observed Centranthera hispida, Ipomœa muricata and pes-tigridis, the Lygodium or climbing fern (abundant in all the valleys of Kumaoon),

* The word Pindur also denotes a *feeder*; while *Pindul* is a *bridge*, a *causeway*, a *passage* over a river or ravine, &c. and might refer in this sense to some early structure at Kurnprag to facilitate the passage of pilgrims to Budureenath.

Costus speciosus, Zingiber capitatum, Curcuma angustifolia, and most abundant in the meadows the "beautifully blue" Exacum tetragonum, "Teeta-khaua."

We found the heat in the valley oppressive, and were enjoying the idea of shelter in one of the deserted houses of Bagesur, now at hand, when to our dismay, we reached the right bank of the Gaomutee Gunga, which here joins the Surjoo from Byjnath, and was so swollen and rapid from late heavy rains as to be perfectly unfordable. While crouching under some thickets to avoid the sun, and most sincerely desiring that the original Pontifices maximi, Sin and Death, who built the first bridge, according to Milton, had exercised their "Art pontifical" at Bagesur, we perceived certain naked savages appear on the opposite bank, armed with a multitude of gourds, (toombas,) which they forthwith commenced fastening in rows about their waists, and then committed themselves to the deep, as buoyant as so many corks. A sufficient number being attached to our charpaees, we were ferried over in security, but not very pleasantly; our very unsailor-like rafts sink so deep that it became necessary to strip. The process of crossing is a simple, but very tedious one, and above two hours elapsed before our scanty baggage was passed over. We afterwards saw the men plunge with perfect indifference into the "angry flood" of the Surjoo itself, and "stemming it aside with hearts of controversy," reach the opposite shore with ease, but with great loss of distance. They even promised to convey us over, an offer which was declined. Falstaff justly abhorred a watery death, even in the placid Thames. The town of Bagesur stands immediately beyond the Gaomutee, on the right bank of the Surjoo, in a very confined spot, being closely backed by a precipitous hill. It consists of two or three irregular lines of houses, one of them now washed by the river, and about 200 yards in length, some of the houses are very respectable, adorned with tastefully carved wood work; but the place is a mere depôt, where in the cold season the Almorah merchants, who chiefly own the houses, resort to traffic with the Bhoteeahs, who meet them for this purpose. This, rather than any particular insalubrity, seems the cause of the town being deserted at other seasons; it has no other resources. True, we Europeans found the temperature disagreeably warm, but the site did not seem malarious, and there was little fever amongst the few inhabitants. The

cases however were more numerous on our return, and it is certain the mountaineers look on a residence here with dread.

At the junction of the two rivers are a couple of stone temples of Mahadeo, where Bruhma also is adored *sub invocatione* Bagesur, Sanscrit Vageeswur, the Lord of Speech, and gives his name to the town. There is an inscribed slab at one of these temples, in a character not seemingly very ancient; the import I understand is given in one of the Journals of the Society. The brahmuns have a legend that the Surjoo could not find its way through the mountains till the present channel, a devious one enough, was opened by a Rishi; ever since which time bathing here is justly considered nearly as efficacious in removing sin as the pilgrimage to Budreenarain itself.* "Bagesur" was perhaps in the first instance indebted for this title to the Tigers which abound in the valley; the brahmuns give both etymologies; these brutes (the tigers), roam up as high as Sooring, but from numerous enquiries I am induced to believe that Bishop Heber was misinformed when he was told that they habitually frequent the snows. They are extremely destructive in the district of Gungolee, along the Surjoo, S. E. of this, where during the present autumn and winter, 25 persons are said to have been destroyed; this with an equal number of victims in the Bhumouree Pass, leading from the plains to Almorah, forms a serious item in the Kumaoon bills of mortality, and goes to prove that the Mosaic penalty of blood for blood is no longer in force; indeed a celebrated writer observes that "the lions, the tigers, and the house of Judah" scarce ever observed this covenant. The mountaineers are firmly persuaded that the worst tigers are men, who transform themselves into this shape by means of the black art, the better to indulge their malice, envy, and love of a flesh diet. The superstition reminds one of the lycanthropy of the old Greeks, and the Louf-garon of the French in modern days.

* It is an extraordinary instance of an attempted fusion of the creeds of Brahma and Muhammed, that the brahmuns of Bagesur in relating this legend, identified Muhadeo with "Baba Adam," and his wife Parvutee with "Mama Hhuwa," or Mother Eve. They were probably indebted for this curious association to the circumstance of "Adim" denoting "first" in Sanscrit, so that "Baba Adam" is "First Father." Had they selected Brahma, who as Viraj, divided himself into male and female for the production of mankind, the parallel would have been still closer.

We were told that up near Sooring a tiger was killed within these few years by a pack of the wild dogs, here called Bhonsla; but even our informant seemed to doubt the truth of the story. Of the boldness of these dogs, however, we had no doubt; they are considered to be Bhugwan's* hounds, and no Shikaree ever thinks of shooting them.

Mr. Lushington, the Commissioner of Kumaoon, has a bungalow on the bank of the Surjoo opposite Bagesur; a little above this, the mountains on that side recede in a deep bay, leaving a spacious tract of level ground, on which the fair is held in January, at which period the whole of the Bhoteeah pergunnahs are deserted by their inhabitants, who descend with their flocks to the central portion of the province for warmth and pasture. These people in mien, make, and features, bear a striking resemblance to the Chinese. It is a curious feature in the agricultural economy of Kumaoon that during the same season, almost the entire population of the mountains between Almorah and the plains, descend to the Tarai, where they have cleared very extensive tracts, which are carefully cultivated with wheat, barley, mustard, &c. irrigated with no mean skill and industry by cuts from the various torrents which there debouche on the plains; while the forests swarm with their cows and buffaloes, which supply them with vast quantities of ghee, the sale of which greatly overbalances the occasional loss of their cattle by wild beasts. The presence of these herds in the forest may be said, to form a sort of safety-valve to the botanist or other explorer of its solitudes, the tigers seldom molesting man when he can obtain beef. The appearance of the young leaves on the Seesoo in April, is the signal for the mountaineers to ascend to their natural homes, where they arrive just in time to cut a second rubbee crop, sown in November; the only instance within my knowledge of the same farmer enjoying the advantage of two harvests in one season. I may

* If the mere English reader should ask "who is Bhugwan," he will not be more in the dark than was one of the Secretaries to a certain Board in 1824. Carriage and supplies were required for the troops in Arrakan, and a native dignitary in Bengal was required to say how much would be forthcoming from his district. "As much as it pleases *Bhugwan*" was the reply. "Who is Bhugwan," writes the Secretary. "You will be pleased to inform Bhugwan, that if he withholds the requisite aid, he will incur the censure of Government, and assuredly be put down."

remark here that the Gooya or Gweeya of Mr. Traill's Report, which he calls the Sweet Potato, is in fact the edible Arum or Colocasia.

*September 13th.*—To Kupkot, 14½ or 15 miles. The river above, Bagesur bisects the open tract of ground before alluded to; and then till within two or three miles of Kupkot, winds its impetuous way through a gigantic ravine rather than a valley, the entire floor being frequently occupied by its bed, now reduced to half the width it has below. This narrow channel is exceedingly deep, and in some places the waters flow more quietly for a space, in black pools, the whole not a little resembling the Findhorn in Morayshire. Over one of these, three or four miles from Bagesur, a single spar is thrown for a bridge, from which the passenger, at a depth of 30 or 40 feet below him, may see the water swarming with large Muhaseer.* The river flows in a channel of live rock, from which the mountains rise precipitously; and in one place the road has to be carried for a hundred yards or more, along the face of the cliff; in general however, the rise is that of the river, only interrupted by the many feeders from the mountains to the left; on which occasions, for some unknown reason, the Puharees always make a dip, involving a troublesome ascent on the other side. At three miles, we crossed one large affluent, and at about seven a second, the Kundilgurh nudee, a furious torrent, which a few days since carried away its bridge; this was only replaced yesterday, which compelled a reluctant halt of one day at Bagesur, where Messrs. Hort and Powys, H. M. 61st Regiment, overtook us in the afternoon, from Almorah. We found the glen of the Surjoo here almost without habitation—wholly given up to jungle, luxuriant grass, deer, and tigers, the latter much dreaded. On the opposite bank, a little above the Spar Bridge, the river receives a large tributary, the Balee Gunga, and, two or three miles short of Kupkot, ceasing to rage through the narrow gorge which contracts it below, pursues its course along some open, but strong and uncultivated dells, covered with dwarf Zizyphus,†

* The presence of a large fish, apparently of the Shark kind, is well attested, in the Surjoo, from Bagesur downwards; reported to grow 6 feet long, to be devoid of scales, and to have teeth like those of a dog.

† The famous shrine of Budureenath derives its name from this shrub, the Budureé (now Ber) or Jujube, Vishnoo being there invoked, like an apothecary, as the "Lord of Jujubes." All the synonymes, Budureesail, Budureebun, "the

to these soon succeeds the beautiful glen of Kupkot, splendidly cultivated with rice, mundooa, &c. in the centre of which we halted at noon, in a grove of tall Silung trees—but had not time to pitch our tents, or put the camp kettle in trim for breakfast, when the exceedingly sultry forenoon was succeeded by a heavy storm of wind and rain, which poured down for two hours, and made us excessively uncomfortable, the ground being already swampy from the rice fields close by.—When the clouds cleared off, we found ourselves in a most romantic little valley, the Bingen of the Surjoo, from one half to two miles long, and about half as wide, from 4,000 to 4,500 feet above the sea, enclosed by a belt of gently swelling and diversified mountains, covered with a beautiful vegetation, the Cheer Pine feathering the summits. The village is on its western edge, close under the sloping mountains, about 150 feet above the river and half a mile from it; several smaller hamlets are scattered over the plain, each with its groves of trees, among which the plantain is conspicuous, producing large and excellent fruit. The more solid supplies are also abundant; and the people, the most civil and obliging in the hills, instructed by the example of Chintamun, the old Putwaree, a more perfect gentleman than whom it would not be easy to find. The climate he represents greatly better than at Bagesur. A bold peak called Chirput, raises its head on the north side of the valley, on this bank of the Surjoo, and to the right of this, up the glen of that river, there is a near view of several snowy peaks the most prominent among them being the so-called Nunda Kot, east of Pindree. The Surjoo, now falling, was rather muddy. On our return though unfordable, its waters were clear as crystal, blue as sapphire, and sparkling in long reaches under a brilliant sun it seemed the most beautiful as it is one of the most sacred of Himalayan rivers.

rock, forest of Ber," point to the same fact: but as no Zizyphus could exist in that climate (they scarce reach Almorah), the spiny tree, Hippophae salicifolia, may be intended: or the name has been altered from *Bhudr*; "Happiness, prosperity, *Mt. Meroo.*" I once suggested these difficulties, with my own solutions, to a brahmun who had visited the spot. He honestly avowed, that so far from Ber trees growing there, there were, as far as he saw, no trees or bushes of any kind; but with an orthodoxy worthy of a better cause, he insisted that the genuine Ber must be there, since the Poorans said so, to doubt which would be Nastikee (Atheism). The deceivers have merged into the deceived!

The rock between Bagesur and Kupkot is almost exclusively limestone, here as elsewhere, forming the most bold and varied scenery: and bearing a most exuberant forest, festooned with innumerable climbers. A gradual change may be perceived in the nature of the plants, and as we approached Kupkot, the Origanum and white thorn, Cratægus crenulata, "Geengaroo," indicated a less tropical climate. Lower down the dwarf date tree springs from every cliff. The tejpat, Cinnamomum albiflorum, called kirkiria, abounds in the shady glens. The Didymocarpus macrophylla, Loxotis obliqua, &c. cover the dripping rocks; a flesh-colored Argyreia, and the Cucumis Hardwickii "air-aloo," climb over the bushes, with Tricosanthes palmata, "Indrayun," and its brilliant-red, but fetid fruit. Coix lacryma, "Loochoosha," "Job's Tears," grows by every stream, and in several places I observed the Æginetia indica. The pretty lilac Osbeckia angustifolia is very abundant amongst the grass, and Clerodendron serrata, ternifolia, and grata, amongst the thickets, as is the "Poee," Bœhmeria tenacissima. The splendid Abelmoschus pungens, grows in abundance on the damp shaded slopes; it is called "Hou" or "Kupusya;" the fibres afford a good cordage. The more common trees are the Photinia and Quercus annulata, Kydia calycina, "Puta," Ehretia serrata, "Poonya," Dalbergia Ougeinsis, "Sanun," Terminalia bellerica, "Byhura," Grislea tomentosa, "Dhaee," Flemingia semi-alata, Wendlandia cinerea, Callicarpa macrophylla, "Ghiwalee," Saurauja Nepalensis, "Gogunda," Engelhardtia Colebrookiana, "Moua," Bauhinia variegata, "Kweiral," and Bauhinia retusa, Roxb., "Kandla," this last being identical with B. emarginata of Royle. Lastly comes a most abundant shrub of the Euphorbiacæ, a species of Sapium apparently, called "Phootkia" by the natives, who occasionally employ the root as a cathartic, but describe its effect as dangerously violent. It grows from 4 to 10 feet high, with tender green foliage, which has, on being crushed, a disagreeably sour odour; like all or most of the plants just mentioned, it accompanied us to our highest point in the valley of the Surjoo. At Kupkot I first (on our return) met the Silung tree in flower; the trees quite covered with the small light yellow blossoms of the most exquisite fragrance, which is diffused (with the least wind) several hundred yards, the mountaineers say a kros. It grows to be a large umbrageous tree, and appears to be the Olea grata of Wallich. In this

province it is commonly found near the temples and on the mountain passes, called Benaiks, where a few stones are piled and rags tied up in honor of the Deotahs. It is most likely the tree called Olea fragrans in the Darjeeling Guide: no notice of it occurs in Dr. Royle's illustrations.

Kupkot is the first village in the pergunnah of Danpoor, which includes the remainder of our route; as comprising Nunda Devee, the loftiest mountain on the globe hitherto accurately measured; it would probably now have occupied the niche in the Temple of Fame filled by Santa Fe de Bogota, Popayan, &c. had Humboldt carried into effect his plan of investigating the Natural History and structure of the Himalaya. That his attention was diverted to the Andes must ever form the subject of regret to the Anglo-Indian.

*September 14th.*—To Sooring or Sring, 11 miles in 5¼ hours, including much delay in passing above and through a spot where a great landslip of white talcose calcareous slate, due to the late rains, had annihilated the road, and nearly obstructed any further advance. Except at this spot, the rock on this day's route consisted chiefly of the usual stratified limestone, forming many abrupt brows and lofty walls, and sometimes contracting the Surjoo to a few yards in breadth. The river is now reduced to a mere torrent, and from Sooring appears, at a profound depth, a narrow streak of foam. Its source is on the south face of a huge spur from the eastern precipitous shoulder of "Nunda Kot;" this spur forks to south-west and south-east; the south-west range separating the valley of the Surjoo from that of the Pindur. At this fork there is not a vestige of snow in September and October.

Our path kept to the right bank of the river, with much more ascent and descent than heretofore. In one place a cliff is passed by scaffolding, with the Surjoo perpendicular beneath, altogether somewhat difficult for ponies (which are of little or no use beyond Sooring to a good pedestrian), and rather trying to nerves which have not been case-hardened in Kanawar and the Bhoteeah pergunnahs. Four streams large enough to require bridges, occur in to-day's march, besides an infinity of rivulets, often converting the road into a swamp, where the leeches were most numerous and voracious. I picked 16 off my feet at once, and found the bites not a little venomous; it moreover

requires all one's resolution not to scratch them, as in that case they are apt to form bad sores. The only security against these pests consists in soaking the stockings in brine; but where one wades for miles through "fresh-water formations" the salt is soon washed away. The idea prevails in the mountains that these leeches possess the power of springing on their prey: this requires verification, but is not altogether improbable. It is only too certain that by getting into the nostrils of sheep, goats, ponies, &c. they do much mischief by keeping them lean and unhealthy. We also found the small round fly or gnat very troublesome here: they give no fair notice of their approach as does the mosquito, and inflict a very irritating bite, for which death is a poor revenge.

About three miles above Kupkot, there is a good Sanga bridge of two planks, 66 feet long, across the Surjoo, leading to Moongsharee, Milum, and the Oonta Dhoora Pass. The river here receives a large affluent on each bank. At one and half miles from Sooring, the path quits it, and mounting 800 or 1000 feet, we found ourselves at our camp with, as at Kupkot, a number of convenient sheds for the servants and coolies, a most welcome piece of hospitality confined, I think, to Kumaoon, but well worthy of introduction elsewhere. Our camp occupies an open spot above Sooring, and below a village called Lohagaon. As water boils at 200°, the elevation is somewhere near 6,700 feet above the sea. A colony of agricultural Bhoteeahs is established in the mountains, which rise steeply above this to the west; unlike the rest of their race, they never quit their villages, and had never even descended to Bagesur they told us. "The world forgetting, by the world forgot," their talk is of bullocks and bears; their only visiter is the tax-gatherer, who ferrets out the most determined hermit; but in this respect the burden of the Kumaoonees is light.

The scenery across the Surjoo is fine. The Lahour ka Dhoora, so named from a village visible to the north-east rather higher than Sooring, is bold, lofty, green, and wooded to the summit; it extends from north to south, and beyond it is the valley of the Ramgunga. From two P. M. we had smart showers for a couple of hours, with a drizzling cloudy afternoon, and more rain at night. It is wonderful how a little experience in Himalayan meteorology opens the understanding with regard to certain doctrines of Hindu Theology: e. g. Vishnu sleeps

on the serpent Sesha during the rainy season; but the shastras which affirm the fact, omit the reason; this can be no other than that the earth is concealed from the skies by so dense a canopy of clouds that even the Lotus-eyed himself cannot pierce it; and hence, unable any longer to observe and preserve his *very* peculiar people of India, he even goes to sleep like Baal of old, letting every man go to the devil his own way. So also it would appear that their representations of Kylas, Bykunth, Uluka, and Soomeroo, glittering with gold and precious stones, are derived from the glorious tints which light up the Hemakoot, or "Peaks of Gold," when "the god of gladness sheds his parting ray" on its snows; aided perhaps by the reality that gold, rock-crystal, &c. are found there, especially near the sacred Lakes of Mansorowur, the *neighbourhood* of which is now ascertained by Mr. Strachey actually to originate four great rivers, flowing to the cardinal points, viz. the Sanpoo, east; Sutluj, west; Indus, north, and Gogra, (Kurnalee) south. Lastly, the shastras affirm that the Ganges, &c. fall from heaven, and, just touching the crests of the Himalaya, flows along the earth: a representation not so utterly ridiculous to those who have seen the sources of these rivers chiefly fed by innumerable cascades, pouring down their sheets of water from the unseen plateaux above the glens. But enough of Hindoo Geography!

