

# *Flora Indica;* *or Descriptions of Indian Plants*

## **Background Information**

In 1820 at the Mission Press in [Serampore](#), William Carey posthumously edited and published [vol. 1](#) of Dr. William Roxburgh's *Flora Indica; or Descriptions of Indian Plants*. In 1824, Carey edited and published [vol. 2](#) of Roxburgh's *Flora Indica*, including extensive remarks and contributions by Dr. Nathaniel Wallich.

Roxburgh (1751-1815) was an eminent botanist, horticulturalist, and physician. From 1793 until his death, Roxburgh was the Superintendent of the [Botanic Garden](#) in Calcutta, India. At the time of these two volumes' publication, [Dr. Nathaniel Wallich](#), a botanist and physician, held the position of Superintendent of the Botanic Garden, Calcutta. Originally established in 1787 by the [East India Company](#), the Botanic Garden held significant interest for William Carey, and the garden still exists today as the [Indian Botanic Garden](#).

Several plants and flowers are associated with Dr. William Roxburgh. At least one specimen appears on the internet. Named [Rosa Roxburghii](#), this rose also is known as "Chestnut Rose," and was placed in the Botanic Garden, Calcutta, in 1824. According to John Overton Choules, [Christ's Messengers; or, the Missionary Memorial](#) (New York: E. Walker, 1845), [p. 335](#), Roxburgh named the Saul tree *Careya aborea*.

In vol. I, Roxburgh gave an account of [Ixora Bandhuca](#) (Bushy Ixora), describing the plant as "A bushy shrub, uncommonly full of branches; native of Hindustan, the flower of which, according to Sir William Jones, is

often alluded to by the best poets of India. It is in bloom nearly the whole year, but principally during the rains; when it is highly ornamental." For a large version of this portrait, [click here](#).

In 1814, the [Asiatic Society](#)--under the leadership of Dr. Wallich--established the "Oriental Museum of the Asiatic Society." On June 1, 1814, Dr. Wallich took charge of the new Museum as its founding curator. William Carey was a member and officer in the Asiatic Society.

After 1866, the Asiatic Society gave over its holdings in the Oriental Museum of the Asiatic Society to the Indian government; these holdings now constitute part of the [Indian Museum, Calcutta](#). However, the Asiatic Society maintains its own [Museum of the Asiatic Society](#) in Calcutta.

Carey and Wallich's friendship continued long after the publication of *Flora Indica*, In 1834, both Carey and Wallich contributed botanical specimens to the [Royal Society of Agriculture and Botany's](#) Winter Show in Ghent, Belgium.

Prolific writers, Drs. Roxburgh and Wallich corresponded with numerous persons in the Far East and in Great Britain. To view a letter by Dr. Roxburgh, as well as a letter by Dr. Wallich--including page images of their handwriting--click below for letters each man sent to [Sir Joseph Banks](#).

[Dr. William Roxburgh's  
Letters  
to Sir Joseph Banks  
1 2 3 4 5 6 7](#)

[Dr. Nathaniel Wallich's  
Letter  
to Sir Joseph Banks](#)

## William Carey's Role in *Flora Indica*

Carey's role in *Flora Indica* extended far beyond the role of a contemporary editor. Within the two volumes of *Flora Indica*, Carey *contributed* substantive comments, editorial notes, and botanical

descriptions, appearing as a co-author by contemporary standards. Below is a list of the full-text pages on which Carey's contributions appear:

<a href="#">Volume I, Title Page</a>	<a href="#">Volume II, Title Page</a>
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Carey's Editorial Introduction to the Book		
<a href="#">Intro., vol. I, pp. 2-3</a>	<a href="#">Intro., vol. I, pp. 4-5</a>	<a href="#">Intro., vol. I, pp. 6-7</a>

Pages on which Carey Adds Botanical, Geographical, and Miscellaneous Notes				
Volume I				
<a href="#">Intro. p. 1</a>	<a href="#">Intro. pp. 2-3</a>	<a href="#">Intro. pp. 4-5</a>	<a href="#">Intro. pp. 6-7</a>	<a href="#">P. 1</a>
<a href="#">Pp. 2-3</a>	<a href="#">Pp. 8-9</a>	<a href="#">Pp. 10-11</a>	<a href="#">Pp. 12-13</a>	<a href="#">Pp. 14-15</a>
<a href="#">Pp. 64-65</a>	<a href="#">Pp. 70-71</a>	<a href="#">Pp. 278-279</a>	<a href="#">Pp. 474-475</a>	<a href="#">Pp. 476-477</a>
Volume II				
<a href="#">Intro. p. i</a> (with title page)	<a href="#">Intro. pp. ii-iii</a>	<a href="#">Intro. pp. iv-v</a>	<a href="#">Pp. 10-11</a>	<a href="#">Pp. 88-89</a>
<a href="#">Pp. 90-91</a>	<a href="#">Pp. 96-97</a>	<a href="#">Pp. 104-105</a>	<a href="#">Pp. 142-143</a>	<a href="#">Pp. 204-205</a>
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<a href="#">Pp. 446-447</a>	<a href="#">Pp. 448-449</a>	<a href="#">Pp. 518-519</a>	<a href="#">Pp. 530-531</a>	<a href="#">P. 573</a>
<a href="#">Pp. 574-575</a>	<a href="#">Pp. 576-577</a>			



**Carey's Extended "Observation" on *Ziziphus, Lamarck***

[vol. II, pp. 358-359](#)

[vol. II, pp. 360-361](#)

[vol. II, pp. 362-363](#)

William Carey's interests in botany and agriculture were expansive. In 1820, he established the Agricultural and Horticultural Society of India. The [William Carey Bust in the Agricultural Society of India](#) memorializes Carey's contribution to the Society.

In addition, Carey's botanical interests are evident through his corresponding membership in the [Linnean Society of London](#), where some of his [archival papers](#) reside. One of the standard biographies of Carey, highlights his botanical interests: S. Pearce Carey, *William Carey, D.D., Fellow of the Linnaean Society* (New York: George H. Doran Co., 1923).

To view a full color image of the background on this page, *Rosa Indica, Grande Indienne*, [click here](#); to view a larger image, [click here](#). This image, *Rosa Indica*, is a reproduction of an 1833 print painted by [Pierre Joseph Redoute](#) and appearing in his book, *Beautiful Flowers and Fruits*. [Redoute](#) (1759-1840), called the "Raphael of Flowers," was the one of the most popular of the French botanical artists.

The Center's copy of *Flora Indica* was made possible by a memorial gift commemorating the lives of Mr. T. Lewis Fowler, Jr. and Mr. Grady Doss.



[Carey Center Home Page](#)

*Created: January 10, 2001*

*Updated: April 27, 2004*



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FLORA INDICA;

OR  
DESCRIPTIONS

OF  
Indian Plants,

BY THE LATE

WILLIAM ROXBURGH, M. D. F. R. S. E. &c. &c.

—•••••

EDITED

By WILLIAM CAREY, D. D.

TO WHICH ARE ADDED

DESCRIPTIONS OF PLANTS

MORE RECENTLY DISCOVERED

By NATHANIEL WALLICH, M. D. F. L. S. &c.

*Superintendent of the Botanic Garden, Calcutta.*

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VOL. I.  
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"ALL THY WORKS PRAISE THEE O LORD." *David.*

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SERAMPORE:

PRINTED AT THE MISSION PRESS.

1820.

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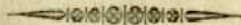
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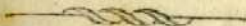
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VOL. I.



"ALL THY WORKS PRAISE THEE O LORD." *David.*



SERAMPORE:

PRINTED AT THE MISSION PRESS.

1820.



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## PREFACE.

ON the occasion of publishing a Botanical Work which owes its origin to the labors of others, the Editor deems it proper briefly to state the circumstances which have thus led him to publish the manuscript of his much valued friend the late Dr. Roxburgh.

With this eminent botanist and friend of science, the Editor was for many years on terms of the closest intimacy; and this work having been frequently the subject of conversation, he is enabled to say, that Dr. Roxburgh repeatedly expressed to him his earnest wish that it might be published in some future time; and his apprehensions that otherwise, imperfect and garbled copies of the work would be published by others not acquainted with him; or that if delayed, a part of his labors might be lost by others publishing descriptions of the same plants which he had previously named and described.

Desirous as he was to publish this work however, he felt unwilling to attempt it, till his return to Europe should give him an opportunity of consulting those eminent botanists in Britain who do so much honor to the science, and enable him fully to avail himself of their remarks; a step which he deemed necessary to the perfection of the work, although no immediate opportunity appeared likely to offer.

In a little time the illness which unhappily terminated in depriving the world of his labors, compelled him to undertake a voyage for the sake of his health; which he at first intended should



have been only to the Cape. His declining state of health however, induced him to proceed as far as St. Helena. During his stay in that island, he, ever attentive to the interests of science, improved the opportunity by describing most of the plants he found growing there. After his arrival in England, whither he was at length obliged to proceed, he entertained considerable hopes of being able to put this work to the press; and once wrote to the Editor, that in preparing it for this purpose he hoped to procure the assistance of one of the first botanists of the present day, Mr. Robert Brown. Death however soon prevented his accomplishing this object which he had so much at heart.

The Editor had been permitted by Dr. Roxburgh to take a copy of the manuscript after it had received the latest alterations and additions which he made to it while he remained in India, the last part of it being returned to him after he had gone on board the ship with the view of leaving the country. On his arrival at Ceylon he met with and described a few plants there; copies of which descriptions, he kindly sent thence to the Editor at Serampore.

After waiting more than a year after the news of Dr. Roxburgh's death had reached India, the Editor, being unable to learn that any one thought of publishing this work, which his deceased friend felt so anxious to put to press in an unmutated state, before the labors of others should render it useless and obsolete, he formed the resolution of taking the risk of the publication on himself; and having secured the co-operation of his various friends in India, he immediately put it to press.

The principal motives which urged him to this step, were these. He in the first instance wished to secure to an old and highly valued Friend the well-earned reward of upwards of thirty years' labor, in the description of more than Two Thousand Plants, natives of Eastern Asia; a work in which none had anticipated him to an equal ex-

tent, and which will form a monument to his memory more lasting than the most pompous inscription engraved on tablets of brass; but of which he would have been completely and unjustly deprived, had the work been suffered to remain unpublished. This, was likewise, strengthened by his desire to promote the interests of a science to which he has been attached from the earliest period of his life, and which must have suffered an almost irreparable loss had the labors of Dr. Roxburgh been suffered to die with him.

To this measure the Editor felt encouraged by another circumstance which he esteems it his duty to mention particularly. On his communicating his wish to publish the Manuscript of his deceased friend, to Dr. Nathaniel Wallich, the present Superintendent of the Honorable Company's Botanic Garden, whom he feels honored in numbering among his most intimate friends, and whose ability and indefatigable zeal in conducting that Institution are so well known, he not only consented to assist in superintending this work of his esteemed predecessor and friend, as it passed through the press; but in the most generous manner promised to insert therein, those numerous plants which have since been communicated to him from all parts of Asia, and particularly from Nepala, a country the productions of which are as yet scarcely known to the European world. This will prove such an addition to the original work of the late Dr. Roxburgh, while it is fully congenial with its nature, that it cannot but form a most desirable acquisition to every lover of this pleasing science, both in Asia and in Europe.

In thus publishing the work of his deceased friend, the Editor feels assured that no one will impute to him motives of a mercenary nature, who considers the expense and labor of printing a work, of this nature, the limited sale it must necessarily have, and the little probability there is of a second edition of it being called for either in India or Europe: as in every new systematic work on general botany, or new editions of preceding ones, all the plants described in parti-



ular Floras published in the intermediate time, are invariably inserted. Hence no work of this kind can be published, at least in India, with any well-founded expectation of its being a profitable speculation. Should any of the relatives of his late friend have an idea of its being made such in this instance, however, the Editor will cheerfully give up to them the whole edition, on their defraying the expenses attending its printing and publication.

To those acquainted with Botany, it is well known that many changes have taken place in the nomenclature of plants, since the late Dr. Roxburgh added the final touch to his manuscripts. In many instances whole orders have undergone a complete revision; genera have been frequently divided into two or three; specific names have been changed; and plants have been removed from one genus to another. The Editor however thought it best to publish his late friend's manuscript in the state in which he left it; and to add in notes such alterations as have been made by botanists with whose improvements the author was unacquainted, or who have written since his death. The whole work therefore, corresponds exactly with Dr. Roxburgh's manuscript after it had received his last correction, with the exceptions just mentioned, and of such corrections of the language as were necessary, which in no instance have been suffered to make any alteration in the sense.

The Editor feels gratified in bearing testimony to the disinterested and highly liberal manner in which Dr. Wallich has contributed his assistance throughout the whole of this work; and to his generosity in enriching it with a number of plants described by himself; and easily to be recognised by the initials N. W. in the first volume. The amount of these, especially among scitamineæ and grasses would have been much more considerable had there been time to insert the recent vast accessions of plants, which the Garden has received from all parts of India, and which from his earnest solicitude to promote the interests of this pleasing and important science, may be reason-

ably expected to bear a far greater proportion to the whole in each succeeding volume. It is intended to terminate the work with an additional volume, which shall include all the plants which may be discovered during the progress of it through the press.

The Editor now submits the work to the relatives of his deceased Friend, as the best tribute of respect he is able to show to his memory;—and to the candid consideration of all who are attached to the interests of the science both in India and Europe, remaining,

RESPECTFULLY THEIRS,

W. CAREY.



Class 1st.

MONANDRIA MONOGYNIA.

CANNA Schreb. gen. No. 1.

*Anther* single, attached to the edge of the petal-like filament. *Style* spatulate, growing to the tube of the corolla. *Stigma* linear. *Capsule* 3-celled: *seeds* several, naked.

*C. indica*. Linn. sp. pl. ed. Willd. 1. 3.

Leaves ovate-lanceolate. Segments of the inner border of the corolla lanceolate, and bidentate.

*Sans.* वनकेली, Vuna-kelee, सर्वजया, Surva-juya.

*Beng.* Lal Surva-juya, the red variety, and Shweta Surva-juya, the yellow.

*Teling.* Kristma-tamara.

*Katu-bala.* Rheed. mal. 11. p. 85. t. 43.

*Cannacorus.* Rumph. amb. 5. p. 177, t. 71. fig 2.

Common over *India*, and in flower and seed most part of the year.

*Observation.* The parts of the corolla are exactly alike in both varieties. *C. lutea* of Roscoe, must therefore be different, as in that, the inner limb of the corolla is bifid.

PHRYNIUM. Willd.

*Anther* single, terminal on a short erect filament. *Style* growing to the tube of the corolla. *Stigma* infundibuliform. *Capsule* 3-celled, 3-valved. *Seeds* solitary, arilled at the base. *Embryo* uncinatè, and furnished with a perisperm.



1. *P. dichotomum*. R.

Shrubby, dichotomous. Leaves cordate.

*Thalia cannaformis*. Linn. *sp. pl. ed. Willd.* 1. 16.

*Arundastrum*. Tonchat seytam. *Rumph. amb.* 4. p. 22. t. 7.

*Donax Arundastrum*. *Lourier. Cochin-ch.* 15.

*Sans.* वला, *Vala*, गौदनिखा *Godanika*, भडा, *Bhadra*, भदौदनी, *Bhadroudanee*, भद्रकाठिका, *Shurakasthika*, कल्यानिनी, *Kalyaninee*, भद्रवला, *Bhadra-bala*, घाटा, *Ghata*, पाटी, *Patee*, बलका, *Valahna*.

*Beng.* Mooceta-patee, Pattee-patee,\* or Madar-patee.

This elegant shrub, is a native of *Bengal*, as well as of various other parts of *India*, &c. Flowering time the hot season; seeds ripen in the rains.

*Root* ramous, woody, perennial.—*Stems* straight, tapering and simple to the branches, about as thick as a man's thumb, and from three to five, or six feet high, of a beautiful, highly polished green colour. *Branches* numerous, dichotomous spreading in every direction, smooth like the stem, but jointed at every division.—*Leaves* alternate, petioled, ovate-cordate, smooth, entire, acute, from 4 to 8 inches long; veins numerous, very fine and parallel.—*Petioles* sheathing, except a small portion, one tenth, or less, at the apex, which is round, and may be called the proper petiole.—*Racemes* terminal, generally solitary, jointed, a little flexuous.—*Bractes* glumaceous, in pairs on the joints of the raceme, each pair embracing between them a two-flowered pedicel.—*Flowers* pair'd, on a common pedicel, from the alternate joints of the rachis, large, pure white.—*Pedicels* clavate, thick, white, and fleshy, near the apex two-parted; *divisions* unequal, with two glands at their ends like the rudiments of flowers.—*Calyx* above, three-leaved; *leaflets* oblong-conic,

\* "Mats made of the split stems of this plant, being smooth, and particularly cool and refreshing, are termed in Hindi *Sital-pati*, which signifies a cool mat, whence the plant itself is said to bear the same name. Suspecting, however, this to be a misappropiation of the term, I have enquired of natives of the eastern parts of *Bengal*, who assure me, that the plant is named *Matta-pata*, or *Patti-pata*, and the mat only is called *Sital-pati*." *Colebrooke*.

tapering to an acute point, and much shorter than the tube of the corol.—*Corol* one-petalled, irregular. *Tube* funnel-shaped. *Border* double; *exterior* of three, equal, linear-oblong, recurved segments. *Inner* elevated far above the exterior on a continuation of the tube, and consists of five very unequal portions: the *exterior* two are larger, obcordate, with waved, expanding margins; the *third* or middle one stands opposite to the first two, is broad, obcordate, deeply emarginate, and of a middling size between the two exterior, and two interior segments; on the inside near the base a semilunar body which projects inward between the anther and stigma; the *inner* two small, and crown the mouth of the tube, closely embracing the stigma, and anther.—*Filament* short, attached to the margin of the smallest segment of the interior border of the corol. *Anther* erect, simple, ovate-oblong. In this species, as well as in *P. capitatum*, the pollen consists of remarkably large round grains.—*Germ* inferior, villous, 3-celled, with one *oculum* in each, attached to the bottom of its cell. *Style* growing to the inside of the tube of the corol, and does not appear until above its mouth, when it enlarges, into an infundibuliform, hooked *stigma*, surrounded with a lobate, callous margin, and directed in an oblique manner toward the face of the anther, as if in search of it, though separated by a callous projection from the base of the middle division of the inner border of the corol.—*Capsule* broad-turbinate, size of a cherry, rugose, somewhat 3-lobed, 3-celled, 3-valved, opening from the apex.—*Seed* solitary, round, resting on a small, partial, scaly aril. *Integuments* two: *exterior* soft and spongy; *inner* nuciform.—*Perisperm* conform to the seed, horny, tinged blue; a fissure penetrates from the base pretty far up, separating the two extremities of the embryo. *Vitellus*; none has been discovered in any of the simple-anthered scitamineæ which have been examined by me.—*Embryo* pure white, hooked, with the convexity upward, which corresponds with the periphery of the seed.



