Notes on the Flora of Parasnath, a Mountain of North-western Bengal, in a Letter from C. B. CLARKE, F.R.S., F.L.S., to, and with an Introductory Note by, Sir J. D. HOOKER, K.C.S.I., F.R.S.

[Read 19th June, 1884.]

[THE mountain, to the vegetation of which the following pages are devoted, is one of the most interesting in trans-Gangetic India from its isolation and position. It stands on the north-eastern extreme of the elevated region which forms the high land of the Deccan, and is prolonged northward to the bend of the Ganges; from which the descent is abrupt to the plains of the Gangetic valley, which again extend northward uninterruptedly to the foot of the Himalaya.

The latitude of Parasnath is nearly 24° N.; longitude 86° 6' E.; its distance from Calcutta is 122 miles in a north-eastern direction, and it is 88 miles distant from the Ganges north of it. Its height is about 4500 feet.

The vegetation of Parasnath is that of the Deccan, with a slight admixture of Himalayan and Malayan types. Of the former of these there are fewer than might have been anticipated from its elevation and position, but not fewer than may well be accounted for by the heat and dryness of the surrounding country.

The first described ascent made of Parasnath was, as far as I am aware, my own in February 1848, as narrated in the Journal of the Asiatic Society of Bengal (vol. xvii. pt. 2, p. 355), and subsequently in my Himalayan Journals (Ed. i. vol. i. p. 18), when I collected or observed about 300 species of plants. Its botany has since been investigated successively by Drs. Thomson, Anderson, and King, when Superintendents of the Calcutta Botanical Gardens, but no complete account of its flora has been published.—J. D. HOOKER.]

Hazaribagh, Oct. 12th, 1883.

MY DEAR SIR J. D. HOOKER,

I ascended Parasnath on 6th October; and you may be interested to get some modern news of a mountain which you first made known to the European scientific public. The road you made the ascent by is still sound, but covered with tall grasses and disused. There is a railway station now only 20

miles from Mudobun at the northern base of the mountain; and from Mudobun to the summit there is a road (6 miles) which you could drive up in a hansom. Along the north base of the mountain is a tea-plantation; but Parasnath itself is not, I think, likely to be encroached on by planters for many years to come, nor has it yet been injured botanically by visitors. As my visit was a short one, I did not attempt to make a general collection of plants: I confined myself mostly to the Monocotyledons, the *Glumaceæ* in particular; but there are some Dicotyledons which, though well known, it is hardly possible to keep one's hands off, such as the *Begonia*, the *Sonerila*, the *Exacum*, all abundant. There is only one plant on Parasnath which I cannot get elsewhere (so far as I know), the pink *Knoxia brachycarpa*, R. Br., which you got here, and which is, I believe, more plentiful in Burma; I collected a stock of it, and find it produces a very thick woody root, bright yellow when cut across. I collected (which I had not got before on Parasnath) the common orange-tipped *Æschynanthus*; and the leaves only of a very large *Hoya*. I got up into two trees but could find neither flower nor any remains of fruit: I suppose it flowers in April. On the central summit (which is 200 feet lower than the western, *i. e.* is 4300 feet about) there is left a cluster of the problematical *Phoenix* (*acaulis*?): I measured the stem of one, which is 14 feet from the ground to the lowest leaf, and nearly uniformly 34 inches in circumference for its whole length: there are other stems 8–10 feet long. I endeavoured to collect a good set of the large Grasses along the ridge—*Cymbopogon*, *Anthistiria*, *Pollinia*, &c. Living on these I found (not a tree-frog but) a grass-frog; a very slaty-dirt coloured species. When I coaxed him downwards he seemed to have a horror of *terra firma*; he jumped about on the *Anthistirias*, holding the culm with his two fore feet, and swinging on them like a bird on a twig. In this season the summit of Parasnath had not one drop of dew in the morning, while at 3000 feet the dew was plentiful: this difference, as well as the difference in altitude, will account for the number of plants that grow along the crest of Parasnath but will not descend. I found a *Carex* I never got here before—a very slender culm, with 1–2 remote female grass-green spikes; it is very nearly (or quite) the same as the low-level *Carex* which grows in the Teesta gorge in Sikkim. I kept my eye on the Gingers, as they are numerous in species, and abundant in individuals here. The large *Amomum*