I made some inquiries here concerning the Ma-murree, a very deadly fever, which annually devastates whole villages in north-west Kumaoon and south-east Gurhwal, but though the reverse is believed at Almorah, could not hear that it had ever penetrated to any place in our line of route. It is chiefly prevalent in the hot season, and is accompanied by buboes under the ears and armpits, and on the groin, exactly as in the plague; attacking for the most part the population clad in woollens, and unquestionably originating in the extreme filthiness of their persons and villages. The disease is mentioned as a typhus fever in Mr. Traill's report; and has lately excited a more lively interest from its having last season approached within 14 kros of Almorah, and included the cotton-weavers amongst its victims. Such is the consternation caused by its appearance, that the village is immediately deserted, and the patient left to shift for himself, which, considering the Sangrado simplicity of native prescriptions, such as violets in cholera, &c. may

perchance deduct little from the otherwise small hope of recovery. The rank cultivation of hemp close to the doors of the houses, may very likely be connected with the origin of this pestilence, which should be investigated. As to goitre (gega) the people of Kumaoon appear less afflicted by it than those of Bissahur, and amongst the Bhoteeahs it appears to be unknown; a fact, if it be one, strongly corroborative of the opinion now received in Switzerland, that it has nothing to do with snow or other water, but is induced by the infected air of close valleys liable to abrupt transitions from heat to cold, a removal from which is often followed by cure. The people of Kumaoon employ a remedy, sold in the Almorah bazar, and called *Gelur-ka-puta;* on procuring a bit of this, and steeping it in warm water, it speedily developed into an unmistakeable fucus or sea weed; a fact on which Dr. Royle (Illustrations, p. 442,) expresses some doubt, and desires information. All that the druggists of Almorah know is that it comes from the west, and is taken internally. It may be assumed as an illustration of the small intercourse between England and Switzerland (at all events, its interior), in the age of Shakspeare, that the poet makes Gonzalo ask in the Tempest—"When we were boys, who would believe that there were mountaineers, dewlapp'd like bulls, whose throats had hanging at them wallets of flesh?" and then proceed to adduce as equally authentic, the "men whose heads do grow beneath their shoulders;" not yet discovered.

The vegetation between Kupkot and the base of the Sooring Hill, though less luxuriant than yesterday's route, exhibited most of the same forms, but as we rose, the Anemone vitifolia, Berberis lycium, "Kilmora," Erythrina arborescens, (coral-bush,) "Roongura," and latterly the Parochetus communis and Quercus incana, become the substance of things hoped for in the way of a better climate. In Don's Prodromus we find this last tree, the "Banj," (Ban of Simlah,) confounded with the Reeanj, or Quercus lanuginosa, which is very distinct, the latter, common on the Ghagur range, is unnoticed by Dr. Royle, as well as the Quercus annulata, common everywhere. Another plant common along the Surjoo to-day was the Æchmanthesa gossypina, abundant also on the hills between Bheemtal and Mulooa Tal, and very remarkable for the dense, thick, and pure white coat of tomentum which invests the branches and stem; it is called "Jounde-

la." Bees are said to be particularly fond of the honey afforded by the flowers, and to make it in large quantities when these are most plentiful. On the sunniest quartz rocks above Sooring, the Vitis macrophylla? creeps along with its stems 5 or 6 feet long, and great cordate leaves from 18 to 20 inches each way. The people call it "Umlee," "Assonjec," and eat the fruit in November: it is not uncommon near Almorah, and Dr. Royle mentions it as climbing over trees at Mussooree; where, however, I never saw it; nor if this be his macrophylla as it should be, has it at all a climbing habit.

*September 15th.*—To Khatee, 12½ miles, over the Dhakree (or Thakooree) Benaik. There is a bitter proverb that if you want to know the value of money, try to borrow some; so to realize the height of these mountains, you must walk up one of them. Such an experience will also go far to reclaim one from the intellectual system of the most honest, able, and amiable of bishops since Synesius, Berkeley, who endeavours to reason us out of our senses, and persuade us that all which we see, hear, feel, touch, and taste has really no external existence—all that we perceive being only ideal—and existing therefore only in the mind. The brain itself, as a sensible thing, exists only in the mind, and not the mind in the brain, as the materialists vainly allege: if full of such sublimated cobwebs, one commences such an ascent as to-day's, he speedily begins to waver; what, have all these rocks, forests, torrents, snows, this "brave o'erhanging firmament"—"immense, beautiful, glorious beyond expression, and beyond thought;" and still more, these wearied legs and craving stomach, no absolute being? If so, it is quite surprising how these two latter ideas are burnished and stimulated by other ideas, such as an easy chair and a pleasant glass of ale. The higher we mount into the atmosphere, the lower we fall in the region of metaphysics; and on the summit of the mountain will generally in practice be found pure materialists, adopting with full conviction the moral enjoined in the apologue of Menenius Agrippa.

We left Sooring at 6: 20, and reached Tantee, a châlet, about 200 feet below the Dhakree Benaik Pass, at 10: 10. Here we breakfasted. Water boils at about 192½°, giving the elevation about 10,700 feet, and the actual ascent 3000, not half what one has to climb on many other routes. The path rises at once from Sooring, and is in parts very steep and rocky, interspersed with occasional undulating meadows. The

streams passed are inconsiderable, but a large one, rising between the pass, and the Chilt ka Dunda flows down the spacious wooded glen on the right hand towards the Surjoo, and in one spot forms a fine waterfall. The limestone rock ceases at Sooring, and is replaced by quartzose rocks, and finally by gneiss. The views across the Surjoo are very grand, and from the pass we enjoyed, not to-day, but on our return, a near and magnificent, though contracted prospect of the snowy range:—extending from the Nunda Kot Peak on the east to Mauntolee ka Dhoora (Trisool) on the west. The eastern peak of the Trisool (No. XIII. of the map) faces the west in a great bluff (which our guides affirmed to be Nunda Devee), from which a long easy ridge, presenting to us an unbroken sheet of snow, slopes down to the east, connecting the Trisool with the Nunda Devee cluster. Strange to say that here, within 20 miles of the two great rocky peaks of this cluster, and elevated 10,800 feet, they are invisible, being concealed by the two beautiful pinnacles of pure snow, which from Almorah, &c. are seen to be merely the abrupt terminations of two immense spurs, the easternmost of which, apparently with a large Loggan stone on its summit, is there known as Nunda-khat, "Devee's bed." From this point of view it rises into so fine and lofty a spire that our ignorant guides insisted it was the Darcoola (Panch-choola). In the hollow between the Trisool and Nunda groups rises the Soondur-Doongee or Redinga river, which flowing nearly south down a narrow and most profound glen, joins the Pindur a little above Wachum, affording probably the best and easiest route to the traveller desirous of penetrating to the core of the Nunda Devee mass. This stream, we were assured, has its source in a glacier like that at Pindree. East of Nunda Devee, in a deep *col* is "Traill's Pass" supposed by him to be 20,000 feet high, leading NOBODY to Milum; its eastern portal formed by the N. W. shoulder of "Nunda Kot"—which mountain closes the view in a colossal rectangular summit of pure snow, with the glen of the Pindur easily made out. The line of perpetual or at all events of unmelted snow, was very well defined along the whole extent of the range, certainly 2000 feet below the crest of Traill's Pass. It is unfortunate for the hurried tourist that to the east of the Dhakree Benaik the range gradually rises, and three or four miles distant, in the Chilt ka Dunda, a bluff woody summit with a temple to Devee,

attains full a thousand feet additional elevation, completely excluding the Panch-chuola, &c. from the prospect. To reach this point which probably commands the loftiest peaks of Nunda Devee, would require a whole day, which we could not spare. The path is very practicable according to Puharee logic—"our *goats* traverse it," a consolation we received more than once. On the whole, I would say, let no one who has no other object, fash himself by coming so far to look at the snowy range. Partial masses are indisputably very grand, but far finer in my opinion is the main line, stretching from Jumnoo tree far down into Nepal, as we see it from Binsur and the loftier points of the Ghagur—always indeed, excepting one snowy range seen from another; e. g. the Ruldung group from the Roopia Pass.

We remained nearly two hours at Tantee and then continued our march leisurely towards Khathee, where we arrived at four P. M. and found Messrs. Ellis and Corbett encamped, employed in bear-shooting, after a very pluviose visit to the glacier above. The Mohroo (Tilunga) and Kurshoo oaks are abundant on the eastern exposure of the Dhakree Benaik, but no pines. The descent on the western side is rapid, first through Kurshoo, which soon becomes blended with abundance of Pindrow (Ragha) fir, forming boundless forests on this fine range. Below these, we passed down, through luxuriant meadows, nearly to the Pindur, opposite to a large village, Wachum. Here a path strikes off to our left to Chiring; and when passable, which it is not now, enables one to vary the return route to Almorah. This long, but in general not very steep descent, led us to a torrent, from which the road again ascends considerably towards Khathee, three miles or so further, the road lying amongst horse-chestnut, Maple, Sumach, mountain Bamboo, Banj, &c. Mohroo oak, Hornbeam, (Carpinus, "Geesh,") Ash, &c. The last hour we walked under a heavy fall of rain, which continued drizzling more or less all night.

Khathee has no permanent village, and at best only a few miserable sheds; the only cultivation half a dozen fields of Chooa, (Amaranthus anardana;) supplies must be obtained from Soopee, six kros distant, on the upper Surjoo, a flourishing village, under the Putwaree Mulkoo. This gentleman forwarded none till the afternoon of the 16th, which compelled us to rest here for a day.

Khathee consists of some beautiful, open, and swelling lawns, closely

hemmed in by exceedingly steep and lofty mountains, either covered with grass or enveloped in dark forest. On the N. W., about 300 feet below, the Pindur roars along its narrow gully, up which, whenever the clouds cleared a little, several high snowy and black rocky peaks of the great range appeared close at hand. Water boiled at 195½°, making the elevation about 9,000 feet; but as the thermometer gave the same result at Diwalee, 10 miles up the valley, and certainly 500 feet higher, 8,500 feet is perhaps the true height of Khathee. The place is a perfect bear-garden; we had not been an hour in camp, before one appeared on the opposite bank of the river, feeding quietly on the locusts. Messrs. Ellis and Corbett have seen half a dozen daily, and on the afternoon of the 16th bagged one of them about half a mile from camp. The mountaineers hold them in great dread and are unanimous in asserting that they not only devour sheep and goats, but even their own species when found dead. They are very fond of the mountain Ash, or Rowan fruit.

The species found here is the common black bear, called indifferently Bhaloo and Reech, terms which Mr. Ogilvy (in Royle's Illustrations) is inclined to think mark two kinds.

The argus and other pheasants are also common in the woods.

The vegetation on our route this day, and about Khathee, is wholly different from that which we have just parted from in the valley of the Surjoo. About 500 feet above Sooring, the Hemiphragma heterophylla began to show itself, scarcely as long as its own name; its godfather was fond of such, and Don observes justly of another of his appellations "Nomen Spermadictyonis nimis auris terribile est servandum." My friend Pilgrim was not so far out, botanically at least, when he compared the Nynee Tal mountains to the Himalaya. On Cheena we find the Kurshoo oak, (Quercus Semicarpifolius,) and on the flat summit of the mountain, this very Hemiphragma; lower down the Pyrus baccata is common by streams, as it is about Khathee and in the Beans country, everywhere under the same name, Bun-mehul, or wild pear. As we advance to the S. E. in these mountains, the various plants, &c. seem not only to occur at lower elevations, but to approach the plains more and more, till in Assam, some of them descend to the valley. In the mountains of Busehur, this Hemiphragma is scarce found under 10,000 feet; here it is common at 8,000. Primula denticulata and

Quercus dilatata, both comparatively rare at Simlah, abound on the crest of the Nynee Tal range almost overhanging the plains at the foot of these hills, reaching to Kalaputhur. We find the Bengal Mudâr, Calotropis gigantea, both the purple and white varieties, in profusion; while, as Dr. Royle observes, the C. Hamiltonii only is found to the N. W. It is curious to mark the exact line of demarcation between different species: the Tree ferns reach to Burmdeo, where the Kalee leaves the hills; Ilex excelsa, unknown in Gurhwal and Sirmoor, is common in Kumaoon, where also I lately found many plants of the Chamœrops Martiana on the Ghagur range, two or three miles S. E. of the Ramgurh bungalow, at about 5,500 feet elevation. The Thakil, a mountain 8,000 feet high, near Petorahgurh, takes its name from this palm. On the Ghagur, Binsur, &c. we also meet as a timber tree, a Michelia, perhaps the Kisopa of Nepal, and in the Dikkolee and Bhumouree Passes, Didymocarpus aromatica, called "Puthur-loung" "Rock-clove," by the natives. But, probably owing to a milder or a damper climate, not only do plants grow lower down, but also much higher up, in Kumaoon than to the N. W. Thus the Rhododendron arboreum (Boorans), and Andromeda ovalifolia (Uyar), which in Busehur we lose at about 8,500 feet, flourishes in the valleys of the Pindur and Goree fully 2,000 feet higher, reaching the lowest limit of Rhododendron campanulatum, and flowering till June. On the west side of the Dhakree Benaik we first meet the Rhododendron barbatum, about the same size as the latter, or rather larger, and known by the same name "Chimool;" it is common above Diwalee. Here also occur Pyrus lanata, "Gulion," crenata, "Moul, or Moulee," and foliolosa, "Sulia, or Hulia;" the "Moulee" is now ripe, and, though small, is the sweetest wild fruit I know of. At about 7,500 feet, on the eastern side of the mountain, a procumbent species of raspberry, perhaps the Rubus foliolosus of Don, made its appearance, and gradually became more abundant, covering every rock, bank, fallen tree, &c. and reaching up to within three or four miles of the Pindur glacier. It has large white flowers and excellent orange fruit, here called "Gungoor;" the Sinjung of Beans. Should this be identical with the "Ground Raspberry" of Darjeeling, it affords another instance of the approach of species to the plains as they extend S. E. along the Pindur above Khathee. Another Rubus, the rugosus of Don, grows to be a large and very handsome shrub,

affording copious panicles of large and excellent blackberries. R. concolor is found above Diwalee. The Viburnum nervosum and cotinifolium, "Ginnia" and "Gweea," Millingtonia dillenifolia, "Gwep," Cotoneaster affinis, "Rous or Reoosh," with black, not bright red fruit, which Loudon gives it in the Arboretum, a smaller shrub, with fruit of this color, is common, and is called "Koocus," the C. acuminata? the Elœagnus arborea, "Ghcewaee;" the Kadsura grandiflora, "Sillunghetee," Panax decomposita, Sabia campanulata, Rhus Teeturee, Fraxinus floribunda, "Ungou," the finest I have met, Acer villosum and cultratum, the Alder, Alnus obtusifolia, "Ooteesh," Cornus macrophylla, "Ruchia," Betula cylindrostachya, "Haonr," or "Shaoul;" and several more trees and shrubs, abound on the mountains of Khathee: with the plants Gaultheria nummularioides, "Bhaloo-bor," Anemone discolor, "Kukreea," Parnassia nubicola, Strobilanthes Wallichii, Euphrasia officinalis, Geranium Wallichianum, Veronica chamœdrys or Teucrium, Halenia elliptica, Pedicularis megalantha, Sibbaldia procumbens, the beautiful club moss, Lycopodium subulatum, "Toola-mooka," 6 to 10 feet long, Roscoea spicata, Hedychium spicatum, Spiranthes amœna, &c. &c.

The Pœonia Emodi abounds in the woods and glades here and higher up, and has as often two carpels as one; the natives call it "Bhooniya madeen," ("Yet-ghas" of the Bhoteeahs,) to distinguish it from the "Bhooniya nur," Lilium giganteum, common in the forests along the Pindur; these being considered the male and female of one species; a very humble approximation to the Linnæan system! Among the bushes opposite to Wachum there is abundance of a twining campanulate plant called "Gol-ghunna,"* with large greenish yellow and purplish blossoms, which, as well as the capsules, are eaten by the inhabitants; it is a species of Wahlenbergia or Codonopsis.

*September 17th.*—After rain all night, and fresh snow on the mountains above us, we left Khathee at 10¼ A. M. and reached Diwalee, about 10 miles distant, in four and quarter hours. A drizzling rain fell nearly the whole way, rendered doubly disagreeable by the dripping of the thick forest, and especially the luxuriant and most abundant Nigala bamboo,

* All these words are spelt according to Dr. Gilchrist's system nearly, which seems best adapted to the English reader; one must protest, however, against its being introduced into names intended for Latin, where *u* for a, and *uo* for au are horribly barbarous.

