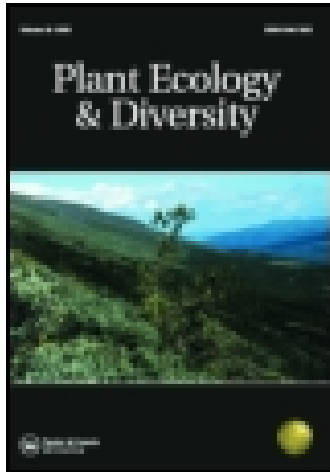


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### XVI. Elucidation of some Plants mentioned in Dr. Francis Hamilton's Account of the Kingdom of Nepál

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XVI. *Elucidation of some Plants mentioned in Dr. Francis Hamilton's Account of the Kingdom of Nepál.* By Lieut.-Col. MADDEN, F.R.S.E., President of the Botanical Society of Edinburgh\*.

READ 12TH JUNE 1856.

THE possession by the University of Edinburgh of the duplicate herbarium (unfortunately incomplete) and the valuable MS. Catalogue of the Plants collected in Nepál and other parts of India by the late Dr. Francis Hamilton (formerly Buchanan), has recently afforded me the opportunity of comparing them with some which he has introduced into his 'Account of Nepál,' only, or chiefly, by their vernacular designations, which are of no assistance to the English reader. Of the result of this examination I purpose to submit a short statement to the Botanical Society, to the Members of which it may prove the more interesting from the fact that, in several cases, the scientific names have not hitherto been given in any, even the latest, works on Indian Botany which have fallen under my notice, although the plants are well known and of general utility in India. Nor will it be considered inconsistent with the object of our meetings, to dedicate a brief space to an inquiry into the botany of a district which engaged the interest and employed the time of this accomplished naturalist †,

\* The death of the author having occurred since this paper was read before the Society, it has been printed without the benefit of his corrections.

† The genus *Hamiltonia*, of the order Cinchonaceæ, was devoted by Roxburgh to the memory of this "illustrious peregrinator," as he is called by D. Don. *H. suaveolens* is a shrub of the Ráj máhal and other hills of Behar; and a very beautiful azure-blue variety abounds all along the base of the Himálaya, the *H. azurea* of Wallich, *scabra* of D. Don, *propinqua* of Jacquemont. The flowers are sweetly fragrant till bruised, when they exhale a most fœtid odour, from which the plant derives its Kumáon name of *Paderá*. Dr. Hamilton himself remarks thus on the specific name at No. 694 of the Catalogue:—

"*Hamiltonia suaveolens*. Habitat in sylvis Anggæ et Mithilæ.

"Nomen specificum haud aptum, cum flores, licet aliquando suaveolentes, sæpius, ut in *Paderia* et *Serissa* affinis, odorem stercoreum gravissimum spirant, quod in cæteris ejusdem generis speciebus quoque evenit."

whose late residence, Leny, near Callander, must be familiar to many of our explorers of the romantic scenery of the Trosachs. Dr. Hamilton was, I believe, the first to investigate the botany of Nepál and the adjacent countries, in which he has been zealously succeeded by Wallich, Griffith, and Hooker. I have not myself had the good fortune to visit these regions, and political jealousy has almost sealed Nepál, especially its alpine tracts, to us; but I have traversed its western frontier, and was for several years associated with its military tribes in the service of the East India Company, and have thus been enabled to acquire the popular names of several of the plants in question. I shall not altogether limit myself to those occurring in the 'Account of Nepál,' but shall extend my remarks also to a few of those enumerated in the Catalogue, with respect to which there is reason to think any additional information will be acceptable, or any errors remain to be rectified. Many points must continue undetermined, and will furnish a field of inquiry to future botanists. Dr. Royle has been the most successful investigator of the various sources of the many articles of the Indian *Materia Medica*, in his valuable 'Illustrations of the Botany of the Himálayan Mountains'; but the origin of many of those contained in his list, published in the 'Journal of the Asiatic Society of Bengal' for October 1832, is still to be made out. With reference to the object before us, the most advantageous plan, perhaps, will be to quote the several passages from Dr. Hamilton's work as they occur, with some regard to the natural sequence of the orders as understood by Dr. Lindley; appending such notices as may be supplied by the Catalogue, and concluding with my own comments.

As Dr. Hamilton always makes use in his Catalogue of the classical names for the various provinces, it may be well to premise that

Magadha	is the modern	Behar.
Mithila	„	Tirhut.
Çosala	„	Oude and Gorakhpur.
Camroop	„	Rangpur and Assam.
Angga	„	North-western Bengal.
Banga	„	Western and Southern Bengal.
Matsya	„	the district of Dinájpur.

“Pháphar, said by some to be a species of *Amaranthus*, called Amardáná in the low country; but others say that this is a mistake.

“Uyá, which I presume is rye, the natives saying that it is neither barley nor wheat, but has a resemblance to both.”

The chief grains of Kullu, a hill province north of the Sutlej

river, now a British possession, were reported to Dr. Hamilton to be Pháphar, Chuyá, and Uyá: "The Chuyá, from the description given, would seem to be the *Holcus Sorghum*, although the coldness of the situation renders this doubtful" (pp. 274, 275, 315).

The Uyá is the *Hordeum cœleste*, well known to the residents of Simla as the Uá jáo, or Uá barley, being in high estimation in the preparation of cakes.

Pháphar or Pháphra is the *Fagopyrum rotundatum*, Bab. (*marginatum*, No. 1688, Wall.), near *F. tataricum*; it is known as Bitter Buckwheat, and is very generally cultivated in the higher and colder sites of the Himálaya; *Fagopyrum vulgare* (or *esculentum*), No. 1687, Wallich, being common lower down, and known as Ogal or Oglá, and Kotu (not Kultu); distinguished from the last as Sweet Buckwheat\*. Chuyá and Anárdáná are one and the same: *Amaranthus amardana*, No. 2028 of the Catalogue (exclude synonym *Amaranthus frumentaceus*, Hort. Beng. 67?). "Anárdáná Hindice. Colitur in arvis Cosalæ et Nepalæ;" and at Bhágalpur on the Ganges, according to Moquin in DeCandolle. Anárdáná implies the supposed resemblance of the grains to the carpels of the Pomegranate. I never met any one who used the name, and incline to think Amardáná, as Dr. Hamilton once writes it, may be the true one, meaning 'immortal grain,' and therefore nearly identical with *Amaranthus*: nothing can better answer to the appellation than this species, which is grown all over the Himálaya, and is also known as Marsá and Báthu. It rises six to eight feet high, and is either of a brilliant crimson or a rich yellow. The effect of a mountain-side, terrace above terrace, covered with distinct fields of these colours, and glowing under the rays of the afternoon sun, is gorgeous indeed; but as an article of food, it must be confessed the reality falls far below the promise of the eye. *Amaranthus caudatus* is occasionally cultivated for the same purpose, and is, in Garhwál, called Rámdáná, 'the grain of God.'

*Cynosurus corocanus*: Maruya of Nepál: now *Eleusine corocana*, everywhere cultivated in the British Himálaya as Manduá or Maruá. *E. stricta* is also grown in Garhwál.

*Holcus Sorghum*. Kaunguni, Muccai, or Muruli,—the first being the Newar name (*i. e.* of the aboriginal Mongolian population), the last two those of their Parbatiya or Hindoo conquerors,

\* There is considerable discrepancy in the description of the Himálayan Buckwheats given by Don (Prod. Fl. Nep. pp. 73, 74. Nos. 21, 22, 23), Babington (Linn. Trans. xviii. 93 *seq.*), and Meisner (Pl. As. Rar. vol. iii.). I am only acquainted with two cultivated species, the Ogal and the Pháphar, as noticed in the text.

also a mountain race. Generally, however, Kanganí is *Panicum italicum*, and Muccai (Makkai) *Zea Mays*: it is probably a term of Indian origin, but the Mohammedans suppose it to be so termed because Maize came to them from Mecca; of this fact it is but a very slender corroboration that the French call the same corn 'Blé de Turquie.' *Sorghum vulgare* is little cultivated in the mountains, but *Sorghum saccharatum* is occasionally seen about Almorah.

*Panicum colonum*. Tangni, Tangri, or Kakun, p. 231.

Sabe, referred to *Ischæmum*, a grass of the Nepál Tarai, growing in great quantities, and exported to the British territories for the manufacture of ropes (p. 64).

No. 2324. *Ischæmum Sabe*. Sabe, Hindice. Habitat in Mithilâ campis ubi legitur ad ligamina foliis nectanda. (Specimen from Náthpur.)

