Journals of Travels in Assam, Burma, Bhootan, Afghanistan and The, by William Griffith

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JOURNALS OF TRAVELS IN ASSAM, BURMA, BHOOTAN, AFGHANISTAN AND THE NEIGHBOURING COUNTRIES

By William Griffith.

Arranged by John M’Clelland.
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“WILLIAM GRIFFITH, Esq., the youngest son of the late Thomas Griffith, was born on the 4th of March 1810, at his father’s residence at Ham Common, near Kingston-upon-Thames, in the county of Surrey.

“He was educated for the Medical profession, and completed his studies at the London University, where he became a pupil of Prof. Lindley, under whose able instructions, assisted by the zealous friendship of Mr. R. H. Solly, and in conjunction with two fellow pupils of great scientific promise, Mr. Slack and Mr. Valentine, he made rapid progress in the acquisition of botanical knowledge. The first public proofs that he gave of his abilities are contained in a microscopic delineation of the structure of the wood and an analysis of the flower of *Phytocrene gigantea*, in the third volume of Dr. Wallich’s ‘Plantæ Asiaticæ Rariores’; and in a note on the development and structure of *Targionia hypophylla*, appended to M. de Mirbel’s Dissertation on *Marchantia polymorpha*, both published in 1832. So highly were his talents as an observer appreciated at this early period, that Dr. Wallich speaks of him as one “whose extraordinary talents and knowledge as a botanist, entitle him to the respect of all lovers of the science;” and M. de Mirbel characterizes him as “jeune Anglois, très instruit, très zélé et fort bon observateur.”

“His note on *Targionia* is dated Paris, April 2nd, 1832, and in the month of May of the same year, having finished his studies at the London University with great distinction, he sailed from England for India, which was destined to be the scene of his future labours. He arrived at Madras on the 24th of September, and immediately received his appointment as Assistant-Surgeon in the service of the East India Company.

“His first appointment in India was to the coast of Tenasserim; but in the year 1835 he was attached to the Bengal Presidency, and was selected to form one of a deputation, consisting of Dr. Wallich and himself as botanists, and Mr. MacClelland as geologist, to visit and inspect the Tea-forests (as they were called) of Assam, and to make researches in the natural history of that almost unexplored district.

“This mission was for Mr. Griffith the commencement of a series of journeys in pursuit of botanical knowledge, embracing nearly the whole extent of the East India Company’s extra-peninsular possessions, and adding large collections, in every branch of natural history, but especially botany, to those which, under the auspices of the Indian Government, had previously been formed. He next, under the directions of Capt. Jenkins, the Commissioner, pushed his investigations to the utmost eastern limit of the Company’s territory, traversing the hitherto unexplored tracts in the neighbourhood of the Mishmee mountains which lie between Suddiya and Ava. Of the splendid collection of insects formed during this part of his tour some account has been given by Mr. Hope in the Transactions of the Entomological Society and in the eighteenth volume of our own Transactions.

“His collection of plants was also largely increased on this remarkable journey, which was followed by a still more perilous expedition, commenced in February of the following year, from Assam through the Burmese dominions to Ava, and down the Irrawadi to Rangoon, in the course of which he was reported to have been assassinated. The hardships through which he passed during the journey and his excessive application produced, soon after his arrival in Calcutta, a severe attack of fever: on his recovery from...
which he was appointed Surgeon to the Embassy to Bootan, then about to depart under the charge of the late Major Pemberton. He took this opportunity of revisiting the Khasiya Hills, among which he formed a most extensive collection; and having joined Major Pemberton at Goalpara, traversed with him above 400 miles of the Bootan country, from which he returned to Calcutta about the end of June 1839. In November of the same year he joined the army of the Indus in a scientific capacity, and penetrated, after the subjugation of Cabool, beyond the Hindoo Khoosh into Khorassan, from whence, as well as from Affghanistan, he brought collections of great value and extent. During these arduous journeys his health had several times suffered most severely, and he was more than once reduced by fever to a state of extreme exhaustion; but up to this time the strength of his constitution enabled him to triumph over the attacks of disease, and the energy of his mind was so great, that the first days of convalescence found him again as actively employed as ever.

"On his return to Calcutta in August 1841, after visiting Simla and the Nerbudda, he was appointed to the medical duties at Malacca: but Dr. Wallich having proceeded to the Cape for the re-establishment of his health, Mr. Griffith was recalled in August 1842 to take, during his absence, the superintendence of the Botanic Garden near Calcutta, in conjunction with which he also discharged the duties of Botanical Professor in the Medical College to the great advantage of the students. Towards the end of 1844 Dr. Wallich resumed his functions at the Botanic Garden. In September Mr. Griffith married Miss Henderson, the sister of the wife of his brother, Captain Griffith, and on the 11th of December he quitted Calcutta to return to Malacca, where he arrived on the 9th of January in the present year. On the 31st of the same month he was attacked by hepatitis, and notwithstanding every attention on the part of the medical officer who had officiated during his absence, and who fortunately still remained, he gradually sunk under the attack, which terminated fatally on the 9th of February. "His constitution," says his attached friend, Mr. MacClelland, in a letter to Dr. Horsfield, "seemed for the last two or three years greatly shattered, his energies alone remaining unchanged. Exposure during his former journeys and travels laid the seeds of his fatal malady in his constitution, while his anxiety about his pursuits and his zeal increased. He became care-worn and haggard in his looks, often complaining of anomalous symptoms, marked by an extreme rapidity of pulse, in consequence of which he had left off wine for some years past, and was obliged to observe great care and attention in his diet. In Affghanistan he was very nearly carried off by fever, to which he had been subject in his former travels in Assam. No government ever had a more devoted or zealous servant, and I impute much of the evil consequences to his health to his attempting more than the means at his disposal enabled him to accomplish with justice to himself."

"The most important of Mr. Griffith’s published memoirs are contained in the Transactions of the Linnean Society. Previous to starting on his mission to Assam, he communicated to the Society the first two of a series of valuable papers on the development of the vegetable ovulum in Santalum, Loranthus, Viscum, and some other plants, the anomalous structure of which appeared calculated to throw light on this still obscure and difficult subject. These papers are entitled as follows:—

2. Notes on the Development of the Ovulum of Loranthus and Viscum; and on the mode of Parasitism of these two genera. Linn. Trans. xviii. p. 71.

“Another memoir, or rather series of memoirs, “On the Root-Parasites, referred by authors to Rhizantheæ, and on various plants related to them,” occupies the first place in
the Part of our Transactions which is now in the press, with the exception of the portion relating to *Balanophoreae*, unavoidably deferred to the next following Part. In this memoir, as in those which preceded it, Mr. Griffith deals with some of the most obscure and difficult questions of vegetable physiology, on which his minute and elaborate researches into the singularly anomalous structure of the curious plants referred to will be found to have thrown much new and valuable light.

“In India, on his return from his Assamese journey, he published in the ‘Transactions of the Agricultural Society of Calcutta,’ a ‘Report on the Tea-plant of Upper Assam,’ which, although for reasons stated avowedly incomplete, contains a large amount of useful information on a subject which was then considered of great practical importance. He also published in the ‘Asiatic Researches,’ in the ‘Journal of the Asiatic Society of Bengal,’ and in the ‘Transactions of the Medical and Physical Society of Calcutta,’ numerous valuable botanical papers; but the most important of his Indian publications are contained in the ‘Calcutta Journal of Natural History,’ edited jointly by Mr. MacClelland and himself. Of these it may be sufficient at present to refer to his memoir “On Azolla and *Salvinia*,” two very remarkable plants which he has most elaborately illustrated, and in relation to which he has entered into some very curious speculations; and his still unfinished monograph of “The Palms of British India,” which promises to be a highly important contribution to our knowledge of a group hitherto almost a sealed book to European Botanists.

“But the great object of his life, that for which all his other labours were but a preparation, was the publication of a General Scientific Flora of India, a task of immense extent, labour and importance. To the acquisition of materials for this task, in the shape of collections, dissections, drawings and descriptions, made under the most favourable circumstances, he had devoted twelve years of unremitting exertion. His own collections, (not including those formed in Cabool and the neighbouring countries) he estimated at 2500 species from the Khasiya Hills, 2000 from the Tenasserim provinces, 1000 from the province of Assam, 1200 from the Himalaya range in the Mishmee country, 1700 from the same great range in the country of Bootan, 1000 from the neighbourhood of Calcutta, and 1200 from the Naga Hills at the extreme east of Upper Assam, from the valley of Hookhoong, the district of Mogam, and from the tract of the Irrawadi between Mogam and Ava. Even after making large deductions from the sum-total of these numbers on account of the forms common to two or more of the collections, the amount of materials thus brought together by one man must be regarded as enormous. The time was approaching when he believed that he could render these vast collections subservient to the great end which he had in view. He had some time since issued an invitation to many eminent botanists in Europe to co-operate with him in the elaboration of particular families; and he purposed after a few years’ additional residence in India to return to England with all his materials, and to occupy himself in giving to the world the results of his unwearied labours. But this purpose was not destined to be fulfilled, his collections have passed by his directions into the hands of the East India Company, and there can be no doubt, from the well-known liberality of the Directors, which this Society in particular has so often experienced, that they will be so disposed of by that enlightened body as to fulfil at once the demands of science and the last wishes of the faithful and devoted servant by whom they were formed. It is hoped too, that the most important of his unpublished materials, both in drawings and manuscripts, will be given to the world in a manner worthy of the author and of the rank in science which he filled.”—*Proceedings of the Linnaean Society*, No. xxv, 1845.

To the foregoing brief sketch which was read before the Linnaean Society at the Anniversary Meeting 24th May 1845, it is scarcely necessary to make any addition. It is worthy of remark however, as showing how talents sometimes run in families, that Mr.
Griffith was great grandson of Jeremiah Meyer, Historical Painter to George the Second, and one of the founders of the Royal Academy. It is also but fair to state on the present occasion, that he was not himself the only member of the family who would appear to have inherited something of his grandfather’s peculiar art, as we owe the transfer of the landscapes to stone, which add so much to the appearance of the following volume, to the talent and kindness of his sister.

It may perhaps be acceptable in this place to afford a few extracts from the private letters of Mr. Griffith, especially those in which he adverts with a liberality of feeling to his contemporaries, no less honourable to himself than to the persons mentioned.

The following notes addressed to his uncle, at various periods, exhibit the sentiments with which he regarded the late Mr. Bauer not merely as an artist, but original observer.

* * * * *

From letters of Mr. GRIFFITH, to Mr. MEYER.

Mergui: January 17th, 1835.

“My last accounts of Mr. Bauer state him to have been in excellent health: he had just completed some more of his unrivalled drawings.”

* * * * *

Suddya: December 30th, 1836.

“Pray give the compliments of the season to Mr. Bauer, to whom I look up with the greatest admiration: what a pity it is for science that such a life as his is not renewable ad libitum. Tell him that I have a beautiful new genus allied to Rafflesia, the flowers of which are about a span across, it is diœci ous and icosandrous, and has an abominable smell. How I look back occasionally on my frequent and delightful visits to Kew.”

* * * * *

To MRS. H---.

Serampore, Calcutta: July 22nd, 1841.

“I was aware of the departure of Mr. Bauer through the Athenæum, in which an excellent notice of him appeared. He certainly was a man to whom I looked up with constant admiration: he was incomparable in several respects, and I am happy to find, that his death was so characteristic of his most inoffensive and meritorious life. It is also very pleasing to me to find that he continued to think well of me. How I should have been able to delight him had he lived a few years longer.”

* * * * *

Calcutta: June, 1843.

“Poor Mr. Bauer, we never shall see his like again, I have seen but few notices of his life, which assuredly is worthy of study. There is not a place I shall visit with better feelings than Kew, it has so many pleasant associations even from my school-days.”

* * * * *

Calcutta: December 31st, 1843.

“Mr. Bauer is not half appreciated yet; he is considered a very great artist, but what is that to what he was? But he did not fight for his own hand, though he worked hard enough in
all conscience. Mr. Bauer in fact preceded all in the train of discovery: he saw in 1797, what others did not see till 30 years after. For instance, the elongation of the pollens’ inner membrane into a tube, the first step towards the complete knowledge we now have of vegetable embryogeny. Unfortunately, Mr. Bauer drew, but did not write, and when I recall to mind a remark of Mr. Brown, that it was a disadvantage to be able to draw, I always fancy he had Bauer in his mind’s eye; for had he been a writer and not a drawer, before 1800, in great probability we should have known nearly as much of embryogeny as we do now. But he shut his portfolio, and folks went on believing the old fovivillose doctrine and bursting of the pollen, which, his observations of the pollens’ inner membrane, would have destroyed at once. Then with regard to Orchideæ and Asclepiadeæ, he was equally in advance: it would be a rich treat if some one would come forward and publish a selection from his drawings, without a word of letterpress.”

* * * * *

Calcutta: February 11th, 1844.

“Mr. Bauer’s light is not yet set on the hill. Really when I look back at his works I am lost in admiration, and always regret that he worked more for others than for himself, and that he did not use his pen as freely as he did his brush. When, in the name of all that is generous, will great men think that true greatness consist in endeavouring to make others more prominent than themselves?”

For some years before his death, Mr. Griffith would appear to have had a presentiment that he would not be spared to complete the description of all his collections. On one occasion, when enumerating those who might contribute most efficiently to this object, in the event of its not being permitted to himself, he writes:

“I cannot however refrain from paying my tribute of respect to Mr. George Bentham, the most industrious, perspicuous, and philosophical Botanist who has systematically contributed to lessen the difficulties under which Indian Botanists have generally suffered.

“There are a few others from whom the sincerity of friendship fully warrants me in expecting every possible assistance: of these Dr. Wight is already well known, and others are rising rapidly to fill, I hope, the highest Botanical stations when these shall have been vacated by the leviathans who now occupy them. Let not the cynic accuse me of partiality when I mention the names of William Valentine, of Decaisne, and C. M. Lemann.”

He also delighted to speak and write in terms of the warmest regard of those to whom he was indebted for facilities in his pursuits. To Lord Auckland he invariably alluded in terms of the deepest gratitude—“Under his Lordship’s patronage” he remarks on one occasion, “I have received such advantages as make me ashamed of the little I have done, and which are constantly holding up before me my deficiencies in many branches of enquiry connected with the physiology and distribution of plants.”

* * * * *

The following letters are quoted chiefly for the additional information they afford on the subject of his travels and pursuits. His letters to Botanists would of course be more important and interesting.

* * * * *

Suddyah: 16th September, 1836.
“I am anxiously awaiting the arrival of the cold weather, as on the 1st of November I hope to accompany ----- to Ava, but in the meantime, I intend proceeding in search of the tea plant to the Mishmee Hills, especially about Bramakoond, where it is reported to grow. If I find it there, I will endeavour to trace it up into the mountains, which form due east of this an amphitheatre of high rugged peaks.”

* * * * *

November 1st, 1836.

“I here write from the foot of the ‘dreaded’ Mishmee Hills. I left Suddyah on the 15th October, and have already been to Bramakoond, where I spent three days. I miss you much; you would have been delighted with the place, which is nothing but rocks and hills. I am recruiting my resources for a movement into the interior of the hills, in which I shall follow Wilcox’s route, taking with me 15 coolies, for whom I am collecting grain. I have already made considerable collections, chiefly however in Botany, with a few stones and birds. I hope before my return to have seen Coptis teeta in flower, and to have proved that the Beese is different from that of Nepal. I have already seen numbers of the Mishmee who are civil people. I have however had great difficulties with the Chief of the Khond, who though apparently friendly, will, I fear, do all he can to hinder me from getting to Ghaloom, with the Gham of which place I wish to have a conference.”

* * * * *

Noa Dihing Mookh: January 20th, 1837.

“I have just returned from the trip to the Lohit much sooner than I expected. I saw nothing of any consequence except rapids which are horrid things, and make one quite nervous. I made a beautiful collection on the Mishmee mountains, of which more anon. Many of the plants are very interesting. I was however worked very hard, all my people being sick: I had even to wash my own clothes, but I fear you will think I am grumbling: so good-bye.”

* * * * *

Loodianah: 11th December, 1838.

“I arrived here in 14½ days, notwithstanding some delays on the road, and have put up with Cornet Robinson, Acting Political Agent. I am not pleased with the up-country, and would rather live in Bengal, for I cannot abide sandy plains and a deficiency of vegetation. Loodianah is a curious place, very striking to a stranger, the town is large, built under official direction, and consequently well arranged in comparison with native towns: there is much trade carried on in it, and it has the usual bustle of a large town.

“Capt. Wade’s house is well situated on a rising ground, and the demesne is a pretty one. Otherwise the country is ugly enough, and very bare, yet it is here well wooded, in comparison with what I hear of Ferozepore. Along the face of the hill near the town, a nullah flows, abounding in fish, of which more anon. The rock pigeons, or grouse, are very abundant, and there are two species, one remarkable for the elongated side-feathers of the tail. Both are beautiful birds, but very difficult of access. Crows, kites, vultures, adjutants, herons, Drongoles, sparrows, parrots, etc. remain as before, but most of the less common birds are different from those to the south; the most European are genuine starlings; and, to my memory of eight years back, identical with those of Europe. I have already got thirty to forty species of fish. Cyprinidae, are by far the most common; one loach, and one of Macrognathus.

“But as they are all from one water, viz. the neighbouring nullah, and the Sutledge being
five miles off, I shall put them all into bottles, and send them off before I leave this. The most edible fish, and one of the most common is the Roh, but it is not the Roh of Bengal, and might well be called Cyprinus ruber. Burnes has given I think a drawing of it, which is faithful as to colour. All the forms will be familiar to you, but I hope there will be some new species.

“I have made further arrangements, and such as will give you a good insight into the fish of the Sutledge, as to the number of duplicates!—it is the safest plan for an ignoramus not to discriminate too nicely. I am to-day to get large specimens of the Kalabans, Rohi, etc. what a splendid fish the Rohi is, both to look at and to eat. There are two or three species of the transparent Chandas, and three or four Perilamps, six or eight Siluridae, besides the Gwali, which is too large; of Ophiocephalus two or three, exclusive of the Sowli, but all ought to be examined, as there is no relying on native discrimination. There is a curious animal here burrowing like a mole, but more like a rat: of this I have not yet got a specimen, although they are very common.