(Arundinaria falcata,) which, from 20 to 30 feet high, overhangs the path in the most graceful but to-day unwelcome clumps; it reaches up within a few miles of the glacier, and is also common on the western face of the Dhakree Benaik; it is very generally in seed, now ripe and ripening. The mountaineers assert that this only takes place every twelve years (a suspicious period), and that then the plant dies. They are certainly so far borne out in this that all the fruit-bearing specimens *do* seem fading away, and that for several years past I have in vain tried to procure the seed. The Nigala is of infinite use to them for mats, baskets, &c. some of which are very neatly and strongly made. Our route lay first on the left, then for a short distance on the right, and finally returned to the left bank of the Pindur, keeping nearly its *level*, with the exception of a few short but steep ascents and descents; the two bridges good. The scenery is of the sublimest description—the valley somewhat of the character of the upper Roopin, except that it is much more narrow, the mountains rising like *walls* to a vast height on each side, broken into great buttresses, and universally invested with the densest forest. Three or four beautiful cascades poured down their *boiling* water from the woody heights, their volume doubly augmented by the late and present rain, but one can scarce appreciate the beauty of these things when wet and hungry, and all around with faces expressive of despair. The last of these falls, nearly in front of Diwalee, pours down amongst the ledges of slate rock from a *maidan* or table-land, which must reach up close to Nunda Devee, and is a favorite beat of the Shikarees. Thar, (wild goat,) moonal, argus, pheasant, &c. being in great numbers. Diwalee, perhaps named from the wall-like cliffs of the Pindur just above, stands in the angle where that river receives on its left bank the Kushinee or Kuphinee river, a stream as large and turbulent as itself, rising in the south-east recesses of Nunda Kot mountain. Their waters are of a dirty milk colour, and the bed of the combined stream is obstructed by some great boulders, against which the waters dash at the pas de charge. We found a good spot for our tents in the angle between the river; above this are several successive terraces, all well adapted for the same purpose, shaded by yew and sycamore trees, but the forest soon terminates upwards in the great bluff snowy spur which separates the rivers. The left or south bank of the Kuphinee is formed by the "Kotela" mountain, the

summit of which, far above the forest region, commands the Pindur from this to its source, and communicates by a goat-path with the Dhakree Benaik.

We were accompanied here from Khathee by Ram Singh, the accredited guide to the glacier; an athletic mountaineer of Soopee, with the limbs of Hercules and the head of Socrates, but scarcely his honesty: this last quality having been perhaps sullied by a three years' abode at Almorah; we found him however, with some disposition to make the best of them, very useful in our subsequent difficulties, and ultimately parted well pleased with each other.

The trees, &c. on the route to-day include all those near Khathee, except the Banjoak; to these may be added the Elm, Ulmus crosa? "Chumburmaya," of great dimensions; Juglans regia, "Akor," Cerasus cornuta, "Jamuna," Spiræa Lindleyana, Leycesteria formosa, "Kulnulia," Hippophae salicifolia, "Dhoor-chook," the "Turwa-chook" of the Bhoteeahs, in abundance all along the banks of the river from Dewalee to Khathee. Ampelopsis Himalayana, "Chchpara," the climbing and the arborescent Hydrangea, the latter called "Bhoo-chutta" and "Bhoojhetta," the hazel, "Bhoteeah-budam," and "Kapasee," Corylus lacera, Piptanthus Nepalensis, "Shulgurree," on which the Thar is said to feed in preference: Ribes glaciale and acuminata, black and red currants, "Kokulia;" Berberis Wallichii, and the only fir, Picea Pindrow. Picea Webbiana is pretty common above Diwalee; both known as "Ragha;" but not a vestige of Pinus excelsa (which however, Mr. H. Strachy found common in Beans) nor of Abeis Smithiana, which from Captain Raper's account, is not to be met on this side of Joseemuth. There is a thick undergrowth with the above, of Strobilanthes, Balsams, Rubus, Cucumis Himalensis, Cuscuta verrucosa, Polygonum runcinatum, molle, and others. Oxyria elatior, Tricholepis nigricans (Edgeworth), Senecio nigricans, alata, canescens, and chrysanthemifolia; Aster ferrugineus (Edgeworth), a shrub which also occurs in Kunawur, Aster alpina, Inula Royleana (Aster inuloides of Don), Jussilago, very abundant on rubble, &c. Doubtless these form but a moiety of the vegetable riches of this region, which I could only partially examine from under the auspices of an umbrella.

On arrival at Diwalee we seized the opportunity of a partial cessation of the rain to pitch our tents; but it soon recommenced, and continued

to fall from this time for no less than 75 hours without a break! This deluge came from the east, and prevailed over all Kumaoon, and no doubt much farther; it made us prisoners in our narrow tent till 5 P. M. on the 20th, when the clouds cleared away before a west wind. During this period, the smallest rivulets became unfordable, and the Pindur and Kuphinee were swollen into the most turbulent, turbid and ungovernable torrents. Up near its source I afterwards observed that the former had risen from 15 to 20 feet, and lower down where the bed is more contracted, and had received countless accessions, it was probably double this; accordingly at 2 P. M. on the 20th we were not surprised by a shout from our people that the Kuphinee bridge was swept away; and in a few hours, our worst fears were confirmed that both bridges over the Pindur had shared the same fate, after standing uninjured for the last 4 or 5 years. This Ram Singh was pleased to call "burra tumasha," but it was death to some of us, and would have placed us in a most serious dilemma as to provisions, had not a flock of sheep and goats, returning from the summer pastures, been fortunately arrested in the same spot as ourselves, utterly cut off from any escape to the south by two savage rivers, and with no means of advance to the north except over the hopeless pass to Milum, barely practicable in the best weather. It was an unlucky emergency for the flock, as during our imprisonment in this slough of despair, we and our followers ate six, and the bears seven of them. The destruction of the bridges isolated our party in three distinct groups: one in the peninsula, a second on the left bank of the Kuphinee, while the third, driven thence on the night of the 18th by the waters invading their oodiyar or cave, had crossed to the right bank of the Pindur, and taken up their residence in a cave between the two bridges. These, when the bridges went, were intercepted from all aid; those across the Kuphinee were supported by "fids" of mutton and goat flesh, which we flung over; but without salt or flour; this food disagreed much with all our people, and when supplies reached us, it was curious to observe how every one eagerly demanded *salt*. On the 21st, the eight men across the Pindur, contrived to clamber down the right bank, till at a spot about two miles short of Khathee, they found a place where its force was somewhat diminished by the current being divided into three streams: these, four of them determined to cross, and had actually got over two, but

the third and last separated them, and three of the unfortunates were instantly carried off and drowned; the fourth, a very strong swimmer, reached the bank, but was so bruised and chilled, the water being at 42°, that he could not lay hold of the rocks, and was rapidly drifting after his luckless companions, when Messrs. Hort and Powys, ignorant of the fate of the bridges, came to the spot at this critical moment, on their way to Khathee, and dragged him out. Mr. Hort *might* have addressed him in the words of Pythagoras, O Genus attonitum—*gelidæ* formidine *mortis*, Quid Stygias, quid tenebras, quid nomina vana timetis; Materiem vatis, falsique pericula mundi? but he did much better: he clothed him, and restored the circulation by brandy, and had him carried back to Khathee. For having his life saved by this unlawful medicine, the poor man soon become an outcast, and it required all my persuasion, and not a few menaces, to induce his accusers to make the amende, on our return to Khathee; this was only accomplished by the chief of them publicly drinking water from his hands, which was not done without much hesitation and many a grimace.

*September* 21*st* was a glorious day, and was passed in various devices to throw a plank over the Kuphinee, to expediate Ram Singh to Khathee, to which, once over this torrent he said there was a track passable for goats and Danpoorees, but all our inventions and exertions failed for want of a felling axe and some thirty yards of strong rope, without which no one should intrude into these regions; during the course of the next day, however, we received a communication from our friends below, with some supplies; and what was better a detachment of the bold Soopee men appeared on the other bank of the Kuphinee, and with some assistance on our side, soon laid a tree or two over that stream, which by noon on the 23rd were so secured and planked as to be passable to *us;* and our coolies being so starved and paralyzed as to be utterly useless, we sent them all back to Khathee. By the 24th the upper Pindur bridge was partially restored, but as there appeared no probability of the lower one being completed for some days, I determined to make a push for the glacier.

We had smart rain from 2 till 6 P. M. on the 23rd. The Pindur river, about 60 feet below us, was invisible from our tent during our "close arrest;" not so the Kuphinee, which, though actually as far down, was right before us, and bounding down its inclined bed at such

an angle as to threaten us with apparent destruction. So great was their combined roaring that all conversation was kept up by shouting, and with the party over the water by gesticulations only. At night, one could not help fancying one's self on board a colossal steamer, with the thunder of the machinery and the incessant plash of the paddles deafening one; but there all is guided by skill and design: here the wild war of the elements seemed to terminate in destruction merely. They afforded a fine study for the action and resistless force of large bodies of water in motion down steep planes. Everywhere the lateral torrents had heaped up on each of their banks enormous *bunds* of mud, gravel, and huge rocks. When we passed, the waters of course had greatly subsided, and perhaps in their utmost force could never move such blocks; these must be owing to the landslips and great *debacles* of mud, in which the specific gravity of the stones is reduced almost to nothing. When subsequent rains have washed away the mud, there remain those immense couleés of rocks so prevalent along the mountain slopes as we approach the Himalaya.

*September 24th.*—With Ram Singh as guide, one of my own followers who wished to see the glacier, two Danpoor coolies, tea apparatus, and a column of ready-made chupatees, I started at 10: 20 A. M. for Dooglee, and reached at 1 P. M. distance about five miles. The rise is gradual but continuous, and except near Diwalee, though the road was much cut up by the innumerable torrents and rivulets still rushing across it, I did not experience much difficulty; *there*, one or two formidable landslips had fallen, which compelled us to rise and get round them—not very pleasant work, when all was still tottering. The "still-vexed" Pindur raves close on the left hand during the route, and at about two miles from Diwalee becomes most savage, leaping down its rocky bed and among the birch-covered boulders in a series of the most *Cambrian* rapids and cataracts. It flows from 150 to 200 feet below Dooglee, whence, and indeed from the glacier, its course towards Diwalee, is nearly straight, and due south. At about one mile from the latter place, there is, across the Pindur, a very fine waterfall: and higher up, on the same side, where the crags fall precipitously to the river, three or four more, all equally beautiful, fed by the snows, and trembling over the bleak bare rock above the line of vegetation in copious sheets of spray. On the left bank the cliffs and shivered pin-

nacles are more remote, and rise from a tract of undulating ground strewed with great rocks and covered with forest and brushwood. At two miles from Diwalee passed a hut and grazing ground, called Toon Paehurree, a little to the east of which a superb cascade falls from the heights in three distinct leaps. One advantage of the late rain and snow is that these falls are now in perfection.

Approaching Dooglee the glen becomes very narrow, and the wild crags and bluffs above the forest across the river, now mantled in an unbroken sheet of snow, are but a few hundred yards distant! The accommodation provided here by nature for the wayfarer consists of a most enormous mass of mica-slate, a little above the road to the east: its western face projects gradually so much as to afford a tolerable shelter in the worst weather, as I had soon an opportunity of testing; for the heavy clouds drifting up the valley turned to rain at 3 P. M., which continued for an hour and a half; but though it was bitterly cold, the Oodiyar remained waterproof. Several similar rocks are grouped here and there in the vicinity, on which the spreading Juniper grows freely: the site also being just at the highest verge of the forest, must be about 11,500 feet above the sea. The wild goat is said to be very numerous hereabouts: and I noticed several flocks of the "Snow Pigeon;" higher up, amongst the cliffs at Pinduree, the Chough is common. The vegetation towards Diwalee comprises the trees before specified, with Silver Fir (Picea Webbiana and Pindrow); Birch (Betula Bhojpatra), Rhododendron arboreum and barbatum, Maples, Jamuna Cherry, with coppice of Viburnum nervosum and cotinifolium, Rosa Webbiana and Sericea, "Sephula" of the Bhotiahs, Berberis brachystachys (Edgeworth,) Jasminum revolutum, Syringa Emodi ("Gheea,") Lonicera obovata and Webbiana, several sallows, the red and the white fruited mountain-ash, Pyrus foliolosa, "Sullia," "Hullia," (the letters s and h are interchangeable here, as in Latin compared with Greek;) and extensive thickets of Rhododendron campanulatum; while the pastures and streams abound with alpine plants, such as Spiræa Kamtchatkika, Cynoglossum uncinatum, "koora," aplotaxis aurita, Carduus heteromallus (Don), "Sum-kuniou," Swertia perfoliata, "Simuria," Cyananthus lobata, Impatiens moschata and Gigantea (Edgeworth,) Rhodiola imbricata (ditto,) Saxifraga parnassiæfolia, Caltha Himalensis, Elshottzia polystachya and Strobilifera, Podophyllum Emodi, Sal-

via Mooreroftiana? Delphium vestitum. At Dooglee, the Potentilla atrosanguinea, "Bhooi-kaphul" commences, and is common towards the glacier, and near the latter only, occurs Aconitum heterophyllum; "Utees;" both plants being-common-on Muhasoo at Simlah, at about 8500 feet. Are these anomalies of the retreat of the alpine plants and the advance of the temperate ones, in these vallies, to be explained by the fact of their thorough exposure to the sun, from their nearly exact north and south direction? Amongst the rocks above Dooglee I found a shrub which the people called, from its bright red berries, "Dhoor-bank," *mountain arum*: the Triosteum Himalayanum, I believe; and if so, the most north-west locality in which it has yet been found.

Either from the hardness of my bed and "dampers," or the wild sublimity of the scenery, and perpetual war of the cascades, "deep calling unto deep, at the noise of the waterfalls," finding sleep impossible, I passed a good portion of the night in conversation with Ramsingh and his companions, and amongst other things endeavoured to convince them, but without much even apparent effect, of the propriety of eating beef; not all their deference and adulation could make them admit its innocence! and yet they are well skilled in the most ready flattery. When we first met Ramsingh, we asked him whether he had ever been to Budrecnath, and his reply was—"No! why should I? *you are my Budreenath.*" Enquiring now a little into his history and the affairs of his village, it soon became too evident that even in these sequestered glens—where one might expect to discover an Arcadia—the very same bad passions are at work as in the nether world,—envy, hatred, malice, jealousy; in short the complete "Black Battalion" of human frailties and passions. If my informant spoke truth, Mulkoo, the Putwaree of Soopee, by the grossest oppression, had despoiled him of house, lands, and flocks; while, according to Mulkoo, Ramsingh, by engrossing the glacier as his peculiar property, robs *him* of his lawful quota of the rewards which accrue from the visiters. Truly of all "the fables of the ancients" that of the Golden age appears to be the most unnatural and incredible. "Croyez-vous, dit Candide, que les hommes se soient toujours naturellement massacrés, comme ils font anjourd'hui; q'uils aient toujours été menteurs, fourbes, perfides, ingrats, brigands, foibles, volages, lâches, envieux, gourmands, ivrognes, avares, ambitieux, sanguinaires, calomniateurs, débauchés, fanatiques, hypocrites, et sots?

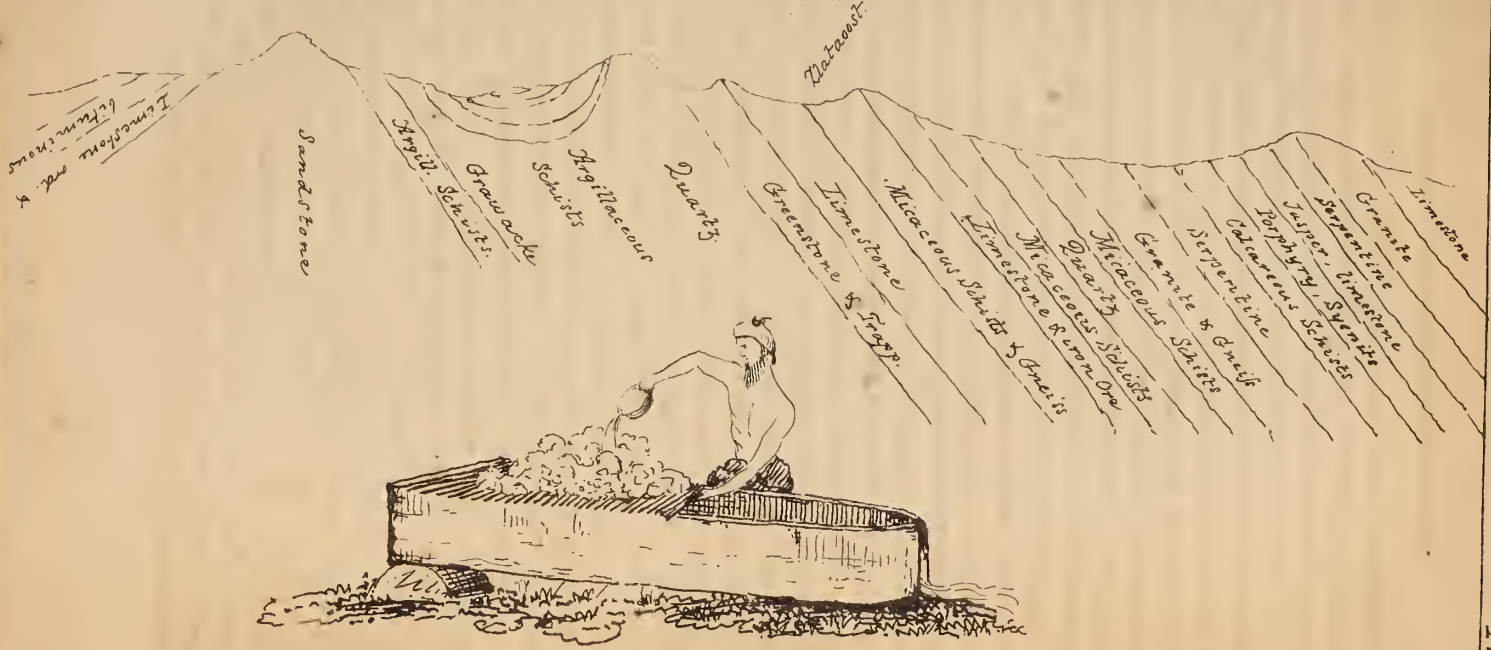
Croyez-vous, dit Martin, que les éperviers aient tonjours mangé des pigeons quand ils en ont trouvé? Oni, sans doute, dit Candide. Eh bien, dit Martin, si les éperviers out tonjours en le même caractere, pourquoi voulez-vous que les hommes aient changé le leur?" My companions, however malicious, were intelligent enough, and listened eagerly to my details of railways, steam-vessels, electric telegraphs, &c. the last a difficult matter to explain to them; they were also very curious to know what the "Sahib-log" did with the sacks and boxes of stones which they carry down to the plains with them! They must surely contain gold, silver, precious jewels, or very probably the Philosopher's stone, in the reality of which they implicitly believe, may be amongst them! In the uses of plants they are more at home, but as to anything beyond tangible and present utility in the way of food or medicine, every man of them is another Jeremy Bentham. Ramsingh informed me that if the honey of the upper Himalaya be eaten fresh or unboiled, it produces continued intoxication, severe griping, &c. Can this be caused by the abundance of Rhododendrons, and the bees feeding on their flowers? The *Ten Thousand* in Pontus were apparently affected from this cause.