No. 2325. *Ischæmum sparteum*. Sabe, Hindice. Habitat in Magadhæ montosis. Ad usum eundem cum præcedente inservit. (Specimen from Ghoramára.) These two plants are identical; *Spodiopogon laniger*, No. 8845 B. of Wallich's Catalogue, Nepál, 1821, being there referred to a new genus, "*Eriantho* affine." In 1850 I found it stacked in large quantities on the bank of the Ganges at Bhojpur and Monger in Behar, where the owners called it Sába, Sáma, and Sábar, and informed me that it was brought down from the Rájmáhal Hills, south, and from those of Tirhut, north—the localities specified by Dr. Hamilton. Dr. Royle (Illustrations, p. 416) states that *Spodiopogon laniger* is "one of the grasses found in the northern as in the southern parts of India." In Kumáon it occurs as far in the mountains as Almorah, and up to an elevation of 5000 feet, flowering in April. Mr. Edgeworth informs me that it is abundant in the ráos or hill water-courses of the Sewálik and lower ranges of the Himálaya in the Pinjor Dun, below Simla, up to 3000 feet; there, as throughout Northern India, it is termed Bán (a word which in Shakespeare's Hindustani Dictionary is erroneously identified with Munj), and is well known as a common material for making rope, which is much used, especially for the bottoms of beds and similar purposes. Dr. Royle adds that *Eragrostis (Poa) cynosuroides* is employed for rope-making: under the names Darbh (Dabh) and Kusa, it plays an important part in the religious ceremonies of the Bráhmans, and, when young, it is a favourite food of cattle; but any other destination has not fallen under my observation. *Eriophorum (Trichophorum) comosum*, Wall., *cannabinum*, Royle, called Bábar and Baib, and *Saccharum (Erianthus) Munja*, also yield excellent material for cordage (the latter requiring the preliminary process of being pounded); but we are indebted to Dr. Hamilton for having in-

dicated the importance of *Spodiopogon laniger* as supplying one of the textile articles of Indian produce.

Kshir Kangkri, or Titi Píralú; a *Lilium* or *Pancratium* (p. 86).

No. 855. *Pancratium sylvestre*. Titi Píralu montanorum, Hindice. Habitat in sylvis Nepalæ inferioris. (Marked in the margin *Allium cumaria*.) From Chatera, April 1810. There is no specimen in the Herbarium, but Wallich believed it to be his No. 8974, *P. verecundum*. Dr. Hooker met "a very sweet-scented *Crinum*" in the Sikkim Tarai, perhaps identical with this.

Dr. Royle (Illustr. p. 374) has a *Crinum* (*C. Himalense*) from Mansár, in the interior of the Himálaya; and the late Dr. M'Gregor assured me that he had found one wild in the valleys near Sabáthu.

Dr. Hamilton, however, states that the true Titipíralú (which signifies the bitter bulb or *Colocasia*) consisted of the dried scales of a tuberous root, having every appearance of being a species of *Lilium*. Of this genus, as well as of *Fritillaria*, many species inhabit Nepál, and among them *L. japonicum*, sometimes called *L. Wallichianum*, known in Kumáon as Findora, a corruption of Pindálu. "The bulb-scales of *Lilium japonicum* dried are said to be employed in China, like salep, in pectoral complaints." (Royle, Illustr. 388. Figured, Wight's Icones, t. 2035.)

According to some of his informants, the Kshir Kangkri is one of the *Cucurbitaceæ*; this is borne out by the signification 'juice of the cucumber;' perhaps *C. Hardwickii*, which is called Air-álu in Kumáon, and Pahári Indráyan, Hill Colocynth, in Garhwál, from its bitterness. Royle, t. 47. f. 3.

*Amomum*: Desi Eláchi, large Nepal Cardamom, with membranous angles (pp. 74, 75).

No. 13. *Amomum? aromaticum*, Hort. Beng. I; Roxb. Fl. Ind. i. 44. Alaichi montanorum in Nepala. Colitur inter montes Nepalæ. (To this is added at a subsequent date),—To this probably belonged the specimen received from Surat, which Linnæus considered as the true *Cardamomum*. (Linn. Trans. x. 252.)

There is no specimen in the Herbarium. In Dr. Christison's valuable collection of *Materia Medica*, this species is named "Java Cardamom, Pereira, ed. iii. p. 1135. From *Amomum maximum*, Roxb. Java and Bengal." I observed it exposed for sale in considerable quantities at Barmdée, a mart on the western frontier of Nepál, where it was said to come from Dotí, a province bordering Kumáon to the east. Roxburgh (*l. c.*) describes *Amomum aromaticum*, Morang Elachi, as a native of the valleys on the eastern frontier of Bengal, with an ovate capsule, the size of a large nutmeg; those of Dotí are much smaller.

"Sínggiya Bikh or Bish (of the lower mountains and hills,

p. 98), much celebrated among the mountaineers. The plant was brought to me in flower, but was entirely male; nor did I see the fruit, which is said to be a berry. So far as I can judge from these circumstances, I suppose that it is a species of *Smilax* with ternate leaves. To pass over several of its qualities that are marvellous, the root, which resembles a yam, is said to be a violent poison. The berries also are said to be deleterious, but when applied externally are considered as a cure for the goûté," p. 87.

No. 2219. *Smilax? virosa*. Sínggíya Bish vel Bikh montanorum, Hindice. Habitat in Nepalæ montibus. Identified by Wallich with No. 5099 of his Catalogue, *Dioscorea virosa*, which Dr. Royle informs us occurs also in Garhwál and Sirmur under the name of Rámberee (the divine Zizyphus). It is remarkable in this genus from having its stems furnished with aculei; and Dr. Royle calls our attention to the fact that this species, with *D. triphylla*, *pentaphylla*, and *dæmona*, all with compound leaves, are distinguished by the acidity of their tubers\*. Sínggíya a Bikh, signifying 'horned poison,' alludes to their curved form in *D. virosa*†.

No. 220. *Smilax? narcotica*. Bharbang montanorum, Hindice. Habitat in Nepala inferiore ad montium radices.

This is identified by Wallich with the preceding.

*Pinus Picea*, W. Common Spruce Fir. Hingwál Ka Ch'hota Saral, i. e. Small Alpine Pine, pp. 83-96.

No. 2064. *Pinus striata: Pinus Picea*, Hamilton's Nepal, 83, 96. Hingwál Ka Ch'hota Saral (Alpium parva Pinus), Hindice.

\* Roxburgh (iii. 806) and Graham (Cat. of Bombay Plants, p. 218) agree that the tubers of *D. pentaphylla* are wholesome, and used as an esculent. Graham tells us that the root of *D. triphylla*, "intoxicating and intensely bitter," is often sliced and infused in toddy to render it more potent. It occurs in Kumáon as high as 6000 feet; *D. dæmona*, with equally nauseous tubers, only reaches to 3000.

The root Charmaghás, so often mentioned in the Sanscrit dictionaries, has not been identified. I found it sold at Barmdee by the Nepalese traders; but my specimens were destroyed by the 'Fish insect,' *Lepisma saccharina*, the scourge of our Indian libraries and herbaria. It may be the Shám, or root of *Charophyllum esculentum*, mentioned in Royle's 'Illustrations,' which is probably the Chamaas, "a wild edible root used as a relish" by the people of Rol, near the Shátul Pass, Basehar (Lloyd and Gerard, i. 293). The *S. nálika* implies a plant with a tubular stem: *sap-talá*, having seven leaves.

† The vernacular Sing, 'a horn,' softened from the Sanscrit Sringa, gives the origin of the Arabic and Persian word for ginger, Zinjábíl, from which the Greek Zingíberis is derived. The common source of all is the Sanscrit Sringavéram, signifying 'antler-shaped;' and it is remarkable that this classical name, as well as that (Nalada) from which the ancients formed their term (Nardos) for spikenard, is no longer used in the Indian dialects, being superseded by some of the many synonyms.



Habitat in Nepalæ alpinis. On the label, "leaves very odorous." This is *Picea Webbiana*, and is identified by Wallich, No. 5058 (for 6058), *Pinus Webbiana*: *P. striata*, Ham.

Neither Wallich nor Hamilton has the Himálayan Spruce (*Abies Smithiana*, or *Morinda*) from Nepál; it is also absent from Kumáon, but is common both east and west of these provinces.

*P. excelsa* is figured by Wall. Pl. As. Rar. iii. t. 201; but t. 246, *P. Smithiana*, errs in exhibiting the cones erect.