“I commence with a list of the fish of this place. I have only to mention that several species are confounded under the name Bhoor, all the Chandras under Chunda Begla, Loaches under Pote, all the Perilamps except the Chulwa, which may be from its flavour a Clupeia, etc. The fact is, that the fishermen are aware of genera, but not of species, excepting when the distinctive marks are very strong. The fisherman enumerates forty species, but I have only twenty-six, I have promised him one rupee when he completes the list:

<table>
<thead>
<tr>
<th>Native Name.</th>
<th>Family.</th>
<th>General size.</th>
</tr>
</thead>
<tbody>
<tr>
<td>2. Bhoor,</td>
<td></td>
<td>mature.</td>
</tr>
<tr>
<td>3. Rewa,</td>
<td>Cyprins</td>
<td>mature.</td>
</tr>
<tr>
<td>4. Bangun,</td>
<td></td>
<td>18 inches, called also Kala Bhans.</td>
</tr>
<tr>
<td>5. Chund Bigla,</td>
<td></td>
<td>mature.</td>
</tr>
<tr>
<td>6. Ditto ditto,</td>
<td></td>
<td>ditto.</td>
</tr>
<tr>
<td>7. Ditto ditto,</td>
<td></td>
<td>ditto.</td>
</tr>
<tr>
<td>10. Khurda,</td>
<td></td>
<td>ditto Trichopterus?</td>
</tr>
<tr>
<td>11. Puttra,</td>
<td>Salurida</td>
<td>20 seers.</td>
</tr>
<tr>
<td>12. Kuttoa,</td>
<td>Ditto,</td>
<td>6 inches.</td>
</tr>
<tr>
<td>14. Bham,</td>
<td></td>
<td>3 feet.</td>
</tr>
<tr>
<td>15. Nuunghree,</td>
<td></td>
<td>6 inches.</td>
</tr>
<tr>
<td>17. Pootea,</td>
<td></td>
<td>12 inches.</td>
</tr>
<tr>
<td>18. Seengh,</td>
<td>Silurida</td>
<td>8 inches.</td>
</tr>
<tr>
<td>20. Mootunna,</td>
<td></td>
<td>nearly mature.</td>
</tr>
<tr>
<td>22. Chilwa,</td>
<td>Perilamp,?</td>
<td>mature.</td>
</tr>
<tr>
<td>23. Nuwha,</td>
<td>Esox,</td>
<td>ditto.</td>
</tr>
<tr>
<td>24. Gwalee,</td>
<td>Silurus,</td>
<td>2 maunds,</td>
</tr>
<tr>
<td>25. Rutttgull,</td>
<td></td>
<td>nearly mature.</td>
</tr>
</tbody>
</table>

* * * *

Candahar: May the 2nd, 1839.
“We have seen three changes in the geological structure of the country.

“The Khojah Omrah was chiefly clay slate, and we are now in another formation, which no one seems to know; but it must be different as the outlines of the hills are completely changed. We are now 3,500 feet above the sea. The climate is good, and would be delightful in a good house, but in tents the thermometer varies from 60° to 98° and even 105°.

“I have got a decent collection of plants, only amounting however to 650 species. The flora continues quite European. I have some of singular interest. Compositæ, Cruciferæ, and Gramineæ form the bulk of the vegetation. All fish are very different from those below the Ghats. I have five or six species of Cyprinidæ. One very inimitable fuscous loach. There are few birds, and fewer quadrupeds; in fact the country is at a minimum in both these respects.”

* * * * *

_Ghuzni: July 25th, 1839._

“We have been gradually ascending since leaving Candahar, and are here at an elevation of 7,600 feet. The same features continue. I have as yet not more than 850 species. The mountains on every side, and indeed the whole face of the country, is still bare. Mookloor, a district through which we passed, about seventy miles from this, is well cultivated and inhabited. There are few birds to be seen, and scarcely any insects, but there are numerous lizards. The thermometer varies in tents from 60° to 90°.”

* * * * *

_Cabul: August 11th, 1839._

“I am encamped close to Baber’s tomb, lulled by the sound of falling water, and cooled with the shade of poplar and sycamore trees, with abundance of delicious fruit, and altogether quite happy for the nonce. I have not yet seen the town which is a strange place, buried in gardens: but nothing can exceed the rich cultivation of the valley in which we are encamped. Beautiful fields on every side, with streamlets, rich verdure, poplars, willows, and bold mountain scenery, which contrasts most favourably with the dreary barren tracts to which we have been accustomed. I go with the Engineers to Bamean in the course of a few days, when we shall cross ridges of 12,000 to 13,000 feet high.

“I can only find three kinds of fish in this neighbourhood. I have been making some drawings, and collecting a few plants which continue to be entirely European.”

* * * * *

_Peshawur: November 17th, 1839._

“I hope some day or other to turn out a real traveller. I am now in hopes of becoming a decent surveyor, and before many years have passed a decent meteorologist. I leave the Army here, and shall part with it, particularly Thomson and Durand of the Engineers, with regret. I start in a short time to travel up the Indus with little before me but difficulties, however à la renommée. If I can do something unparalleled in the travelling way I shall be content for a year or two at least.

“I have obtained some few specimens of fossil shells from the shingly beds of the Khyber Pass. They seem to be a Spirifer with a very square base, quite different from the common species of the Bolan Pass, which is like a large cockle, and of which I have one beautiful specimen. How I regret not seeing Bukkur, for with a few days’ leisure, a
The number of fossils might be obtained. The older I grow the less content am I scientifically: would that I had received a mathematical education. I was much interested with some quotations from Lyell's Elements in a late Calcutta Courier, especially about the Marine Saurian from the Galapagos. What further proof can be wanted of the maritime and insular nature of the world during the reigns of the Saurian reptiles? What more conclusive can be expected about the appearance of new species? This point would at once be settled if the formation of these islands can be proved not to have been contemporaneous with the Continents. Then the animal nature of chalk!

"I am doing nothing in botany, but learning Persian, and the use of the theodolite, with nothing but difficulties to look at all around. I begin to feel of such importance, (do not think me conceited in relation to my collections and information on geographical botany,) that I am not overpleased with the idea of facing dangers alone: however I suppose every thing is as usual exaggerated."

* * * * *

_Bamean: August 3rd, 1840._

"Yesterday I crossed the Hindoo-koosh by my former route, and this morning while out, i.e. trout fishing, was most agreeably interrupted by the post. The fishing was ended forthwith. Indeed the sun in this country even at elevations of 12,000 feet is very hot, and has excoriated my hands, beautifully white as they were after my sickness, but not before I had caught 3 barbels, evidently different from those of the other side of the range. I caught some trout yesterday evening, it is a most beautiful fish, I was particularly struck with the size of the eye, its prominence, and expressive pupil, in opposition to the sluggishness of the eyes of carps.

"It is strange that Botany has always been the most favoured of the natural sciences, it is strange that in spite of what all do say it is the least advanced of any. How can I reconcile my own splendid opportunities with those of more deserving naturalists in other branches? and I would willingly share them on the principle of common fairness with others, who I know would turn them to a better account. Oreinus takes the worm greedily; in the Helmund, 11,000 feet above the sea, it is abundant. It is the same species I think as that in the Cabul river; but in the Cabul river, Barbus is the predominant fish: in the Helmund it is the reverse. How can one account for the small elevation at which fish are found in the Himalayan? I cannot imagine it is owing as some think to the relative impetuosity of the rivers, which after all is only an assumption.

"This Bamean valley is the strangest place imaginable, its barrenness and the variegated colours of the rocks convey the idea of its volcanic origin, and give it a look as if it had come out of the furnace. I cannot make out where the stones so universally found all over the slopes of the mountains, came from, for very generally they seem water-worn. I find no great peculiarity in the flora of this side of the range, except an abundance of odd-looking Chenopodiaceous plants, probably resulting from the saline saturation of the soil. There is a very singular spring on the other side of the range, about 11,000 feet above the sea: the water very clear, with no remarkable taste, but every thing around is covered with a deposit of a highly ferruginous powder. I shall write next from the fossil locality, which is said to be about forty miles from this. I am as stout as ever, but by no means so strong."

* * * * *

_Bamean: August 21st, 1840._

"I am now out of the region of trees, excepting a poplar, of which I will send you a bit, as..."
the same tree grows in much lower places. The want of rings in wood is by no means unusual in tropical vegetation. For the production of rings, some annual check to vegetation is required: their absence is particularly frequent in climbers. The walnut will not be a good instance, because even if you can get it from Java, it is a tree that requires cold, and must consequently be found at considerable altitudes. Your instances must be taken from subjects that can bear a great range of climate: you have some in the apricot, vine, etc. I will not fail in sending you what you want from Cabul, and also from Peshawur, in which almost the extremes of temperature can be contrasted. I will also get the woods of apricots, cherries, etc., at the highest elevations on my road back, as I hope to pass through the grand fruit country of Afghanistan. No Jungermannias are obtainable in this part, nor anywhere indeed, except towards the true Himalayas. I do not remember having seen the pomegranate growing at Cabul: the place is too cold for it. I think however, I can get some from Khujjah, where snow lies in winter. I leave for the Provinces early in October, and shall travel 30 miles a day. I want to get to Seharunpore, 15 or 20 days in advance of my time, as I must run up to Mussoorie and fish in the Dhoon. I shall be in Calcutta in all February.”

* * * *

Cabul: September 26th, 1840.

“I despatch to-morrow the first of the bits of wood, the duplicates will be sent on the 28th or 29th: on this latter day I leave for Peshawur, and right glad am I that the time has come at last. I will send you the same woods from Peshawur, but shall scarcely be able to send you pomegranate from any thing like a cold place.

“On receiving your specimens of vine, the following question occurred to me. If wood is a deposit from the leaves or fibres sent down from the leaves, how is the presence of wood to be accounted for in tendrils, which have no leaves, but yet which are evidently branches? The theory of the formation of wood, which considers it as above, is deemed ingenious, but it will not I think be found to be true. The bark evidently has a great deal to say to the matter.

“I shall be most rejoiced at a remote prospect of again setting to work. I take no interest now in the vegetation of this country. I hope to be at Loodianah early in November; my present intention is to run up to Simla, thence to Mussoorie, and descend on Seharunpore. If I do this, I shall only leave one point unfinished, and that is the Hindoo-koosh Proper, where however I shall have the advantage of Major Sanders of the Engineers, who will pick up a few plants for me. I wish much to take notes of the vegetation about Simla and Mussoorie, this I can do at a bad season. I shall afterwards be able to compare the Himalayan chain at very distant points.”

* * * * *

Serampore, -- 1841.

“I will send you to-morrow dissections of Santalum if I can get a small bottle for them: under ½ inch lens you can easily open the pistillum of Santalum having previously removed the perianth: it is a conical body; you must take care to get it out entire, especially at the base, then place it in water, and dissect off the ovula of which there are three or four, as per sketch. I shall not say what I see, as I want to have your original opinion unbiased, etc.; but whenever you see the tubes with filaments adhering to their apices, pray mark attentively what takes place, both at the point and at the place where the tube leaves the ovulum; your matchless 1/1500 would do the thing. Try iodine with all such, after having examined them in water.
“Should you find any difficulty in dissecting away the ovula, light pressure under glass will relieve you. I shall be very anxious to know what your opinion is, particularly with regard to the tubes and all adhering filaments; the question now occupying botanists, being this, is the embryo derived directly from the boyau or is it derived from some parts of the ovulum?

“I hope you can understand these sketches.”

* * * * *

Peshawur: 13th December, 1839.

“What a shame it is that botanists should know nothing whatever of the formation and structure of wood! They look at a section of a piece of oak, and imagine they have discovered the secret, and write volumes on this imagination, yet they have been told over and over again, that nothing is to be learnt on such subjects without beginning at the commencement, which they are too idle to do. To name an abominable Aster, is among them of much higher importance than to discover the cause of the growth of wood. Medullary rays are most difficult, because they are very often deficient particularly in climbers. I am horridly idle, and yet what can I do without books; yet with regard to books, the more originality we possess, the less we require them? There is nothing to be got here except a few marsh plants coming into flower. One beautiful Chara, which might disclose the secret, had I good glasses, it is a most graceful pellucid form, an undescribed duckweed, a floating Marchantiaceæ. Would that I was settled with a Ross on one hand, and a Strongstein on the other, around my collections with good health and good spirits. Tell ---- I have in view the division of the vegetable kingdom analogous to radiata, they include all the Marchantiaceæ, and are, to all intents and purposes, Vegetable Radiata.”

* * * * *

Pushut, 1st march beyond Kooner: January 29th, 1840.

“This will be a letter of odds and ends, you know I was to return to Jallalabad; well I reached that place, but left the encampment and crossed the river, where an advance road making partly for the Kooner expedition were employed, and having originally determined on going to Kooner, I accompanied them two marches, when they were overtaken by the army, to avoid which, I halted one day, and on the next proceeded onwards by the north bank of the river, thus saving all the fords of this horrid river. I should call it beautiful at any other season. The road was bad, and the last one and a half mile into camp most difficult, the path winding round and over spurs of sharp limestone rocks which must have had abundance of silex in them they were so very hard. At the very worst part, my headman being in front, all of a sudden I heard three shots in quick succession with the usual hallooing, and then I was called on in advance, meeting my headman wounded: he has lost the two fore-fingers of his right hand. All I saw was three men scrambling up the face of the hill, on whom I opened a fire as soon as my guns came up, and had the pleasure of hitting one on the shield.

“Such a scene ensued! for when there are three or four on such occasions we may reasonably expect thirty or forty, and my object was to get out of the bad road, and so be close to camp. Some of, or rather all, my people became dismayed, I had therefore to cheer, to point my double barrels, and in fact to enact a whole legion. One fellow tried to shoot me but his powder proved faithful, the others were wounded: however they kept in sight, and to make matters worse, in one place within twenty yards, six or seven of my loads were thrown; evening drawing on, and prospects disgusting, when at last having passed over one bad part and got down into a ravine, a number of people were seen
closing down on us, but my man had run off to camp, and by shouts succeeded in calling five or six sepahis, part of the rear-guard, to our relief, and so we escaped bag and baggage, the rascals making off when the red coats appeared. I was sick at heart at the loss of poor Abdool Rozak’s fingers: he is an Arab with an English heart, bearing his loss most manfully, and when his fingers were removed expressed anxiety alone about me and my Sundoogs (collections). Well then, where should I have been had I been assailed as Abdool Rozak was, I should have been unprepared, and if riding, my mare would certainly have jumped into the river beneath. Thomson said when he left me, G--, you are rash and Abdool Rozak is rash, take care or you will get into trouble. My moving about without a guard was imprudent, and I now return to Jallalabad to get one, or if not successful to wait there until the spring and its floral excitments call me out: what I dislike is danger without any recompense, not a flower is to be had; with excitement it is nothing. I have now had two escapes, one from the buffalo in Assam, and this, which is a greater one, because had not the army been delayed by accident at the ford, it would have been eight or ten miles in advance, and consequently there would have been no rear-guard at hand.

“The country is disturbed, and one can only stir out in the valley itself close to camp, which is the more tantalizing as the mountains are accessible, and covered with forest. Our halt here should put us in possession of much information respecting these forests. As it is, I shall leave probably as wise as I came, except in having ascertained that the change from the well-wooded Himalaya mountains to those of the Hindoo-koosh, without even a shrub five feet high, takes place to the east of this. My employment is surveying and collecting data for ascertaining the heights of the hills around. But wherever I turn, the question suggests itself, what business have I here collecting plants, with so many in Calcutta demanding attention? How I am living! alone, without a table, chair, wine, or spirits, with a miserable beard, and in native clothes! but one thus saves much time; how unfortunate that mine now is not worth saving!

“I have been reading Swainson’s volumes in Lardner’s Cyclopædia, in which there is a little to which severe critics may object, but a vast deal more that is beautifully sound. I am quite certain I never appreciated them before. How wonderful that no one before Macleay and Swainson thought that living beings were created on one plan. I have imbibed all the important parts with the hope of bringing them to bear on Botany, which is in a shameful state. One talks of the typical nature of polypetalous or monopetalous plants; another ridicules the idea, because as he wisely says, some polypetalous plants are monopetalous, and vice versa!! he objects, in fact to what constitutes the great value of a character, its mode of variation. All Swainson’s propositions appear to me philosophical and highly probable, but none of the present generation have eyes young enough to bear such a flood of light as he has thrown upon them. There are faults I acknowledge, but a man who writes for money does not always write for fame; rapid writing and much more rapid publishing is a vast evil, but one which is too often unavoidable. I have four or five drawings of fish, one of the spotted carnivorous carp, the most carnivorous type of all except Opsarion, and perhaps a new subgenus; one of the Sir-i-Chushima and Khyber Oreinus, and a Perilamp with two long cirrhi on the upper lip. I intend in my travels now I am alone, to stop at every fertile place. I am ascertaining the limit of the inferior snow in these latitudes, which I fancy will be 3,500 feet. Is it not curious that here 1,000 feet above Jallalabad we have had no snow, while at Jallalabad there has been abundance. I attribute it to the narrowness of the valley at this place, and to the forest. When I glance at the subject of botanical geography, how astounding appears our ignorance! we have no data, except to determine the mere temperature and amount of rain yet men will persist in the rage for imperfect description of undescribed species, and pay no attention to what is one of the most important agents in preserving things as they are in
our planet,—i.e. vegetation. On this point Swainson is less happy than on others when he
ascribes such importance to temperature, and points out the fact that countries in the same
latitudes, and having the same temperatures, produce different animals.”

* * * * *

Cabul, September 25th, 1839.

“I am just on the eve of re-entering Cabul from a visit to Bamean, a singular place on the
other side of the Hindoo-koosh, celebrated for its idols and caves. It has amply repaid a
march of 106 miles and back again. I never saw a more singular place, and never enjoyed
myself more: we crossed several high ridges between 11 and 13,000 feet, but so poor is
the flora that I have only added 200 species to my catalogue, now amounting to 1200
species instead of 2,400 as I fully expected. But I must say I was as much pleased at the
acquisition of a genuine Salmo in the Bamean river (which is a tributary of the Oxus,) as
at any thing.

“Unfortunately we were so hurried, that I had only one afternoon and that an
unfavourable one, for indulging in my fishing propensities: the chief fish seems to come
very near the English trout, and so far as I can judge, is not found on this side the
Himalaya. The other fish of these rivers are a fine Schizothorax or Oreinus, allied to the
Adoee, a flat-headed Siluroid, a loach, and a small Cyprinus. This is a singular country,
quite unlike anything I have seen, and as distinct from the Himalaya in its vegetation,
etc. as can well be imagined. Generally it is very barren, and after travelling over so
much of the country I have yet seen only three parts of it decently cultivated. It is
reported to be rich in minerals.

“But it will never bear comparison with Hindoostan. It is however capable of much
improvement. It consists of a succession of barren valleys, divided from each other by
barren ridges, and is generally deficient in the great fertilizer of all things—water. There
is scarcely an indigenous tree in the whole country, and generally very few cultivated
ones, except about Cabul, although they have poplars and willows well suited to the
climate. It has been subjected to so much misrule that the natives have become
indifferent to its improvement, (if they ever felt alive to any such interest.) The Zoology
is very poor, quite at zero. There is a species of Ibex, an Ovis, and a Capra, which from
the frequency of their heads and horns about sacred places and gateways of towns, must
be common; but I have never seen more than a portion of one fresh specimen of the
sheep. Furs are brought from the Hindoo-koosh, but are all too mutilated to be of any
use, except to a Zoologist with antiquarian eyes: one Jerboa. Hares are rather common in
some parts, and about here there is a Lagomys. Of birds there are but few, but as the
vegetation is chiefly vernal, these creatures may perhaps be abundant. The game birds
are quail, three species of partridge, a huge Ptarmigan? Pterocles of Loodianah. The
fauna is richest in Saurian reptiles, and of these one might make a very good collection. I
have only seen two snakes, and both are I believe lost.”

* * * * *

Mirzapore: April 26th, 1841.