*September 25th.*—Clear morning and the snows of Pindrec in full view ahead, called two pukka kros, about four miles. Leaving Dooglee at 6 A. M. I reached the base of the glacier in two hours; the ascent very gradual, and for the most part over sloping lawns, bounded on the east by high crags, and covered with Geranium Wallichianum, Potentilla atrosanguinea and other species, Ligularia arnicoides, Morina longifolia, Primula glabra, Parochetus communis, Cyananthus, Saxifraga spinulosa, Polygonum Brunonis, and others, Sibbaldia procumbens, Ephedra Gerardiana, several species of Gentian and Pedicularis, &c. The only bushes beyond Dooglee are the Rhododendron campanulatum, Lonicera obovata, Willow, Birch, Rowan, all diminutive, and ceasing wholly about a mile short of the glacier, except the Juniper and the Cotoneaster microphylla, both of which flourish on its edges; the latter hardy little shrub seeming equally at home here as on the hottest banks at Almorah. The west bank of the Pindur is precipitous for about two miles above Dooglee, where a Gopha or cave is pointed out, said in days of yore to have been tenanted by the Pandoo, Bheemsing, not, however, till after the manner of St. George and St. Patrick, he had

expelled and slain certain dragons and serpents, the original occupants.* Above this cave, the right bank also becomes undulating, and exhibits the trace of a road which formerly led to the glacier, till the bridge was carried away; the slopes there are covered with low thickets, probably of Rhododendron lepidotum, but the unfordable river forbade all examination. In the north-west Himalaya, the passes, contrary to the fact here, are all gained by the north-west banks of the streams; here in general the eastern bank is most accessible. One circumstance remains constant, which is the comparatively level bed of the river below the glacier; from its source to the cave nearly, the Pindur flows along a wide channel, overspread with gravel and stones, the product doubtless of the glacier, which has no terminal moraine; its waters are exceedingly turbid, and though diminished above by the dozens of cascades, which of all sizes, and at all distances, rush down from the snow, are quite impassable. The spot called Pinduree is rather an open, undulating piece of ground, covered with grass, docks, and the ubiquitous Shepherd's Purse, in an amphitheatre of crags, with many snow-beds along their bases. Here I found the remnants of a hut, which supplied fuel, and at 10 A. M. started for the head of the glacier and the source of the Pindur (this last about 10 minutes' walk distant, but visited last,) which took me exactly three hours to accomplish. From the breakfasting ground the ascent is rather steep, over rough, and occasionally pasture land, covered with Sibbaldia, Salix Lindleyana, a low shrubby astragalus, the yellow aromatic Tanacetum, the dwarf white Helichrysum, an Iris? a garlic-like allium, and two most abundant and beautiful blue Gentians. The glacier lay to the west, and between us and it, rose a lofty moraine, along the hither or east base of which flows a considerable stream, the source of which is much more remote than that of the Pindur, which it joins one or two hundred yards below its exit from the ice. Having ascended perhaps a thousand feet, we struck off to the left, and crossing the moraine, which is here about 150 feet high, descended to the glacier, and with infinite

* During the heavy snow which fell in Kumaoon in February 1807, from 40 to 50 Kakur are reported to have taken refuge in a cave near Loba, when they were killed by the peasantry. Had the bad weather continued, and these deer been starved, we should probably have one illustration of the manner in which Bone Caverns have been stocked.

Vertical section through the Aoorahl Mountains at Zlataoost showing under what succession of strata the Gold occurs.




Washing for Gold at the River Beyass.

J.W. Lavalay lith.

Pl. IV.

difficulty, advanced a few hundred paces towards its head, where it commences in huge broken tiers of the purest snow. The glare from this was intolerable, and the warmth of the sun now began to tell on the snow; the consequences soon made themselves heard and seen in the avalanches which, one in about every three minutes, commenced falling from the lofty crest on our right—the northern shoulder of Peak No. XV. generally known as Minda Kot or Nunda Hosh. The ridge of this was capped by a wall of snow, apparently 40 or 50 feet thick, from which stupendous masses were constantly detached and fell with the noise of thunder, spreading out in their descent like a fan, and tumbling in great blocks to the base of the moraine. Though perfectly safe where we stood to gaze, my Almorah servant was terribly frightened by "Devee's opera." Having crossed the glacier we kept for a short distance along its western side, as I hoped to reach the source of the Pindur that way; and return to the *camp* by crossing it at its source: both objects Ramsingh assured me were now impracticable; and as heavy clouds began to collect to the south, any delay became dangerous; and therefore returning to the glacier, we endeavoured to steer down its centre, so as to look down on the river from the southern escarpment; but this was also impossible, from the tremendous fissures (the veritable Davy's locker) which crossed our path. Nothing remained but to regain the moraine, which we only did by passing along some very awkward isthmuses between these fissures. The moraine is constituted of gravel, mud, and blocks of stone imbedded in ice; the stones much smaller than I should have expected. It conducted us, latterly by a very steep descent, to where the river issues from a cave in the face of the glacier, about 20 feet high, by perhaps 90 wide; the impending roof is riven into four or five successive thick ribs of ice, the lower members of which promise a speedy fall. I found the water extremely cold and muddy, and, as my guide had declared, too deep and impetuous to be crossed. Mr. Hort found the water to boil at $190\frac{3}{4}^{\circ}$, which, allowing half a degree too high for the error of his thermometer, would make the elevation very nearly 12000 feet.

It is most surprising that with such a beautiful and unquestionable example of a glacier within seven marches of Almorah, the existence of this phenomenon in the Himalaya should have been considered doubtful! Having within these five years visited the Mer de Glace and seve-

ral of the glaciers of Switzerland, I can most confidently state that there is not in Europe a more genuine instance, and Mr. H. Strachey, after much more experience, in Gurhwal and Kumaoon, assures me that it is by no means a singular one. Captain A. Broome many years ago penetrated to the cave source of the Bhagiruthee, which he found to be formed of pure ice; so that little doubt can remain of the enormous "snow-bed" at the head of that river being also a true glacier. Captain Weller, who traversed the glacier near Milum (J. A. S. No. 134, for 1843) was struck by the fantastic castles, walls, &c. of its higher portion; this appearance would denote the junction of a lateral glacier; but in no part of of his journal does he appear to be aware that at Milum there was such a thing as a glacier; at least he never employs *the word*. Certainly the recent heavy rains had thoroughly washed the Pinduree glacier, and its surface exhibited a sheet of the purest ice, except on and near the terminal escarpment, which being covered with rubble, resembles, at a short distance, a steep bank of mud; and such, I hear, is the appearance in May and June of the Milum glacier. But to make quite sure, I carried a hatchet, and frequently broke off fragments, which *everywhere* were perfect ice, the only difference perceptible, or that I can remember, between this and the Alpine ice, being a coarser granular structure here. It is intersected by the same fissures, has the same *ribband* texture, and from its origin in the snow to its termination above the cave, falls in a series of the most beautiful curves, which appeared to my unscientific, but unbiassed eye, a striking illustration of the truth of Professor Forbes' *Viscous Theory*. That the mass is moving downwards seems confirmed by the form of the snow at its head, viz. a succession of terraces, with steep walls, just such as clay, &c. assumes on its support being removed. The Bhotiahs of Milum affirm that their glacier has receded from the village two or three miles to its present site, and Ramsingh assured me that the same is true, in a less degree, at Pindurec. The glacier may be about two miles long, and from 300 to 400 yards broad, and probably occupies the interval between the levels 12000 and 13000 feet above the sea; owing its existence to the vast quantities of snow precipitated from Nunda Devee and the other lofty mountains above, which, melted by the noonday sun, is frozen at night. It must be observed too, that in spite of theory and observation elsewhere, the perpetual snow appears here to

descend to the level of 13000 feet: for from the head of the ice to the crest of "Traill's Pass"—the *col* which may be considered as the *root* of the glacier,—there is an uninterrupted surface of snow, and that, from its low angle except for the lowest thousand feet, evidently in situ. In short no one in Kumaoon can doubt the existence of *permanent* snow, when he contemplates daily the faces of Trisool, Nunda Devee, and others, exposed to the full blaze of the meridian sun, and yet preserving in many spots, and those by no means the highest, spacious fields of snow without a speck or rock.

None of the culminating pinnacles of the Himalaya are visible from Pindree; though the great Peak, No. 15, 22,491 feet, is *immediately* above on the east—but its northern shoulder, a massive snowy mountain, forms a grand object to the north-east, and this, passing the depression forming Traill's Pass, is continued in glorious domes and peaks to the left, where a beautiful pinnacle terminates the view, apparently the easternmost of the two lower peaks of Nunda-Devee. The adytum of the Goddess herself is utterly concealed. By many she is irreverently confounded with THE BULL of Siva; but H. H. Wilson gives us Nunda and Nundee as epithets of *Durgá*, the *inaccessible* goddess." The largest temple at Almorah is dedicated to her, and though several hundred years old, is there very generally believed by the credulous mountaineers to have been built and endowed by Mr. Traill, the late Commissioner, in gratitude for his recovery from temporary blindness from the snow glare, when crossing the pass now named from him. An equally lying tradition purports that, like Heliodorus, he was struck blind at Almorah for forcing his way into her temple, and only restored on endowing it handsomely. These legends, credited against all evidence on the very spot and in the very age where and when they were invented, reduce the value of tradition, and even of contemporary testimony, unless assured of the witness' judgment, considerably below par! Amongst some great rocks on the east of the moraine, I found numbers of the curious Saussurea obvallata, here called the "Kunwul," or Lotus of Nunda Devee; near it grew the Dolomiæa macrocephala, another sacred plant, bearing the strange name of "Kala-Tugur," or Black Tabernæmontana; and the common Rhubarb, Rheum Emodi, here called "Doloo." The rocks in situ about the glacier are mica-slate and gneiss, but on the moraine, the fragments consist

also of crystalline and slaty quartz, the latter often considerably colored with iron between the layers; horneblende rock is also common; and masses of the same granite which forms the great range at least up to Gungootee. Though it exhibits quartz, felspar, and mica, the felspar is in such excess to the other minerals, and large crystals of black schorl are so abundant, that Captain Herbert probably did not recognize it to be granite, and hence his denial that this rock is found in the snowy range.—It certainly differs much in appearance from the more authentic granite which we find north and south of the Great Chain, in Kunawar and Kumaoon.

My investigations were cut short by the very threatening appearance of the weather, and to his great relief, I at last commanded Ramsingh to retreat. At one period, he had evidently lost his way, and become confused on the glacier, and on quitting it, he turned round, joined his hands, and made a low reverence towards Nunda Devee; on the intensitive principle invented by Puff in the critic of firing six morning guns instead of one, I own I was strongly tempted to imitate and even surpass my guide by making six vows in the same direction, but there was no time for formalities, and the goddess who is pacified for a million of years by the sacrifice of a man, is not to be bearded with impunity in her own den; so, without further ceremony, we started, and passing Dooglee, in one hour reached Diwalee, in an hour and a half more, under pelting showers the whole distance. Messrs. Hort and Powys had arrived from Khathee an hour before me.

The existence of alternate diurnal currents of air to and from the Himalaya, the first of which I experienced to-day, resembles in its regularity, the land and sea breezes of many tropical coasts, and is a fact which all travellers in these mountains must have remarked, though none that I am aware of, has recorded or attempted to explain it.* All along the exterior ranges we find that during the warm season, at least, about 9 or 10 A. M. a strong gale sets in from the plains, well known at Mussooree as the "Dhoon Breeze," and equally prevalent and grateful at Nynee Tal, &c. from 2 to 3 P. M.; it reaches the snowy range, blowing violently up all the passes from the Sutlej to the Kalee;

* Mr. Batten informs me that the Rev. J. H. Pratt has written an essay on this subject in a literary Journal of Cambridge; which I have not had the advantage of consulting.

and so furious in Hoondes and upper Kunawar as to preclude the use of pitched roofs, and to render it necessary to secure the flat ones by heavy stones. On the other hand, along the base of the mountains at Hurdwar, Dikkolec (on the Kossillah), Bhumouree, and Burmdeo, we find, so far as my own experience goes, that from November till April, from perhaps 2 till 7 or 8 A. M. a perfect hurricane rushes down the great vallies *from* the mountains, and being greatly cooler than the surrounding air, and soon followed by an oppressive calm, is perhaps the cause of much of the insalubrity of the tarai; as the reverse gale probably originates *much* goitre in the mountains. The explanation which suggests itself is as follows: Sir J. Herschel states that at 10,600 feet about the sea, one-third of the atmosphere is below us, and at 18,000 feet, one half. For the sake of round numbers, let us assume the attenuated stratum of air resting on the Himalaya and Tibet, to be deficient by about half the weight of the whole atmosphere; during the day time, owing to the heat reflected and radiated from this elevated plateau, and the rocks and snows of the Main Chain, (a source of heat wanting of course to the corresponding stratum over the plains,) this is further expanded or rarified, so that it becomes specifically lighter, and ascends. Hence, owing to the great pressure of the whole mass of the atmosphere incumbent on the plains, the air thence is forced to flow upwards, to fill the comparative vacuum, and the current is generated, which commencing at the outer range, reaches the higher one in the afternoon, laden with vapor, which is there condensed by the cold, and astonishes the traveller by those storms of rain and snow which succeed, and are indeed a necessary result of the serene morning. It is for this reason that the guides are always so anxious to set out betimes, so as to cross the passes by noon. It may be objected that as the process of rarefaction commences at the summit of the mountains, and must be gradually communicated to each stratum beneath, where it comes in contact with the heated ground, the current should begin instead of ending at the higest elevations; but it would appear probable that the movements of the air from this cause is trifling; the main agency being the pressure of the atmosphere on the plains, which necessarily commences its operation with the outer ranges. During the night, the atmosphere, like Penelope, undoes what it did by day. From the absence of the sun, the mountain air is cooled and condensed,

and, recovering its former bulk and weight, descends, to restore the equilibrium by forcing the aerial invader back to the plains, the process being no doubt greatly aided, or rather caused, by gravitation as well as by the expansion and consequent diminution and negation of pressure which the plain atmosphere has itself experienced from the intense heat of the earth and sun's rays by day, the former of which is dispersed into the air during the whole night, and till about sunrise, when the gale from the mountains attains its maximum of intensity.

Both "up and down trains" must be much modified and complicated by the direction of the mountain ranges and great vallies; these last determine of course their usual route, and by their narrowness and depth tend greatly to augment the force of the wind. At Bheemtal, 12 miles from the plains, its effect is but too sensible; but at Ramgurh, as much farther in, it is unknown; the Ghagur serving as a most efficient screen in this direction. The entire career is run out in about 100 miles; this distance is so short, and the anomalies from the irregularity of the ridges so great, that the effect of the earth's rotation may be unappreciable; if not, the day breeze coming from the south, where the velocity of rotation is greater, ought to blow from the south-west and the night one from north-east: and this is certainly true at Almorah of the first.*

* The climate of Ludakh, 11,000 feet above the sea, as observed by Moorcroft, fully bears out the above theory. Frost and snow continue from the beginning of September till that of May. "In May, the days become warm, although early in the morning the rivulets not unfrequently present a coat of ice, and this may be observed in some spots even in June, whilst on the loftiest mountains, snow falls occasionally in every month of the year. During the summer months, the sun shines with great power, and, for a short part of the day, his rays are intensely hot. At Lé, on the 4th July, the Thermometer in the sun rose at noon to 134°, and on the march to Piti, it stood ten degrees higher. At night the temperature was 74 degrees. Even in the depth of winter, the heat of the sun is very considerable for an hour or two, and the variation of temperature is consequently extreme. On the 30th of January, the thermometer shewed a temperature of 83° at noon, when it was only 12½° at night. The great heat of the sun in summer compensates for the short duration of the season, and brings the grain to rapid maturity. Barley that was sown in the neighbourhood of Lé on the 10th of May, was cut on the 12th of September; and at Pituk, five miles from Lé and about 800 feet lower, in a sheltered angle of the valley, the same grain is ready for the sickle in two months from the time of sowing. (Travels, I. 268.) Much further eastward, Captain Weller

The trade and similar periodical winds are of no mean benefit to the navigator ; the use of their mountain counterparts is unknown, unless it be to scour the deep vallies of their malaria. One abuse of them was too evident ; the locusts were everywhere taking advantage of them to penetrate into the mountains, and were in considerable numbers, living, dying, and dead, at the very head of the Pindaree glacier. How strong must be the instinct of wandering and self-preservation in these scourges, when, in search of sustenance (which they would scarce find in Tibet,) it thus leads them, as the moth in the case of light, to their own destruction amongst the ice and snows of the Himalaya! But so long as rational men are found to resort to Sierra Leone, &c. on the same errand, and with the same fate, though from an opposite cause, we have not much room to boast of our superior discretion. The natives of Kumaoon consider that the flights of locusts, which have in late years, done immense damage to their crops, are produced from the sea. I KNOW them to be produced in Rajpootana ; on our return to Almorah on the 2nd October, we found vast swarms of them settled on the fields and fresh ones coming from the south and south-east ; fortunately the harvest was too advanced to admit of much injury.

*September 26th.*—Walked to Khathee in $3\frac{1}{2}$ hours, with soft showers at intervals ; and heavy rain from 4 to 6 P. M. ; at one of the bridges we met the Putwarec Mulkoo, or Mulkih Singh, a regular short, thick-set, mountain savage, not unlike one of his own bears.

*September 27th.*—To the Tantee châlet (now deserted) on the Dhakree Benaik, which we walked in $3\frac{1}{4}$ hours. From half-past 12 till 6

was told that in May and June "it is hot below Dhapa (Daba,) that sealing wax melts if carried on the person during the day," a significant hyperbole. Moorcroft suffered severely from fever in the same district, probably from these rapid extremes.