Catalogue, No. 2063. *Pinus Strobos*. Gobiya Saral montanorum, Hindice. Habitat in Nepalæ alpinis. (The native name belongs to the last.) Weymouth Pine, p. 83. *Pinus excelsa*, which is very near to *P. Strobos*. In Lambert's 'Description of the genus *Pinus*,' it is characterized as follows:—"This species approaches so near in habit and in the figure of its cones to *P. Strobos*, that were it not for the simple round membranous crest of the anthers, it would be almost impossible to distinguish their limits as distinct species. The leaves of this species are considerably longer than those of *P. Strobos*, and the cones larger." *P. Strobos* has "antherarum crista omnium minima è setis duabus erectis brevissimis." Mr. D. Moore of Glasnevin informed me that it is, in Ireland, less hardy than *P. excelsa*. A variety of this in our Horticultural Society's Garden, with short leaves, removes one of the differences on which Lambert relies. Colonel Markham (Shooting in the Himálaya, 213, 214) says that, in Kunáwar, "torches are made from the Cheel Pine, which, being full of turpentine, burns beautifully, and gives a capital light. . . . The gum of the Cheel is held in great estimation for its healing qualities throughout the hills." So Hooker, Journals, ii. 45.

The Salla of Dr. Hamilton is *Pinus longifolia*, also called Chír, a species occasionally introduced into our Pineta, but quite unfitted to endure the severity of our winters, being a semi-tropical plant.

It is observable that Dr. Hamilton nowhere mentions the Deodár, which he could scarcely have failed to procure had it been indigenous to Nepál. When in India, with very scanty materials for an opinion, I came to the conclusion that we have no evidence of its existence till we come to Garhwál, though it is usually quoted as a native of Nepál: a reference to Dr. Wallich's Catalogue establishes the correctness of this conclusion, for under his No. 5060 (for 6050?) we have "*Pinus Deodara*, Roxb. a Kamaon, R. B. (Robert Blinkworth). ? $\beta$ . ex horto quodam ad Pátan in Nepalia, 1821." But even in Kumáon, where fine groves occur, the tree is clearly introduced.

*Juniperus*: Dhupi. Alpine Nepal. No. 2280. *Juniperus*

*squamosa*. Dhupi montanorum, Hindice. Hamilton's Nepal, 96. Habitat ad Emodi nives: labelled, "Thibet Hills." So Wallich, No. 6043. *J. squamosa*, Ham. Gosainthán, Chur. The common species of the Himálaya, with considerable diversity as found in the dry or the rainy districts. The description of the Dhupi in the 'Account of Nepal,' p. 96, can, however, only agree with *Juniperus excelsa*: "A very large tree." "Its wood has a beautiful grain, a fine mahogany colour, and a remarkably pleasant scent, a good deal resembling that of the pencil Cedar, but stronger, and I think more agreeable. Planks of this are sent to Thibet, from whence they are probably carried to China." Dhup signifies 'incense.'

*Juniperus*: a low bush; Thumuriya Dhupi. "Branches and leaves have an agreeable smell, and are used in fumigations," p. 96.

No. 2279. *Juniperus? incurva*. Thumuriya Dhupi montanorum, Hindice. Hamilton's Nepal, 96. Habitat ad Emodi nives. No. 6042, Wallich. *Juniperus recurva*, Ham., identified with his *J. recurva*. Gosainthán. Dr. Hamilton's specimen quite resembles some of the north-western forms of *J. squamosa*, and has neither the hue nor the pendulous branchlets of the *J. recurva* of our collections, which is certainly not a native of the British Himálaya. Dr. Hooker (Journals, ii. 28, 45) calls it the weeping Blue Juniper, and figures it as a tree 30 feet high, in Upper Sikkim, but comparatively scarce.

Catalogue, No. 2067. *Cupressus sempervirens*. Bhairupati, Hamilton's Nepal, 97. Habitat in Nepalæ alpinus. Labelled, "Brought from the alps of Thibet: said to be a shrub." ("Its dried leaves have a disagreeable sulphureous smell," p. 97.) The name is here given, 'Bhaingropati,' and in p. 97, Bhairupati (*i. e.* Siva's leaf) is said to be a *Rhododendron*. Wallich (No. 6041) identifies Dr. Hamilton's specimen with *Juniperus excelsa*; and has *Cupressus torulosa* (No. 6046) only from Níti in Garhwál. I have stated elsewhere, on the authority of the late Mr. J. E. Winterbottom, that he had obtained it from Gosainthán in Nepál; but he subsequently discovered that his specimens were those of a Juniper. Dr. Hamilton's plant has the branches four-sided, agreeing with Don's "quadrifariam imbricatis" of *C. torulosa* (Prod. Fl. Nep. 55) and with my own observation. Lambert says, "ramulis teretibus," perhaps from a young state of the plant.

Hingwál Ka bará Saral: the Yew, according to Dr. Hamilton, confirmed by his specimen No. 2281. *Taxus baccata falcata*. Yew-tree, Anglorum. Hingwál Ka bara Saral montanorum, Hind. Hamilton's Nepal, 83, 96, 117. Habitat in Nepalæ alpinus. The name signifies 'great Alpine Pine,' and is cer-

tainly misapplied, probably by the carelessness of the collectors ; as 'small Alpine Pine' cannot belong to *Picea Webbiana*. They have most likely been interchanged.

Zuccarini\* constitutes a distinct species (*Taxus Wallichiana*) for the Himálayan Yew ; but though the leaves are more curved, and the berries smaller than in our European tree, the difference is so trifling, that, with our knowledge of such a marked variety as the Irish Yew generally reproducing the common form, a new species seems uncalled for. Dr. Hooker (Journals, ii. 25) holds that the Himálayan, the North American, and several connecting links, all belong to *Taxus baccata* ; he tells us (i. 186) that the red bark is used as a dye, and for staining the foreheads of the Bráhmans in Nepál. The timber found by Layard in the palaces of Nineveh, and pronounced by him to be Cedar, is in reality Yew.

Dr. Wallich (No. 6054, and Tent. Flor. Nep. t. 44. p. 57) identifies *Taxus baccata falcata* of Nepál with *Taxus nucifera* of Kaempfer from Japan, an oversight which has been set right by Zuccarini, as well as by the fact that no one has hitherto detected that plant or other *Taxus* in any part of the Himálaya. Dr. Wallich has indeed, in "No. 6056, *Taxus? Lambertiana*, Wall. Pini spec. Wall. Herb. 1824. Himálaya, Webb, Govan, Kamroop." No specimen exists in the collection here ; but from Lambert's genus *Pinus* iii. t. 67, we know it to be *Pinus (Picea) Pindrow*. "Dr. Wallich, who had seen neither flowers nor fruit, supposing it to be a *Taxus*, has doubtfully referred it to that genus under the name of *Taxus Lambertiana*, in the Catalogue of his Herbarium. It does not appear to have been found in Nepál, but is frequent in the countries to the westward, having been observed in Kumáon by Captain W. S. Webb, and in Sirmore and Garhwál by Drs. Govan and Royle." Dr. Thomson (Western Himálaya and Tibet, p. 86) considers it one species with *Picea Webbiana* : "The long green-leaved state is that of the moist Himálaya ; in the driest regions the very short glaucous-leaved form occurs." The Himálayan chain from Kumáon to Baséhar on the Indian face is annually drenched with rain ; and still more the various detached outliers, Dudutoli, Chur, &c., rising above 11,000 feet. Everywhere in this tract, so far as my observation extends, the Pindrow alone will be found up to about that elevation, when in a few hundred feet it yields to *P. Webbiana*. Owing to this lofty habitat, *P. Webbiana* is stimulated into premature growth by our early springs, and often cut down by subsequent frosts ;

\* Morphology of the Coniferæ, 52, 53, in Reports and Papers on Botany, printed for the Ray Society, London, 1846.

the Pindrow, though from a lower zone, is not liable to this accident.

The preparation of a kind of tea from the Yew-tree is, I think, peculiar to the Himálaya, and it is remarkable that so dangerous a plant should have been selected. Col. Markham (Shooting in the Himálaya, p. 115) thus describes its use in Kashmir: "There is a capital substitute for tea, in the inner bark of the Yew-tree, dried and prepared like tea. The colour is perfect; but I never could find much taste in the infusion, although one of my friends once said that he liked it better than tea." It is for this reason that, in Kunáwar, *Taxus baccata* is called Sang-chá = Sang *tea*, perhaps connected with the name of the mountain Sung-lo in Kiangnan, "famous in China as being the place where the green tea shrub was first discovered, and where green tea was first manufactured\*."

Of the popular idea of the great age attained by this tree, I met with a curious illustration in 1851, when an Irish gardener repeated the following as being an ancient composition taught him by old people. Three years being the age assigned to the unit, the total comes to 2187:—

Tri saoghail muic,	saoghal con ;
Tri saoghail con,	saoghal eich ;
Tri saoghail eich,	saoghal aufhir ;
Tri saoghail aufhir,	saoghal seade ;
Tri saoghail seade,	saoghal iolair ;
Tri saoghail iolair,	saoghal au iur.

*In English.*

Three lives of a pig	= life of a dog ;
Three lives of a dog	= life of a horse ;
Three lives of a horse	= life of a man ;
Three lives of a man	= life of a path (or furrow) ;
Three lives of a path	= life of an eagle ;
Three lives of an eagle	= life of a yew.