“Request --- to refrain from abusing compound microscopes. Why should not compound
and simple microscopes each have their merits? Valentine, who is a great authority, and
an unrivalled dissector, says, the simple lens must be suspended. I only wish I could
dissect with a compound microscope: what things might not one get access to. The
simple lens is quite useless with opaque objects; it only does for transmitted light. Now
dissections of opaque objects have been too much neglected. How odd it is that all
improvements are ridiculed at first.
“I enclose a bit of Sphagnam, a curious moss, with curious incomplete spiral cells in the leaves. I dare say it will bear preservation in Canada balsam. I have received a new microscope, a queer-looking thing, very portable; one object glass of a quarter inch focus, by Ross; two eye-pieces magnifying linearly 200 to 300 times. I have put it up, but I am not well enough to decide on its merits. Now that I have arranged all my things, I am literally frightened at the work I have to do.

“I am quite annoyed at the idea that German artists make better microscopes than English. I was aware that the lenses were better, but otherwise I imagined that any comparison would be vastly in our favour. I am curious to know the price, and where to apply for one, as your account makes me quite ashamed of mine. Who knows what a fine penetrating power of 1100 may not disclose. I am very much pleased with your idea of anointing cuts with nitrate of silver; this hint I will bear in mind.

“I enclose the first list of fish, No. 2, not that it is of much use.—What nonsense it is to collect without knowledge.

<table>
<thead>
<tr>
<th>No.</th>
<th>Native Name</th>
<th>Family</th>
<th>REMARKS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Kuggur,</td>
<td>Siluridæ</td>
<td>Back greenish,</td>
</tr>
<tr>
<td>2</td>
<td>Soonnee,</td>
<td>Cyprinidæ</td>
<td>otherwise pearly-white.</td>
</tr>
<tr>
<td>3</td>
<td>Dhurra,</td>
<td>Cyprinidæ</td>
<td>Fins reddish, red spot on opercule, back</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>greenish-brown.</td>
</tr>
<tr>
<td>4</td>
<td>Moogulle,</td>
<td>&quot;</td>
<td>Perilampoid, Diaphanous, silvery, head</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>reddish.</td>
</tr>
<tr>
<td>5</td>
<td>Peeduc,</td>
<td>&quot;</td>
<td>Like the preceding.</td>
</tr>
<tr>
<td>6</td>
<td>Moor,</td>
<td>&quot;</td>
<td>Ditto ditto.</td>
</tr>
<tr>
<td>7</td>
<td>Bhanghun,</td>
<td>&quot;</td>
<td>Ditto ditto.</td>
</tr>
<tr>
<td>8</td>
<td>Kundura,</td>
<td>&quot;</td>
<td>Perilampus, Back greenish, otherwise quite</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>silvery.</td>
</tr>
<tr>
<td>9</td>
<td>Pullee,</td>
<td>&quot;</td>
<td>Same as 4, 5, 6, 7.</td>
</tr>
<tr>
<td>10</td>
<td>Gooolla,</td>
<td>Ciprinidæ</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>Khunnuree,</td>
<td>Percidæ, Chanda</td>
<td>Diaphanous.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>Sur-ri-rha,</td>
<td>Cyprinidæ</td>
<td>Silvery-green on back.</td>
</tr>
<tr>
<td>13</td>
<td>Gundhan,</td>
<td>&quot;</td>
<td>Same colours.</td>
</tr>
<tr>
<td>14</td>
<td>Mhukk,</td>
<td>&quot;</td>
<td>Ditto ditto.</td>
</tr>
<tr>
<td>15</td>
<td>Ghurr,</td>
<td>&quot;</td>
<td>Ditto ditto.</td>
</tr>
<tr>
<td>16</td>
<td>Dhoalee,</td>
<td>Ophiocephalus,</td>
<td>Colour brown, with usual marks and bars.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Diaphanous, 3-5 irregular longish stripes.</td>
</tr>
<tr>
<td>17</td>
<td>Ahaiha,</td>
<td>Siluridæ</td>
<td>Silvery-blueish.</td>
</tr>
<tr>
<td>18</td>
<td>Mhullee,</td>
<td>Silurus,</td>
<td>Yellowish-green, fins reddish. 5 seers.</td>
</tr>
<tr>
<td>19</td>
<td>Mhoarree,</td>
<td>Cyprinidæ</td>
<td>Brownish-green, 6 seers.</td>
</tr>
<tr>
<td>20</td>
<td>Dhumpurra,</td>
<td>&quot;</td>
<td></td>
</tr>
<tr>
<td>21</td>
<td>Pho-eikee,</td>
<td>&quot;</td>
<td>Perilampoid.</td>
</tr>
<tr>
<td>22</td>
<td>Putolleye,</td>
<td>Cyprinidæ</td>
<td>Back and sides light-green.</td>
</tr>
<tr>
<td>23</td>
<td>Poapree,</td>
<td>&quot;</td>
<td>Back greenish-brown, sides greenish.</td>
</tr>
<tr>
<td>24</td>
<td>Shingra,</td>
<td>Siluridæ</td>
<td>No stripes, lightly tinged with brown.</td>
</tr>
<tr>
<td>25</td>
<td>Dhimmurr,</td>
<td>Silurus.</td>
<td></td>
</tr>
<tr>
<td>26</td>
<td>Ghoa-gha,</td>
<td>&quot;</td>
<td>Back greenish, punctulate, head reddish.</td>
</tr>
<tr>
<td>27</td>
<td>Mokkhurr,</td>
<td>Opiocephalus.</td>
<td></td>
</tr>
<tr>
<td>28</td>
<td>Dhuwjha,</td>
<td>&quot;</td>
<td></td>
</tr>
<tr>
<td>29</td>
<td>Thaila,</td>
<td>Cyprinidæ</td>
<td>5 to 6 seers.</td>
</tr>
</tbody>
</table>
30  Mhorakkee,           "                     Much like 19.
31  Singarhee,           "                     Much like 4, 5, 6, 7.
32  Logurr,            Siluridæ,               3 to 4 faint punctulate
longish lines.
33  Ghoje,              Not noted.
34  Tupree,             "                     "
37  Ghunghutt,         Perilampus.
38  Soourr,            Siluridæ,               Diaphanous. Faint
punctulate lines.
39  Soonaree,          Cyprinidæ.
40  Phunnee,            "      Perilampoid.
41  Kutchoo,            "                     Much like the
preceding.
42  Saisurr,            "                     Ditto ditto.
43  Coommeee,           "                     Much like no. 4.
44  Saluree,            "                     Ditto ditto.
45  Shumsheer,          "                     So called because of
its voracity,
(Shumsheer a sabre.)
46  Ghora,              "                     Same as Soonee.
47  Sabooan,            "                     Same as the preceding.
48  Bambhun,            Cyprinidæ,               Same as Dharra.

All the above from the Indus, at Shikarpore.

<table>
<thead>
<tr>
<th>No.</th>
<th>Family</th>
<th>River</th>
<th>REMARKS.</th>
</tr>
</thead>
<tbody>
<tr>
<td>49</td>
<td>Cyprinidæ</td>
<td>Nari,</td>
<td>Small size, colour-silvery, except upper back, which is bluish-green.</td>
</tr>
<tr>
<td>50</td>
<td>Siluridæ</td>
<td>Mysore.</td>
<td></td>
</tr>
<tr>
<td>51</td>
<td>Ophiocephalus</td>
<td>&quot;</td>
<td></td>
</tr>
<tr>
<td>52</td>
<td>&quot;</td>
<td>&quot;</td>
<td></td>
</tr>
<tr>
<td>53</td>
<td>Cyprinidæ</td>
<td>&quot;</td>
<td>Same as 49.</td>
</tr>
<tr>
<td>54</td>
<td>&quot; Systomus.</td>
<td>&quot;</td>
<td>A beautiful fish, bright green back, otherwise bright orange-red, fins stained with black colours; fugacious.</td>
</tr>
<tr>
<td>55</td>
<td>Cyprinidæ</td>
<td>&quot;</td>
<td></td>
</tr>
<tr>
<td>56</td>
<td>&quot; Systomus,</td>
<td>&quot;</td>
<td>Back greenish, opercle orange spotted, one black spot near tail.</td>
</tr>
<tr>
<td>57</td>
<td>Percida Chamda</td>
<td>&quot;</td>
<td></td>
</tr>
<tr>
<td>58</td>
<td>Perilampoid,</td>
<td>&quot;</td>
<td>Water of both these rivers, quiescent: bunded up.</td>
</tr>
<tr>
<td>59</td>
<td>Cyprinoid</td>
<td>Dadur.</td>
<td></td>
</tr>
<tr>
<td>60</td>
<td>&quot;</td>
<td>&quot;</td>
<td>Same as 54.</td>
</tr>
<tr>
<td>61</td>
<td>&quot; Systomus,</td>
<td>&quot;</td>
<td>Same as 56.</td>
</tr>
<tr>
<td>63</td>
<td>Cyprinoid</td>
<td>&quot;</td>
<td></td>
</tr>
<tr>
<td>64</td>
<td>&quot;</td>
<td>&quot;</td>
<td></td>
</tr>
<tr>
<td>65</td>
<td>&quot;</td>
<td>&quot;</td>
<td></td>
</tr>
<tr>
<td>66</td>
<td>&quot;</td>
<td>&quot;</td>
<td>Same as 59.</td>
</tr>
<tr>
<td>67</td>
<td>Cobites,</td>
<td>&quot;</td>
<td></td>
</tr>
<tr>
<td>68</td>
<td>Cyprinoid</td>
<td>Bolan,</td>
<td>Bluish-green, blue bars and dots. Takes the fly.</td>
</tr>
<tr>
<td>69</td>
<td>Barbus?</td>
<td>&quot;</td>
<td>Intestines very long, much like Naipoora.</td>
</tr>
<tr>
<td>70</td>
<td>Gonorhynchus?</td>
<td>&quot;</td>
<td></td>
</tr>
<tr>
<td>71</td>
<td>&quot;</td>
<td>&quot;</td>
<td>Probably a small specimen of 69.</td>
</tr>
<tr>
<td>72</td>
<td>Cyprinoid</td>
<td>&quot;</td>
<td></td>
</tr>
<tr>
<td>73</td>
<td>&quot; Gonorhyncus,</td>
<td>Gurmarb,</td>
<td>Same as 70?</td>
</tr>
<tr>
<td>74</td>
<td>&quot;</td>
<td>&quot;</td>
<td></td>
</tr>
<tr>
<td>75</td>
<td>Cyprinoid</td>
<td>&quot;</td>
<td>Closely allied to the Mahaseer.</td>
</tr>
<tr>
<td>76</td>
<td>Ditto Mahaseer,</td>
<td>&quot;</td>
<td>Beautiful fish with yellow-brown back, golden sides. Takes fly greedily.</td>
</tr>
<tr>
<td>77</td>
<td>&quot; Gonorhynchoid,</td>
<td>&quot;</td>
<td></td>
</tr>
<tr>
<td>78</td>
<td>&quot;</td>
<td>&quot;</td>
<td></td>
</tr>
</tbody>
</table>
79 Silurida, " In Bolan river, deep still water.
80 Cyprinoid, " In small streams.
81 Macrognathus, " Tenacious of life, belly puffy, common throughout; a good deal like a Gudgeon.
82 Loach, Quettah.
83 Cyprinoides, " A beautiful silvery-leaden backed fish, with a streak of bright-red along the side. Common, very like the preceding: of these Quettah fish No. 83 is the most common, 82 the least so.

84 Cyprinus, curious, " not being a mountainous form.
86 " " "
87 Cyprinoides, Lora, Same mountain form, Gonorrhynchoid.
88 " " "
89 Loach, " Ditto ditto ditto.
90 " " " Perhaps same as the preceding.
91 Cyprinoides, " Like the Adoee.
92 " " " Mountain form.
93 " " " Large size for the genus.
95 " " " Note.—Probable number of species 47, deducting those supposed not different

96 Cyprinoid, Urghundab.
97 Loach, " Urghundab.
98 Siluridae, " I subjoin a list given me by a fisherman at Shikarpore, with his divisions into la: Large. Small.
Dhumpurra, Ghunghut.
Buree Phookee, Pedir.
Buree Thaillee, Soonnee.
Mhoarrhee, Phokee.
Moukkur, Moqullee.
Gundhan, Dhimmur.
Singaree, Ghoagar.
* Pulla, Khuggur.
Seenra.
Mhorr.
Bhangun.
Ghurr.
Souurr.
Morakee.
Tupree.
Ghogee.
Phopree.
Thaillee.
* Pulla.
Punnotee.
Dhaiee.
Ghogura.

(I send this list as all the specimens are not lost, and some are among the plants. Most of the species are, I think, distinct, and when they have appeared to me not to be so, I have generally noted it on the spot.

The mountain forms are very distinct, the mouth being under the snout, or head, the intestines long, peritoneum covered with a black pigment. These forms commence at Dadur, 800 feet above the sea: this stream abounds in rapids.
Gurmab is 1,100 feet. Quettah, 5,600 feet. Lora river, 3,600 feet. Urghundab, 3,600 feet.

These lists may be of some small use compared with Burnes’s collection. To a certain extent they may be useful as showing the preponderance, etc. of certain forms. You may rely on my distinctions between Cyprinidæ, Siluridæ, and Percidæ.

“To-morrow I will send the other list of specimens No. 3, which will I hope reach you; of all the fish in these parts, the Sir-i-Chushme and Cabul river Oreinus travels farthest up. I have caught it at nearly 11,000 feet in the Helmund river. Then come loaches, and the beautiful trout-like Opsarion; other Cyprinidæ ascend 2,000 or 3,000 feet, the Mahaseer scarcely more. Above that, come the genuine mountain forms.

<table>
<thead>
<tr>
<th>No.</th>
<th>Family.</th>
<th>Locality.</th>
<th>REMARKS.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Cyprinidæ, Oreinus?</td>
<td>Streams from So-faid-koh,</td>
<td>A brown fish, with irregular black spots.</td>
</tr>
<tr>
<td>2</td>
<td>Cyprinidæ,</td>
<td>&quot;</td>
<td>&quot;</td>
</tr>
<tr>
<td>3</td>
<td>&quot;</td>
<td>&quot;</td>
<td>A sombre looking Gudgeon-like fish, back blackish, sides yellowish, punctulate with groups of blackish spots.</td>
</tr>
<tr>
<td>4</td>
<td>Loach,</td>
<td>&quot;</td>
<td>Colours and patches obscure.</td>
</tr>
<tr>
<td>5</td>
<td>Perilamp,</td>
<td>Jallalabad river,</td>
<td>Usual silvery-bluish hues.</td>
</tr>
<tr>
<td>6</td>
<td>Cyprinidæ, mountain form, Schizothorax.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Cyprinidæ, Poo-teoides,</td>
<td>&quot;</td>
<td>Colours obscure, scales minute, dorsal spine very strong.</td>
</tr>
<tr>
<td>8</td>
<td>Cyprinidæ,</td>
<td>&quot;</td>
<td>A stout fish, of obscure colours, each scale with a transverse more or less wavy red line (like the Nepooa of Assam), mouth nepooroid, intestines very long, very thin, very frangible, packed in longish folds, Peritoneum covered with a black pigment. Herbiv.</td>
</tr>
<tr>
<td>9</td>
<td>Cyprinidæ, Perilampoid,</td>
<td>&quot;</td>
<td>Back metallic bluish-brown, otherwise silvery.</td>
</tr>
<tr>
<td>10</td>
<td>Cyprinoid,</td>
<td>&quot;</td>
<td>&quot;</td>
</tr>
<tr>
<td>11</td>
<td>&quot; Schizo-thorax,</td>
<td>&quot;</td>
<td>&quot;</td>
</tr>
<tr>
<td>12</td>
<td>&quot; &quot;</td>
<td>&quot;</td>
<td>Back greenish, fins reddish, snout elongated.</td>
</tr>
</tbody>
</table>
| 13  | " " | " | Colours brownish, tinged with yellow; perhaps it is the same as the Helmund and Cabul species: intestines packed in a few folds, moderately long, 4½ inches longer than body: diameter of body 2 inches. Peritoneum with the black pigment Carno-herbivorous.
<table>
<thead>
<tr>
<th>Page</th>
<th>Text</th>
</tr>
</thead>
<tbody>
<tr>
<td>14</td>
<td>Cyprinoid,</td>
</tr>
<tr>
<td>15</td>
<td>Ophiocephalus,</td>
</tr>
<tr>
<td>16</td>
<td>Cyprinoid like a Bleak, Schizo-thorax,</td>
</tr>
<tr>
<td>18</td>
<td>Cyprinoid,</td>
</tr>
<tr>
<td>19</td>
<td>&quot;</td>
</tr>
<tr>
<td>21</td>
<td>Racoma nobilis Lalpoor, Cabul river,</td>
</tr>
<tr>
<td>22</td>
<td>Loach,</td>
</tr>
<tr>
<td>23</td>
<td>Cyprinid, Oreinoides,</td>
</tr>
</tbody>
</table>
stream. confined to back and sides, small but distinct; fins tinged with reddish. Peritoneum loaded with black pigment. Intestines in short loops across abdomen of intermediate size, as to length and diameter. Air bladder small; very common. Swarm in deepish pools under limestone rocks, takes bait, i.e. offal and worms with great avidity. Like many other species, it is asserted to be the English trout: it rises to the surface.

24 Loach, Same place common, Shape subcylindrical, pale greenish-brown, with very broad bars of brown, fins spotted with black, otherwise fuscescent; at root of tail a deep black bar. Head depressed, in old specimens broad, closely spotted with black, snout attenuated, apex with cirrhi; upper jaw in the centre with a bony process not unlike an incisor tooth.

25 Cyprinid, Opsarion " A beautiful trout-like fish, back bluish-black, triangular bars of azure blackish, ending in a point towards glandular line, fins tinged with orange, tail tipped with black. Peritoneum spotted slightly with black.

26 " Opsarion, " Possibly young specimens of preceding, colours same but fainter.”

*****

Memorandum on return from Afghanistan.

“As I considered on my arrival at Peshawur in December 1839, that a great deal remained to be done, I obtained permission to remain another season in Afghanistan. I immediately mentioned my wishes of travelling to General Avitabili, who strongly advised me not to attempt leaving Peshawur in any novel direction, as the whole of his district was much disaffected. Soon afterwards I heard of an expedition being on the point of leaving Jallalabad for Kooner, and I determined on joining it. I re-traversed the Khybur Pass alone, and arrived at Jallalabad just in time to go in the advance. I was present at Pushut, 18th January 1840; and on the return of the force I remained behind with Captain Macgregor. In February 1840 I accompanied Captain Macgregor to Chugur-Serai, and thence to Otipore or Chugur-Serai-Balu on the immediate frontier of Kaffiristan, and through his influence I was enabled to remain there, and to increase my materials in an extremely interesting direction. I remained about Otipore for some weeks, making arrangements for penetrating into Kaffiristan and little Cashgur, and in daily expectation of being joined by the late Capt. E. Connolly; all my plans, which first seemed to promise success, were completely frustrated by the disturbances which broke out in Bajore, consequent on Meer Alum Khan’s absence at Jallalabad. Capt. Connolly
barely escaped with his life from the hands of the Momauds. Meer Alum Khan found on his return towards his government that he could not leave Chugur-Serai, and at last, circumstances threatened so much around Otipore and Chugur-Serai, that Meer Alum Khan insisted on my leaving Otipore and on returning with him to Jallalabad. I did not leave a moment too soon, for shortly after, Syud Hoshin turned Otipore by crossing the hills to the north of Deogul, and very soon possessed himself of Otipore. Meer Alum and I reached Jallalabad in safety, having been attacked once on the road.