*Root* perennial, tuberous like ginger, with long, fleshy fibres from the crown, and various other parts.—*Stem* none.—*Leaves* radical, long-petioled, oblong, entire, smooth on both sides; length from 6 to 18 inches, and broad in proportion. *Veins* numerous, fine and parallel.—*Petioles* longer than the leaves, slender, round, smooth, taper a little from the base, and are there expanded into a sheath for those immediately within; such as are destined to bear the flowers have a joint a little above the middle; immediately above this joint there is a swelling, which in due time is forced open on the inside by the growing flowers exactly as in our *Indian* species of *Pontederia*. It however sometimes appears, and even in the same plant, that some of the petioles, now scapes, extend no further than the flowers.—*Flowers* numerous, collected into a pretty large, sessile head, which bursts from the anterior margin of the jointed petioles, small, and nearly hid among the large bractes; when they first expand in the morning rose-colour'd, gradually becoming purple by the evening.—*Bractes*, calyx of *Loureiro's Phytodes*, several, collecting the small sessile flowers into several fasciculi of two, three, or four pair, each of which expand in succession. The exterior one of each fascicle is large, sub-cylindric, of a firm texture, and reddish colour; apices truncate, with scarioso, incurved margin; the rest are smaller, and more or less pointed.—*Calyx* superior, three-leaved; *leaflets* ensiform, length of the tube of the corol, hairy about the points.—*Corol* one-petalled. *Tube* funnel-shaped, scarcely perforated. *Border* double; exterior of three, equal, purple, spatulate, recurvate segments; interior more elevated on a continuation of the tube, and consists of five, very unequal segments; the exterior two larger, round, curled, and of a pale rose colour; the innermost one small, and running down the side of the filament like a wing.—*Filament* solitary, short, inserted on the mouth of the tube close by the free, curved end of the style. *Anther* simple; grains of the pollen white, large, and spherical.—*Germ* inferior, oblong, very short pedicelled, hairy, 3-celled, with one *ovulum* in each, attached to the bottom of its cell. *Style* growing to, or blended with the tube of the corol. *Stigma* large, funnel-shaped, obliquely-incurved or hooked towards the anther.—*Capsule* short, turbi-

nate, three-sided, pretty smooth, size of a gooseberry, three-celled, three-valved, opening from the apex.—*Seed* solitary, nearly round, smooth, dark grey, resting on a small, squamiform aril, which is attached to and surrounds the short umbilical cord which unites the seed to the bottom of the partition. *Integument* double; exterior spongy; inner thin and rather hard, adhering to the exterior, and to the perisperm.—*Perisperm* conform to the seed, horny, tinged with pale blue; a fissure replete with a brown substance penetrates from the base to a considerable distance upwards.—*Embryo* pure white, hooked, with the convexity upwards, which corresponds with the periphery of the seed.

## HEDYCHIAM. Kön.

*Corolla* with a long, slender tube; both borders three-parted; inner resupinate. *Anther* double, naked. *Capsule* three-celled, three-valved. *Seeds* numerous, arilled. *Embryo* simple, and furnished with both perisperm and vitellus.

1. *H. coronarium*. *Linn. sp. pl. ed. Willd. i. p. 10. König in Retz. obs. 3. 73.*

Leaves lanceolate. Spikes compactly imbricated; segments of the cleft lip of the corol semi-lunar.

*Gandsulium*. *Rumph. amb. 5. t. 69. f. 3.*

*Goruk-nathia* of the Bengalees, also by them called *Doolala-champa*.

A native of various parts of *Bengal* and the neighbouring provinces. Flowers during the rains; and the seeds ripen in the early part of the cool season.

*Root* horizontal, perennial, round, fleshy, marked with annular cicatrices, about as thick as a man's thumb, fleshy, with fibrous ramifications issuing from the cicatrices; taste simply herbaceous.—*Stems* erect, 3-4 feet high, round, every where covered with the sheaths of the leaves.—*Leaves* sessile, alternate, bifarious, lanceolate, tapering to an evanescent point; above, a deep smooth green; below, striated, pale,

and slightly covered with depressed, soft, white hairs; 9-12 inches long and about two broad.—*Sheaths* smooth on both sides, striated, terminating in a ligulated process, (as in many of the grasses) which is often two-parted.—*Spike* terminal, solitary, erect, linear-oblong, about the size of the thumb, compactly imbricated with many large, oval, concave, green, common, permanent bractes.—*Flowers* large, pure white, very fragrant, 2-4 to each common bracte, but seldom more than one or two expand at the same time.—*Bractes*; besides the common exterior ones, already mentioned, there are as many interior as there are flowers in the fascicle; the largest of which is about half the length of the common bracte, and envelopes not only the most forward (exterior) flower, but all those of the same fascicle, gradually diminishing in size; all have a sheathing base, are membranous, and striated.—*Calyx* superior, one-leafed, a little inflated, contracted at the mouth, a little hairy, striated, half the length of the tube of the corolla.—*Corolla* one-petalled. *Tube* long and slender, from the apex of the exterior bractes recurved. *Border* flat, double. *Exterior* three-parted; *divisions* equal, lanceolate, acute, membranaceous, striated. *Interior* resupinate, three-parted; *lower* two divisions obliquely or short-clawed; *upper* division broad, orbiculate, banner-like, with the fissure deep, and the lobes roundish; margins waved; toward the base tinged yellow.—*Nectary* (of König and Retzius) two shallow, fleshy, subulate bodies embracing the base of the style.—*Filament* from the lower margin of the mouth of the tube, between the insertions of the inner border of the corolla, ascending; upper channelled for the style, and inserted into the anther a little above its base. *Anther* linear, sub-erect, two-lobed.—*Germ* obsolete, three-sided, three-celled, with many *ovula* in each, attached to the axis. *Style* slender, in length sufficient to elevate the large, bifurcated, glandular, green *stigma* just about the apex of the anther.—*Capule* oblong, three-celled, three-valved, opening from the apex inside orange coloured.—*Seeds* many in each cell, invested in the proper, multilid, crimson aril. *Integuments* two.—*Perisperm* none.

\* A variety deeply tinged with yellow, is found in some of the interior provinces and another of a pale yellow colour; all are equally fragrant.

*scitellus* together conform to the seed; the former occupies the lower and exterior portion; and the latter the upper and interior portion, and is in immediate contact with the embryo.—*Embryo* simple, sub-cylindric, nearly as long as the seed.

*Obs.* This, to me, is the most charming of all the plants of this natural order that I have yet met with; the great length of time it continues to throw out a profusion of large, beautiful, fragrant blossoms, makes it particularly desirable.

## 2. *H. angustifolium*. R.

Leaves linear-lanceolate. Spikes open; fascicles of flowers sub-tern, segments of the cleft lip oblong; the other five segments of the corolla linear.

*Beng.* Bhoo-ada.

Native of *Chittagong*, *Silhet*, and the eastern parts of *Bengal*, where it flowers about the beginning of the rains, in June.

*Root* tuberous, horizontal, jointed, &c. as in the other scitamineous plants.—*Stems* erect, 3-6 feet high, entirely invested in the sheaths of the leaves.—*Leaves* bifarious, sessile on their smooth sheaths, narrow-lanceolate, very fine, I may say filiform, pointed, smooth on both sides; length 10-14 inches, by 1-2 broad.—*Spike* terminal, erect, rigid, 6-18 inches long, smooth. Fascicles of flowers generally three-fold, and spreading out considerably from the rachis.—*Bractes*, exterior of the fascicle cylindrical, linear; interior, one to each flower, and smaller.—*Flowers* rather small, dull red (*luteo-roseus*), generally about four in the fascicle, and expanding in succession.—*Calyx* superior, cylindrical, length of the tube of the corolla; mouth equally three-toothed.—*Corolla*; tube slender, cylindrical, about an inch long; 5 segments of the border linear (sub-filiform,) variously revolute. *Lip* lateral, with linear, channelled and two-parted *lamina*; the segments thereof semi-oval.—*Filament* opposite to the lip, and twice its length, nearly straight, filiform, grooved for the style. *Anther* two-lobed, naked.—*Germ* oval, a little hairy, three-celled, with many *ovula* in each, attached to the axis. *Style* filiform, its base embraced by the usual two subulate bodies. *Stigma* funnel-form, projecting from the apex of the anther.



3. *H. gracile*. R.

Leaves lanceolar. Spikes terminal, open; flowers solitary, scattered; segments of the bifid, sessile lip, semi-lanceolar, the other five segments of the corol linear.

Khasee name, *Kattia Laphya*.

*Obs.* This is a slender species, about three feet in height, a native of the mountains on the North-East border of Bengal. Like the preceding two species it flowers in the rainy season. Its solitary-flowered spike of white\* corols with their scarlet filament, and its lanceolar leaves, distinguish it from *H. angustifolium*.

*Note.* The following two species, discovered since the Author of this work left the Botanic Garden, are added by Mr. N. Wallich, the present superintendent of that institution.

4. *H. villosum*. Wall.

Spike elongated, villous, open. Fascicles approximate and copious, scattered or paired, three-flowered; lip short-clawed, bifid, of equal length with the five linear segments of the corol.

A native of the mountains North-East of Bengal, from whence our indefatigable collector of plants, Mr. Matthew Robert Smith, sent specimens to me in 1815. Flowering time the rainy season.

Khasee name, *Kattia Ram Ruit*.

Stems upright, slender, smooth, as well as the leaves, from two to three feet.—Leaves flat, lanceolar-oblong, elevated from the back of the sheaths by a very short petiole; glaucous underneath. Sheaths terminated by an oblong, obtuse, closely adpressed, long ligula.—Spike terminal, erect, cylindrical, obtuse, from 10-12 inches long; all its parts covered with a short, sericeous down.—Bractes oval, much shorter than the tube, of a reddish tint; exterior or common, three, seldom two-flowered, flat; interior, one to each flower, the base of which it embraces.—Flowers delightfully fragrant even when dry, less succulent than those of *H. coronarium* and *angusti-*

\* There is a variety of this species with cream-coloured flowers. Ed.

*folium*, of a pale yellow colour.—Calyx very slender, somewhat shorter than the filiform, inch and half-long tube; mouth obliquely bifid.—Border smooth; segments linear, sub-clavate, spreading, half the length of the tube; divisions of the claw, or superior segment of the interior border, linear-oblong, obtuse.—Filament as long as the tube, filiform, smooth, of a scarlet colour; Anther very short, ovate, two-lobed.—Germ densely villous; stigma slightly ciliated.

*Obs.* This beautiful species differs from *H. gracile*, R. (of which the Rev. Dr. W. Carey has favored me with a living specimen in blossom), in the length and villosity of its spikes, its copious fascicled flowers, and the equal length of all the segments of the border. It seems altogether to be a larger plant.

5. *H. speciosum*. Wall.

Spike elongated, open, smooth; fascicles approximate scattered, two-flowered; lip entire sessile, acute. A native of the same country with the preceding, and like all the species flowering in the rainy season.

Khasee name, *Kattia Lung Mutti*.

Leaves very large, oblong-lanceolate, attenuate at both ends, long-pointed; margins slightly waved.—Spike terminal, large.—Fascicles spreading and numerous.—Bractes; exterior very large, obtuse, as well as the others, with a few white hairs at the end.—Interior, two, opposite; that close to the rachis obtuse, with a few loothlets at the end; the other much smaller, linear-lanceolate, acute.—Flowers pale yellow, fragrant.—Calyx cylindrical, half the length of the tube; mouth obliquely bifid, with two or three ovate, bearded teeth.—Tube upwards of two inches long, filiform.—Exterior segments linear, very long, of a greenish colour; interior clavate. Lip of equal length with the interior segments, ovate, acute, tapering downwards.—Filament filiform, scarlet, somewhat longer than the tube; Anther elongated, arched.

*Obs.* My examination of this stately plant has hitherto been confined to a well preserved spike and a few leaves only, which how-



ever point it out as the largest of the genus. The sessile, undivided, and acute lips distinguish it from the other species.

*KEMPFERIA.* Linn. *gen. pl. ed. Schreb. No. 9.*

*Corolla* with a long, slender tube, and both borders three-parted. *Anther* double, with a two-lobed crest. *Capsule* three-celled, many-seeded.

1. *K. Galanga.* Linn. *sp. pl. ed. Willd. 1. 15.*

Leaves sessile, round-ovate-cordate. Spikes central. Upper segments of the inner border of the corol oval.

Katsjula Kelangu. *Rheed. mal. 11. p. 81. t. 41.*

*Alpinia sessilis.* Kön. in *Retz. obs. 3. p. 62.*

*Soncorus.* *Rumph. amb. 5. p. 173. t. 69. f. 2.*

*Sans.* चन्द्र मूलिका, Chundra-moolika.

*Beng.* Chundra-moola, or Kumula.

A native of various parts of India,\* and common in gardens also. Flowering time the rainy season.

*Root* biennial, tuberous, with fleshy fibres from the tubers.—*Stem* none.—*Leaves* radical, petioled, spreading flat on the surface of the earth, round-ovate-cordate, between acute and obtuse; margins membranaceous, and waved; upper surface smooth, deep green; below taper and somewhat woolly, streaked length ways with ten or twelve slender lines.—*Petioles* hid in the earth; in short they are only cylindric sheaths embracing those within, and the fascicle of flowers, their mouths being crowned with a membranaceous process.—*Flowers* collected in small fascicles, of 6-12, within the sheaths of the leaves, expanding in succession; pure, pellucid white, except a purple spot on the centre of each of the divisions of the inner border, or lip.—*Bractes* three to each flower; a larger exterior; and two within at the sides; all are linear, acute, membranaceous, and half the length of the tube of the

\* This plant, which is said to be very common on the mountainous districts beyond Chittagong, is called *Kumula*. I find on further inquiry that it is cultivated by the Jomma (mountain) Mugs, and by them brought down and sold in the markets to the people of Bengal under the above name, who use it as an ingredient in their medicine. *Ed.*

corol.—*Calyx* length of the bractes.—*Corol. Tube* long, filiform. *Border* double, both three-parted. *Exterior* divisions linear, acute. *Interior*, upper two divisions ovate, erect; under one expanding, two-parted, with lobes bifid.—*Filament* short, apex, two-parted, and recurved. *Anther* replete with white pollen, crowned with a bidentate crest, or continuation of the filament above the anther. *Stigma* funnel-shaped.—*Nectarial* filaments of König two, filiform, erect, pretty long, embracing the lower part of the style.—*Pericarp*; I never saw it ripen.

*Obs.* The roots possess an agreeable, fragrant smell, and somewhat warm, bitterish, aromatic taste; the Hindoos use them not only as a perfume, but also medicinally. They are unknown to our best judges in London.

2. *K. rotunda.* Linn. *sp. pl. ed. Willd. 1. 15.*

Leaves oblong, coloured. Spike radical, appearing before the leaves. Upper segment of the inner border of the corol lanceolar, and acute.

Malan-Kua. *Rheed. mal. 11. p. 17. t. 9.*

*Sans.* भूचम्पुका, Bhoo-chumpuca. *See Asiat. Res. iv. 242.*

*Beng.* and *Hind.* Bhooi-champa or Bhoo-champa.

This elegant plant is very generally found cultivated in gardens on account of the beauty and fragrance of its flowers, and though no doubt a native of various parts of India, yet I cannot say where it is indigenous. Flowering time in our gardens March and April, at which period the plant is totally destitute of leaves.

*Root* biennial, tuberous.—*Stem* none.—*Leaves* radical, petioled, oblong, waved, smooth, generally coloured underneath; about a foot long in a good soil, and 4-6 inches broad.—*Petioles* sheathing, united into a short stem, as in *Curcuma*.—*Scapes* just sufficient to elevate the flowers above the earth, embraced by a few common sheaths, of a greenish purple colour.—*Flowers* sessile, from 4 to 6 to the scape, or spike, very large, fragrant; colour of various shades of purple, and white.—*Bractes* two to each flower, surrounding the base of the germ; the inner one has its apex two-parted; the exterior, or longest is here

surpassing *A. nutans*, which I believe the Botanical Repository considers a species of *Renalmia*.

5. *A. nutans*. Roscoe in *Trans. of Linn. Soc.* 8. 346.

*Leaves* lanceolar, short-petioled, smooth. *Racemes* compound by the lower pedicels being two or three-flowered, drooping. *Lip* broad, three-lobed, the lateral incurved into a tube; the exterior curled and bifid. *Capsules* spherical, opening on the sides. *Seeds* few.

*Beng.* Poonag-champa.\*

*Renalmia nutans*. *Andr. Bot. Repos.* 5. 4. 360.

*Globba nutans*. *Linn. Sp. Pl. ed. Willd.* 1. 15. 5.

This very elegant plant, a native of the Eastern Islands, was introduced by the Rev. Dr. Carey, into the Botanic Garden near Calcutta, where it blossoms in April and May.