was in full flower at 4100 feet, with leaves 5 feet long and more (the lamina 32 by 11 inches), the flower-spikes very large, white, the rhizome gamboge-yellow when cut across. It is a very striking plant; but, comparing it with the medium-sized common white *Amomum* of the 1500-feet level, I could find no specific difference. The *Hedychium* common here is now (October) very shabby, but is throwing up young stems to flower next April. These are very red, with the young leaves red and scale-like, and so exceedingly like the flowering (leafless) stems of the *Zingiber* that (the two plants growing mixed) it is difficult, without taking the plant in the hand, to say whether you have got a young stem of *Hedychium* or a leafless flower-stem of Ginger. Is the leafless flower-stem of Ginger really only an ordinary stem gradually forced abnormally early into flower by a secular change in climate? There was a fine *Elettaria* in fruit, which is nearly or quite the same as the one that grows at Khursiong in Sikkim. I saw three ground Orchises in fruit: I have never seen on Parasnath any epiphytic Orchis; the air seems too dry, though there is *Vanda* in abundance on the Mohwa trees (*Bassia*) at the base, as you found it. In spite of the dryness, there are a good many Ferns even near the summit. *Asplenium* (*Drepanophyllum* is the name) abounds, while the nearly allied common *A. (Athyrum) macrocarpum* is absent. Parasnath is the north-east limit of the *A. (Drepanophyllum) Hohenackerianum*, which is, I believe, abundant in Central India. I also collected several specimens of *Ophioglossum vulgatum*: I say *vulgatum*, relying on Luerssen, who has (I doubt not correctly) run a number of *Ophioglossums* into that species. The Indian *Ophioglossums* are not less interesting considered as forms than considered as species: this Parasnath form is, however, much more like the common English *Ophioglossum* than either the Sikkim or Levinge's Kashnir one.

It is 15 years ago since I first ascended Parasnath, and I see wonderfully little difference in the vegetation: there are the same plants, in the same relative degrees of abundance, and I can hardly pick out one that I can say has either advanced or retreated 100 yards, so nicely are the forces balanced. There is the *Thalictrum*, the *Geranium*, the *Barberry*, the *Senecio*, &c., on the ridge exactly where you found them, and, as of old, the giant scandent *Bauhinia* ascending a few feet higher than any of them.

The Himalayas and Khasia rather spoil one for a small thing like Parasnath; but Parasnath is really very rich; the number of trees that flourish at or above 4000 feet is remarkable, and some of them, as *Grewia asiatica*, appear to grow higher up at this elevation than elsewhere. I noticed that *Heptapleuron* commences its life here as a scandent epiphyte, but subsequently reaching the ground, it grows to a large size as a tree, and shows no sign of its early history. Other Araliads do this in Sikkim, thus imitating *Wightia* and several of the Figs.

I attempted photographs on Parasnath, but I had only some gelatine plates that have been through the rains at Calcutta, and I cannot tell how they may develop, possibly not at all.

By the north railway Darjeeling is now so quickly and easily reached that all the pressure of Calcutta visitors is taken off Parasnath, which is chiefly visited from the neighbourhood. The coal-mines here give employment to a large English population, and the East-Indian Railway has some of its largest works not far off, so that the Bungalow at 4200 feet is still used: indeed I met a lady who went up for the whole hot weather, nearly two months. The air is perfect on Parasnath, and the change sufficient for the Englishman from the plains who, if he goes to 7000 feet at Darjeeling, may there get "chill," or "fever," or "hill-dysentery." Parasnath is perfectly healthy; and the succession of visitors still bless Sir G. Campbell, who purchased the bungalow (very cheaply) with the express purpose that Europeans might recruit there.

I collected at about 2500 feet alt., on Parasnath, the remarkable Rice we know (perhaps wrongly) as *Oryza coarctata*, Roxb. It has the hard, horny, almost woody root, and the broad plicate ribbed leaves that so many of the rocky-wood inhabiting grasses possess; but the flowers and fruit are completely *Oryza*. Indeed the natives tell me that it is a high-class food-rice, and that though so scanty and troublesome to collect, they sometimes set their children to collect a little, as exceptionally good in quality.

Yours very truly,
C. B. CLARKE.