“I remained at Jallalabad a few days, and was driven thence to Khaggah by the necessity of obtaining medical aid. I reached Khaggah in a high fever, and was confined to my bed for six weeks: during my severe illness, I experienced the greatest kindness and attention from Dr. Thomson and Dr. Andrew Paton, of the H. C. European Regt.

“Early in July I proceeded to Cabul for change of air, and as soon as I recovered a little strength, started to join Lieut. Sturly, who was surveying on the Toorkistan frontier. I met that Officer at Syghan the day he left to prosecute his surveys, which had been interrupted by the Kamard disturbances: he was recalled to Syghan, in consequence of heavier and more serious disturbance.

“I returned to Cabul, as I found it impossible to proceed beyond Syghan, and then waited with impatience for a season that would enable me to cross the Punjab without great risk to my still debilitated constitution.

“My establishment of collectors consisted of unintelligent Affghans, who were particularly prone to abrupt abscondings, and my supplies of materials and carriage very limited.

“The botanical collection is as extensive as could be expected from the nature of the country and the climate. It is in excellent order, consisting of about 1500 species, and a great number of duplicates. This collection has been formed on the principles which have guided me on former travels. Those principles I conceive to require the collection of every form in numbers, and in various localities, so that the geographical limits of each may be estimated, and the examination be open. They also require information as to habitat, locality, climate, whether the plants are gregarious or not, and whether they contribute to giving peculiar features to the country. I do not hesitate to say that this collection contains almost all the plants that existed in flower or fruit along the line of march of the army between Cabul and Syghan, about Chugur-Serai, Otipore, and Pushut, and in the neighbourhood of Khaggah.

“The extent over which it was formed is about 1,600 miles, and on the variety of geographical position a considerable part of its value depends. If the plants between Cabul and Peshawur are less rich, as my journeys between those cities always occurred at unfavourable seasons, the deficiency has been lessened by my friend Dr. Ritchie.

“The Ornithological portion of the collection, consists of about 350 specimens, is in good order, and contains many objects of interest, valuable for throwing some light on the geographical distribution of birds.

“To the fish of the various tracts I paid considerable attention, but owing to the difficulties of travelling and of climate, the collection has suffered severely. At Shikarpore I made an extensive collection of the fish of the Indus. I had collected most of the fish of the river, of the Bolan Pass, of the streams of Quettah, and of the Urghundab, near Candahar, unfortunately I relied too much on the preservative powers of alcohol. Subsequently I took the additional precaution of preserving skins separately; and it is to these which amount to about 150 specimens, that the collections are chiefly limited. The collections contain the fish of the Cabul river, between its source near Sir-i-Chushme, and
Peshawur, of the Helmund at an altitude of 11,500 feet, of the Bamean river, and of the Chenab, Ravee, and Sutledge.

“This collection is particularly interesting, as showing that while the plants, quadrupeds, and birds of the southern and northern declivities of the Kohi-Baba, the continuation of the Hindoo-koosh, are much alike, yet that a total difference exists in their fish.

“Lord Keane, and Sir Willoughby Cotton, left me in complete possession of my own time, a great kindness due no doubt to the considerate instructions of Lord Auckland, but for which I was not the less grateful.

“I always found Sir Alexander Burnes very considerate and very willing to forward my views, and put me in possession of information. The late Dr. Lord also showed himself anxious to assist me in my duties, and very kindly asked me to join the Mission to Toorkistan, so suddenly put an end to by a suspected outbreak in Kohistan.

“To Captain Macgregor I was under great obligations during the whole time I continued in his district. Through his influence I was enabled to remain at the outer borders of Kaffiristan; and that deservedly warm respect which he was held in by all the chiefs, would, I am confident, have gained me access into Kaffiristan, and towards Cashgur, at any less unsettled period. I have seen Captain Macgregor in the closet and in the field, and I cannot sufficiently express the respect with which I have had cause to regard him in both situations.

“Captain Sanders, of the Bengal Engineers, was always eager to swell my stock of materials, and during periods of occasional indisposition, I relied almost entirely on him. Captain Sanders had also made for me a collection of plants between Candahar and Herat, which, I regret to say, was nearly entirely destroyed in crossing one of the rivers on that route.

“It is to Dr. Ritchie, of the Bombay Medical Service, the companion of the justly celebrated Major Pottinger, during his return from Herat via Jhomunna, that the Botanical collections are mostly indebted. Dr. Ritchie not only placed unreservedly at my disposal a very interesting collection made on that journey, but also a larger one made between Peshbolak and Peshawur. Both these are of considerable value, the one shows that the Affghan forms prevail as far as Herat on both sides of the Paropamisus, the other shows that Affghanistan, even in its hottest parts, has a majority of European forms. To the contents of these collections, notes of the localities are also added, enhancing their value very considerably. I may be excused for adding, that Dr. Ritchie is acquainted with route surveying; in this and his knowledge of Botany, he possesses two valuable requisitions of a traveller.

“Dr. Grant, of the Bombay Medical Service, formerly in Medical charge of Dr. Lord’s Mission, liberally presented me with an excellent series of specimens from the valley of Syghan.

“While I am beyond measure indebted for Zoological collections, to Captain Hay, of the European Regiment.”

* * * * *

“The following notes addressed to Emanuel Fernandez, plant collector at Malacca, may perhaps be useful as containing instructions for the collection and transmission of plants and seeds. They are perhaps worthy of insertion on other grounds, as an example of the painstaking, and patient manner in which Mr. Griffith made his wishes known to the persons employed by him in his pursuits.”
To Emanuel Fernandez.

“I have received the open box of seeds, and the large case of plants, per ‘Tenasserim.’
The Ebool seeds were coming up, the dried plants are in good order, and are of very good kinds.

“Before you put in the palms and fruits with other collections, you should see that they are quite dry, as otherwise they rot and injure the dried plants. When you send up more fruits, etc. put them into open rattan baskets, so that they may be aired.

“I send a list of palms and rotans wanted very much, and two more glazed cases for seeds: water the earth inside a day before closing the boxes and sending them off to Singapore. Whenever you get any good seeds, dry them, and put them in a letter, directed to me. Seeds spoil by being kept, particularly if kept among wet fruits and dried plants.

“If you can get flower-pots in Malacca buy two or three dozen, and whenever you get seeds sow them in a pot, and keep them, until you have enough pots filled to occupy one of the cases, then put mould between the pots, and sow more seeds in this mould, fasten the lid down and send off the box to Singapore.”

* * * * *

May 30th, 1843.

“The cases of plants, etc. have arrived: the fresh plants were nearly all dead.

“You planted them very well, and cleverly, but some how or other the lids of the boxes were nailed down, and so the plants died; because plants will not live without light.

“Some of the Ebool seeds have sprouted, one Lanjoot arrived alive, and also the Pakoo Galowe.

“I will send soon two glazed cases, in which you may put plants as before, and seeds of palms, or any good plants: sow them in the same manner, and three or four days before the cases are despatched water the earth and plants moderately; then screw down the lid, when the plants, if they have rooted in the earth, will not die, because the glass admits light to them. But to be sure of the plants having rooted, you must keep the cases with you for three weeks, and if any plants are sickly, take them out and put in others.

“I send a list: when your next despatch arrives, I will increase your pay. If you send plenty of seeds, etc. often, that is once a month or six weeks, I will keep you in my service even if I do not come back to Malacca.

“I also send a box with a large bottle in it of spirits of wine, this is for monkey cups (Nepenthes). Take the finest ones you can get of all sorts, and put them in the bottle, leaves and all, do not squeeze them into the bottle, then send it to me.”

* * * * *

“I send two empty glazed cases for plants: when these reach you, fill them with moist earth and plant in them ripe fresh seeds of the following palms * * * You need not wait until you have obtained all, but such only as you can get at once; but remember when you have got ripe seeds of any kind to sow them in the case. Take care the earth is not too wet. The seeds you sent, sown in an open box, came up, and we have now six or seven live Eools, etc.

“Send me up some ripe fruits and seeds of the Epoo, those you sent were not ripe. If you
can get any ripe ones, also sow some with the palm seeds.”

* * * * *

Calcutta: March 26th, 1844.

“When you prepare Rotangs do not cut off the stalk of the leaf close to the stem, but six inches from it, and do not cut off the thorns, but tie all up in mats or gunny bags: at the same time send the leaves of each dried in paper like other plants and flowers, all with names written plainly in English and Malay.

“Send live plants according as you receive boxes for them.”

* * * * *

“Whenever you find ripe fruits or seeds, dry them in the sun, and then send them to the Post Office for despatch in paper bags. Sow palm seeds in open boxes as you did before, the Ebool having come up.”

* * * * *

January 14th, 1844.

“The plants dried and living have been received, and do you great credit. The live plants particularly are in excellent order. I have sent two more cases, when they reach you, fill them as you have done before, and despatch them to me. I send some cards on which you can write the names plainly, and tie them on the specimens. I will also send you a pocket English Dictionary, and make you a present of the English and Portuguese one.”

PRIVATE JOURNALS OF WM. GRIFFITH, F.L.S.

CHAPTER I.

When proceeding with the Assam Deputation for the Examination of the Tea Plant.

September, 1835.—We arrived at Pubna on the 9th of September, and left it on the following morning, pursuing the course of the Pubna “Karee,” which is exceedingly tortuous and of about an average width of 100 yards. On the evening of the 10th, we halted in the same river near its termination. This morning we reached the “Beera,” into which the Pubna Karee enters, and which at the mouth presents a vast expanse of water. Among the jheels which occur on every side, we noticed in abundance the Tamarix dioica. About noon we entered a narrow river, and in the evening a very narrow creek in which in two places we experienced a great difficulty in getting the boats along. We noticed Alpinia allughas, Nymphaea pubescens, Oxystelma esculentum, Apluda aristata, in abundance. Up to this period the two most conspicuous grasses continue to be Saccharum spontaneum, and Andropogon muricatus.

Sunday, 13th.—Arrived at Shiraz-gunge, about half-past 8 A.M., from which place the people say Jumalpore is a three days’ journey. The country through which we proceeded after leaving Shiraz-gunge is nothing but a net-work of rivers, several of vast size, and low islands, occupied almost exclusively by Saccharum spontaneum, and in some places abounding in Typha elephantina, in fruit. We halted at a small village in the evening, where we procured Centrostachys aquatica.
September 14th.—Came in sight of distant very elevated land, which we suppose to be the Kassiya Hills. This morning (15th) the Hills are very plain, and bear nearly due north. The country through which we passed yesterday presented no change whatever. *Andropogon muricatus* has now nearly left us; but the *Saccharum* reaches to a large size, and is incredibly abundant. The natives use it for thatching their huts. We were visited by a heavy squall in the evening.

16th.—Strong winds from an easterly direction. About noon we succeeded in reaching a creek, in which we are completely sheltered. During our route here, we were employed in examining a new species of *Crotalaria*, and one of *Mitrascaceae! In pools close to us are *Damasonium indicum, Nymphaea caerulea, Myriophyllum tetrandrum, Polygonum rivulare*, and a species of *Villarsia, V. cristata*.

19th.—Left the creek, and arrived at Jumalpore about 2 P.M.; the cantonment of which occupies the right-hand side of the Burrampooter, along the bank of which the officers’ houses are situated; indeed this is the only dry line about the place, as immediately inland there are nothing but jheels and rice fields. Jumalpore is about ¾ of a mile from the junction of the Jenai with the Burrampooter or rather from the point of exit of the former river.

24th.—We left the cantonment about 11 A.M., and proceeded down the Burrampooter, which is a very uninteresting river, and appears more like a net-work of water and sand banks; opposite Jumalpore, the banks are about a mile apart, but the distance between the extreme banks, leaving the island opposite the cantonment out of the question, is much more. During the dry weather this part of the river is passable, and indeed is in some places nothing but a dry bed of sand, so that people walk across it. During our stay at the above place we met with many interesting and new plants, among which a new species of *Villarsia* occupied the most prominent place. *Cyperaceæ, Gramineæ*, and aquatic *Scrophularineæ* abound. *Solanum spirale* occurs in abundance, and the trees commence to be clothed with ferns. I observed only one *Epiphytica Orchidea*, probably an *Aerides*.

The banks consist hitherto of nothing but sand, covered with *Saccharum spontaneum*. *Andropogon muricatus* is scarcely to be met with.

26th.—We left Mymensing this morning, and proceeded down the Burrampooter, the banks of which still present for the most part nothing but a succession of sandy banks covered with *Saccharum spontaneum*. The stream is not very rapid, and the river, owing to the numerous islands and banks, does not present so imposing an appearance as the Ganges. For the last week strong easterly winds have prevailed.

27th.—We entered the mouth of the Soormah, or, as the natives seem to call it, the Barak. The water of this river or portion of the Megna? is remarkably clear, compared with that of the Ganges; as indeed is that of the Burrampooter.

30th.—Some time after we entered the Soormah we apparently left its channel, and up to this morning we have passed through a tract of jheels with a few clear and very deep channels. The villages are built on small eminences, and are entirely surrounded with water; they have the usual form, and those houses adjoining the water have fences of an *Arundo*, which they tell us are intended to keep out the grass. We have since entering these jheels passed through and between immense beds of vegetation, formed principally of *Oplismenus* (Panicum) *stagninus, Leersia? aristata*, which by-the-bye is a distinct genus. *Villarsia cristata, Nymphaealotus, Potamogeton, Azolla Salvini*, etc. etc. The only novel things we have met with are *Ischæmum cuspidatum*, Roxb. (sui generis,) and a small grass intermediate between Panicum and Chamæraphis. The wild form of *Oryza sativa, Panicum interruptum and Leersia? ciliaris*, Roxb. also occur; the two former in
abundance. On the more dry tracts, that occasionally though very rarely occur, *Andropogon muricatus* appears. No *Saccharum* presented itself since the 28th. High ground was visible yesterday evening, apparently at a great distance.

**October 1st.**—We have continued to pass through immense jheels: about 6 A.M. we arrived at Hubbe-gunge, a large native town, situated on the Barak, which does not deserve the name of a river. The actual distance from this place to Chattuc is about 42 miles, and the high land in that direction was faintly visible for about 2 hours in the morning. The ground to the Eastward is losing the “Jheel” character, and appears densely wooded, and to the S.E. rather high hills are visible. Altogether this land of jheels is very remarkable, particularly on account of the great depth of the water, which except in one point has hitherto always exceeded 6 feet, and yet the water has fallen in all probability two or three more. As the head quarters of tropical aquatic plants, it is well worthy of attention; the profusion of *Leersia aristata*, Roxb. is immense, but this is almost exceeded by *Oplismenus stagninus*.

On the 3rd October, we left the tract of jheels, and proceeded by small rivers, overhung with jungle and fine bamboos; on the 5th we re-entered the Soorma and proceeded down it to Chattuc, which is situated on the left bank of the river, and which we reached in the afternoon. During our passage down the river we had beautiful views of the mountains, which do not however strike one with an idea of great height. We could plainly distinguish two or three waterfalls shooting over scarped precipices.

**Churra Punjee, October 30th.**—After a residence of 20 days here, I wrote to Mr. Solly, stating nothing particular, except that Bucklandia has coniferous tissue, and that Podostemon will probably prove Monocotyledonous and allied to Pisciaceae. Our stay here has proved a source of great delight, and accumulation of botanical and geological treasures. The cantonments of Churra are at an elevation of 4200 feet above the sea, the native village being situated half way up the ascent which closes in the table-land on which the cantonment is situated towards the N. and W., and it is hence about 300 feet higher. The country immediately adjoining the cantonment is flat, with here and there a rounded hillock, destitute of any covering but grasses and a few low, half shrubby plants. To the Eastward there is a very deep and beautiful valley, the west side of which in particular is densely covered with jungle, but this does not contain any large trees. The opposite side, fronting our bungalow, runs nearly N. and S., presents a succession of ravines, and a most picturesque and varied surface. This valley, along the bottom of which as is usual a torrent runs, opens into the low country at Terrya Ghat, which is situated at the foot of the ascent to Churra. Directly to the south, and at a distance of about two miles from the cantonments, there is another valley likewise occupied below by a torrent fed by the Moosmai falls. The commencement of all these valleys, that I have at least seen, is a sheer precipice, which often, and particularly at Moosmai, assumes the form of a vast amphitheatre, over the brink of which cascades, especially at Moosmai, fall in tolerable plenty. It is in these places that the immense depth of the sandstone is best seen; the depth of the valley of Moosmai is, I am told, 1500 feet, the country above these precipices is generally level, and is in fact table-land. The most beautiful valley is at Maamloo, a village to the Westward of Churra, and about five miles distant. The approach to Churra is pretty enough, and gives the best view of the cantonment. The coal mines are to the Westward, and close to Churra. These I have not yet seen; the coal is of the very best description, it does not splinter, gives remarkably few ashes, affords an admirable fire and the best coke. Water-courses are plenty about Churra, but the body of water is at this season small, although it becomes considerable after a few hours rain; it is then that the great fall at Moosmai becomes really beautiful, the water shooting over the precipice and falling into a basin about 150 feet below. By a succession of these falls, although of more limited height, it at length reaches the bottom of the valley. It is only on
the precipices about the fall that the Chamærops appears to grow; at the foot of a
precipice a little to the right (going from Churra,) a tree fern grows, which I have
Wallich’s authority for stating to be Polypod giganteum, a fern which occurred at
Mahadeb, and which I have seen in somewhat similar situations at Mergui. All my
excursions have been confined to this valley and to the water-courses immediately around
Churra; once only have I quitted the table-land and proceeded to Maamloo, and yet in this
very limited space the profusion of objects has been such as to enable me only to embrace
a very limited proportion. The above excursion proved very rich. About half way to
Maamloo I discovered a solitary tree fern (Alsophila Brunoniana,) and to the left, and up
the broken sides of the calcareous cliffs that occur here and between Maamloo and
Moosmai, a group of several magnificent specimens, of which on the succeeding day we
brought home three. We saw none above 30 feet, although the specimen in the British
Museum from these hills measures 45. Their axis is of small diameter, and is nearly
cylindrical, the vascular fascicles being disposed in covered bundles, often assuming the
form of a UU near the circumference of the very dense cellular tissue of which the axis is
chiefly composed. Towards the base it is enveloped in an oblique dense mass of
intermottled rigid fibres (roots) which, as they are developed in the greatest extent, the
nearer they approach the base, give the trunk a conical form. Their growth is essentially
endogenous, and will probably be found when examined aborigine to approximate to that
of Cycadeæ, although these last are of a more exogenous than endogenous nature.
Nothing however is known of the growth of Palms, Cycadeæ, or tree ferns. I have above
alluded to the calcareous rocks or cliffs; these are of the same formation with those that
occur so abundantly on the Tenasserim coast, although they are much more rich in
vegetation. These I first saw at Terrya Ghat; like those of Burmah they abound in caves,
and assume the most varied and picturesque forms; they appear to be the head quarters of
Cyrthandraceæ, of which we found a noble species with the flower of a Martynia growing
among the tree-ferns. They are very rich in ferns and mosses, of which last near the
tree-ferns I gathered four species of four genera without moving a foot. The cliffs in
which, or at the foot of which the coal is found, bound the Churra cantonments to the
Westward. These are chiefly calcareous. The entrance to Churra lies between this and
the precipice at Moosmai. Very few animals of any description are to be seen about
Churra. I have seen one small species of deer, about half as large again as the mouse-deer
of Mergui, and one young flying squirrel of a greyish black colour, with a very bushy
tail. Leopards are, they say, not uncommon. Tigers do not generally come so high. Of
birds, I mean about Churra, there are several species of hawks, and their old companions
crows and swallows; but I have seen no sparrows, which is singular enough. There is one
beautiful species of jay, with crimson-orange beak and legs, and a pretty king-fisher; but,
except perhaps in the valleys, birds, I should say, are very scarce. With respect to
shooting, scarcely any is to be had; wood-cocks are found in the dells about Churra, but
sparsingly. I have seen only one snipe and one quail.