During the rainy season of the Indian Himalaya, the prevalence of clouds and moisture, by equalizing the temperature, must in a considerable degree, neutralize these currents : but to solve the problem satisfactorily, careful and extended observations are requisite, with the comments of an experienced meteorologist ; several necessary elements, evaporation, electricity, &c. probably playing no mean *rôle* in the phenomena.

In the Arctic regions, Dr. Richardson found the radiation of heat from the snow in spring to exceed greatly that from the soil in summer : and in the Himalaya, the "Dhoon Breeze" is most regular and powerful from April till June.

P. M. we endured a heavy storm of rain, hail, and thunder, from the west, followed by a clear and very cold night; our tent, which withstood the 75 hours rain at Diwalee, leaked in half a dozen places at once to-day, such was the deluge that fell. Our people fortunately had the huts to shelter them, for, notwithstanding every precaution, several fell sick every day with fever, so that our march resembles the retreat from Walcheren.

*September 28th.*—After enjoying the view from the Pass, we descended to Sooring in $2\frac{1}{2}$ hours; slight rain in the evening.

*September 29th.*—To Kupkot, in $4\frac{1}{2}$ hours, breakfasting at a hamlet about half way, called Dooloom. Some very large species of orchideæ, probably Dendrobium, Phaius, Cœlogyne, &c. grow on the rocks and trees in this stage. The road at the landslip not yet replaced; but after the paths above, it was trifling; one's feet seem gradually to acquire a sixth sense from practice over dangerous ground; a portion of the mind descending and taking up its temporary abode in the toes; as the bat is said to have a sensibility in its wings which enables it to avoid walls, &c. in the dark. To-day was fine till 4 P. M. when a strong cold wind blew down the valley accompanied with light showers for about an hour. The rice-crop is now being cut here.

*September 30th.*—Walked to Bagesur in $5\frac{1}{2}$ hours, breakfasting halfway at the Mundilgurh Torrent, where we met Messrs. Norman and Weston on their way to Pinduree. The Puharees are quite aware of the value of a *mid-way* meal. A friend once asked one of them how far such and such a place was off; and the reply was—"Two kros if you have dined, three if you have not."

The Surjoo has fallen six feet since we left Bagesur; the temperature of the town is considerably lower, but the people look sickly and sallow from fever. No rain to-day, for the first time since we started, 21 days since.

*October 1st.*—To Sutralee in $4\frac{3}{4}$ hours, of which $2\frac{1}{2}$ were expended in reaching the summit of the Ladder Hill, exclusive of a full hour's delay in crossing the "infamous" Gaomutee, now just fordable, mounted on a ferryman's back, who was obliged to have a second man to steady him. That such an obstacle on the main line of commerce between Kumaoon and Tibet should remain without a bridge, is accounted for by the circumstance that little communication takes place in the rainy

season; and that during the rest, the stream is only ankle-deep; but when the iron-mines and foundries of the province are once in operation under the management of the new company, let us hope the traveller will be expedited on his way to Pinduree or Milum by one of the Suspension Bridges, the glory of Kumaoon above all the rest of the Himalaya taken together.*

We breakfasted at the Dhurmsala, under a very elegant arbor of Jessamine, but clouds again disappointed us of the desired view of the snowy range. Noticed the Vitex negundo in various places to-day; indeed it is common in Kumaoon, as in all the outer hills, and is here called Shiwalee. An intelligent brâhman of Almorah assures me that THIS is the Sephalica of Indian poetry, and brought me the Amurkosh to prove his point, where it certainly was explained by "Soovuha"—"Nirgædee" and Neelika; with *niwar* as the Hindee. For Nigoondee, H. H. Wilson gives us "Vitex negundo," and "*another* plant, Neel-sephalica," but does not say what this is. "Neelika" though denoting "blue," he follows Sir W. Jones in explaining by Nyctanthes arbor tristis, though no blue Nyctanthes was ever heard of. Sir W. Jones was assured by his Bengali pundits that this tree was their Sephalica, though he quotes the Amurkosh as stating "WHEN the sephalica has white flowers," &c. which the Nyctanthes always has. It grows wild abundantly in Kumaoon, but Roxburgh could never find it so circumstanced in Bengal; the original name is therefore more likely to be preserved in the mountains, where so far as the brâhmans are concerned, *Parjat* is the only one extant, and this also Sir William Jones was aware of in respect to other parts of India. He also gives *Nibaree* as the vulgar (Bengal) term for the Nyctanthes; but in Dr. Voigt's catalogue, this is annexed to Cicca disticha. The Puharee "Shiwalee" is an easy and regular corruption of Sephalica, and Sir William describes it in terms which might well attract the praises of the poets—"a most elegant appearance, with rich racemes or panicles (of odoriferous, beautifully blue flowers, Voigt,) lightly dispersed on the summit of its branches." "Soovuha" 'bearing well,' may allude to these, or to the aroma of the bruised leaves; but the experimentum crucis of try-

* These bridges are constructed of iron manufactured in Calcutta, and probably smelted in England. The abutments of one over the river Khyrna near Nynee Tal are absolutely built on an iron-mine!

ing whether the "bees sleep in the flowers"—for that is the signification of Sephalica, remains yet to be made.

*October 2nd.*—To Almorah in $5\frac{1}{4}$ hours: total hours from the glacier 32; road distance 83 miles, (in a direct line 52,) giving an average rate of walking, 2 miles and 5 furlongs.

In the preceding notes, the popular name of each tree and plant, where any certain one exists, is commonly added, with the view of enabling those who visit the same or similar localities, to acquaint themselves, if so disposed, with the more prominent characteristics of this department. "The naturalist," says Sir William Jones, "who should wish to procure an Arabian or Indian Plant, and without asking for it by its learned or vulgar name, should hunt for it in the woods by its *botanical character*, would resemble a geographer who, desiring to find his way in a foreign city or province, should never enquire by name, for a street or town, but wait with his tables and instruments, for a proper occasion to determine its longitude and latitude."

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*Account of the process employed for obtaining Gold from the Sand of the River Beyass; with a short account of the Gold Mines of Siberia; by Capt.* J. ABBOTT, *Boundary Commissioner, &c.*

It has long been known that the sand of the river Beyass yields Gold Dust to the sifter. A description of the process and of the value of the produce may possibly be interesting; and if it should lead to search for the original veins of this precious metal, the result may be valuable as well as curious.

From the mountain district of Teera to Meerthul, where the Chukki joins the Beyass, and the course of both is nearly southward, gold dust is found in the sands of the latter pretty equally distributed. The boulders and pebbles in the river channel from Ray to Meerthul (the greater portion of this interval) are generally siliceous, quartz, porphyry, sandstone, gneiss, with occasional granite—and oftener pebbles of jasper. These appear to be debris of the Brisna cliffs and hills bordering the river, with exception perhaps of the gneiss, which I suspect is carried down from the older formations. My impression is

that the gold is originally deposited in the gneiss and quartz rock, and separated with the sand itself by attrition of the boulders together. This would account for the extreme minuteness of its particles, which are literally dust. All my enquiries however failed to ascertain the discovery at any time of a particle of gold adhering to any fragment of rock.

At Teera the course of the Beyass lies between mountains. At Ray it emerges into the plain, having hills on its north-eastern brink. Here it divides into many streams scattered over a cultivated channel more than a mile in breadth. The gold finders are a few poor natives who have no more lucrative subsistence. The labour is severe and the profits poorly remunerate them.

*Process.*

The spot selected for the washing was close to the main stream of the Beyass. The larger boulders and fragments being thrown aside, the coarse sand to the depth of a foot is abraded and carried in baskets to a trough upon the brink of the stream. This trough, which is a hollowed block of timber about four feet in length by a foot in depth, and a foot and four inches in breadth, is made to slope toward its outlet in front, a cleft an inch wide, extending from top to bottom. A seive of bamboo staves is laid over the posterior portion, and the sand is laid upon the seive; water is then poured upon the heap, which the pourer stirs about with his hand, until all the sand has been carried through the seive into the trough, when the remaining coarse particles are rejected. This is repeated until the trough is nearly filled. Water is then poured into the sand, which is agitated by the hand. The water carries off the lighter particles. The man who stirs the sand, rakes it back incessantly with his left hand, whilst he pours upon it water with his right hand. In about half an hour there remains only $1\frac{1}{2}$ or 2 lbs. of black sand, very fine and sparkling. This appears to be either the hornblende, from granite and gneiss rocks, or corundum. It is used by cutlers in conjunction with lac or rosin or pitch to form the wheel with which they sharpen tools and weapons.

This black sand, which is very heavy, is found upon examination to contain a few small particles of gold dust. It is carefully scraped out of the trough in its wet state, placed upon a plank one foot square and slightly hollowed. Mercury of the size of a large drop of rain is poured into it, and the whole is carefully kneaded with the hands for

twenty minutes. More water is then added, until the mass is fluid. It is shaken with a circular motion, which causes the water and lighter particles to fly off at the circumference. This process is continued, with the continual addition of fresh water until only a small heap remains in the centre, in which the gold and quicksilver appear together as a small globule. This is washed, taken out and put upon a piece of ignited cowdung. The mercury flies off and leaves the gold yellow. In order however that the utmost weight be given to the mass, it is taken from the fire before the whole of the mercury is evolved.

The quantity of gold obtained from a trough half filled with sand, and containing therefore about $2\frac{1}{2}$ cubic feet, is about $1\frac{1}{4}$ rutties. This employs nine men for about 45 minutes. It is obvious to me that much gold is lost in this imperfect and expensive process. For the outlet of the trough extends to the very bottom, without any ledge to arrest the heavier particles.

Any enterprising native who would work these sands upon a larger scale with machinery turned by the river current, might find it pay handsomely, but only by personal supervision.

I have the pleasure to forward a specimen of the gold dust collected in my presence, and also of the sand previous to washing, and the black sand in which the gold is ultimately found. This still contains its gold dust.

It strikes me that as an accompaniment to the foregoing description of the process of washing for gold in the Beyass, the particulars of my visit to the richest gold mines in the world, (those namely, of Siberia) may be acceptable. And as, in Siberia, a particular succession of strata is considered presumptive evidence of the presence of gold, the same phenomena may possibly prove of similar significance in the regions lately added to our empire.

During my mission to Russia, I was detained at Oxenburgh awaiting an answer to my despatches. General Perroffoki, the enlightened governor of the province, anxious to amuse me, afforded me the means of visiting the celebrated fabric of Mines at Zlataoost and the gold and platinum mines of that neighbourhood.

As far as Ufa, a considerable town of a military station, the road lay over an undulating steppe, and at that season of the year the jour-

ney is delightful, the horses cantering lightly over the springing turf, and the temperature by day and by night being equally pleasant. But after quitting Ufa, the undules swelled into hills, generally of easy ascent, partly forest and partly cultivation, and over these we had reached the summit of the ridge of the Oorahl mountains, without any of the appearances of rock, ravine or precipice, which so usually token the proximity of any considerable mountains. From this height we descended a few hundred feet to the valley, and pretty little artificial lake of Zlataoost, celebrated for its fabric of arms and for the gold mines in its neighbourhood: but much better remembered by myself, for the courtesy, the kind hospitalities, the engaging manners, and traits of patriotic feeling which distinguish its inhabitants.

From Col. Anosoff, a practised geologist and a man of science and sagacity, I gathered the following particulars, which may form a useful introduction to my visit to the mines.

The gold mines of the Oorahl mountains are very different from our ordinary notion of metallic mines of any kind. For they are not excavations of the rocky strata of plain or mountain, but mere exfoliations of the superficial soil, varying in depth from one to four feet. Their gold is unmixed with any matrix, being almost pure gold in its metallic form. There is nothing in the appearance of the valleys yielding gold to distinguish them from such as yield none: and the first discovery of the mines was purely accidental, grains of gold having been washed down by the torrents. But by a careful comparison of phenomena, a geologist may now seek them with increased certainty, for, in every case, the gold is found to occur under the following succession of strata, which presents a Geological section across the Oorahl range at Zlataoost.*

The morning after my arrival I mounted the vehicle prepared for me by the attention of Col. Anosoff, and in company with his whole family proceeded to the gold mines. We passed through a forest of small firs and cedars feathering the high ground above the lake, and after coursing over some 8 or 10 miles of undulating steppe clothed with rich grass and beautiful wild flowers, entered a very extensive but shallow valley, bounded on all sides by scarcely perceptible acclivities of the same steppe. The abundance and beauty of the wild flowers enamelling the turf redeemed the monotonous character of the landscape.

* See plate.

It was one of the poetical phases of the steppe, oftener spoken of than encountered, and probably never seen south of the Oorahl river. At some distance onward we came upon a party of diggers for gold.

There was nothing in the spot they occupied to distinguish it from the steppe around. It was covered with turf and wild flowers springing from a black vegetable soil. It was not even the bed of a watercourse; although such are very generally selected, owing to the gold being there brought to light by the action of torrents. The workmen dug away the superficial crust of black soil, working very carefully as they neared the bottom and leaving a layer about three inches thick untouched. When a considerable space had been thus prepared, they commenced excavating the soil to be washed for gold. This was done by digging through the thin layer of black soil not hitherto disturbed and to the depth of about one foot into the substratum, which is a hard table of clay and sand with fragments of schists and serpentine. The gold appears generally to lie upon the surface of this, but is sometimes found beneath. The whole of the earth now excavated is carried in barrows to the washing-house, where seives of different degrees of fineness are shaken by water-work under the current of the stream. From the residue the gold is carefully extracted. It is generally of such size as to need no aid from mercury. The machinery appeared to me simple and well adapted to the process. It was not possible for me to make notes: but my impression is that the profits amount to about 75 per cent. in these the good washings: and the small price of labour, and the richness of the masses exhibited, as that year's collection, made me easily credit the account. These are the richest gold mines in the world, and appear to be inexhaustible, every year leading to the discovery of fresh riches, although they are supposed to have been worked from very ancient days; the name Zlataoost signifying mouth of gold.

The phenomena of these golden debris (for mines they can scarcely be called) are peculiar and lead to speculation. The gold dust so often found in the sand of rivers, streams and torrents, is generally attributed to some rocky veins in the higher sands. Here, there is no appearance of such an origin. Previous to the growth and deposit of the present black vegetable soil, the gold seems to have lain strown like pebbles, over the surface of the hard clay and schist stratum: not particularly in the channels of torrents, but as if it had fallen in a general shower.

The higher sands are very remote from the spot. The ascent to them is scarcely perceptible, and at the foot of those heights are valleys and ravines which would have caught and detained any debris washed down from their sides or summits.

The gold itself is of almost virgin purity. A small quantity of silver alloys it. It lies in granules, precisely similar to those formed by pouring upon water molten lead; and immediately suggests the idea of having been cast molten upon the hard stratum on which it is found. The strata however, hereabouts have no volcanic character, and it is evident that the gold has been cast in its present position, since the deposit of the clay on which it rests; its own great specific gravity otherwise giving it a lower rest.

When the gold has been worked it is laid up in heaps, which are transmitted to St. Peterburgh. The average size of the grain is that of a barleycorn: but masses of the size of pistol and gun bullets are not uncommon, and much larger masses are occasionally found. The appearance of all will be familiar to any one who has thrown fused lead upon water. When the late Emperor Alexander visited these mines he turned up a spadeful of the earth by way of example. We had scarcely quitted the spot, when an immense mass of gold, larger than a man's foot was found beneath the imperial footprint. The very genuineness of such a natural mass in such a position becomes doubtful.

Several of these gold mines are the property of or farmed by individuals who sometimes make immense fortunes upon the profits.

Col. Anosoff spoke confidently of the uniform succession of the strata on which gold is found, and as gold occurs in many and distant portions of the Oorahl chain, this circumstance is very remarkable, there being no imaginable connection between the gold itself and any of the substrata.

The supply does not seem to cease with the Oorahl mountains, for at the north-west foot of the Altai range it is gathered in considerable quantities. There however it is found in quartz, which is pulverized for its extrication. If I recollect right a few of the masses of gold of these washings was found adhering to fragments of quartz.

After examining these works we proceeded with fresh horses to Mias, where there are other gold mines. Platinum was here shown me in

the form of a black flattish grain, bearing the pure metal slightly corroded. It occurs here, but more commonly at Ekaterinburgh. Not having witnessed the search for it, the particulars are less fresh in my recollection. I was told that it was found under much the same circumstances. Platinum coin is commonly current in Russia for about half the value of the same weight in gold, although it can be obtained cheaper. Of course the circulation is limited to the Russian Empire. But the extent of this is so great that not much inconvenience accrues.

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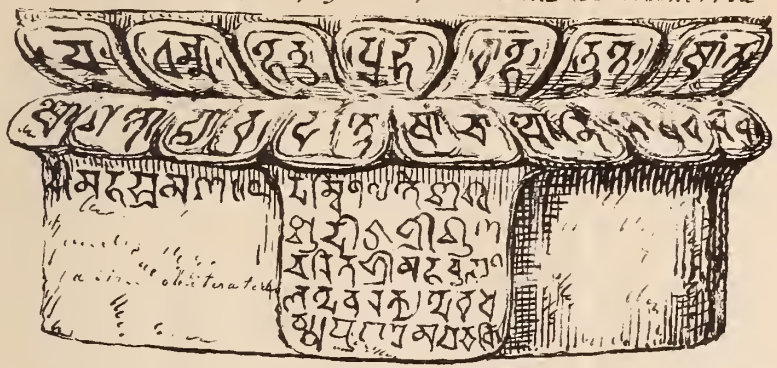
*Notes on the Viharas and Chaityas of Behar, by Capt.* M. Kittoe, *6th Regt. N. I.*

The perusal of notices on the Buddhist annals by Hodgeson and Turnour, and of the inscriptions so ably translated by Prinsep, as well as my own observation of the many curious things I have occasionally met with, particularly in the vicinity of Gyah, have afforded me much room for reflection and speculation.