*Root* perennial, tuberous, &c. as in the other species.—*Stems* more or less bent to one side, (a direction common to most of the plants of this order;) from four to six feet high.—*Leaves* bifarious, subsessile on their sheaths, occupying the upper half of the stems; the lower are broad lanceolar, the upper much narrower, all are entire, and remarkably smooth on both sides; while young the margins villous; length from one to three feet.—*Sheaths* of the leaves smooth, with a stipular bearded process, rising above the insertion of the leaf.—*Racemes* terminal, compound, variously curved, villous, about a foot long, drooping under the leaves.—*Involucres* of generally two, caducous, lanceolate, boat-shaped sheaths.—*Flowers* numerous, large.—*Pedicels* two or three-flowered.—*Bractes* large, concave, pure white, with a pink-coloured apex, smooth; a common one to the two or three flowers, and a proper, smaller one to the second and third

\* From this name, which Dr. Roxburgh mentions as the Bengal name, it is natural to suppose this plant to be the Poonaga of the Sungskrita Materia Medica. If the following Sungskrita Synonymia should stand before the Bengalee name, *পুনাগ*, Poonaga, *পুনাগ*, *Poonvaha*, *পুন*, *Toonga*, *পুন*, *Pooman*, *পুন*, *Patola*, *পুন*, *Rakta-poshpa*, *পুন*, *Poonama*, *পুন*, *Rakta-renoo*, *পুন*, *Lroois*. It is however doubtful whether this plant is the Poonaga. *Ed.*

*Flowers*, which expand in succession for a long time after the first.—*Calyx* superior, colour of the bractes, three-toothed.—*Corol* with a double border; *exterior* three-parted, pale pink, with deeper rosy apices; upper division oval, incumbent; lower two linear-oblong, revolute, with the apices rounded. *Inner* lip large, ovate-cordate, obscurely three-lobed, lateral lobes incurved into a large campanulate tube; apex of the interior lobe bifid, margins curled; at the base are two spurs which embrace the base of the style, colour of the whole a mixture of deep orange yellow, with a dark crimson ground, and veins.—*Germ* beneath, oval, hairy, three-celled, with many *ovula* in each, attached to the inner edge of the partitions. *Stigma* on the first expansion of the flower erect through the fissure of the apex of the anther; afterwards, as the *style* lengthens, its apex becomes involute, and throws the *stigma* under the anther.—*Nectaries* (of König) two, square, fluted, fleshy bodies within the tube, on the apex of the germ, embracing the base of the style.

*Obs.* This is no doubt one of the most gaudy of our East Indian *Scitamineae*. It multiplies itself by the root very fast, grows quickly, and continues to produce its numerous, large, elegant, drooping panicles, of beautiful flowers for two months, and more or less the whole year round.

6. *A. mutica*. R.

*Leaves* short-petioled, narrow-lanceolar, polished. *Racemes* erect, compound. *Lip* three-lobed, base spurless. *Capsule* buried. *Seeds* numerous, angular. *Aril* evanescent.

Found indigenous in the forests of Prince of Wales Island by Mr. W. Roxburgh, and from thence introduced into the Botanic Garden near Calcutta, where it flowers about the beginning of the rains, and ripens its seed from October till January.

*Stems* numerous, erect, involved in the sheaths of the leaves, from four to six feet high, generally biennial, as they do not perish till after the seed is ripe.—*Leaves* alternate, bifarious, short-petioled, narrow-lanceolar, acute, polished, and entire, from ten to twenty-



base of the filament is a small acute hornlet, as in most of the plants of this genus, and in several of the other genera of our other *Indian Scitamineæ*.—*Filament* short, erect. *Anther* double, emarginate.—*Germ* beneath, oval, smooth. *Style* slender. *Stigma* funnel-shaped.—*Nectarial scales* of König, subulate, almost half the length of the tube of the corol.—*Capsule* oval, somewhat three-sided, size of a small nutmeg; three-celled, three-valved.—*Seeds* many, angular.

*Obs.* The following account of this interesting plant has lately been transmitted to me by Captain Dickson, the commanding officer of the district of *Wynaad* where the *Cardomum* is cultivated, viz.

“The *Cardomum* shrub is found in great abundance among the western mountains of *Wynaad*, and is called by the natives of Malabar *Ailum chady* (the *Ailum* shrub). I cannot obtain any satisfactory derivation of the true import of the word *Ailum*,\* unless, as is alleged, it implies in the Sanskrit language, celebrity, and eminence.

“The shrub is said to be produced as follows. Before the commencement of the periodical rains, in June, the cultivators of the *Cardomum* ascend the coldest, and most shady sides of a woody mountain; a tree of uncommon size and weight is then sought after, the adjacent spot is cleared of weeds, and the tree felled close at its root. The earth shaken, and loosened by the force of the fallen tree shoots forth young *Cardomum* plants in about a month’s time. I have repeatedly enquired of the natives the means by which the *Cardomum* plants are first produced, and have invariably been told as already stated. They attribute no other effects to the falling tree, which may be selected from any species, than such as are derived from its weight and strength, added to the shade and shelter which its branches afford to the young plants. I have heard it by some asserted that the *Cardomum* like the famed Phoenix, would emerge from the ashes of any large forest tree; but these stories were uttered only by the ignorant, and are too absurd to require comment.

“The shrub continues to grow in this manner until after the early rains of the fourth year, in February, when it has reached its ul-

\* It is undoubtedly corrupted from अण्, the Sanskrit name of the plant. Ed.

most height, which varies from six to nine feet; four or five tendrils are now seen to spring from its stem near the root, and afterwards the fruit is produced, which is gathered the following November; and requires no other preparation, than drying in the sun. The fruit is annually collected in this way, until the seventh year, when it is usual to cut it down, and from the trunk other sprouts arise, in the course of the next monsoon; which grow, flourish, and are cultivated as before. The husk with the seed I have called the fruit, as it corresponds with the native name. The seeds are termed the rice, and the tendrils the threads of the plant.

“I do not hear of any varieties in the species, and now enclose you a specimen of some just given to me by the person who farms the collection, and accounted of an inferior growth. It may not be unnecessary to mention, that this commodity yields to Government from 25, to 50,000 rupees per annum. The inhabitants use it as a general condiment to their food, and it is likewise held in sacred estimation for the purposes of sacrifice. It is constantly chewed with betle, and some medicinal properties are ascribed to it when used in decoction for complaints of the bowels. I am assured, by all, that the seeds of the *Cardomum* will never produce plants, and that it is only to be propagated as already stated, or by cuttings.”

#### 10. *A. punicca*. R.

*Leaves* lanceolate. *Spikes* radical, compact, imbricated. *Lip* entire, sub-parabolic; base spurless.

A stately species, a native of *Sumatra*, from thence sent by the late Dr. C. Campbell, to the Botanic Garden near *Calcutta*, where it blossoms in March and April.

*Roots* hard, and bifarious. *Suckers* numerous, running far under the surface of the earth.—*Stems* numerous, erect, or oblique, smooth, swelled near the base; general height about six or seven feet, and as thick as a slender walking cane.—*Leaves* sub-bifarious, short-petioled on their sheaths, lanceolate, rounded at the base, both sides smooth; from six to twenty inches long, by from three to six broad.—



34. *A. Schœnanthus*. Linn. Sp. Pl. ed. Willd. iv. 915.  
Perennial, erect. *Panicle* sub-secund, linear, leafy; *spikelets* thereof paired, on a common, spathed pedicel, with proper pedicels and spathes; *flowers* of both sorts awless, the male corol one-valved.

Sans. मालात्रिङ्गु, Malatrinukung, भूलुङ्ग, Bhoostriung.  
Beng. Gundha-beua.

Ramaceiam. Rheed. Hort. mal. 12 p. 137. t. 72.

Schœnanthum amboinicum. Rumph. amb. 5. p. 181. t. 72. f. 2.  
Schœnanthus, or Juncus odoratus of the *Materia Medica*.

On the Coast I have only found this elegant valuable species in a state of cultivation, few gardens being without it; I have but twice found it in flower and both times during the rainy season.

*Root* perennial, young propagating-shoots issue from the axils of the leaves that surround a short, sub-lignous leaf-bearing culm.—*Culms* from five to seven feet high, erect, simple, smooth, about as thick as a goose quill.—*Leaves* many, near the root bifarious, few on the upper part of the culm, of a soft texture, pale green colour, slightly scabrous on the margins when drawn backward against the fingers, otherwise smooth; from three to four feet long including their sheaths, and about three-quarters of an inch broad. *Floral leaves* small.—*Panicle* linear, a little bent to one side, composed of many fascicles of spikes that are both terminal, and from the exterior axils.—*Spikes* generally paired on a common peduncle, with a common boat-like spathe, or involucre at the division; each has also its proper pedicel, and both spathe-shaped. *Rachis* articulated, much waved, hairy.—*Flowers* in pairs, one hermaphrodite and sessile, the other male and pedicelled; the last hermaphrodite flower of each spike has two males; below, only one male, as the *rachis* occupies the place of the other; this is the case with most of the species of the genus.

HERMAPHRODITE FLOWERS sessile. *Glume* gilt at the base with wool, &c. as in the family.—*Corol* two-valved, awless. Ne-

\* In the North of Bengal large tracts of waste land are covered with it. Ed.

*tary*, two, broad, short, wedge-formed, obliquely lobed, crenulated bodies embrace the insertions of the filaments and the forepart of the germ.

MALE FLOWERS pedicelled. *Calyx*, *glumes* as in the hermaphrodite ones.—*Corol* one-valved, awless. *Nectary* as in the hermaphrodite.—*Stamens* three.

*Obs.* The fresh leaves are much used as a substitute for tea. The white succulent centre of the leaf-bearing culms is often put into carries, to give them an agreeable flavour.\*

35. *A. Iwarancusa*. Philosoph. Transact. Vol. 80. 284. t. 16.

Perennial, erect. *Leaves* long, and very slender. *Panicles* linear; *spikelets* paired, five-jointed, with common spathes; hermaphrodite flowers awned; male one-valved and awless.

Beng. and Hind. Itharankusha, Iwarankusha, Kurankusha.

Iwarancussa. Anat. Res. iv. 109.

A native of the skirts of the northern mountains of India. Dr. Blume found it between the river Raptée and the mountains, and Dr. Boyd about Hurdwar; it is therefore probably a native of a very extensive tract along the skirts of that range of mountains which bounds the plains of Bengal, Bahar, Oude, &c. Flowering time the rainy season.

It grows in large tufts, each tuft composed of a number of plants adhering together by their roots.

*Root* perennial, the principal parts thereof are thicker than a crow's quill, and marked with circular cicatrices, from these issue many small, firm, aromatic fibres.—*Culms* erect, generally simple; from three to six feet high, smooth in every part, not hollow, but filled with a light spongy substance.—*Leaves*, those near the root longer than the joints of the culm, margins hispid when the finger is drawn backwards over them, otherwise smooth in every part.—*Panicle* axillary, and terminal, or the whole may be reckoned a

\* The natives of the Molucca Islands extract a pleasant-tasted essential oil from the leaves. Ed.



five, rather shorter than the petals, and inserted immediately over them, so that the small oval anthers rest in their concave apices.—*Germ* above. *Style* two-cleft; *divisions* recurved. *Drupe* globular, size of a large cherry, smooth, yellow when ripe.—*Nut* rough, two-celled.—*Seed* solitary, affixed at the base.

The fruit is eaten by all classes of persons.

*Obs. by the Editor.*

There is a variety of this species, or perhaps a distinct species, which produces an excellent fruit of a long form, about the size of a hen's egg, to which the following Sanskrit names belong.

राजवदरः, Rajuvadura, चपेयः, Nripesta, राजवल्गुः, Rajuvallubha, चपवदरः, Nripuvadura, एयुकोलः, Piithookola, तनुवोजः, Tanooveeja, मधुरफलः, Mudhooraphula, राजकोलः, Rajakola.

Beng. Narikelee Kool.—*Ed.*

5. *Z. vulgaris*, Willd. sp. i. 1105.

*Leaves* obliquely oval, serrulate, three-nerved, hoary underneath. *Thorns* stipulary, one straight, the other recurved. *Drupe* oblong. *Nuts* sharp-pointed, two-celled.

*Z. sativa*, Gaert. i. p. 202. t. 43. f. 4.

A pretty large tree, often as large as full grown apple tree in England, a native of Persia, and Hindoosthan; only found in gardens in Bengal, where it blossoms in August, and the fruit ripens in January.

6. *Z. nitida*, R.

Arboreous. *Thorns* stipulary, one projecting, one recurved. *Leaves* obliquely ovate-oblong, three-nerved, obtusely serrate, smooth. *Fruits* sub-cylindric; *nuts* two-celled.

Introduced from China into the botanic garden at Calcutta, where it grows to be a small tree. Flowering time the hot season.

*Root* superficial, sending up many suckers for some yards round the tree.—*Trunk* generally crooked. *Bark* brown, pretty smooth; *branches* few, flexuose, and thin of leaves.—*Spines* stipulary, the upper one straight, long, and pointing much forward, the other shorter and recurved.—*Leaves* alternate, short-petioled, obliquely oblong, emarginate, three-nerved, serrate, smooth, of a shining green on both sides, from one to two inches long.—*Flowers* axillary, few, collected on short common peduncles; they are small, yellow, semi-digynous.—*Drupe* oblong, pendulous and smooth, about an inch long, when ripe pale-yellow. *Nut* lanceolate, pointed at both ends, a little compressed, rugose, two-celled.

The fruits are eaten, but to my taste they are rather insipid. Innumerable suckers constantly rise from the root which run to a great distance from the parent tree, and make it a troublesome plant in a garden, but at the same time they render it easily propagated, if necessary.

7. *Z. Lotus*, Lamarck encyclop. iii. 304. *Illustr.* 1. 185. f. 2.

Arboreous; *spines* stipulary, one long, slender, and straight, the other recurved. *Leaves* oval, three-nerved, most slightly crenulate-serrate, smooth on both sides. *Flowers* axillary, style two-cleft.

*Z. Lotus*, Willd. i. 1103.

A native of Persia, &c.; blossoms in the hot season in the botanic garden at Calcutta. It is readily known from its Indian congeners by the whiteness of its bark, and the pale-yellow tinge of its long and very slender prickles.

8. *Z. elliptica*, R.

Arboreous. *Thorns* paired, the upper one rather incurved, the under one recurved. *Leaves* elliptically oval, serrulate, three-nerved, pale underneath. *Corymbs* axillary, dichotomous. *Flowers* semi-trigynous.

A stout straight tree, a native of Tranvancore, from thence intro-



four, inserted on the mouth of the corolla, most spreading, alternating with the segments and somewhat exceeding them in length. *Anthers* roundish, two-celled.—*Ovarium* very small. *Stigma* obscurely two-lobed.—*Berry* round, smooth, about four lines in diameter, when dry wrinkled and of a dark brown colour, crowned with a vestige of the two-lobed stigma, two-seeded; *pulp* scanty.—*Seeds* semi-ovate, obtuse, rounded at the base; the inner side flat with a gibbous protuberance above the centre, the outer one convex with about six unequal, very prominent ribs, separated by as many deep furrows.—The rest as in *Aquifolium*, *Gart. Carp.* ii. 72, tab. 92.

*Obs.* This species varies considerably in the shape and serratures of the leaves. Generally they are oblong and remotely serrate; sometimes, however, they are of a more ovate form, rounded at the base, the margins sinuated and marked with pretty strong unequal spinous serratures. But in all the varieties the berries are two-seeded; a character which sufficiently distinguish them from the varieties of the common Holly. I am indebted to my esteemed friend Capt. Webb for a specimen without flowers which, if not the last mentioned variety of my *I. dipyrena*, most probably is the *I. Aquifolium*; it was communicated to me with the following remark: "This Holly is found near stre ams in the Purgunna Choudans; it is called *Gumshing* in the Bhotea language, and forms a bush of ten to twelve feet in height; its berries ripen in October."—N. W.

### END OF VOLUME FIRST.

### CORRIGENDA ET ADDENDA.

- Page 13, line 23, for loothlets, read toothlets.  
 — 47, — 23, for zerumbet, read Zerumbet.  
 — 97, — 17, for lauceolaria, read lanceolarium.  
 — 98, — 8, for Sirinagore, read Sirinagur.  
 — 25, for nearly as the tube of the calyx, read nearly as long as the tube of the corol.  
 — 100, — 9, after 521, add N. W.  
 — 101, — 10, for Japonicum, read japonicum.  
 — 107, — 12, for dichotomus, read dichotomus.  
 — 116, — 6, for sub-bilabiate clavate, read sub-bilabiate. *Cap-  
 sule* clavate.  
 — 120, — 19, for woody, read woolly  
 — 28, for broader a little, read a little broader.  
 — 124, dele the last five lines beginning with *Bractes*, and ending with succession, p. 125. l. 1. and instead thereof insert *Bractes* opposite, sessile, entire; those of the flowers (better perhaps called involucrels) linear, oblong, cordate, unequal: the uppermost being larger and incumbent over the fascicle of flowers. *Calycine* bractes small.  
 — 125, line 13, for quotted, read quoted.  
 — 136, — 15, for vol. read col.  
 — 163, — 5, from the bottom, for three-coloured, read three coloured.  
 — 167, — 7, for leaflets, read leaflet.  
 — 3, from the bottom, for permanent, read permanent.  
 — 177, — 20, for Tali-pulli, read Tali-pullu;—*ibid.* after 9, add p. 123.