Regarding the natives, I have little to say. They are a stout-built, squat, big-legged hill
tribe: the women in regard to shape being exactly like their mates; and as these are
decidedly ugly—somewhat tartarish-looking people, very dirty, and chew pawn to
profusion—they can scarcely be said to form a worthy portion of the gentler sex. They
appear to be honest; but that is a quality which, from the example of their European lords,
they are said to be losing fast. They have no written character; every thing being
transmitted by tradition, and performed by the interchange of tokens. They drink like
fish, and manufacture a bad kind of arrack, the pernicious effects of which were
experienced by the European invalids when the Sanatarium was in existence. They pay
respect to their dead by the erection of a sort of kairns and large erect slabs of sandstone
rounded off at the upper end: of these, I believe, they put up three or five to each friend,
according to their means and, probably, rank. The Churra people cultivate nothing but a
little cotton, and perhaps a species of Eleasine. They depend upon the plains for their support and supplies, and this is good management since rice at Terrya Ghat is sold at 70 or 80 seers a rupee. Their hire is, considering the cheapness of their food, very expensive; a man being rated at four annas a day, a woman at three, and a boy at two. I should add, that they have no caste.

The climate is certainly very cool and cold, the thermometer ranging from about 56° to 66° in-doors at this time of the year. The rains are said to be the coldest part of the year; they are excessive, commencing in April and ceasing in October. It occasionally rains for fifteen or sixteen days in succession, and without intermission; and nine or ten inches have been known to fall in twenty-four hours. Since we have been here, inclusive of this, we have had four days of wet weather, of which three were continued rain. Both were ushered in by the sudden irruption of heavy mists from below, which soon spread over the country, obscuring every thing. These sudden irruptions occur during the partial breaking up of the rain, during which time the valleys are completely choked up with dense mists, the summits of the hills on the opposite side to that on which one stands being alone visible. After the rains were over, in the first instance, the plains, or rather the mass of haze hanging over them, presented a most curious spectacle.

The coldest weather we have yet experienced was at Maamloo, on the 27th, the thermometer at 8 P.M. being at 52°. This is remarkable, as Maamloo is rather below Churra. There is however a good deal of wood round the place. [7]

With regard to Botany, the chief vegetation about Churra, as indeed is at once indicated by the appearance of the country, consists of grasses. Along the water-courses, which intersect this portion of the country, Bucklandia populnea, a species of Ternstræmia, Pandanus, Eugenia, Camellia, are found; while Compositæ, Eriocaulon, and ferns abound in the same places. The vegetation of the valleys is very rich and very varied; and, an affinity is indicated with the botany of China by the existence of a species of Illicum, I. khascanam, and several Ternstrœmiaceæ. The great orders are grasses, ferns, compositæ. During a trip to Maamloo, a beautifully situated village on the brink of the table-land, we discovered abundance of the tree-fern Alsophila Brunoniana, the highest of which measured 25 feet. The appearance of the tree is that of a palm. The flora surrounding these tree-ferns we found to be exceedingly rich. Among Nepal ferns, I may mention Anisadenia, Saxifraga ligulata.

Interior of the Khasyah Mountains.—On the 2nd, we left for Surureem; at which place we halted a day. Bucklandia here occurs, of a very large size, perhaps 50 or 60 feet. It is a rugged-looking tree, many of the branches being decayed. There we observed the first Rhododendrum arboreum. Our next stage was to Moflong; during our march thither, or rather mine, I had a fine view of the Himalayas, but not upon the regular road to Moflong. The European forms certainly increased in number between Surureem and the above place. Two great acquisitions occurred on the road; a new Crawfurdia, and a Podostemon which W. has named after me. This I found in the clear stream adjoining the Bogapanee growing upon stones, and adhering to them very firmly. It is on the hills about the Bogapanee that the firs first make their appearance, but do not attain to any great size. The valley of the Bogapanee is exceedingly deep, and both the descent and ascent are very difficult.

Moflong is a bleak exposed village and the bungalow or residence for travellers very bad. The number of European forms we found to increase considerably about this place. The only woods that occur are of fir, but the trees are of no great size; their frequent occurrence, however, stamps a peculiar feature on the scenery. We here experienced nearly three days of continued rain, and, as the place is bleak, we were miserable enough. We left for Myrung on the 9th, and the greater and all the first part of the long march was
very uninteresting. At Mumbree, however, there is a decided improvement, and the scenery is very good. One here notices the occurrence of woods—of oaks, etc., and their form reminded me somewhat of the woods of Buckinghamshire. No woods of fir occur; all the trees occurring isolatedly. I should mention that the country between Molee and Moftong is quite peculiar in geological structure, abounding in Cyanite, the masses of which are of very considerable size. I imagine that the vegetation farther on in this direction would be more rich in European forms than elsewhere, at least between Churra and Mingklow.

Myrung is certainly far superior in every point to any place that we have yet seen; and, as the climate is peculiarly fine and the bungalow good, the degree of enjoyment is as great as can be expected. The features of the country are similar to those of Mumbree. The groves or woods are composed chiefly of oaks, intermixed with Magnolias, which attain a very large size. These forests seem all to have a northern aspect. Orchideae abound in these woods, and so far as herbaceous forms go, European vegetation is on the decrease. From the bungalow one has occasionally a remarkably fine view of the Himalayas, mountains intercepted by large tracts of very high land, probably Bootan. The coldest weather we have experienced here was when the thermometer sank to 46°; even in the middle of the day the sun is not oppressive. It is singular enough, that the first attempts, so to speak, at a Fauna occur here. The woods abound with small birds. I shot one squirrel, with a very short tail and rounded head. Red deer (the Gye of the Burmese) occur, though rarely. Two or three solitary snipes may be found during a day’s excursion, and perhaps a brace of quail, which are nearly as large as English partridges. Pheasants are reported to occur in the woods. I should add, that both here and at Nunklow snipe of a very large description, and of the habits of the solitary snipe, are found in small numbers. They are very brown, as large as a wood-cock, and their cry is that of a common snipe. Lieutenant Townsend informs me, that these birds are a totally distinct species. Lieutenant Vetch tells me, that the Khasiyas declare that they are the females of the wood-cock, in other words, wood-hens, and that in March wood-cocks abound in the places with these wood-hens. He likewise informs me, that the only difference he could ascertain to exist between these birds and wood-cocks, consists in their having very short and thick legs.

I have seen two of this particular description, but have never shot any.

After Myrung one can speak much less in favour of these hills. Nunklow is a pretty spot, and commands a really magnificent view of the Himalayas, of the Bootan mountains, and of the plains of Assam. Altogether this view is the finest which, in my limited experience, I have ever seen: I did not however like Nunklow, nor do my wishes recur to it. [91] The route thither is pretty enough, and not fatiguing. I may mention Nunklow as the station of some fine trees, among which is a Betula, two Æsculi, oaks, etc.
abundance. The pine is in fine order, but not large. Much more cultivation is carried on in this portion of the hills than elsewhere, and paddy is cultivated apparently to some extent. The temperature is much warmer, and the air by no means so bracing as that of Myrung. Perhaps at this place the flora resemble that of lower Himalaya more than other places we have yet seen. The march from Nunklow to Nowgong is very long, and, as we started late, owing partly to mismanagement and partly to the want of coolies, we were most agreeably benighted in the jungle. The descent is very sudden and commences at Nunklow; the valley, on the brink of which it is situated, being perhaps 2000 feet deep. It is in this valley or on its walls that the finest pines we have seen occur, but even here they do not attain a greater height than 60 feet, and perhaps a diameter of a foot or a foot and a half. As Mr. Brown of the Sillet Light Infantry informed me most correctly, many would make fine spars; but Mr. Cracroft’s language in one of the Journals of the Asiatic Society when describing these firs, seems rather overwrought. During our march I picked up a pretty species of Sonerila. A small stream runs at the foot of the descent, by what name it goes I know not. Near the Bustapanee, flowing along a valley about two hours’ walk from the last mentioned water. Wallich discovered abundance of his favourite and really splendid Polypodium Wallichianum, which I may accuse with justice of being an additional reason for our benightment. The stream is really the only respectable river we have seen, or rather the second one that can be called a torrent, the other being the Bogapanee. It boils along, and the body of water is great, even at the season of the year at which we passed it. It has forced enormous holes, frequently round, in the large masses of rock that form its bed, and then in and a few yards beyond the bridge of bamboos by which we crossed, it falls, they say, 70 feet into a fine basin, which however is only partly visible from above. They who have been on the edges of this basin say that the fall is really fine; it certainly has not much of this when viewed from above, neither can it, I think, even in the rains come up to Mr. Cracroft’s description. Moosmai is, après tout I will venture to say, the king of the falls between Terrya Ghat and Ranee Godown. On the farther side of this water, small trees of Cycas first make their appearance, but we had no time now or rather then to examine any thing. As the shades of evening lengthened we quickened our paces, and at last when it became dark, came up with the coolies in a most rugged road, and when it was dark, after stumbling about a good deal, I made my way to the foot of the descent, and reached a small stream, where we made preparations for a halt, and where we passed the night, during which we were treated with a slight shower of rain. As the season was far advanced we all escaped, scot-free, from fever, and reached the Bungalow called Nowgong about 10 o’clock next morning, where we spent the day.
From this time we were, I believe, all anxious to leave the hills, which had lost all their charms, although the vegetation was still more gigantic and interesting. But we were now confined to the road, which is very good, all digressions being prevented by the thickness of the jungles, and then in some places swarms of wild elephants. These animals appear most numerous about Onswye, near which there is a marshy place literally trodden up by them, and their tracks were so fresh that no traces of Wallich or his coolies could be identified, although they had preceded us only about half an hour. It was in this particular place that I gathered a solitary specimen of _Butomus pygmaeus_. Beyond Nowgong, saul first comes into view, and many trees attain a considerable size. Some fine ferns and two beautiful Acanthaceae, I may mention, as collected about that place. We reached Jyrung by an easy march the next day; every step adding only to a greater renewal of acquaintance with old faces, or at least old plain plants. Between Jyrung and the foot of the hills, we fell in with _Henslowia glabra_ in fine flower: Wallich took many fine specimens, all of which were males. This species is, as well as the former, liable to deceive one as to the sex of the plant; but all the seeming ovaries beginning to enlarge are due to insect bites or punctures. To conclude: at the foot of the hills we were embraced with _Marlea Begonifolia, Bauhinia purpurea_, etc. almost exactly as at Terrya Ghat. Between the foot of these really delightful hills and Ranee Godown, I fell in with one plant only, deserving of mention, _Dischedia Rafflesiana_; this is worthy of notice, as our Indian Asclipiferous species have not hitherto been found, I believe north of Moulmain, nor otherwhere than that peninsula and the archipelago. From Ranee Godown we had the pleasure of walking nineteen miles to Gowahatty, which place we reached on the 23rd November.

All I can say in its favour is, that it is very cold in the mornings, always at this season cool; that it is very pretty, being situated on the Burrampooter, and surrounded with hills; that the women are good-looking, and the whole body of officers among the best. Of its botanical riches I can only say, that in a short afternoon’s excursion we found _Cardiopterus harnulosa_, or rather saw it, and a species of Apocynea in fruit, probably the same with one I have from Tenasserim, and which is remarkable for the very many fleshy alæ of its fruit. Gowahatty is particularly known as the station for _Cycas circinatis_, one fine specimen of which Captain Jenkins shewed us, and the height of which is perhaps 20 or 25 feet.

It was dichotomous, but only once. The rings formed by the scars of the foot stalks, as
well as those of the fruit stalks, were most distinct on the two branches only, and gave
them a very rich and less elated appearance. The examination of this specimen only
strengthens me in my opinion derived chiefly from examination of those in the Botanic
Gardens, that these rings which certainly afford the age of each branch, one being added
of either sort every year, are not to be distinguished in the stem below its division. So
that after all, Brongniart is only half-wrong, although he is ignorant of the saving clause.

I may add, that we were on the hills about thirty-eight days, of which seven and a half
were rainy, a proportion of 1 in 5½.

On the 2nd December, our party left Gowahatty for Suddiya, on the morning of the 4th I
proceeded in advance in Captain Matthie’s express canoe for Tezpoor, which place I
reached on the evening of the 6th, and at which I met with a most kind reception from
Captain Matthie, Principal Assistant to the Agent to the Governor General, and in Civil
charge of the district of Durrung. Tezpoor possesses many advantages over Gowahatty,
from which place it is about 120 miles distant, that is, following the river. It is situated on
the banks of what was once a portion of the Burrampooter, but which is now nothing but
a nullah, nearly dry at the present season. It is a completely new place, Captain
Matthie having arrived here about a year since, at which time it was a complete jungle.
Some small hills run along the side of the nullah, on one of which Captain Matthie’s
house is situated. The clearings have already reached to a considerable extent, and there
are two good roads for buggies. The great advantage it has over Gowahatty consists in its
freedom from fogs, which evidently hug the Meekur hills on the opposite side of the
Burrampooter, bearing about E.S.E. from Tezpoor. It is perhaps owing to the proximity
of these hills that Nowgong until 10 A.M. appears completely enveloped in fog, while all
round Tezpoor it is completely clear.

From this place the view of the Himalayas and of the intervening Bootan hills is very
fine. The chain is of considerable extent, and presents three grand peaks, of which the
most westerly one is the largest. They do not appear very distant, and are distinctly seen
at this season at all times of the day. They are more soft and picturesque towards
evening, at which time the different shades are better developed. The degrees of ascent of
the Bootan hills are well shewn; the hills forming the lowest range being of no
considerable height. It is at once obvious, that the ascent into Bootan from this place
would occupy several days.

The view to the S. and S.S.W. is barren enough, and is completely flat; the country
presenting nothing whatever but high grass, with an occasional peep of the river. That to
the north is, owing to the Himalayas, very striking and picturesque.
Cultivation is carried on to a great extent about Tezpoor, and the district is populous, although few villages are to be seen, as they are all concealed among trees. Paddy is the principal grain cultivated, and this is carried on in low places, which appear on a casual examination to have been originally beds of rivers. Captain Matthie however tells me, that many of these have abrupt terminations and commencements, such may have been old jheels. Sursoo, opium, and sugar-cane are likewise cultivated, especially the former. The whole land indeed, with the exception of the rice-places and the evidently old beds of the Burrampooter, are much more elevated than the land round Gowahatty. Both Tezpoor and Durrung are consequently less damp, and more healthy than the above-mentioned place. In fact, as a residence I would infinitely prefer Tezpoor to Gowahatty. With regard to the shikar, (shooting) both large and small game abound. Tigers are frequent as well as bears. Buffaloes are to be seen on the churs (islands) in large herds. Pea-fowl and jungle-fowl abound, as well as water-fowl; floricans and partridges, both black and red, are by no means unfrequent.

Upper Assam, Jan. 15th.—We arrived at Kujoo, a rather large village of Singfos, and within half a day’s journey of which the tea is found in its native state. This is the first Singfo village I have as yet seen, and is situated on the skirts of a plain of small extent, and covered to all appearance by extensive grass jungles, among which trees are interspersed. The houses are not numerous, but they are of large size, and are raised in the Burman fashion on piles from the ground. Within one, many families are accommodated. The people themselves are fair, much like the Burmese, but still quite distinct. The male dress resembles the Burmese much; the female is more distinct, consisting chiefly of a sort of gown; and whilst tattooing is confined to the males in Burma, it here appears to be indulged in chiefly by the ladies; all the legs I saw during the day, being ornamented with rings of tattoo. The men are a stout, rather fine race; free, easy, and independent, and great admirers of grog in every form.

During our journey hither, and indeed en route from Kujoo Ghat, we passed over a clay soil and through a dense jungle, comparable to which I have seen but little. Our direction has been nearly south from the above place. The jungle consisted chiefly of trees, here and there large patches of bamboo or tobacco occurring: there was but little underwood. Among the trees the most gigantic was a species of Dipterocarpus, probably the same with that I have gathered on Pator hill, Mergui. We picked up likewise very large acorns with a depressed lamellated cap, and two fruits of Castanea, one probably the same with that from Myrung. But of all the vegetation, that of ferns is the most luxuriant and most varied.

Jan. 16th.—This day we gave up to the examination of the tea in its native place. It occurs in a deep jungle to the south of the village, and at a distance of about three miles from it. Our route thither lay through first a rather extensive grass jungle, then through a deep jungle. We crossed the Deboru once on our route; it is a mean and insignificant stream.

Nothing particular presents itself in the jungle until you approach the tea, on which you come very suddenly. This plant is limited to a small extent, perhaps to 300 yards square, the principal direction being N. and S. It grows in a part of the jungle where the soil is light and dryish, and throughout which, ravinules are frequent, due, Mac. tells me, to the effect of rain dropping from the heavy over-shadowing foliage on a light soil. In addition to this, small mounds occur about the roots of the large trees; but chiefly around bamboos, which are by no means unfrequent. This, however, is of common occurrence in all bamboo jungles. The underwood consists chiefly of Rubeaceæ, a small Leea, Cythandraceæ and Filices, Polypodium arboreum, Angiopteris orassipes, and a large Asplenium are common. Among the arbuscles are a large leaved Tetranchera, a
Myristica, Anonaceæ, *Paeiderioidea fætidissima*, foliis ternatis; stipulis apicee subulata, 3-fidis, etc. And among the forest trees are a vast Dipterocarpus, the same we met with en route to Kujoo, *Dillenia speciosa*, etc. Piper and Chloranthus are likewise not uncommon. There is no peculiar feature connected with the existence of the tea in such a place, and in such a limited extent. We were fortunate enough to find it both in flower and fruit, owing to its site; its growth is tall and slender, and its crown at least that of the smaller, very small and ill developed. Large trees are rare; in fact, they have been all cut down by the Singfos, who are like all other natives excessively improvident. The largest we saw, and which Wallich felled, was, including the crown, 43 feet in length. Small plants are very common, although Bruce had already removed 30,000. Mac. thinks they grow chiefly on the margins of the ravinules or hollows. Their leaves were all large, of a very dark green, and varying from four to eight inches in length. The pith of the tree felled was excentric, the greater development taking place as usual on the southern side; it was two and a half inches N., three and a half S.; but about 10 feet above the base this excentricity was nearly doubled. The wood is very compact, and the tree apparently one of slow growth. The largest that Bruce has seen, and which he felled last year, was 29 cubits in length. The jungle was so thick that all general views as to its real extent, and the circumstances limiting it, must be very superficial. To the East the cessation of the lightness of the soil and of the hollows is very abrupt, and strongly influences the tea, only a few small straggles being visible in that direction. The jungle here was choked with grasses, and the large viscous Acanthaceæ of which we have elsewhere en route seen such abundance. The tree evidently, even in its large state, owes little gratitude to the sun, at least for direct rays, none of which I should think ever reach it. The Singfos however say, that it will only thrive in the shade. We halted after gathering a crop of leaves under a fine Dillenia, which was loaded with its fruit. Here the Singfos demonstrated the mode in which the tea is prepared among them. I must premise, however, that they use none but young leaves. They roasted or rather semi-roasted the leaves in a large iron vessel, which must be quite clean, stirring them up and rolling them in the hands during the roasting. When duly roasted, they expose them to the sun for three days; some to the dew alternately with the sun. It is then finally packed into bamboo chungas, into which it is tightly rammed. The ground on which it occurs is somewhat raised above the plain adjoining the village, as we passed over two hillocks on our route to the tea, and the descent did not evidently counterbalance the ascent.