Although no benefit to science may be derived by search for, or discovery of, the ruins or sites of the 18 Viharas mentioned in the Pali Buddhistical annals of Ceylon, nor of the 83,000 Chaityas which the Burmese believe to have been built by Asoka, still our interest or curiosity is excited in the search, and if successful in any degree, it must be admitted that a greater value becomes attached to these records than they might otherwise seem to deserve.

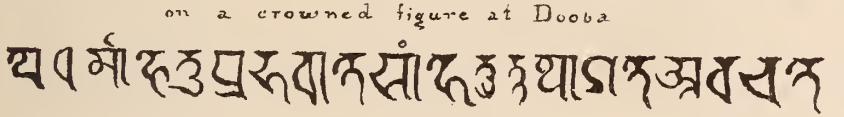
Partial success increases our desire, and in following out one research, others suggest themselves, light is thrown on what formerly seemed darkness, truth on that which appeared but childish fable, and when such is the case, it must be accorded that history has gained a prize, hence it is that antiquarian research is not altogether an useless or idle one, it becomes interesting and instructive; acting upon this reasoning, I have taken advantage of my leisure after two years' hard though ill-requited labour in an official sphere, to drown unpleasant reflections thereon by resuming a study I had been obliged entirely to sacrifice to the calls of duty, and great will be my gratification if the result of my

Throne of a figure of Buddha at Goonerria

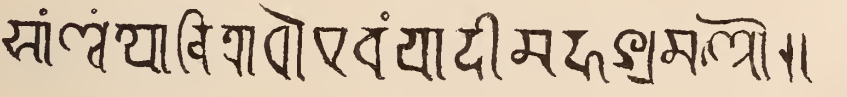


at Goonerria.

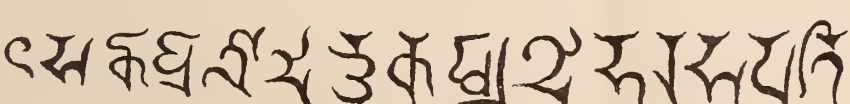
on a crowned figure at Dooba



on an ancient Budha



on a Jain relic at Amheti.



M. Kittoe del.t & Lith.t

PL. VI

travels prove interesting; at any rate I feel that I am partly carrying out the wishes of my late amiable and learned patron, James Prinsep, who oft expressed a wish that I should ramble over the district of Behar and cater for him. To be thus able (even at this late period) to carry out the views of my benefactor, is in itself delightful, but I hope that I am at the same time partly meeting those of the Honorable the Court of Directors, and of the Royal as well as of the Parent Asiatic Society. I however labour under great disadvantages, viz. want of means and want of an establishment of good draftsmen and a good pundit. I have only one of the former and of the latter none. Accurate drawings occupy much time, and a single idol will require a whole day, a group will take more, for all those which are worth drawing have most elaborate ornamental details. A complete and interesting portfolio could be filled either at Gyah or Bodh Gyah; to copy these again fairly, takes an equal if not longer time, indeed I have in a few days sketched more than can be reduced to order in as many weeks.

To enable me to do the subject of this paper justice, it would be requisite to visit the whole of the country included in ancient Behar or "Vihara," for the name has undoubtedly been derived from the numerous "Viharas" or Monasteries of which the present town of Behar, was probably the principal, though Bodh Gyah was perhaps the most sacred of the whole on account of its being the site where Sakya's miracles are supposed to have been performed; the term of doubt I apply to the miracles only, for, that such a lawgiver as Sakya existed, I see no reason to question, the accounts of his life and death when sifted of their fabulous interpolations; are too circumstantial for us to take a different view, and of such the Ceylon books seems particularly free—in this respect the Budhist works are far better than the Brâhminical; the best of these perhaps is the Mahabharut, which if likewise parted from its impurities, would prove a history of real and great events of however less remote date.

In page 517, Vol. VI. of the Journal Asiatic Society, in Turnour's examination of the Pâli Budhistical annals, mention is made of a dispute about the repairs of the "eighteen great Viharas surrounding Raja-griha." The question is, where were these said Monasteries, which, from their requiring repairs, may be supposed to have existed for a long period, even before the advent of Sakya himself,

shortly after whose death this took place? This is what I shall try to show.

Within a circle of 30 or 40 miles round Gyah, I have traced the following, of what I suppose to be the remains of Viharas, viz. Nagarjuni, Koorkihar, (Bodh Gyah,) Bukrour, (Gyah proper,) Murghat, Chillor, Booraha, and Gooncherit, Pawapuri, Burgaon or Koondilpoor, Behar, Raja-griha, Giryek, Patna, or as I find it called in an inscription, "Patalipntra," Poonaha and Dharawut: here are seventeen, of these places I have visited eleven; the great antiquity of five of them is unquestionable; of those named which I have not seen, there are five, also doubtless; therefore we may assume that we know of ten out of the eighteen of Sakya's time.

Behar, or more properly speaking "Magda," is acknowledged ever to have been the chief seat of the Buddhist religion, and of its heretical offshoots; the exact extent of this kingdom is unknown—and I fear must ever remain doubtful, though it would seem to have included (to the north) Benares, Allahabad and Ajudhia (or Oude) and to have extended to Ganjam, (Kalinga Desa) to the south, and Arracan to the south-east, at least the inscriptions, cave temples and the mention made in the Buddhist works would seem to warrant such a conclusion, though the former clearly point to the king of Magda having supreme power over all India from Caubul to Ceylon. Such must have been the case in Asoka's time and in that of Chundra Gupta. The 83,000 temples supposed to have been built by the first named were scattered all over India, and raised or repaired by command at one and the same time, upon the occasion of his conversion to the Buddhist faith. Of these perhaps the Tope of Manikyala, the caves of Bamiyan and of western India formed part; however I have here to treat of the "Vihars around Raja-griha," ten of which I have shown to have been traced with tolerable certainty.

I have given the names of seventeen sites: I will now describe those I have visited.

First of all Bodh Gyah. The extensive mound of brick, mud and hewn stones bear evidence of there having been perhaps more than one establishment, and that a great Chaitya or tope existed, the masonry of which was of brick and stone, the latter from the same quarry as all the pillars, bearing inscriptions in the ancient Pâli, and supposed to

be the work of Asoka, though I think there is reason to assign even a much earlier date to them. One of these formerly stood at Bukrower, the site of another city, and of a Vihara directly opposite to Bodh Gyah, likewise on the banks of the Lellajun, on the neck of land above the junction of the Mahana or "Mahanada," between both rivers; part of this pillar is set up in the town of Sahebgunge (Gyah) and two fragments remain at the original spot; of a fourth fragment, containing the inscription, various stories are told, but suffice it to say it is missing.

Proceeding further down the river, we come to Gyah proper; that this was originally a place of Buddhist and Jain worship, I believe there is little room for doubt, and that the worship of the Linga or Siva at this and all the Viharas, was practised for ages in conjunction with that of Budha, I think is equally clear from the innumerable Linga stones of every shape and variety found scattered about. I could wish that I had time to draw the whole variety, from the simple round stone to the richly sculptured four-headed kind called "the Chowmoorti," and "Chowmookhi" Mahadeva, though some would be unfit for our pages.

Still following the river, which is now called the Phulgoo, and at a distance of 15 miles, we reach Nagarjuni hills, the site perhaps of the chief Vihara or of several, for we read in Turnour that after the death of Sakya, the first great convocation was held before the Sutta pnnni (Sutgurba)? cave on the south of the hill, &c. which I think there is every reason to believe was the very spot now called Barabur as I have attempted to show in my notice on the caves. On the north-west end of these hills is Dharawnt, and Chundowk tank, also the site of a Vihara.

Crossing the river and proceeding some 12 or 14 miles to the south-east, and after passing the range of barren rocks which extend from near Gyah to Giryek and Raja-griha, we come to a vast mound of bricks and rubbish, called Koorkihar, undoubtedly the site of a great monastery and large town, indicated by the potsherds and the many fine wells and tanks. Koorkihar is perhaps a corruption of "Korika," and Vihara the ancient name, is said to have been Koondilpoor, but this honor is claimed also for Burgaon, the site of another large city and monastery, Chaityas, &c. to the north of the hills, distant 10 or 12 miles.

The outer enclosure appears to have been 180 paces square; the wall (of bricks) was about three feet in thickness; there must have been an

inner inclosure half the width and considerably less in length; the court yard thus formed appears to have been filled for ages with Chaityas or Budha temples of every dimension, from 10 inches to perhaps 40 or 50 feet, and to have been built one upon the other, the first being buried or terraced over to receive those of later date. There are great varieties both in form, size and materials, some of granite, others of basalt, pot-stone or chlorite, also of plain ground bricks.

There have been several rows of large images (and I should think of temples, covering them) of the Gyani Budhas, also of female figures; all have the creed "Yé Dhurma hétu," &c. engraved on them; some of the sculptures are very beautiful and perfect, and of colossal size; the whole country is strewed with images and fragments: excavation and search in this mound would enable us to fill our own and other museums, and no doubt lead to some rational conclusion as to the progress of Buddhism up to its annihilation, for whilst digging out a miniature Chaitya I found the plynth of one with an inscription (No. 3 of my late notice of Inscriptions) which proves it to belong to one of the Pál Rajahs of Bengal who were known to be heretics. Buchanan and other travellers have noticed these innumerable small temples or models (figs. ) heaped under every fig-tree throughout the district, the like also occur (though belonging to the Jains), at Agrahat in Cuttack, but for what purpose they were intended no one had ventured to conjecture; chance however, at this place, has discovered the secret. The inscription abovenamed as well as other brief sentences I have found, show them to have been funeral monuments, our learned fellow-member Mr. Hodgeson of Nepaul has kindly communicated much valuable information to me, which has served to confirm my views; he mentions that in the valley of Nepaul these numerous small Chaityas, surrounding a larger, is by no means uncommon. If again we look to Rangoon, we find the same to exist, but I shall advert more particularly to this subject in a separate paper and give some illustrations.

Quitting Koorkihar to return towards Gyah, and after travelling three miles to the south-west, the hamlet of Poonaha is met with, situated between two rocky eminences, and having a large tank to the north; to the south of the village is a handsome Budhist temple, the most perfect of any I have met with; indeed the only one save that of Bodh Gyah which is of comparatively modern date, it possessed the most striking

picture of the style, viz. a solid round tower with a niche to each of the cardinal points, formerly ornamented with figures of four of the five Budhas, fragments of which are strewed about, and there are likewise many others and much brick rubbish, denoting the existence of some large building in former times; on the rock to the west is a fine shaft of granite, in the north face of which is an empty niche; there appears to be no inscription.

Taking Gyah again as a starting point and proceeding to the south-west four miles beyond Chirki, and on the right bank of the Morhur, we come to the site of a large city and citadel, &c. and no doubt of Budhist and Saiva monasteries, on the two hillocks or rocks by the river side, which are covered with bricks, this place is called Murhut.

After crossing the river bed and directly opposite, is a high mound called Chillor, on which is a mud fort; this mound is the site of an ancient city of great extent; a quarter of a mile to the south are several mounds of earth and bricks; two are very conspicuous; one seems to have been a Dagope, the other has lately been opened for the bricks and several Budhist idols of beautiful workmanship found; one of Siva is of great beauty, large dimensions, and quite different from any other figures I have ever met with. I hope to give an illustration of this figure hereafter; it took me many hours to draw. There are other mounds which it would be well worth while to open.

About two miles to the north is a small hill called "Matka," where there are the remains of a Chaitya; it was from this spot, I am told, that the small image of Budha, I sent a drawing of last month, was brought.

Proceeding due west for four miles, we come to a place called "Booraha." Here are several sites where there have been Chaityas, and a large Vihara, there is a natural curiosity which has no doubt been always a place of sanctity. There is a hollow spot beside a nullah where there are many powerful springs of apparently mineral waters, which come up vertically through the soil and discharge gas, the same as hot springs; the temperature of these is said to vary, much as well as the volume of water and gas discharged.

Two miles or less to the west of this place is a small cluster of hills called Manda, around which pottery and bricks are strewed for a great distance; this is the site of another large town. There have been

Budha and Siva temples on the rocks, of which traces only are left; under a tree are heaped fragments of idols of all ages, amongst them were two small figures of sows with seven sucking pigs on their hind legs; one of these sculptures I have secured for the Museum.

Leaving Manda and proceeding south-east towards Seerghatty for three miles, we reach a place called "Goonerria," the site of a large town and of a Vihara, the name of which appears from inscriptions to have been formerly "Sri, Gooncherita." There are numerous small Budha and Siva idols collected around a very fine figure of Budha of large size, on the throne of which is the annexed inscription plate.* In the same plate I have given some shorter inscriptions from smaller idols: there has been a fine tank to the north of the town and several Linga temples near it.

One of the inscriptions is written on the lotus leaves of the throne of a Budha; it seems to be what is termed a Muntra, and reads perhaps three ways.

From this place we return to Seerghatty, which is six miles to the south-east, passing on our way a large tank and mound called Kurmaine; a mile further south of which are two other mounds; one is very extensive and elevated, but there is neither name nor tradition to guide us to any conclusion.

Such are the sites I have visited. I must here remark with reference to ancient sites, that it is much to be regretted that when the revenue surveys take place accurate notes should not be made of all the sites of ancient towns and villages, the high mounds of which are every where to be seen in India—this province in particular, where the most important events of early history have occurred.

In the north-western provinces above Agra, and as far as Lahor, there are many remarkable spots, but of all of these some legend more or less absurd, though instructive in a measure, exists. In the Jallunder Doaub might not this plan be adopted as a survey is being made?

Before I conclude this brief notice, I must not forget to mention Pawapuri, which I am told is the site of a very large city. The present village is inhabited chiefly by Surrawucs or Jains, who claim the place as a seat of that sect; according to a clever Bengálí pundit, Pawapuri was the capital of Magda in Chundra Goopta's time, and it was here

* We have been obliged to omit this inscription in the plate for want of space.

he received Alexander's ambassador Antiochus; this is strange, and if correct, we shall again be at fault as to Asoka and the pillar inscriptions. I beg to invite attention to this subject.

I shall never feel satisfied till I shall have seen Pawapuri, Burgaon, Giryek, Raja-griha and Behar, and several other places which have been pointed out to me. I hope the time is not far distant; until then I must take leave of the Viharas.

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*Geological Notes on Zillah Shahabad, or Arrah.—By Lieut.* W. S. Sherwill.

The southern portion of Zillah Arrah, or Shahabad, is occupied by an elevated plateau of table-land, forming the eastern extremity of the Kymore range of sandstone mountains. From whichever side it is viewed, it presents a series of high bluffs, or precipices, similar to those so often seen on sea coasts; these precipices, varying from 300 to 1500 feet in perpendicular height, are supported by bulging buttresses covered with almost impenetrable bamboo forests. The summit of this extensive plateau is covered with forests of Ebony, Saloogunje, a few Saul, and a variety of other trees, and has several ranges of low hills traversing it in various directions; many rugged and deep valleys indent the northern face, which is of a much less elevation than the southern face. These valleys, extending for ten or twelve miles into the body of the table-land, gradually contract in width from one mile to a few hundred yards, similar valleys branching off from them laterally. The ends of these valleys terminate abruptly in mural precipices, down which, during the rainy season, mountain streams are precipitated with a deafening roar. These valleys present to the traveller views of exceeding beauty: in many spots where they happen to be only a few hundred yards across, the deep shade at mid-day caused by the dense foliage and perpendicular walls a thousand feet in height, is quite a phenomenon for India. The most extensive of these valleys, or as they are styled by the natives k'hohs, is that through which the Doorgoutee river flows; a more beautiful spot it is difficult to imagine; at the spot where the Doorgoutee falls from the table-land, the valley named Kudhur-k'hoh, is only a few hundred feet in width, dark, deep and cold; immediately

below the falls the valley is darkened by an immense grove of mango trees, which extends for two miles along the bosom of the valley. Proceeding to the northward the valley deepens rapidly from 700 to 1,000 feet, sometimes expanding to a mile in width, sometimes contracting to a few hundred yards; diverging from this valley are numerous smaller k'hohs, almost impenetrable to man, but all affording excellent shade and pasture to large herds of buffaloes, which help to supply the Mirzapoor and Benares markets with Ghee. After having traversed about eight miles of this valley the Soogeea-k'hoh strikes off west and extends into the mountains for about ten miles; in this valley are situated the extraordinary limestone caves, a surveyed map of which appears as a vignette on the accompanying map.

*Sandstone.*—This mineral forms the grand mass of the table-land, and I am inclined to think overlies an equally extensive bed of mountain limestone. It is to this sandstone that the mountains owe their grand appearance, displaying as it does the most tremendous precipices; it varies in color in almost every specimen; it is exceedingly hard, strikes fire with a steel readily, is ponderous and tough, fracture conchoidal; that it is of a durable nature is proved by the buildings at Sasseram, Rhotas and Shergurh. The sandstone in some of the buildings in the two last named places cannot have been quarried and used for building less than 800 years ago and yet is still as perfect as the rock from whence quarried. It is universally quarried wherever a town or village requiring stone happens to be near the hills. The colors are principally white, red, pink, striped and grey, and is used for all sorts of building purposes, handmills, sugarmills, pestles, mortars, steps, door-posts and a variety of other domestic purposes: to it, the fortresses of Rhotas and Shergurh are beholden for all their palaces, and battlements; Sasseram for the greater part of its city, the tomb of Sher Shah is built of it, as also the bridge over the Kurrumnassa river at Musehee; on the northern face of the table-land it is of a softer texture; here it is extensively quarried for a variety of purposes.

The vast precipices exhibited in this sandstone admirably display the horizontal formation of the mass; one of the precipices in the fort of Rhotas I found by measurement to be 1,300 feet, a sheer mass of stone without a bush, or tree on its surface; it is situated close to an overhanging mass of building known as the Hujjam's palace, a few minutes'

walk from the gateway leading up from Rajghat. The echo at this spot, which is a complete amphitheatre of precipices, is very distinct and grand, giving seven distinct responses to several syllables; the report of a gun reverberates like thunder; the sandstone at this spot is of a dark red, an overhanging rock at this spot enabling a person to look over and to fully contemplate this fearful abyss. At the foot of a small detached hill at Sasseram a very curious apparently horizontal column, or formation in the sandstone appears, which has been described by me in the 163d No. of the Journal of the Asiatic Society at pp. 495—497.