- Page 197, dele the last three lines beginning with but Retzius.  
 — 200, line 2, for 336, read 330.  
 — 227, — 6, from the bottom, for oblong scales; ovate, read oblong; scales ovate.  
 — 230, — 4, for astivalis, read aestivalis.  
 — 248, — 2, from the bottom, for three, read three-,  
 — 249, — 3, for sara, read Sara.  
 — 250, — 5, for vallies; compare, read vallies. Compare.  
 — 251, — 20 and 21, for seven flowered, hermaphrodite, read seven flowered. *Hermaphrodite flower.*  
 — 260, — ult. for no, read or  
 — 273, — 8, from the bottom, for cernuum read cernuus.  
     — 7, from the bottom, for verticels, read verticils.  
 — 288, — 21, dele P.  
     — 22, for grass, can, read grass. Can.  
     — 23, for the, read The.  
 — 292, — 11, for dactylon, read Dactylon.  
 — 293, — 9, for dactylon, read Dactylon.  
 — 382, — 7, for In the, read A native of Nepala. In the.  
 — 456, Immediately before *P. pinnata*, insert:

*P. caudata*, R.

Perennial rooting. Extreme shoots leafless, flagelliform, and pendulous. Leaves ovate-cordate, from entire to pinnatifid, segments sub-ensiform, one-nerved.

From Prince of Wales Island slips were brought to the Botanic Garden at Calcutta, in 1797; and now, 1812, it is one of the most common and most extensive climbers; but has not as yet blossomed in the garden. The long flagelliform pendulous extremities of its shoots readily distinguish it from every other species I have seen; the leaves also are oftener undivided than otherwise.

Page 457, Immediately before *P. heterophylla*, insert:

*P. pinnatifida*, R.

Perennial, rooting on trees. Leaves pinnatifid; segments falcate, one-nerved.

A native of Sumatra; from thence brought into the Botanic Garden at Calcutta, where it grows freely on the trunks of trees, to which its lateral roots adhere most firmly, the original one being still in the ground, where first planted. Although some of the plants are six or seven years old and about twenty feet high, they have not yet blossomed.



FLORA INDICA;

OR  
DESCRIPTIONS

OF  
(Indian Plants.)

BY THE LATE

WILLIAM ROXBURGH, M. D. F. R. S. E. &c. &c.

EDITED

BY WILLIAM CAREY, D. D. F. L. S.

TO WHICH ARE ADDED

DESCRIPTIONS OF PLANTS

MORE RECENTLY DISCOVERED

BY NATHANIEL WALLICH, M. B. F. R. S. E. &c.

*Superintendent of the Botanic Garden, Calcutta.*

VOL. II.

"ALL THY WORKS PRAISE THEE O LORD." *David.*

SERAMPORE:

PRINTED AT THE MISSION PRESS:

1824.



L 581.954  
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ADVERTISEMENT.

IN presenting the second volume of Roxburgh's Flora Indica to the Public, it has been deemed necessary to explain, briefly, the causes of the delay, which has unavoidably occurred during its progress through the press; and this task very properly devolves on me, in consequence of my having, unfortunately, been the chief cause of that delay.

A few months subsequent to the publication of the preceding volume, in 1820, I was deputed on a botanical mission to Nipal, intended, originally, to have occupied only one year, but which was protracted to eighteen months, and lasted until my return in the beginning of 1822. The printing, which had been left off at p. 81, was immediately resumed, and continued up to the end of May, when p. 200 was struck off.

A severe fever, which I had caught on my descent to the plains, and which I had endeavoured in vain to root out by a cruise at the head of the Bay of Bengal, during one of the preceding months, at this time again attacked my enfeebled constitution; I was confined to my couch for nearly two months, and at length was forced to try a voyage to sea, in search of that health, to which I had so long been a stranger. I visited, accordingly, Pinang and Singapore in the straits of Malacca, and returned to this garden on the last day of the year, after having attained the immediate object of the trip, and

loaded with a botanical collection, such as could not fail resulting from a stay of several months, on those indescribably rich islands, and fully proportionate to that, which it had been my good fortune to bring away from Nipal. The materials, which by these means have been placed at my disposal will, I humbly hope, enable me to contribute a number of not altogether uninteresting additions to this work.

Here may I be permitted to claim the indulgence of the Reader, while I state the reasons, which induce me to express myself thus freely on the extent of my Nipal and Malayan treasures. It would have been impossible for any one, in the least attached to the study of Botany, to have visited those favoured countries, and not to have made large collections of plants; such is the prodigious extent of their riches, and such are the comparative facilities of gathering these. But to have been supported, as I was, during my researches, especially in Nipal, by the matchless munificence of the Honourable East India Company, which left nothing unprovided, that could in any manner tend to ensure success—and yet to have failed realizing the objects of my journey, would have deservedly stamped my labours and my name with indelible disgrace. In short, if I did succeed in reaping an ample harvest, it was because I could not possibly have missed the object, under those glorious auspices, which fell to my lot.—But I return to the final progress of the volume.

The printing which my inestimable friend, the Rev. Editor, had thought proper to suspend during these, to me most bitter intervals, was immediately resumed and the volume is at length completed. If it is considered that sickness is under the controul of no one, that the distance at which I live from the press at Serampore is twenty miles, that the numerous duties belonging to my charges, are fully adequate to occupy the time of one individual; finally, that a tropical climate is but too apt to throw sudden and unexpected obstacles in the way of close application—I trust, that my small share in this vo-

lume will meet with a lenient and kind reception. It was necessary to break off before the end of Pentandria Monogynia, that the number of pages might not be swelled to an unreasonable extent. If life and health are spared, no exertions on my part shall be wanting, with the view of completing, in the course of next year, the third volume which is intended to commence with a vast number of remaining Rubiaceæ, and to comprise the rest of Pentandria, together with Addenda to the two preceding volumes.

N. WALLICH.

Botanic Garden, Calcutta, }  
March, 1824. }



ones opposite. Flowers solitary, drooping. Calyx conical, with five hornlets behind.

Beng. Chhota-kulpa.

Common over most parts of India, producing flowers and ripe seed the greatest part of the year.

Root fibrous, annual.—Stem scarcely any, but many dichotomous, hairy, spreading branches of about a foot in length.—The lower leaves opposite; the upper ones alternate; all sessile, stem-clasping, sub-sagittate, entire, hairy. Peduncles opposite to, or between the leaves, drooping, hairy, one-flowered.—Flowers pale blue.—Calyx five-parted, with the fissures extended into five recurved hornlets; divisions adhering by their margins, giving to the whole a conical shape.—Corol a little longer than the calyx; divisions cordate with filiform apices.—Anthers united into a firm, taper cone over the mouth of the tube of the corol.

2. *B. zeylanica*, Willd. Sp. i. 777.\*

Annual, erect, ramous, strigose. Cauline leaves opposite, subsessile, lanceolate; floral ones alternate with the solitary, one-flowered, drooping peduncles.

A native of various parts of India. Flowering time the cold season.

Root annual.—Stem erect, branches opposite, round, jointed, hispid with numerous sharp, stiff bristles of two sizes; the larger inserted on coloured glandular elevations; the height of the whole plant in a good soil from four to six, or even eight feet.—Leaves opposite, sub-sessile, lanceolate, entire, harsh, with a few stiff, scattered hairs. Floral leaves terminal, alternate, small, sessile, cordate-lanceolate.—Peduncles sub-solitary, one-flowered, drooping, sub-alternate, longer than the floral leaves, round, hairy.—Bractes no other than the floral leaves.—Flowers cernuous, pale-blue.—Calyx five-leaved; leaflets adhering slightly near the base, and at their adhesions forming five-sharp ridges, but without the posterior horns of *Borago*

\* *Trichodesma*, R. Brown, l. cit.—N. W.

*indica*; nor, like that plant, does it shut over the seed, but becomes expanded.—Corol; divisions of the border broad-cordate, with their apices sub-filiform.—Filaments short, and thick, inserted on the mouth of the tube of the corol. Anthers sagittate, woolly, each ending in a large twisted thread; sides firmly united into a conical dome over the stigma.—Seeds four, ovate, smooth on the outside, rough on the inside, where lodged in the receptacle.

3. *B. spinulosa*, R.

Annual, diffuse, dichotomous, armed with depressed bristles. All the leaves alternate, sessile, oblong, scabrous. Peduncles leaf-opposed, one-flowered.

A native of Bengal, appearing in the cold season.

ONOSMA.

Calyx five-parted. Corolla tubular-companulate, with a pervious, naked throat. Seeds four, attached to the bottom of the calyx, with imperforate bases.

1. *O. Emodi*, Wall.

Procumbent, covered with dots and spreading bristles; leaves lanceolate, triple-nerved, less hairy beneath; racemes terminal, solitary, recurved before expansion; flowers twice as long as the linear bractes; calyx companulate, five-cornered, with ovate laciniae; corolla ventricose, five-keeled, narrowing towards the mouth; anthers longer than the filaments; style exerted.

A native of Gosain-Than in Nepala, where it is called *Maharanga*.\* Flowering time September—December.

Root stout, sub-fusiform, dividing at the end into several thick branches, whitish within, covered with deep purple bark; fibres ca-

\* महारङ्ग, a strong or intense colour. Ed.

entire, though sometimes a little lobed, or angular, smooth, above three or four inches long and three broad.—*Petioles* round, smooth, length of the leaves.—*Peduncles* axillary, smooth, clubbed, length of the petioles or more, from two to four-flowered.—*Flowers* remarkably large, the border being from four to six inches in diameter, pure white, delightfully but faintly fragrant, opening at sun rise and drooping at day light. *Tube* very long, cylindric.—*Stigma* double.—*Capsules* ovate, smooth, two-celled, four-valved.—*Seeds* two, viz. two in each cell, smooth, black.

*Obs.* Till I observed Gærtner's figures of the capsule and seeds of *Ipomoea bona-nox* I considered this to be that plant. Dr. Kuntz also thought it was *bona-nox* and I think he said Linnaeus the same had committed a mistake when (in the *Supplementum Plantarum*) he called this plant *Convolvulus grandiflorus*, instead of *Ipomoea grandiflora*.

#### 2. *I. salicifolia*, R.

*Leaves* linear-lanceolate, acuminate. *Peduncles* one to three flowered, length of the petioles.

Found by Dr. Buchanan in the district of Rungpore in Bengal. In the Botanic Garden at Calcutta it is biennial, flowering in the rainy season.

*Stem* and *branches* twining to a moderate extent, round, smooth.—*Leaves* short-petioled, linear-lanceolate, tapering from the rounded base into a long, slender, acute point, entire, smooth on both sides, from three to eight inches long, and scarcely so broad at the broadest part.—*Peduncles* axillary, solitary, half an inch long, bearing one, two, or three large, pure white flowers.—*Calyx*; *leaflets* five, ovate, smooth.—*Corolla* with a cylindric tube about an inch and a half in length, border flat, obscurely divided.—*Stamina* hid in the tube of the corolla.—*Stigma* of two round lobes.—*Capsules* two-celled, with three seeds in each.

#### 3. *I. muricata*, R.

Annual, twining, muricate. *Leaves* cordate. *Peduncles* few-flowered; inside of the tube of the corolla hairy.

*Convolvulus muricatus*, *Lin. Mant.* 44.

I have only met with this in my own garden, it was raised from seeds sent from Persia and proves annual.\*

*Stem* as in *I. grandiflora*, but much more murexed, and not so long, the leaves also the same, but much larger.—*Peduncles* axillary, half the length of the petioles, from two to six-flowered.—*Flowers* large, pale bluish-purple. *Tube* widening a little towards the mouth; inside hairy, by which mark it is instantly distinguished from *I. grandiflora*.

#### 4. *I. multiflora*, R.

*Stems* woody, twining. *Leaves* broad-cordate, downy. *Peduncles* as long as the leaves, umbelliferous.

A common species, native of hedges, forests, &c. Flowering time the cold season.

*Stem* perennial, woody, twinning up, and over trees and bushes.—*Leaves* scattered, petioled, broad cordate, entire, a little bent downwards, bristle-like pointed, both sides a little downy, particularly the under one, from three to four inches each way.—*Petioles* round, downy, from two to three inches long.—*Umbels* three or five-parted, many-flowered.—*Peduncles* round, nearly erect, longer than the leaves.—*Flowers* numerous, very large, rose-coloured; inside of the tube a bright red.—*Leaflets* of the calyx unequal.—*Stigma* two-lobed; *lobes* globular.

\* It is found in most parts of Hindoostan. I have met with it in various parts of the country along the Ganges, from Behar and Tishoot up to Cawnpore; also at Lucknow. I have likewise frequently seen it in the valley of Nepala (1) where it blossoms in the rainy season.—N. W.

(1) The name of this Country is written in Sungalrita Dictionaries Nepala, and Nepala with the *l* sounded long as in time, the final *a* is not pronounced. On that account it will be hereafter written Nipal, as most agreeing with the pronunciation in the country itself. Ed.



*Obs.* This species while in flower is one of the greatest beauties of our forests. Whether this is what König called *Ipomoea Burmanni* or not I cannot say.

5. *I. sepiaria*, Kön. *Mss.*

Perennial, twining, hairy. *Leaves* cordate. *Peduncles* many-flowered, and with the pedicels clavate, *capsule* four-celled.

Tiru-tali, *Rheed. Mal. xi. p. 109. t. 53.* is certainly this plant, though quoted for *Convolvulus maximus*. Can they be the same? Probably they are, as Vahl's description agrees tolerably well with my plant.

Teling. Matta-tootia.

This is one of the most common species on the Coast, it grows plentifully in every hedge, thicket, &c. Flowers during the rainy and cold season.

*Stem* twining, perennial, young shoots round, filiform, hairy.—*Leaves* alternate, petioled, cordate, pointed, somewhat sagittate, or angular behind, otherwise entire; smooth, often clouded with brownish spots in the centre; from two to three inches long.—*Peduncles* axillary, as long as the leaves, round, smooth, clubbed, many-flowered.—*Flowers* large, of a beautiful pale rose-colour.—*Stigma* two-lobed; *lobes* globular.—*Capsule* smooth.

6. *I. carulescens*, R.

Perennial, twining, all the tender parts hairy. *Leaves* round cordate, neutre. *Peduncles* erect, length of the petioles, from one to three-flowered. *Stigma* of three round lobes. *Capsules* smooth, three-celled.

Native place uncertain, nor can any Asiatic names be procured for this beautiful, distinct species.

*Stems* perennial, twining to a great extent; *young shoots* round, hairy, and twining; hair reflexed.—*Leaves* round-cordate, long-petioled, posterior lobes large and rounded, apex acute, surface less hairy than the petioles and shoots, size three or four inches each way.

\* It is equally abundant in Bengal. *Ed.*

*Peduncles* axillary, length of the petioles, hairy, at all times erect, from one to three-flowered.—*Flowers* pretty large; their colour when they first expand early in the morning, is a beautiful lively pale blue, or azure, gradually growing darker.—*Bractes* lanceolate, hairy.—*Calyx* five-cleft; *segments* ensiform, hairy, about half the length of the tube of the corol.—*Coral*; *Tube* widening a little from the base, paler than the undivided border.—*Germ* three-celled. *Stigma* three-lobed; *lobes* round.—*Capsules* smooth, three-celled, with two smooth, black seeds in each.

*Obs.* This, and *I. carulea* (probably *I. hederacea* of Jacquin,) are exactly the same in the inflorescence, germ, stigma and capsules; but they differ specifically. This being perennial, and having the leaves constantly without any tendency to be lobate; whereas that is annual, with three-lobed leaves. I may further add, that plants raised from seed received from the Honourable Charles Greville, in London, under the name *Convolvulus hederaceus*, differ only in the colour of the flowers from my *I. carulea*, in which it is blue, and in this, *hederacea*, white.

7. *I. carulea*, Kön. *Mss.*\*

Annual, twining, hairy. *Leaves* cordate, three-lobed, downy. *Peduncles* from two to three-flowered, margins of the corol subentire. *Stigmas* three-lobed. *Capsules* three-celled.

Beng. Neel-kulmi.

It is common during the rains in most parts of India.

*Stems* and *branches* twining, annual, round, hairy, from six to twelve feet long, as thick as a crow quill.—*Leaves* alternate, petioled, broad-cordate, three-lobed, downy; from two to four inches long, acute, &c. almost as in *Dillenius's* figures of *Convolvulus Nil.*—*Peduncles* axillary, length of the petioles, round, hairy, from two to three-flowered.—*Bractes* and leaflets of the calyx linear.—*Flowers* large, of a beautiful light, but bright blue.—*Stigma* sub-globular,

\* This, as the author hints above, is undoubtedly *I. hederacea*, Linn. I have found it, though rarely, in the valley of Nipal, blossoming in May.—N. W.

## CAMPANULA. Schreb. Gen. 290.

*Calyx* five-parted. *Corol* campanulate. *Filaments* with their lobes dilated, and arched. *Stigma* from three to five-cleft. *Capsule* inferior, from three to five-celled, opening by pores on the sides.

1. *C. dehiscens*, R.\*

Annual, ascending, round, a little hairy. *Leaves*, sessile, linear lanceolate, remotely toothed. *Flowers* from five to six, terminal. *Capsules* without lateral pores and opening at the apex.

A native of Bengal. Flowering time the cold, and beginning of the hot season.

*Root* nearly simple, white, annual.—*Stems* and *branches* ascending, about a foot high, round, hairy.—*Leaves* alternate, sessile, linear lanceolate, remotely, and lightly toothed; from one to two inches long.—*Flowers* terminal, corymbiform, white, pretty large, bell-shaped.—*Calyx*, *corol*, *stamens* and *pistil* as the genus.—*Capsule* obovate, without lateral pores, opening at the apex.—*Seeds* numerous, minute.—*Receptacle* reniform, in the angle of each cell.

2. *C. lancifolia*, R.†

Ramous, smooth. *Leaves* sub-opposite and alternate, short-petioled, lanceolate, serrate, acuminate. *Flowers* terminal. *Calyx* leaflets lanceolate and laciniate. *Capsules* obovate, five-celled.

\* *C. dehiscens*, Roxb. hort. beng. 85; et Wall. in Asiat. Res. xii. 571, c. lecta—N. W.