**Jan. 17th.**—We arrived at Kujoo-doo this afternoon, having passed through a great extent of jungle, which I am sorry to say presented the usual features. We crossed the Deboro once during our march, and several tributary streams which, as may be supposed, from the size of the larger recipient river, are excessively insignificant. The soil throughout, a good part seemed to be of clay. The only plants of interest we found were two Bambusæ in flower, and two species of *Meniscium*, and a *Polypodium venulis* tertiariis simplicibus. A *Sarcopyramis Sonerilæ* was also found, but rather past flowering, and an *Acrostichum*? or Lomaria? We did not observe any ravinules or hollows, although mounds were by no means uncommon.

**Jan. 18th.**—We proceeded in a Southerly direction, and after marching for nearly seven hours arrived at, and encamped on, a largish plain, on which paddy had been extensively cultivated. The whole route lay through a vast and deep jungle, the road running partly on the side of an old bund: part of our road was through very wet ground, part through rather dry elevated woods, bamboos of two species occurred abundantly. We saw several vast specimens of Dipterocarpus, one which had been cut down measured from the base to first branch 110 feet. Ferns still continue in excess. I gathered another species of *Sarcopyramis*; a *Goodyera, Chrysobaphus Roxburghii* in flower, but rare; and an *Apostasia* not in flower.
Jan 19th.—We reached Negrigam early in the forenoon although we did not leave our ground before 10 A.M. The road to the village was pretty good. Negrigam is a largish village on the north bank of the Booree Dihing, which is here a considerable though not deep stream. This bank is at the site of the village very high. The population seemed to be considerable. To the south, large ranges of hills were visible, the first of which were close enough to admit of one’s distinguishing them to be wooded to the top. The inner ranges were lofty. We had some difficulty in ascertaining where the tea was located, the accounts being rather contradictory. At length we proceeded up the bed of a small river, Maumoo, which runs into the Booree Dihing close to the village: after wading along in the waters for two hours we arrived at a khet where we encamped. The direction being from Negrigam N.W. along the banks of this stream. The Pavia I first observed at Silam Mookh, was abundant, and some of the specimens were very fine, the largest was a handsome, very shady tree, of perhaps thirty feet high. The only plant of interest was Gnetum scandens. On a high land bank I gathered a species of Polytrichum, and one of Bartramia.

January 20th.—This morning we crossed the small streamlet Maumoo, ascended its rather high bank, and within a few yards from it came upon the tea: which as we advanced farther into the jungle increased in abundance; in fact within a very few yards, several plants might be observed. The plant was both in flower and ripe fruit, in one instance the seeds had germinated while attached to the parent shrub. No large trees were found, the generality being six or seven feet high; all above this height being straggling, slender, unhandsome shrubs: the leaves upon the whole were, I think, smaller than those of the Kujoo plants. With respect to the plants with which it is here associated, I may observe that they were nearly the same with those of the Kujoo jungle, but here there was nevertheless one striking difference, that the jungle was by no means so dark in consequence of the smaller size of the jungle trees. The underwood consisted chiefly of ferns, among which Polipodium unitum was very common, and a Lycopodium. Bamboos occurred here and there, although by no means so extensively as at Kujoo. Chrysobaphus Roxburghii, and a new Dicksonia, D. Griffithiana, Wall. were the plants of the greatest interest. With regard to the limits of the tea, it is by all accounts of no very great extent; but this is a point upon which it is difficult to say any thing decisive, in consequence of the thickness of the jungle. The space on which we found it may be said to be an elbow of the land, nearly surrounded by the Mannoo river, on the opposite side of which, where we were encamped, it is reported not to grow. Within this space the greater part consists of a gentle elevation or rather large mound. On this it is very abundant, as likewise along its sides, where the soil is looser, less sandy, and yellow (McClell.); along the base of this I think it is less common, and the soil is here more sandy, and much darker (McClell.) We partly ascertained that it was limited to the west, in which direction we soon lost sight of it. To the south and eastward of the elbow of land it is most common, but here it is, as I have said above, stopped by the river.

The greatest diameter of the stem of any plant that I saw in this place, might be two or three inches, certainly not more.

Nadowar, Feb. 17th.—Our route from this village, at which we were encamped, to the tea locality in the neighbouring forest, lay for the first time partly over paddy fields, the remainder over high ground covered with the usual grasses, with here and there a low strip; all was excessively wet. We next traversed a considerable tract of tree jungle, perhaps for nearly a mile; this was a drier and higher soil than the rice ground. On the northern flank of this, and close to the edge of the jungle we came to the tea, situated on a low strip of ground.

This plant here occupies an extremely limited space, and its greatest, and indeed almost
only extent, is from south to north. It is in one spot excessively thick, and many of the plants had attained a considerable size, but the largest had been cut down, when it was visited by people from Suddiya in search of tea some short time ago. It had just passed flowering; all the plants looked well, better I think than those of Kujoo. The soil was very much like that of the Kujoo and Negrigam jungles, and was remarkable for its great dryness and looseness, in spite of the long continued and heavy rains. That near the surface was dark brown, below yellow brown, and the deeper it was examined the more yellow it seemed to become. We satisfied ourselves that its depth extended lower than two feet from the surface. The space the plant occupies in any numbers certainly does not exceed forty yards in length, by twenty-five in breadth. About fifty yards to the north several plants occurred, but the soil here was of a much darker tint, although it appeared to be nearly as dry as the other. The accompanying diagram may give some idea of its situation.

February 17th.—We arrived at Rangagurrah, the capital of the Muttack country, and the residence of the Burra-seena Puttee, or Bengmara. Our route thither occupied us, inclusive of the day spent in examining the tea at Noadwar, five days. During the three first, we passed through a low country admirably, and almost exclusively, adapted for rice cultivation, and consequently abounding in wild wading birds and water-fowl.

As we approached Rangagurrah the ground became higher, in addition to which it is better drained. We crossed about two miles from Rangagurrah a small rivulet, a tributary of the Deboro; no plants but one of much interest was detected en route. That one was a fine forest tree affecting damp low places, apparently very limited in extent. It is a new genus, belonging to Hamemelideæ, and we have called it Sedgwickia cerasifolia. On our arrival at Rangagurrah we were met by the Burra-seena Puttee, 'Big warrior,' who escorted us to the houses he had caused to be erected for us, and which were at a little distance from the village itself. During our association with him or with his country, he was remarkably attentive and civil, and as he is an independent man he pleased me much. On the -- Feb. we reached Tingrei, a poor village about ten miles to the S.E. of Rangagurrah, situated on the west bank of the rivulet of the same name, another tributary of the Deboro. On the same morning as the march was very short, we proceeded to examine the tea, and the following day was likewise given up to another examination. The tea here may be characterised as dwarf, no stems that I saw exceeding fifteen feet in height; it had just passed flowering. It occurs in great abundance, and to much greater extent than in any of the places at which we had previously examined it. But here it is neither limited by peculiarity of soil or such slight elevation as the place affords; it grows indiscriminately on the higher ground where the soil is of a brownish yellow, and on which it attains a larger size than elsewhere, or on clumps occurring in low raviny ground and associated with fine bamboos. This ground was intersected by a very tortuous dry nullah bed, on the banks of which tea was very abundant. On either side of the jungle in which it is found, extensive clearings occur, so that it is impossible to say what its original extent may have been; I am inclined to think, however that its limit was with the commencement of a small clearing running to the N.W. of a village situated on the west bank of the Tingrei, and that not much has been cut down.
The extent may be roughly estimated as follows, reckoning from the entrance into the jungle in a south easterly direction: the one in fact of our route from the village to the tea.

S.E. 180 yards, after which it disappears, but shews itself again sparingly about 100 yards further on, and in the same direction.

To the S. of this I found none, its direction being totally changed; its general direction being now,

N.W. or N.N.W. in which, and in about 200 yards from the place at which it ceased towards the south, it becomes very abundant, and continues so in a

W.N.W. course for about 220 yards.

Thence it appears to be interrupted for the space of 80 or 100 yards.

It then recommences a course

N. by W. for about 100 yards, when it is terminated by cultivated ground to the east, and low raviny ground to the west.

200 yards to the north, and close to a small village, it is very abundant, and at least its stumps with numerous shoots, occupy almost the whole of a small clearing bounded on the N.E. by the rivulet Tingrei. It may be supposed to extend for a little distance into the contiguous jungle to the N.W.

On the whole, it may be said to occupy a narrow strip of jungle, extending from the village Tingrei in a S.E. direction about a ¼ of a mile. I consider the plants here as finer than in any of the other tea jungles, the crown being much better developed owing at least in some parts to the less denseness of the jungle. The fact of the shoots appearing from the bases of the stems which had been cut down in the small clearing above mentioned, gave us good opportunities of seeing the effects of exposure to the sun. This they seemed to bear well, but the shoots were rather too much elongated, and the leaves had too much of a yellow tint to indicate that such was their natural situation. No part of the soil on which tea was found was like the soil of Nadowar or Manmoo; still, although stiffer than the others, it was characterised by a certain lightness.

The superstratum was very light, and brownish black, the remainder yellowish brown, the yellow tints as well as the stiffness increasing downwards. The soil was here deeper than in any of the other sites.

Many parts of the ground were excessively low, and very probably inundated during the
rains.

From the fact of its occurring in such abundance in the small clearing to the N.W. of the village, I am induced to suppose that it had at some period extended down the large clearing which runs 200 yards to the south of the above village.

The associated vegetation presented no peculiarities; several plants, with which we had not previously met, occurred. One, a Stauntonia, was found, which may be supposed from analogy to indicate a certain coldness of climate. But on the other hand, it was associated with so many tropical forms that not much reliance can be placed on this isolated fact.

On the 25th we returned to Rangagurrah, where the elephants and dowaniers (drivers) were dismissed. On the 26th we commenced returning by the Deboroo, the descent of which occupied two days and a half.

Here let me express my opinion that in cases like ours, where a set of men are deputed to examine countries, time spent on rivers is absolutely thrown away. Of course in many instances such must be the case, but where it is avoidable, marching, and especially returning by a different route, should be adopted. Rangagurrah, be it known, is only two days’ march from Suddiyah in a direct line, yet we have been a month proceeding by the circuitous line of rivers between these places.

CHAPTER II.

Journal of a trip to the Mishmee Mountains, from the Debouching of the Lohit to about ten miles East of the Ghalooms. Lat. 27°50' to 28°10' N.; Long. 95°20' to 96°40' E.

I left Suddiya on the morning of the 15th October 1836, and halted at Noa Dihing Mookh, (river mouth) a place abounding in fish, and promising excellent sport both in fly and live-bait fishing. The temperature of the Noa Dihing, an indolent stream flowing over a flat, sandy plain, was 79°; that of the B. pooter, which falls in large volume rapidly from the mountains, was 67°. Fish congregate in vast numbers at the junction of rivers of different temperatures, and are there more easily captured than in other situations, a fact that ought to be borne in mind, whether for the mere object of sport or the more practical purpose of fisheries in India.

The following day (16th) we passed Choonpoora, where the rapids commence, and where stones first appear; one rapid, a little above Choonpoora, is severe. There is a severe one also at Toraneemookh, on which the Copper temple is situated; and one at Tingalee Mookh, on which Lattow is situated. The river now commences to be more subdivided; there is but little sand deposited alone, but vast beds of sand and stones occur together. The banks are clothed with jungle, and are occasionally skirted with tall grasses, but the churs or islands disappear it may be said with the sands, and are only formed in lower and more distant parts from the mountains, where the velocity of the current is less.

Temperature at 6 A.M. 66°, 4 P.M. 76°, (water of B. pooter 64.65,) 7 P.M. 72°.

Buffaloes abundant, but I only saw a few.

The most interesting plants were a Cyclocodon, Liriodendron, Sanicula: 32 species were collected.

Oct. 17th.—Reached Karam Mookh, about noon. Rapids much increased, some very severe, especially that opposite Karam Mookh, which we crossed without accident, although as we crossed a confluence of two rapids, the water in the middle being much agitated; it was a wonder that no canoes were upset. The bed of the river is still more
divided, the spots between the streams being for the most part entirely composed of stones. The lowest temperature of the B. pooter was 63°. A severe but short rapid occurs at Karam Mookh itself, the fall being very great, but the body of water small. The water of this river is beautifully clear. Its temperature at the Mookh 72°. The jungle extends down to both edges of the water, and the stream is not divided into branches. My guide in the evening disgusted me by asking how many days I intended to stop at the Koond before my return to Suddiya, when I had engaged him expressly to go into the Mishmee hills, and not merely to Brama Koond, as the above question implied. But such is the way in which our best designs depending on native agency are often tampered with. Thermometer at 8 P.M. 64°. Species of Conaria grow abundantly on the banks!

Oct. 18th.—We are still in the Karam river. Reached about noon the Kamptee village, Palampan, or rather its Ghat. This Karam river is tortuous, generally shallow, with a more or less stony bed; it is nothing more in fact than a succession of rapids, between each of which the slope is very gentle, so that one makes good progress. Temperature at 6 A.M. 66° in the canoe; but in the hut in which I slept, it is as low as 60°. The dews are very heavy, and the jungle, as before, comes down to the edges of the water, but scarcely affords any marked feature. *Kydia calycina* is common, as is likewise a large Mimoseous tree. There is apparently very little diminution in the volume of water, though several minor streams were passed between this and the Mookh. *Liriodendron* is becoming more frequent. The views of the mountains are very varied; and that of the Koond defile or Chasm, very beautiful; water-falls seem to be distinctly visible down one hill or mountain, in particular. The finest view however is on the Lohit, opposite Dyaroo Mookh, at which place the three huge, ever snowy peaks, characteristic of the Mishmee portion of the mountains, are distinctly seen.

Left the Ghat for the village which is situate on the Dea-soon or Simaree, which flows into the Tenga-panee, and which is said now to carry off so much water from the Karam that this river ceases a short distance above this place to become navigable for boats like mine. The path we pursued ran in a S.E. or S.S.E. direction for about a mile; it is good, and leads through a thick jungle: the village contains probably fifteen houses. The Gohain, or chief, is a most respectable-looking man, and of very fair complexion. His people are for the most part stout. The women also of very fair complexion, with their hair tied in a large knot on the top of the head, in a peculiar way, putting one in mind of fat Norman damsels. Temperature in the boat to-day 76°, the sky beautifully clear. The B. pooter seems still the only river, the temperature of which is always below that of the air. One interesting *Elaeocarpus* occurred—*Petal. viridibus apice dentatis; calice griseo vix valvato*. I may remark, that the aestivation of *Kydia* is scarcely valvate. I saw a, to me, new kingfisher and wood-pecker. The black and white kingfisher, *Dalcedo rudus*, is not found on the B. pooter beyond the termination of the sand banks.

Oct. 18th—Temperature in my hut at 5½ A.M. is 56°, outside it is 52½°, that of the river water 63°. We left about 8, and proceeded up the Karam, which presented nothing singular. The volume of water is now less, and rapids are more frequent: heavy snow is visible from a little above Palampan Ghat, where the river bends to the northward; and a little further on a fine view of the Koond occurs. The Chasm is bounded in the rear by the fine rugged peak so distinctly seen from Suddiya due east. About 11, we reached the Ghat, beyond which boats, except of the smallest description, cannot pass; and about 1, started for the Mishmee village Jing-sha, situated on the Karam. Our course was along the bed of the river, and nearly due east. Formerly boats were able to reach the Ghat of the village, but the water has become shallower, owing, they say, to a larger portion being carried off by the Dea-soon, which runs into the Tenga-panee. We reached the village Ghat about four in the afternoon, but our people arrived very little before six o’clock. The march was tedious and difficult, owing to the numerous stones which are strewed in
the way: and the necessity for crossing the river was so frequent, that all idea of shoes was quite out of the question. To increase the difficulty, the stones in the bed of river are very slippery, and as we crossed rapids, it frequently required some care to prevent our falling.

We were met by the Gam, or chief, before any signs of the village there were visible. The population is small; the people fair, but begrimed with dirt; the dress consists of a loose jacket without sleeves. The primary article of clothing is indeed so scanty, that the less one says about it the better. The women are decently clothed, and have generally enormous calves, certainly bigger than those of the men: their favourite ornament seems to be a band of silver, broadest across their forehead, which encircles their head. This village is close to the hills, and within a day’s journey of the Koond, at least for a Mishmee. One Assamese slave is among the inhabitants, who was sold when a boy. A few of the men have Singfo dhaos or swords, others miserable knives, and some the usual spear so general with the tribes on this frontier. But in general the weapons of these people are most insignificant. The view of the hills is not fine from this place; it is too close to see any of great height, and they soon disappear to the westward. In the evening that of the Koond, which bears E.N.E. by N. is fine, particularly one mountain, which is known at once by its numerous cascades or appearances of water-falls, which, although they appear like streaks of white to the eye, are distinctly visible through a telescope. The bed of the Karam is almost entirely stony, and the immediate banks are clothed with grass. The jungle is of the usual thick description. The Gam, whose name is Jingsha, is a respectable looking man, fair in his dealings, and willing to oblige. They all have tobacco pipes.

Oct. 19th.—Halted to enable the people to bring up the baggage, and we shall in all probability have to halt to-morrow. I paid a visit to the Gam’s house, Jingshi; it is to the S.E. of the Ghat, and about a mile and a half distant from it. The houses are all detached, and almost buried in jungle. Jingsha’s house is a good one, very long, and well built; he has only about five skulls. [24] Monti was handed round to the Mishmees in large bamboo cups. From our encampment, abundance of clearances for cultivation are visible on the hills. Those to N., S., S.E. are of some extent, and belong to a Mishmee Gam, Tapa. Some fine timber trees exist on the road to the village, and a very large Ficus: no particular plants occur except a Chloranthus, fructibus albis, which is also common towards Palampan. Thermometer at noon, in imperfect shade, 83°.

Oct. 20th.—The temperature of the air at 5½ A.M. was 57½°. That of water, 60°. I was obliged to halt again to enable the rice to be brought up. To-day we gathered on the banks of the Karam, a tree in fruit, Fol. alterna, impari-pinnata, stipulis caducis. Cymi compositi dichotomi; calyce minuto, 4 dentato, reflexo; corolla coriacea, viridi, rotata; stamina 4, hypogyna, gynobasi, maxima; carpellis 4, aggregatis, 1, 3, fecundalis, globosis, atro-cyaneis, baccatis; stylis lateralibus; semen 1, exalbumosum arbuscula mediocris; one Chrysobalanee? one Ochnacea?