*Mountain Limestone.*—Next in order, is the limestone, and from the fact of its appearing in so many places, though far apart, separated even for many miles and yet always appearing of the same structure, I am inclined to think that it penetrates in an unbroken stratum under the sandstone. Start, for instance, from the eastern face of the table-land, where the limestone forms an unbroken bed from the foot of the Fortress of Rhotas to the village of Dhowdand, a distance of 30 miles north, and proceeding in a north-westerly direction at the distance of thirteen miles we meet with the same limestone in the valley of Soogeea-k'hoh at the depth of a thousand feet below the summit of the table-land and in company with the limestone Gupta caves; nine miles further in the same direction, it again appears at Buranoon in two low detached hills, much lower than their sandstone neighbours; four miles further north it again appears in a low hill at Nowhutta, then turning nine miles to the west, it again appears at Musehee; beyond that, I lost all trace of it, but I have little doubt that from the fragments that are washed out of the numerous k'hohs, that it will be shown to exist wherever the sandstone has been deeply penetrated. To the west of Rhotas limestone appears cropping out as two small hillocks situated in the forest under the lofty sandstone precipices bounding the southern face of the mountains. It also appears at the foot of the sandstone at the western entrance of the large valley named Doomur-khar, on the northern face of the hills about 12 miles south-west of the town of Sasseram. This limestone is extensively quarried wherever it appears, and from Tilothoo on the banks of the Sone, large quantities are burnt for lime and taken down the river in boats to Dinapore, Patna, Arrah, Chupra and to other large towns.

Specimens of this stone were sent by me to Calcutta in December 1844, hoping they would prove useful as Lithographic stones, but they were declared to be too siliceous and too thin for any practical purposes; but I feel convinced, that any one who could command time and had the inclination, would be rewarded by finding some good and serviceable beds of this most useful article.

In the valley named Soogeea-k'hoh, in a jungly and wild spot, are situated the Gupta limestone caves, which penetrate to a great distance into the mountain; the hill Khyrwars insisted that the low passages which are met with after penetrating the hill for about 300 yards and through which it is almost impossible for a human being to penetrate, communicate with the other side of the spur of the hill, which is about half a mile broad, (vide map) and upon going round to the eastern side I saw the opening, but masses of rock fallen from the roof having blocked up the entrance, I was content with viewing it from the distance of a few hundred yards across a deep ravine. The cave is about ten or twelve feet in height, eighteen or twenty feet in width, and has a few stalagmites and stalactites, worshipped by the Hindus at particular periods of the year. I penetrated these caves for about 500 feet. The strata of limestone in the caves are very narrow and flinty, much waved and contorted, and in some parts of the roof appear to have been forcibly torn asunder, or as if the sides of the cave had sunken into the earth, the roof splitting in the middle to allow of such an arrangement.

The general appearance of this limestone is of a dark blue slate color, fracture conchoidal, strikes fire, difficult to break; when burnt forms the best lime, is quite free from any animal exuviæ, and impalpable in texture. In a few cases it is nearly black, also of a pale yellow or buff; the latter appears to be in a state of decay and is not burnt for lime.

*Chalk.*—Associated with the limestone, chalk is found in a great many spots; wherever known to exist it is extensively quarried and exported. By the natives it is known as Khari Muttee, but is very different from the English chalk. It is found in thin strata of a few inches thick, is unctuous to the touch; has a shiny appearance, but soils the fingers; a small detached hill at the foot of Rhotus is composed almost entirely of this mineral.

*Hornstone.*—This mineral is found in several spots underlying the sandstone; it is met with at a waterfall named Tootala Koond, on the

eastern face of the table-land, four miles west of Tilothoo, also in the Sone river, eight miles west of the Koel river, where jutting into the river its causes rapids; and again at Jadonathpoor, four miles from the Mirzapoor and Shahabad boundary.

*Iron Ore.*—This is found in large quantities at and near to Soorkee or Sirkee, so named after the red appearance of the soil, which for miles round about is highly impregnated with the red oxide of Iron, and which is situated on the southern edge of the table-land. The ore lies scattered over a large surface of ground, extending for about four miles east and west, what may be under the surface remains to be seen. The principal manufacture of iron from this ore is at Sunda, a village two miles from the edge of the table-land. Specimen 115 is the ore pounded and broken ready for fusion; 116 is the iron as produced after once smelting, in which state it sells for its weight in rice; 117 is the ore three times smelted, and now sells for one and a half ana for a kucha seer, or three anas for a pukha seer. Iron ore appears scattered all over the table-land but in small and insignificant quantities generally. At a spot named Sulya, at the head of the Mukree-k'hoh valley, are immense heaps of iron slag, scattered here and there amongst the hills and in the jungle, and by the hill men said to be remnants of the extensive iron founderies in the days of the now almost extinct races of Khyrwars and Cheeroos, a peculiar and now scattered race, but who profess once to have been a powerful people, having their own kings and princes ruling over them; in appearance these men are very like the Kols, Bheels and Gonds of central and western India; in their customs, religion and roving habits they also resemble them, and living in the same range of mountains, the Vindhyan range, as their confréres, there is little doubt that they are one of the scattered remnants of the races who formerly inhabited the Gangetic plain long since driven from that fertile tract by a more civilized race.

*Indurated Reddle*—Geru, (Hindustáni.)

Large beds of this mineral are situated on the summit of the table-land, the principal ones being at Mundpa and Chuthaus; great quantities are carried away by the Pussarees on bullocks and exported to Benares, Patna and other large cities; it is used in dyeing, as a pigment, and for a variety of other purposes. The beds extend for about two miles north and south, and the spots from whence extracted are

usually six or seven feet below the surface. The value of a bullock load at the spot costs about three anas.

*Laterite.*—Large quantities of this curious mineral are seen scattered about on all parts of the table-land, but nowhere did I find it forming strata or beds.

*Alum ore—Martial pyrites—Sulphate of Iron—Potstone.*

Beds of the above mentioned minerals, occur associated together in five different spots in the hills, viz. two mines in the Koriyari-k'hoh, under the Fortress of Rhotas, one at Telkup four miles north of Rhotas, one in the valley of the Doorgoutee river, and one in the Soogeak'hoh ; these two last mines, I believe are totally unknown to Europeans, and would be well worth exploring. A description of one mine will suffice for the whole, as neither in quantity, quality or relative situations, or in arrangement of strata do they differ in any one respect. At the foot of the sandstone precipices, from eight hundred to a thousand feet in height, these mines appear as dark burnt masses of horizontally stratified rocks, of several hundred feet in length and from fifty to two hundred feet in vertical thickness. The arrangement of strata is as follows : sandstone a thousand feet, indurated potstone thirty feet, dark schistose rock or ore of alum ten or twelve feet ; what may be under this, remains to be discovered. The ore when exposed to the air becomes covered with a yellow spongy efflorescence, which has a small trace of sulphur in its composition ; associated with this ore is another, mostly in small irregular masses, similar to the odds and ends of stone lying about a stone cutter's yard ; it is a black, heavy martial pyrites or sulphuret of iron ; the saline crystals on this ore, some a quarter of an inch in length, are of a beautiful pale blue color, deliquesce upon the slightest exposure to moisture, and when shut up in a box or bottle, the crystals dissolve, and re-crystallize into soft and light masses resembling snow, which under a lens display a most elegant assemblage of delicate and perfectly formed white crystals. These crystals dissolved in a decoction of gall-nuts or black tea make an excellent clear writing ink.

These mines are not worked to any extent ; only a few maunds of sulphate of iron, under the native name of Kussis, being made during the year and exported to Patna and Dinapore, where it is used as a dye for Calico, and in the manufacture of leather.

I was informed by the zemindars at the mines of a curious circumstance connected with this ore, which is, that the ore never looses its qualities of yielding the sulphate, though washed and rewashed year after year, during the process of extracting the salt; like the Soda lands in Behar, it appears to have the power of re-producing what, to all appearance, had been expended.*

*Potstone.*—Large quantities of this useful stone are found associated with the alum ore; also in spots where the alum does not exist. At the village of Pitteean, on the northern face of the hills, a very fine potstone of a dark blue colour is quarried and exported to Benares for the manufacture of Linggas, images, pestles, mortals, bowls, &c. It underlies the sandstone, and extends for about two hundred yards along the base of the hills. In the valley of Doorgawtee I picked up a considerable quantity of dark black stones used by goldsmiths as touch-stones in testing gold.

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*Queries on the Archæology of India.—By the Rev.* James Long.

In my occasional researches into the Archæology of this country, the following subjects have frequently presented themselves as requiring elucidation—perhaps through the medium of this Journal light may be thrown on them by correspondents in various parts of the country—some of them may afford a very useful theme for Essays.

1. What are the grounds for believing that the aborigines who now occupy the Hills of Birbhúm, Rajmahal, Shergatty, &c. ever lived in the plains of Bengal?

2. Any historical documents giving a description of the cities, population, &c. formerly in the Sunderbunds.

3. When was the temple of *Kali Ghat* built? What circumstances led to its being established in that particular locality?

4. What accounts are there of the condition of *Dacca* in the time of the Romans?

* This admits of easy explanation. The one is a sulphuret of iron, which by exposure to air and moisture, gradually absorbs oxygen and is partially converted into the sulphate. On washing out the latter, the remaining insoluble sulphuret, exposed to the same influence, will continue to yield repeated supplies of the sulphate till the whole be exhausted.—Eds.

5. What was the state of Bengal about the commencement of the Christian era?

6. Why was *Nudiya* selected as a seat of Sanskrit learning? What accounts have we of it before the time of Lakhman Sen in the 13th century?

7. *Tamluk* was a seat of Buddhist learning in the 4th century—have we any other traces of Buddhism in Bengal proper at that period? Was Buddhism then in the ascendant at the court of Gaur?

8. The causes by which *Tirhút* became such a seat of learning?

9. What were the reasons of the degeneracy of the Bengal bráhmans before the time of Adisur? Was it in any degree owing to their being infected with Buddhist notions?

10 What language was spoken at the Court of Gaur previous to the Musalman invasion? Was it Hindí or Bengálí or Sanskrit?

11. What is the earliest authentic account we have of Bengal?

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*Specimen of the Language of the Goonds as spoken in the District of Seonee, Chuparah; comprising a Vocabulary, Grammar, &c., by* O. MANGER, *Esq., Civil Surgeon, Seonee. (Communicated by Lieut-Col.* SLEEMAN).*

| *English.* | *Goondi.* | *English.* | *Goondi.* |
|---|---|---|---|
| Head, | Tulla. | Eyes, | Kunk. |
| Forehead, | Kuppar. | Nose, | Mussúr. |
| Eyebrows, | Kunkúnda. | Ears, | Kohi. |
| Eyelids, | Mindi. | Cheeks, | Korir. |

* A short vocabulary of the Goond language was published in the Journal, No. CXLV; but the present is much more copious and valuable. It is greatly to be desired that gentlemen engaged in ethnological researches among the Hill tribes, whether of Central India, or of our Northern or Eastern frontier, would concur in the adoption of a uniform and well selected vocabulary of English words for translation into the langauges of these interesting people. This would confer great additional value on such collections, which would thus admit of ready comparison one with another; whereas from the absence of any such system, it is often no easy matter to find in any two independent vocabularies half a dozen words that admit of collation. We purpose publishing a vocabulary of the kind for circulation among such as have the opportunity of prosecuting these researches, the value of which can scarcely be overrated, and shall be thankful in the meantime for any hints upon the subject that we may be favoured with.—EDS.

| *English.* | *Goondi.* |
|---|---|
| Lips, | Sewli. |
| Mouth, | Túdhi. |
| Tongue, | Wunja. |
| Teeth, | Pulk. |
| Chin, | Towrwa. |
| Throat, | Gúnga. |
| Neck, | Wurrur. |
| Shoulders, | Sutta. |
| Nails, | Tirrís. |
| Armpit, | Káukli. |
| Stomach, | Pír. |
| Loins, | Nunni. |
| Entrails, | Puddú. |
| Back, | Múrchúr. |
| Arms, | Kayik. |
| Thighs, | Kúrki. |
| Navel, | Múd. |
| Knees, | Túngrú. |
| Legs, | Potri. |
| Feet, | Kál. |
| A male, | Mándsa. |
| A boy, | Perga. |
| An infant, | Chowa. |
| A young man, | Pekúr. |
| An old man, | Séna. |
| A woman, | Maiju. |
| A girl, | Pergi. |
| A young woman, | Rayah. |
| A married woman, | Lunguriar. |
| A chulah, | Saidál. |
| A towa, | Pinka. |
| A hundi, | Kúrwi. |
| A ghurra, | Mullah púrah. |
| A cup, | Múché. |
| A chumcha, | Súkkúr. |

| *English.* | *Goondi.* |
|---|---|
| Fire, | Kis. |
| Firewood, | Kuttia. |
| Huldi, | Kúmka. |
| Salt, | Sowur. |
| Oil, | Ní. |
| Ghee, | Pální. |
| Milk, | Pál. |
| Butter, | Nenú. |
| Mare, | Krúp. |
| Cow, | Múra. |
| Heifer, | Kullor. |
| Calf, | Paia. |
| Bullock, | Koda. |
| Udder, | Tokur. |
| Horns, | Kor. |
| Buffalo, | Urmi. |
| Horse (large), | Perrál. |
| Tattu, | Chúddúr. |
| Wheat, | Gohuc. |
| Otta, | Pindi. |
| Bread, | Gohuc sari. |
| Sujee, | Jowha. |
| Chenna, | Hunnain. |
| Dol, | Kússeri. |
| Rice, | Paraik. |
| Cooked rice, | Gáto. |
| Water, | Er. |
| To drink, | Udána. |
| Bring water, | Ertera. |
| To bathe, | Erkiana. |
| To wash hands and feet, | Núra. |
| To eat, | Tindana. |
| Male buffalo, | Urmi. |
| Female buffalo, | Bodé. |
| He goat, | Buckrál. |

| *English.* | *Goondi.* |
|---|---|
| She goat, | Peti. |
| A dog, | Naie. |
| A cat, | Bhongal. |
| A wild cat, | Wurkar. |
| Fowls, | Kúr. |
| Cock, | Gungúri. |
| Chickens, | Chíwar. |
| Eggs, | Mesuk. |
| Mice, | Ulli. |
| Serpents, | Turrás. |
| Fish, | Mink. |
| A tiger, | Púlliál. |
| Come hither, | Hikké wurra. |
| Stop, | Udda. |
| Sit down, | Ud chíhun. |
| Go on, | Dut. |
| Go, | Hun. |
| To kneel, | Múrsána. |
| To go to bed, | Nurmána. |
| To walk, | Takána. |
| To run, | Wittána. |
| To laugh, | Kowána. |
| To sing, | Wúrána. |
| To dance, | Yendána. |
| To speak, | Wúnkana. |
| To fight, | Turritána. |
| To beat, | Jittána. |
| To weep, | Urtána. |
| Bamboo, | Wuddú. |
| Buckul, | Murrús. |
| Grass, | Jari. |
| Leaves, | Aki. |
| Posts, | Serrák. |
| A tree, | Murra. |
| A root of a tree, | Sír. |
| A flower, | Púngar. |

| *English.* | *Goondi.* |
|---|---|
| A mango flower, | Irú. |
| A mango tree, | Irú murra. |
| A bear tree, | Ringa. |
| A tamarind tree, | Chitta. |
| Sagun tree, | Teka. |
| Peepul, | Ali. |
| Not, no | Hillé. |
| Yes, | Hingé. |
| Near, | Kurrún. |
| Before, | Nunné. |
| Within, | Rupper. |
| Between, | Nuddúm. |
| Behind, | Pija. |
| Above, | Purro. |
| Beneath, | Sídi. |
| On account, | Lané. |
| Hither, | Hikké. |
| Thither, | Hukké. |
| Now, | Indéké. |
| When, | Boppór. |
| Here, | Iga. |
| Thus, | Ital átal. |
| Daily, | Dink. |
| One, | Undí. |
| Two, | Rund. |
| Three, | Múnd. |
| Four, | Nalo. |
| Five, | Saiyan. |
| Six, | Sárún. |
| Seven, | E'ro. |
| Eight, | Armúr. |
| Nine, | Urmah. |
| Ten, | Pudth. |
| Twenty, | Wísa. |
| Fifty, | Punnás. |
| Hundred, | Núr. |

Singular nouns form their plural by the addition of nk—as,

| | | |
|---|---|---|
| Kora, | a horse, | Koránk. |
| Konda, | an ox, | Kondánk. |
| Múra, | a cow, | Múránk. |
| Mánda, | a man, | Mándsánk. |
| Maiju, | a woman, | Maijúnk. |
| Neli, | a field, | Nelnk. |
| Rún, | a house, | Ronk. |

Gender.—There is nothing to distinguish the genders except that the females of certain animals have a different name from the males—as

| | | | |
|---|---|---|---|
| Bílál, | a she cat, | Bokál, | a tom cat. |
| Yeti, | a she goat, | Buckrál, | a he goat. |
| Puddhi, | a sow, | Ikundál, | a boar. |
| Kor, | a hen, | Gogorí, | a cock. |

Nouns are thus declined.

*1st Declension.*

| | Singular. | | Plural. | |
|---|---|---|---|---|
| Nominative, | Kora, | a horse. | Koránk, | horses. |
| Genitive, | Korana, or, Korada, | of a horse. | Koránkna, | of horses. |
| Dative, Accusative, | Korát, or, Korátún, | to a horse. | Koránkún, | horses. |
| Ablative, | Korátsún, | by a horse. | Koránksún, | by horses. |

*2d Declension.*

| | | | |
|---|---|---|---|
| Nominative, | Gohk, | wheat. | No Plural. |
| Genitive, | Gohkna, | of wheat. | |
| Dative & Accusative, | Gohkún, | to wheat. | |
| Ablative, | Gohksún, | by wheat. | |

*3d Declension.*

| | | | |
|---|---|---|---|
| Nominative, | Pindi, | otta. | No Plural. |
| Genitive, | Pindina, | of otta. | |
| Dative & Accusative, | Pinditún, | to otta. | |
| Ablative, | Pinditsún, | with otta. | |

Adjectives and Participles are indeclinable.