† I think this may be a species I have met with in the northern parts of Bengal. My plant grows on the bare interstices between the tufts of long grass in the valleys which are overflowed during the rains, where it springs as soon as the fresh dry up. It is a very slender annual plant, a foot or a foot and half high, without branches, except near the top, where it shoots out sometimes two or three small ones an inch or two long, each terminated by a single nodding flower about the size, shape, and colour of those of *C. rotundifolia*, the radical leaves I have not seen, as they soon drop off, the six or eight leaves (for there are not more on the full grown plant) are lanceolate, or even linear. It is found in flower from November to March or April, and perishes after having perfected its seeds. t d.

A native of the moist vallies of Chittagong, where it flowers in October.

## Additions by N. W.

3. *C. sylvatica*, Wall.

Rough with short hairs. *Stem* slender, sub-dichotomous. *Leaves* linear, sub-entire, approximate toward the middle of the plant. *Flowers* long-peduncled, panicled. *Corolla* pubescent, with a campanulate tube and lanceolate *laciniæ*. *Ovarium* prismatic

*C. stricta*, Wall in Asiat. Res. xiii. 374.

Delights in moist ground in the forests of the valley of Nipal; blossoming in the dry part of the summer, that is to say in April and May.

*Obs.* As there is already a species called *stricta* by Linneus I have been obliged to alter the name I had once given to this very elegant plant. I have nothing to add to my description, l. cit. except that in the fresh plant I have always found a few remote glandular toothlets on the leaves which however, are so small as to disappear entirely after being dried.

4. *C. agrestis*, Wall.

Smooth, ramous, slender. *Leaves* linear, very narrow, with a few remote toothlets; the uppermost very small, entire. *Flowers* terminal, panicled. *Laciniæ* of the *calyx* half the length of the infundibuliform corolla.

A delicate species which is common in fields along the sides of paths in the valley of Nipal, blossoming in March.

It is generally speaking smooth, though sometimes with a few remote short hairs. *Root* fibrous.—*Stem* from six to twelve inches high, erect, very thin and slender, round, divided from the base into many almost simple ascending branches; the upper part sub-dichotomous. *Leaves* alternate, from one to two inches long, very



tober. It has also been brought to me from much more northerly and higher parts of Nipal towards Gosain-Than, where it blossoms later.

An extensively twining, very ramous, annual plant, with slender, round, smooth, shining, sometimes purplish stem, of the thickness of a crow-quill. Branches alternate, numerous, from one to two feet long, leafy.—Leaves alternate, spreading, membranous, ovate-oblong, tapering into an acute apex, or acuminate, obscurely crenulate, base cordate, with rounded lobes, from three to five inches long, sparingly beset on the upper, bright green, opaque surface with short, soft, adpressed hair, densely villous, glaucous underneath, with slender elevated rib, and oblique reticulated nerves.—Petioles rounded, tortuous, villous, half an inch long.—Flowers large, drooping, solitary, placed irregularly along the branches, or axillary, sometimes opposite the leaves, possessing a very disagreeable narcotic smell, glaucous, pubescent.—Peduncles filiform, curved, naked, pubescent, somewhat enlarged under the flower.—Calyx persistent, consisting of five equal, very distant, linear, acute, denticulate, recurved, two or three-nerved lobes, about five lines long, and separated by rectilinear naked interstices of four lines.—Corolla ample, bell-shaped, one inch long, of a thickish, rather fleshy texture, and a pale yellowish green colour; tube ventricose, inserted round the vertex of the ovarium, the inside with small purple dots; border spreading, an inch and half wide, five-parted; lacinia ovate, acute, half the length of the tube, very obscurely marked along the margins, with small elevated papillæ. Aestivation valvate.—Stamina five, distant, distinct, erect, two-thirds shorter than the tube of the corolla, opposite its lacinia; filaments fleshy, smooth, subulate, base scarcely widened, inserted within the base of the corolla; anthers erect, linear, as long as the filaments, two-celled.—Ovarium large, fleshy, hemispherical, depressed, ten-nerved, the vertex obscurely five-angled, convex, gently elevated within the bottom of the flower, shining, purple, umbilicated, three-celled; ovula very numerous, attached to three very thick and fleshy axile placenta which protrude so much as to render the cells very narrow and parietal

—Style smooth, rounded, rather longer than the stamens, widening at the persistent base. Stigma large, fleshy, sub-infundibuliform, three-lobed; lobes ovate, blunt, recurved.—Capsule nearly round, ten-nerved, pubescent, two-thirds inferior, its conical vertex considerably elevated above the calyx, which has now enlarged into a distinct broadish margin, with its distant lacinia reflexed; about the size of a large cherry, three-celled, bursting partially at the apex into three small divergent subulate valves. Dissepiments very narrow, ventral.—Placenta large, ovate, convex, fungiform, inserted into the inner angle of the cells; their surface cellular.—Seeds exceedingly numerous, minute, sub-cylindric, ferruginous.

### 2. C. purpurea, Wall.

Leaves ovate-oblong, smooth, together with the branches opposite. Calycine lacinia triangular, spreading.

A native of precisely the same places as the first species; it is however of much rarer occurrence on Sheopore,\* (Shivapora) and more common towards the Himalaya. Time of flowering the same.

It is perfectly smooth on all parts. Stem as in the preceding; of a straw-colour, and shining when dry. Branches mostly opposite, so as to give the plant a trichotomous appearance, jointed.—Leaves opposite or sub-opposite, in remotish pairs, ovate-oblong, attenuate-acute, base rounded, from three to five inches long, entire or obscurely crenulate, perfectly smooth, very glaucous underneath.—Petioles furrowed above, round, jointed at the base, half an inch long.—Flowers large and showy, solitary, terminal, or in alternate axils, sometimes lateral, mostly erect, dark-purple, glaucous on the outside, fetid.—Peduncles naked, from one to three inches long.—Calyx

\* This word is differently pronounced in different parts of India. It ought to be written shiva-pora; but my friend Wallich being desirous of writing the word according to the provincial pronunciation of Nepala, his way of writing it is retained in the text; though it is highly probable they pronounce it shivapoor, with the i short as in tin, and not Sheopore, with the e long as in a name, the sound allotted to a in every system of writing Indian words with Roman letters. Ed.



with thick cinnamon-coloured bark, which cracks transversely. The wood is brownish, close-grained; it seems to be well suited for furniture. *Branches* quadrangular, with rounded corners, densely clothed with ash-grey, very soft tomentum, as are also the leaves and panicles; growing smoother by age.—*Leaves* lanceolate, tapering, sub-acuminate, the base acute; from four to six inches long, smoother above; underneath glaucous from copious tomentum, with elevated rib and parallel oblique nerves.—*Petioles* from one to two inches long, round.—*Stipules* large, oblong, the lower half adpressed, the upper recurved, foliaceous, reniform, emarginate, deciduous.—*Panicle* ovate, very large, terminal, supra-decompound, with divaricate ramifications, tomentose, glaucous.—*Bractes* oblong, caducous, sometimes lobed or sub-bistate at the base; the lowermost very long, linear.—*Flowers* small, white, fragrant, sub-sessile, densely fasciated, forming oblong, opposite racemes which are from one to two inches long.—*Calyxine* laciniae very small, triangular.—*Tube* of the corolla smooth, very short; *limb* divided into five lanceolate, spreading laciniae; *throat* with five minute tubercles.—*Anthers* exerted above the throat.—*Capsule* very small, globular, villous, with numerous minute seeds.

10. *R. coriacea*, Wall.

Arboreous, smooth on all parts. *Leaves* oblong-lanceolate, acuminate, tapering at the base, much longer than the interstices, coriaceous, lucid. *Stipules* adpressed, with ligulate vertical apex. *Panicle* terminal, dense. *Flowers* opposite very numerous.

A native of the valley of Nipal, where it is common in the forest at Toka and other places. I have also had it from Noakote. Flowering time the months of March and May.

Parbuteeya\* name, Konggea.

Newar, Julsi.

\* This word however universally applied by the Nepalese to the people who inhabit the higher mountains, should probably be either Bhotia or Nipal. It means simply the language of mountaineers, and is equally applicable to all the inhabitants of Nipal, and of all other mountains in the world. Ed.

A tree of about ten or twelve feet in height, with a straight stem, measuring from five to eight inches in diameter. *Bark* spongy, brown; wood light, very fine-grained, becoming brown on exposure. *Branches* issuing almost from the base of the stem, numerous, spreading, together with the other parts perfectly smooth, the uppermost somewhat quadrangular.—*Leaves* spreading, sub-decussate, one or two inches distant from each other, from five to seven inches long, acuminate, tapering at both ends, of a firm and leathery texture, polished and shining on the upper surface, less so underneath, where they are marked with very fine nerves.—*Petioles* about an inch long, slightly margined.—*Stipules* broad and short, rounded, ending in a ligulate acute lamina, which is turned in an opposite direction, in such a manner, that one of the margins is parallel with the branch.—*Panicle* terminal, pyramidal, sessile, perfectly smooth, consisting of numerous, opposite, decussate, decompound, approximate ramifications; sometimes with one or two leaves above the base. *Bractes* lanceolate, coriaceous, acute; those on the common peduncles sometimes half an inch long.—*Flowers* white, fragrant, opposite, much crowded, on very short pedicels, each having a capillary bracte at the base.—*Calyx* small, with subulate laciniae. *Corolla* with a cylindrical tube, five lines long; *laciniae* spreading, ovate, acute, marked with parallel sub-glandular veins. *Filaments* inserted under the throat; *anthers* elevated above the limb, spreading with the laciniae. *Stigma* clavate, two-lobed.

*Obs.* The inhabitants of Nipal use the wood for various purposes, such as rafters, tools, &c.; indeed it appears to me well worthy of being employed for furniture, being close-grained, and becoming soon after it is cut of a brownish colour, not unlike mahogany. A red dye is likewise prepared from it. The leaves and flowers attain sometimes a bluish colour on being dried.—*R. tinctoria* differs in having pubescent leaves, branches and panicles; whereas this species is perfectly smooth.



9. *M. polysperma*, W. J.

Tetraandrous. *Peduncles* axillary and terminal. *Corols* four-cleft hairy within. *Leaves* ovate, acuminate. *Berries* two-celled, many-seeded.

Found in the Island of Singapore.

A shrub, with short, sub-dichotomous, flexuose branches. *Leaves* opposite, petiolate, ovate, acuminate, obtuse at the base, very smooth, coriaceous, flat, about three inches long. *Stipules* short, interpetiolar. *Peduncles* axillary and terminal; axillary ones opposite; terminal ones from one to four in a kind of umbel. *Capitula* few-flowered. *Calyx*, an entire margin. *Corolla* infundibuliform, four-parted, densely covered within with white hairs. *Stamina* long, shorter than the corolla; *filaments* short; *anthers* linear, style erect. *Stigma* bifid. *Berries* coadunate, two-celled, many-seeded! *Seeds* numerous, angular.

*Obs.* The flowers of this species are perfectly similar to those of the preceding, but the fruit presents a singular anomaly in being polyspermous. Both differ so much from the other species of *Morinda* that I think they might properly constitute a new and distinct genus.—*W. Jack, l. cit.*

## Note by N. W.

I have met with this singular species in abundance near the seashore, some miles from the town of Singapore. It is a large climber, running over shrubs and even small trees; its branches are sometimes radicate.

LORANTHUS,\* *Schreb. Gen. 600.*

*Calyx* uncertain. *Corol* generally one-petalled, and often irregular. *Germ* inferior, one-celled, one-seeded, attachment superior. *Berry* one-seeded. *Embryo* inverse, and furnished with a perisperm.

\* This Genus is usually placed in Hexandria monogynia, but as Dr. Roxburgh in the best copy he made of the Flora Indica, before he left this country, removed it to Pentandria, it is printed where he then placed it. *Ed.*

1. *L. bicolor*, Roxb. *Corom. ii. 19. tab. 139.*

*Leaves* opposite; oblong, smooth. *Racemes* axillary. *Corols* irregular, five-cleft. *Stamens* five. *Berry* oblong.

*Sung.* वुन्दा, Vuuda, वृक्षादनी, Vrikshadance, वृक्षमन्दा, Vrikshambhukin, and वृक्षरुहा, Vrikshurooha.

*Hind. and Beng.* Bura-manda.

Yellanga-wadinika of the Telugas; (wadinika means parasitical.)

It always found growing upon the branches of various kinds of trees, and is very ramous. Flowers during the greatest part of the year, and is highly ornamental.†

*Trunk* scarcely any. *Branches* numerous, ascending, woody; bark grey.—*Leaves* nearly opposite, sessile, or very short-petioled, from oval to linear-lanceolate, waved, entire, reclined, veins scarcely any; from three to five inches long, and from half an inch to an inch and half broad. *Racemes* axillary, single, simple, sub-erect, many-flowered.—*Flowers* in size and appearance very much like those of the honey suckle. *Bractes*, a small, concave, cordate one, pressing on the base of the germs on one side.—*Calyx*, there is no other perianth of the fruit than the above-mentioned bracte; that of the flower is cap-shaped, entire, permanent.—*Corol* one-petalled. *Tube* long, a little curved, swelling from the bottom to within a third of the mouth, then contracting a little; *border* five-parted, upper fissures much the deepest; *segments* linear, reflexed towards one side.—*Filaments* five, from the base of the segments of the corol, short. *Anthers* linear.—*Germ* inferior, naked. *Style* length of the corol. *Stigma* clubbed. *Berry* inferior, crowned with the remaining calyx, oblong, smooth, pulpy, one-celled.—*Seeds* single.

*Obs.* This is a handsome looking parasite, bearing a great number of very beautiful flowers; its foliage also looks very well. All

\* Sir William Jones thought Vuuda to be the general term for all parasitic plants. It is probable that all the names here cited are so. *Ed.*

† It is one of the most common plants in Bengal, where it is chiefly found growing on mango trees, frequently in such abundance as to disfigure them, and to be with difficulty rooted out. At Sühel it is called *Pal-veem* and is in great repute as a remedy against venereal complaints.—N. W.



*VERBASCUM*. Schreb. Gen. N. 331.

Corol rotate, somewhat unequal. Capsules superior, two-celled, two-valved.

1. *V. Thapsus*. Willd. spec. i. 1001.

Leaves decurrent, downy on both sides. Stem simple.

Found by Captain Hardwick amongst the mountains on his tour to Shreenugura. In the botanic garden at Calcutta it grows to the height of from six to eight feet, the stem still perfectly straight, but often ramous; it blossoms during the cold season.

Obs by N. W.

This appears to be a distinct species, which I propose calling *V. indicum*, and which may be thus characterised: The whole plant densely hoary. Leaves decurrent, elliptic-oblong, acuminate, grossly crenate, waved. Raceme spiked, dense, elongated, marked with variously bent, large, acuminate bractes. Lacinia of the corolla nearly equal, rounded; two longer filaments perfectly smooth.

I found it in abundance on the most exposed and naked parts of Ek-danta between Koola-kana and Bheempadi in Nipal. I have also had it from Gosain-Than. In the former situations it blossoms in the cold weather from December to March, in the latter during the rains.

Root strong, woody, fibrous. Stem nearly simple, straight, strongly winged, from two to three feet high in the wild state, much taller when cultivated; very thick; it is densely covered, as are all the other parts, with greenish white, soft, stellate tomentum.—Leaves from oblong to obovate, mostly ending in a very long, slender acumens, the lowermost from one to two feet long, and from four to six inches broad, never obtuse; the others gradually decreasing in size, and waved; they are all strongly crenate; the uppermost sub-ovate, resembling the bractes.—Raceme from one to three feet long, with innumera-

ble yellow, fragrant flowers; the lowermost fascicles remote. Outer bractes very large, spreading and conspicuous, variously bent and waved, acuminate, much longer than the flowers; inner ones oblong, equalling the calyx.—Corolla sub-rotate, with ovate, obtuse lacinae, a little villous on the outside. Two longer filaments perfectly smooth, the others woolly. Anthers of a vivid red colour, reniform.—Capsule large, slightly woolly.—N. W.

*HYOSCYAMUS*, Linn.

Corolla infundibuliform, obtuse. Stamina bent inwardly. Capsule operculate, two-celled.

1. *H. niger*, Linn.

Leaves sinuate, stem-clasping; flowers sessile.

Native place, the west and north parts of Hindoosthan. My worthy friend Major-General Hardwick informs me that it grows wild between Futtehgur and the artillery practice-ground at Delia to the westward, whence he brought the seeds to Cawnpore. Seeds were sent down to me from Moradabad, in 1815, by the Marchioness of Hastings, the noble patroness of the Agriculture and Botany of this country, to whose warm and successful, but most unostentatious exertions to improve and promote the husbandry and horticulture of the Indian empire, of which I have been an eye witness for several years past, while India possessed that illustrious lady, I am proud to seize this opportunity of bearing the amplest testimony.\* We have ever since cultivated it in the botanic garden, for the purpose of supplying annually the Hon. Company's dispensary at Calcutta with the herb for preparing the extract, which as well as

\* I am happy in this opportunity of corroborating this testimony to the zeal of the Marchioness of Hastings in promoting the agriculture and botany of India, and of saying that the zeal and abilities of my much esteemed friend Dr. Wallich in these pursuits had gained him a very high degree of the confidence and esteem of both the Marquis and Marchioness. Ed.



## SOLANUM. Schreb. Gen. N. 387.

*Calyx* five-parted. *Corol* rotate. *Anthers* coalescent, gaping at the top with a double pore. *Berry* superior, two-celled, many-seeded.

## Sect. 1st. Unarmed.

1. *S. pubescens*, Willd. spec. i. 1026.

Sub-arboreous, unarmed. *Leaves* alternate, oblong, pointed, entire, downy. *Cymes* dichotomous.

Gandira\* the Sanscrit name, see *Asiat. Res.* iv. 258.