Bhurya patra, or Bhurjapatra, p. 97. *Betula bhajpatra*, Wall. "This bark (of a fine chestnut colour) is imported into the low country in considerable quantity, and is used both in the religious ceremonies of the Hindus, and for constructing the flexible tubes with which the natives (*and Europeans also*) smoke tobacco." Both in India and in Persia this bark was anciently substituted for paper (called Tús in Persia); hence a Sanscrit name of the Birch, Vidhádál, 'leaf of knowledge.'

\* Fortune's Tea Countries of China, 86.

The blocks used in Thibet for stereotype printing are formed of its wood. The Sanscrit Bhurjja, 'firm or hardy in the earth,' seems the origin of our term Birch, Russian Beréza, &c. The Bhárangí bark from Almorah (Royle, J. A. S. B. for October 1832, No. 110) is explained to be *Betula bhojpatra*,—Illustrated Cat. of Great Exhib. of 1851, vol. ii.

Káephal (not Karphal), p. 85. *Myrica sapida*. Káyaphal, from the Sanscrit Katphal, signifies both acid and stony fruit. It is scarcely worth eating; but the bark is sent down to the plains in large quantities, and is used, I think, in dyeing.

Lálchandan, "a timber tree, the foliage and appearance of which have some resemblance to the Laurels" (p. 85). No specimen or reference seems to exist in the Catalogue; but the plant is probably *Goughia Himalensis*, Bentham (a new genus of Euphorbiaceæ, near to *Sarcococca*), which is not uncommon in moist valleys in outer Kumáon and other provinces of the Himálaya as far N.W. as Dharmsála near Kotkángra, at 5000–7000 feet. The Kumáon name, Rakt Chandan, is of the same import as that given by Dr. Hamilton, and signifies 'Red Sandal-wood;' the heart-wood being used for the sectarian mark which the Hindus daub on their foreheads.

The genus *Goughia* is described and figured in Wight's Icones, v. 22. t. 1878–79.

Catalogue, specimen No. 1486. *Sinapis Gorraea*. Ghor ráyi, Hindice. Colitur rarius in Indiæ Gangeticæ arvis ob semina acria. In fr. Surjaghorri, 27 March, 1811. Identified by Wallich (No. 4790) with *Sinapis erysimoides*, Roxburgh, Fl. Ind. iii. 123, from Wynaad, a district of Malabar.

Ten years since, I noticed this plant under cultivation at Almorah, with the names Makara rái, Asl rái, Tarantula and True Mustard. I referred it doubtfully to *S. erysimoides* or *nigra*. On a voyage down the Ganges in 1850, I found the plant commonly grown from Mirzápur as far down as Bar in Behar, but in the greatest abundance about Benares, being cultivated (like the rest of the genus) in the cold season, on the rich clay banks of the river. The leaves are used as cress, the seed for the same purposes as with us; as well as in horse and camel medicines: hence the name Ghor-rái, Horse Mustard. On arriving in Europe that year, it was at once recognized as *Sinapis nigra*.

The cultivation of *Sinapis nigra* in India does not appear in our works on its agricultural resources. Dr. Royle enters *Sinapis nigra*? (No. 219) among the Indian articles of *Materia Medica* (Journal As. Soc. Bengal, Oct. 1832); and in the Liverpool Collection of Imports, Class 29. No. 270. of the Exhibition of 1851, is "Mustard Seed, Brown: *Sinapis nigra*, from Bombay. Import, 1100 quarters in 1850." In the Illustrated Catalogue,

ii. 879, is a similar entry,—“Annaloo Noonæ (*Sinapis nigra*) from Tanjore;” and “Khardal rai, *Sinapis nigra*.” (871.)

It appears from Ainslie’s ‘*Materia Indica*,’ i. 231, that the plant was cultivated long since in the Calcutta Botanic Garden from seeds “brought from England by Colonel Garstin.”

Malayagiri, p. 84, “a pale yellow wood, with a very agreeable scent.”

1262. *Michelia Zila*. Ham. Nepal, 217. Zila champa. Habitat in sylvis Nepalæ. This is apparently *M. Kisopa*. *Michelia Doltsopa* is described by Don (Prod. Flor. Nep. 226) as “arbor vasta ligno odorato gaudens, ad ædes ædificandas omnium arborum Nepalæ optima.” *Magnolia (Michelia) excelsa*, Wall. (Tentamen Fl. Nep.), yields a valuable timber, of a fine texture, at first greenish, but soon changing into pale yellow. This is probably the *champa* of Darjiling, described as “an excellent yellow timber.” One of these I suppose to be the Malayagiri, a term implying ‘mountain Sandal-wood.’ Dr. Hooker mentions the *Cupressus funebris*, Chandan, as “valued only for the odour of its wood” (*l. c.* ii. 45), which is probably yellow. *Ligustrum nepalense*, *Buxus Himalensis*, *Symplocos cratægoides*, have all yellow wood, but without odour. *Camphora glandulifera*, the Nepal Camphor-tree, however, has pale yellow wood, while fresh smelling strongly of camphor, and may be the Malayagiri.

“Bish, Bikh, and Kodoya Bish or Bikh; nor am I certain whether the Mitha ought to be referred to it, or to the foregoing kind,” Bishma.

“I have only seen the flower and fruit of one. This is called Bishma or Bikhma, and seems to me to differ little in botanical characters from the *Caltha* of Europe,” p. 99.

Catalogue, No. 1247. *Caltha? Bishma*. Bishma vel Bikhma, Hamilton’s Nepal, 99. Habitat inter nives Emodi.

1248. *Caltha? Nirbisia*. Nirbishu vel Nirbikhi. Ham. Nepal, 99. Habitat cum præcedente. Montanorum unus hanc pro radice indica toxicaria ostendebat, alter autem sequentem afferebat. Flores non vidi.

1249. *Caltha? Codoa*. (No specimen.) Kodoya Bish vel Bikh, Hamilton’s Nepal, 99. Habitat cum duabus præcedentibus. Credo hanc esse reveram Toxicariam Indorum radicem. Flores non vidi.

In Brewster’s Edinburgh Journal of Science, i. 249–251, “On the Herba Toxicaria,” Dr. Hamilton informs us that his specimens were collected in July 1810, near the sources of the Kosi River, and therefore necessarily quite immature; still it is surprising that he should have referred them, even doubtfully, to *Caltha*, to which they bear no resemblance. In the

very short account in the Journal last mentioned, founded probably on the specimens before us, he says of *Caltha Bismia*, "The Bikhma is used in medicine, and is a strong bitter, very powerful in the cure of fevers\*." *Caltha Nirbisia* "has no deleterious qualities," while *Caltha Codoa* includes Bish and Kodoya Bish. Dr. Wallich† showed that all these specimens belong to *Aconitum*: his 4723, *A. palmatum*, being *Caltha? Bishma*, H. Ham.; and 4721, *A. ferox*, including *Caltha? Nirbisia* and *C.? Codoa*, H. Ham.

It would be impossible to unravel this complication without a visit to Nepál; but perhaps some additional light may be thrown on the subject by eliminating the known from the unknown, and rejecting the specimens as misnamed. Dr. Hamilton (p. 98) expressly says there are "four different plants." We know that the Bish‡ proper is *Aconitum ferox*. Kodoya Bikh may be *A. palmatum*, or Dr. Hooker's new species from Upper Sikkim, *A. luridum*, reported to be as virulent as *A. ferox* (Journals, i. 168; ii. 108). *A. ferox* is found all over the alpine Himálaya; on the Shátúl Pass, in Basehar, it is well known as Bikh; also Maur, Máúr, and Máhur, of the same import. Vatsanába, 'calf-destroyer,' is the original of the Bachnag§, mentioned by Dr. Royle from the Makhzanul Adwiyyah. In order to ascertain whether it were justly called Mitha, 'sweet,' I masticated a very small slice, and found it was so; but this was soon succeeded by the most distressing burning all over the mouth and fauces, though nothing was swallowed.

Plants of other genera are also known as Bikh and Máhur: the root of *Meconopsis Wallichii* is reported in Sikkim to be very poisonous (H. and Th. Flor. Indica, 254); and the root of a

\* So in the Account of Nepal, p. 99.

† He left occasion for additional criticism. The description of *A. ferox* in the 'Pl. As. Rar.' is full and interesting, pp. 35-39; but the plate (t. 41) and specimen 4721 A. belong to *A. dissectum*, Don's Prod. 197. *A. ferox* flourishes at from 11,000 to 13,000 feet; it has beautiful deep-blue flowers in August and September, and is described and figured by Dr. Balfour and Mr. M'Nab in the Ed. New Phil. Journal, October 1849, plate 5, from plants which first flowered that autumn in our Horticultural Garden. *A. multifidum* is abundant at from 12,000 to 14,500 feet; *A. palmatum* grows at Nagkhanda near Simla in forests at 8500 to 9500 feet, and flowers from May to July; *A. heterophyllum* at from 8500 to 13,000 feet.