PERSONAL PRONOUNS.

Singular

| | | | | | |
|---|---|---|---|---|---|
| Nák or nunna | I, | Imma | thou, | Wúr | he. |
| Nowa | my, | Niwa | thy, | Wunna | his. |
| Nakun | me, | Nikún | thee, | Wúnk | him. |
| Náksún | by me, | Niksún | by thee, | Wúnksún | by him. |

Plural.

| | | | | | |
|---|---|---|---|---|---|
| Mák | we, | Imát | you, | Wúrg | they. |
| Mowan | our, | Miwan | your, | Wúrran | their. |
| Mákún | us, | Mekún | you, | Wúrrún | them. |
| Máksún | by us, | Miksún | by you, | Wúrrúnsún | by them. |

| *Demonstrative.* | | *Interrogative.* | | | |
|---|---|---|---|---|---|
| Singular. | | | | | |
| Yirg | this, | Búr | who. | Ud he, she, it. | |
| Yenna | of this, | Bona | whose, | | |
| Yenk | this, | Bonk | whom, | Ten } | him, her, it, |
| Yenksún | by this, | Bonsún | by whom, | Táne } | them. |
| Plural. | | | | | |
| Yirg | these, | Búrk | who. | | |
| Yirran | of these, | Boran | of whom. | | |
| Yirkún | these, | Bonk | whom. | Tunna his, hers, theirs. | |
| Yirrúnsún | by these, | Bonsún | by whom. | | |

Indefinites—Bore, some one, Bara, something.

Singular—Bora, what? Plural Barauk, what?

VERBS.

| | | |
|---|---|---|
| Imperative, | Wunka | speak. |
| Infinitive, | Wunkunna | to speak. |
| Present Part. | Wunki | speaking. |
| Past Part. | Wunktúr | spoken. |
| Conjunctive Part. | Wunksi | having spoken. |

*Present Tense.*

| | |
|---|---|
| Nunna wunki, | I speak. |
| Imma wunki, | thou speakest. |
| Wúr wunki, | he speaks. |
| Már wunki, | we speak. |
| Imar wunki, | ye speak. |
| Wúrg wunki, | they speak. |

*Imperfect Tense.* *Future Past.*

Singular.

Nunna wunkundán,
Imma wunkundi,
Wur wunkundúr,
} I was speaking, &c.

Nunna, wunksi howe,
Imma, wunksi howe, &c.
same for all persons.

Plural.

Mar wunkundúm,
Imar wunkundir,
Wurg wunkundúrg
} I shall have spoken.

*Perfect.*

Singular.

Nunna wunktán, I spoke
Imma wunkti.
Wúr wunktúr.

*Imperative Mood.*

Wunka, speak thou.

Plural.

Már wunktúm.
Imar wunktir,
Wúrg wunktúrg.

Wunkar, speak ye.

*Pluperfect.*

Singular.

Nunna wunksi,
Imma wunksi,
Wúr,
Plural.
Mar, &c.
Imar,
Wurg,
} I had spoken, &c.

*Future.*

Singular.

Nunna wunkíka,
Imma wunkíki,
Wúr wunkanúr,
Plural.
Mar wunkíkúm,
Imar wunkíkir,
Wúrg wunkanúrg,
} I shall speak.

*Future Indefinite.*

Singular.
Nunna wunkundán howe,
Imma wunkundi howe,
Wúr wunkundúr howe. } I shall be speaking.
Plural.
Már wunkundir howe,
Wúrg wunkundúrg howe,

*Second Example of a Verb.*

Jim, beat thou. jimpt, beat ye.
Jiána, to beat.
Jítúr, beaten.
Jía, beating.
Jísi, having beaten.
Nunna jía, I am beating.
,, jindán, I was beating.
,, jítán, I beat.
,, jísi, I have beaten.
,, jeka, I shall beat.
,, Jíndán howe, I shall be beating.
,, Jísi howe, I shall have beaten.

The verbs seem to be conjugated alike, whether transitive or intransitive, and to have no passive voice, nor is there anything corresponding to the Hindustáni particle ني. No aorist tenses or subjunctive mood.

THE LORD'S PRAYER.

Mowa Dowiál budrut purro muddár-warré ; Níwa purrol dhurmát-mál
*Our Father heaven above inhabitant ; Thy name hallowed*
aie. Niwa rájpát waie. Niwár biehar itál budrít purro mundar atál
*be. Thy kingdom come. Thy will as heaven above is, so*
durtit purro áud. Mowa piálda sarín neut mak punkíut : unde
*earth on be. Our daily bread to-day to us give : and*
bahún már upnún reina dherrúm kísia-turrúm, atal imma mak dherúm
*as we our debtors forgive, so thou to us trespasses*
kísiut, unde mákún miwa jhara-jherti te ninni wátnát unde burrotsún
*forgive, and us into thy temptations do not throw, and from evil*
mak pisihát, báríke niwa rájpát, unni níwa bul, unni niwa dhurmát
*us deliver, for thy kingdom and thy power and thy glory*
mal sudda mund ital ánd.
*established remain, so be it.*

THE TEN COMMANDMENTS.

Purmesúr itál iltúr.

*God thus spake.*

1. Kodawund níwa Purmesúr nunna áudúr, namúnné níwúr Deo boré
*The Lord thy God I am, besides me thy gods not*
hillé audúr.
*any shall be.*

2. Apun láne kítál penk, bore budde ai jins itál budráte
*To yourselves graven images, any sort of creature such as in heaven*
nuni dhurtile, unni yeté mundar, atál miuni kemut imát wúrea kál
*and on earth, and in sea are, such do not make—you their feet*
minni kurmát, unde wúrrún rámakisní minni kemát; iden laine lainé mák
*do not embrace, and their obeisance do not perform; because to me*
án mundur, únde dourana pápún sáte chawún purro sásiut dusta-tona,
*jealousy is, and father's sins for children on, punishment inflict,*
nati unni punti-lor purro, wurg admirun bor nowa
*grand children and great-grand children upon those men who my*
bairi munda, undé mát awén—mén sun hazarón nakún mink
*enemies are, and I from among those a thousand (who) me as*
púndatúrg, unde nowa wunktán purro taki-turg, nunna wurrún
*a friend take, and my commands according to walk, I on them*
purro durmi kia tona.
*my shadows throw.*

3. Purmesúr-da parrol labarít purro minni yeumát, tin-lainun papi
*God's name in falsehood do not take, for guilty*
ainún wúrg mánwál bór Purmesúr-da parrol labarit purro
*will be that man who God's name in falsehood*
yetanúr.
*shall take.*

4. Purmesúr-da piál purriát unde tan swáf irát sarrún pialk bunni
*God's day remember and it holy keep; six days daily*
búta kimpt, unde sub miwa kám kimpt, át ernúda piál Purmesúr-da
*work do, and all thy labour perform, but seventh day God's*

piál mundur, ud piál imma buttiai kám kemut, imma
*day is, that day thou any kind of work do not make, thou*
unni níwa pergál unni níwa pergól, unni níwa rútkawál unni níwa kúnda,
*and thy son, and thy daughter, and thy servants, and thy cattle,*
unni niwa pownalúr rún mundúr; tin laine Purmesúr sarún pialk
*and thy stranger (thy) house dwelling; because God six days*
né budra unni dherti unni sumdúr unni cheitkunné jinsk iwíté
*in, heaven, and earth, and sea, and each creature in them*
mundatán, awén kítur, nude yerrún piál rúm túr, Tuilaine id piáltún
*existing, them made, and seventh day rest took, therefore that day*
Purmesúr dhurmát-mal tane kítúr.
*God hallowed established.*

5. Imma upnón babonna unni awunna sewa kimpt, ten sún niwa
*Thou thy father's and mother's service perform, therefore thy*
yarbúl durtit purro Purmesúr níkún sítúr, parál aud.
*life, the land upon, God to thee has given, prolonged may be.*

6. Imma máuwán minni jukmát.
*Thou a man not kill.*

7. Imma páp minni kema.
*Thou adultery not do.*

8. Imma kulwein minni kema.
*Thou theft not do.*

9. Imma upnón biganún purro labari gohai minni sena.
*Thou thy neighbour against false witness not give.*

10. Imma upnon biganún-ta rota lob minni kema. Imma upnón
*Thou thy neighbour's house covet not. Thou thy*
biganún-ta maigú-na lob minni kema, únde wunna rútkawál únde
*neighbour's wife covet not, and his house-servants, and*
wunna kúnda, innui wunnal guddál unde buttié-jins, upnon biganún-na
*his ox, and his ass, and any thing, that thy neighbour's*
mundar tan purro lob minni kema.
*is it upon covetousness not make.*

Sandsumjee-na sáká.

*Sandsumjee's Song.*

Sandsumjee-na sáka kuyát, ro Bábán,
*Sandsumjee's song hear, O Father.*

Sark ask kítur, Sing-Baban hillé púttúr,
*Six wives he took, Sing-Baba not born,*

Yirrún ask kítúr, awíté Sing-Bábán autarietúr.
*Seventh wife took, by her Sing-Baba was conceived.*

Aulár yétana Baban púnwaké.
*Of her pregnancy Father was not informed.*

Taksítún Baban, tunwa pari sumpté kiálé
*Departed Father, his kinsfolk being assembled together*

Bariké bouke aie penk putta sika.
*For this reason to some one it happened to offer a sacrifice to a God.*

Hikké Sing-Baban putti-lé-ai latur.
*Hereupon Sing-Baba began to be born.*

Loro askna sowatí, sarún mutta.
*Small wife was sleeping, the other six were there.*

Awítun, koti aunáté tulla dúrissí, "assun inga chawa putti,"
*Said they, grain basket's mouth into, her head let us introduce in our house child is born,*

Ud it, ahé kint annáté tullatún durritún,
*So said, so done, into mouth her head introduced,*

Unni Sing-Baban púrtúr,
*And Sing-Baba was born,*

Sing-Baban techi urmí sarté michítun,
*Sing-Baba having taken up, into Buffaloe's stable threw,*

Unni nai-píla taniga dussitún,
*And a puppy instead placed,*

Unni ittúr, nai-júla wattoni,
*And said, a puppy is born,*

Naí-pílla misáte ; tánk kawâl kédé kiáté taré kitún,
*A puppy having brought forth, thence crows to frighten they set her,*

Sing-Baban, urmi ittún, ké yenk borré minní jemát,
*Sing-Baba, buffaloes said, that him let none hurt,*

Na tokar jémát, unni tordé pál púrsi ten úhát.
*Nor blow strike, and into his mouth milk having poured him suckled.*

Au sarúngé ásk whúr setún, pistúr ka sátúr?
*The six wives said, let us go and see him, is he living or dead?*

Sing-Baban gursundúr.
*Sing-Baba was playing.*

Augrul úndé téchi múra na sarkté nuchitun.
*Thence indeed having taken him into cow's stable threw.*

Múrai ittún Sing-Baban boré jarniut
*The cows said Sing-Baba let no one hurt*

Natokar jemát tordé pál pírsi ten úhát,
*Or blow strike, into his mouth milk pouring him suckled,*

Agra kubbér tullick sétún, satur ke pislúr?
*Therefore information they sent to seek, is he living or dead?*

Sing-Baban gursundúr.
*Sing-Baba was playing.*

Agrál téchi kuán ruppa nuchitun.
*Thence having taken well into threw.*

Tisro dián hur sétún, satur ka pistur?
*On the third day having gone to see, is he living or dead?*

Sing-Baban aga úndé gursundúr.
*Sing-Baba there indeed was playing.*

Agrál úndé túnsi púlliá-na surrit purro.
*Thence indeed having taken, Tiger's path upon.*

Nuchíchi situn, Púlliál ásk mándsál wandurg;
*They threw him, Tiger's female and male were coming;*

Sing-Baban na arana kinchturg.
*Sing-Baba's cries they heard.*

Pullial mian trás lakt, naur murri aúdúr,
*Tigress compassion felt, "my child it is."*

Ingi techi yét, Tunwa rúnd wot unni tunwa piláusún niaro írt,
*Having said so, took him away. Their den came to and their pups from apart set,*

Khandk̄ tullana tunwa piláuún thitana
*Meat bringing their pups to feed*

Pillán hotíta, pál Sing-Babán uhnud
*Their pups weaning, with milk Sing-Baba suckled,*

Thé kína kína ké, Sing-Baban húsiar atur.
*So continuing to do, Sing-Baba grew up.*

Undí dián wúnna avarí tunwa pilánsún
*One day his mother her whelps*

Miláf kissichísí, unni pilánún indalat
*Together brought, and to whelps began to say*

Immer urpa mundana turrimát minni
*Yourselves among together stay, fight not.*

Tisro diaú Sing-Baban ittúrke, mowa kaia désita
*The third day Sing-Baba said, my body is naked*

Makun putchial, kor, pheta tuchim
*To me a dhoty, dohur, and pugrey give.*

Adungí hattúm surde ucchi raimát
*She going Bazar road seated remained.*

Punkatur unni marratur maralur agdol passiturg
*A muslin-maker and cloth-maker that way came*

Techi wit, wurg tunwa guttri pótri nuchi surritarg
*Having got up ran, they their bundles having thrown away fled,*

Ud téchi tucchit, Sing-Baban tunsi kursi yétún
*She having taken up brought Sing-Baba took and put on*

Unni tunwa awarinna kál kurtúr,
*And his mother's feet kissed,*

Munna munnaké úndé dián unde indalatur
*Staying staid then one day indeed began to say*

Ki nak gúlléle tucchim ud hénhud
*That to me a bow give. She again went*

Ucchi raimát, Wúrrúr sipahi gullele-warré agdol pussitúr
*Seated remained a sepoy armed with a bow that way came.*

Ud vit ktissi, Gúlléle nuchi surritúr.
*She ran having cried out. Bow thrown away, he fled.*

Ud techi urriwat Sing-Baba sít;
*She having it came and to Sing-Baba gave;*

Sing-Baba tunna tummúr singné gursi latur,
*Sing-Baba big brother little brother together played.*

Pittun púdúr tunna tummur tán tindúr
*Birds shot big brother little brother to them gave to eat*

Thé kina kina ke, Sandsumjí niga subé wátúr
*So continuing to do, Sandsumjí home returned with his friends*

Unni Sandsumjí nída latur peuk bouk wandum? lour ehat
*And Sandsumjí began to say has any one become inspired, let him arise;*

Penk bóuké waiyun? aga Sing-Baba úmhén kítun
*God into any one not entered? Then Sing-Baba inspiration received.*

Sing-Baba taksítúr tunna tummur sungue muttur
*Sing-Baba was coming, big brother little brother together were*

Wasi autúr, uddam atur wúrrúr Bummenál
*Coming came, in the midst was a bráhman*

Wún Sing-Baba teta latur, Wur tedúr;
*Him Sing-Baba required to get up, he refused;*

Tunnarán gussalakt wur Bummenál tingietúr
*Big brother became angry, the bráhman eat up*

Sing-Baba penk techictur.
*Sing-Baba the image took up.*

Sube indalatúr ke imma boni andi?
*All began to say, that you who are you?*

Wur ittur ke immer urmiñun unni múramúr keat
*He said that you the Buffaloes and cows ask*

Unni tunwa tummán indalatur, hun dain kési terah
*And to his little brother said, mother go and call.*

Wur vittar kesí tuttur.
*He ran and called.*

Yen múnté jins undc punchatité puná atur
*These three species before the punchaite assembled came.*

Jub Sing-Baba indalatur ké iwéu puchc kimpt
*Then Sing-Baba said that them question,*

Awen sun púché kial latur, yir búr áudúr?
*From them they asked, this one who is he?*

Múnnc urmi wunktun yir Sandsúmjeénúr murri audur.
*First the buffaloes said this Sandsumjee's son is.*

Wúrg indalatúr, imma bane putti? Awittún
*They said, you how understand? These said*

Maiga rundidían mungi muttúr. Bahur mungí muttur
*In our house two days staid. How did he remain?*

Awittún niwa sarúnge ask tuttchi maiga pikkílé nuchi angí
*These said thy six wives having taken into our house to kill threw*

Unni igga hillé saiúr, to murana sarte nuchiche sítúr
*And there not injured, then cow's house into threw*

Awen púchc kial atúr, Maiga Baban át?
*From these asked, How into your house Baba came?*

Múraitún ké, Maiga rund dián mungi muttur
*The cows said, At our house two days stayed.*

Awen sarúngi ask agral wosi kúánte nuchi sitún
*These six wives thence having taken into well threw,*

Aga úndé hille saiúr. To agrul tunsi kójane bewatun
*There indeed not injured, thence taking I know not where took.*

Sing-Baban púché kial atúrké agrál imma behuth?
*Sing-Baba they questioned that thence you went where?*

Wúr ittur id nowa awan púche kimpt
*He said of my mother ask.*

Wúnna awál púllían púché kia latur
*They mother-tigress asked*

Imma bugga punné mátí? Ud it
*You where found? She said*

Mowa surde awe sarúngé ask muchiché mutta
*On my road these six wives threw away;*

Nunna techi urri watán, nowa pílán notíta
*I having taken brought, my whelps weaning,*

Pál yén úhthán unni hinda húnda bala buttir
*Milk him suckled and here there with prey*

Nowa chowanún thetán sube jánk púlliána
*My young fed. All-understood, tigress'*

Kál kúrtúr unni táne penk thaira kítúr.
*Feet embraced, and her a God established.*

Unni awé sarúngé asknún áden púllián sítúrg.
*And these six wives to this Tigress gave.*

Udnetí tál Sing-Baban puttál atúr
*That day Sing-Baba illustrious became*

Unni pulliál núdé penk thairí mat
*And Tigress indeed as a God established became.*

Sandsumjee Babána id saka áud
*Of Sandsumjee Baba this song is,*

Bhirri báns-Bhirri-ta sáka áud.
*Of Bhirry bamboo-jungle Bhirri the song is.*