*Sang.* श्वेतद्विती, Shwetavilutee, श्वेतमहतोका, Shwetamahatika, श्वेतसिद्धि, Shwetasinghee, श्वेतफला, Shwetaphula, श्वेतवाक्किनी, Shwetavartakinee.

Beng. *Urusa*.

Teling. *Rusa-ghedi man*.

Amongst the mountains in the Telinga country this grows to be a small or middle-sized tree, with a very thick shady head. Flowers during the hot season.

*Leaves* alternate, short-petioled, oblong, entire, downy, from six to ten inches long.—*Cymes* terminal or leaf-opposed, two-cleft; ramifications recurved.—*Flowers* small, white, very numerous.—*Berry* the size of a cherry.

## Obs. by N. W.

I strongly suspect that Roxburgh is mistaken in considering this to be Willdenow's *pubescens*.—It is a plant which I have found very common in valleys and on the sides of the lower mountains of Nipal, where it blossoms all the year round, I have likewise had it from the N. W. mountains of Hindoosthan; and from Shreenugur, where the plant is called असेडु, *Ushedu*. It agrees perfectly with *S. verbascifol*

\* This name probably belongs to some other species. *Ed.*

*ium*, Linn. which has been well described by Poiret, in *Encycl. bot.* iv. 279, and by Loureiro, *flor. cochinch.* ed. Willd. i. 159.—N. W.

2. *S. auriculatum*, Willd. spec. i. 1025.

Sub-arboreous, every part downy. *Leaves* broad-lanceolate, entire. *Stipules* axillary, obliquely ovate-cordate. *Cymes* in the forks of the branchlets, dichotomous.

A native of Mauritius, and introduced by Captain Tenant, into the Botanic Garden at Calcutta; where it blossoms during the rainy and cold seasons, and continues to ripen its fruit from December till May.

*Stem* nearly erect, in six years as thick as a man's leg, and about eight feet high.\* *Bark* smooth, ash-coloured. *Branches* dichotomous, spreading much. *Branchlets* and all the tender parts most completely clothed with sessile and pedicelled, hoary, stellate pubescence.—*Leaves* alternate, petioled, broad-lanceolar, tapering to a rather obtuse point, entire; clothed underneath like the branchlets; upper surface a little hairy; from four to eight inches long, and two or three broad.—*Petiols* channelled, downy like the branchlets.—*Stipules* in sessile, axillary pairs, obliquely ovate-cordate, large, and recurvate round the branchlets, looking more like small common leaves than stipules.—*Cymes* in the forks of the branchlets long-peduncled, dichotomous. *Ramifications* recurvate, sub.secund.—*Flowers* numerous, subsessile, small, lively blue-purple.—*Berry* spherical, size of a small cherry, when ripe of a dull yellow.

*Obs.* Independently of the colour of the flowers, the stipulæ or axillary leaves render this species readily known; in all other respects it almost exactly resembles the preceding; in that plant there are no stipulæ, and the flowers are white.

3. *S. Lycopersicum*, Willd. sp. i. 1033.

Annual. *Leaves* pinnate, gashed. *Racemes* bipartite, leafless. *Fruit* smooth, vertically compressed, torulose.

\* I had a plant sixteen feet high which was not more than eight years old. *Ed.*



Cariram, *Rheed. mal. i. t. 97.*

*Sung.\** दोर्घपरकः, *Deerghapatnaka*, कुपीलुः, *Koopeelo*, कालपीलु, *Kalapeelo*, कालपीलुक, *Kalapeelooka*, काकपीलुक, *Kakapeelooka*, कुलक, *Kooluka*, कालतिन्दुकः, *Kalutindooka*, वियतिन्दुः, *Vishutindoo*, मकटतिन्दुकः, *Mukatutindooka*, काकतिन्दुकः, *Kakutindooka*, काकेन्दुः, *Kakendoo*, काकाण्डः, *Kakanda*, कालाण्डः, *Kaanda*, काकसूजी, *Kakusphoorjo*, कालाका, *Kalahwa*, कालबीजकः, *Kaaveejaka*.

*Beng.* Koochita.

*Teling.* Musadi.

A middling sized tree, common on almost every part of the coast of Coromandel; in flower during the cold season.

*Trunk* short, often crooked, but pretty thick. *Branches* irregular, both are covered with smooth, ash-coloured bark; *young shoots* highly polished, deep green. *Wood* white, hard, close-grained, and bitter.—*Leaves* opposite, short-petioled, oval, shining, smooth on both sides, entire, from three to five-nerved, or rather between that and triple, or quintuple, differing in size from one and half to four inches long, and from one to three broad.—*Stipules* none.—*Flowers* small, greenish-white, collected on small, terminal corymbs.—*Calyx* five-toothed, permanent.—*Corol* infundibuliform, as in the genus.—*Filaments* scarcely any, or exceedingly short, inserted over the bottom of the divisions of the corol. *Anthers* oblong, half within the tube, and half out.—*Germ* two-celled, with many *ovula* in each, attached to the thickened centre of the partition. *Style* the length of the tube of the corol. *Stigma* capitate. *Berry* round, smooth, size of a pretty large apple, covered with a smooth, somewhat hard shell, of a rich,

\* Those of the above synonyma which are in the *Umura Koba* are by Mr. Colebrooke attributed to *Diospyros melanoxylon*. Most of the pundits are of the same opinion, probably because *Tindoo*, one of them, is the name of *D. glutinosa*. It is not unlikely that the opinions of the pundits, joined to the similarity of names led him to this conclusion. These words are however expressly stated in the *Bhara-prakash* to be the names of the *Koochita*, which is universally acknowledged to be this plant. *Ed.*

beautiful orange colour when ripe; filled with a white, soft, gelatinous pulp.—*Seeds* several, immersed in the pulp of the berry.

The wood of this tree being hard and durable is used for many purposes by the natives. It is exceedingly bitter, particularly that of the root, which is used to cure intermitting fevers, and the bites of venomous snakes; when that of *Naga musadi* cannot be had. The seeds are employed in the distillation of country spirits, to render them more intoxicating. The pulp of the fruit seems perfectly innocent, as it is greedily eaten by many sorts of birds.

2. *S. potatorum*, *Willd. sp. i. 1052. Corom. pl. 1. N. 5.*

*Leaves* opposite, from ovate to oval, smooth, pointed. *Bark* deeply cracked. *Berries* one-seeded.

*Sung.* पयःप्रसादि, *Payaprasadi*, कतक, *Kutuka*, कतक, *Kutuka*, उम्बुप्रसादः, *Umbooprasada*, कटु, *Kutoo*, कतः, *Kuta*, तिक्तफलः, *Tiktaphala*, रूच्यः, *Roochya*, छेदनोद्यः, *Chhedunodya*, गुच्छफलः, *Goochhaphala*, कतफलः, *Kutaphala*, तिक्तमरिचः, *Tiktamuricha*, त्रैयप्रसादनं, *Toyuprasadana*, उम्बुप्रसादनं, *Umbooprasadana*.

*Beng.* and *Hind.* *Nirmulac.*

*S. potatorum*, *Anat. Res. xi. p. 178.*

*Teling.* Induga.

*Tam.* Tettan-kotta.

*Eng.* Clearing-nut.

This species grows to be a larger tree than *Nux-vomica*. It is much scarcer, being only found amongst mountains and woods of great extent. It flowers during the hot season.

Dr. König's description of this tree in the *supplementum plantarum* of Linneus, page 148, is so perfect, as to leave me little to add. The only observation I have to make is that the leaves cannot be said to be either three- or five-nerved.

*Stipules* entire, connecting.—*Corymbs* from the extremities of the



last year's shoots, round the base of this year's, small, bearing in ternary order, many, small, erect, fragrant, greenish-yellow flowers.—*Filaments* rather longer than in *Nux-vomica*.—*Germ* and contents as in *S. Nux-vomica*.—*Berry* shining, black when ripe.

The wood of this like that of the former is hard and durable, and is used for various economical purposes.

The pulp of the fruit, when ripe, is eaten by the natives; to me the taste is rather disagreeable.

The ripe seeds are dried, and sold in every market to clear muddy water. The natives never drink clear well water if they can get pond or river water, which is always more or less impure according to circumstances. One of the seeds is well rubbed for a minute or two round the inside of the vessel containing the water, generally an unglazed earthen one, which is then left to settle; in a very short time the impurities fall to the bottom, leaving the water clear and, so far as I have been able to learn, perfectly wholesome. These seeds are constantly carried about by the more provident part of our officers and soldiers, in time of war, to enable them to purify their water. They are easier to be obtained than alum, and are probably less hurtful to the constitution.

*S. S. colubrina*,\* Willd. sp. i. 1052.

Scandent; *tendrils* simple. *Leaves* from oval to oblong, obtuse-ly acuminate, triple-nerved, polished. *Berries* many-seeded.

\* The following note was written by Dr. Roxburgh several years before this species was discovered in Bengal, and attached to *S. Nux-vomica*. I have therefore thought it best to insert it here.—*Ed.*

There is a tree, but exceedingly rare on this coast, which the Telingas call *Naga sandi* (*Naga*, or *Tansoo-paum* in the Telinga language, means the *Cobra de Capella*, or *Coluber naga* of Linnæus, *Tansoo* means dancing, and *pauw* a serpent; this sort being famous for erecting its head and moving it from side to side at the sound of music.) I have only once met with this tree, and then it was pointed out to me by a Telinga Doctor. The tree had been cut down, and carried away, from the only remaining one that I could find, some shoots had sprung up. The leaves upon these were opposite, short-petioled, obtuse lanceolate, three-nerved; about two, or two and half inches long, by three-fourths of an inch broad. The

petiole

*Modira Caneram*, *Rheed. mal. S. t. 24.*

*Beng. Koochila-luta.*

Found by Mr. M. R. Smith, indigenous on the hills near Silhet, where it blossoms in April, and the seeds ripen in September and October.

*Stem* of great size, often from eight to twelve inches in diameter; the wood hard, intensely bitter and of a light grey colour; this with its numerous ramifications climbs over the highest trees. *Bark* ash-coloured, more or less scabrous, according to the age and size of the part of the young shoots, smooth and green.—*Tendrils* lateral, simple, becoming thick and lignous.—*Leaves* opposite, short-petioled, from oval to oblong, entire, obtusely acuminate, triple-nerved; *nerves* extending to the apex, texture rather thin; glossy; from three to six inches long, by two or three broad.—*Stipules* none.—*Corymba* terminal, small; composed of two or three pairs of opposite, few-flowered, short, villous branches.—*Flowers* small, greenish yellow, in a sub-ternary order.—*Bractes* one under each division and subdivision of the corymb, tapering, villous.—*Calyx* five-parted, clammy, with glandular pubescence.—*Corol* infundibuliform, smooth. *Tube* cylindrical. *Border* five-parted; *segments* linear-oblong, spreading.—*Filaments* five, short, inserted into the mouth of the tube of the corol under the fissures of its border. *Anthers* sub-sagittate.—*Germ* superior, ovate, smooth, two-celled, with many *ovula* in each, attached to a fleshy ridge down the middle of the partition. *Style* the length of the corol. *Stigma* capitate.—*Berry* often as large as an orange, round, in the advanced state one cell only can be detected. *Cortex*

petioles were very short, and connected at their insertions by a membrane. I took up this root with the greatest care, cut off the upper part from whence the shoots grew, and planted it in my garden, but it soon perished. From the above circumstances I am inclined to think there is a species different from the third, or scandent species called *Colubrina*, as well as from the *Nux-vomica* tree, which yields the real or at least another sort of the *Legnum colubinum*. The wood of the root of this sort is esteemed by the Telinga Physicians an infallible remedy for the bite of the *Naga*, as well as for that of every other venomous snake. It is applied externally, and at the same time given internally. It is also given as a substance for the cure of intermitting fevers. Roxb. Mas.

H h



above the throat, considerably shorter than the style, which is bifid at the apex. *Stigma* crenulate, waved.—N. W.

*EHRETIA*, Schreb. gen. N. 352.

*Calyx* five-parted. *Corol* one-petalled, five-parted. *Stigma* two-cleft. *Drupe* superior, with a four-partible nut, or with one or two from two- to six-celled nuts.

1. *E. serrata*, R.

*Leaves* broad-lanceolate, serrate, five-pointed, smooth. *Flowers* paniced. *Style* half two-cleft. *Drupe*s with two two-celled nuts.

This tree has been introduced from Bhotan, and is now growing and bearing fruit in Dr. Glass's garden at Bhagulpooa. It is also a native of the eastern part of Bengal. Flowering time the beginning of the hot season.

*Leaves* alternate, petioled, oblong, and broad-lanceolate, acutely serrate, smooth on both sides; from two to five inches long, and from one to two and a half broad.—*Petioles* short, slender, and smooth.—*Stipules* none.—*Panicles* terminal, and from the exterior axils, ovate-oblong, with numerous, short, spreading, compound, and simple ramifications.—*Flowers* small, numerous, collected into small, somewhat remote, sub-sessile fascicles; some of them hexadrous.—*Bractes* ovate, small, pressing on the calyx.—*Calyx* five-cleft.—*Corol. Tube* as long as the calyx; divisions of the border oblong and spreading.—*Filaments* in the mouth of the tube of the corol, and rather shorter than the border. *Anthers* ovate.—*Germ* roundish.—*Style* as long as the stamens, half two-cleft. *Stigma* obtuse.—*Drupe* round, pulpy, when ripe red, and about the size of a pea.—*Nuts* two-celled, they are flat on one side, and convex on the other. The above description is taken from trees sent to the botanic garden by Dr. Glass, who says the fruit is delicious. Plants of the same have also been received from Dr. Buchanan, but with him, about Lak-

shameepooa where the tree is indigenous the fruit is not esteemed, indeed they have little or no pulp on them. The others have but little, what they have is, however palatable. Both now have been twelve years in the botanic garden. The trees are about thirty feet high, ramous, and stout in proportion.

*Obs. by N. W.*

This is among the more common trees of Nipal where it is called Nulshima. It grows both on mountains and in valleys, blossoming most profusely in the summer, and ripening its fruit during the rains. The latter are not touched by the natives. The flowers spread a honey-like powerful smell. In Siliet this species is called *Kala Oja* (কলা অঁজা).—N. W.

2. *E. laevis*, Willd. i. 1077. Roxb. Corom. 1. 56.

Arboreous. *Leaves* ovate, smooth. *Corymbs* lateral, composed of dichotomous, recurved, second spikes. *Drupe*s with a four-partible nut.

*Teling*, Seregada.

The species grows to be a pretty large tree. It is a native of the Circar mountains.\*

*Trunk* erect. *Bark* ash-coloured. *Branches* numerous, nearly erect.—*Leaves* alternate, short-petioled, oval, sometimes scalloped, pretty smooth, from three to four inches long, and two or three broad.—*Corymbs* lateral or axillary, two-forked, composed of thin, recurved, one-ranked spikes.—*Flowers* white, small.

The parts of fructification as in the last, except that here the seeds or nuts are wrinkled on the outside. The chief specific difference is in the corymbs, there they are terminal, here lateral or axillary.

The wood of this tree is used by the hill people for many purposes.

\* It is abundant in some parts of Bengal. Ed.



five, rather shorter than the petals, and inserted immediately over them, so that the small oval anthers rest in their concave apices.—*Germ* above. *Style* two-cleft; *divisions* recurved. *Drupe* globular, size of a large cherry, smooth, yellow when ripe.—*Nut* rough, two-celled.—*Seed* solitary, affixed at the base.

The fruit is eaten by all classes of persons.

*Obs. by the Editor.*

There is a variety of this species, or perhaps a distinct species, which produces an excellent fruit of a long form, about the size of a hen's egg, to which the following Sanskrit names belong.

राजवदरः, Rajuvadura, चययुः, Nripesta, राजवल्लभः, Rajuvallubha, चयवदरः, Nripuvadura, एयुकोलः, Prithookola, तनुवोजः, Tanooveeja, मधुरफलः, Madhooaphula, राजकोलः, Rajakola.

Beng. Narikelee Kool.—*Ed.*

5. *Z. vulgaris*, Willd. sp. i. 1105.

*Leaves* obliquely oval, serrulate, three-nerved, hoary underneath. *Thorns* stipulary, one straight, the other recurved. *Drupe* oblong. *Nuts* sharp-pointed, two-celled.

*Z. sativa*, Gaert. i. p. 202. t. 43. f. 4.

A pretty large tree, often as large as full grown apple tree in England, a native of Persia, and Hindoosthan; only found in gardens in Bengal, where it blossoms in August, and the fruit ripens in January.

6. *Z. nitida*, R.

Arboreous. *Thorns* stipulary, one projecting, one recurved. *Leaves* obliquely ovate-oblong, three-nerved, obtusely serrate, smooth. *Fruits* sub-cylindric; *nuts* two-celled.

Introduced from China into the botanic garden at Calcutta, where it grows to be a small tree. Flowering time the hot season.

*Root* superficial, sending up many suckers for some yards round the tree.—*Trunk* generally crooked. *Bark* brown, pretty smooth; *branches* few, flexuose, and thin of leaves.—*Spines* stipulary, the upper one straight, long, and pointing much forward, the other shorter and recurved.—*Leaves* alternate, short-petioled, obliquely oblong, emarginate, three-nerved, serrate, smooth, of a shining green on both sides, from one to two inches long.—*Flowers* axillary, few, collected on short common peduncles; they are small, yellow, semi-digynous.—*Drupe* oblong, pendulous and smooth, about an inch long, when ripe pale-yellow. *Nut* lanceolate, pointed at both ends, a little compressed, rugose, two-celled.

The fruits are eaten, but to my taste they are rather insipid. Innumerable suckers constantly rise from the root which run to a great distance from the parent tree, and make it a troublesome plant in a garden, but at the same time they render it easily propagated, if necessary.

7. *Z. Lotus*, Lamarck encyclop. iii. 304. *Illustr.* 1. 185. f. 2.