‡ The term *vish*, Sanscrit, denotes 'poison' simply, and is from the same root as *vishnu*, 'penetrating, pervading.' In the mountains and the north-west provinces it is pronounced Bikh; in Behar and Bengal, Bish; but there is no difference in the original word. *Narbishi* means 'not poisonous,' a term from which Don (General System of Gardening, i. 63) forms his genus *Nirbisia* to include two deadly Aconites and an innocent *Delphinium*,—as uncalled-for therefore in botany as it is false in etymology.

§ Bachnag, according to Graham's 'Bombay Plants,' is *Gloriosa superba*; its root is a virulent poison.

*Convallaria* with verticillated leaves is considered a very virulent poison (Hooker's Journals, i. 168)\*. Dr. Royle (Illustr. 382) says that "*Polygonatum verticillatum*, L., called Mitha-dúdhya in Sirmore, and *Smilacina pallida*, called Dúdhya-mohura, are both accounted poisonous in the Himálayas." On Mahásu, near Simla, I observed people gathering the young shoots of *P. verticillatum* or *cirrhifolium*, to induce intoxication; and the poisonous root Máhura was useful, they said, in cases of ring-worm.

Nirbishi denotes some plant, "not *Aconitum ferox*," but resembling it. Dr. Royle observes that he was struck with the resemblance of some *Delphinium* roots from the Himálayas to those sold as Narbisi; and both at Pindri in Kumaon and Bhojgara, on the south side of the Kowári Pass in Garhwál, at 11,000 to 14,000 feet above the sea, I found the beautiful *Delphinium Kashmerianum*, Royle, p. 55. t. 12 (*Jacquemontianum*, Cambessedes, Voyage aux Indes, viii. t. 7), with cylindrical tuberous roots, absolutely identical in form with the ordinary Nirbisi, and, I doubt not, its true source. No one, however, could previously supply me with the least information as to the province which produced it: the Nepalese said it came from the west; the Tibetans told Major H. Strachey it came from the east. Dr. Royle (J. A. S. B. October 1832) got the root (No. 49) from Amritsir. Its properties seem to be unknown; he describes it as having a pure bitter taste †.

The Bishma of Dr. Hamilton is expressly stated to be a bitter, which precludes the idea of its being *Aconitum ferox*, of which the taste is sweet; and Colonel Kirkpatrick, in his 'Account of Nepál,' p. 182, note, long since supposed it might be a kind of Gentian. Dr. Royle conjectures that it may be *Aconitum heterophyllum* (excellently figured, 'Illustr.' t. 13), the root of which,

\* In the Journ. As. Soc. of Bengal for May 1849, page 438, Dr. Hooker states that "another far more powerful Bikh is yielded by a plant of the order *Compositæ*, which I have gathered abundantly at 10,000 and 9000 feet; and it requires care to distinguish its root from that of the Aconites; when mixed, the Bhotiyás could not separate them." Dr. Hooker informs me that the plant in question is a *Cacalia*, allied to *C. aconitifolia*; and that the reputed qualities having never been confirmed in any shape, he does not doubt that they are altogether due to the similarity of its foliage to the Aconite.

† Dr. Royle distinguishes this Amritsir and Basehar drug from the common sort: according to him it is fusiform, externally black, somewhat flattened and wrinkled, and in some respects resembling the Bikh itself, with a slight degree of bitterness and acrimony (Illustr. p. 49). This would agree well with the roots of Wallich's fig. of *Aconitum ferox* (*A. dissectum*), and with Colonel Munro's fact of a Kunáwar species being used as a tonic. It appears, on the authority of Linnæus, that in certain cold climates the root of *A. Napellus* is eaten with impunity.



called Atís, Patís, and Mahaushadham, 'the great drug,' is in much estimation for its medicinal qualities. Atís is a vernacular corruption of the Sanscrit Atívisha, 'overcoming poison,—antidote,' (erroneously rendered *summum venenum* by Wallich,) with the synonyms Upavish, 'reverse of poison,' and Prativishá, 'against poison, an antidote'\*; the last is the origin of the vernacular Patís. This plant, however, is not quoted as indigenous to the east of Kumáon; and we may therefore substitute *Gentiana Kurroo*, Royle, which is much used in the N.W. mountains, or *Aconitum multifidum*, a very abundant species in the alpine Himálaya, "planta *A. Anthoræ* affinis," Royle; of this or *A. dissectum*, Colonel Munro states (Hooker and Thomson's Fl. Indica, p. 58) that "the roots are eaten in Kunáwar as a pleasant tonic." Dr. Royle's *A. multifidum* is from that district. *A. Lycototum* (Læve, Royle) is as common in the Himálaya as in Alpine Europe; and its roots, which are, I believe, harmless, may also be so employed †.

Jumne-mundroo, p. 85. *Berberis* (*Mahonia*) *nepalensis*; properly Jámani mándru.

Chotrathul, *i. e.* fruit of the Chotra, a Barberry. Catalogue, No. 841. *Berberis asiatica*, Hort. Beng. 25; DC. i. 107. Habitat in dumetis Nepalæ. The specimen is wanting, and Chotra, Chutro, is the proper name of *B. aristata*; but Wallich has, No. 44, *B. asiatica*, Roxb., from Nepál and Kumáon.

Catalogue, No. 1082. *Rhododendron puniceum*. Potasar: Go-rangs: montanorum Hind. The common *R. arboreum*.

"Sanpati: a small *Rhododendron*, like *Myrica Gale*; the leaves

\* It is the Jadwár or Zedoary of the Arabs and Persians. "Ideoque dixit Avicenna nihil esse ea præstantius ad ebibitum Napellum" (Royle, Illustr. 50). In all probability this is purely an imaginary virtue.

† Griffith (Journals of Travels, ix. 37, 57) says, "I hope before my return to have seen *Coptis Teeta* in flower, and to have proved that the Bæse is different from that of Nepál." The *Coptis*, called Mishimí Tita, or Bitter, from being indigenous to the Mishimí Mountains, a branch of the Himalaya, bounding Assam to the east, is, like the best Chiretta, of a yellow colour, "a pure intense bitter of some permanence, but without aroma." He calls it a "valuable drug." It may be one of the Bikhmas. In Hindustani, Bikhmán is explained by Shakespeare, "name of a medicine or poison," perhaps from the Sanscr. *vishama*, uneven. Bee or Bih is merely the Assamese form of Bish: thus we have Koni-bih (*Croton Tiglium*), Naga-bih (*Gordonia integrifolia*). Mr. Griffith (J. A. Soc. Beng. 1837, 331-335) mentions "the celebrated poison, Bee," of the *Ranunculaceæ* (and says it is "in very great request") as one of the three staple articles of the Mishims. Masters (J. Agri. and Hort. Soc. Calc. iv. 200) tells us that "the juice of this fruit (*Dillenia speciosa*) is mixed with the Mishimi Bih to prepare the poison for arrows." And Wilcox (As. Res. xvii. 456) mentions two kinds of poison from the mountains north of Assam,—the Bor Bis (great poison) and Sengumuri Bis; all no doubt to be included in the above-mentioned species of *Aconitum*.

are very odorous, and even when dried retain their fragrance. It is used in fumigations, and sent to the low countries," p. 97.

Catalogue, No. 1083. *Rhododendron*. Son Pati. Hamilton's Nepal, p. 97. The specimen is imperfect, but seems to belong to *Rhododendron anthopogon* or *pendulum*; the leaves of the first are very aromatic, and are burned as incense.

Bhairupati. *Rhododendron*. "Its qualities are similar to those of the former, but it is less fragrant," p. 97.

Catalogue, No. 1084. *Rhododendron Bhairopatium*. Bhairupati v. Bhaingropati. This specimen is also without flowers or fruit, but belongs to *R. lepidotum*, or one of the varieties or allied species discovered by Dr. Hooker.

Catalogue, No. 1062. *Melia Azederach*.

a. Enc. Method. i. 341; Willd. Sp. Pl. ii. 558. Colitur ad urbes Indiæ rarius, habitat in Nepála. In flower, Calcutta Botanic Garden, 4th January 1814.

No. 1063. *M. Azederach*.

β. Enc. Method. i. 341. *Melia sempervirens*, Willd. Sp. Pl. ii. 559. Habitat ad Indiæ pagos. In flower, Jolpigorry, 31st March 1809.

Wallich's Cat. 1251. *M. sempervirens*.

Nepál and Kumáon.

Ibid. 1250. *M. Azederach*, L. H. B. C.