Yesterday they brought me a beautiful snake, Collo gracillimo, colore pulchre fusco, maculis aterrimis, capite magno; [25] has all the appearance of being venomous. To-day we passed another place for catching fish: the water is prevented from escaping, (except at the place where the current is naturally most violent,) by a dam composed of bamboos, supported by triangles, from the centre of which hang heavy stones: the fish are prevented passing down except at the above spot, and here they are received on a platform of bamboo: the stream is so strong through this point, that when once the fish have passed down they are unable to return. One of these fish-traps on a larger scale exists below Palampan.

The Karam debuts from the hills a little to the S. of east of Jingsha Ghat: the chasm is
very distinct. Temperature at 2 P.M. 87°, at sunset 76°, 8 P.M. 68°.

Oct. 21st.—Left the Ghat about 9, and proceeded over the same difficult ground down the Karam until we arrived at Laee Mookh. This occupied about an hour; our course thence lay up the Laee, which runs nearly due east. The bed of the river throughout the lower part of its course is 60 or 70 yards across: the journey was as difficult as that on the Karam. Towards 2 P.M. we were close to the hills, and the river became contracted, not exceeding 30 or 40 yards across. It is here only that large rock masses are to be found, but the boulders are in no case immense. We arrived at the place of our encampment about 4 P.M., the porters coming up much later. The march was in every respect most fatiguing. Temperature about 6 A.M. 58°, outside 57°. Water 60°. Temperature of Laee at sunset 66°. Of the air 71°.

Oct. 22nd.—Cloudy: during the night we were much annoyed by heavy gusts of wind sweeping down the river. Left our encampment at 7½, and struck into the jungle, the porters still continuing along the course of the river; after crossing some rising ground we reached a path, which is tolerably good. Our course lay about N.E.; we crossed over some low hills, and after marching for about an hour and a quarter, came upon the Koond Chasm, or great defile; of which, however, from the thickness of the jungle, we had no view. We then descended a very steep, but not very high hill, and came upon the Koond; of which nothing is at first seen but large masses of rock strewed in every direction. We were accompanied by a number of Jingsha Gam’s people, and in the evening we were visited by Tapan Gam himself, with a train of followers. This man assumes the sovereignty of the Koond. We encamped immediately under the Faqueer’s Rock, which is known to the Mishmees by the name “Taihloo Maplampoo.” The south bank is wooded to its brink, but not very densely: it is excessively steep, and in many places almost perpendicular. The strata composing it is partly limestone, lying at an angle of 45°, and in many places at a greater one. The scenery is picturesque and bold: on either side of the river are hills rising abruptly to the height of a few hundred feet, but the hills are continued longer on the north side. From the Rock the river seems to run W.N.W. for a quarter of a mile, and then bends to the S.W. The breadth of the bed is a good hundred yards, but the stream at this season is confined to the fifty yards near the south bank, the remainder being occupied by rocks in situ, or boulders and sand: the edge of the N. bank is occupied by stunted Saccharum. The appearance of the water is characteristic, of a greyish green tinge, giving the impression of great depth. It is only here and there that it is white with foam, its general course being rather gentle. It is in various places encroached upon more or less by the rocks forming its bed, some of which are quite perpendicular. A little to the west of the Faqueer’s Rock there is an immense mass of rock in the bed of the river, between which and the south bank there is now very little water and no current. The rocks are generally naked; here and there they are partially clothed with Gramineæ, and a Cyperaceous-looking plant, something like an Eriophorum. The river, a short distance beyond the Deo-panee, takes a bend to the north; at the point where it bends there is a considerable rapid.
The Faqueer’s Rock itself is a loose mass of rugged outline, about 50 feet high: access to its summit is difficult to anybody but a Mishmee; it is, however, by no means impracticable. The path by which it may be gained, leads from the eastward. At the summit is an insulated, rounded, rugged mass of rock, on which the faqueers sit. It is however the descent by the path to the east which is difficult, and people generally choose another path to the west. This rock is clothed with ferns epiphytical Orchideæ, an Arundo, and a few stunted trees are very common at its summit. Between it and the hill is another much smaller mass, and the intervening spaces are occupied by angular masses of rock. These spaces both lead westward to that corner of the river into which the Deo-panee falls. Eastward they lead to the margin of the bank.

The north face of the Faqueer’s Rock is excavated into a hollow of the Deo Dowar. It has no resemblance to a Gothic ruin, which form is, I believe, peculiar to calcareous rocks. It is this rock which, by its eastern extremity projecting into the water, forms the reservoirs into which the Deo-panee falls, or rather at this season runs; the place resembles merely a sort of bay. The water-mark of floods visible on some of the rocks, is probably eight feet above that of this time of the year. The reservoir is completed by a projection from the rocks forming the south bank, but it is almost entirely abstracted from the stream. The south bank immediately beyond this is extremely precipitous, and very high. The Faqueer’s Rock is three-peaked; two peaks can only be seen from the Deo-panee, the third is the low one to the west, the middle is the highest, and is perforated: the eastern represents a sugar-loaf appearance. Two distinct streams run into the reservoirs, the bed of one forms the second defile before alluded to: this is very insignificant. The other occupies the corner of the bay, and can only be seen from a low station on the sand beneath: it is an attempt at a small water-fall.

Oct. 23rd.—To-day I have been employed in collecting plants. Nearly due east of the Koond, and at a distance of about 40 yards, the face of the hill is perpendicular, and in some places overhanging; its extremity juts out into the stream, which here flows with great violence; the banks are occupied by masses of rock strewn in every direction, resulting from a landslip of great size: some of these masses are enormous. The greater portion of the slip is clothed with herbage and trees, so that it is of some age, or standing; but in one place over the river it is clean, as if fresh formed, and white-looking much like chalk. This cliff in many parts is a dripping well, particularly in one extremity where a good deal of water falls. It is clothed with the Eriophorum, which hangs down in long tufts; the moist parts with an Adiantum much like A. C. Veneris, a beautiful Pteris, a Pothos or Arum folis pulchre nigro tinctis, and some mosses; B. speciosa out of flower, and some Hepaticæ, Ruta albiflora, etc. Between this and the Deo-panee a small stream enters the Lohit: following this up to some height, one arrives at a pretty water-fall; here
it is inaccessible in this direction, but by following a branch of the stream to the west, one may arrive at the summit of the hill, from which however no view is to be obtained. The summit is ridge-like, and excessively sharp; the descent on either side almost precipitous. I found several fine ferns up this hill; at its base an Acer and fine Equisetum.

The Koond is apparently formed by the Deo-panee and Mori-panee. In the rains it must be a rather striking object, now however it is at this season, lost amidst the fine surrounding scenery. How the Faqueer’s Rock and the rock between it and the Mori-panee were detached, is difficult to say. It is evident, however, that formerly the two rivers were not united to form the Koond as at present, but that they had each their own channels when the Faqueer’s Rock must have stood between them. In fact both channels, in which water has flowed, still remain. My broken Thermometer pointed out the low temperature of the Lohit water, and 208° was the point at which water boiled in two experiments. All attempts at passing along the river on this side would be vain, owing to a cliff which is totally impracticable. The Mishmees know of no rivulet called the Mtee; probably this has been mistaken for the Mishmee name for water, Mchee. The way Wilcox went I am at a loss to ascertain; as he could not have passed the Koond, he must have gone above it; although the hills are said to be impracticable for loaded coolies.

Oct. 25th.—The Koond is obviously little frequented. I left sometime after the coolies, pursuing the path leading to Ghaloom’s, which extends to the eastward. An hour and a quarter brought me again to the Lace-panee, and three hours and a half to Lace Mookh: from this place to Jingsha Ghat is scarcely an hour’s walk. The day’s journey occupied about five hours inclusive of stoppages: the distance is probably about twelve miles. I came to the determination of returning, owing to the known difficulty of the route pursued by Wilcox, and the impossibility of making a collection of grain. The Tapan Gam, or Lord of the Koond, particularly insisted on the impossibility of ordinary coolies going this way, and as he offered men to bring up grain from the plains, I at once acceded to his proposal of making a granary in his village. This man had no delicacy in asking for presents: he at once said, “You must give gold, silver, and every thing in the calendar of presents to the Deo,” meaning himself. As I found it impracticable to satisfy him, I sent him off with a small present, promising more when he should have amassed the grain. His brother, a tall, stout, and much more useful man, (as he does not refuse to carry loads,) on seeing me rub salt on a bird’s skin, remarked, “What poor devils we are! Bird’s skins with salt supply the Sahibs with food, while we can’t get a morsel.” They promised to take me all over the country, and to be my slaves, if I would point out to them where salt is to be found.
I saw nothing particular in the woods. I picked up the fruit of a Magnolia and Castanea, and observed an arborescent Leea. Some of the timber is fine. A large Acrotirchea abounds between Laee and the Koond, as well as Chloranthus. Near the Laee a climber, the base of whose stem is elephantopoid and enormous considering the slender stem, is abundant. I could not get any of the leaves. At the Koond, Buddleia Neemda, a Prunus, etc. occur. Cælogyne polleniis 4 obovatis, faciebus incumbentibus complanates materie pulverea, mediocri. Dundoons are rather troublesome; they are flies, and nearly as large as an ordinary house fly: their proboscis is large, and leaves spots of extravasated blood where they bite, nearly of the size of an ordinary pin’s head.

Oct. 27th.—My people brought me in a beautiful snake, *Coluber porphyraceus*, ventre albo, cæterum pulchre coccineo-badio, capite lineis nigris tribus quarum centralis brevior, dorso lineis nigris duabus postea gradatim evanescentibus, lineis circularibus minus conspicuis, iridibus carneis. 

Oct. 28th.—Yesterday evening two elephants arrived with grain, so that I have every prospect of being fairly on my way in a day or two. Nothing worth seeing has occurred, except a man who by some accident had the lobe of his ear torn, and had the fragments stitched together with silver wire.

Oct. 31st.—Halted at the Laee-panee, and gathered an Oberonea, and specimens of fish.

Nov. 1st.—Dirty weather; rain looking much as if it were going to continue for several days. There is a small drupaceous fruit found here and at Beesa, the Singfo name of which is Let-tan-shee; it is the produce of a large tree probably the fruit of a *Chrysobalanus*, testibus stylo *laterali*, stam, perigynis: cotyledonibus crispatis. The flavour is acid, rather pleasant, and somewhat terebinthinaceous.

Nov. 2nd.—I thought it best to set off, although it was raining heavily. Our course lay in an E. direction up the Karam for about two hours, when it diverged: it thence after passing through some heavy jungle continued up the steep bed of the now dry Dailoom; it next diverged again about 2 P.M., when we ascended a small hill; it continued thence through heavy jungle chiefly bamboo, until we descended in an oblique manner on the Laee-panee, about a mile up which we found our halting place. The whole march occupied, including a few halts, seven hours; and as the pace was pretty good for six full hours, I compute the distance to be about fifteen miles. Hill Flora recommenced in the bamboo jungle; two fine species of Impatiens and several Urticeæ making their appearance; *Camellia axillaris* and some fine Acanthacea: the best plant was a species of Aristolochea. The latter part of the day was fine, and the elephants with grain from
Suddiyah arrived.

Nov. 3rd.—Passed the forenoon in ascending the hill opposite our encampment: it is of no great height, but like all the others very steep. To the N.W. of this has occurred a large slip, but long previous to this time; on it two or three Phæniceous palms may be found. Pandanus still occurs. The hill was barren of Botany, excepting a few ferns towards base.

Nov. 4th.—Left Laee-panee at 9½ A.M., and reached the encampment at 3½ P.M. Our course diverged almost immediately from the last encampment, and we ascended for some time up the bed of a torrent. The first hill we ascended occupied an hour, and the remainder of the day’s journey consisted of ascents and descents along the most difficult path imaginable. All the hills are very steep, and the paths when they wind round these, are very difficult; a slip would cause a dangerous fall. About 1 P.M. we reached two or three houses constituting a village.

From this, one has a fine view of the plains, and of the B. pooter near its exit from the hills: it is much intersected by islets covered with jungle. Leeches are not very numerous. Dundoons or sand flies very annoying. I have gathered plenty of plants, especially ferns. Wallichia continues; Wulenia obliqua, and a Companula were the best. At our halting place I found the fruits of Sedgwickia in abundance. Passed two or three streams. Found the flowers of a large Loranthus, or rather its very large flowers on the ground. They are eaten by the natives, but the acidity is unpleasant, owing to its being mixed with a bitter; the flowers are two inches long: tubo 4 angulato, basi-coccinescenti, laminis viridibus interstibus carneis, coccineo lineatis præsenti transverse, antheris syngenesia. Sarcocordalis, common.

Nov. 5th.—Left at half-past 8, and reached extensive kheties (cultivated fields) with dispersed houses at about 1 P.M. This place is called Dilling. Our route consisted of the same fatiguing marching: we passed over some hills, from which we had fine views. The first gave us a fine sight of the Patkaye mountains, [31] S.E. of Upper Assam, which reach apparently a great height. The second, of the plains of Assam. The exact summits of all the hills are covered with a coarse spicate Saccharum. On one we met with a Melampyracea. The Botany is improving greatly; two species of Viola, two fine Cythandraceæ occurring. I also noticed Sedgwickia again, and got abundance of ferns, a Buddleia, and a fine Amaranthacea. Halted on a cleared ground immediately under the Red mountain so plainly seen from Jingsha. There is now no appearance of water-falls on it, but there are several white spots owing to slips: the brink or brim of this hill is woody, but there is a considerable space covered only with short grass. The strata are inclined at an angle of 45°. I here got two or three fine mosses. All the Mishmees have the idea, that on some hills at least rain is caused by striking trees of a certain size with large stones, some hills are again free from this charm; it was ridiculous to hear them call out not to throw stones whenever we approached one of these rainy hills. The people appear to get dirtier the farther we advance. I saw plenty of snow on two high peaks, and had a peep of the Lohit beyond Brahma Koond. Wallichia continues, as well as Bambusa, Saccharum Megala. The kheties are either of rice or Cynosurus or Zea. Tobacco is not cultivated, but left to take care of itself. Buddleia Neemda and wild plantain continue, the latter is probably a distinct species; leaves subtis glauco niveis. Pandanus continues. The name of the Red mountain before alluded to, is Thu-ma-thaya, the rivulet at its base is Tus-soo-muchee. Tus-soo Dee-ling is the name of the place; a large mountain bearing N.N.E., is Sun-jong-thaya. It is obvious that Dee-ling must be of some extent, as my site does not agree with that of Wilcox. The view to the E. is entirely limited to Thu-ma-thaya, and to the N.N.E., by Sun-jong-thaya; no B. pooter is visible, nor is Ghaloom’s house. The snow collects on the Thu-ma-thaya this month: the clearings for cultivation on the declivities of Thu-ma-thaya are called Chim-bra: the
houses, although at great distances from the village, are called Yeu.

Nov. 6th.—We arrived at our halting place after a march of seven hours, over a most difficult and fatiguing road: we skirted throughout the whole time the base of the huge Thu-ma-thaya; I never saw a worse road, if road it may be called—part of it lay over places where a false step or slip would be very dangerous, if not fatal. We came suddenly on the B. pooter; but as the place was not a good one for crossing, we prepared to go a little higher up the stream, and though the distance we had to go was not above 100 yards, yet as the river side was impracticable, it became necessary to ascend and descend by a most difficult path where a slip would have precipitated one into the river sixty or seventy feet below. What rendered this passage most difficult and dangerous, was the jungle which, while it caused you to stoop, at the same time concealed your footing. It is one of the characteristics of Mishmees, that they sooner risk their necks than take the trouble of cutting down underwood.

We have scarcely passed Thu-ma-thaya, so that the distance we have travelled in a direct line from Deeling must be very small. The stream of the Lohit is not forty yards broad, but the bed is about sixty. It has the appearance of great depth, and roars along amidst rocks in some places in fine style. I here picked up some small branches of an elm, very like U. virgata: the tree was too late to reach fruit. I also gathered a fine Acanthacea, and some good ferns. The north bank of the Lohit here has the same structure as the south at the Koond, and is perpendicular. The water of the Lohit is certainly much cooler than any of the mountain streams. Vast blocks of rock, of many sorts, lie strewn on the south side; one in particular is quartzose, remarkable for the indentations on its surface. I here gathered some mosses, and a good Marchantiacea, very nearly allied to Octoskepos, but culiculate. Pandanus still continues, as also Marlea, Wallichia, Caryota, and Pentaptera. Passed several streams, and a pretty fall, the water falling down a cliff almost perpendicular, about 100 feet high. The Mishmees use the fibres and reti of Caryota as an ornament to their baskets, from which it likewise keeps the rain. Wild plantain continues. Our encampment is on a fine bed of sand.

Nov. 7th.—Rain throughout the night at intervals, and sharp cold in the morning; we left at 9 A.M. and arrived at our encampment about 12 P.M. The first part of our march was very difficult, it in fact consisted of crossing a precipice overhanging the Lohit; the difficulty was increased by the slipperiness occasioned by the rain; no one could pass some of the places unless aided by ratans fixed to trees, etc. We came to the Sung river about 12 noon, but were delayed some time in building a bridge. This river appears to me to be in some places fordable, but the Mishmees say that it is not; the water is beautifully clear. The first cane suspended bridge occurs here; I did not fancy it, although I observed the Mishmees cross, the passage taking barely half a minute. Throughout the whole time the Mishmees use their legs and arms, to accelerate or determine their progress; the inclination caused by the weight is slight. I preferred one of our own erection, about 100 yards distant from it. The height is not great over the river, and the width is perhaps thirty yards. The Bourra crossed after some delay; we were then obliged to make two halts: we followed the Sung down to its mouth, which is barely 200 yards: its bed is rocky; at its junction there is a large bay formed, on the N. side of which is a fine sand bank. The Lohit there runs nearly N. and S., and is excessively violent in its course, certainly ten miles an hour. The scenery is pretty, but no hills of great height are seen to any extent. This is the most romantic spot I have seen in my course of travels as yet. We forded the bay about its centre, and encamped on the sand: the path we are to follow is said to be above, and very difficult. We here gathered some fine ferns and a Bleteoid Orchidea. A Gentianacea likewise occurred. The Tapan Gam, on my inquiring, said, that Wilcox passed by the upper path, the Lohit at that time running under the cliff which forms one side of the bay. [33] The course of the river, he says, has since changed by the
occurrence of a large slip, principally of mica slate.

Nov. 8th.—The commencement of our march to-day was up a hill, the ascent, as in all the other cases, being very steep. From its summit we could see Dilling in a horizontal distance extremely near. We then proceeded skirting the hill, and descended subsequently to the O. rivulet, which is of no size. We then ascended another considerable height, and found ourselves on the site of Ghaloom’s old dwelling. The situation was delightful; to the N.E., a high range was visible, which is covered with snow, the pines on the lower parts of the ridge standing out, in fine relief. To the N. was a noble peak bare at its summit, on which snow rests during some months, its centre being prettily marked out with numerous patches of cultivation. To the N. again the Tid-ding might be seen foaming along the valleys; the hills are evidently improving in height and magnificence of scenery. We reached this at 12 o’clock, our march having lasted five hours. We thence descended crossing a small stream at the base of the hill, on which Ghaloom’s former house stood, called the Dhaloom Basee.