Arboreous; *spines* stipulary, one long, slender, and straight, the other recurved. *Leaves* oval, three-nerved, most slightly crenulate-serrate, smooth on both sides. *Flowers* axillary, style two-cleft.

*Z. Lotus*, Willd. i. 1103.

A native of Persia, &c.; blossoms in the hot season in the botanic garden at Calcutta. It is readily known from its Indian congeners by the whiteness of its bark, and the pale-yellow tinge of its long and very slender prickles.

8. *Z. elliptica*, R.

Arboreous. *Thorns* paired, the upper one rather incurved, the under one recurved. *Leaves* elliptically oval, serrulate, three-nerved, pale underneath. *Corymbs* axillary, dichotomous. *Flowers* semi-trigynous.

A stout straight tree, a native of Tranvancore, from thence intro-



duced by Dr. A. Berry, into the botanic garden at Calcutta, where it blossoms in May and June.

*Trunk* straight, but slightly bent to one side, covered with pretty smooth, brown bark. *Branches* and *branchlets* numerous, spreading much while young, and divaricated when old. *Young shoots* slightly villous, and flexuose.—*Prickles* paired and stipulary; the upper one straighter and pointing forward; the under one much recurved. *Leaves* alternate, bilobed, short-petioled, elliptically oval with the base obliquely cordate, finely serrulate, three-nerved, smooth above, pale and soft underneath, from one to two inches long.—*Sinipules* subulate, soon becoming the sharp thorns above described.—*Corymbs* axillary, much shorter than the leaves, several times dichotomous, villous, many-flowered.—*Calyx*, corol, and *stamina*, as in the genus.—*Germ* ovate, immersed in the receptacle, three-celled, with one *ovulum* in each, attached to the bottom of the cell. *Style* short, three-cleft.

9. *Z. Oenoptia*, Willd. i. 1105.

Shrubby. *Thorns* solitary, recurved. *Leaves* unequally ovate-cordate, entire, acute; three-nerved, downy underneath. *Flowers* minute, crowded in the axils.

Native of various parts of India. Flowering time the close of the rains.

10. *Z. tomentosa*, R.

Shrubby. *Thorns* solitary, scarcely curved. *Leaves* unequally ovate-cordate, three-nerved, obtuse, minutely serrulate, hairy above, and tomentose underneath. *Panicles* lateral.

A short, very ramous shrub, a native of Chittagong, and there used for fences.

11. *Z. xylopyrus*, Willd. spec. i. 1104.

Arboreous. *Leaves* obliquely cordate, three-nerved, serrate, downy. *Thorns* when present stipulary, one recurved, the other straight. *Nuts* three-celled, three-valved.

*Rhamnus Xylopyrus*, Retz. obs. ii. 11.

*Telinga*. Gott.

Common in every forest on the coast of Coromandel.

In a good soil it grows to be a pretty large tree, with a tolerably erect trunk, but in general it is found in the state of a large straggling shrub. *Bark* light ash-coloured, much cracked, corky; young parts covered with soft white down.—The *prickles* in a poor soil are always present and stipulary, the under one recurved, the upper one erect and straight.—*Leaves* alternate, short-petioled, bilobed, obliquely-cordate, serrate, three-nerved, downy, particularly on the under side, about two inches long.—*Corymbs* axillary, small, many-flowered. *Flowers* as in the genus.—*Style* three-cleft.—*Drupe* the size of a large cherry, greenish and downy, marked round the base with the remains of the nectary. *Nut* three-celled, three-valved, the valves separating when the nut has been sometime exposed to the weather, leaving a central three-sided receptacle.—*Seeds* one in each cell, orbicular, compressed, sixed at the base to the receptacle.

Cattle eat the leaves, young shoots, and fruit. The kernels taste like fibrets, and are eaten by the Natives.

The wood of the largest trees is much esteemed by the natives; being yellowish or orange-coloured, very hard and durable, and at the same time not very heavy.

12. *Z. Caracutta*, Buch.

Arboreous. *Thorns* in pairs; the under one recurved; the upper one straight. *Leaves* round, serrulate, three-nerved. *Peduncles* axillary, very short, many-flowered. *Style* three-cleft. *Drupe* oval, with a three-celled nut.

A native of the Southern parts of Mysore, and there known to the natives by the name *Karakutta*. Seeds sent from thence by Dr. Buchanan to the botanic garden at Calcutta produced plants, which in four years were about ten feet high, with a tolerably erect, stout trunk, and many spreading, crooked branches; covered with smooth,



dark ash-coloured bark. The young shoots are round, and villous. They blossom in April, and the fruit ripens in December.

*Thorns* in stipular pairs, the lower one recurved, the upper one straight, both are hard, smooth, and acute; where the flowers are, the thorns are generally deficient.—*Leaves* short-petioled, obliquely round-cordate, or nearly round, obtuse, or retuse, serrulate, three-nerved; while young somewhat villous; from one to two inches long, and nearly as broad.—*Peduncles* axillary, very short, bearing many small, short-pedicelled, greenish-yellow flowers.—*Style* three-cleft.—*Drupe* the size of a large cherry, oval, depressed a little at both ends, smooth, dark-brown; fleshy part tough, firm, and yellowish. *Nut* roundish, a little uneven on the outside, very hard and thick, three-celled.—*Seeds* solitary, attached to the bottom of the cell, nearly round, compressed, convex on the inside. *Integuments* two; the exterior firm, light brown, and polished; the inner thin and softer. *Perisperm*; when the seed is ripe, there is only on each side of the embryo a white, fleshy lamina; but at this period not connected round its margins, as before maturity. *Embryo* erect; *cotyledons* two, nearly five-nerved. *Radicle* inferior, oval, just within the umbilicus.

### 13. *Z. microphylla*, R.

Shrubby; *branchlets* bifarious, flexuose. *Thorns* stipulary, one straight, the other recurved. *Leaves* ovate, three-nerved, serrulate, woolly underneath. *Flowers* fasciated. *Stigma* two-cleft.

*Jujubas zizyphus zeylanica*, Pluck. *Aln.* 199. t. 197 f. 2.

*Rhamnus nummularia*, Burm. *ind.* 61.

Common on barren uncultivated lands on the Coromandel coast. Flowering time the beginning of the rainy season.

*Stem* scarcely any, but many slender, rigid, bifarious, flexuose branches spreading in all directions, and forming a small bush. *Bark* covered with a light-coloured, almost white pellicle.—*Thorns* stipulary, the upper one straight, slender, but very sharp, and as long as the leaves. The under one shorter, and much recurved.—*Leaves* alternate, bifarious, very short-petioled, ovate and oval, serrulate, above

pretty smooth, woolly underneath; about half an inch long.—*Flowers* collected in the axils of the leaves, short-peduncled.—*Calyx* tomentose on the outside.—*Petals* short-clawed, oval.—*Stigma* two-cleft.

### 14. *Z. Napeca*, Willd. *spec.* i. 1104.

Shrubby, climbing. *Leaves* obliquely cordate, serrate, three-nerved, downy underneath. *Thorns* stipulary. *Nuts* two-celled.

*Sung.* सूक्ष्मफला, Sookshmuph'la, बड़कखड़क, Bhookantuka, सूक्ष्मत्रका, Sookshmuputuka, दुसर्ष, Doosparsha, मधुरः, Madhura, श्वराहारः, Shvurahara, शिखिप्रिया, Shikhipriya, कर्कडु, Karkandho, श्रृगालकोलि, Shrigalakoli.

*Beng.* Shen-kool.

*Tsinga* Paramie.

This is the most common species of the genus; it is to be found in every hedge throughout India, and always with scarcely any thing that can be called a trunk, but many large, straggling, climbing branches, which are too weak to support themselves. *Bark* dark, rust-coloured, pretty smooth; young shoots downy.—*Prickles* always present, stipulary, large, and exceedingly sharp; the lower one is much recurved, the upper one straight.—*Leaves* alternate, short-petioled, bifarious, very obliquely ovate, serrate, three-nerved; downy underneath, from one to two inches long.—*Corymbs* axillary, many-flowered.—*Style* two-cleft.—*Drupe* the size of a pea, smooth, shining black, marked round the base with a circular scar. *Nut* rugose, obcordate, two-celled; generally one of the cells is obliterated, or abortive.—*Seed* solitary, affixed to the bottom of the cell.

The fruit is eaten by the natives; the taste a very pleasant acid. A decoction of the bark of the fresh root is said to promote the healing of fresh wounds.

*Obs. by N. W.*

I have found this in flower and fruit in Prince of Wales's island in August. At Siliuet it is common.—N. W.



oblong, black seeds, which are almost entirely enveloped in a scarlet fleshy arillus.

*Obs.* This and the following are exceedingly alike in the inflorescence and leaves; but the fruit differs widely. The disposition of the nerves of the leaves seems also to differ; in the species just described they are nearly transversal, parallel, and uniting under the margins in reticulate arches, and more visible on the upper surface; in *E. vagans* they are very oblique, and very obscurely reticulate towards the periphery.—I have never observed the last mentioned species with a radicans stem or branches.—N. W.

19. *E. vagans*, Wall.

Climbing, shrubby. Leaves ovate-lanceolate, serrate. Peduncles filiform, axillary, dichotomous. Capsules globular, naked, unarmed.

It inhabits the same places as the last described, and produces flowers and fruit at similar seasons of the year. I have also found it in fruit on Cheesapani, in December.

A most extensive rambling and climbing shrub, with stem, branches, leaves and flowers exactly like those of the preceding species except in the points adverted to in the concluding observation.—The capsule smooth, unarmed, globular, four celled, four-seeded; seeds large, hidden within a fleshy scarlet arillus.

*Obs.* Gaertner has very justly observed in his matchless carpology, ii. 86, that there exists no generic difference between *Celastrus* and *Euonymus*, and I confess, that the two just described may perhaps with equal justice be placed under the former genus.—The wood of *E. vagans* is compact and fine grained.—I have brought with me a piece of the stem of a most gigantic climber belonging either to this species or very nearly allied to it, measuring full fifteen inches in circumference, marked with many parallel furrows and covered with spongy bark, grey on the surface and yellow within; the wood brown, soft, and perforated with small tubular cells like a ratan.—N. W.

*VENTILAGO*, Gaert.

*Calyx* five-parted. *Corol* five-petalled. *Germ* hid in the circumscissile flat nectary. *Style* two-cleft. *Samara* semi-supera, globose, long-winged, one-seeded. *Embryo* erect, with perisperm.

1. *V. Madraspatana*, Willd. sp. i. 1106. Gaert. Carp. i. 223. t. 49. *V. viminalis*, Rumph. Amb. v. 3. t. 2.

*Beng.* Raktupita.

*Telinga.* Yerra chictali.

A very large climbing shrub; a native of forests and other uncultivated places, amongst the mountains; flowering during the cold season.

Leaves alternate, short-petioled, bifarious, ovate-oblong, serrulate, smooth, except while young, then villous; from three to four inches long. Panicles terminal, composed of alternate, bifarious, ramous, villous branches.—Flowers very numerous, small, greenish, smelling very strong and offensive.—Calyx, corol, nectary, stamens, and pistillum as in *Rhamnus Jujuba*.—Capsule (*Samara*) globular, size of a pea, surrounded near the middle with the remaining nectary, terminating in a long, linear, membranaceous wing, one-celled, not opening of itself.—Seed solitary, round.

*Obs.* This plant is generally dioicous. The smell of the flowers is very offensive, not unlike that of *Sterculia fetida*.

*Obs. by N. W.*

While young the stem and flexuose branches are striped with white lines, which elegantly contrast with the smooth green bark, not unlike what is observed in the beautiful *Acer striatum*.—In the herbarium siccus of the late Dr. Heyne specimens are preserved of Willdenow's *V. dentata* (nov. act. berol. iii. 417); which I am supported by one of the very first authorities in botany in considering only as va-

\* Common in the north parts of Bengal. Ed.



rieties of *V. madraspatana* (See Sir J. E. Smith in Rees's cyclop. in loco).—*V. bracteata*, Heyn. also preserved in his herbarium, is very much like the former, and I am disposed to think that the round, sub-retuse, half-inch-long, villous, floral leaves are merely accidental.—In Sihat the climber is called *Panee Luta* (पानेलुता).—*Funis viminalis* of Rumphius is undoubtedly like a *Ventilago*; but it climbs by means of hooks, which ours does not.—N. W.

*HOFENIA*, Schreb. gen. N. 375.

*Calyx* five-parted. *Corol* five-petalled. *Germ* superior, three-celled; cells one-seeded; attachment inferior. *Style* three-cleft. *Capsule* trilocular. *Embryo* erect, with scanty perisperm.

1. *H. dulcis*, Thunb. japon. 101. Willd. spec. i. 1141.

Sicku, vulgò *Ken et Kenpökönas*, Kaempf. amern. p. 808. t. 809.

A tree, a native of Nipal; from thence introduced by Dr. Buchanan into the botanic garden at Calcutta, where when eight years old, they began to blossom in April.

*Trunk* in our young trees straight and high, from ten to twelve feet to the branches; and twenty inches in circumferences, four feet above the earth. Total height about thirty feet.—*Bark* smooth, dark-brown. *Branches* spreading much, branchlets bifarious, round; young shoots hairy. *Leaves* alternate, short-petioled, cordate, acutely serrate, acuminate, three-nerved, smooth above, a little hairy underneath; from four to six inches long, by from two to four broad.—*Stipules* lanceolate, hairy, caducous.—*Cymes* axillary, rarely terminal, dichotomous, villous; *divisions* clavate.—*Flowers* numerous, small, white.—*Calyx* one-leaved, acetabuliform, inside hairy. *Border* five-parted; *divisions* ovate, reflexed.—*Petals* five, inserted within the fissures of the calyx, broad spatulate, sides incurved round the filaments.—*Filaments* five, longer than the petals, recurved. *Anthers* ovate.—*Germ* superior, ovate, three-celled, with one ovulum in each,

attached to the bottom of its cell. *Style* cylindrical, apex three-cleft. *Stigmas* simple.—*Capsules* superior, round, size of a pea, thin, smooth, and brown, three-celled. The ramifications of the cyme are now, when the seed are ripe, much swollen, and variously bent, as represented by Kaempfer, but the taste is simply astringent.—*Seed* solitary. *Integuments* two; exterior tough, thick, hard, and highly polished; interior membranaceous, and covered with a brown mealy substance.—*Perisperm* in small quantity, tough, dull, livid-white. *Embryo* erect, yellowish. *Cotyledons* orbicular. *Radicle* oval, inferior.

*Obs.* By Dr. Buchanan dated Katumanda, 10th and 14th November, 1802. "Munko-khoshee.\* A tree originally brought from China or some country subject to it. The fruit is a capsule, containing three-seeds, and resting on an enlarged pedunculus, which is soft, and contains a sweet juice. This does not come to maturity till after the capsules are ripe. Part of the seed now sent in this parcel was brought from China, and part has ripened here. There can be no doubt, from the singular nature of the peduncle, that it is an *Hovenia*, Thunb. but whether or not his species, I know not. It has hairy leaves and is reckoned the largest tree in Nipal."

*Obs. by N. W.*

This fine tree undoubtedly grows wild in the valley of Nipal at

\* The name here given as a Newar name is in the extract of Dr. Buchanan's letter written Man Kokochoo, and is one, out of hundreds which might easily be produced, of the mistakes which constantly occur when persons unacquainted, in some measure at least, with the languages, set down words from the mouth of natives. Dr. Buchanan spoke only Hindoostanee, and a Newar man gave him as a reply to a question, Munko Khoshee, a Hindoostanee word which means *pleasure or delight to the mind*. This might be the Hindoostanee word by which the tree is designated by the Nipales, but it is much more probable the man only intended to say it was a *delightful tree*. The above-mentioned circumstance, and likewise the great number of native names of plants, seemingly obtained with the utmost care by other gentlemen who have merely run through a country as collectors; (which however was not the case with Dr. Buchanan); added to the difficulty I have myself found in obtaining names, and the uncertainty of those commonly obtained, fully dispose me to coincide with the suggestion of my friend Wallich in his note at the foot of page 99. Ed.



2. *V. lanceolata*, R.

Leaves alternate, lanceolar. Flowers in axillary fascicles.

An erect, shrubby plant, a native of Pulo Pinang.

Leaves alternate, bifarious, short-petioled, lanceolate; veins numerous, simple and parallel: smooth on both sides.—Stipules within the leaves, lanceolate, chaffy.—Flowers small, numerous, collected on short-peduncled, axillary, compound corymbs, pale yellow.—Calyx five-leaved; leaflets oval, concave, permanent.—Petals five, lanceolate, expanding, permanent.—Filaments five, shorter than the petals, incurved, united at the base into a ring round the lower half of the germ. Anthers arrow-shaped, erect.—Germ superior, ovate, hairy. Style longer than the stamens, hairy. Stigma simple.—Capsules three-lobed, leathery, one-celled, evalvolar.—Seeds several, affixed to three, vertical, parietal receptacles, on the inside of the middle of the lobes of the capsules.

## Obs. by N. W.

I have specimens belonging probably to this plant, which were collected at Pinang by W. Jack who, in a Mss. note says: "I am at a loss what to make of this shrub. I thought it might be a *Vareca* (according to Roxburgh) but the capsule is one-celled, three-valved, with parietal placenta; the calyx five-leaved; corolla five-petalled; stamina five, with filaments united at the base in an annular tube surrounding the ovary."—I venture to say it is certainly not a *Vareca*, and I even doubt whether any of the other species recorded above belong to that genus.—*V. heteroclita*, blossoms freely every year, but has never shewn the least disposition to produce fruit.—N. W.

3. *V. heteroclita*, R.

Shrubby. Leaves broad-lanceolar, crenate. Flowers axillary, crowded, sessile.

A small shrub, received into this garden from General Martin at Tanjkuow. Blossoms in October.