Dr. Hamilton's first No. has oval-lanceolate leaflets; in 1062 they are somewhat broader and less arcuate; the difference, however, is certainly not more than is usual in specimens from the same tree; and hence Dr. Hamilton finds *M. Azederach* in Nepál, where Dr. Wallich finds *M. sempervirens*; and *M. sempervirens* in the Indian villages, which Dr. Wallich has only from the Calcutta Botanic Garden. I am satisfied that the Himálayan plant is identical with that of the Gangetic plains; in the hills it is called Dek or Jek and Betain; in the plains, Bakáyan, a name which is applied to *M. sempervirens*, As. Res. xi. 170. No specific name could be more inappropriate, since it is completely leafless during the winter months; and this appears to be true also, to a somewhat less extent, of the West Indian *M. sempervirens*, Swartz, which is said to vary from a small bush to a tree. Seemann (Kew Journal of Botany, October 1851) informs us that this is a native of Panamá, and known as 'Jasinto.' DeCandolle (i. 621) mentions Jamaica as its habitat, and says, "priore minor, florens jam biennis, folia tardius autumno deponens, et tepidarium per hyemem in nostris hortis requirens." Roxburgh (ii. 395) adds to the difficulty: he says *M. sempervirens* is "a native of Persia, now common throughout India..... It blossoms the greater part of the year in our gardens, and is perfectly distinct from *Azedarak*, which is a robust,

deciduous timber tree, and this is a small delicate evergreen, of short duration compared with the other." He gives Bakarja as the Hindustáni name,—evidently the Bengáli name, Bakarjan, of *M. Azederach*. This last he calls a native of China. Graham (Cat. of Bombay Plants, p. 30) says it is common "about villages" in the Concan and Deccan, S. India. Jacquemont (Voyage dans l'Inde, iii. 147) finds it under the same circumstances in the Punjáb, but scarcely indigenous, nor has it the least claim to be so considered anywhere in Northern India. Its Sanscrit names, Mahátikta, 'the great Bitter,' and Mahánimb, therefore, go for nothing, and are not in the Amera Kosha. The Persian Azád-i-darakht, 'the spreading tree,' which gives it the specific name, with its popular one, 'Indian or Persian Lilac,' is compatible with its importation from America by the Portuguese, who, like other Roman Catholic people, use the berries in rosaries (Bead-tree); once introduced, its "very great beauty," and flowers like the Lilac, sweetly fragrant (Roxburgh), would speedily cause its general diffusion. Wight and Arnott (Prodromus, p. 117) found Roxburgh's own specimens of *M. Azedarach* and *sempervirens* so much alike as to appear as if cut from the same tree; and the figure of the latter in the Botanical Register, t. 643, may very well be *M. Azedarach* in a young state, and forced in a stove. In Dr. Royle's List, No. 191, Bakain is entered as *M. sempervirens*; and in February 1850 I saw this last in the Calcutta Botanic Garden in full flower, a tree 30 feet high, called Mohá ním by the Bengáli gardeners, and quite the same with the Bakáyan of Northern India.

Timmue (for Timmur) or Taigbul: a mountain shrub; and an arboreous species on the lower hills (p. 84). The first, well known for its aromatic capsules, and for the thick prickly clubs used by fakírs (mendicants), is the *Xanthoxylon hostile* of Royle (*X. alatum* of Roxb. iii. 768, and *X. acanthopodium*, DC.), called Timúr and Zejbal, the last expressive of its strong pungency. It seems to be the Jwarántika, 'fever-ender,' of the Sanscrit. It is (perhaps erroneously) referred to *X. aromaticum*, a West Indian species, in the Illustrated Catalogue of the Great Exhibition of 1851, ii. 895. There is a new species flourishing in shadier and loftier sites in Kumáon, which Mr. Edgeworth proposes to call *X. tomentosum*; of this the native name is Símur; it has similar properties. The arboreous species mentioned by Dr. Hamilton may be *X. Budrunga* of Roxburgh, of which the capsules are of a warm spicy nature, with the fragrance of lemon-peel. *Toddalia floribunda*, Wall., and another species of *Xanthoxylon* are natives of Nepál; and *Tetradium cymosum* and *fraxinifolium* (Royle, 157) may be from Lower Nepál.

Padam chhál "is a plant with a thick cylindrical root that is

used in medicine, and brought to the low country for that purpose. The specimen that I procured had one large heart-shaped rough leaf, and had somewhat the appearance of an Anemone" (p. 100). The name signifies 'bark of the Lotus,' and, according to my Nepalese authority, belongs to some species of *Rheum*, probably *R. Emodi*, or *Webbianum*, or both, the roots of which have "a spongy texture" (Royle) resembling the Lotus.

Sied burroa: *Daphne papyrifera*, Ham. pp. 85, 232; properly written Seta-baruwa, *i. e.* White Baruwá. The shrub abounds in the temperate districts of the Himalaya; and the paper made from its bark, though coarse, is not touched by insects. "The bark is exceedingly strong and pliable, and seems to be the same with certain tape-like bandages employed by the Chinese in tying many of their parcels."

Sinkauri, Silkauri: the leaves, Tejpát. "Both its bark and leaves have a fine aromatic smell and taste, and this quality in the leaves is strengthened by drying" (p. 84). *Cinnamomum albiflorum*; *Laurus Soncaurium*, Ham., Linn. Trans. xiii. 557; *C. Cassida*, Don, Prod. 67. Another Sinkauri is distinguished by its aromatic quality residing in the bark of the roots. Dr. Hamilton received it from the mountains of Morang, the tract between the rivers Kosi and Tista. In the Trans. Linn. Soc. xiii. 558, he describes this plant as *Laurus Sailyana*: "vis aromatica tota in radicis cortice posita. Hic autem cortex lævis, colore lateritius, odoratissimus, sapore grato aromaticus. Cortex ramorum et folia insipida, inodora." Nees von Esenbeck (in Wall. Pl. As. Rar. ii. 73-75) identifies it as *Cinnamomum albiflorum*  $\beta$ , very near *C. Tamála*, 'Taj' Bengalensium, cultivated in the gardens of Cámrup.

*Machilus odoratissimus* (*Laurus Champa et bombycina*, Herb. Ham.), a fine tree of all the warmer valleys of the Himalaya, is known in Kumáon as the Kaula, which term enters into Hamilton's Nepalese names. Dr. Hooker found *Cinnamomum* in Sikkim, up to 8500 feet (i. 162).

"The Seta and Cálá Bhot más of the Parbatiyas (Hindoo mountaineers) are called Musa and Gya by the Newars (the Mongolian aborigines of Nepál). They are two varieties of the *Dolichos Soja*, the one of which has yellow flowers and white seeds, and the other has black seeds and purplish flowers. The former is ripe about the 1st of November, the latter about the 1st of September" (p. 228).

Catalogue, 1778. *Dolichos Soja*. *Soja hispida*, DC. Garo Kolai, Bengalensium. Bhot mas, Montanorum Hindice. Colitur in Camrupæ orientalis et Nepalæ montosis.

Thence abundantly up to Kumáon, where the Soy Bean plants are called Bhat. "Bhut. *Soja hispida*, Kumaon." Illustrated

Cat. of G. E. of 1851, ii. 871. No mention of it, however, in this respect occurs in our botanical or agricultural works on India. Soy pulse is reckoned rather unwholesome, and much of the sickness which assailed the divisions operating against Nepál in 1813-14 was popularly attributed to its use.

Catalogue, 1690. *Hedysarum Alhagi*. Habitat in ripis Gangis et Jomanis arenosis. Labelled, "Monger, 17th June, 1811."

This is the common Jawásá or Camel Thorn of the plains of Northern India, and is here introduced as an example of the way in which species are unnecessarily formed, on the supposition that a new locality (though erroneous) requires a new species. The plant extends from the extreme north of India down to Behar, where I have seen it in the neighbourhood of Monger, near the well-known hot spring of *Sitákund*. It is Dr. Wallich's No. 5760. *Alhagi Maurorum*, *Hedysarum Alhagi*, H. Ham. e Monger; and neither of these botanists gives any intimation of the genus being found in Nepál, nor is there any known *Sitákund* in that country. Yet, on the supposition that it is from that country, *Alhagi Nepaulensium* forthwith appears in our books:—Don, System of Gardening, ii. 310, "Native of Nepaul, near Sitaucund." DeCandolle, Prod. ii. 352. Syn. *Genista Juasi*, Ham. *Hedysarum Hamiltonii*, Sprengel, Syst. iii. 316; and *Manna Nepaulensis*, D. Don, Prod. Fl. Nep. 247. Habitat in Nepalia, prope Sitaucund, Ham., in which DC. follows.