I thence proceeded over some nasty swampy ground with a few low elevations until we reached Ghaloom’s, which we did about 2 P.M. A small spot was allotted to us some distance from the village, on which we erected our huts. Ghaloom changed his residence to this place, owing to the death of two of his people, which was attributed to the unhealthiness of the former site; but as might be expected from the nature of the place he has chosen, he has suffered very severely from fever since his removal. As soon as our huts were built, Ghaloom and his brother Khosha visited us, preceded by the hind quarter of a pig. Their appearance is somewhat better than the ordinary run of Mishmees, but they are just as dirty. Khosha is a little man, with a mahogany-coloured wrinkled face. Great attention was paid by their attendants to all they said, and Khosha himself is evidently the Demosthenes of the Mishmees. When interrupted, he commanded silence in an authoritative way. Krisong was not present. Khosha declares that Rooling, the Mezhoo chief, is nobody, and that Wilcox gave him his present unknown to them. The acquisitions in Botany consisted of some fine Cyrtandraceae, a Cymbidium, and some ferns. One of these Cyrtandraceae is very singular: the runners are long, producing one stem with a very small terminal leaf, and a very large flower. Afterwards this leaf enlarges, becomes a large cordate Begoniod one, bearing from its bosom apparently one or two Siliquae; Pandanus Bambusa continue. The fine Quercus is common, Megala, Podomolia, Triumfetta, Siegesbeckia. Cynoglossum, Callicarpa, Urena, Rottlera and several other low tropical forms continue. The Cymbidioid has pollena 4, incumbentia postice aliquoties minore, glandula nulla?

Nov. 9th.—Halted. Went to the suspension bridge over the Lohit, which is about 60 yards across, or double the length of the one we crossed on the 7th. The passage by Mishmees takes two, or two minutes and a half, requiring continued exertion the whole time, both by hands and feet, as above described. Both banks are very steep, yet the natives are so confident of safety, that of this bridge only one cane is trustworthy. Bathed in the river, which is very cold and deep, but comparatively quiet.

Nov. 10th.—Went to the Lohit, gathered Cymbidium giganteum, two or three ferns, and a Rafflesia in its several stages. I have not however yet seen the perfectly expanded flower, the natives do not know it, although it must be a sufficiently striking object, the alabastri before expansion are about the size of an orange. Went to Ghaloom’s house, which is of great length, built of bamboos, raised high from the ground, divided into about twelve compartments, and containing 100 men, women, and children.

Nov. 11th.—Left for Khosha Gams; crossed the Lohit on a raft, and left its banks at noon. Followed the river for some distance, and then diverged towards the N.W. and reached Khosha at 3 P.M., the march owing to the heat was very fatiguing. Found very few
plants; noticed a flower of a Ternstroemiaceae nearly allied to the genus Camellia, cor. rotat. lacin. reflexis, albis fauce carnea. stam. 00, epipet. anther. erectis-apice dehiscent, and of a large Hibiscus; the Cælogyne of the Koond was also found. Two species of Castaneæ occur in these woods, one with very stout thorns to its cupula, and not eatable fruit; the other has long slender prickles, and its fruit about the size of an acorn, is eatable, and not at all disagreeable. On all the hills of any height with grassy tops Compositæ are among the most striking forms. Areca parva continues, Pentaptera, and Fici continue. Saccharum Megala very abundant and fine. Cupuliferæ are becoming more abundant. The roofs of the houses which are built of bamboo, are covered with the leaves of the Marantaceous genus—capitulis densis lateralibus culmis I-foliosis. Buddleia N’eemda and Callicarpa continue.

Want of means forms the only limit to the number of wives of a Mishmee. A rich man who has at his disposal numerous cattle, etc, will give 20 mithuns; [35] but the wife appears to bring with her slaves, etc. as a return. A poor man will get a wife for a pig. Whatever the number of wives may be, each will have a separate khetee, (field) and each khetee has a separate granary. All the wives live in the same house; in fact, one house forms the village. Theft is punished by a fine inflicted by a meeting of all the Gams; if the fine is not paid, or the offender refuses to pay, he is slain in a general attack. Murder is punished in the same way, but by a heavier fine: adultery against the consent of the husband, or at least elopement, is punished by death; if with the consent of the husband, the delinquent is fined. There appears to be no regular law of succession: the favourite son succeeding without reference to age.

Nov. 12th.—I went out for plants, and descended to the Paeen rivulet, which is of small size: followed up its course some way, and then returned over a low hill to Khosha’s. The guide who was some distance behind, came up with a Rafflesia bud. I returned with him, and saw it to perfection; he likewise succeeded in tracing the roots to a gigantic Cissus, the fruit of which I have before observed is eatable, and not unlike a greengage. I returned home loaded with this undescribed genus: I found likewise a fine Buddleia, and Menispermum, with some rare Compositeæ, among which was an arborescent Eupatorium and a gigantic thistle, a Prunus in flower and fruit, and a neat Liparis, Calamus, Tree-fern, Tupistra, Pandanus, were likewise observed, and a beautiful Viburnum, Corol sterilibus, 4 phyllis, foliis niveis carneo venosis: petal fertil calyptratis, deciduis, intus cæruleo tinctis: staminibus cyaneis, ovaris pallide cæruleis, stigmatib. carnis.

Nov. 13th.—Opposite Khosha’s, or rather his granaries to the E. is a high mountain excessively steep, only partially clothed with trees, and with stunted ones at its summit, which in December and the colder months is covered with snow: this they call Thaya-thro.

Khosha positively refuses to take me any farther into the interior, and Krisong begs that I won’t come and see him. It is obvious that they are under great fear of other tribes. Khosha says, he should be attacked by all the Mishoos or Mizhoos, were he to conduct me any farther now, and that very probably the Lamas would attack him likewise. He says the only chance of success in penetrating to Lama, is to send previously a present of salt, (about a seer) to all the chiefs, and request their leave, without which preparatory donation, they would cut up any messengers he might send. He offers to do this at any time, and to let me know the result. He declined taking me to the Chibong Gam, a few days’ journey up the Diree, although the man is a relation of his own, and a Deboro Mishmee. It is obvious that there is no chance of getting further at present, nor would it be fair even if one could bribe them. He says no reliance whatever is to be placed on Rooling, the Mizhoo who deceived Wilcox, and whom he represents to be an underhand person. I tried to overcome his scruples by assuring him that I only wanted to go as far as
Rooling, but he declines taking me. He says I may go any where to the west of this, but to the north he dare not conduct me. I shall therefore go to Premsong to-morrow, and if that is not a favourable place, return forthwith to Ghaloom’s, and thence to Deeling to botanise on Thuma-thaya.

Nov. 14th.—Proceeded to Premsong’s, which we reached in less than two hours. Our march was in a westerly direction across a hill of some elevation: the remainder of it was over kheties and level ground. The plants evidently increase in interest as we advance in the interior, Compositæ and Labiatæ being most numerous. A large tree occurs not uncommonly, which is either a Birch or a Prunus, most probably from the venation of its leaves, the latter; the bark is exactly like that of a Birch. Close to Premsong’s I gathered a Clematis, Valerian and a fine Botrychium, a Carex and a Cuscuta. The mountain on the base of which Premsong’s house is situated, is a very high one; it is the one that is so striking from Ghaloom’s old site: it is named Laimplan-thaya; its summit, which is a high peak, is very rugged, partially clothed with vegetation, in which, as in all the others of the same height autumnal tints are very distinct. Thai-ka-thaya is a smaller peak to the S.S.W. of Premsong’s. One of my Mishmee Dowaniers tells me that the Mishmee (Coptis) teeta Khosha gave me last evening, is cultivated near his native place; its flower buds are just forming and are enclosed in ovate concave squamæ. The leaves are of a lively green, not unlike those of some ferns, but at once to be distinguished by the venation; it is very evident that the Mishmees know nothing about the period of its flowering, as they told me it flowered in the rains, at the same time as the dhak flowers in Assam; the radicles are numerous, tawny yellowish, the rhizomata are rugged tortuous, the bark and pith are of yellow orange colour, the woody system gamboge: this is the same in the petioles: it tinges the saliva yellow. It is a pure intense bitter of some permanence, but without aroma: it is dried over the fire, the drying being repeated three times. Judging from it in its fresh state, the test of its being recently and well dried is the permanence of the colors. The Bee flowers during the rains: its flower, \( \text{on} \ \text{dit} \) is white and small; they pretend that it is very dangerous to touch, causing great irritation; both Coptis teeta, and Bee, are found on high hills on which there is now snow; one of them, the Ummpanee or Moochee, is accessible from hence in three days.

The Mishmee name for the Teeta, is Yoatzhee; of Bee, Th’wee; Ghe-on is the Mishmee name for the smelling root, which the Assamese call Gertheon. The smell of this is a compound of Valeriana and Pastinaca; it is decidedly aromatic, and not at all disagreeable, it is white inside and abounds in pith, but has scarcely any taste.

Yesterday evening I visited Khosha’s house, which is of immense length, and considerably longer, though not so high from the ground as Ghaloom’s: it is divided into upwards of twenty apartments, on the right hand side of the passage are ranged the skulls of the cattle Khosha has killed, including deer and pigs; on the other side are the domestic utensils, the centre of the floor is occupied by a square earthen space for fire-place: the bamboos, of which the floor is composed being cut away. From the centre of each room over the fire-place, hangs a square ratan sort of tray, from which they hang their meat or any thing requiring smoke; their cooking utensils are, I believe, confined to one square stone vessel, which appears to answer its purpose remarkably well. The women appear to have no shame; they expose their breasts openly, which from their dirty habits by no means correspond with the exalted character of the sex. On hills to the N.E. of Khosha’s first residence, forests are very visible, descending far down the sides.

On an open spot a little distance from Premsong’s, there is a fine view of the course of the Lohit, and of the more remote (now) snowy ranges. The hills beyond this exactly answer to Wilcox’s description, being very high, and all descending as it were unbroken to the Lohit.
Went out for about two hours over a tolerably level portion of the hill, covered with Artemesia; found abundance of interesting plants, Crawfurdia campanulaceae, a Clematis, Acer, Prunus, Camellia axillaris, Cyathea, Myrica, Rhus, Sedgwickia, Polygala, Galium: and a beautiful very fragrant climbing Composita.

Great part of the side of the hill is covered with a small hard bamboo, which forms excellent walking sticks. An Urticea foliis peltatis, was among the novelties. The Paeen Panee forms the nearest ravine. The Polygonum, paniculis densissimis, is a certain indication of some elevation. I observed Calamus, and Torenia asiatica. There is likewise a large Mimoseous plant, which we found in fruit.

Nov. 15th.—Spent the greater part of the day attempting to reach the summit of Laim-planj-thaya, but my guide did not know the way. We ascended for upwards of four hours, slowly of course, but were still a long way from its summit. The face of the mountain is entirely occupied by woods, with but little underwood. Found abundance of plants, chiefly ferns, only saw 4 Orchideæ, of which 2 were in flower. The novelties were a Polygonatum, Camellia, and Quercus lamellata.

I observed no less than 5 Araliaceæ, of which I succeeded in getting 4: an Acer, probably that from Brahma Koond: and several incertæ. Near Premsong’s the varnish tree was shewn to me, it is obviously a species of Rhus. The Assamese name of the varnish plant is Ahametta Gas. I took specimens of it in fruit.

They obtain the juice by ringing, and the only two specimens I observed were evidently well drained: no preparation is required for the varnish; and it is applied one day, the next day is hard; it has a fine polish, and is of an intense black. It is the same probably with two small trees I had previously seen in Capt. Charlton’s garden at Suddyah. Kydia continues; a fine Palm, caudex 8-10-pedali; it probably belongs to the genus Wallichia? Camellia is only found towards the top; the Polygonatum also does not descend far. I saw also species of an undescribed Bucklandia, likewise one specimen which had been damaged: the caputuli pluriflori. Towards the middle a small bamboo becomes plentiful; the lower joints, from which no branches proceed, are armed with a verticillus of spines. I did not observe Pandanus, but it is used for constructing large mats: Megala continues, but not up the hill.

Nov. 16th.—Attempted to ascend Laim-planj-thaya by the Paeen rivulet which proceeds from the centre, but after proceeding about half an hour we found our progress effectually stopped by a water-fall, the sides of the stream being so precipitous as to render all idea of clambering over, or proceeding round ridiculous. Gathered two or three rare ferns, and a pretty Lobelia. On our return through the open grassy parts near Premsong’s, we found a fine Choripetalum and Crawfurdia campanulaceae, beautifully in flower; the flower is rose-coloured. Anthistiria arundinacea, the same Sambucus found at Suddyah, Solanum 10 dentatum, a Kydia and Torenia continue.

Nov. 17th.—Left and returned to Khosha’s, as we were all out of rice, and it was impossible to get anything in Premsong’s absence. The march on return occupied us about two hours, but the path was so excessively slippery, owing to the grass not being cut away on either side and to the dry weather and heat, that our progress was very slow. Noticed Lactuca exalata and a Rottlera on the road; more snow has fallen on the hills E.N.E. The descent on returning, owing to the slippery state of the roads, was more fatiguating than the ascent. Hedychium angustifolium I also observed on the road.

I have as yet observed the following grains used by the Mishmees. 1st, Oriza, rice; variety of this called Ahoo Da; 2nd, a species of Eleusine, Bobosa; 3rd, Zea Mays, Gorm dan; 4th, Panicum Panicula nutanti, densa clavata. 5th, Konee, Chenapodium sp. panicula
The Mishmee names are as follow: *Dan-khai* rice; *khai hoo*, *bobosa*, *Mdo-zea*, or *Maize*, *Ma-bon-konee-yo* *Chenopodium*; *Thenna*, a kind of Polygonum; *Hubra-Aloo*, *Ghee-kuchoo-shoom*, Sweet potato; *Gaihwan*, Plantain; *Puhee Dhoonhwa*, Tobacco. They likewise cultivate Sesamum.

**Nov. 18th.**—Found more of the Rafflesiaceae on low hills along the Paeen; it was also attached to the roots of the same species of Cissus, on which it was found before. I also gathered a Euonymus and a fine Engelhardtia. The hairs of the fruits of Engelhardtia create a disagreeable itching. All the Mishmees decline shewing me the road a foot in advance of this place. I tried every way I could think of, to overcome their objections, but to no purpose. They have so little regard for truth, that one cannot rely much on what they say: I begin to think that it is all owing to the Tapan Gam, who I suspected was insincere in his professions.

**Nov. 19th.**—Yesterday evening Premsong arrived, he is a man about 35, the best looking of all the Gams: but has rather a cunning Jewish face. The brandy I gave him made him at first wonderfully obliging, for he seemed disposed to enter into my views. This morning however he came with Khosha and Tapan, by whom it was at once obvious that he has been overruled; not only will he not take me to the Lama *Dais* (plains,) but he won’t even shew me the road to Truesong’s, a Digaroo, whose village is only distant about five days’ journey. Premsong I know wishes to go, induced by the promise of 200 Rs. but he is afraid of incurring the displeasure of Khosha, etc. I shall therefore return towards Deeling, and devote a few days to botanising on Thuma-thaya.

**Nov. 20th.**—Returned to Ghaloom’s: gathered the Martynia, finely in flower, and observed the Rafflesiaceae along the banks of the Lohit.

**Nov. 21st.**—Halted at Ghaloom’s, the Rafflesiaceae is found all about, anth. bilocular, apice poro-gemino dehiscent, pollen simplex, materie viscosa cohaerenti, ovula antitropa, tegumento unico. Made every arrangement with Premsong. According to this Gam we are to go up the Dree, and then cross over high mountains, leaving the Lohit entirely. He says the Lamas wear trowsers, socks and shoes, and that they dress their hair *a la mode Chinoise*; their houses are built on posts, and raised from the ground: they erect forts like the Chinese, and have plenty of fire-locks. They have also abundance of cattle, consisting of about seven kinds, but no *Mithuns*; and three sorts of Horses, which alone they use as beasts of burden. Their staple food is Ahoodan. The *Mithun* of the Mishmees appears to me intermediate to a certain degree between the Bison and the wild Bull; their head is very fine, and as well as the horns that of a Bull, but their neck and body have, so to say, the same awkward conformation as those of the buffalo. I have not seen a large living one; the largest head I saw was three feet from tip to tip of the horns, the diameter of the forehead being probably about one-third of the above.

**Nov. 22nd.**—Returned to Loong Mockh. I cannot reconcile Wilcox’s description of Ghaloom’s old site with the reality, because the scenery is decidedly fine, embracing the Tidding, and the (in comparison with the near surrounding hills) gigantic Laim-planj-thaya, which from this presents the appearance of a vast cone with a peaked summit. Premsong’s village is obviously at a considerable elevation. Found another *Acrostichum*, a *Bolbophyllum*, a rare *Aristolochia folis palmatis*, 7 lobis, subtus glaucis; sapor peracerbus, floribus *siphonicis*. The Huttaya I have not seen: it occurs at a greater distance in the mountains than I have been. In addition to the plants I have gathered, *Asplenium nidus* it very common. *Tradescantia* and *Camelina* both occur; *Ricinus* also occurs, the Mishmees do not however put it to any use; *Melica latifolia* is common on some of the hills. *Anthistiria arundinacea* occurs in abundance. Likewise a small *Arecia*...
and Chloranthus.

It is at Ghaloom’s old site that these hills commence putting on an interesting appearance, those previously seen, excepting however Thuma-thaya, being entirely covered with tree jungle; but beyond this site, the lower spaces unoccupied by jungle become much more numerous. The Mishmee word for bitter, is *Khar*. Query—why should not the name of the plant Coptis teeta, be changed to Coptis amara, although the species of the genus Coptis are probably all bitter? Sauraussa and Bombax both occur at Ghaloom’s, as well as Pentaptera; Sesamum is used for oil.

I should have mentioned the top of the hill, surmounted in going immediately from Loong Panee towards Ghaloom’s, is occupied almost entirely by a species of Fraxinus.

On my arrival at Ghaloom’s on the 20th, I found that the coolies had played me the same trick as they had done previously, though not to such an extent. Instead of each man having 20 days’ provisions, scarcely one had more than 5 or 6: as they had 20 days’ given them in addition to that they would require on the road, it is obvious they must have thrown much away. Were all the Gams disposed to take one to Lama, it could not be done with Assamese coolies and, above all, Seerings or Ahooms are the very worst; and although often good sized men, they are very deficient in strength. Nagas and Mishmees are the best, then Kamptees.

I gave before leaving a packet of salt to Premsong, according I suppose to their own custom of proceeding. Yesterday he went to Roomling, Krisong’s eldest son, and gained his consent. I mention this to shew how active he is. He is a friend of the Dupha’s, and to my surprise, told me he saw Capt. Hannay at Hookhoom, who gave him a jacket, and tried to induce him to shew him the road to Suddiya. He is certainly the best of all the Gams, and appears to be very liberal.

*Nov. 23rd.*—Arrived at Deeling after a tedious march of 8 hours: we did not traverse the two cliffs near the Lohit, but pursued a longer, but more commodious cattle path: our Mishmees, however, preferred the shorter one. Gathered Sabia, Martynioidea, Alsophila, Menispermum at Paeen in fine flower. At Ghaloom’s old site a large Euphorbia fol obovatis, ramis 4 angulato-alatis occurs, and Cymbidium giganteum in fine flower. *En route* hither I noticed the following; Bauhinia, Hoya, Urtica gigas, Mucuna, Curculigo, Panax, foliis supra-decompositis, Dalbergia, Laurus, Abroma, Lactuca exaltata, Uncaria, Siegesbeckia, Megala,