Stem short and slender; bark smooth, ash-coloured. Branches

bifarious, slender, all spreading nearly horizontally.—Leaves alternate, bifarious, sessile, cuneate-lanceolar, crenate, smooth on both sides; in the axil of each vein on the underside is a remarkable hollow gland.—Stipules ensiform.—Flowers axillary, crowded, sessile, small, white.—Calyx of five, unequal, imbricate, woolly, margined leaflets.—Petals five, lanceolate, confined at the base, by the rigid leaflets of the perianth, into a bell shape; above they are revolute and smooth on both sides.—Filaments five, long, and slender, projecting considerably beyond the mouth of the bell-shaped part of the corol, at the base each side is enlarged with one or more adjoined hornlets which are bearded at the base.—Germ superior, ovate, somewhat three-sided. Style as long as the stamens, villous; stigma simple. In the germ are the rudiments of two, three, or four seeds.

## VIOLA, Schreb. gen. N. 1364.

Calyx five-leaved. Corol five-petalled, irregular, calcarate. Anthers united. Capsules superior, three-valved, one-celled.—Seeds many, parietal. Embryo furnished with a perisperm; radicle centrifugal.

1. *V. suffruticosa*, Willd. spec. i. 1171.

Perennial, diffuse. Leaves alternate, sub-sessile, lanceolate. Stipules subulate. Peduncles axillary, with two bractes near the middle. Corol resupine. Capsules round.

A native of the sandy lands about Madras.\* In the botanic garden at Calcutta it continues in flower and seed most part of the year.

Stem scarcely any, but many diffuse, perennial, round, smooth branches, often extending to a foot in length.—Leaves alternate, sub-sessile, lanceolate, slightly serrate, pretty smooth, about an inch long,

\* It is very common in the fields from Nudocoy to Moorshabad, and probably in most other parts of Bengal. Ed.



and a quarter of an inch broad.—*Stipules* small, subulate.—*Peduncles* axillary, solitary, one-flowered; shorter than the leaves, jointed above the middle, where there are two small bractes, one on each side.—*Calyx* five-leaved. *Leaflets* nearly equal, lanceolate, acute.—*Petals* five, rosy, the two upper ones smallest, linear-oblong, and pointed; the two lateral ones sub-ovate, with long, taper, recurved apices; the lower one (here the corol is resupinate,) much larger than the others, broad-cordate, supported on a claw as long as the superior petals, which is protruded behind, between the two lower leaflets of the calyx, into a gibbous nectary.—*Filaments*; the two lower ones have each a ciliate hornlet projecting back. *Anthers* with brown, ovate, scariose apices.—*Capsules* nearly round, size of a pea, one-celled, three-valved.—*Seeds* several in each cell, attached to a ridge which runs along the inside of each valve, obovate. *Integument* single, thin, striated.—*Perisperm* conform to the seed, white. *Embryo* three-fourths the length of the perisperm, greenish. *Cotyledons* oval. *Radicule* sub-cylindric, pointing to the umbilicus, at the small end of the seed.

2. *V. emicasperma*, Willd. spec. i. 1171.

Perennial, rather diffuse. *Leaves* lanceolate. *Corol* with little or no horn behind.

*Nelam. parenda*, *Rheed. mal.* 9. t. 60. rather a bad figure.

3. *V. primulifolia*, Willd. spec. i. 1162.\*

Annual, stemless. *Leaves* from triangular- to lanceolar-cordate, serrate, decurrent. *Flowers* resupinate; in that position the lower petal is broader, and emarginate.

Native of the interior parts of Bengal; in the botanic garden at Calcutta it blossoms and ripens its seed more or less the whole year.

\* *V. primulifolia* is a native of America. Whether this be the American plant I know not, but I doubt its being a native of Bengal. Dr. Roxburgh received it from a gentleman then resident at Moorshinabad which is all the authority he had for considering it indigenous here: it certainly does not differ from the next species; all the species I know produce apetalous flowers except at one season of the year, when the flowers are perfect. Ed.

4. *V. apetala*, R.

Annual, stemless. *Leaves* broad-cordate, sagittate, serrate lobes, and apex rounded, in luxuriant plants the scapes are many-flowered. *Flowers* diandrous, and very generally without a corol.

Received from the Mauritius into the botanic garden in Bengal, where it is in constant flower and seed the whole year.

Additional species by N. W.

5. *V. serpens*, Wall.

Covered with reflexed short pubescence. *Stems* simple, prostrate, stoloniferous. *Leaves* ovate-cordate, acuminate. *Stipules* fringed. *Flower stalks* erect, simple, shorter than the leaves. *Calyx* acute. *Corolla* resupinate, nodding; *lowermost petiol* lanceolate, smaller than the rest.

A native of Nipal, where it inhabits moist and shady places on most of the hills about the great valley, blossoming and ripening its seeds successively from March till June. In the botanic garden it has succeeded very well on raised, well drained, beds of masonry, filled with gravelly soil.

*Root* slender, perpendicular, cylindrical, a little branchy. *Stems* numerous, very slender, round, simple, more or less purple, from one to two or more feet long, at first somewhat prostrate, creeping, and stoloniferous from the axils of the leaves; together with the petiols and peduncles beset with copious, short, reflexed, erect, afterwards roughish hairs.—*Leaves* alternate, remote, erect, ovate-cordate, acuminate, obtusely serrate, the serratures rather prominent on the upper surface, margins gibbous, lobes of the base rounded, approximate, separated by a deep, entire sinus, pubescent on both sides, dark-green, rugose above; nerved, veined, and from five- to seven-nerved underneath; those near the root about three inches long, the rest gradually smaller.



*Convolvulus foetidus*, Rumph. amb. v. 436. t. 160.

*Apocynum foetidum*, Burm. ind. p. 71.

Is rather a rare plant, I have only found it in the vicinity of Calcutta, twining up and over trees, &c. Flowering time the beginning of the cold season. Its roots used by the Hindoos as an emetic.

*Stem* ligneous, twining; *young parts* round, smooth. *Leaves* opposite, long-petioled, oblong-cordate, pretty smooth, entire. *Stipules* broad-cordate.—*Panicles* axillary and terminal, brachiate.—*Flowers* numerous, of a deep pink colour.—*Bractes* ovate.—*Calyx* five-toothed.—*Corol. Tube* pretty long, somewhat gibbous, inside woolly. *Border* narrow, divided into five cordate, crenulate segments.—*Filaments* short, inserted irregularly about the middle of the tube. *Anthers* erect, within the tube.—*Germ* inferior, turbinate, two-celled; *cells* containing one ovulum each, attached to the bottom of the cell. *Style* single. *Stigma* two-cleft; *segments* various, bent amongst the anthers.—*Berry* dry, compressed, smooth, with five lines on each side; one-celled, two-seeded.—*Seeds* compressed, smooth, enlarged with a somewhat membranaceous ring all round.—*Perisperm* conform to the seed, but scanty.—*Embryo* large, erect. *Cotyledons* round, cordate. *Radicl* short, inferior.

*Obs. by N. W.*

This is a very common shrub in Nipal, blossoming during the rainy season, and ripening its fruit in December. It is also found at Silhet.\*—Mr. Porter has communicated wild specimens from Penang.—The leaves vary much in figure and size.—N. W.

♀ *P. recurva*, R.

Shrubby. *Leaves* lanceolar, acuminate. *Corymbs* terminal, recurved.

A slender shrubby species; a native of Chittagong, where it is chiefly found in moist situations amongst the hills, flowering in the hot season. The seeds ripen in October and November.

\* It is found in the North of Bengal. Ed.

*Stem* and *branches* erect; *young shoots* round, and smooth.—*Leaves* opposite, short-petioled, lanceolar, entire, acuminate, pretty smooth on both sides, about six inches long, and from two to three broad.—*Stipules* as in the other rubiaceae, with a subulate, hairy point.—*Corymbs* terminal, recurved, brachiate, villous.—*Bractes* opposite, ensiform.—*Calyx* five-cleft, hairy; *segments* conic, permanent. *Corol* funnel-shaped. *Tube* the length of the border, widening to the mouth, a little hairy on the outside. *Border* of five, contorted, obliquely oblong segments.—*Filaments* scarcely any. *Anthers* five, linear, erect, attached below the middle to the mouth of the tube of the corol, and their lower ends in it.—*Germ* hairy, two-celled with one ovulum in each, attached to the partition a little above its middle. *Style* the length of the tube of the corol. *Stigma* simple, linear-clavate, longer than the stamina.—*Berry* inferior, size and colour of a black currant, when dry striated, crowned with the remaining calyx, two-celled.—*Seeds* solitary, the outside convex; on the inside a deep pit filled with the spongy receptacle. *Integument* single, thin.—*Perisperm* conform to the seed, hard, dull white.—*Embryo* lodged in the middle of the convexity of the seed. *Cotyledons*, reniform. *Radicl* inferior.

♂ *P. erecta*, R.

Shrubby, erect. *Leaves* sub-sessile, broad-lanceolar, entire. *Panicles* in the terminal forks of the *branchlets*, erect. *Stamina* protruded.

An erect, shrubby plant; a native of the Silhet district. It flowers in May and June; and the seeds ripen about the end of the rainy and beginning of the cold season.

*Stems* short, erect. *Bark* smooth, ash-coloured. *Branches* round, smooth, and dichotomous.—*Leaves* opposite, sub-sessile, broad-lanceolar, entire, smooth, ribbed with parallel veins underneath; from three to four inches long, by one and a half broad.—*Stipules* interfoliaceous, as in other rubiaceae.—*Panicles* solitary in the fork of the branchlets, often longer than the leaves; thin, being composed of a few small, short, opposite ramifications.—*Flowers*



equal.—*Tube* clavate, about an inch long, widening towards the mouth which is shut by means of five villous pink-coloured scales. *Lacinia* broad-ovate, most spreading, sub-retuse, in consequence of the blunt apex being slightly incurved.—*Stigma* capitate, sub-bilobate.—N. W.

*OPHIOXYLON*, Schreb. gen. N. 1378.

*Calyx* five-toothed. *Corol* funnel-shaped. *Germ* two-celled, cells one-seeded, attachment inferior. *Berries* twin, superior, slightly united, each one-seeded. *Embryo* inverse, and furnished with a perisperm.

1 *O. serpentinum*, Willd. iv. 979.

Triovanna-Amel-Podi, Rheed. mal. vi. 81. t. 47.

Radix Mustela, Rumph. Amb. vii. 29. t. 16.

Sung चन्द्रिका, Chundrika, चन्द्रिका, Churmuhuntree, पसुविचन कारिका, Pushomehunakarika, नन्दनी, Nandane, कारवी, Karavee, भद्रा, Bhudra, वासुपुष्पा, Vasopooosha, वासर, Vasara, चन्द्रशूरा, Chundrusboora.

Beng. Chandra.

Hind. Ch'hota chand.

Teliga. Patalganni.

This, in a rich soil, is a large climbing or twining shrub; in a poor soil, small and erect. It is a native of the Circar mountains.\* † In my garden it flowers all the year round.

*Stem* woody, erect, climbing, or twining. *Bark* ash-coloured.—*Leaves* three-, four-, or five-fold, short-petioled, oblong, pointed, waved, entire, smooth; from four to five inches long, and about two broad.—*Stipules* none.—*Fascicles* axillary, peduncled, many-flowered.—

\* It is indigenous in every part of Bengal.—Ed.

† It grows wild at Nonkote in Nipal, blossoming in May.—N. W.

*Pedicels* long, smooth, round, sometimes nearly erect, sometimes drooping. *Pedicels* and *calyces* of a bright red colour, which with the white flowers, gives the fascicles a very pretty appearance.

The HERMAPHRODITE FLOWERS, indeed I never could discover any other, are well described in the *Genera plantarum*, except that the coral is always contracted.—*Germ* superior, two-lobed, with one cell in each, attached to the inner and lower corner of the cell.—*Berry* two-lobed, smooth, shining black, and succulent when ripe; lobes the size of a pea, each one-celled.—*Seed* solitary, somewhat sapeiform. *Integuments* two, the exterior one nuciform, most pointed at the base, hard, thick, and rugose, the inner one a fine membrane, adhering to the perisperm.—*Perisperm* conform to the seed, greenish white.—*Embryo* inverse, straight, nearly as long as the perisperm. *Cotyledons* round, cordate. *Radicle* sub-cylindric.

*Obs.* The want of the nuciform, bony, exterior integument of the seed in Gaertner's *O. trifoliatum*, ii. 129. induces me to think his cannot be the same, yet I know of no other to compare his with.

The root of this plant is employed for the cure of various disorders by the Telinga physicians. *First* in substance, inwardly, as a cathartic. *Secondly*, in the same manner, after the bite of poisonous animals. The juice is also expressed, and dropt into the eye, for the same purpose. And *thirdly* it is administered, in substance, to promote delivery in tedious cases.

*HUNTERIA, R.*

*Calyx* five-parted. *Corol* infundibuliform. *Germ* two-lobed; lobes one-celled, two-seeded, attachment of the *ovula* sub-inferior. *Berries* two, pedicelled, one-celled, one- or two-seeded.

1. *H. corymbosa, R.*

A tree, native of Prince of Wales's Island, where it blossoms in

CORRECTIONS AND ADDITIONS.

- Page 7, *add* to Note. I have found it common on fields and in gardens, in the valley of Nipal, blossoming during the cold and hot season.
- 34, *line 15, add* (after *L. auriculata*, Jack.) Mal. Miscell. 2.
- 21, *add* I have found it with ripe fruit at Singapore, on Alligator-island, and other neighbouring islands.—N. W.
- 39, — 8, *for* *cariose* *read* *scariose*.
- 42, — 8, *add* I have likewise found it on Chundragiri and Cheesapanee, flowering from November to February.—On Shivapoor it blossoms much later.
- 50, *Convolv. blandus. Add* the following Note. It was brought to me from Noakote in Nipal, where it grows abundantly, and flowers in the month of April.—All the tender parts are covered with glaucous pubescence.—N. W.
- 50, *C. laurifolius.*—Note. This is *Conv. ellipticus*, of Dr. Heyne's collection. I. elliptica, Syst. Veg. iv. 248.
- 54, *line 8, capitatus read capitatus.*
- 56, *1st line of the first Note for Rot, read Bot.*
- 57, *nit. for Exo. read Edw.*
- 64, *line 9, add, My friend Mr. Royle, the zealous superintendent of the botanic garden at Saharanpore, informs me, that the plant is common in that direc-*



tion and that the natives use the seed, as a purgative, under the name of *Lal-dant*.

- Page 65, 1st line of 2nd Note read confounded.  
 — 69, line 20, for *Stigma* read *Segments*.  
 — 70, Note. Add—At Silhet it grows in fields, blossoming during the rains.  
 — 75, line 12, *Lettsomia*, R. Note by N. W. This must not be confounded with the polyandrous genus bearing that name which has been recorded in the *Flora Peruviana*.  
 — 80, first Note. Add—This powerful climber is common in the Saul forest which skirts the northern frontier of Hindoosthan, where I found it loaded with ripe capsules in the month of December. The natives of the Turraie call it *Chemedee*.  
 — 113, add between 1st and 2nd line, Additional species by N. W.  
 — 124, after *N. ovalifolia* add R.  
 — 127, line 16, *Amboine*, *dele e*.  
 — 139, — 8, for *pistilum* read *pistillum*.  
 — 10, add R. *corymbosa*, Jack in Mal. Miscell. vol. i.  
 — 156, — 21, for *shew* read *exhibit*.  
     *penult.* read as well as.  
     *ult.* read as that of.  
 — 160, — 18, for *on* read *in*.  
     — 21, for *hark* read *base*.  
 — 165, — 21, Add *P. malayana*, Jack in Mal. Miscell.  
 — 167, *ult.* for *long*, *accuminate* read *long-accuminate*.  
 — 174, line 17, for *Leaves-oblong cordate*, read *Leaves oblong-cordate*.  
     — 22, for 195 read 185.  
 — 185, — 3, He did me the honor to call the genus *Wallichia* in his *Mss.*

- Page 189, line 23, for *laciniæ* read *laciniæ*.  
 — 193, — 21, *Ovule* read *ovulum*.  
 — 196, — 7, for *i. Spec.* read *Spec. i.*  
 — 217, — 5, from bottom, for *berries* read *Berries*.  
 — 230, second Note, commence with Bot. Mag. 2052.  
 — 267, *S. bicirrhosa*.—Note. A species, which is very closely allied, if not identically the same, grows at Pinang.—N. W.  
 — 269, line 8.—Note. I have seen single flowers of this shrub in the garden of my most valued friend the Rev. Dr. Carey, at Serampore, in May 1823.—N. W.  
 — 312, — 12, for *monophyllus* read *monophyllous*.  
 — 320, — 9, for “shrub rather sparingly,” read “shrub, I have found rather sparingly,” &c.  
 — 329, — 26, read *large plumula*, reaching almost to the middle of the cotyledons; its base, which constitutes the radicle, is placed, &c.  
 — 349, — 6, from the bottom insert after “Calcutta” who found it, if I mistake not, in ravines on the Island of Mauritius.  
 — 353, — 9, after *respect* add “that of.”  
 — 360, — 18, add after Willd. “spec.”  
 — 365, — 18, add, The plants which I brought down with me from Nipal blossomed for the first time during the rains of 1823.  
 — 369, — 12, from the bottom add. It has been introduced by Mr. Reeves from China into the botanic garden, at Calcutta, where it blossomed for the first time in October 1823.  
 — 375, — 5, read *napalensis*.  
 — 381, — 13, add, I have also had specimens from Silhet.  
 — 385, — *penult.* for and read *but*.  
 — 395, — 4, from bottom, *robusta*.

Page 414, line 8, add, I have found this shrub, or one closely allied to it, in Nipal.

— 449, — 10, from bottom, read,—"somewhat erect afterwards, &c."

— B, for afterwards read a little.

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