In the same manner D. Don has (Prod. 101) *Heliotropium obovatum*. Hab. versus ripas fluminis (Bhagirathi) infra Morshídabad, Ham. (it is *H. europæum*, L.), to which DC. prefixes, "In Nepalia versus," &c., the locality being Bengal. A *Melanthus Himalayanus* is constituted (Linn. Trans. xx. 417) from a garden specimen of *M. major* grown at Háwalbágh, near Almorah, the only individual of the genus in Kumáon. In short, if we take as criteria the genera *Viburnum*, *Lonicera*\*, *Cirsium*, and others in DeCandolle's Prodrömus, one-fourth of his Himalayan species have no reality independent of the different names imposed by different botanists, and adopted as species without examination.

*Alhagi Maurorum* is interesting as the shrub which yields the 'Manna' of N. Persia, Bokhara, and Samarkand, called Tarangabín or Taranjabín; the plant itself being Khár-i-Shutar and Ushtar-Khar, i. e. Camel Thorn. The Manna of Mount Sinai, a product of *Tamarix gallica*, is also formed in Louristán

\* *Lonicera quinquelocularis* of Hardwick and Roxburgh (DC. iv. 338. no. 50) is *L. diversifolia*, Wall. (no. 24, 334), as I ascertained on the spot where the General discovered it. Exclude "ramis volubilibus."

and Irák, where it is called Gazángabín or Gazánjabín. The names are all *Persian*.

*Saxifraga ligulata*, Wall.

*S. Pacumbis*, Ham. MSS. in Don, Prod. 209. Dr. Hamilton's specific name, I doubt not, is a misprint for Páshán-bhéd, its Sanscrit designation (pronounced Pákhán-bhédin in the mountains), still preserved as Pákhán-bhéd in Nepál and Garhwál: so Royle, J. A. S. B. Oct. 1832, No. 121. H. H. Wilson erroneously explains the Sanscrit term by *Plectranthus scutellarioides*. It signifies 'Rock-splitter'; and it is the more interesting that the name should in this remote district be applied to a species of our genus *Saxifraga*, since Pliny (H. N. xxii. 30) refers *Saxifragum* to *Asplenium Trichomanes*, or *Adiantum Capillus-Veneris*: "calculos e corpore mire pellit frangitque, utique nigrum. Qua de caussa potius, quam quod in saxis nasceretur, a nostris saxifragum adpellatum crediderim."

Catalogue, 77*A*. *Calotropis procera*. Habitat in arenosis Mithilæ, Magadhæ, et Cosalæ.

The distribution of this plant (*C. Hamiltonii*, Wight, Contrib. 53) is ill understood. Abundant in the south of Syria (Beid-el-osshar), Northern Africa, and all the warmer regions of Asia, I traced it down the Ganges to Nadiyá in Bengal, where it apparently ceases. It appears to have escaped the observation of Roxburgh, and is not mentioned in his 'Flora Indica.' The allied species, *C. gigantea*, is unknown in Northern India, except at the base of the Himálaya below Nainí Tál in Kumáon, where for some miles it occurs in profusion: thence southward I met with it wild till ten or fifteen miles below Rajmáhal, from which to Nadiya both species are intermingled, *C. gigantea* reaching Calcutta. The name Madár\* applies to both: the term Ak, also often applied, is from Sans. Arka, 'the sun,' to which the flowers always turn; hence, where the two occur, *C. gigantea* is called Bará ákand; *C. procera*, Chhota ákand; great and small *Calotropis*.

Griffith (Itinerary Notes, p. 207) has nearly the same distribution as above: "*Calotropis Hamiltonii*; very common throughout the sandy plains of India, on the N. side of the Rajmahál hills, to the complete exclusion of *C. gigantea*. In appearance there is scarcely any difference, and, as far as foliage goes, perhaps none; the flowers are smaller, and invariably the leaflets much smaller and bilobed at the apex." Dr. Hamilton (Linn. Trans. xiv. 246-248) explains the differences excellently. Dr.

\* Madarine, the active principle of *C. gigantea*, "possesses the property of coagulating by heat, and becoming again fluid on exposure to cold."

Hooker (Notes of a Tour in the Plains of India, P. ii. p. 78) notices nearly the same distribution as Griffith: "The species look very different, but when gathered, there is extreme difficulty in recognizing them." He adds, that "there is considerable discrepancy of opinion as to their comparative efficacy, the votes being in favour of *C. gigantea*."

Catalogue, No. 781. *Swertia Chirata*. Bará Chiráta.

No. 782. *Gentiana Cherayti*. Chhota Chiráta.

Dr. Hamilton informs us (p. 85) that of these two species the smaller (782) is the one most in request. It is the *Agathotes Cherayta* of D. Don (Linn. Trans. xvii. 522); *Gentiana floribunda* (Prod. 127); *G. Chirata*, Wall. (P. A. R. iii. 34. t. 252, where the flowers are of far too intense a yellow). Dr. Hamilton truly describes it as a perennial; it has yellow roots, hence the Arabic Kasb-al-zarīrach, 'yellow stem or twig' (Royle, 278); it brings twice the price of the other kinds: "sapore intense amaro," Wall., who also notes its "radix perennis." It flourishes in woods and shady places, with Plantago-like leaves, and is the largest plant of the whole, reaching 4½ feet high; so that the native appellation, given by Dr. Hamilton, does not apply.

No. 781 is probably *Ophelia angustifolia*, from which much of the Chiráyítá of commerce is obtained\*; but several other species, *alata*, *cordata*, *fasciculata*, *purpurascens*, are equally esteemed or collected. These are annuals, and abound in open sites, at various zones from 4000 to 12,000 feet above the sea. *Ophelia angustifolia* and *paniculata* are figured in Wallich's Pl. As. Rar. iii. t. 204-5.

"The Kutki is another officinal plant, with a woody root, and a stem containing many alternate leaves, toothed on the edges and shaped like a spathula. It has much the appearance of a Saxifrage. The roots are brought for sale" (p. 100). *Picrorhiza Kurroo*, Royle, Illustr. t. 71. f. 2, a bitter for which he tells us that *Gentiana Kurroo* is frequently substituted. *Nima quassioides*, occurring in the valleys of Basehar and Upper Garhwal at 5500 to 8000 feet, is also called Karwí, from its exceedingly bitter bark and wood.

*Picrorhiza Kurroo* is abundant in the Alpine Himalaya, on

\* D. Don (Linn. Trans. l. c. 524) says it is "more bitter than the last," the *Agathotes*. Wallich, on the contrary (Pl. As. Rar. iii. 2), says that it and *paniculata* "possess only a slight degree of bitter taste." Don is here most correct, according to my experience.

The large and handsome *Swertias* of the Alpine Himálaya do not appear to be imported to the plains.

Chiráyítá derives its name from the Kirátas, a people of Eastern Nepál, the *Cirrhadae* of Arrian: hence the Sanscrit Kiráta-tikta; but the mountaineers call it simply Kánda Títa, 'bitter stem.'

the open downs above the limit of forest, 12,000 to 14,000 feet. There is a second species in Kumáon, discovered by Major R. Strachey, at similar heights.

Jatámánsi, p. 97: the Nard or Spikenard of the ancients; Hebrew Neredde, from the Sans. Nalada, *i. e.* 'giving fragrance.' *Nardostachys Jatámánsi*, Royle, Illustr. t. 54. f. 2. *Patrinia Jatamasi*, Don, Prod. 159, 160. The Indian women consider the smell very agreeable, and most of them that can afford it use oil impregnated with this root for perfuming their hair. "All I can say is," adds Dr. Hamilton, "that if this root was the Spikenard of the Roman ladies, their lovers must have had a very different taste from the youth of modern Europe." Cant. i. 12. There is, however, a larger species, *N. grandiflora* (DC. Prod. iv. 624), in Kumáon, flourishing at similar elevations (13,000 to 14,000 feet) to *N. Jatámánsi*\*, and with a similar root; "but it is much larger, and its smell is more agreeable" (Wall. P. A. R. iii. 40); and Lambert (Genus Cinchona, 1821, p. 179) says, it "may be considered as possessing the most agreeable odour of any" of the Valerians. His figure (p. 180) evidently represents this species, not *N. Jatámánsi*; and the description, anticipated from Don's Prodrómus, proves that the latter also, unless made from Nepál specimens, belongs to it. The perfume and properties of the genus are, in fact, very nearly those of *Valeriana Celtica* and *Phu*; and it is curious enough that the radical leaves of the last two species (the roots of which are substituted in Western Asia for the Spikenard) are simple, and bear a considerable resemblance to those of *Nardostachys*. The name Jatámánsi signifies 'locks of hair,' sometimes simply Mási; and the vernacular Bálchhar denotes 'hairy staff,' all with reference to the root, which has been compared to the tail of an ermine, "on account of its withered stalks and ribs of leaves, cohering in a bundle of yellowish-brown capillary fibres." Pliny's description accords (N. H. xii. 26): "Cacumina in aristas se spargunt: ideo gemina dote nardi spicas ac folia celebrant." *Spica* is a translation of the Arabic Sumbul, Hindí Bal, 'an ear of corn.' Sir W. Jones, in As. Res. ii. 405-10, iv. 109, where the figure (copied, except the root, by Roxburgh, *ib.* iv. 435) with cordate radical leaves, is, as Lambert truly observes (*l. c.* p. 179), that of *Valeriana Hardwickii* (Pl. As. Rar. iii. t. 263). The roots of this very common species have the same smell as those of *V. officinalis*, are also used medicinally, and were substituted by Sir William Jones's collectors without

\* It is strange that DeCandolle (iv. 624) should assign Mándu and Chitor in Central India as stations for this plant, which cannot live at Almorah, 5500 feet, beyond a few months.



any very glaring imposture. In Pliny's time also, adulteration took place by Pseudo-nard, "crassiore atque latiore folio." They are called Shameo in Nepál and Kumáon, the Sanscrit Shami, from Sham, 'to calm'; proving how widespread is the antispasmodic energy attributed to them.

The aromatic-rooted Grass, *Andropogon Jwaráncusa* (i. e. the 'fever-goad,' also Jwaranásaka, 'fever-destroyer'), at first taken for the Spikenard\*, is abundant all along the base of the Himalaya, and in the valleys of Kumáon up to 4000 feet. At a lower level in the valley of the Alakananda in Garhwál, the still more fragrant species, *A. Calamus-aromaticus*, Royle, t. 97, *nardoides*, Nees, from which the celebrated Rusa, or Grass-oil of Nimmár, is distilled, is not uncommon. Dr. Royle only traces it north to Delhi.

"The Manjít, or Indian Madder, seems to be of two kinds: the *Rubia cordata* of Willdenow, and a species of *Rubia* not described in the common systems of Botany. Both seem to be equally fit for the purpose, and grow in the same manner. It is cultivated exactly as cotton is among the hills" (p. 74).

Catalogue, No. 354. *Rubia cordifolia*.

Catalogue, No. 355. *Rubia Chaya*. From Bhotan.

The first is *Rubia Manjistha*, Roxb. i. 374, the *R. cordata* of Thunberg, from Japan; differing by its pentandrous flowers from *R. cordifolia*, L., from Siberia. But this test is not satisfactory, as remarked by Wight and Arnott, whose statement is perfectly correct, that the flowers of *R. Manjisthá* are frequently tetrandrous. DeCandolle (iv. 588) describes them as all pentandrous, and those of *R. cordifolia* both tetrandrous and pentandrous, agreeing with *R. Javana* (*R. cordifolia*, Blume), which he considers a medial form. Wight and Arnott (Prod. 442), Wight (Icones, i. t. 187; Illustr. ii. t. 128 bis), and Don (Prod. 133) all identify them. *R. Manjistha* is very abundant in the Himálaya, from 4000 to 9500 feet, with black fruit, and deep red flowers, not yellow, as represented in Archer's Popular Economic Botany, P. xv. f. 78.

The second species, which Dr. Hamilton considers new, is by Dr. Wallich (No. 6069) identified with *R. cordifolia*, L. Our Edinburgh specimen, however, though imperfect, seems to be an undescribed species, which I found in the glen of the Sarju River in Eastern Kumáon, in two localities, Rámesar and Gangoli, at 3000 to 4000 feet elevation above the sea. Mr. Edgeworth proposes to name it *R. nervosa*. Griffith (Itinerary Notes) probably found it in Bhotan; his No. 11 is *Rubia Manjistha*,

\* "The root of *Andropogon muricatum*" is given as a secondary meaning of *Nalada*, Spikenard.

Dewangiri, in woods. No. 116. *Rubia cordifolia*; alt. 2800 ped. in sylvis. No. 367. *Rubia cordifolia*. Khegumpa. Yields Manjistha (Madder). No. 1021. *Rubia* sp. Scandens, hirsuta, certe distincta a *R. cordifolia*; towards Panga, in woods, 6500 to 7500 feet. In the Journals of Travels, p. 203, he writes at Dewangiri, elevated 2000 feet: "I find that large quantities of Manjistha or Madder are sent to the plains from this, where the plant is very common." At p. 292 we have *Rubia hispida*, at 8700 feet; and at p. 296, *Rubia hirsuta*, at 5500 feet. At p. 209 he says, "Madder is furnished by both *Rubia Manjistha* and *R. cordifolia*; these species are quite distinct, the latter affecting greater elevations than the former, scarcely descending below 4000 feet." The plant becomes shorter and stouter at high elevations; and in a matured Report, published in the Journ. As. Soc. Bengal for April 1839, p. 281, he modifies this view, and identifies these two supposed species, adding that "Bhotan has two species. The two species used in Bhotan are very distinct, and very general constituents of other mountainous floras; one of them has leaves without stalks." This is perhaps Dr. Hamilton's plant from Bhotan. His specific name *Chaya* appears to vindicate a practice condemned by Mr. Archer (*l. c.* 212): "Munjeet is often called Chay-root; but this is a mistake, the latter being the produce of a totally different plant," *Hedyotis umbellata*, in Tamul Saya. In Bengal, Cháyá is *Ærua lanata*. Wallich (Roxb. Fl. Ind. i. 384) has *Rubia alata*, from Nepál, which Don reduces to *R. cordifolia*; and Major Strachey has a *Rubia* from Nítí in Garhwál, with greenish flowers, which he considers to be *R. Manjisthá* of Roxburgh. *Rubia purpurea*, figured and described by Decaisne in Jacquemont's 'Voyage aux Indes,' is merely *R. cordifolia*, one of the many instances in that valuable work of needless synonyms, owing to the want of ordinary precaution as to what previous botanists had already named.

"Umbelliferous plant with root resembling *Athamanta Meum*, and when fresh, an uncommonly fragrant smell" (p. 98). Very probably the well-known *Chora*, *Angelica glauca* of Mr. Edgeworth, abundant at 9000 to 10,000 feet (and which I take to be the aromatic Gertheon or Certheana of Assam, a compound of *Valeriana* and *Pastinaca*, Griffith, Journals, 37, 57; and J. A. Soc. Beng. 1837, 331, 335). Two thousand feet higher flourishes the Hushíál, also very aromatic, which I believe to be *Hymenolæna angelicoides*, DC. Prod. iv. 245; as well as *Hymenidium Brunonis*, Nesir or Lesir\* of the mountaineers, a very fragrant plant.

\* Dr. Hoffmeister has pointed out the resemblance of this name and plant to the *Laserpitium* (Lesir-pati) of the Romans, the *Silphium* of the

Bhutkes: Bhutkesar, pp. 86, 98. "A thick woody root, on the top of which were many stiff bristles, and from among these the young leaves were shooting." These Dr. Hamilton thought belonged to *Thalictrum*, and Dr. Royle (Illustr. p. 69) refers Bhutkes to *Corydalis Govaniana*; but it is actually the root of *Oreocome filicifolia* and *elata* of Mr. Edgeworth (Linn. Trans. 1845), especially the former. This is probably identical with *Selinum Candollii* (*Peucedanum Wallichianum*, DC. Prod. iv. 181; *Selinum tenuifolium*, Wall.) and *Pleurospermum cicutarium*, Royle, Illustr. Don's three species of *Athamanta*, Prod. 184-5, described in accordance with the signification of Bhutkes, seem to belong to *Oreocome*. Both the above plants, and one or two species of *Cortia*, growing at great elevations (14,000 to 15,000 feet), are well known all over the Himalaya by Dr. Hamilton's names, which signify 'hair of the spectre,' against which they are worn as charms. They are often called simply Kés, 'hair,' for the same reason as the Jatámánsi. With the medicinal root Bhutkes, Dr. Hamilton mentions another, called Jainti, which he refers to an Orchid growing among moss on large stones, on the higher mountains. *Cœlogyne præcox* is so described on his authority in Don's Prodrômus, p. 37. "Brim" (p. 100) is another orchideous root used in medicine; but neither of this nor of the Bariyalbhera seeds (p. 285) from Chhináchhin in Yumila, a province east of Kumáon, have I any identification to bring forward.

Greeks, which the historians of Alexander inform us that his army found in Afghánistan. The Greeks of Cyrenaica represented the plant (*Thapsia Silphium* of Viviani, Flor. Lib., or *Thapsia garganica*, Desfontaines) on their coins still extant; and Pliny (N. H. xix. 15; xxii. 49) paints in high colours the virtues of its gum-resin, *Laser Cyrenaicum*, as a medicine and perfume. The celebrated drug, *Asa dulcis* of Cyrene, recalls the *Assa-foetida* of Persia, as well as a kind of incense from the Himálaya, called *Asá purí* (*i. e.* 'the fulfiller of hope'), of which the Nepalese told me wonderful virtues.